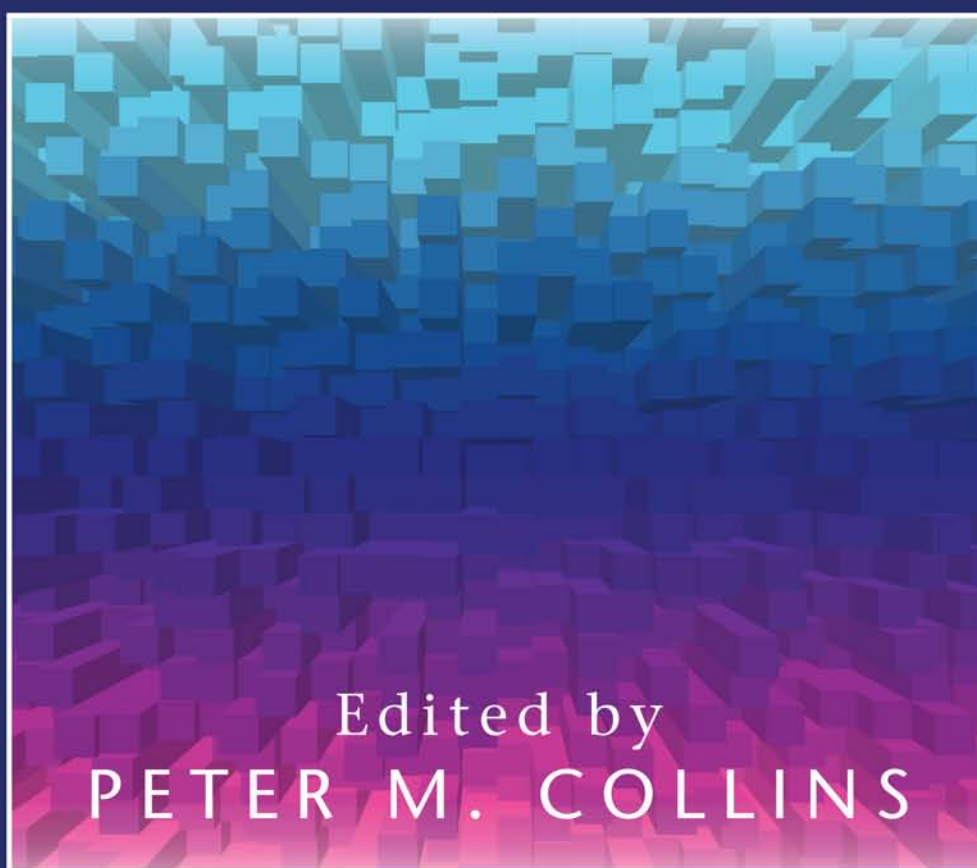


SECOND EDITION

Dictionary of
CARBOHYDRATES
with CD-ROM



Edited by
PETER M. COLLINS

S E C O N D E D I T I O N

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CARBOHYDRATES
with CD-ROM

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Edited by
P E T E R M . C O L L I N S

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Published in 2006 by
Chapman & Hall/CRC
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

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Printed in the United States of America on acid-free paper
10 9 8 7 6 5 4 3 2 1

International Standard Book Number-10: 0-8493-3829-8 (Hardcover)
International Standard Book Number-13: 978-0-8493-3829-8 (Hardcover)

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Library of Congress Cataloging-in-Publication Data

Catalog record is available from the Library of Congress

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Preface

This Dictionary is intended to provide an easy-to-use reference source for all scientists working with carbohydrates on a regular or occasional basis. It represents a much enlarged and revised new edition of the dictionary first published in 1998, which in turn was an expansion of the earlier title *Carbohydrates* (chemistry sourcebook series) (1987). The previous edition was welcomed by carbohydrate researchers and has been found to be of considerable practical use and it is therefore anticipated that this new edition, with its numerous improvements in response to users' comments, will be equally welcomed.

Compared with the previous volumes, the number of compounds included has been substantially increased, while at the same time the presentation has been sharpened. A further careful review of the coverage was carried out so that the best possible selection of the parent sugars and their derivatives could be made. A number of entries present in the previous compilation for antibiotic and other natural product types in which the sugar component is not central to the structure have been omitted. Despite these deletions, the extensive compilation of further important carbohydrate compounds means that the total number of compounds included is now 24,000.

The vast majority of references given for each entry are now labelled to indicate their content, particularly in respect to their derivative(s) that they document. In general, therefore, the Dictionary takes the user straight from the entry to the correct literature citation for the compound, eliminating several steps compared with a literature search carried out by other routes.

Carbohydrate science is no longer seen as a specialised subdivision of organic chemistry, but as a discipline of central importance to the chemical and biological sciences. Every attempt has been made in the coverage of the Dictionary to provide all glycoscientists, not just synthetic carbohydrate chemists, with the key information that they will need for their day-to-day work.

The *Dictionary of Carbohydrates* is published as a book with a CD-ROM. The CD-ROM version has a number of benefits compared to the book. Users already familiar with other titles in the Chapman & Hall series will find the CD-ROM uses the same familiar interface, but even those with no previous experience will find the CD-ROM intuitive to use.

P. M. Collins

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Introduction

1. COVERAGE

The *Dictionary of Carbohydrates* covers the following classes of compound.

(1) **The parent monosaccharides and their important derivatives.** All of the fundamental aldoses and ketoses are extensively documented. The coverage of their derivatives is extensive although not of course comprehensive. Entries have been compiled to present a wide range of derivatives of most interest in synthetic carbohydrate chemistry, including a good selection of those containing the more recently developed blocking groups.

Sugars differently derivatised at several functional groups are common in carbohydrate chemistry and these are presented as 'derivatives of derivatives', sometimes branching off into their own entries (see below).

(2) **Modified monosaccharides.** Compounds such as halodeoxy-, aminodeoxy-, thio- and anhydrosugars, glycuronic acids, etc. are covered extensively.

(3) **Disaccharides.** The coverage of disaccharides derived from two unmodified sugar residues is virtually complete. There is selective coverage of modified disaccharides (e.g. aminodeoxysucroses).

(4) **Tri-, oligo- and polysaccharides.** The coverage of these has also been increased and concentrates on those with biochemical significance and/or industrial usage.

(5) **Alditols and cyclitols.** These are extensively documented along with their most important derivatives.

(6) **Nucleosides.** The number of these included has been considerably increased. The coverage centres on naturally occurring nucleosides such as those found in RNA, their analogues and other nucleosides with pronounced drug activities.

(7) **Glycoside antibiotics and related compounds.** An up-to-date coverage of these is given.

(8) **Other glycosides.** Some natural products containing markedly unusual sugars or unusual glycosidic linkages are included. A very large number of plant and animal glycosides is now known, and for comprehensive coverage of these the user is referred to the *Dictionary of Natural Products* website (www.chemnetbase.com) or CD-ROM. The glycosinolates are covered.

In compiling the printed version and the CD-ROM, the primary literature has been reviewed up to late 2004.

2. ORGANISATION OF ENTRIES

The Dictionary is arranged alphabetically by entry name. Every entry is numbered to assist ready location. Many compounds are included as derivatives of main entry compounds but important derivatives have their own individual cross-referenced entries. Use of the indexes enables the rapid location of all compounds in the Dictionary by name or compound type, regardless of their location.

In most cases the stereoisomeric and ring-form (i.e. pyranose/furanose) variants of a given carbohydrate are included in the same entry, with a few exceptions (for example, glucoseptanose has its own entry).

The organisation of the entry for a typical important monosaccharide therefore follows the following scheme:

Entry Compound

D-form

Derivatives generally applicable to the D-form (e.g. derivatives of the open chain form)

D-Pyranose-form

Derivatives not specifically assigned to either the α - or β -anomer

α -D-Pyranose-form

Derivatives

β -D-Pyranose-form

Derivatives

D-Furanose-form

Derivatives not specifically assigned to either the α - or β -anomer

α -D-Furanose-form

Derivatives

β -D-Furanose-form

Derivatives

L-form

etc.

A representative dictionary entry is shown in Fig. 1.

2.1 CHEMICAL NAMES AND SYNONYMS; NOMENCLATURE OF CARBOHYDRATES

The Dictionary contains a wide range of synonyms which may be (a) those found in the primary literature, (b) *Chemical Abstracts* names, or (c) names added editorially to achieve as much consistency as possible with other closely related substances. Names corresponding to those used by CAS during the 9th and subsequent Collective Index periods (1973-) are

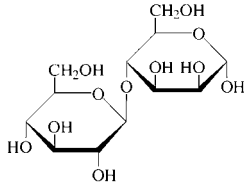
Entry Name	→	4-O-β-D-Glucopyranosyl-D-mannose, 9CI, 8CI	G-432 ←	Entry Number
CAS Registry Number	→	<i>Epicellobiose</i> , <i>Glucosidomannose</i> [15761-61-2]	←	Synonyms
Structural formula and stereochemical description	→	 α-Pyranose-form		
Molecular formula	→	C ₁₂ H ₂₂ O ₁₁	←	Molecular weight
General information	→	342.299 Structural unit in the glucomannans of plant hemicelluloses. Isol. from the partial acid hydrolysates of the glucomannans from <i>Amorphophallus</i> spp., white spruce (<i>Pinus glauca</i>), western hemlock (<i>Tsuga heterophylla</i>), red maple (<i>Acer rubrum</i>), eastern white pine (<i>Pinus strobus</i>), larch (<i>Larix decidua</i>), jack pine (<i>Pinus banksiana</i>) and from <i>Narcissus tazetta</i> ; from hemicelluloses of loblolly pine (<i>Pinus taeda</i>) and in trace amounts from the acetolysates of the α-celluloses from white birch (<i>Betula papyrifera</i>) and slash pine (<i>Pinus caribaea</i>). Cryst. Mp 135-138° (anhyd.) Mp 179-182°. [α] _D ²⁰ +11 → +6 (H ₂ O). [α] _D 0 (H ₂ O).	←	Physical data
Cyclic form heading	→	α-Pyranose-form <i>Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-α-D-mannopyranose</i> C ₂₈ H ₃₈ O ₁₉ 678.597 Mp 202-204°. [α] _D +36 (CHCl ₃).		
Derivative heading	→	β-Pyranose-form <i>Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-β-D-mannopyranose</i> C ₂₈ H ₃₈ O ₁₉ 678.597 Mp 165°. [α] _D -13 (CHCl ₃).	←	Derivative synonym
Bibliographic references	→	[94799-29-8, 102046-24-2] Haworth, W.N. <i>et al.</i> , <i>J.C.S.</i> , 1930, 2326; 2636 (<i>α,β-forms, Ac, synth</i>) Haskins, W.T. <i>et al.</i> , <i>J.A.C.S.</i> , 1941, 63 , 1724 (<i>synth</i>) Smith, F. <i>et al.</i> , <i>J.A.C.S.</i> , 1956, 78 , 1404 (<i>isol</i>) Mian, J. <i>et al.</i> , <i>Can. J. Chem.</i> , 1960, 38 , 1511 (<i>isol</i>) Tyminski, A. <i>et al.</i> , <i>J.A.C.S.</i> , 1960, 82 , 2823 (<i>isol</i>) Perila, O. <i>et al.</i> , <i>Can. J. Chem.</i> , 1961, 39 , 815 (<i>isol</i>) Alexander, J.K. <i>et al.</i> , <i>Arch. Biochem. Biophys.</i> , 1968, 123 , 240 (<i>synth</i>) Kato, K. <i>et al.</i> , <i>Carbohydr. Res.</i> , 1973, 29 , 469 (<i>struct</i>) Das-Gupta, P.C. <i>et al.</i> , <i>Carbohydr. Res.</i> , 1976, 48 , 73 Usui, T. <i>et al.</i> , <i>Agric. Biol. Chem.</i> , 1979, 43 , 863 (<i>nmr</i>)	←	Reference tags
			←	Related CAS Registry Numbers

FIGURE 1

labelled 9CI (there have been no substantial changes in CAS nomenclature for most carbohydrates since 1973). Names used during the 8th Collective Index period (1967-1972) are labelled 8CI. All important derivatives embedded within entries are named (but see comment on CAS nomenclature below).

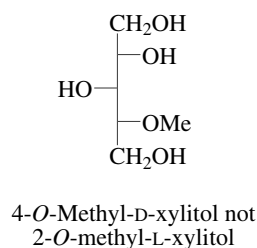
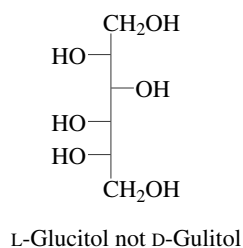
If a compound cannot be located immediately in the main body of the entries, it is important to use the indexes.

The most authoritative current statement of good practice on carbohydrate nomenclature is the document *IUPAC/IUBMB Joint Commission on Biochemical Nomenclature of Carbohydrates Recommendations*, (*Pure Appl. Chem.*, 1996, **68**, 1919) the full text of which can be read on the Dictionary of Carbohydrates CD-ROM (access from the Windows® Start menu item or via the Help menu in the main program).

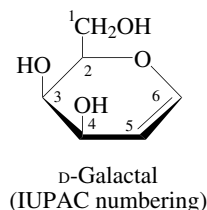
For the majority of carbohydrates documented in the dictionary there is full agreement between the IUPAC/IUBMB recommendations and current practice by the vast majority of authors active in carbohydrate science, and therefore no difficulty in deciding on the entry name for the majority of compounds in the Dictionary. However, a number of complications arise at a more detailed level.

(1) The complexity of the names of carbohydrate derivatives containing a variety of different substituents means that trivial errors in naming them according to the correct IUPAC alphabetical rules are quite widespread in the primary literature. In general, these errors have been corrected in the Dictionary and the incorrect versions are not given as synonyms.

(2) IUPAC rules for nomenclature of a few types of carbohydrate contain certain features that differ from those for general organic compounds. For carbohydrates which do not possess a functional group to receive the locant 1 such as alditols, two names are possible. In such cases precedence is given to the name deriving from the parent structure coming *first in alphabetical order*, then to assignment to the *D-* rather than *L-series*; these rules take precedence over the usual IUPAC numbering principle of lowest possible locants (rule 2-Carb-2-1-3). This is illustrated by the following examples.

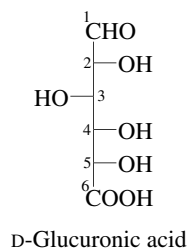


The rule can lead to names which are less than user friendly. *D*-Galactal, for example, is 2,6-anhydro-5-deoxy-*D*-*arabino*-hex-5-enitol rather than 1,5-anhydro-2-deoxy-*D*-*lyxo*-hex-1-enitol which is more intuitive and would be the choice of workers in the field (in the Dictionary all three names are quoted).

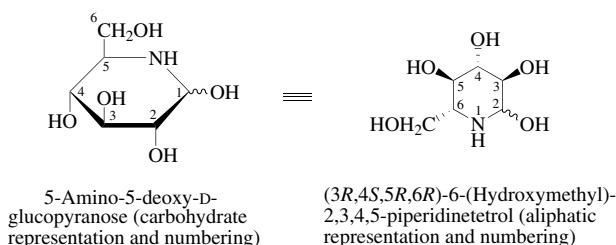


Not all authors follow strict IUPAC principles. In this Dictionary the policy has been to follow IUPAC in the choice of the entry name for the compound, but to give the 'incorrect' forms as synonyms. Such entries are often given notes explaining the nomenclature situation with a view to eliminating as much confusion as possible.

(3) The -CHO (or potential CHO) group in aldoses (but *not* the CO group in ketoses) takes numbering precedence over any other group in the molecule, including groups such as -COOH which in general organic nomenclature are senior to -CHO .



(4) Complexities arise at the interface between carbohydrate and aliphatic chemistry, where it is frequently possible to name compounds either as modified sugars or as aliphatic structures such as lactones or furans. The transition between the two systems is not rigidly defined by IUPAC and compounds treated in *Chemical Abstracts* as sugars may be named by other authors as aliphatic compounds, and vice-versa. The numbering scheme invariably changes and so does the preferred system for



denoting configurations, meaning that great care is necessary to avoid errors. The following example is typical:

In this Dictionary, compounds containing three or more chiral centres are usually named and numbered as carbohydrates, while the majority of compounds containing one or two chiral centres are named and numbered as aliphatics¹. The alternative schemes are usually given as synonyms.

(5) Although Chemical Abstracts names for carbohydrates follow IUPAC principles, the CAS names for some common groups found in carbohydrate derivatives do not correspond to those used by the majority of carbohydrate chemists as given in this Dictionary. For example;

<i>Dictionary name</i>	<i>CAS name</i>
Isopropylidene	1-Methylethylidene
Benzylidene	Phenylmethylene

In the majority of cases, the CAS alternative is not given as a synonym in the Dictionary entry.

2.2 CAS REGISTRY NUMBERS

CAS numbers are identifying numbers allocated to each distinctly definable chemical substance indexed by CAS since 1965 (plus some retrospective allocation of numbers by CAS to compounds from earlier index periods). The numbers have no chemical significance but they provide a label for each substance independent of any system of nomenclature. They are extensively used for exchanging information between individuals and databases. The numbers take the form NNNNNN-NN-R, where the total number of digits is five or more and R is a check digit.

For practical purposes, CAS numbers have certain shortcomings arising from their free allocation, resulting in one substance having more than one potential number. Duplication may arise for one of several reasons to do with the detailed chemistry of the substance, for example tautomerism, solvent formation, partially unspecified stereochemistry. There are also replaced numbers. For this reason, Carbohydrates entries will often contain one or more *Additional CAS numbers* which may help the user to obtain further information about the substance, especially by online searching.

Clearly, the additional CAS numbers given in Carbohydrates have to be used with care. Their inclusion in the entry is the result of an editorial decision by the Carbohydrates contributor that they refer to what is essentially the same substance, but this decision may be a subjective one. Care has been taken

to ensure that the main CAS number given in Carbohydrates for each substance is the correct one.

Further information on CAS number allocation policy can be obtained from CAS indexes or *The Organic Chemist's Desk Reference*.

2.3 STRUCTURAL FORMULAE

Every attempt has been made to present the structures of chemical substances as accurately as possible according to best current practice and recommendations of IUPAC (The International Union of Pure and Applied Chemistry). As much consistency as possible has been aimed at between closely-related structures. For example, all sugars are shown as Haworth formulae, and whenever possible in complex structures the rings are oriented in the standard Haworth convention so that structural comparisons can be quickly made.

2.4 MOLECULAR FORMULA AND MOLECULAR WEIGHT

The elements in the molecular formula are given according to the Hill convention (C, H, then other elements in alphabetical order). The molecular weights given are formula weights (or more strictly, molar masses in daltons) and are rounded to three places in decimals. In the case of some high molecular mass substances, such as proteins, the value quoted may be that taken from an original literature source and may be an aggregate molar mass.

2.5 PHYSICAL DATA

Carbohydrates gives the following physical characteristics of substances, when available; appearance, melting point, boiling point, optical rotation, density, refractive index, solubility, pKa. All of these fields are searchable by numerical value (including range searching) in the CD-ROM version of Carbohydrates.

2.5.1 Appearance

Organic compounds are considered to be colourless unless otherwise stated. Where the compound contains a chromophore which would be expected to lead to visible colour, but no colour is mentioned in the literature, the Carbohydrates entry will mention this fact if it has been noticed by the contributor. An indication of crystal form and of recrystallisation solvent is often given but these are imprecise items of data; most compounds can be crystallised from several solvent systems and the crystal form often varies. In the case of the small number of compounds where crystal behaviour has been intensively studied (e.g. pharmaceuticals), it is found that polymorphism is a very common phenomenon and there is no reason to believe that it is not widespread among organic compounds generally.

¹ Lichtenthaler, F.W., *et al.*, *Annalen*, 1989, 1153

2.5.2 Melting points and boiling points

The policy followed in the case of conflicting data is as follows:

- Where the literature melting points are closely similar, only one figure (the highest or most probable) is quoted.
- Where two or more melting points are recorded and differ by several degrees (the most likely explanation being that one sample was impure) the lower figure is given in parentheses, thus Mp 139° (134-135°).
- Where quoted figures differ widely and some other explanation such as polymorphism or incorrect identity seems the most likely explanation, both figures are quoted without parentheses, thus Mp 142°, Mp 205-206°.
- Known cases of polymorphism or double melting points are noted.

Boiling point determination is less precise than that of melting points and conflicting boiling point data is not usually reported except when there appears to be a serious discrepancy between the different authors.

2.5.3 Optical rotations

These are given wherever possible, and normally refer to what the Carbohydrates contributor believes to be the best characterised sample of highest chemical and optical purity. Where available an indication of the optical purity (op) or enantiomeric excess (ee) of the sample measured follows the specific rotation value.

Specific rotations are dimensionless numbers and the degree sign which was formerly universal in the literature has been discontinued.

2.5.4 Densities and refractive indexes

Densities and refractive indexes are now of less importance for the identification of liquids than has been the case in the past, but are quoted for common or industrially important substances, or where no boiling point can be found in the literature.

Densities and refractive indexes are not quoted where the determination appears to refer to an undefined mixture of stereoisomers.

2.5.5 Solubilities

Solubilities are given only where the solubility is unusual for a compound. Typical organic compounds are soluble in the usual organic solvents such as ether and chloroform, and virtually insoluble in water. The presence of polar groups (OH, NH₂, and especially COOH, SO₃H and NR₃⁺) increases water solubility.

2.5.6 pK_a values

pK_a values are given for both acids and bases. The pK_b of a base can be obtained by subtracting its pK_a from 14.17 (at 20°) or from 14.00 (at 25°).

2.6 SPECTROSCOPIC DATA

Many Carbohydrates entries include ultraviolet spectra which are presented in the format:

[neutral] λ_{max} 198 (log ε 1.55); 224 (sh) (log ε 0.61);
241 (sh) (log ε 0.55) (H₂O) (Berdy)

where ε is the absorption coefficient for a given UV maxima value (λ_{max}). A description of the solvent conditions used, if reported in the literature, is listed at the beginning and end of the UV data in parentheses. All peak absorptions cited are maxima unless otherwise described, e.g. shoulder/inflection (sh) and end absorption (end). In addition, UV data may be followed by the term 'Berdy' or 'DEREP' indicating from which database the data originated. The absence of either of these terms implies that the data was abstracted from the primary literature.

On the CD-ROM, all the λ_{max} values are indexed in the UV Maxima field and can be searched for numerically including range searching. Similarly, the solvent data associated with the UV data are indexed in the UV Solvent field.

2.7 HAZARD AND TOXICITY INFORMATION

2.7.1 General

Toxicity and hazard information is highlighted by the symbol ► and has been selected to assist in risk assessments for experimental, manufacturing and manipulative procedures with chemicals.

Physical, *reactive* and *toxic* properties all contribute to the hazard associated with a particular chemical. As part of the *physical data*, flash points, explosive limits and autoignition temperatures have been included where appropriate. Flammable classifications, which are based on flash point measurements and boiling points, are also mentioned, and the opportunity has been taken to include UK occupational exposure limits, or for some compounds threshold limit values published by the American Conference of Governmental Industrial Hygienists (ACGIH). For the *reactive* hazards, a brief comment is made on any explosive (or violent polymerisation) properties and aspects of the chemical reactivity of a substance which are of concern. These include the potential for peroxidation, oxidising/reducing properties and incompatibility with commonly available chemicals. *Toxicity* information has been chosen to show hazardous effects from short-term or long-term

exposure. Observations from human exposure are summarised if available (including possible adverse effects of drugs), otherwise experimental (exp.) tests are quoted. Included in the toxicity data are the results of irritancy tests, acute lethality data, target organ toxicity, and carcinogenic and reproductive properties where appropriate. Those chemicals which have been classified by the International Agency for Research on Cancer (IARC) as *human carcinogens*, *probable human carcinogens* or *possible human carcinogens* have been identified in Carbohydrates accordingly.

The Publishers cannot be held responsible for any inaccuracies in the reported information, neither does the omission of hazard data in the *Dictionary* imply an absence of this data from the literature. Widely recognised hazards are included however, and where possible key toxicity reviews are identified in the references. Further advice on the storage, handling and disposal of chemicals is given in *The Organic Chemist's Desk Reference*.

Finally, it should be emphasised that any chemical has the potential for harm if it is carelessly used.

2.7.2 RTECS® Accession Numbers*

Many entries in Carbohydrates contain one or more RTECS® Accession Numbers. Possession of these numbers allows users to locate toxicity information on relevant substances from the NIOSH *Registry of Toxic Effects of Chemical Substances*, which is a compendium of toxicity data extracted from the scientific literature.

For each Accession Number the RTECS® database provides the following data when available: substance prime name and synonyms; data when the substance record was last updated; CAS Registry Number; molecular weight and formula; reproductive, tumorigenic, and toxic dose data; and citations to aquatic toxicity ratings, IARC reviews, ACGIH Threshold Limit Values, toxicological reviews, existing Federal standards, the NIOSH criteria document program for recommended standards, the NIOSH current intelligence program, the NCI Carcinogenesis Testing Program, and the EPA Toxic Substance Control Act inventory. Each data line and citation is referenced to the source from which the information was extracted.

2.8 BIBLIOGRAPHIC REFERENCES

The selection of references is made with the aim of facilitating entry into the literature for the user who

wishes to locate more detailed information about a particular compound. The contents of most references are indicated by reference tags (suffixes) indicating their content and in particular the stereoisomers and derivatives of the parent compound which they document. Many carbohydrates are documented in several different literature references, and unless there are marked differences in their reported physical properties or syntheses, recent and accessible references are preferred to older and/or less accessible ones. The number of references cited does not indicate the relative importance of a compound; one key recent citation may supersede a number of older ones.

Journal abbreviations generally follow the practice of the Chemical Abstracts Service Source Index (CASSI), except for a short list of very well known journals where the Dictionary gives shorter abbreviations to save space (e.g. *J.A.C.S.* instead of *J. Am. Chem. Soc.*)

2.8.1 Further References

Further useful information on a variety of topics concerned with the structure, description, stereochemistry and nomenclature of organic compounds, including carbohydrates can be found in the *Organic Chemist's Desk Reference* (Chapman & Hall, 1995).

3. INDEXES

There are two printed indexes:

- (1) A **Name Index** which lists every compound name and synonym in the Dictionary, and
- (2) A **Type of Compound** index listing all compounds given in the Dictionary.

The indexes refer to the entry number. In the Name Index an entry number preceded by the word 'see' means that the name listed is a synonym to an entry name, and appearance of the term 'in' means that the name listed is the name of a derivative embedded within the entry.

Searches on all text and numerical indexes, as well as structure and substructure searching can be carried out on the CD-ROM version of the Dictionary. In the CD-ROM Type of Compound Index, all carbohydrates in the Dictionary are classified under one or more of the headings given in Fig. 2.

* RTECS® Accession Numbers are compiled and distributed by the National Institute for Occupational Safety and Health Service of the U.S. Department of Health and Human Services of The United States of America. All rights reserved (1996)

AF0100	Tetroses	AF5400	4-Deoxy sugars
AF0200	<i>arabino</i> -Pentoses	AF5500	5-Deoxy sugars
AF0300	<i>lyxo</i> -Pentoses	AF5600	2,6-Dideoxy sugars
AF0400	<i>ribo</i> -Pentoses	AF5700	3,6-Dideoxy sugars
AF0500	<i>xylo</i> -Pentoses	AF5800	4,6-Dideoxy sugars
AF0600	<i>allo</i> -Hexoses	AF5850	Polydeoxy sugars
AF0700	<i>altro</i> -Hexoses	AF5900	6-Deoxyalloses
AF0800	<i>galacto</i> -Hexoses	AF6000	6-Deoxyaltroses
AF0900	<i>gluco</i> -Hexoses	AF6100	6-Deoxygalactoses
AF1000	<i>gulo</i> -Hexoses	AF6200	6-Deoxyglucoses
AF1100	<i>ido</i> -Hexoses	AF6300	6-Deoxyguloses
AF1200	<i>manno</i> -Hexoses	AF6400	6-Deoxyidoses
AF1300	<i>talo</i> -Hexoses	AF6500	6-Deoxymannoses
AF1400	Higher aldoses	AF6600	6-Deoxytaloses
AF1500	<i>erythro</i> -Pentuloses	AF6650	Other deoxy sugars
AF1600	<i>threo</i> -Pentuloses	AF6700	Unsaturated sugars; 1-enes
AF1700	<i>fructo</i> -Hexuloses	AF6800	Unsaturated sugars; 2-enes
AF1800	<i>psico</i> -Hexuloses	AF6900	Unsaturated sugars; 3-enes
AF1900	<i>sorbo</i> -Hexuloses	AF7000	Unsaturated sugars; 4-enes
AF2000	<i>tagato</i> -Hexuloses	AF7100	Unsaturated sugars; 5-enes
AF2100	Miscellaneous ketoses	AF7150	Other unsaturated sugars
AF2200	Higher ketoses	AF7160	Sugar alkynes
AF2300	1,2-Anhydrosugars	AF7200	Branched chain sugars
AF2400	1,3-Anhydrosugars	AF7300	Dicarbonyl sugars; glycos-2-uloses
AF2500	1,4-Anhydrosugars	AF7400	Dicarbonyl sugars; glycos-3-uloses
AF2600	1,5-Anhydrosugars	AF7500	Dicarbonyl sugars; glycos-4-uloses
AF2700	1,6-Anhydrosugars	AF7600	Dicarbonyl sugars; glycos-5-uloses
AF2800	2,3-Anhydrosugars	AF7700	Diuloses
AF2900	2,5-Anhydrosugars	AF7800	Dialdoses
AF3000	2,6-Anhydrosugars	AF7900	Aldonic acids and lactones
AF3100	3,4-Anhydrosugars	AF8000	Glycuronic acids and lactones
AF3200	3,6-Anhydrosugars	AF8100	Aldaric acids and lactones
AF3300	4,6-Anhydrosugars	AF8200	Ketoacid sugars and lactones
AF3400	5,6-Anhydrosugars	AF8300	Higher sugar acids and lactones
AF3500	Dianhydrosugars	AF8400	Other sugar acids and lactones
AF3600	Other anhydrosugars	AF8500	Glycerol derivatives
AF3700	Glycosyl halides and other 1-halogenosugars	AF8600	Tetritols
AF3800	2-Halogenosugars	AF8700	Pentitols
AF3900	3-Halogenosugars	AF8800	Hexitols
AF4000	4-Halogenosugars	AF8900	Higher alditols
AF4100	5-Halogenosugars	AF9000	Cyclitols
AF4200	6-Halogenosugars	AF9100	Other polyols
AF4300	Glycosylamines	AF9150	Sugar phosphates
AF4400	2-Amino-2-deoxysugars	AF9200	Reducing disaccharides
AF4500	3-Amino-3-deoxysugars	AF9220	Non-reducing disaccharides
AF4600	4-Amino-4-deoxysugars	AF9230	Trisaccharides
AF4700	5-Amino-5-deoxysugars	AF9300	Linear oligosaccharides
AF4800	6-Amino-6-deoxysugars	AF9350	Cyclic oligosaccharides
AF4900	Aminodeoxyalditols	AF9400	Polysaccharides
AF4950	Azidosugars	AF9500	Miscellaneous carbohydrate antibiotics
AF5000	Thioglycosides and 1-thiosugars	AF9600	Glycosinolates
AF5100	Other thiosugars	AF9900	Nucleosides
AF5150	1-Deoxy sugars	AF9999	Carbohydrates of unknown or partially unknown structure
AF5200	2-Deoxy sugars		
AF5300	3-Deoxy sugars		

FIGURE 2

4. ABBREVIATIONS

The following is a selection of the most common Database abbreviations used:

Abbreviation	Name
[α]	specific rotation
abs config	absolute configuration
Ac	acetyl
acc	according
AcOH	acetic acid
Ac ₂ O	acetic anhydride
ADI	Acceptable Daily Intake
alk	alkaline
amorph	amorphous
amt	amount
anal	analytical applications, analysis of detection
anhyd	anhydrous
aq	aqueous
BAN	British Approved Name
bibl	bibliography
biosynth	biosynthesis
Bp	boiling point
c	concentration
ca	(<i>circa</i>) about
cd	circular dichroism
CAS	Chemical Abstracts Service
chromatog	chromatography
cmr	carbon (¹³ C) nuclear magnetic resonance
CNS	central nervous system
col	color, coloration
coml	commercial(ly)
compd	compound
conc	concentrated
config	configuration
conformn	conformation
constit	constituent
cryst struct	X-ray crystal structure determination
d	density
dec	decomposes, decomposition
degradn	degradation
deg	degree
deriv(s)	derivative(s)
detn	detection, determination
dil	dilute, dilution
dimorph	dimorphic
diss	dissolves, dissolved
dist(n)	distil, distillation
DMF	dimethylformamide
DMSO	dimethyl sulfoxide
ee	enantiomeric excess
epr	electron paramagnetic (spin) resonance
equilib	equilibrium
esp	especially
Et	ethyl
EtOAc	ethyl acetate
EtOH	ethanol

Abbreviation	Name
EtOH aq	aqueous ethanol
exp	experimental
FEMA	Flavor and Extract Manufacturers' Association
fl p	flash point
fluor	fluoresces, fluorescence
formn	formation
Fp	freezing point
g	gram
glc	gas liquid chromatography
Glc	β -D-glucopyranosyl
GRAS	Generally Recognized As Safe
ham	hamster
haz	hazard
hplc	high performance liquid chromatography
hydrol	hydrolyses, hydrolyzed, hydrolysis
ihl	inhalation
ims	intramuscular
INN	International Nonproprietary Name
intermed	intermediate
ipr	intraperitoneal
ir	infra-red spectrum
isol(n)	isolation, isolated
isom	isomerism, isomers, isomerises
ivn	intravenous
JAN	Japanese Accepted Name
JMAF	Japanese Ministry for Agriculture, Forestry and Fisheries
LC	lethal concentration
LD	lethal dose: LD ₅₀ , a dose that is lethal to 50% of the animals tested
M	molecular weight (formula weight)
manuf	manufacturer, manufactured
max	maximum
Me	methyl
MeOH	methanol
Me ₂ CO	acetone
MEL	maximum exposure limit
metab	metabolite, metabolism
misc	miscible
mixt	mixture
mod	moderately
Mp	melting point
ms	mass spectrum
mus	mouse
<i>n</i>	index of refraction, e.g. n_D^{20} for 20° and sodium light
nmr	nuclear magnetic resonance spec- trum (general)
obt	obtained
oc	open cup
occup	occupational
OES	Occupational Exposure Standard
op	optical purity
ord	optical rotatory dispersion
orl	oral
Ph	phenyl (C ₆ H ₅)

Abbreviation	Name
pharmacol	pharmacology
pmr	proton (¹ H) nuclear magnetic resonance
polarog	polarography
polym	polymerises, polymer
ppd	precipitated
ppm	parts per million
props	properties
purifn	purification
Py	pyridine
rbt	rabbit
ref	reference
resoln	resolution
rev	review
rt	room temperature
scu	subcutaneous
sepn	separation
skn	skin
sl	slightly
sol	soluble
soln	solution
solv	solvent
sp	species (singular)
spar	sparingly
spp	species (plural)
ssp	subspecies
subl	sublimation, sublimes
synth	synthesis
tautom	tautomerism
THF	tetrahydrofuran
tlc	thin layer chromatography
TLV	Threshold Limit Value
tox	toxicity
unsatd	unsaturated
USAN	United States Adopted Name
uv	ultraviolet spectrum
v	very
var	variety
vis	visible
vol	volume

4.1 REFERENCE TAGS

The following is a selection of the most common Reference Tag abbreviations used:

Abbreviation	Name
abs config	absolute configuration
anal	analysis
bibl	bibliography
biosynth	biosynthesis
cd	circular dichroism
chromatog	chromatography
cmr	¹³ C nuclear magnetic resonance spectrum
config	configuration
conformn	conformation
cryst struct	X-ray crystal structure determination
deriv(s)	derivative(s)
detn	determination, detection
dta	differential thermal analysis

Abbreviation	Name
glc	gas-liquid chromatography
hplc	high performance liquid chromatography
ir	infrared spectrum
isol	isolation
isom	isomerism
manuf	manufacture
metab	metabolism
ms	mass spectrum
nmr	nuclear magnetic resonance spectrum
occur	occurrence
ord	optical rotatory dispersion
pharmacol	pharmacology
pmr	proton (¹ H) nuclear magnetic resonance spectrum
props	properties (chemical or physical)
Raman	Raman spectrum
resoln	resolution
rev	review
sepn	separation
struct	structure
synth	synthesis
tautom	tautomerism
tlc	thin layer chromatography
tox	toxicity
trans	transition(s)
uv	ultraviolet spectrum
uv-vis	ultraviolet visible spectrum

5. DICTIONARY OF CARBOHYDRATES ON CD-ROM

The *Dictionary of Carbohydrates* is published together with a fully searchable CD-ROM. Space considerations have precluded the inclusion of indexes other than the Name Index and the Molecular Formula index in the hard-copy version of The *Dictionary of Carbohydrates*. These were considered to be the most useful types of indexing for users primarily wishing to locate carbohydrates. In contrast, the CD-ROM contains searchable indexes on the following 33 fields:

Accurate Mass	Molecular Formula
All Entries	Molecular Weight
All Text	Optical Rotation
Biological Source	Partition Coefficient (Calc.)
Biological Use/Importance	Percent Composition
Boiling Point	References
Boiling Point Pressure	Refractive Index
CAS Registry Number	Rotation Conditions
Chapman & Hall Number	RTECS Accession No.
Chemical Name	Source/Synthesis
Density	Supplier
Development Status	Type of Compound
Dissociation Constant	Type of Compound Words
Hazard & Toxicity	Use/Importance
Hazard Flag	UV Maxima
Ion Charge	UV Solvent
Melting Point	

In addition to searching the above text fields, it is possible to search on structure and substructure.

Once installed, a User manual and Help file providing additional information on data content and guide to searching are available from the Chapman & Hall CRC folder in the Start Menu and from the Help menu on the CD-ROM.

When accessing the *Dictionary of Carbohydrates on CD-ROM* the first screen that is obtained is the Search Form window (Fig. 3).

The Search Form window is split into three panes:

1. Structure Search pane — allowing structure and substructure searching.
2. Search Terms pane — search from one or more of the 29 available data/text fields.
3. Index pane — displays the indexed terms within a selected field.

From the Search Form window design your search profile using text, structure or text/structure searching. Once your search has been performed the resultant hits are listed alphabetically by chemical name in the Hit List screen. Clicking on any one of the hits in the hit list screen will result in that entry being displayed in the Entry Display screen (Fig. 4).

Any comments and suggestions for inclusion may be sent to:

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Email: matt.griffiths@informa.com

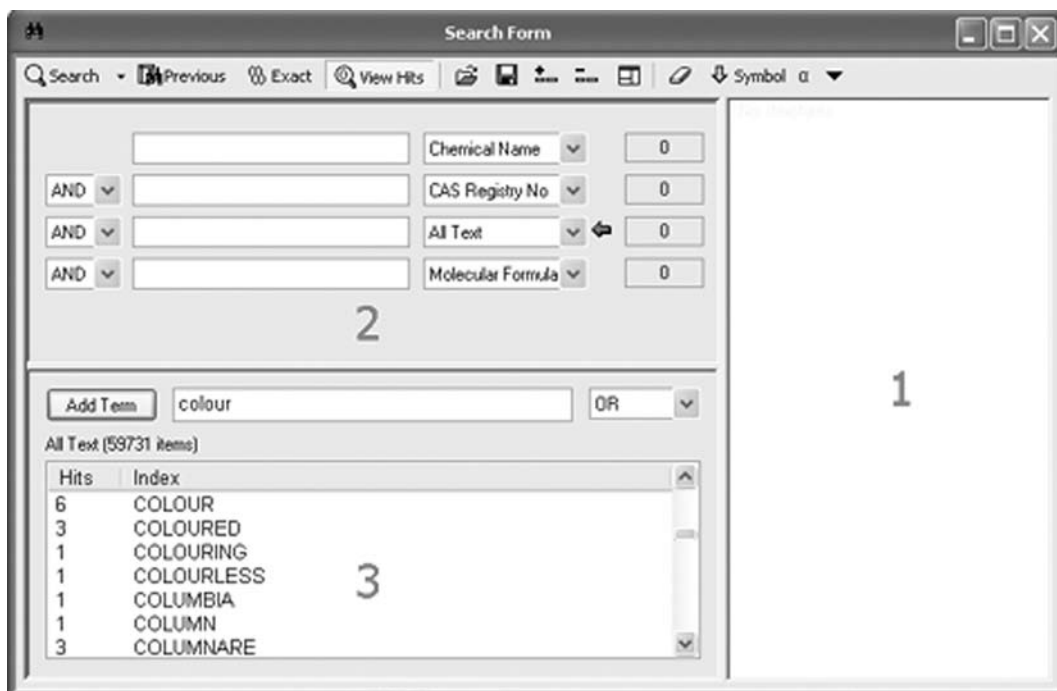


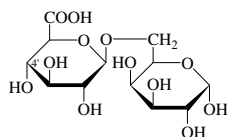
FIGURE 3

FIGURE 4

Acaciabiuronic acid

A-1

6-O-β-D-Glucopyranuronosyl-D-galactose,
9CI, 8CI
[7264-19-9]



α-Pyranose-form

C₁₂H₂₀O₁₂ 356.283

Probably the commonest aldobiouronic acid present as a structural unit in plant gums. Isol. from partial acid hydrolysates from the following plants; black wattle (*Acacia mollissima*), *Acacia senegal*, *Acacia pycnantha*, *Acacia karroo*, *Acacia cyanophylla*, egg plum (*Prunus domestica*), almond (*Prunus amygdalus*), peach (*Prunus persica*), *Anogeissus latifolia* (gum ghatti), *Vigilia oroboides*, *Afraegle paniculata*, *Ferula* and *Chorisia* spp. Also isol. from hydrolysates of maritime pine (*Pinus pinaster*) hemicellulose and wheat straw. Mp 118-119° (hydrate). [α]_D +11.6 → -8.6 (H₂O).

Ca salt: [α]_D +2 (H₂O).

Ba salt: [α]_D -3 (H₂O).

Me ester:

C₁₃H₂₂O₁₂ 370.31

Mp 119°. [α]_D -9 (H₂O).

Hepta-Ac, Me ester:

C₂₇H₃₆O₁₉ 664.57

Mp 202-203°. [α]_D -17.5 (CHCl₃).

4'-Me: 6-O-(4-O-Methyl-β-D-glucuronopyranuronosyl)-D-galactose, 9CI, 8CI
[13006-41-2]

C₁₃H₂₂O₁₂ 370.31

Structural unit in plant gums, e.g. *Prosopis juliflora*, *Commiphora myrrha*, *Boswellia carteri*.

[α]_D -1 (H₂O).

α-Pyranose-form [52554-59-3]

[α]_D +2 (H₂O).

1,2:3,4-Di-O-isopropylidene, 2',3',4'-tri-Ac,

Me ester: [35906-41-3]

C₂₅H₃₆O₁₅ 576.55

Mp 114-115°. [α]_D -65 (c, 4.5 in CHCl₃).

Me glycoside, hexa-Me, Me ester:

C₂₀H₃₆O₁₂ 468.497

[α]_D +42 (CHCl₃).

β-Pyranose-form [52554-60-6]

Me glycoside, hexa-Ac, Me ester:

C₂₆H₃₆O₁₈ 636.56

Mp 140°. [α]_D -54 (CHCl₃).

Me glycoside, hexa-Me, Me ester: [22854-45-1]

Mp 86-90°. [α]_D -35 (CHCl₃).

[1693-80-7, 5566-99-4]

Hotchkiss, R.D. et al., *J. Biol. Chem.*, 1936, **115**, 285 (deriv)

Goebel, W.F. et al., *J. Biol. Chem.*, 1938, **124**, 207 (isol)

Jackson, J. et al., *J.C.S.*, 1940, 74 (α-Me pyr hexa-Me Me ester, isol)

Aspinall, G.O. et al., *J.C.S.*, 1955, 1160; 1961, 3461 (isol)

Mukherjee, S. et al., *J.A.C.S.*, 1958, **80**, 2536 (isol)

Jones, J.K.N. et al., *Can. J. Chem.*, 1961, **39**, 162 (isol)

Bailey, R.W. et al., *Oligosaccharides*, Pergamon

Press, London, 1965, **4**, 134 (occur)

De, K.K. et al., *Carbohydr. Res.*, 1967, **4**, 177

(synth, diisopropylidene tri-Ac Me ester)

Peciar, C. et al., *Chem. Zvesti*, 1974, **28**, 83

(config, pmr)

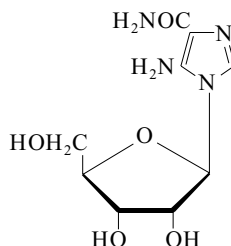
Di Fabio, J.L. et al., *Carbohydr. Res.*, 1982, **99**, 41 (isol)

Acadesine, BAN, INN, USAN

A-2

5-Amino-1-ribofuranosyl-1H-imidazole-4-carboxamide, 9CI. AICA-Riboside. AI-CAR. GP 1-110

[2627-69-2]



C₉H₁₄N₄O₅ 258.233

Accumulates in the culture medium of *E. coli* under sulfonamide stasis. Manuf. by *Bacillus pumilus* and *Bacillus subtilis*. Platelet aggregation inhibitor. Pink rosettes (EtOH). Sol. H₂O.

Mp 215-216° dec. [α]_D²⁰ -62.4 (c, 0.5 in H₂O). Log P -2.97 (calc).

Picrate: [24418-25-5]

Mp 146-147°.

5'-Phosphate: [3031-94-5]

C₉H₁₅N₄O₈P 338.213

Produced by the action of brewer's yeast on the riboside. The 5'-phosphate and its nontoxic salts are potent flavour enhancers of soups, canned foods, beverages, etc. Nucleotide involved in the *de novo* biosynth. of other purine nucleotides.

Converted by Bratton-Marshall reagents to a purple dye with λ_{max} 540 nm. λ_{max} 268 (ε 12800) (H₂O).

2',3',5'-Tri-Ac: [23274-21-7]

C₁₅H₂₀N₄O₈ 384.345

Mp 69° (88-90°, 130-131°). [α]_D²⁷ -30.5

(c, 1.0 in EtOH).

N,2',3',5'-Tetra-Ac: [37805-74-6]

C₁₇H₂₂N₄O₉ 426.382

Cryst. (EtOH). Mp 208-209°. [α]_D²⁶ +2.9 (c, 0.51 in CHCl₃).

2',3'-O-Isopropylidene, 5'-Ac:

C₁₄H₂₀N₄O₆ 340.335

Mp 168-169°.

2'-Deoxy:

Cryst. (MeOH). Mp 177-178°.

3'-Deoxy:

Cryst. (MeOH aq.). Mp 214-216°.

Greenberg, G.R. et al., *J. Biol. Chem.*, 1956, **219**, 411; 423 (isol)

Burrows, I.E. et al., *J.C.S. (C)*, 1967, 1088

(synth, phosphate)

U.S. Pat., 1967, 3 355 301; CA, **68**, 28636q (use)

U.K. Pat., 1968, 1 134 974; CA, **70**, 58231n

(isopropylidene Ac)

Panzica, R.P. et al., *J.O.C.*, 1971, **36**, 1594

(synth)

Panzica, R.P. et al., *J. Het. Chem.*, 1972, **9**, 623

(synth, tri-Ac, tetra-Ac)

Ivanovics, G.A. et al., *J.O.C.*, 1974, **39**, 3651

(synth)

Adamia, D.A. et al., *Acta Cryst. B*, 1979, **35**,

924 (cryst struct)

Sabina, R.L. et al., *J. Biol. Chem.*, 1982, **257**,

10178 (metab)

Ferris, J.P. et al., *J.O.C.*, 1985, **50**, 747 (synth, uv,

pmr)

Mullane, K. et al., *Cardiovasc. Res.*, 1993, **27**,

43 (rev)

Martindale, *The Extra Pharmacopoeia*, 30th

edn., Pharmaceutical Press, 1993, 1329

Minakawa, N. et al., *Chem. Pharm. Bull.*, 1996, **44**,

288 (2'-deoxy, 3'-deoxy)

Kohyama, N. et al., *Synthesis*, 2003, 2639-2642

(synth, pmr, cmr)

Acarbose, BAN, INN, USAN

A-3

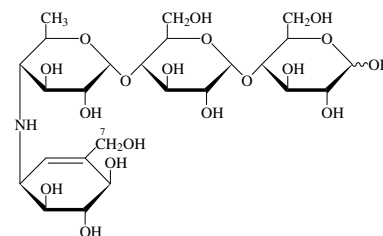
4,6-Dideoxy-4-[[4,5,6-trihydroxy-3-(hydroxymethyl)-2-cyclohexen-1-yl]amino]-α-D-glucopyranosyl-(1→4)-α-D-glucopyranosyl-(1→4)-D-glucose, 9CI.

Amylostatin J. Glucobay. Bay g 5421.

α-GHI. Precose. Prandase

[56180-94-0]

[82642-63-5]



C₂₅H₄₃NO₁₈ 645.611

A component of the Amylostatin complex.

See also Amylostatin, A-475. Isol. from *Actinoplanes* sp. A potent inhibitor of α-glucosidases and saccharases. Used for treatment of diabetes, hyperlipidaemia and obesity. Launched in 1990.

Amorph. Sol. H₂O; fairly sol. MeOH; poorly sol. EtOH, hexane. [α]_D +147.2 (H₂O). [α]_D²⁰ +171.3.

► LZ7153000

7-O-Phosphate:

C₂₅H₄₃NO₂₁P 724.583

From *Actinoplanes* sp.

Ger. Pat., 1975, 2 347 782; CA, **83**, 56721s

Schmidt, D.D. et al., *Naturwissenschaften*,

1977, **64**, 535-536; 536-537 (isol, props)

Truscheit, E. et al., *Angew. Chem., Int. Ed.*,

1981, **20**, 744-761 (rev)

Creutzfeldt, W. et al., *Int. Congr. Ser. Excerpta*

Med., 1982, 594 (book)

Junge, B. et al., *Carbohydr. Res.*, 1984, **128**, 235-

268 (struct)

Bock, K. et al., *Carbohydr. Res.*, 1984, **132**, 142-

149 (conformn)

Ogawa, S. et al., *Chem. Comm.*, 1988, 605

(synth)

Clissold, S.P. et al., *Drugs*, 1988, **35**, 214 (rev,

pharmacol)

Maul, W. et al., *Arzneim.-Forsch.*, 1989, **39**,

1251-1253 (synth)

Shibata, Y. et al., *Carbohydr. Res.*, 1989, **189**,

309-322 (synth)

Peruche, B. et al., *Pharm. Ztg.*, 1992, **137**, 30;

32; 34; 36 (rev)

Martindale, *The Extra Pharmacopoeia*, 30th

edn., Pharmaceutical Press, 1993, 276

Goeke, K. *et al.*, *J. Antibiot.*, 1996, **49**, 661-663; 664 (7-phosphate)
 Mahmud, T. *et al.*, *Chem. Rev.*, 2001, 300-301 (rev, biosynth)
 Bowers, S.G. *et al.*, *Carbohydr. Res.*, 2002, **337**, 297-304 (biosynth, bibl)
 Périon, R. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2779-2792 (synth)

Acemannan, INN, USAN

A-4

Carrisin. Polymannoacetate

[110042-95-0]

Long chain polymer consisting of linear (1 → 4)-D-mannopyranosyl units, randomly acetylated (0.8 Ac per monomer) MW >10000 Dalton. Constit. of leaf juice of *Aloe barbadensis* and *Aloe arborescens* (Liliaceae). Biol. active component of carrisin extract (73-90%). Potent inducer of Interleukin 1 and Prostaglandin E₂ production by human peripheral blood adherent cells *in vitro*. Influences activity and production of T-lymphocytes, fibroblasts, B-lymphocytes and endothelial cells. Adjuvant and immunoenhancer. Increases antibody production, stimulates phagocytosis. Shows specific antineoplastic activity against sarcoid tumours in horse. Used in the treatment of inflammatory bowel disease. Fluffy amorph. powder.

Pat. Coop. Treaty (WIPO), 1987, 0 052, (Carrington Lab); CA, **107**, 183550z (extraction)

Womble, D. *et al.*, *Int. J. Immunopharmacol.*, 1988, **10**, 967; CA, **110**, 50917q (activity)

Pat. Coop. Treaty (WIPO), 1990, 01 253, (Carrington Lab); CA, **114**, 55783k (prep, activity)

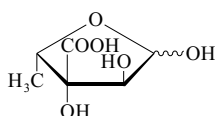
Fogleman, R.W. *et al.*, *Vet. Hum. Toxicol.*, 1992, **34**, 144; 201 tox

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 536

Aceric acid

A-5

3-C-Carboxy-5-deoxyxylose. Ace A
 [87863-99-8]



L-Furanose-form

C₆H₁₀O₆ 178.141**L-form**

Constit. of Rhamnogalacturonan II, R-10, a primary cell wall pectic polysaccharide isol. from cultured cells of *Acer pseudo-platanus* (Sycamore). First branched chain acidic sugar to be found as a natural product.

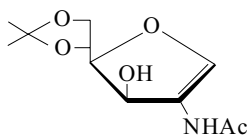
1,4-Lactone: 3-C-Carboxy-5-deoxyxylono-1,4-lactone
 [87864-05-9]
 C₆H₈O₅ 160.126
 Cryst. (2-pentanone/CHCl₃). Mp 120-122°.

Spellman, M.W. *et al.*, *Carbohydr. Res.*, 1983, **122**, 115 (isol, pmr, cmr, ms, cryst struct, lactone)

Whitcombe, A.J. *et al.*, *Carbohydr. Res.*, 1995, **271**, 15-29

2-Acetamido-1,4-anhydro-2-deoxy-5,6-O-isopropylidene-arabino-hex-1-enitol

A-6

C₁₁H₁₇NO₅ 243.259**D-form** [66335-63-5]

Plates (MeOH/Et₂O). Mp 152°. [α]_D²⁵ -1 (c, 0.5 in MeOH).

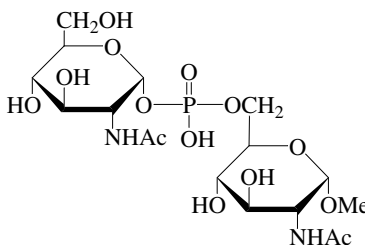
3-O-(2-Acetamido-2,3-dideoxy-5,6-O-isopropylidene-α-D-erythro-hex-2-enofuranosyl): 2-Acetamido-3-O-(2-acetamido-2,3-dideoxy-5,6-O-isopropylidene-α-D-erythro-hex-2-enofuranosyl)-1,4-anhydro-2-deoxy-5,6-O-isopropylidene-D-arabino-hex-1-enitol
 [73745-59-2]
 Amorph. solid. [α]_D²⁵ -81.7 (c, 1.0 in CHCl₃).

3-O-(2-Acetamido-2,3-dideoxy-5,6-O-isopropylidene-β-D-erythro-hex-2-enofuranosyl): 2-Acetamido-3-O-(2-acetamido-2,3-dideoxy-5,6-O-isopropylidene-β-D-erythro-hex-2-enofuranosyl)-1,4-anhydro-2-deoxy-5,6-O-isopropylidene-D-arabino-hex-1-enitol
 [73836-73-4]
 Plates (Et₂O/EtOH). Mp 198-199°. [α]_D²⁵ +7.6 (c, 1.0 in CHCl₃).

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1979, **74**, 341; 1978, **63**, 91; 1980, **79**, 255 (synth, ms, pmr)

(2-Acetamido-2-deoxy-α-D-glucopyranos-1-yl)(methyl 2-acetamido-2-deoxy-α-D-glucopyranosid-6-yl)phosphate

A-7

C₁₇H₃₁N₂O₁₄P 518.411

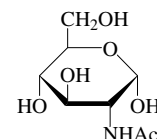
Prod. by *Streptomyces* sp. A50. Amorph. solid.

Ben-Bashat, D. *et al.*, *J. Nat. Prod.*, 2001, **64**, 1538-1540 (isol, pmr, cmr, ms)

2-Acetamido-2-deoxyglucose

A-8

2-(Acetyl-amino)-2-deoxyglucose, 9CI.
 N-Acetylglucosamine
 [7512-17-6]



α-D-Pyranose-form

C₈H₁₅NO₆ 221.21**D-form**

Monomer of Chitin, C-58. Also in the exopolysaccharide from blue-green alga *Cyanospira capsulata*.

Mp 205°. [α]_D¹⁸ +64 → +41 (H₂O). Homopolymers with α-1,4- and with β-1,6-glycosidic links have been synth. using condensation polym.

6-Phosphate: [1746-32-3]

C₈H₁₆NO₉P 301.189Mp 147-148° dec. (as mono-NH₄ salt).

Di-Et dithioacetal:

C₁₂H₂₅NO₅S₂ 327.465Mp 121-122°. [α]_D -24 (H₂O).

3-Ac: 2-Acetamido-3-O-acetyl-2-deoxy-D-glucose
 [51449-93-5]

C₁₀H₁₇NO₇ 263.247

Cryst. (EtOH/Et₂O). Mp 157-160°. [α]_D +19 (c, 1.0 in EtOH).

1,3,4-Tri-Ac, 6-phosphate:

C₁₄H₂₂NO₁₂P 427.301Mp 166-168°. [α]_D²⁰ +125 (c, 1 in H₂O).

1,3,4-Tri-Ac, di-Ph ester, 6-phosphate:

C₂₆H₃₀NO₁₂P 579.496Mp 144-145°. [α]_D +25 (c, 0.7 in CHCl₃).

3,4,5,6-Tetra-Ac, di-Et dithioacetal:

C₂₀H₃₃NO₉S₂ 495.614Mp 126-127°. [α]_D -32 (CHCl₃).

3-Benzoyl: 2-Acetamido-3-O-benzoyl-2-deoxy-D-glucose
 C₁₅H₁₉NO₇ 325.318

Cryst. (MeOH). Mp 198° dec. [α]_D²⁰ +35 (c, 0.85 in 50% dioxan aq.).

4,6-O-Isopropylidene, di-Et dithioacetal:

C₁₅H₂₉NO₅S₂ 367.53

Needles (EtOH/petrol). Mp 39-40°. [α]_D²⁰ +9 (c, 1 in H₂O).

3-Me: 2-Acetamido-2-deoxy-3-O-methyl-D-glucose
 [94825-74-8]

C₉H₁₇NO₆ 235.236

Mp 195-196° (183-185°). [α]_D +33 (H₂O).

4-Me: 2-Acetamido-2-deoxy-4-O-methyl-D-glucose
 [111537-25-8]

C₉H₁₇NO₆ 235.236

Mp 211-215° dec. [α]_D +79 → +69 (H₂O).

6-Me: 2-Acetamido-2-deoxy-6-O-methyl-D-glucose
 C₉H₁₇NO₆ 235.236

Mp 224-225°. [α]_D +74 → +48 (H₂O).

- 3,4-Di-Me:** 2-Acetamido-2-deoxy-3,4-di-O-methyl-D-glucose
[53684-98-3]
C₁₀H₁₉NO₆ 249.263
Cryst. (Me₂CO/Et₂O). Mp 173-175°. [α]_D²⁰ +64 → +48 (1d) (c, 0.81 in CHCl₃).
- 3,6-Di-Me:** 2-Acetamido-2-deoxy-3,6-di-O-methyl-D-glucose
C₁₀H₁₉NO₆ 249.263
Mp 232-233°. [α]_D²⁰ +90 → +37 (H₂O).
- 4,6-Di-Me:** 2-Acetamido-2-deoxy-4,6-di-O-methyl-D-glucose
C₁₀H₁₉NO₆ 249.263
Mp 227-228°. [α]_D²⁰ +88 → +68 (H₂O).
- 3,4,6-Tri-Me:** 2-Acetamido-2-deoxy-3,4,6-tri-O-methyl-D-glucose
C₁₁H₂₁NO₆ 263.29
Needles (EtOH). Mp 234°. [α]_D²⁰ +75 → +44.8 (H₂O).
- 3,4-Di-Me, 4,6-O-isopropylidene, di-Et dithioacetal:** [18422-19-0]
C₁₇H₃₃NO₅S₂ 395.583
Needles (Et₂O/petrol). Mp 120-121°. [α]_D²⁰ +13.6 (c, 1 in H₂O).

β-D-Pyranose-form [72-87-7]

- 4,6-O-Isopropylidene:** 2-Acetamido-2-deoxy-4,6-O-isopropylidene-D-glucopyranose
C₁₁H₁₉NO₆ 261.274
Needles (EtOH). Mp 189-190°. [α]_D²⁰ +57.5 (c, 1 in MeOH).
- 3,4,6-Tribenzyl:** 2-Acetamido-3,4,6-tri-O-benzyl-2-deoxy-D-glucopyranose
[4171-72-6]
C₂₉H₃₃NO₆ 491.583
Cryst. (MeOH). Mp 218-219°. [α]_D²⁰ +71.3 (c, 1.08 in CHCl₃).
- Me glycoside:* See Methyl 2-acetamido-2-deoxyglucopyranoside, M-144
- Benzyl glycoside:* See Benzyl 2-amino-2-deoxyglucopyranoside, B-13

α-D-Pyranose-form [10036-64-3]

- Mp 203-205° dec. [α]_D²¹ +75 → +41 (c, 2 in H₂O).
- 1-Ac:** See 1-O-Acetyl-2-amino-2-deoxyglucose, A-13
- Di-Ac:** 2-Acetamido-1,3-di-O-acetyl-2-deoxy-α-D-glucopyranose
[50605-11-3]
C₁₂H₁₉NO₈ 305.284
Cryst. (CHCl₃). Mp 172-173°. [α]_D²⁰ +80 (c, 1.0 in MeOH).
- 1,3,4,6-Tetra-Ac:** 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy-α-D-glucopyranose
[7784-54-5]
C₁₆H₂₃NO₁₀ 389.358
Mp 139°. [α]_D²⁰ +92 (CHCl₃).
- 3-Octadecanoyl, 6-propanoyl:** *Dictyoglucosamine A*
C₂₉H₅₃NO₈ 543.74
Isol. from *Dictyostelium purpureum*. Amorph. [α]_D²⁰ +11.9 (c, 0.96 in CHCl₃).
- 3-Octadecanoyl, 6-(3-methylbutanoyl):** *Dictyoglucosamine B*
C₃₁H₅₇NO₈ 571.793
Isol. from *Dictyostelium discoideum*. Amorph. [α]_D²⁰ +18.2 (c, 0.01 in CHCl₃).
- 1-Benzoyl:** 2-Acetamido-1-O-benzoyl-2-deoxy-α-D-glucopyranose
C₁₅H₁₉NO₇ 325.318

Needles (EtOAc/EtOH). Mp 192-193°. [α]_D²⁰ +190 (c, 0.83 in MeOH).

1-Benzoyl, 3,4,6-tri-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-1-O-benzoyl-2-deoxy-α-D-glucopyranose
[10583-53-6]
C₂₁H₂₅NO₁₀ 451.429
Mp 161-162°. [α]_D²⁰ +114 (c, 1.2 in CHCl₃).

4,6-O-Isopropylidene, di-Ac: 2-Acetamido-1,3-di-O-acetyl-2-deoxy-4,6-O-isopropylidene-α-D-glucopyranose
[50605-10-2]
C₁₅H₂₃NO₈ 345.349
Cryst. (Et₂O). Mp 137-138°. [α]_D²⁰ +73 (c, 1.0 in CHCl₃).

3,4,6-Tribenzyl, 1-benzoyl: 2-Acetamido-1-O-benzoyl-3,4,6-tri-O-benzyl-2-deoxy-α-D-glucopyranose
C₃₆H₃₇NO₇ 595.691
Needles (diisopropyl ether). Mp 118-119°. [α]_D²⁰ +171 (c, 0.54 in CHCl₃).

β-D-Pyranose-form [14131-68-1]
Mp 182-184°. [α]_D²⁰ -21.5 → +40.4 (H₂O).

1,3,4,6-Tetra-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy-β-D-glucopyranose.
N,1,3,4,6-Pentaacetylglucosamine
[7772-79-4]
C₁₆H₂₃NO₁₀ 389.358
Mp 186-189°. [α]_D²⁴ +3.9 (c, 10 in CHCl₃).

1-Benzoyl: 2-Acetamido-1-O-benzoyl-2-deoxy-β-D-glucopyranose
[4171-78-2]
C₁₅H₁₉NO₇ 325.318
Cryst. (H₂O). Mp 154-160°. [α]_D²⁰ -38 (c, 0.82 in CHCl₃). Becomes anisotropic at ca. 100°.

3,4,6-Tribenzyl, 1-benzoyl: 2-Acetamido-1-O-benzoyl-3,4,6-tri-O-benzyl-2-deoxy-β-D-glucopyranose
C₃₆H₃₇NO₇ 595.691
Needles (EtOH/petrol). Mp 147-148°. [α]_D²⁰ -11.1 (c, 0.54 in CHCl₃).

α-D-Furanose-form

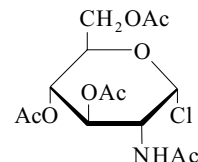
1-Benzoyl, 3,5,6-tri-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-1-O-benzoyl-2-deoxy-α-D-glucofuranose
C₂₁H₂₅NO₁₀ 451.429
[α]_D²⁰ +110 (c, 0.3 in CHCl₃).

4-Nitrophenyl glycoside: 4-Nitrophenyl 2-acetamido-2-deoxy-α-D-glucopyranoside
[14948-96-0]
C₁₄H₁₈N₂O₈ 342.305
Chromogenic substrate for *N*-acetyl-β-glucosaminidase detn. Mp 206-207°. [α]_D²⁰ +19 (c, 0.1 in H₂O).

DL-form

- Cryst. (EtOH). Mp 184-191° dec.
[134451-97-1, 134522-12-6]
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 757D (ir)
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 1238A (nmr)
White, T. et al., *J.C.S.*, 1940, 428 (*D*-form, synth, *D*-tri-Me)
Foster, A.B. et al., *Adv. Carbohydr. Chem.*, 1952, 7, 247 (rev)
Jeanloz, R.W. et al., *J.A.C.S.*, 1952, 74, 4597 (*D*-3,4-di-Me)

- Kuhn, R. et al., *Chem. Ber.*, 1953, 86, 722 (*β*-*D*-pyr. synth)
Jeanloz, R.W. et al., *Adv. Carbohydr. Chem.*, 1958, 13, 189 (*Me* ethers, rev, *D*-form, *cryst struct*)
Johnson, L.N. et al., *Nature (London)*, 1964, 202, 588
Harrison, R. et al., *J.O.C.*, 1965, 30, 2317 (*D*-pyr tribenzoyl, α-*D*-pyr 1-benzoyl, α-*D*-pyr 1-benzoyl tribenzyl, β-*D*-pyr 1-benzoyl, β-*D*-pyr 1-benzoyl tribenzyl)
Inch, T.D. et al., *J.O.C.*, 1966, 31, 1821 (*D*-3-benzoyl, α-*D*-pyr 1-benzoyl tri-Ac, α-*D*-fur 1-benzoyl tri-Ac)
Heyns, K. et al., *Chem. Ber.*, 1967, 100, 2655 (*D*-di-Et-dithioacetal derivs)
Horton, D. et al., *The Amino Sugars*, (Jeanloz, R.W., Ed.), Academic Press, 1969, 1A, (rev)
Cerezo, A.S. et al., *Chem. Ind. (London)*, 1971, 96 (pmr)
Horton, D. et al., *Methods Carbohydr. Chem.*, 1972, 6, 282 (α-*D*-pyr, synth)
Bundle, D.R. et al., *Can. J. Chem.*, 1973, 51, 3812 (*D*-3-Ac, cmr)
Hasegawa, A. et al., *Carbohydr. Res.*, 1973, 29, 209 (*D*-pyr isopropylidene, α-*D*-pyr isopropylidene di-Ac, α-*D*-pyr di-Ac)
Matta, K.L. et al., *Carbohydr. Res.*, 1976, 48, 65-71 (4-nitrophenyl glycoside)
Higashimura, T. et al., *Polymer*, 1977, 18, 291 (polym)
Lehmann, J. et al., *Annalen*, 1991, 937 (*DL*-pyr, *DL*-pyr tetra-Ac, synth)
Garozzo, D. et al., *Carbohydr. Res.*, 1995, 270, 97-106 (occur)
Sukwattanasinitt, M. et al., *Carbohydr. Res.*, 2002, 337, 133-137; 557-559 (enzymic synth)
Maeda, H. et al., *Tet. Lett.*, 2002, 43, 1481-1486 (*Dictyoglucosamines*)

2-Acetamido-2-deoxy-3,4,6-tri-O-acetylglucopyranosyl chloride, 8CI

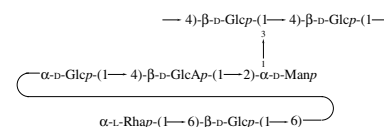
C₁₄H₂₀ClNO₈ 365.767

α-D-form [3068-34-6]

- Mp 127-128° (133-134° dec.). [α]_D²⁴ +110 (c, 1.1 in CHCl₃).
- Micheel, F. et al., *Chem. Ber.*, 1957, 90, 521 (*struct, ir*)
Conchie, J. et al., *Methods Carbohydr. Chem.*, 1963, 2, 332 (*synth*)
Org. Synth., 1966, 46, 1 (*synth*)
Horton, D. et al., *J.O.C.*, 1967, 32, 1073 (pmr)
Horton, D. et al., *Methods Carbohydr. Chem.*, 1972, 6, 282 (*synth*)
Pravdic, N. et al., *Carbohydr. Res.*, 1975, 45, 302
Nashed, M.A. et al., *Carbohydr. Res.*, 1980, 82, 237 (*synth*)

Acetan, 9CI

[110865-71-9]

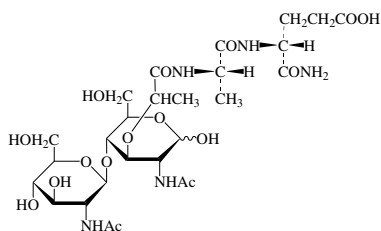
A-10

Exopolysaccharide prod. by *Acetobacter xylinum*.

Jansson, P.E. *et al.*, *Carbohydr. Res.*, 1993, **245**, 303 (struct)
Colquhoun, I.J. *et al.*, *Carbohydr. Res.*, 1995, **269**, 319 (pmr, cmr, bibl)

N²-[N-[N-Acetyl-4-O-[2-(acetyl-amino)-2-deoxy-β-D-glucopyranosyl]muramoyl]-L-alanyl]-D-α-glutamine, 9CI

N-Acetyl-β-D-glucosaminyl-(1→4)-N-acetylmuramyl-L-alanyl-D-isoglutamine [70280-03-4]

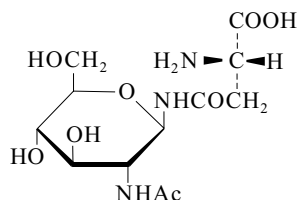


C₂₇H₄₅N₅O₁₆ 695.676
Repeating disaccharide-dipeptide unit of bacterial cell wall peptidoglycan. Exhibits immunoadjuvant activity. Hygroscopic powder. Mp 170-178° (dec.). [α]_D²⁴ +0.6 (c, 1 in H₂O).

Kusumoto, S. *et al.*, *Tet. Lett.*, 1978, 4407-4410 (synth)
Durette, P.L. *et al.*, *Carbohydr. Res.*, 1979, **77**, C1-C4 (synth, pmr)
Kiso, M. *et al.*, *Carbohydr. Res.*, 1982, **104**, 253-269 (synth, pmr)
Guinard, M. *et al.*, *Eur. J. Biochem.*, 1984, **143**, 359-362 (enzymic synth)

N-[2-(Acetyl-amino)-2-deoxy-β-D-glucopyranosyl]-L-asparagine, 9CI

2-Acetamido-1β-(L-β-aspartamido)-1,2-di-deoxy-D-glucose [2776-93-4]



C₁₂H₂₁N₃O₈ 335.313
Found in hydrolysates of glycopeptides/glycoproteins. Needles (EtOH). Mp 255-258° dec. [α]_D²² +23.6 (c, 1 in H₂O).

Trihydrate:

Plates (EtOH aq.). Mp 215-222° dec. [α]_D²⁴ +23.2 (c, 1.5 in H₂O).

Marks, G.S. *et al.*, *Biochem. J.*, 1963, **87**, 274 (isol, struct)

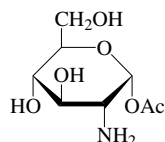
Tsukamoto, H. *et al.*, *Biochem. Biophys. Res. Commun.*, 1964, **15**, 151 (synth)

Kiyozumi, M. *et al.*, *Carbohydr. Res.*, 1970, **14**, 355-364 (synth)

Likhoshesterov, L.M. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1986, 1663-1669; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1986, 1512-1517 (synth)

Augé, C. *et al.*, *Carbohydr. Res.*, 1989, **193**, 288-293 (synth, pmr)

1-O-Acetyl-2-amino-2-deoxy-glucose A-13
1-O-Acetylglucosamine



α-D-Pyranose-form

C₈H₁₅NO₆ 221.21

α-D-Pyranose-form

N-Ac: 2-Acetamido-1-O-acetyl-2-deoxy-α-D-glucopyranose
C₁₀H₁₇NO₇ 263.247
Mp 169-170°. [α]_D²⁰ +8 (c, 0.29 in MeOH).

2N,3-Di-Ac: 2-Acetamido-2-deoxy-1,3-di-O-acetyl-α-D-glucopyranose
C₁₂H₁₉NO₈ 305.284
Mp 172-173°. [α]_D²⁰ +8 (c, 1.0 in MeOH).

N,3,4-Tri-Ac: 2-Acetamido-2-deoxy-1,3,4-tri-O-acetyl-α-D-glucopyranose [10034-17-0]
C₁₄H₂₁NO₉ 347.321
Mp 110°. [α]_D +57 (c, 1.0 in CHCl₃).

N,3,6-Tri-Ac: 2-Acetamido-2-deoxy-1,3,6-tri-O-acetyl-α-D-glucopyranose [76612-22-1]
C₁₄H₂₁NO₉ 347.321
Mp 160-161°. [α]_D +62 (c, 1.0 in CHCl₃).

3,4,6-Tri-Ac: 1,3,4,6-Tetra-O-acetyl-2-amino-2-deoxy-α-D-glucopyranose
C₁₄H₂₁NO₉ 347.321
Mp 143°. [α]_D +25.9 (CHCl₃).

N,3,4,6-Tetra-Ac: See 2-Acetamido-2-deoxyglucose, A-8

N-Benzoyl, 3,4,6-tri-Ac: 1,3,4,6-Tetra-O-acetyl-2-benzamido-2-deoxy-α-D-glucopyranose
C₂₁H₂₅NO₁₀ 451.429
Mp 240°. [α]_D +41.9 (CHCl₃).

4-Triflyl, N,3,6-tri-Ac: 2-Acetamido-2-deoxy-1,3,6-tri-O-acetyl-4-O-triflyl-α-D-glucopyranose
C₁₅H₂₀F₃NO₁₁S 479.384
Characterised spectroscopically.

3,4,6-Tribenzyl, N-Ac: 2-Acetamido-1-O-acetyl-3,4,6-tri-O-benzyl-2-deoxy-α-D-glucopyranose
C₃₁H₃₅NO₇ 533.62
Mp 146-147°. [α]_D²⁰ +108 (c, 0.74 in CHCl₃).

β-D-Pyranose-form

3,4,6-Tri-Ac: 1,3,4,6-Tetra-O-acetyl-2-amino-2-deoxy-β-D-glucopyranose
C₁₄H₂₁NO₉ 347.321
Mp 230° (as hydrochloride). [α]_D +29.7 (H₂O).

2N,3,4,6-Tetra-Ac: See 2-Acetamido-2-deoxyglucose, A-8

N-Benzoyloxycarbonyl, 3,4,6-tri-Ac: Mp 150-151°. [α]_D +21.5 (Py).

3,4,6-Tribenzyl, N-Ac: 2-Acetamido-1-O-acetyl-3,4,6-tri-O-benzyl-2-deoxy-β-D-glucopyranose
C₃₁H₃₅NO₇ 533.62
Mp 168-169°. [α]_D²⁰ +31 (c, 0.9 in CHCl₃).

Foster, A.B. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 247

Harrison, R. *et al.*, *J.O.C.*, 1965, **30**, 2317

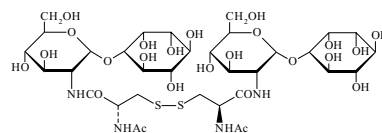
Inch, T.D. *et al.*, *J.O.C.*, 1966, **31**, 1813

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1973, **29**, 209

Chaplin, D. *et al.*, *J.C.S. Perkin 1*, 1992, 235 (acetyl derivs, triflate)

2-(N-Acetylcysteinyl)amido-2-deoxy-α-D-glucopyranosyl-D-myo-inositol disulfide A-14

2',2'''-[Dithiobis[2-(acetyl-amino)-1-oxo-3,1-propanediyl]imino]]bis[3-O-(2-deoxy-α-D-glucopyranosyl)]-D-myo-inositol, 9CI
[157230-65-4]

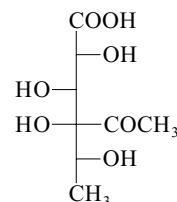


C₃₄H₅₈N₄O₂₄S₂ 970.977
Prod. by *Streptomyces* sp. AJ-9463. Powder.

Mp 199-204° dec. [α]_D²⁷ +48.8 (c, 0.14 in H₂O). λ_{max} 250 (sh) (ε 530) (H₂O).

Sakuda, S. *et al.*, *Biosci., Biotechnol., Biochem.*, 1994, **58**, 1347 (isol, uv, ir, pmr, cmr)

4-C-Acetyl-6-deoxygalactonic acid A-15



C₈H₁₄O₇ 222.194

D-form

2,3-Methylene, Me ester: Methyl 4-C-acetyl-6-deoxy-2,3-O-methylene-D-galactonate. Methyl eurenate
C₁₀H₁₆O₇ 248.232
Residue found in Avilamycin A (see Avilamycin C, A-880) and Flambamycin, F-8. Syrup.

2,3-Methylene, Ac, Me ester: Methyl 4-C-acetyl-5-O-acetyl-2,3-O-methylene-D-galactonate
C₁₂H₁₈O₈ 290.269
Mp 87°. [α]_D -55 (MeOH).

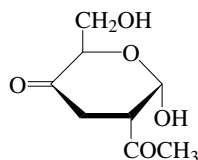
Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 283 (synth, pmr, cmr)

2-C-Acetyl-2,3-dideoxy-erythro-hexopyranos-4-ulose

A-16

6-O-Acetylglucose, 9CI

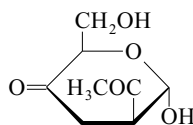
A-19

 α -D-form $C_8H_{12}O_5$ 188.18 **α -D-form***Et glycoside, 6-trityl*: [76101-44-5] $C_{29}H_{30}O_5$ 458.553

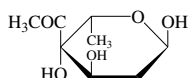
Syrup.

Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1977, **55**, 3986; 1980, **58**, 2694**2-C-Acetyl-2,3-dideoxy-threo-hexopyranos-4-ulose**

A-17

 $C_8H_{12}O_5$ 188.18 **α -D-form***Et glycoside, 6-trityl*: [60903-86-8] $C_{29}H_{30}O_5$ 458.553Needles (Et₂O). Mp 107.8-108°. [α]_D²³ +152.6 (c, 1.25 in CHCl₃).Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1977, **55**, 3986; 1980, **58**, 2694 (α -D-Et gly deriv, pmr)**4-C-Acetyl-2,6-dideoxy-xylo-hexose**

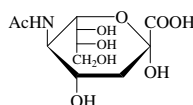
A-18

Quinovose B. Trioxacarcinose B α -L-Pyranose-form $C_8H_{14}O_5$ 190.196**L-form**

Occurs in Trioxacarcin A.

 α -L-Pyranose-form*Me glycoside: Methyl 4-C-acetyl-2,6-dideoxy- α -L-xylo-hexopyranoside* $C_9H_{16}O_5$ 204.222Needles (MeOH). Mp 109-112°. [α]_D²⁰ -60 (c, 0.1 in CHCl₃). **β -L-Pyranose-form***Me glycoside: Methyl 4-C-acetyl-2,6-dideoxy- β -L-xylo-hexopyranoside* [81534-45-4] $C_9H_{16}O_5$ 204.222Plates. Mp 103-107°. [α]_D²⁰ +46 (c, 0.2 in CHCl₃).Matern, U. *et al.*, *Eur. J. Biochem.*, 1972, **29**, 1 (*synth*, pmr) **β -D-Pyranose-form**Produced by *Bacillus megaterium*.*Phenylhydrazine*: Mp 134-136°. [α]_D²⁰ -13 (c, 1.3 in H₂O). **α -D-Pyranose-form**Mp 150-152°. [α]_D²⁵ +90 → +51 (H₂O). **β -D-Pyranose-form**Mp 148-149°. [α]_D²⁵ +22 → +51 (H₂O).Reeves, R.E. *et al.*, *J.A.C.S.*, 1957, **79**, 6041 (α -D-pyr, β -D-pyr)Duff, R.B. *et al.*, *Nature (London)*, 1957, **179**, 103 (*isol*)Gotor, V. *et al.*, *J.C.S. Perkin 1*, 1991, 491 (*synth*)Pulido, R. *et al.*, *J.C.S. Perkin 1*, 1992, 2891 (*cmr*)**N-Acetylneuraminic acid**

A-20

5-(Acetylamino)-3,5-dideoxy-D-glycero-D-galacto-2-nonulosonic acid, 9CI. O-Sialic acid. **Aceneuramic acid**, INN. Lactaminic acid. Gynaminic acid. Serolactaminic acid. KI 111. NANA. Neu5Ac. Neu5NAc [131-48-6] α -D-Pyranose-form $C_{11}H_{19}NO_9$ 309.272

See also Sialic acids, S-37. Isol. from eggs, milk, colostrum, submaxillary mucin and meconium by acid or enzymic hydrol. of the constit. sialoproteins and oligosaccharides. Present in urine of patients with sialuria. Most abundant source is Collocalia mucoid, the nest cementing glycoprotein substance of the Chinese Swiftlet. Chiral synthon. Anti-inflammatory, antiviral and antitussive agent. Involved with blood protein half-life regulation, bacterial adhesion, toxin neutralisation, glycoprotein lytic protection.

Mp 185-187° dec. [α]_D²² -32 (H₂O). The only sialic acid formed in human tissues. Store below 0° in the dark.*Me ester: Methyl N-acetylneuraminatate* $C_{12}H_{21}NO_9$ 323.299Mp 194-195°. [α]_D -28 (c, 3.5 in H₂O).**4-Ac:** $C_{13}H_{21}NO_{10}$ 351.31Mp 199-200°. [α]_D -62 (H₂O).**7-Ac: B-Sialic acid** $C_{13}H_{21}NO_{10}$ 351.31Mp 138-140°. [α]_D +6.**4,7,8,9-Tetra-Ac, Me ester:** $C_{20}H_{29}NO_{13}$ 491.448Mp 174-175°. [α]_D²⁰ -4.8 → -5.2 (c, 0.5 in CHCl₃).*2,4,7,8,9-Penta-Ac, Me ester: Methyl 5-N-acetyl-2,4,7,8,9-penta-O-acetylneuraminatate* $C_{22}H_{31}NO_{14}$ 533.485

Cryst. (EtOAc/petrol). Mp 156-157°.

[α]_D²⁰ -3.3 (c, 1.0 in CHCl₃).*4,7,8,9-Tetrabenzoyl, Me ester:* $C_{40}H_{37}NO_{13}$ 739.731[α]_D²⁰ -0.4 (c, 1.0 in CHCl₃). **α -Pyranose-form***Me glycoside, 4,7,8,9-tetra-Ac*: [50669-91-5] $C_{20}H_{29}NO_{13}$ 491.448Mp 185-188° dec. [α]_D²⁵ -16.5 (MeOH).*Me glycoside, Me ester*: [6730-26-3] $C_{13}H_{23}NO_9$ 337.326Mp 166-168°. [α]_D²⁵ -5.2 (c, 0.52 in MeOH).*Me glycoside, 4,7,8,9-tetra-Ac, Me ester: Methyl (methyl 5-acetamido-4,7,8,9-tetra-O-acetyl-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranosid)onate* [73208-80-7] $C_{21}H_{31}NO_{13}$ 505.475Mp 135-137°. [α]_D²⁵ -19 (MeOH).*Allyl glycoside, Me ester: Methyl (allyl 5-acetamido-3,5-dideoxy-D-glycero- α -D-galacto-2-nonulopyranosid)onate.**Methyl N-acetylneuraminatate α -allylpyranoside* $C_{15}H_{25}NO_9$ 363.364Mp 143-144°. [α]_D -10.1 (c, 1.0 in MeOH).*Benzyl glycoside, 4,7,8,9-tetra-Ac*: [73208-81-8] $C_{26}H_{33}NO_{13}$ 567.546Mp 194-195°. [α]_D²⁵ -7.5 (MeOH).*Benzyl glycoside, 4,7,8,9-tetra-Ac, Me ester*: [19342-75-7] $C_{27}H_{35}NO_{13}$ 581.572Mp 85-89°. [α]_D²⁵ -3.5 (MeOH). α (2→8)-Homopolymer: **Colominic acid** [9013-15-4][70431-34-4, 175674-06-3] Isol. from *Escherichia coli*. Homologous to the weakly immunogenic group B capsular polysaccharide of *Neisseria meningitidis*. An α -(2→8)-N-acetylneuraminic acid polymer (av. Mw 10 kDa). Readily undergoes intramolecular lactonisation. **β -Pyranose-form***Me ester: Methyl N-acetyl- β -D-neuraminatate* $C_{12}H_{21}NO_9$ 323.299Prisms + 1H₂O (MeOH). Mp 180-182° dec. [α]_D²⁰ -28 (c, 1.0 in H₂O).*Me glycoside, Me ester*: [6730-43-4]Mp 115-130°. [α]_D²⁰ -46 (c, 0.67 in MeOH).*Me glycoside, 4,7,8,9-tetra-Ac, Me ester*: [41521-03-3] $C_{21}H_{31}NO_{13}$ 505.475Mp 134-135°. [α]_D²⁰ -19.9 (c, 1.0 in CHCl₃).

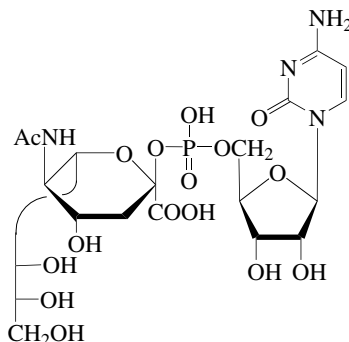
[19342-33-7, 126934-33-6]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 758C (*ir*)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1239A (nmr)
 Gottschalk, A. et al., *The Chemistry and Biology of Sialic Acids and Related Substances*, Cambridge Univ. Press, London, 1960, (book)
 Blix, G. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 246-250 (isol)
 Kuhn, R. et al., *Chem. Ber.*, 1966, **99**, 611-617 (tetra-Ac Me ester, penta-Ac Me ester, tetrabenzoyl Me ester, β-D-pyr Me ester)
 O'Connell, A.M. et al., *Acta Cryst. B*, 1973, **29**, 2320-2328 (cryst struct)
 Codington, J.F. et al., *Methods Carbohydr. Chem.*, 1976, **7**, 226-232 (isol, detn)
 Martin, J.E. et al., *Carbohydr. Res.*, 1977, **56**, 423-425 (isol)
 Haverkamp, J. et al., *FEBS Lett.*, 1977, **73**, 215-219 (Colominic acid, struct)
 Jaques, L.W. et al., *J. Biol. Chem.*, 1977, **252**, 4533-4538 (cmr)
 Czarniecki, M.F. et al., *J.A.C.S.*, 1977, **99**, 8273-8279 (isol, cmr)
 Benzing-Nguyen, L. et al., *J.O.C.*, 1978, **43**, 551-554 (synth, cmr)
 Haverkamp, J. et al., *Adv. Mass Spectrom.*, 1980, **8A**, 983-989 (Colominic acid, ms)
 Gekko, K. et al., *Agric. Biol. Chem.*, 1980, **44**, 1183-1184 (Colominic acid, cd)
 Friebohn, H. et al., *Angew. Chem., Int. Ed.*, 1980, **19**, 208-209 (equilib)
 Eschenfelder, V. et al., *Carbohydr. Res.*, 1980, **78**, 190-194 (α-D-Me gly, tetra-Ac Me ester)
 Noehle, U. et al., *Hoppe-Seyler's Z. Physiol. Chem.*, 1981, **362**, 1495-1506 (metab)
 Schauer, R. et al., *Adv. Carbohydr. Chem. Biochem.*, 1982, **40**, 131-234 (rev)
 Van der Vleugel, D.J.M. et al., *Carbohydr. Res.*, 1982, **102**, 121-130 (α-D-Me pyr Me ester)
Sialic Acids: Chem. Metab. and Function, (Ed. Schauer, R.), Springer-Verlag, Vienna, 1982, 5 (rev)
 Julina, R. et al., *Carbohydr. Res.*, 1987, **164**, 415-432 (β-D-Me pyr Me ester, synth)
 Csuk, R. et al., *Helv. Chim. Acta*, 1988, **71**, 609-618 (synth)
 Roy, R. et al., *Can. J. Chem.*, 1990, **68**, 2045-2054 (isol, Me ester, allyl gly, pmr)
 Kai, H. et al., *J. Pharm. Pharmacol.*, 1990, **42**, 773-777 (pharmacol)
 Prytulla, A. et al., *Magn. Reson. Chem.*, 1990, **28**, 888-901 (cmr, pmr)
 Kragl, U. et al., *Angew. Chem., Int. Ed.*, 1991, **30**, 827-828 (enzymic synth)
 DeNinno, M.P. et al., *Synthesis*, 1991, 583-593 (synth, gly, rev)
 Gordon, D.M. et al., *J.O.C.*, 1993, **58**, 7937-7938 (Et ester, synth, pmr, cmr)
 Bodenmüller, A. et al., *Annalen*, 1994, 541-548 (synth)
 Kragl, U. et al., *Ann. N.Y. Acad. Sci.*, 1995, **750**, 300-305 (synth)
 Chan, T.H. et al., *J.O.C.*, 1995, **60**, 4228-4232 (synth)
 Flaherty, T.M. et al., *Carbohydr. Res.*, 1996, **281**, 173 (cmr, bibl, Colominic acid)
 Maru, I. et al., *Carbohydr. Res.*, 1998, **306**, 575-578 (synth)
 Banwell, M. et al., *J.C.S. Perkin I*, 1998, 2251-2252 (synth)
 Ooi, H.C. et al., *Aust. J. Chem.*, 1999, **52**, 937-940 (synth)

N-Acetyl-β-neuraminic acid 2- (hydrogen 5'-cytidylate) A-21

5-(Acetyl-amino)-3,5-dideoxy-D-glycero-β-D-galacto-2-nopolupyransonic acid 2-(hydrogen 5'-cytidylate), 9CI. 5-Acetamido-3,5-dideoxy-D-glycero-D-galacto-nopolusonic acid 2-ester with 5'-cytidylic acid, 8CI. Cytidine 5'-monophosphate N-acetylneuraminic acid. Cytidine 5'-monophosphosialate. CMP-NAN. CMP-Neu5Ac. CMP-Sialic acid [3063-71-6]

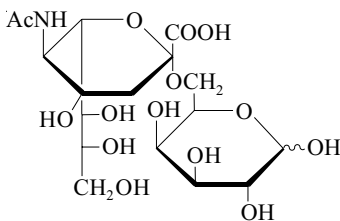


C₂₀H₃₁N₄O₁₆P 614.456
 Cryst. (as bis(triethylammonium) salt).
 [α]_D²⁰ +18 (c, 1.9 in H₂O) (salt).

Warren, L. et al., *J. Biol. Chem.*, 1962, **237**, 3527-3534 (synth)
 Kean, E.L. et al., *J. Biol. Chem.*, 1966, **241**, 5643-5650 (purifn, props)
 Schauer, R. et al., *Hoppe-Seyler's Z. Physiol. Chem.*, 1972, **353**, 883-886 (synth)
 Higa, H.H. et al., *J. Biol. Chem.*, 1985, **260**, 8838-8848 (synth, pmr)
 Simon, E.S. et al., *Methods Enzymol.*, 1989, **179**, 275-287 (synth, pmr, cmr)
 Thiem, J. et al., *Annalen*, 1990, 1101-1105 (synth, pmr)
 Auge, C. et al., *Carbohydr. Res.*, 1990, **200**, 257-268 (synth, pmr)

6-O-(N-Acetyl-α-D-neuraminyl)-D-galactose A-22

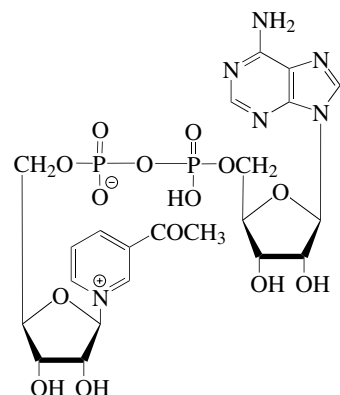
6-O-(5-Acetamido-3,5-dideoxy-α-D-glycero-D-galacto-2-nopolupyransylonic acid)-D-galactose



C₁₇H₂₉NO₁₄ 471.414
K salt: [α]_D²⁵ +16.7 (c, 0.3 in H₂O).
Me ester: [α]_D²⁰ +5.4 (c, 0.8 in MeOH).
Me ester, benzyl-β-glycoside: Mp 183-184°. [α]_D²⁰ -1.3 (c, 0.95 in MeOH).
 Khorlim, A.Ya. et al., *Carbohydr. Res.*, 1971, **19**, 272
 Van Der Vleugel, D.J.M. et al., *Carbohydr. Res.*, 1982, **104**, 221

3-Acetylpyridine adenine dinucleotide A-23

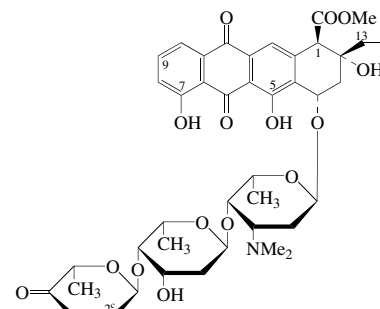
Adenosine 5'-(trihydrogen diphosphate) P' → 5'-ester with 3-acetyl-1-β-D-ribofuranosylpyridinium inner salt, 9CI. 3-Acetyl NAD. 3-Acetylpyridine NAD. APAD [86-08-8]



C₂₂H₂₈N₆O₁₄P₂ 662.443
 Analogue of Coenzyme I, C-143. Used in enzymic assays of lactate, malate and glutamate. Synthetic cofactor for NAD(P)H dehydrogenases. Solid.
 Kaplan, N.O. et al., *J.A.C.S.*, 1954, **76**, 1713-1714 (enzymic synth, uv)
 Sarma, R.H. et al., *Biochem. Biophys. Res. Commun.*, 1969, **36**, 780-788 (nmr, config)
 Williams, T.J. et al., *Arch. Biochem. Biophys.*, 1976, **172**, 490-501 (cmr)
 Anderson, B.M. et al., *Anal. Biochem.*, 1984, **140**, 250-255 (synth)
 Anderson, B.M. et al., *Methods Enzymol.*, 1986, **122**, 173-181 (synth)
 Pietta, P.G. et al., *Chromatographia*, 1988, **25**, 543-544 (enzymic synth, hplc)
 Ferrier, B. et al., *Anal. Biochem.*, 1990, **186**, 229-232 (use)
 Friedlos, F. et al., *Biochem. Pharmacol.*, 1992, **44**, 25-31 (biochem)

Aclacinomycin A A-24

Aclarubicin, BAN, INN, USAN. Aclacin. Aclacinon. Aclacur. Aclaplastin. MA 144A. NSC 208734. Antibiotic MA 144A₁ [57576-44-0]



C₄₂H₅₃NO₁₅ 811.878
 Anthracycline antibiotic. Isol. from *Streptomyces galilaeus*. Antineoplastic agent used to treat malignant blood disorders. Shows anti-HIV activity. Yellow powder. Sol. CHCl₃, EtOAc;

fairly sol. MeOH, C₆H₆, acids, Py, Me₂CO, EtOH, dioxan; poorly sol. Et₂O, hexane, H₂O.

Mp 129-135° dec. $[\alpha]_D^{24} +29$ (c, 1 in CHCl₃). Log P 0.98 (uncertain value) (calc). λ_{\max} 230 (€ 46900); 258 (€ 26700); 290 (€ 11400); 434 (€ 13300) (MeOH/HCl) (Derep). λ_{\max} 240 (€ 55000); 288 (€ 18800); 314 (€ 12700); 523 (€ 13800) (MeOH/NaOH) (Derep). λ_{\max} 230 (€ 43800); 258 (€ 24400); 290 (€ 10400); 434 (€ 11900) (MeOH) (Derep). λ_{\max} 228 (E1%/1cm 480); 256 (E1%/1cm 260); 292 (E1%/1cm 100); 432 (E1%/1cm 130) (MeOH) (Berdy). λ_{\max} 229 (E1%/1cm 540); 258 (E1%/1cm 325); 433 (E1%/1cm 160) (EtOH) (Berdy). λ_{\max} 228 (E1%/1cm 490); 256 (E1%/1cm 280); 295 (E1%/1cm 115); 430 (E1%/1cm 138) (MeOH/HCl) (Berdy).

- Cardiotoxic effects and bone-marrow depression reported when used therapeutically. Eye irritant. LD₅₀ (mus, orl) approx. 30 mg/kg. LD₅₀ (mus, ipr) approx. 16 mg/kg. LD₅₀ (mus, ipr) 22.6 mg/kg, LD₅₀ (mus, ivn) 33.7 mg/kg. Exp. reprod. effects. Q19279300

Hydrochloride: Aclarubicin hydrochloride, JAN

[75443-99-1]
Mp 150-151° dec.

N-De-Me: Aclacinomycin L. MA 144L1. Antibiotic MA 144L1. N-Demethylaclacinomycin A
[64431-58-9]

C₄₁H₅₁NO₁₅ 797.852

Prod. by *Streptomyces galilaeus*. Antitumour and antibacterial agent. Yellow powder.

Mp 134-136°. λ_{\max} 230; 259; 290; 433 (MeOH).

5-Me ether: [76264-92-1]

C₄₃H₅₅NO₁₅ 825.905

Semisynthetic. Shows reduced tox. Mp 144-146°. $[\alpha]_D^{22} -58$ (c, 0.05 in CHCl₃).

- Q19280700

7-Me ether: [76304-86-4]

C₄₃H₅₅NO₁₅ 825.905

Semisynthetic. Shows reduced tox. Yellow powder. Sol. MeOH, CHCl₃; poorly sol. H₂O. Mp 144-146°. $[\alpha]_D^{22} -38$ (c, 0.2 in CHCl₃). λ_{\max} 229 (E1%/1cm 527); 258 (E1%/1cm 324); 418 (E1%/1cm 13) (MeOH) (Berdy). λ_{\max} 258 (€ 23300); 288 (€ 11400); 419 (€ 10900) (CHCl₃) (Berdy). λ_{\max} 217 (E1%/1cm 871); 250 (E1%/1cm 390); 320 (E1%/1cm 77); 525 (E1%/1cm 90) (MeOH/NaOH) (Berdy).

- Q19280600

9-Hydroxy: 9-Hydroxyaclacinomycin A
[79127-36-9]

C₄₂H₅₃NO₁₆ 827.878

From *Streptomyces galilaeus*. Antineoplastic agent. Dark yellow powder. Mp 165-167°. $[\alpha]_D^{23} +42.3$ (c, 0.04 in MeOH). Log P 0.35 (uncertain value) (calc).

- LD₅₀ (mus, ipr) 50 mg/kg. Q19279180

2^c-Amino, 2^c,3^c-didehydro: Antibiotic CG

IC. CG 1C

C₄₂H₅₂N₂O₁₅ 824.877

Biosynth. prod. of *Streptomyces galilaeus*. Yellow powder. Sol. MeOH, Me₂CO, CHCl₃; poorly sol. H₂O, hexane.

Mp 142-145°. $[\alpha]_D +36$ (c, 0.01 in CHCl₃). λ_{\max} 229 (E1%/1cm 411); 262 (E1%/1cm 294); 282 (E1%/1cm 294); 431 (E1%/1cm 115) (MeOH) (Berdy).

5^c-Epimer: Aclacinomycin G. MA 144G1.

Antibiotic MA 144G1. 5^c-Epiacclacinomycin A

[64520-15-6]

C₄₂H₅₃NO₁₅ 811.878

Prod. by *Streptomyces galilaeus*. Antitumour and antibacterial agent. Yellow powder.

Mp 146-148°. $[\alpha]_D^{22} +54$ (CHCl₃). λ_{\max} 230; 258; 290; 432 (MeOH).

13-Methyl: 13-Methylaclacinomycin A

[78776-19-9]

C₄₃H₅₅NO₁₅ 825.905

From *Streptomyces galilaeus*. Antineoplastic agent.

Mp 160.5°. $[\alpha]_D^{20} +1.96$ (c, 0.93 in CHCl₃). λ_{\max} 229 (E1%/1cm 531); 258 (E1%/1cm 310); 289 (E1%/1cm 121); 430 (E1%/1cm 158) (MeOH) (Berdy).

- Q19288960

Oki, T. et al., *J. Antibiot.*, 1975, **28**, 830; 1977, **30**, 683; 1979, **32**, 791; 801; 1980, **33**, 1331; 1981, **34**, 916 (isol, uv, ir, struct, derivs)

Belg. Pat., 1978, 859 236; CA, **89**, 105874d (MA 144G1)

Hori, S. et al., CA, 1978, **88**, 145957u (props, MA 144G1)

Doyle, T.W. et al., J.A.C.S., 1979, **101**, 7041 (cmr)

Mori, S. et al., Jpn. J. Antibiot., 1980, **33**, 618-622 (synth, ir, uv)

Oki, T. et al., Recent Results Cancer Res., 1980, **74**, 207 (rev)

Soga, K. et al., J. Antibiot., 1981, **34**, 770 (deriv)

Matsuzawa, Y. et al., J. Antibiot., 1981, **34**, 1495; 1596

Smith, R.G. et al., Anal. Chem., 1982, **54**, 2006 (ms)

Egorin, M.J. et al., Dev. Oncol., 1982, **10**, 527 (rev. pharmacol)

Eur. Pat., 1983, 72 974; CA, **98**, 21413 (deriv)

Hoshino, T. et al., J. Antibiot., 1983, **36**, 1458 (synth)

Monneret, C. et al., J. Carbohydr. Chem., 1988, **7**, 417-438 (partial synth)

Juelich, T. et al., Magn. Reson. Chem., 1991, **29**, 178 (pmr)

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 454

Parkinson, J.A. et al., Tetrahedron, 1995, **51**, 7215 (pmr, cmr, conform)

Johdo, O. et al., J. Antibiot., 1996, **49**, 669

(Antibiotic CG 1C)

Lewis, R.J. et al., Sax's Dangerous Properties of

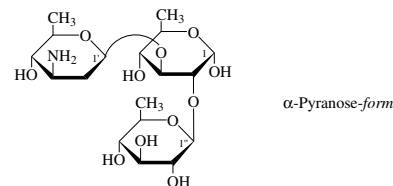
Industrial Materials, 8th edn., Van Nostrand

Reinhold, 1992, APU500; HIS300

Aculexित्रiose

A-25

3-Amino-2,3,6-trideoxy-β-D-arabino-hexopyranosyl-(1→3)-[6-deoxy-β-D-glucopyranosyl-(1→2)]-6-deoxy-D-glucose, 9CI
[122037-03-0]



C₁₈H₃₃NO₁₁ 439.459

Constit. of Aculeximycin isol. from the culture broth of *Streptosporangium albidum* (actinomycete). Amorph. powder. Mp 198-200°. $[\alpha]_D^{24} +12.9$ (c, 0.1 in MeOH).

N-Ac: [122037-04-1]

C₂₀H₃₅NO₁₂ 481.496

Amorph. powder. Mp 162-166°. $[\alpha]_D^{24} +16.5$ (c, 1.0 in MeOH).

Hepta-Ac: [122037-02-9]

C₃₂H₄₇NO₁₈ 733.719

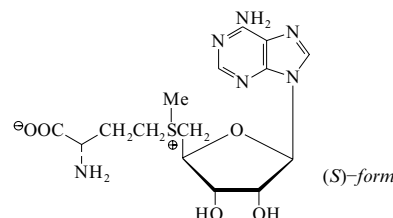
Amorph. powder. Mp 123-127°. $[\alpha]_D^{24} +51.3$ (c, 0.1 in MeOH).

Murata, H. et al., J. Antibiot., 1989, **42**, 691; 701 (isol, synth, pmr, cmr, ms, hplc)

Ademetionine, INN

A-26

5'-[[(3-Amino-3-carboxypropyl)methyl]-sulfonio]-5'-deoxyadenosine hydroxide inner salt, 9CI. S-Adenosylmethionine. Active methionine
[2613-02-7]



C₁₅H₂₂N₆O₅S 398.442

Strictly the name Ademetionine refers to the (S)-form. Metab. intermed. which functions as the principal biological donor of methyl groups, as the source of the propylamine moieties of spermidine and spermine, and as the regulator of a variety of enzymatic reactions. Metabolic; used to treat hepatic disorders. Also under investigation as an antidepressant, and for the treatment of osteoarthritis.

4-Methylbenzenesulfonate, sulfate (1:2): Ceritan. Gumbartal. FO 1561
[97540-22-2]

(S)-form

Donor. S Amet IM. SAM. Samet. Samyr. Tunik
[29908-03-0]

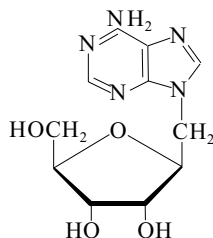
- AU7334000

[485-80-3, 14031-35-7, 17176-17-9]

- Cantoni, G.L. *et al.*, *J.A.C.S.*, 1952, **74**, 2942 (*synth*)
 Cantoni, G.L. *et al.*, *J. Biol. Chem.*, 1953, **204**, 403 (*struct*)
 Baddiley, J. *et al.*, *J.C.S.*, 1953, 2662; 1954, 4280; 1955, 1085 (*synth, struct*)
 de la Haba, G. *et al.*, *J.A.C.S.*, 1959, **81**, 3975 (*synth, resoln*)
 Lombardini, J.B. *et al.*, *Adv. Enzyme Regul.*, 1971, **9**, 349 (*rev*)
 Cantoni, G.L. *et al.*, *Annu. Rev. Biochem.*, 1975, **44**, 435 (*rev*)
 Follmann, H. *et al.*, *Eur. J. Biochem.*, 1975, **58**, 31 (*uv, cd*)
 Cornforth, J.W. *et al.*, *J.A.C.S.*, 1977, **99**, 7292 (*abs config*)
The Biochemistry of Adenosylmethionine, (Eds. Salvatore, F. *et al.*), Columbia Univ. Press, 1977, (*book*)
 Stoloritz, M.L. *et al.*, *J.A.C.S.*, 1981, **103**, 6015 (*pmr*)
 Minch, M.J. *et al.*, *J.A.C.S.*, 1981, **103**, 6015 (*nmr*)
 Zappia, V. *et al.*, *Methods Enzymol.*, 1983, **94**, 57 (*rev, hplc*)
 Giuliodori, P. *et al.*, *Eur. J. Clin. Pharmacol.*, 1984, **27**, 119 (*pharmacol*)
 Moriguchi, K. *et al.*, *Yakuri to Chiryo*, 1987, **15**, 4547; *CA*, **108**, 142870f (*pharmacol, tosylate*)
Drugs of Today (Barcelona), 1988, **24**, 165-168 (*use*)
 Deurre, J.A. *et al.*, *Biochim. Biophys. Acta*, 1989, **985**, 211 (*pharmacol*)
 Friedel, H.A. *et al.*, *Drugs*, 1989, **38**, 389 (*rev*)
 Almasio, P. *et al.*, *Drugs, Suppl.* 3, 1990, **40**, 111 (*rev*)
 Osman, E. *et al.*, *Aliment. Pharmacol. Ther.*, 1993, **7**, 21 (*rev*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1331
 Bottiglieri, T. *et al.*, *Drugs*, 1994, **48**, 137 (*neuropharmacol, rev*)
 Park, J. *et al.*, *Bioorg. Med. Chem.*, 1996, **4**, 2179-2185 (*synth*)
 Jorgens, S. *et al.*, *Chem. Rev.*, 2003, **9**, 2405-2410 (*rev*)

1-(9-AdeninyI)-2,5-anhydro-1-deoxyallitol A-27

1-(6-Amino-9H-purin-9-yl)-2,5-anhydro-1-deoxyallitol, 9CI, 8CI



$C_{11}H_{15}N_5O_4$ 281.271

D-form [29868-39-1]

Mp 206°. $[\alpha]_D^{24} +15.7$ (c, 1.07 in 50% EtOH aq.). λ_{max} 261 (ε 14 600) (H₂O), 258 (14 300) (pH 1), 261 nm (14 600) (pH 13).

2',3'-O-(Ethoxyethylidene):

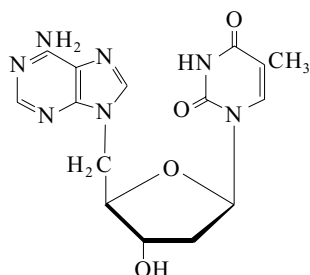
Syrup. λ_{max} 257 (pH 1), 260 nm (pH 7, 13).

Montgomery, J.A. *et al.*, *J. Het. Chem.*, 1970, **7**, 443 (*synth*)

Farkas, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, **36**, 3043 (*synth*)

5'-(9-AdeninyI)-5'-deoxythymidine A-28

1-[5'-(6-Amino-9H-purin-9-yl)-2',5'-dideoxy-β-D-erythro-pentofuranosyl]thymine, 8CI
 [28220-19-1]



$C_{15}H_{17}N_7O_4$ 359.344

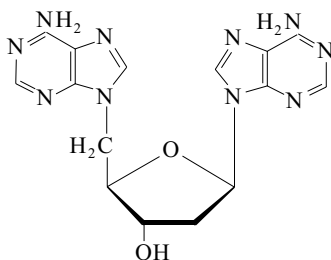
Cryst. (H₂O). Mp 239-240° (monohydrate). λ_{max} 257 (ε 19 840) (H₂O), 260 (18 700) (0.1N HCl), 260 nm (18 200) (0.1N NaOH).

Fecher, R. *et al.*, *Carbohydr. Res.*, 1970, **13**, 105 (*synth, pmr, cd*)

Fecher, R. *et al.*, *J.A.C.S.*, 1970, **92**, 1400 (*synth, pmr, cd*)

5'-(9-AdeninyI)-2',5'-dideoxy-ribofuranosyladenine A-29

9-[5'-(6-Amino-9H-purin-9-yl)-2,5-dideoxy-erythro-pentofuranosyl]adenine, 8CI



$C_{15}H_{16}N_{10}O_2$ 368.357

β-D-form [28220-20-4]

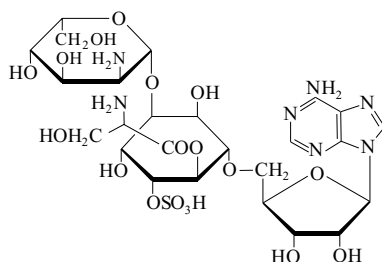
Mp 305-306°. λ_{max} 256 nm (ε 24 900) (H₂O).

Fecher, R. *et al.*, *Carbohydr. Res.*, 1970, **13**, 105 (*synth*)

Fecher, R. *et al.*, *J.A.C.S.*, 1970, **92**, 1400 (*synth, pmr, cd*)

Adenomycin, 9CI

C19-97 Substance. Antibiotic C19-97. C8030C. Antibiotic C8030C
 [76174-56-6]



A-30

$C_{25}H_{39}N_7O_{18}S$ 757.685

Nucleoside antibiotic. Isol. from *Streptomyces griseoflavus* C19-97. Active against gram-positive and -negative bacteria and tumours.
 Mp 165-168° dec. $[\alpha]_D^{22.5} +10.5$ (c, 2 in H₂O). λ_{max} 260 (ε 11400) (H₂O) (Derep).

Hydrochloride (1:2):

Powder. Mp 210-220°. $[\alpha]_D^{25} +14$ (c, 1 in H₂O).

De-O-seryl: Deseryladenomycin. C8030E.

Antibiotic C8030E

[71427-17-3]

$C_{22}H_{34}N_6O_{16}S$ 670.607

Prod. by *Streptomyces pseudogriseolus*. Insecticide, miticide. Sol. H₂O, DMSO; fairly sol. MeOH, EtOH; poorly sol. Me₂CO, hexane. $[\alpha]_D -9.1$ (H₂O). λ_{max} 259 (E1%/1cm 210) (pH 7 buffer) (Berdy). λ_{max} 256 (E1%/1cm 206) (HCl) (Berdy). λ_{max} 259 (E1%/1cm 210) (NaOH) (Berdy).
 [70535-13-6, 71427-15-1]

Japan. Pat., 1979, 79 14 595; *CA*, **91**, 37478 (*isol*)

Ogita, T. *et al.*, *Tet. Lett.*, 1980, **21**, 3203 (*struct*)

Iwasa, T. *et al.*, *CA*, 1981, **95**, 148651v

(Deseryladenomycin)

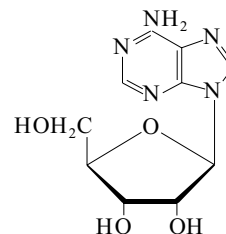
Otake, N. *et al.*, *J. Antibiot.*, 1981, **34**, 130

(*spectra*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)

Adenosine, 9CI, 8CI, BAN, A-31 USAN

9-β-D-Ribofuranosyl-9H-purin-6-amine, 9CI. 9-β-D-Ribofuranosyladenine, 8CI. 6-Amino-9-β-D-ribofuranosyl-9H-purine. Adenocard. Adenocor. Adenoscan. SR 96225
 [58-61-7]



$C_{10}H_{13}N_5O_4$ 267.244

Widely distributed in nature. One of the four principal nucleosides of nucleic acid. Antiarrhythmic agent. Cardiac depressant. Launched 1989. Cryst. (H₂O). Sol. H₂O, MeOH; poorly sol. Me₂CO, hexane. Mp 234-236°. $[\alpha]_D^{11} -61.7$ (c, 0.7 in H₂O). pK_{a1} 3.6; pK_{a2} 12.4 (25°). Log P -2.88 (calc). Component of numerous preparations. λ_{max} 259 (ε 15400) (H₂O). λ_{max} 260 (ε 15100) (H₂O) (Berdy).

► LD₅₀ (mus, ipr) 500 mg/kg. AU7175000

2'-Phosphate: See 2'-Adenylic acid, A-45

3'-Phosphate: 3'-Adenylic acid. Adenosine 3'-(dihydrogen phosphate)

[84-21-9]

$C_{10}H_{14}N_5O_7P$ 347.224

Mp 195° dec. $[\alpha]_D^{20} -38.5$ (c, 2.0 in H₂O).

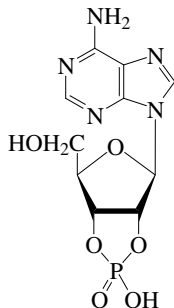
5'-Phosphate: See Adenylic acid, A-44

- 5'-Diphosphate:** See Adenosine diphosphate, A-33
- 5'-Triphosphate:** See Adenosine triphosphate, A-39
- 2',5'-Diphosphate:** See Adenosine 2',5'-diphosphate, A-34
- 3',5'-Diphosphate:** See Adenosine 3',5'-diphosphate, A-35
- 2',3'-Cyclic monophosphate:** See Adenosine cyclic 2',3'-(hydrogen phosphate), A-32
- 3',5'-Cyclic monophosphate:** See Cyclic AMP, C-162
- 3'-(Butyl hydrogen phosphate): Monobutyl 3'-adenylate. 3'-Butylphosphoryl adenosine. *B-factor***
[52278-63-4]
C₁₄H₂₂N₅O₇P 403.331
Prod. by *Nocardia* sp. Inducer of biosynth. of Rifamycin B. Powder. Sol. MeOH, Py, H₂O; poorly sol. Me₂CO, EtOAc, CHCl₃. Mp 182-186°. λ_{max} 207 (ε 16700); 260 (ε 12700) (H₂O). λ_{max} 260 (ε 13000) (NaOH) (Berdy). λ_{max} 209 (ε 16700); 260 (ε 12700) (H₂O) (Berdy). λ_{max} 238 (ε 10800); 258 (ε 11900) (HCl) (Berdy).
- 1-Oxide:** [146-92-9]
C₁₀H₁₃N₅O₅ 283.243
Cryst. (EtOH). Mp 223-224°. [α]_D²¹ -40 (c, 0.8 in H₂O).
- 3-Oxide:** [71074-55-0]
C₁₀H₁₃N₅O₅ 283.243
Light brown powder. Mp 158°.
- 3'-Ac:** [6554-21-8]
C₁₂H₁₅N₅O₅ 309.281
Cryst. (EtOH). Mp 180-181°. λ_{max} 260 (ε 14130) (95% EtOH).
- 5'-Ac:** [2140-25-2]
C₁₂H₁₅N₅O₅ 309.281
Cryst. (MeOH). Mp 143° (132-133°). [α]_D²⁵ -51.8 (c, 1 in MeOH).
- 2',3'-Di-Ac:** [29886-19-9]
C₁₄H₁₇N₅O₆ 351.318
Cryst. (Me₂CO). Mp 180-181°. [α]_D²⁵ -49.5 (c, 1 in MeOH).
- 3',5'-Di-Ac:** [6554-24-1]
C₁₄H₁₇N₅O₆ 351.318
Cryst. (EtOH). Mp 175-176°.
- 2',3',5'-Tri-Ac:** [7387-57-7]
C₁₆H₁₉N₅O₇ 393.355
Cryst. (EtOH or toluene). Mp 174°. [α]_D²⁰ -27.9 (c, 2 in CHCl₃).
- 3',5'-Dibenzoyl:** [62374-24-7]
C₂₄H₂₁N₅O₆ 475.46
Mp 193-194°.
- 2',3',5'-Tribenzoyl:** [51549-15-6]
C₃₁H₂₅N₅O₇ 579.568
Glass. [α]_D²² -71 (c, 1 CHCl₃). λ_{max} 231 (ε 47100); 258 (ε 20500) (EtOH).
- 6N,2',3',5'-Tetrabenzoyl:** [6984-53-8]
C₃₈H₂₉N₅O₈ 683.676
Glass. [α]_D²² -94 (c, 1 in CHCl₃). λ_{max} 230 (ε 49200); 279 (ε 22400) (EtOH).
- 5'-Tosyl:** [5135-30-8]
C₁₇H₁₉N₅O₆S 421.433
Mp 151-153°.
- 5'-O-Sulfamoyl:** Antibiotic AI-R 2748.
AI-R 2748
[25030-31-3]
C₁₀H₁₄N₆O₆S 346.323
- Isol. from *Streptomyces* sp. Cytotoxic to P388 cells and inhibitory to bacteria.
Cryst. + 1H₂O (H₂O).
Mp 153-155° (softened) 165° dec. [α]_D³³ -33.6 (c, 1.0 in DMF).
- 2',3'-O-Isopropylidene:** [362-75-4]
C₁₃H₁₇N₅O₄ 307.308
Cryst. (EtOH). Mp 220°.
- 2',3'-O-Isopropylidene, 5'-Ac:** [15888-38-7]
C₁₅H₁₉N₅O₅ 349.346
Cryst. (CHCl₃/Et₂O). Mp 170-172°.
- 6-N-Me:** N⁶-Methyladenosine
[1867-73-8]
C₁₁H₁₅N₅O₄ 281.271
Modified nucleoside present in tRNAs. Hygroscopic cryst. (EtOAc or MeOH). Mp 135-140° Mp 208° dec. (double Mp.). [α]_D²⁵ -54 (c, 0.63 in H₂O). λ_{max} 265 (ε 16300) (H₂O).
- 6N,6N-Di-Me:** See N,N-Dimethyladenosine, D-724
- 6N-(3-Methyl-2-butenyl):** See N-(3-Methyl-2-butenyl)adenosine, M-234
- 6N-Cyclohexyl, 2'-O-Me:** SDZ WAG 994
[130714-47-5]
C₁₇H₂₅N₅O₄ 363.416
Selective adenosine A₁ receptor agonist. Mp 88-91°.
- 6N-Benzyl:** [4294-16-0]
C₁₇H₁₉N₅O₄ 357.368
Isol. from various plant spp. Mp 184-186°.
- 6N-Benzyl, 3'-O-β-D-glucopyranosyl:**
[150035-65-7]
C₂₃H₂₉N₅O₉ 519.51
Prod. during shoot organogenesis in *Petunia* sp.
- 6N-(2-Hydroxybenzyl): Cytokinin R**
[50868-58-1]
C₁₇H₁₉N₅O₅ 373.368
Isol. from leaves of poplar *Populus robusta*. λ_{max} 260 (EtOH at pH 2) (Derep). λ_{max} 265 (EtOH/pH 11) (Derep). λ_{max} 266 (EtOH) (Derep).
- 6N-(3-Hydroxybenzyl): meta-Topolin 9-riboside**
[110505-76-5]
C₁₇H₁₉N₅O₅ 373.368
Isol. from *Populus x canadensis* cv. *robusta*. Cytokinin. Mp 171-174°.
- N-(2-Methylbenzyl): N-[(2-Methylphenyl)methyl]adenosine, 9CI. Metrifudil, INN. Th 322**
[23707-33-7]
C₁₈H₂₁N₅O₄ 371.395
Coronary vasodilator. Never marketed. Mp 157-158°. Log P -0.16 (calc).
- 2-Me:** See 2-Methyladenosine, M-223
- 2'-Me:** See 2'-O-Methyladenosine, M-221
- 6N-Cyclopentyl:** N⁶-Cyclopentyladenosine. CPA
[41552-82-3]
C₁₅H₂₁N₅O₄ 335.362
Adenosine A₁ receptor agonist. Platelet aggregation inhibitor. Cryst. (H₂O). Mp 77-81° Mp 105-107°.
- 6N-Cyclohexyl:** [36396-99-3]
C₁₆H₂₃N₅O₄ 349.389
Adenosine A₁ receptor agonist.
- Platelet aggregation inhibitor. Cryst. (EtOH/EtOAc). Mp 100°.
- 6N-(1-Methyl-2-phenylethyl):** See N-(1-Methyl-2-phenylethyl)adenosine, M-278
- 1'-Epimer: 9-α-D-Ribofuranosyladenine. α-Adenosine**
[5682-25-7]
C₁₀H₁₃N₅O₄ 267.244
Mp 205-207°. [α]_D²⁰ +28 (c, 0.65 in H₂O). [3080-29-3]
- Aldrich Library of FT-IR Spectra, 1st edn.*, 1985, **2**, 719C; 720A; 721A; 722C; 725B (ir)
- Aldrich Library of 13C and 1H FT NMR Spectra*, 1992, **3**, 222A; 224A; 227B; 229B (nmr)
- Levene, P.A. *et al.*, *J. Biol. Chem.*, 1920, **41**, 483-494 (3'-phosphate)
- Bredereck, H. *et al.*, *Chem. Ber.*, 1947, **80**, 401-405 (2',3',5'-tri-Ac)
- Davoll, J. *et al.*, *J.C.S.*, 1948, 967-969 (synth)
- Brown, D.M. *et al.*, *J.C.S.*, 1950, 3299-3304 (synth)
- Michelson, A.M. *et al.*, *J.C.S.*, 1956, 1546-1549 (2',3',5'-tri-Ac)
- Johnson, J.A. *et al.*, *J.A.C.S.*, 1958, **80**, 699-702 (6-N-Me)
- Biemann, K. *et al.*, *J.A.C.S.*, 1962, **84**, 2005-2007 (ms)
- Sundaralingam, M. *et al.*, *Acta Cryst.*, 1966, **21**, 495-506 (3'-phosphate, cryst struct)
- Fromageot, H.P.M. *et al.*, *Tetrahedron*, 1967, **23**, 2315 (3'-Ac, 5'-Ac, di-Ac, isopropylidene)
- South African Pat.*, 1968, 6 707 414; *CA*, **70**, 115505f (metrifudil)
- Shuman, D.A. *et al.*, *J.A.C.S.*, 1970, **92**, 3434-3440 (5'-O-sulfamoyl, synth)
- Saffhill, R. *et al.*, *J.O.C.*, 1970, **35**, 2881-2883 (3'-phosphate)
- Shikata, K. *et al.*, *Acta Cryst. B*, 1973, **29**, 31-38 (cryst struct)
- Kikugawa, K. *et al.*, *J. Med. Chem.*, 1973, **16**, 358-364 (6N-alkyl derivs)
- Sarma, R.H. *et al.*, *J.A.C.S.*, 1974, **96**, 7337-7348 (pmr, conformn)
- Earl, R.A. *et al.*, *J.O.C.*, 1975, **40**, 1822-1828 (cmr)
- Horgan, R. *et al.*, *Phytochemistry*, 1975, **14**, 1005-1008 (Cytokinin R)
- Ishido, Y. *et al.*, *J.C.S. Perkin 1*, 1977, 657-660 (2',3',5'-tribenzoyl, 6N,2',3',5'-tetrabenzoyl)
- Gregoire, R.J. *et al.*, *Can. J. Chem.*, 1978, **56**, 487-490 (2',3',5'-tri-Ac)
- Kemal, O. *et al.*, *Synthesis*, 1980, 1025-1028 (6-N-Methyladenosine)
- Mathlouth, M. *et al.*, *Carbohydr. Res.*, 1984, **131**, 1-15 (ir, Raman)
- Kawaguchi, T. *et al.*, *J. Antibiot.*, 1984, **37**, 1587-1595 (B-factor)
- Moos, W.H. *et al.*, *J. Med. Chem.*, 1985, **28**, 1383-1384 (N-cyclopentyl)
- Wilson, C.C. *et al.*, *Acta Cryst. C*, 1986, **42**, 697-700 (cryst struct, triacetyl)
- Rengaraju, S. *et al.*, *CA*, 1987, **106**, 134902 (5'-O-sulfamoyl, isol)
- Puech, P. *et al.*, *Handb. Exp. Pharmacol.*, 1989, **89**, 453-460 (rev, metab, props, use)
- Adenosine and Adenosine Receptors*, Williams, M., ed., Chapman and Hall, 1990, (book)
- Pinski, S.L. *et al.*, *Cleveland Clin. J. Med.*, 1990, **57**, 383 (use)
- Reddy, A.M. *et al.*, *J. Het. Chem.*, 1990, **27**, 1297-1305 (ms)
- Robins, M.J. *et al.*, *Can. J. Chem.*, 1991, **69**, 1468-1474 (1-oxide, synth, pmr, cmr)
- Morgan, J.M. *et al.*, *Circulation*, 1991, **84**, 1145 (use)
- Thompson, R.D. *et al.*, *J. Med. Chem.*, 1991, **34**, 3388-3390 (6N-alkyl derivs)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 57
 Auer, C.A. *et al.*, *Plant Physiol.*, 1993, **102**, 541-545 (*N*-benzyl 3'-glucoside)
 Peakman, M.-C. *et al.*, *Br. J. Pharmacol.*, 1995, **115**, 801-810 (*N*-cyclopentyl)
 Rhie, S.Y. *et al.*, *Heterocycles*, 1995, **41**, 323-328 (3-oxide)
 Prashad, M. *et al.*, *Synth. Commun.*, 1996, **26**, 3967-3977 (6*N*-cyclohexyl 2'-*O*-Me)
 Saladino, R. *et al.*, *Tetrahedron*, 1996, **52**, 6759-6780 (2',3',5'-tri-Ac)
 Strnad, M. *et al.*, *Phytochemistry*, 1997, **45**, 213-218 (*meta*-Topolin 9-riboside)
 Mahler, G.S. *et al.*, *Anal. Profiles Drug Subst.*, 1998, **25**, 1-37 (rev)
 Moyroud, E. *et al.*, *Tetrahedron*, 1999, **55**, 1277-1284 (*L*-form, *synth*, *pmr*, *cmr*)
 Mikkola, S. *et al.*, *Eur. J. Org. Chem.*, 2000, 2315-2323 (6-*N*-Me)
 Ciuffreda, P. *et al.*, *Tetrahedron*, 2000, **56**, 3239-3243 (2',3'-di-Ac, 5'-Ac, 3'-Ac, *synth*, *pmr*)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AEH750

Adenosine cyclic 2',3'-(hydrogen phosphate), 9CI
 2',3'-AMP
 [634-01-5]

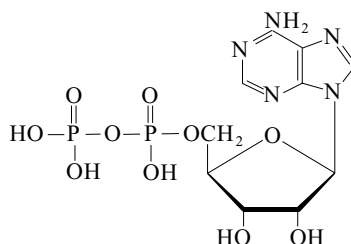
A-32



$C_{10}H_{12}N_5O_6P$ 329.209
 Needles (EtOH). λ_{\max} 257 (ϵ 14270) (H_2O).
Na salt: [37063-35-7]
 Hydrate. Mp 241-243° (dec.).
 Brown, D.M. *et al.*, *J.C.S.*, 1952, 2708-2714 (*synth*)
 Smith, M. *et al.*, *J.A.C.S.*, 1958, **80**, 6204-6212 (*synth*)
 Jardetsky, C.D. *et al.*, *J.A.C.S.*, 1960, **82**, 222-229; 1962, **84**, 62-66 (*pmr*)
 Ikehara, M. *et al.*, *J.O.C.*, 1966, **31**, 819-821 (*synth*)
 Ueda, T. *et al.*, *Chem. Pharm. Bull.*, 1970, **18**, 2303-2308 (*synth*)
 Van Boom, J.H. *et al.*, *Nucleic Acids Res.*, 1976, **3**, 2731-2747 (*synth*, *tlc*)
 Eto, M. *et al.*, *Agric. Biol. Chem.*, 1978, **42**, 199-200 (*synth*, *props*, *uv*, *pmr*)
 Uesugi, U. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 3040-3049 (*cmr*)
 Fathi, R. *et al.*, *J.O.C.*, 1986, **51**, 4143-4146 (*P-31 nmr*)

Adenosine diphosphate A-33

Adenosine 5'-(trihydrogen diphosphate), 9CI. Adenosine 5'-pyrophosphate. ADP. Adenosine-5'-diphosphoric acid [58-64-0]



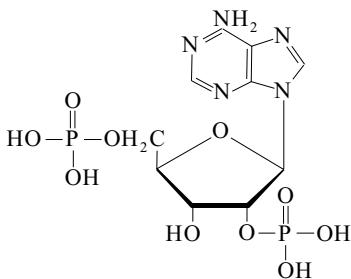
$C_{10}H_{15}N_5O_{10}P_2$ 427.203
 Formed from ATP in the muscle by the enzyme adenosinetriphosphatase. Prod. by various bacteria. Platelet aggregating factor. Inhibits adenylate cyclase. P_2 receptor agonist. pK_{a4} 4; pK_{a5} 6.48 (25°, 0.15M NaCl). λ_{\max} 259 (ϵ 15400) (H_2O).

► AU7467000

Acridine salt: Mp 215° dec. λ_{\max} 281 (ϵ 19400) (H_2O).
 6*N*-Benzoyl, tri-*Na salt*: λ_{\max} 281 (ϵ 19400) (H_2O).
 [1172-42-5, 20398-34-9, 123333-51-7]
 Baddiley, J. *et al.*, *J.C.S.*, 1947, 648
Biochem. Prep., 1949, **1**, 1
 Chambers, R.W. *et al.*, *J.A.C.S.*, 1960, **82**, 970 (*synth*)
 Mitsugi, K. *et al.*, *Agric. Biol. Chem.*, 1964, **28**, 571 (*isol*)
 Wieland, T. *et al.*, *Chem. Ber.*, 1968, **107**, 3031 (*synth*)
 Sarma, R.H. *et al.*, *Chem. Comm.*, 1973, 140 (*pmr*, *nmr*)
 Hampton, A. *et al.*, *Biochemistry*, 1975, **14**, 5438
 Swaminathan, P. *et al.*, *Acta Cryst. B*, 1980, **36**, 2590 (*cryst struct*)
 Hourani, S.M.O. *et al.*, *Trends Pharmacol. Sci.*, 1994, **15**, 103-108 (*pharmacol*)
Merck Index, 13th edn., 2001, No. 155 (rev)
 Barnard, E.A. *et al.*, *Trends Pharmacol. Sci.*, 2001, **22**, 388-391 (*pharmacol*)

Adenosine 2',5'-diphosphate A-34

2'-Adenylic acid 5'-(dihydrogen phosphate), 9CI. Adenosine 2',5'-bis(phosphate), 8CI. Adenosine 2',5'-diphosphoric acid [3805-37-6]



$C_{10}H_{15}N_5O_{10}P_2$ 427.203
 Component of coenzyme II. Amorph. powder.

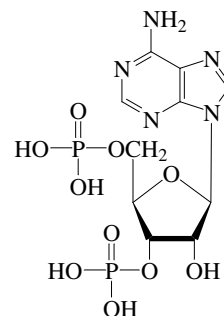
Di-Ca salt:

Octahydrate. λ_{\max} 258 nm (ϵ 14 250) (H_2O).

Wang, T.P. *et al.*, *J. Biol. Chem.*, 1954, **206**, 299
 Baddiley, J. *et al.*, *J.C.S.*, 1958, 1000 (*synth*)
Japan. Pat., 1967, 536; *CA*, **66**, 64391y (*synth*)
 Takaku, H. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 1844 (*synth*)
 Roeder, S.B.W. *et al.*, *Physiol. Chem. Phys.*, 1975, **7**, 115 (*cmr*)

Adenosine 3',5'-diphosphate A-35

3'-Adenylic acid 5'-(dihydrogen phosphate), 9CI. Adenosine 3',5'-bis(phosphate), 8CI. Adenosine 3',5'-diphosphoric acid [1053-73-2]



$C_{10}H_{15}N_5O_{10}P_2$ 427.203
 Component of coenzyme A. Amorph. powder.

Ca salt:

Pentahydrate. λ_{\max} 258 (ϵ 14050) (H_2O).

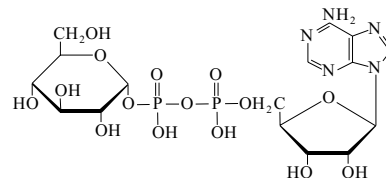
2'-Deoxy, *N*-Me: MRS 2179
 [101204-49-3]

[201048-81-9]
 $C_{11}H_{17}N_5O_9P_2$ 425.231
 Purine (P_{2Y1}) receptor antagonist. Characterised by *pmr* and *P-31 nmr* (as tetra- NH_4 salt).

Wang, T.P. *et al.*, *J. Biol. Chem.*, 1954, **206**, 299
 Baddiley, J. *et al.*, *J.C.S.*, 1958, 1000 (*synth*)
 Takaku, H. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 1844 (*synth*)
 Lee, C. *et al.*, *FEBS Lett.*, 1974, **43**, 271; *CA*, **82**, 12479u (*pmr*)
 Roeder, S.B.W. *et al.*, *Physiol. Chem. Phys.*, 1975, **7**, 115 (*cmr*)
 Moro, S. *et al.*, *J. Med. Chem.*, 1998, **41**, 183-190; 1456-1466; 2000, **43**, 829-842 (*MRS* 2179, *synth*, *pmr*, *pharmacol*)
 Baurand, A. *et al.*, *Eur. J. Pharmacol.*, 2001, **412**, 213-221 (*MRS* 2179, *pharmacol*)

Adenosine diphosphate glucose A-36

Adenosine 5'-(trihydrogen diphosphate) mono- α -D-glucopyranosyl ester, 9CI. ADPG [2140-58-1]



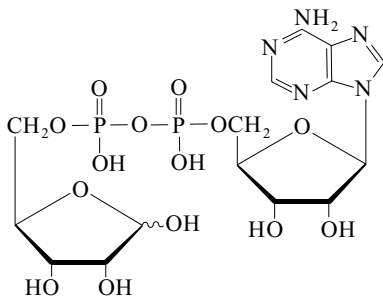
C₁₆H₂₅N₅O₁₅P₂ 589.345

Present in ripening cereal grains. Also obt. from algal cells. Glucose donor in glycogen synth., sucrose synth. and glucoside formn.

λ_{\max} 257 nm (pH 2). λ_{\max} 259 (€ 15400) (H₂O) (as di-K salt). λ_{\max} 257 (dil. acid) (pH2).

Roseman, S. *et al.*, *J.A.C.S.*, 1961, **83**, 659Murata, T. *et al.*, *Arch. Biochem. Biophys.*, 1964, **106**, 371 (*isol, synth*)Frydman, R.B. *et al.*, *Biochim. Biophys. Acta*, 1966, **113**, 620 (*occur*)Krauss, G. *et al.*, *J. Chromatogr.*, 1973, **76**, 248 (*chromatog*)Sarma, R.H. *et al.*, *FEBS Lett.*, 1973, **36**, 157 (*nmr*)Lee, C.H. *et al.*, *Biochemistry*, 1976, **15**, 697 (*conformn, pmr*)**Adenosine diphosphate ribose** A-37

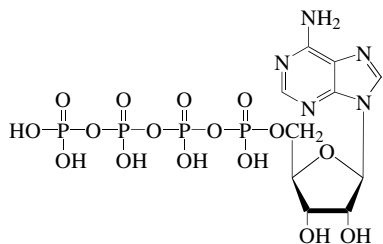
Adenosine 5'-(trihydrogen diphosphate) (5'→5') ester with D-ribose, 9CI. ADPR [20762-30-5]

C₁₅H₂₃N₅O₁₄P₂ 559.319

Prod. of enzymic or chemical hydrol. of diphosphopyridine nucleotide. Inhibits coenzyme action of diphosphopyridine nucleotide.

Rosenberg, S. *et al.*, *J. Biol. Chem.*, 1954, **211**, 763 (*isol*)Blumenstein, M. *et al.*, *Biochemistry*, 1972, **11**, 1643 (*cmr, nmr*)Sarma, R.H. *et al.*, *J.A.C.S.*, 1973, **95**, 7470 (*conformn, pmr*)Abdallah, M.A. *et al.*, *Eur. J. Biochem.*, 1975, **50**, 475 (*cryst struct*)**Adenosine 5'-tetraphosphate, 8CI** A-38

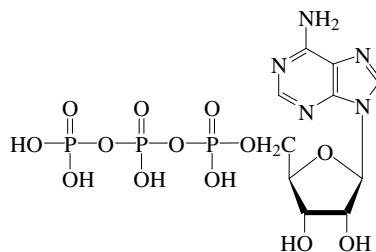
Adenosine 5'-(pentahydrogen tetraphosphate), 9CI [1062-98-2]

C₁₀H₁₇N₅O₁₆P₄ 587.163

No phys. props. reported.

Feldkaus, P. *et al.*, *Eur. J. Biochem.*, 1975, **57**, 197-204 (*synth*)**Adenosine triphosphate** A-39

Adenosine 5'-(tetrahydrogen triphosphate), 9CI, 8CI. ATP. Adenosine 5'-triphosphoric acid. Adenylpyrophosphoric acid. Atriphos. Cardenosine. Fosfobion. Striadyne [56-65-5]

C₁₀H₁₆N₅O₁₃P₃ 507.183

Isol. from muscle extracts. Mammalian skeletal muscle at rest contains 0.3-0.4 g of ATP/100 g. Isol. from various plant sources. Important metabolic coenzyme; fundamental role in biological energy transformations. Used in the treatment of supraventricular tachycardia. Sol. H₂O. Mp 143-145° dec. $[\alpha]_D^{25}$ -26.7 (c, 3.1 in H₂O). pK_{a4} 4.06; pK_{a5} 6.53 (25°). Component of numerous preparations. λ_{\max} 259 (€ 15400) (H₂O).

LD₅₀ (rat, ipr) 200mg/kg. AU7416000

Di-Na salt: Adenosine triphosphate disodium, JAN. Adetphos. Trinosin [987-65-5]

[51963-61-2]

Inhibits enzymatic browning of apples, potatoes etc. Mp 188-190° dec. (hydrate).

Ca salt: [15866-84-9]

[71937-66-1]

Solid.

Triacridine salt: Mp 208-209° dec.

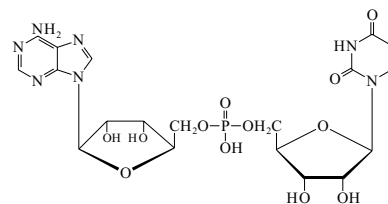
6N-Benzoyl:

C₁₇H₂₀N₅O₁₄P₃ 611.292 λ_{\max} 259 (€ 19400) (H₂O) (as Na salt).

[1476-84-2, 2964-07-0, 22887-44-1, 37866-02-7, 56842-80-9]

Biochem. Prep., 1949, **1**, 5 (*isol*)Baddiley, J. *et al.*, *J.C.S.*, 1949, 582 (*synth*)Michelson, A.M. *et al.*, *The Chemistry of Nucleosides and Nucleotides*, Academic Press, N.Y. and London, 1963, 153 (*rev*)Feldman, I. *et al.*, *J.A.C.S.*, 1968, **90**, 7329 (*pmr*)Kennard, O. *et al.*, *Nature (London)*, 1970, **225**, 333 (*cryst struct*)Dorman, D.E. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1970, **65**, 19 (*cmr*)Hampton, A. *et al.*, *Biochemistry*, 1975, **14**, 5438Bock, J.L. *et al.*, *J. Inorg. Biochem.*, 1980, **12**, 119-130 (*synth, Ca salt*)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 58Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, ARQ500**Adenosine 5'-uridine 5'-phosphate** A-40

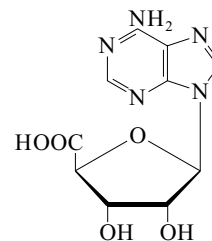
Uridyl-yl-(5',5')-adenosine

C₁₉H₂₄N₇O₁₂P 573.412

Amorph. hygroscopic powder. Dec. at 180-200° without melting. λ_{\max} 259.5 (€ 21 300) (0.01N H₂SO₄), 260.5 nm (20 300) (0.01N NaOH).

Elmore, D.T. *et al.*, *J.C.S.*, 1952, 3681 (*synth*)Michelson, A.M. *et al.*, *CA*, 1962, **56**, 14622b**Adenosine-5'-uronic acid** A-41

1-(6-Amino-9H-purin-9-yl)-1-deoxy-β-D-ribofuranuronic acid, 9CI. Adenosine-5'-carboxylic acid [3415-09-6]

C₁₀H₁₁N₅O₅ 281.227

Coronary vasodilator.

Me ester: [35803-56-6]

C₁₁H₁₃N₅O₅ 295.254

Cryst. (MeOH). Mp 217° (220-222°).

Et ester: [35803-57-7]

C₁₂H₁₅N₅O₅ 309.281Cryst. (EtOH/C₆H₆). Mp 210-211° (218°).

Et ester, hydrochloride: Abbott 40557

[50663-70-2]

Cryst. (EtOH). Mp 207-209°.

Benzyl ester: [35788-20-6]

C₁₇H₁₇N₅O₅ 371.352

Solid. Mp 135-137°.

Amide: Adenosine-5'-carboxamide

[35788-21-7]

C₁₀H₁₂N₆O₄ 280.243Cryst. (EtOH). Mp 245-247°. $[\alpha]_D^{25}$ -29 (c, 1.08 in 1M HCl).

N-Methylamide: [35788-27-3]

C₁₁H₁₄N₆O₄ 294.269

Cryst. (MeOH). Mp 241-243°.

N-Ethylamide: 1-(6-Amino-9H-purin-9-yl)-1-deoxy-N-ethyl-β-D-ribofuranuro-

namide, 9CI. Adenosine-5'-N-ethyluro-

namide. 5'-N-

Ethylcarboxamidedenosine. NECA

[35920-39-9]

C₁₂H₁₆N₆O₄ 308.296

Non-selective adenosine receptor agonist. Cryst. (EtOH or H₂O). Mp 249-250° (245-246°). $[\alpha]_D^{26}$ -16.3 (c, 0.92 in HCl).

N-Ethylamide, 2,3-di-Ac: [58048-26-3]
 $C_{16}H_{20}N_6O_6$ 392.371
 Mp 96-102°. $[\alpha]_D^{26}$ -19 (c, 1.8 in H_2O).

N-Ethylamide, 6-N-cyclopentyl: **Selodenson**, INN. RG 14202
 [110299-05-3]
 $C_{17}H_{24}N_6O_4$ 376.414
 Adenosine A_1 receptor agonist. Solid.
 Mp 95-101°.

N,N-Diethylamide:
 $C_{14}H_{20}N_6O_4$ 336.35
 Cryst. (MeOH). Mp 244-245°.

[41110-76-3]

Stein, H.H. et al., *J. Med. Chem.*, 1973, **16**, 1306 (synth)

Meris, I. et al., *Xenobiotica*, 1973, **3**, 381 (metab)

U.S. Pat., 1974, 3 855 205, (Abbott); CA, **82**, 171372v (synth)

Stein, H.H. et al., *Ann. N.Y. Acad. Sci.*, 1975, **255**, 380 (rev. pharmacol)

Prasad, R.N. et al., *J. Med. Chem.*, 1976, **19**, 1180; 1980, **23**, 313-319 (synth, derivs, bibl)

Raberger, G. et al., *Arch. Int. Pharmacodyn. Ther.*, 1977, **230**, 140-149 (NECA, pharmacol)

Prasad, R.N. et al., *J. Med. Chem.*, 1980, **23**, 313-319 (NECA, synth, pharmacol)

Olsson, R.A. et al., *J. Med. Chem.*, 1986, **29**, 1683-1689 (synth)

Eur. Pat., 1987, 222 330, (Warner-Lambert); CA, **107**, 134632u (selodenson, synth, pharmacol)

Moos, W.H. et al., *Nucleosides Nucleotides*, 1989, **8**, 449-461 (cryst struct, ethylamide)

Bridges, A.J. et al., *Nucleic Acid Chem.*, 1991, **4**, 230-239 (NECA, synth, derivs, pharmacol, selodenson)

Merkel, L.A. et al., *J. Pharmacol. Exp. Ther.*, 1993, **265**, 699-706 (selodenson, pharmacol)

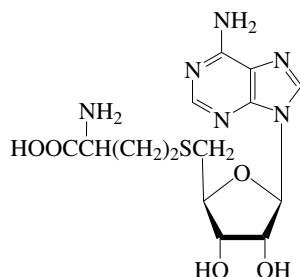
Wnuk, S.F. et al., *J. Med. Chem.*, 1996, **39**, 4162-4166 (benzyl ester, amide derivs, synth, pmr)

Cox, B.F. et al., *J. Cardiovasc. Pharmacol.*, 1997, **29**, 417-426 (selodenson, pharmacol)

Sreekante, G. et al., *Acta Cryst. C*, 1998, **54**, 647-649 (cryst struct)

S-Adenosylhomocysteine A-42

5'-S-(3-Amino-3-carboxypropyl)-5'-thioadenosine, 9CI, 8CI. SAH
 [979-92-0]



$C_{14}H_{20}N_6O_5S$ 384.415
 Methyl transferase inhibitor. Mp 210-211° dec. $[\alpha]_D^{23}$ +44.5 (c, 0.1 in 0.05M HCl).
 λ_{max} 260 (H_2O).

Picrate: Mp 170° dec.

S-Oxide: See Ademetionine, A-26

6N-Me:

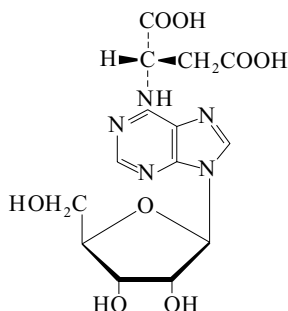
$C_{15}H_{22}N_6O_5S$ 398.442
 Mp 208-210°.

de la Haba, G. et al., *J. Biol. Chem.*, 1959, **234**, 603 (synth)

Duerre, J.A. et al., *Arch. Biochem. Biophys.*, 1962, **96**, 70
 Follmann, H. et al., *Eur. J. Biochem.*, 1974, **47**, 187 (conformn, pmr)
 Borchardt, R.T. et al., *J. Med. Chem.*, 1976, **19**, 1094 (pharmacol)
 Borchardt, R.T. et al., *J.O.C.*, 1976, **41**, 565 (synth)
 Ramalingam, K. et al., *J.O.C.*, 1984, **49**, 1291 (synth)

Adenosylsuccinic acid A-43

N-(9-β-D-Ribofuranosyl-9H-purin-6-yl)-L-aspartic acid, 9CI. 6-Succinamidopurine riboside
 [4542-23-8]



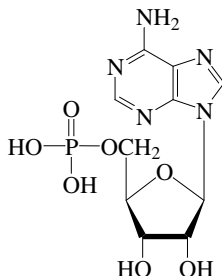
$C_{14}H_{17}N_5O_8$ 383.317
 Found in the mycelium of *Penicillium chrysogenum* and in other microorganisms. Cryst. (EtOH).
 Mp 240-245° dec. $[\alpha]_D^{24}$ -18 (dil. alkali).
 $[\alpha]_D^{24}$ -44.7 (dil. acid).

6'-Phosphate: Adenylosuccinic acid

[19046-78-7]
 $C_{14}H_{18}N_5O_{11}P$ 463.297
 Found in *Penicillium chrysogenum* and *Fusarium nivale*. Intermed. in adenylic acid formn. $[\alpha]_D^{25}$ -3.4 (c, 1.04 in H_2O).
 Lieberman, I. et al., *J. Biol. Chem.*, 1956, **223**, 327
 Ballio, A. et al., *Arch. Biochem. Biophys.*, 1963, **101**, 311 (struct)
 Mansurova, S.E. et al., *Biokhimiya (Moscow)*, 1966, **31**, 1057
 Ballio, A. et al., *Ann. Ist. Super. Sanita*, 1967, **3**, 149; CA, **68**, 59824d (synth)
 Van der Weyden, M.B. et al., *J. Biol. Chem.*, 1974, **249**, 7282

Adenylic acid, 9CI, 8CI A-44

Adenosine phosphate, BAN, INN, USAN.
 Adenosine 5'-phosphate. Adenosine 5'-monophosphate. Adenosine-5'-phosphoric acid. Muscle adenylic acid. AMP. 5'-Adenylic acid. Phosphaden. NSC 20264
 [61-19-8]



$C_{10}H_{14}N_5O_7P$ 347.224
 Nucleoside widely distributed in nature. Isol. from muscle. Has been used as an antiviral agent; nutrient.
 Mp 196-200°. $[\alpha]_D^{20}$ -47.5 (c, 2.0 in 2% NaOH). $[\alpha]_D^{30}$ -26 (c, 2.0 in 10% HCl). pK_{a2} 3.74; pK_{a3} 6.05; pK_{a4} 13.1 (25°). Component of numerous preparations. λ_{max} 259 (ε 15400) (H_2O).

► Human systemic effects when used therapeutically incl. anaphylactoid reactions. Exp. reprod. effects. LD₅₀ (mus, ipr) 4000 mg/kg. AU7480500

Acridine salt: Mp 208°.

2',3'-O-Isopropylidene, 5'-dibenzylphosphate: Mp 97-98°.

5'-Dibenzylphosphate: Mp 234° dec.

[485-84-7, 4578-31-8, 7384-99-8, 13474-03-8, 18422-05-4]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 723D (ir)

Kerr, S.E. et al., *J. Biol. Chem.*, 1941, **139**, 131 (synth)

Baddiley, J. et al., *J.C.S.*, 1947, 648 (synth)

Yathindra, N. et al., *Biopolymers*, 1973, **12**, 297 (conformn, cryst struct)

Sarma, R.H. et al., *J.A.C.S.*, 1974, **96**, 7337 (pmr)

Norton, R.S. et al., *J.A.C.S.*, 1976, **98**, 1007 (cmr)

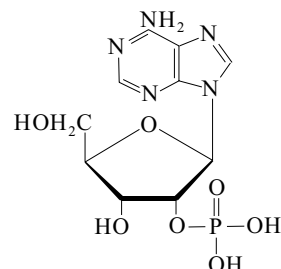
Hampton, A. et al., *J. Med. Chem.*, 1976, **19**, 1029

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1331

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AOA125

2'-Adenylic acid, 9CI, 8CI A-45

Adenosine 2'-(dihydrogen phosphate), 9CI.
 Adenylic acid a. Adenosine-2'-phosphoric acid
 [130-49-4]



$C_{10}H_{14}N_5O_7P$ 347.224
 Isol. from yeast ribonucleic acid. Also from *Penicillium* sp.
 Mp 205-215° (187°) dec. pK_{a1} 0.89; pK_{a2} 3.81; pK_{a3} 6.17 (25°).

Acridine salt: Mp 215° dec.

Dibrucine salt: Mp 165-175°.

3'-O-(3,4-Di-O-phospho-α-D-glucopyranoside): **Adenophostin A**
 [149091-92-9]

$C_{16}H_{26}N_5O_{18}P_3$ 669.325

Prod. by *Penicillium brevicompactum*. Calcium channel activator. Activates inositol triphosphate (Ins(1,4,5)P₃) receptor. Sol. H_2O , DMSO; fairly sol. MeOH, EtOH; poorly sol. Me₂CO, CHCl₃, EtOAc. $[\alpha]_D^{25}$ +28.6 (c, 0.7 in H_2O).

λ_{\max} 256 (ε) (H₂O/HCl) (Derep). λ_{\max} 260 (ε) (H₂O/NaOH) (Derep). λ_{\max} 258 (ε 12000) (H₂O) (Derep). λ_{\max} 256 (ε 13300) (HCl) (Berdy).

3'-O-(6-O-Acetyl-3,4-di-O-phosphono- α -D-glucopyranoside): **Adenophostin B** [149091-93-0]

C₁₈H₂₈N₅O₁₉P₃ 711.362

Prod. by *Penicillium brevicompactum*. Inositol-1,4,5-triphosphate receptor agonist. Sol. H₂O, DMSO; fairly sol. MeOH, EtOH; poorly sol. Me₂CO, EtOAc, CHCl₃. $[\alpha]_D^{25} +33.8$ (c, 0.9 in H₂O). λ_{\max} 256 (ε) (H₂O) (Derep). λ_{\max} 260 (ε) (H₂O/NaOH) (Derep). λ_{\max} 258 (ε 12000) (H₂O) (Derep). λ_{\max} 256 (ε 13300) (HCl) (Berdy).

Brown, D.M. *et al.*, *J.C.S.*, 1952, 44-51 (*synth*)
Brown, D.M. *et al.*, *Nature (London)*, 1953, 172, 1184-1185 (*struct*)

Fromageot, H.P.M. *et al.*, *Tetrahedron*, 1966, 22, 705-710 (*pmr*)

Kotowycz, G. *et al.*, *Biochemistry*, 1973, 12, 517-520 (*cmr*)

Son, T. *et al.*, *Biochim. Biophys. Acta*, 1974, 335, 1-13 (*conformn*, *pmr*)

Takahashi, M. *et al.*, *J. Antibiot.*, 1993, 46, 1643-1647; 1994, 47, 95-100 (*Adenophostins A, B*)

Hotoda, H. *et al.*, *Tet. Lett.*, 1995, 36, 5037-5040 (*Adenophostin A*, *synth*)

Van Straten, N.C.R. *et al.*, *Tetrahedron*, 1997, 53, 6509-6522 (*Adenophostin A*, *synth*)

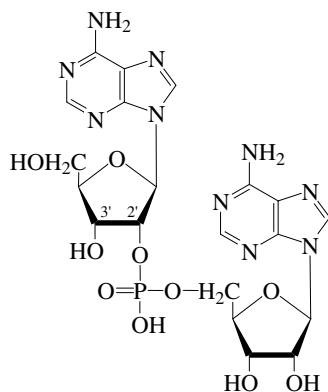
Bird, G.S. *et al.*, *J. Biol. Chem.*, 1999, 274, 20643-20649 (*Adenophostin A*, *pharmacol*)

Marwood, R.D. *et al.*, *J.C.S. Perkin 1*, 2000, 1935-1947 (*Adenophostin A*, *synth*)

Parekh, A.B. *et al.*, *Biochem. J.*, 2002, 361, 133-141 (*Adenophostin A*, *pharmacol*)

Adenylyl-(2' → 5')-adenosine, 9CI

[2273-76-9]



C₂₀H₂₅N₁₀O₁₀P 596.452

No phys. props. reported. λ_{\max} 260 (pH 7.1).

Mizuno, Y. *et al.*, *J.A.C.S.*, 1966, 88, 863-864 (*synth*)

Doornbos, J. *et al.*, *Eur. J. Biochem.*, 1981, 116, 403-412 (*pmr*, *ord*)

Kvasyuk, E.I. *et al.*, *Zh. Org. Khim.*, 1990, 26, 1229-1236; *J. Org. Chem. USSR (Engl. Transl.)*, 1990, 26, 1063-1068 (*synth*, *uv*, *pmr*)

Suzuki, H. *et al.*, *Biomed. Chromatogr.*, 1992, 6, 35-38 (*hplc*)

Sawai, H. *et al.*, *Bioorg. Med. Chem. Lett.*, 1996, 6, 1785-1790 (*synth*, *conformn*)

Adenylyl-(3' → 5')-adenosine, 9CI

[2391-46-0]

C₂₀H₂₅N₁₀O₁₀P 596.452
No phys. props. reported. λ_{\max} 259 (log ε 4.41) (H₂O, pH 7.0).

Mizuno, Y. *et al.*, *J.A.C.S.*, 1966, 88, 863-864 (*synth*)

Annamalai, A. *et al.*, *J.A.C.S.*, 1987, 109, 3125-3132 (*cd*)

Kvasyuk, E.I. *et al.*, *Zh. Org. Khim.*, 1990, 26, 1229-1236; *J. Org. Chem. USSR (Engl. Transl.)*, 1990, 26, 1063-1068 (*synth*, *uv*, *pmr*)

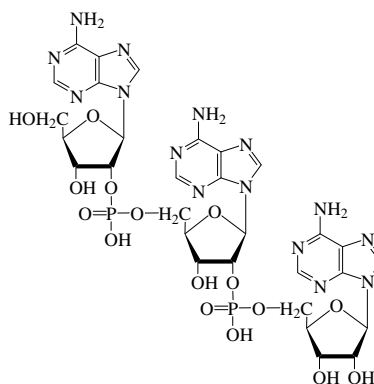
Yashima, E. *et al.*, *J. Chromatogr.*, 1992, 603, 111-119 (*hplc*)

Sekine, M. *et al.*, *J.O.C.*, 1993, 58, 3204-3208 (*synth*)

McNeff, C. *et al.*, *Anal. Chem.*, 1995, 67, 2350-2353 (*hplc*)

Adenylyl-(2' → 5')-adenylyl-(2' → 5')-adenosine, 9CI

[70062-83-8]



C₃₀H₃₇N₁₅O₁₆P₂ 925.661

No phys. props. reported. λ_{\max} 259 (log ε 4.55) (phosphate buffer pH 7).

Charubala, R. *et al.*, *Tet. Lett.*, 1980, 21, 1933-1936 (*synth*, *pmr*, *cd*)

Doornbos, J. *et al.*, *Eur. J. Biochem.*, 1981, 116, 403-412 (*pmr*, *conformn*)

White, J.C. *et al.*, *Biochemistry*, 1987, 26, 7737-7744 (*Raman*)

Kvasyuk, E.I. *et al.*, *Synthesis*, 1987, 535-541 (*synth*, *pmr*)

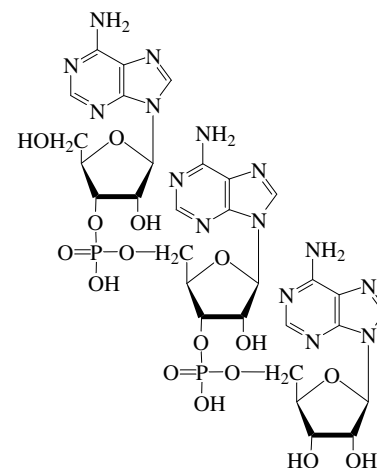
Suzuki, H. *et al.*, *Biomed. Chromatogr.*, 1992, 6, 35-38 (*hplc*)

Foldesi, A. *et al.*, *J. Biochem. Biophys. Methods*, 1993, 26, 1-26 (*pmr*)

Sawai, H. *et al.*, *Bioorg. Med. Chem. Lett.*, 1996, 6, 1785-1790 (*synth*)

Adenylyl-(3' → 5')-adenylyl-(3' → 5')-adenosine, 9CI

[917-44-2]



C₃₀H₃₇N₁₅O₁₆P₂ 925.661

No phys. props. reported.

Lohrmann, R. *et al.*, *J.A.C.S.*, 1966, 88, 819-829 (*synth*)

Yoshida, S. *et al.*, *Chem. Pharm. Bull.*, 1986, 34, 2456-2461 (*synth*, *cd*)

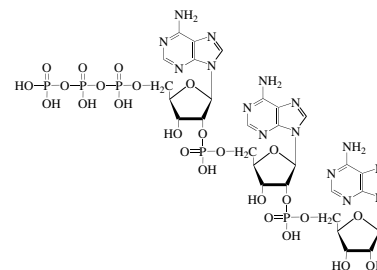
White, J.C. *et al.*, *Biochemistry*, 1987, 26, 7737-7744 (*Raman*)

Ozaki, H. *et al.*, *Chem. Lett.*, 1990, 959-962 (*synth*)

Sawai, H. *et al.*, *Bioorg. Med. Chem. Lett.*, 1996, 6, 1785-1790 (*synth*)

Adenylyl-(5' → 2')-adenylyl-(5' → 2')-adenosine 5'-(tetrahydrogen triphosphate), 9CI

[65954-93-0]



C₃₀H₄₀N₁₅O₂₅P₅ 1165.601

No phys. props. reported. λ_{\max} 259 (Et₄NH⁺HCO₃⁻ buffer pH 7.6).

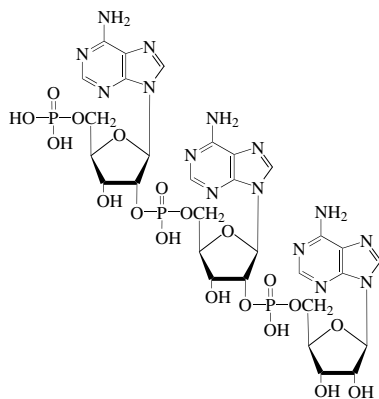
Jones, S.S. *et al.*, *J.A.C.S.*, 1979, 101, 7399-7401 (*synth*, *pmr*, *P-31 nmr*, *uv*)

Jamouille, J.-C. *et al.*, *Biochemistry*, 1987, 26, 376-383 (*synth*, *pmr*, *P-31 nmr*)

White, J.C. *et al.*, *Biochemistry*, 1987, 26, 7737-7744 (*Raman*)

Noyori, R. *et al.*, *Aust. J. Chem.*, 1992, 45, 205-225 (*synth*, *bibl*)

Adenylyl-(5' → 2')-adenylyl-(5' → 2')-5'-adenylic acid
p5'A2'p5'A2'p5'A
 [61172-40-5]



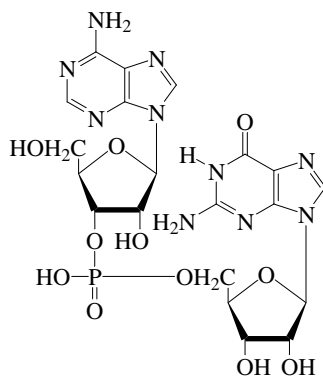
C₃₀H₃₈N₁₅O₁₉P₃ 1005.641

den Hartog, J.A.J. *et al.*, *J.O.C.*, 1981, **46**, 2242-2251 (*synth*, *P-31 nmr*)

Noyori, R. *et al.*, *Aust. J. Chem.*, 1992, **45**, 205-225 (*synth*)

Adenylyl-(3' → 5')-guanosine, 9CI

ApG
 [3352-23-6]



C₂₀H₂₅N₁₀O₁₁P 612.452

[21027-47-4]

Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**, 29-38 (*ord*)

Brimacombe, R. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2074-2086 (*synth*, *uv*)

Takaku, H. *et al.*, *Chem. Lett.*, 1979, 811-814 (*synth*)

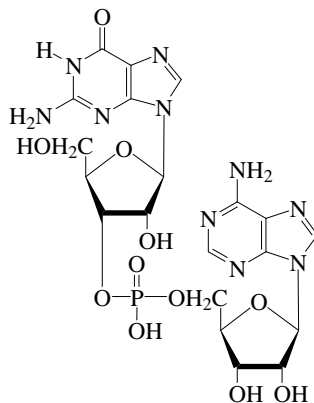
Heikkilä, J. *et al.*, *Acta Chem. Scand., Ser. B*, 1985, **39**, 657-659 (*synth*, *pmr*, *P-31 nmr*)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (*ms*)

Damha, M.J. *et al.*, *Biochemistry*, 1988, **27**, 6403-6416 (*pmr*, *cmr*, *cd*, *uv*, *conformn*)

Adenylyl-(5' → 3')-guanosine, 9CI

Guanylyl-(3' → 5')-adenosine. GpA
 [6554-00-3]
 [102029-53-8]



C₂₀H₂₅N₁₀O₁₁P 612.452

Sato-Asano, K. *et al.*, *Biochim. Biophys. Acta*, 1958, **29**, 655-656 (*synth*)

Dimroth, K. *et al.*, *Annalen*, 1959, **620**, 109-122 (*uv*)

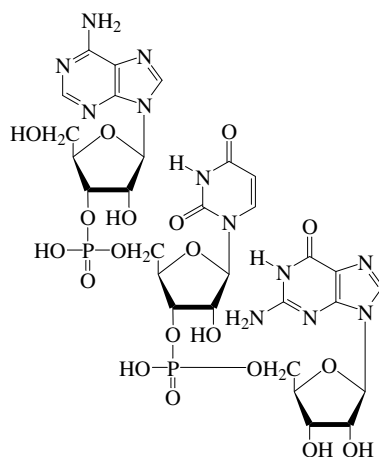
Michelson, A.M. *et al.*, *J.C.S.*, 1959, 3655-3669 (*synth*, *uv*)

Tomasz, J. *et al.*, *Nucleic Acids Res.*, 1978, **5**, 2945-2957 (*synth*)

Seuvre, A.M. *et al.*, *Carbohydr. Res.*, 1987, **169**, 83-103 (*ir*, *Raman*)

Adenylyl-(3' → 5')-uridylyl-(3' → 5')-guanosine, 9CI

ApUpG
 [3494-35-7]



C₂₉H₃₆N₁₂O₁₉P₂ 918.62

Lohrmann, R. *et al.*, *J.A.C.S.*, 1966, **88**, 819-829 (*synth*)

Bell, R.A. *et al.*, *Biopolymers*, 1981, **20**, 1383-1398 (*synth*, *pmr*)

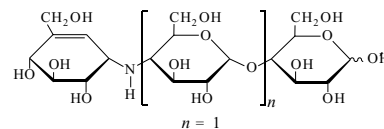
Stone, M.P. *et al.*, *Biophys. Chem.*, 1985, **23**, 129-138 (*synth*, *cmr*)

Fujii, M. *et al.*, *Chem. Pharm. Bull.*, 1987, **35**, 3066-3069 (*synth*)

A-53

Adiposin 1

TAI-2. TAI-B. Antibiotic A2396 1-0.
A2396 1-0
 [83764-11-8]



C₁₉H₃₃N₁₄O₁₄ 499.468

Aminocyclitol antibiotic. Prod. by *Streptomyces calvus* and other *Streptomyces* spp. Active against gram-positive and -negative bacteria and phytopathogenic fungi. α-Amylase inhibitor.

Powder + 2H₂O.

Mp 138-143° dec. [α]_D²² +139 (c, 1 in H₂O). pK_a 5.1. Adiposin is also the name of a hormone.

► LZ7150300

[74870-01-2]

Japan. Pat., 1980, 80 64 509; 80 64 524; *CA*, **93**, 166097; **94**, 45580 (*isol*)

Namiki, S. *et al.*, *J. Antibiot.*, 1982, **35**, 1156; 1167; 1234

Kangouri, K. *et al.*, *J. Antibiot.*, 1982, **35**, 1160
 Ogawa, S. *et al.*, *Carbohydr. Res.*, 1985, **141**, 29 (*synth*)

Adiposin 2

A-56

TAI-1. TAI-A. Antibiotic A2396-2-0.
A2396 2-0

[83764-12-9]

As Adiposin 1, A-55 with
 n = 2

C₂₅H₄₃N₁₉O₁₉ 661.61

Prod. by *Streptomyces calvus* and other *Streptomyces* spp. Active against gram-positive and -negative bacteria and phytopathogenic fungi. α-Amylase inhibitor. Powder + 2H₂O. Sol. H₂O, DMF, MeOH, DMSO, Py; poorly sol. hexane.

Mp 157-162° dec. [α]_D²² +163 (c, 1 in H₂O). pK_a 5.

► LD₅₀ (mus, ivn) 10000-30000 mg/kg.
 LZ7150500

Dihydro: Dihydroadiposin II

C₂₅H₄₅N₁₉ 663.626

Prod. by *Streptomyces castaneoglobisporus*. α-Amylase inhibitor. Sol. H₂O.

[76090-51-2]

Japan. Pat., 1980, 80 64 509; 80 64 524; *CA*, **93**, 166097; **94**, 4550 (*isol*)

Namiki, S. *et al.*, *J. Antibiot.*, 1982, **35**, 1156; 1167; 1234

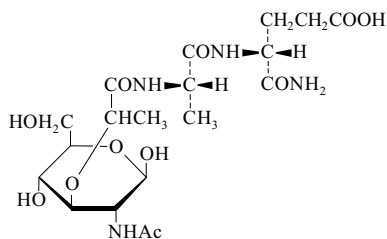
Kangouri, K. *et al.*, *J. Antibiot.*, 1982, **35**, 1160
 Shibata, Y. *et al.*, *Carbohydr. Res.*, 1989, **189**, 309 (*synth*)

Japan. Pat., 1990, 90 92 267; *CA*, **113**, 189796e (*Dihydroadiposin II*)

Adjuvant peptide

A-57

N²-[N-(N-Acetylmuramoyl)-L-alanyl]-D- α -glutamine, 9CI. N-Acetylmuramyl-L-alanyl-D-isoglutamine. Muramyl dipeptide. MDP
[53678-77-6]



C₁₉H₃₂N₄O₁₁ 492.482

Identified as the minimum structural constit. of the mycobacterial cell wall component of Freund's complete adjuvant which is necessary for adjuvant activity. It and many of its analogues have been investigated as adjuvants in the immunisation of animals. Immunomodulator. Somnogenic and pyrogenic agent. Mp 190-194°. [α]_D²⁵ +44 (c, 1 in AcOH).

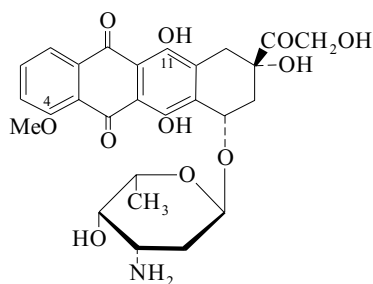
► MA2275260

- LeFrancier, P. et al., *Int. J. Pept. Protein Res.*, 1977, **9**, 249; 1978, **11**, 289 (synth)
Nebelin, E. et al., *FEBS Lett.*, 1979, **107**, 254 (ms)
LeFrancier, P. et al., *Prog. Chem. Org. Nat. Prod.*, 1981, **40**, 1 (rev)
Chapman, B.E. et al., *Aust. J. Chem.*, 1982, **35**, 489 (pmr)
Fogler, W.E. et al., *Immunol. Ser.*, 1984, **25**, 499 (rev)
Masek, K. et al., *Int. J. Immunother.*, 1985, **1**, 177 (rev, pharmacol)
Ivanov, V.T. et al., *Pure Appl. Chem.*, 1987, **59**, 317 (synth, pharmacol)
LeFrancier, P. et al., *Pure Appl. Chem.*, 1987, **59**, 449 (rev, pharmacol)
Misra, P.K. et al., *J. Chem. Res., Synop.*, 1988, 374 (bibl, synth)
Boulanger, Y. et al., *Tetrahedron*, 1992, **48**, 8855 (bibl, conformn, pmr)

Adriamycin, 8CI

A-58

Doxorubicin, BAN, INN, USAN. 14-Hydroxydaunomycin. Adriacin. Adriblastin. Caelyx. Dox. Doxil. Farmiblastina. FI 106. K 1039. KW 125. NSC 123127
[23214-92-8]



C₂₇H₂₉NO₁₁ 543.526

Anthracycline antibiotic. Numbering scheme and numbering of derivs. is variable. Metab. of *Streptomyces peuce- tius*. Antineoplastic antibiotic; shows

anti-HIV activity. Used in the treatment of ovarian cancer and AIDS related Kaposi sarcoma. Approved 1995. Sol. MeOH, acids, CHCl₃; poorly sol. H₂O, hexane. Log P -1.45 (uncertain value) (calc). Acid hydrol. affords Daunosa- mine and Adriamycinone. λ_{\max} 234 (€ 40700); 252 (€ 27700); 290 (€ 9400); 480 (€ 13300); 500 (€ 13300); 530 (€ 7200) (pH 4 MeOH) (Derep). λ_{\max} 237 (€ 26700); 250 (€ 32000); 287 (€ 6000); 362 (€ 4850); 560 (€ 13900); 597 (€ 12900) (MeOH/NaOH) (Derep). λ_{\max} 234 (€ 40700); 252 (€ 27700); 290 (€ 9400); 480 (€ 13300); 500 (€ 13300); 530 (€ 7200) (pH 4 MeOH) (Derep). λ_{\max} 233 (E1%/1cm 658); 253 (E1%/1cm 440); 290 (E1%/1cm 145); 477 (E1%/1cm 225); 495 (E1%/1cm 223); 530 (E1%/1cm 124) (MeOH) (Berdy).

- Local and systemic adverse effects reported when used therapeutically incl. bone-marrow depression, alopecia, gas- trointestinal effects, and dose-related car- diotoxicity. Probable human carcinogen. LD₅₀ (mus, orl) 570 mg/kg. LD₅₀ (mus, ivn) approx. 9 mg/kg. Exp. carcinogenic, reprod. and teratogenic effects. AV9800000

Hydrochloride: Doxorubicin hydrochloride,**JAN, USAN**

[25316-40-9]

Orange-red needles. Mp 204-205° dec.

[α]_D²⁰ +248 (c, 0.1 in MeOH).

- Systemic adverse effects reported when used therapeutically incl. nephrotoxic, cardiotoxic and pulmonary effects. LD₅₀ (mus, orl) 698 mg/kg. LD₅₀ (mus, ivn) 1.25 mg/kg. Exp. reprod. effects. QI9295900
N-L-Leucyl: See Leurubicin in *The Combined Chemical Dictionary*.

O¹⁴-Pentanoyl, N-trifluoroacetyl: See Val- rubicin in *The Combined Chemical Dictionary*.

13S-Alcohol: **Adriamycinol. 13-Dihydroa- driamycin. Deoxorubicinol. Doxorubici- nol**

[54193-28-1]

[39061-20-6]

C₂₇H₃₁NO₁₁ 545.542

Prod. by *Streptomyces peuce- tius-caesius*. Metab. of adriamycin. Cytotoxic agent. Red powder.

4'-Epimer: **Epirubicin, BAN, INN. Ellence.**

NSC 256942. IMI 28

[56420-45-2]

C₂₇H₂₉NO₁₁ 543.526

Approved 1999.

Antineoplastic antibiotic. Used in the treatment of breast cancer. Log P -1.45 (uncertain value) (calc). Apparently in- correctly described as β -anomer in CAS.

- Adverse effects similar to Adriamycin when used therapeutically. LD₅₀ (rat, ivn) 14.3 mg/kg. QI9295840

4'-Epimer, hydrochloride: **Epirubicin hy-**

drochloride, USAN. Farmorubicin.**Pharmorubicin**

[56390-09-1]

Launched 1984.

Red cryst. Mp 185° (dec.). [α]_D +274 (c, 0.01 in MeOH).

► QI9295750

4'-Deoxy: **Esorubicin, INN. 4'-Deoxydox- orubicin. IMI 58. NSC 267469**

[63521-85-7]

C₂₇H₂₉NO₁₀ 527.527

Antineoplastic agent. Mp 163° (as hydrochloride). [α]_D²⁰ +320 (c, 0.05 in MeOH). Log P -0.99 (uncertain value) (calc).

► QI9295700

4'-Deoxy, 4'-iodo: 4'-Deoxy-4'-iodoadria- mycin. 4'-Deoxy-4'-iododoxorubicin

[83997-75-5]

[83943-83-3]

C₂₇H₂₈INO₁₀ 653.423

Analogue of Adriamycin exhibiting antitumour activity. Monohydrate (as hydrochloride). Mp 137-138° (hydrochloride monohydrate). [α]_D²⁰ +160 (c, 0.05 in MeOH).

11-Deoxy: **11-Deoxydoxorubicin**

[71800-89-0]

[73952-94-0]

C₂₇H₂₉NO₁₀ 527.527Isol. from *Micromonospora* sp. nov.

Antibacterial, cytotoxic and antileukaemic. Sol. MeOH, CHCl₃, Py, acids, dioxan; poorly sol. Et₂O, hexane, H₂O.

Mp 171-173° dec. (as hydrochloride). [α]_D²³ +111 (c, 0.2 in MeOH). Log P -0.91 (uncertain value) (calc). λ_{\max} 228

(€ 36400); 260 (€ 23700); 418 (€ 10900)

(MeOH) (Derep). λ_{\max} 228 (E1%/1cm

645); 260 (E1%/1cm 420); 418 (E1%/1cm

193) (MeOH) (Berdy). λ_{\max} 235 (E1%/1cm

600); 262 (E1%/1cm 406); 426 (E1%/1cm

161) (pH 7 buffer) (Berdy). λ_{\max} 510 (E1%/

1cm 120) (NaOH) (Berdy).

11-Deoxy, O⁴-de-Me: **4-O-Demethyl-11- deoxydoxorubicin**

[81382-05-0]

C₂₆H₂₇NO₁₀ 513.5Isol. from *Streptomyces peuce- tius* var.

aureus. Antibacterial, cytotoxic and anti- neoplastic substance. Sol. MeOH, CHCl₃, Py, dioxan, acids; poorly sol. Et₂O, H₂O, hexane.

Mp 208-210° dec. (as hydrochloride). [α]_D²⁵ +130 (c, 0.1 in MeOH) (hydrochloride).

Log P -1.39 (uncertain value) (calc). λ_{\max}

228 (E1%/1cm 650); 258 (E1%/1cm 435);

430 (E1%/1cm 217) (MeOH) (Berdy). λ_{\max}

520 (E1%/1cm 152) (MeOH-NaOH)

(Berdy).

Demethoxy: **Medorubicin, INN. 4-De-**

methoxyadriamycin. NSC 256438

[64314-52-9]

[64363-63-9]

C₂₆H₂₇NO₁₀ 513.5

Antineoplastic agent. Orange cryst. (as

hydrochloride). Mp 226-229° dec.

(hydrochloride). [α]_D²⁰ +190 (c, 0.042 in

MeOH). Log P -1.39 (uncertain value)

(calc).

► QI9329300

4'-O-(Tetrahydropyran-2-yl): 4'-O-(Tetra- hydropyran-2-yl)adriamycin. **Pirarubicin,**

INN. Theprubicin. THP-ADM. THP-**ADR**

[72496-41-4]

C₃₂H₃₇NO₁₂ 627.644

Launched 1988.

Antineoplastic agent. Mp 188-192° dec. $[\alpha]_D^{25} +175$ (c, 0.2 in CHCl₃). Log P -0.06 (uncertain value) (calc).

- ▶ Adverse effects similar to Adriamycin when used therapeutically. LD₅₀ (mus, ivn) approx. 28 mg/kg. QI9296000

3'-Deamino, 3'-(3-cyanomorpholinyl): 3'-Deamino-3'-(3-cyanomorpholino)doxorubicin. A 489. MRA-CN. NSC 357704 [88254-07-3]

C₃₂H₃₄N₂O₁₂ 638.627

Antineoplastic agent. Log P -1.32 (calc). Mixt. of diastereoisomers.

- ▶ Exp. carcinogen. QI9405000

Aglycone: 7,8,9,10-Tetrahydro-6,8,10,11-tetrahydroxy-8-(hydroxyacetyl)-1-methoxy-5,12-naphthacenedione, 9CI. Adriamycinone. Doxorubicinone [24385-10-2]

C₂₁H₁₈O₉ 414.368

Mp 223-224°. $[\alpha]_D^{23} +188$ (c, 0.1 in dioxan).

Aglycone, penta-Ac: Mp 166°. $[\alpha]_D^{23} -94$ (c, 0.1 in CHCl₃).

De(glycosyloxy): Deoxyadriamycinone [38554-25-5]

C₂₁H₁₈O₈ 398.368

Red cryst. Numbering schemes vary. CAS no. refers to the R-enantiomer which corresp. to the abs. config. of natural Adriamycin.

N-Benzyl, 14-pentanoyl: N-Benzyladriamycin-14-valerate. AD 198 [98983-21-2]

C₃₉H₄₃NO₁₂ 717.768

Antineoplastic agent.

BR96 - Doxorubicin immunoconjugate:

SGN 15. BMS 182248. BR96 - DOX Chimeric human/mouse monoclonal antibody linked to 8 doxorubicin mols. Antibody directed against Lewis-Y antigen.

[63950-06-1]

Arcamone, F. et al., *Tet. Lett.*, 1969, 1007

(struct, ir, uv, ms, nmr)

Arcamone, F. et al., *J. Med. Chem.*, 1975, **18**, 703 (Epirubicin)

Takanishi, T. et al., *Drug Metab. Dispos.*, 1976, **4**, 79-87 (Actinomycinol)

IARC Monog., 1976, **10**, 43; Suppl. 6, 35; Suppl. 7, 82 (rev, tox)

Smith, T.H. et al., *J.A.C.S.*, 1976, **98**, 1969

(synth)

Arnone, A. et al., *Tet. Lett.*, 1976, 3349 (cmr)

Ger. Pat., 1977, 2 642 837; CA, **87**, 68589

(Esoxubicin)

Smith, T.H. et al., *J.O.C.*, 1977, **42**, 3653-3660

(synth, ir, pmr, ms, Deoxyadriamycinone)

Arcamone, F. et al., *Experientia*, 1978, **34**, 1255

(Medorubicin)

Suzuki, F. et al., *J.A.C.S.*, 1978, **100**, 2272

(synth)

Swenton, J.S. et al., *J.A.C.S.*, 1978, **100**, 6188

(synth, ir, uv, ms, nmr)

Umezawa, H. et al., *J. Antibiot.*, 1979, **32**, 1082;

1984, **37**, 1094 (Pirarubicin, synth, props, abs config)

Vigevani, A. et al., *Anal. Profiles Drug Subst.*, 1980, **9**, 245 (rev, synth, anal)

Cassinelli, G. et al., *J. Antibiot.*, 1980, **33**, 1468;

1982, **35**, 176 (derivs)

Cassinelli, G. et al., *J.A.C.S.*, 1980, **102**, 1462

(derivs)

Gioia, B. et al., *Biomed. Mass Spectrom.*, 1984, **11**, 35 (ms, derivs)

White, R.J. et al., *Drugs Pharm. Sci.*, 1984, **22**, 569 (rev)

Salmon, S.E. et al., *J. Clin. Oncol.*, 1984, **2**, 282 (Esoxubicin)

Barranco, S.C. et al., *Pharmacol. Ther.*, 1984, **24**, 303 (rev, pharmacol)

Brown, J.R. et al., *Prog. Med. Chem.*, 1984, **21**, 169 (rev)

Iguchi, H. et al., *Cancer Chemother.*

Pharmacol., 1985, **15**, 132 (Pirarubicin)

Traganos, F. et al., *Cancer Res.*, 1985, **45**, 6273-6279; 1991, **51**, 3682-3689 (AD 198)

Acton, E.M. et al., *Drugs Exp. Clin. Res.*, 1985, **11**, 1 (A 489, rev)

Castegnaro, M. et al., *IARC Sci. Publ.*, 1985, **49**, (disposal)

Kimura, Y. et al., *Bull. Chem. Soc. Jpn.*, 1986, **59**, 423 (Medorubicin)

Acton, E.M. et al., *J. Med. Chem.*, 1986, **29**, 1225 (A 489, synth)

U.S. Pat., 1986, 4 610 977, (Univ. of Tennessee); CA, **105**, 209343v (AD 198)

Allman, T. et al., *Can. J. Chem.*, 1987, **65**, 2405 (pmr, conformn)

Barbieri, B. et al., *Cancer Res.*, 1987, **47**, 4001-4006 (4'-Deoxy-4'-iodoadriamycin)

Kajii, K. et al., *Iyakuken Kenkyu*, 1987, **18**, 704 (Pirarubicin, uv, ir, pmr, struct)

Nakashima, H. et al., *J. Antibiot.*, 1987, 396 (anti-HIV activity)

Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 7522

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 475; 477; 497

Barthwal, R. et al., *J. Mol. Struct.*, 1994, **327**, 201 (pmr, conformn)

Harstick, A. et al., *Anti-Cancer Drugs*, 1995, **6**, 681-685 (AD 198)

Coukell, A.J. et al., *Drugs*, 1997, **53**, 453-482; 520-538 (Epirubicin, Doxorubicin, pharmacol, rev)

Tolcher, A.W. et al., *J. Clin. Oncol.*, 1999, **17**, 478-484 (SGN 15, pharmacol)

Smith, S. et al., *Curr. Opin. Mol. Ther.*, 2001, **3**, 295-302 (SGN 15, rev)

Rho, Y.S. et al., *Synth. Commun.*, 2004, **34**, 3497-3511 (aglycone, synth)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AES750; EBB100; HKA300; COP765; DAM800

Agar

A-59

Agar-agar. Gum agar. Gelose. Japan agar. Bengal isinglass. Ceylon isinglass. Chinese isinglass. Japan isinglass. FEMA 2012. E406

[9002-18-0]

See also Agarose, A-61. Consists of a mixt. of 2 polysaccharides, Agarose A-61 and Agarpectin, which has essentially the same struct. except that a variable proportion of the sugars in the polymer are replaced by 4,6-O-(1-carboxyethylidene)galactose or by sulfated or methylated sugar residues such as to retain the alternating sequence of 3-linked β-D- and 4-linked α-L- units. Mucilaginous substance extracted from red marine algae (Rhodophyceae); *Gelidiella acerosa*, various *Gelidium* spp. *Gracilaria*

confervoides, *Pterocladia capillacea* and *Pterocladia lucida* are used in various parts of the world. There is some species variation in gel structure and strength. An important thickener, stabiliser and gelling agent in the food industry. Also used as protective colloid in photo-metric detn. of Sn, Mg, Si, SO₄²⁻. Solid medium for the cultivation of bacteria. Laxative-cathartic. Strips or fine powder. Sl. sol. in hot H₂O.

▶ AW7950000

Clark, R.E. et al., *Analyst (London)*, 1937, **62**, 661 (detn, Sn)

Bogan, E.J. et al., *Ind. Eng. Chem., Anal. Ed.*, 1942, **14**, 849 (detn, SO₄²⁻)

Welcher, F.J. et al., *Organic Analytical Reagents*, Van Nostrand, New York, 1948, **4**, (use)

BeMiller, J.N. et al., *Methods Carbohydr. Chem.*, 1965, **5**, 65 (purifn)

Duckworth, M. et al., *Carbohydr. Res.*, 1971, **18**, 1 (struct, bibl)

Davidson, R.L. et al., *Handb. Water-Soluble Gums Resins*, McGraw-Hill, N.Y., 1980, 7/1 (rev)

Glickmann, M. et al., *Food Hydrocolloids*, CRC Press, Boca Raton, Florida, 1983, **2**, 73 (rev)

Rochas, C. et al., *Carbohydr. Res.*, 1994, **253**, 69 (bibl)

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 53-56 (use, props)

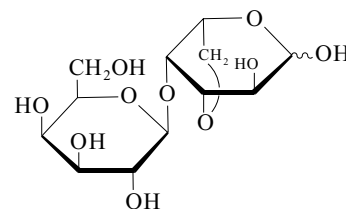
Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 1470

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AEX250

Agarobiose, 9CI

A-60

3,6-Anhydro-4-O-β-D-galactopyranosyl-L-galactose, 9CI. β-D-Galactopyranosyl-(1→4)-3,6-anhydro-L-galactose [5627-25-8]



C₁₂H₂₀O₁₀ 324.284

Obt. from agar by partial acid hydrol. and from the polysaccharide of the red seaweed *Gloiopeltis furcata*. Amorph. solid. $[\alpha]_D^{15} -15.9$ (c, 0.82 in H₂O).

Phenylosazone: Mp 220-221°. $[\alpha]_D^{16} +136.2$ → -109.2 (c, 0.42 in 3:2 MeOH/Py).

Di-Me acetal: Mp 162-164°. $[\alpha]_D -36$ (MeOH).

Diethyldithioacetal: Mp 171-172°.

1,2-O-Isopropylidene:

C₁₅H₂₄O₁₀ 364.349

Cryst. (MeOH). Mp 163-165°. $[\alpha]_D^{16} -29.4$ (c, 1.2 in H₂O).

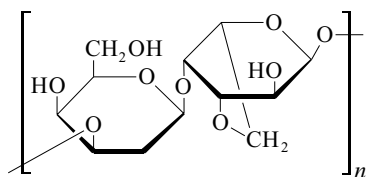
Hirase, S. et al., *Bull. Chem. Soc. Jpn.*, 1958, **31**, 428; 1968, **41**, 626 (isol, synth)

BeMiller, J.N. et al., *Methods Carbohydr. Chem.*, 1965, **5**, 65 (synth)

Agarose

Neutral agarose. Indubiose A4
[9012-36-6]

[9036-61-7]



See also Agar, A-59. Composed of repeating units of β -D-Galp (1 \rightarrow 3), 3,6-anhydro- α -L-Galp (1 \rightarrow 3). Has a domain struct. of double helices aggregating into a three-dimensional framework holding water molecules. Isol. from red seaweed agar (*Gelidium* spp.). Gives gels of high strength at low concs. in water which are nearly transparent. These are used commercially as gelling agents and for biomedical applications, e.g. electrophoresis media, chromatography and immunology assays.

There are two other polysaccharides in agar, one is similar to agarose but with 4,6-acetals of pyruvic acid at some of the D-galactose units. The other contains fewer 3,6-anhydro-L-galactose units and is sulfated.

Poly(6-aminohexyl) ether: Agarose (6-aminohexyl)carbamimidate. Sepharose AH

[58856-73-8] Intermed. for the prepn. of affinity chromatog. absorbents. Non-stoichiometric.

Poly(5-carboxypentyl) ether: [55128-01-3]
Intermed. for the prepn. of affinity chromatog. absorbents. Non-stoichiometric.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 201C; 201D (ir)

Hegenauer, J.C. et al., *Biochim. Biophys. Acta*, 1965, **111**, 334 (isol)

BeMiller, J.N. et al., *Methods Carbohydr. Chem.*, 1965, **5**, 65 (purifn)

Percival, E. et al., *The Carbohydrates*, 1970, **2B**, 553

Batey, J.F. et al., *Carbohydr. Res.*, 1975, **43**, 133

Turvey, J.R. et al., *Carbohydr. Res.*, 1976, **49**, 419

Rees, D. et al., *Angew. Chem., Int. Ed.*, 1977, **16**, 214

Taylor, J.L. et al., *J. Chromatogr.*, 1983, **257**, 275-284 (5-carboxypentyl ether)

Szewczyk, A. et al., *Biochim. Biophys. Acta*, 1987, **89**, 252-260 (6-aminohexyl ether)

Kiwitt-Haschemie, K. et al., *Carbohydr. Res.*, 1993, **248**, 267

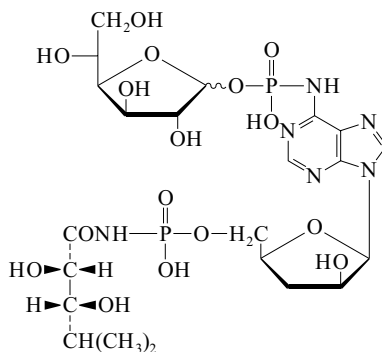
Arndt, E.R. et al., *Carbohydr. Res.*, 1997, **303**, 73-78 (cd, struct)

Gamini, A. et al., *Carbohydr. Res.*, 1997, **304**, 293-302 (pmr, cmr, conformn)

A-61

Agrocin 84, 9CI

[59111-78-3]



$C_{22}H_{36}N_6O_{16}P_2$ 702.504

Nucleotide antibiotic. Isol. from *Agrobacterium radiobacter*. Bacteriocin active against *Agrobacterium tumefaciens*. λ_{max} 270 (€ 19000) (pH 1) (Derep). λ_{max} 264 (€ 19500); 270 (sh) (€ 15000) (pH 7 H₂O) (Derep). λ_{max} 270 (pH 1 buffer) (Berdy).

Heip, J. et al., *Arch. Int. Physiol. Biochim.*, 1975, **83**, 974 (isol)

Roberts, W.P. et al., *Nature (London)*, 1977, **265**, 379 (struct)

Das, P.K. et al., *J. Antibiot.*, 1978, **31**, 490 (props)

Thompson, R.J. et al., *Antimicrob. Agents Chemother.*, 1979, **16**, 293 (isol, props)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Filippov, D. et al., *Tet. Lett.*, 1998, **39**, 4891-4894 (partial synth)

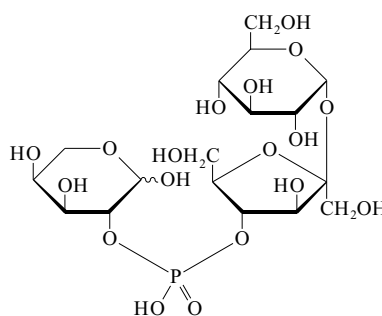
A-62

Agrocinopin A

A-63

Sucrose 4'-(L-arabino-2-yl phosphate).
L-Arabino-2-yl sucros-2-yl phosphate
[77193-02-3]

[92590-11-9]



$C_{17}H_{31}O_{18}P$ 554.395

Produced in crown gall tumours incited by nopaline strains of *Agrobacterium tumefaciens*. Amorph. solid (as Na salt). $[\alpha]_D^{25}$ +47.9 (c, 1 in H₂O) (Na salt).

De-O-glucopyranosyl: Agrocinopin B. L-Arabinos-2-yl D-fructos-2-yl phosphate
[77193-03-4]

$C_{11}H_{21}O_{13}P$ 392.253

Prod. in crown gall tumours induced by nopaline strains of *Agrobacterium tumefaciens*.

Ellis, J.G. et al., *MGG, Mol. Gen. Genet.*, 1981, **181**, 36 (Agrocinopin B)

Ryder, M.H. et al., *J. Biol. Chem.*, 1984, **259**, 9704 (isol, struct, cmr)

Messens, E. et al., *J. Carbohydr. Chem.*, 1986, **5**, 683 (pmr, P-31 nmr)

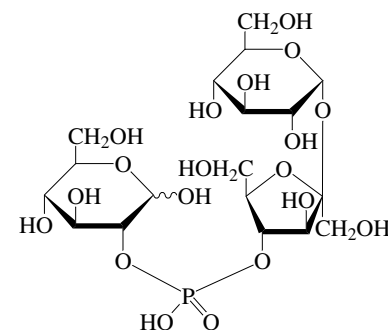
Franzkowiak, M. et al., *Annalen*, 1987, 1065 (synth)

Lindberg, M. et al., *J. Carbohydr. Chem.*, 1988, **7**, 749-755 (synth)

Agrocinopin C

A-64

D-Glucos-2-yl sucros-2-yl phosphate
[153888-63-2]



$C_{18}H_{33}O_{19}P$ 584.421

Revised struct., originally assigned as the sucros-6-yl isomer. Produced in crown gall tumours by *Agrobacterium tumefaciens*.

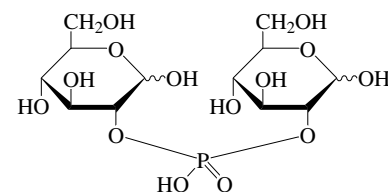
$[\alpha]_D$ +56.5 (c, 1.0 in H₂O) (equilib., as Na salt). CAS no. refers to the Na salt.

Lindberg, M. et al., *J. Carbohydr. Chem.*, 1993, **12**, 1139-1147 (synth, pmr, cmr, P-31 nmr)

Agrocinopin D

A-65

Di-D-glucos-2-yl phosphate
[153888-66-5]



$C_{12}H_{23}O_{14}P$ 422.279

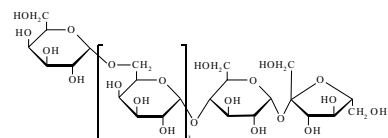
Revised struct. Prod. in crown gall tumours by *Agrobacterium tumefaciens*.

Monohydrate (as Na salt). $[\alpha]_D$ +51.4 (c, 1.1 in H₂O) (Na salt, equilib.). CAS no. refers to the Na salt.

Lindberg, M. et al., *J. Carbohydr. Chem.*, 1993, **12**, 1139-1147 (synth, struct, cmr, P-31 nmr)

Ajugose

A-66



$C_{36}H_{62}O_{31}$ 990.867

Found in the root of *Ajuga nipponensis* and *Verbascum thapsiforme* and in the transfer products formed by the action of coffee α -D-galactosidase upon Raffinose, R-1 and Stachyose, S-72.

Mp 270°. $[\alpha]_D^{12} +190.8$ (H₂O). $[\alpha]_D^{18} +161.3$ (H₂O).

Eicosa-Ac: Mp 140°. $[\alpha]_D^{21} +163.7$ (C₆H₆).

Eicosabenzoyl: Mp 150°. $[\alpha]_D^{28} +152.4$ (C₆H₆).

Eicosa-Me:

Syrup. $[\alpha]_D^{27} +157.5$ (C₆H₆).

Murakami, S. *et al.*, *Acta Phytochim.*, 1941, **12**, 97

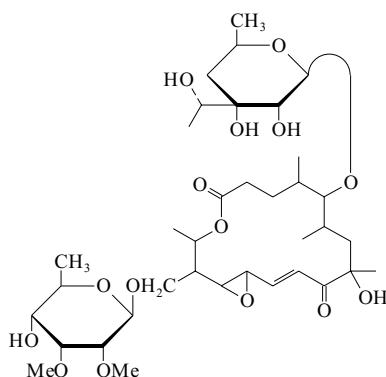
Anagnostopoulos, C. *et al.*, *Bull. Soc. Chim. Biol.*, 1954, **36**, 1115

Herissey, H. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1964, **259**, 824 (*isol*)

Aldgamycin C, 9CI, 8CI

A-67

AL 471C. Antibiotic AL 471C
[11020-65-8]



C₃₅H₅₆O₁₅ 716.818

Macrolide antibiotic. Produced by *Streptomyces lavendulae* (Lederle soil isol. AL 471). Broad spectrum antibiotic. Cryst. (CH₂Cl₂/Et₂O). Sol. MeOH, C₆H₆; fairly sol. H₂O, Et₂O; poorly sol. hexane. Mp 150-153°. $[\alpha]_D^{25} -70$ (c, 0.67 in MeOH). λ_{\max} 217 (E1%/1cm 190) (MeOH) (Berdy).

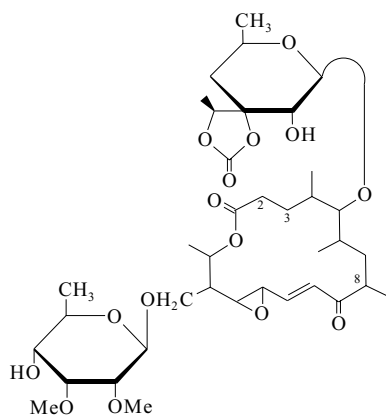
Ellestad, G.A. *et al.*, *Tetrahedron*, 1967, **23**, 3893 (*struct*, *ir*, *uv*, *ms*, *pmr*)

Achenbach, H. *et al.*, *Chem. Ber.*, 1975, **108**, 759; 772; 780 (*ms*, *struct*)

Aldgamycin E, 9CI

A-68

[11011-06-6]



C₃₇H₅₈O₁₅ 742.856

Macrolide antibiotic. Prod. by *Streptomyces lavendulae*. Broad spectrum antibiotic. Needles or plates (dimorph.). Sol. MeOH, C₆H₆; fairly sol. Et₂O, H₂O; poorly sol. hexane. Mp 158-161° (needles) Mp 173-178° (plates). $[\alpha]_D^{25} -56$ (c, 0.972 in MeOH). λ_{\max} 218 (€ 21100); 240 (€ 12400) (MeOH) (Derep). λ_{\max} 218 (E1%/1cm 185) (EtOH) (Berdy).

Di-Ac: Mp 167-171° Mp 239-243° (dimorph.).

2,3-Didehydro-8-hydroxy: Aldgamycin G

C₃₇H₅₆O₁₅ 740.84

Prod. by *Streptomyces avidinii*. Active against gram-positive bacteria. Cryst. (CHCl₃/hexane). Sol. MeOH, CHCl₃, C₆H₆, EtOAc; poorly sol. H₂O, hexane. Mp 145.5-148.5°. $[\alpha]_D^{27} -29$ (c, 1.09 in CHCl₃). λ_{\max} 218 (€ 21100); 240 (€ 12400) (MeOH) (Derep). λ_{\max} 218 (€ 22500); 241 (€ 12300) (MeOH) (Berdy).

► LD₅₀ (mus, ipr) 1000 - 2000 mg/kg.

2,3-Didehydro-8-hydroxy: Aldgamycin F

[55141-41-8]

C₃₇H₅₆O₁₆ 756.84

From *Streptomyces lavendulae*. Broad spectrum antibiotic. Noncryst. Sol. MeOH, Et₂O; poorly sol. H₂O. $[\alpha]_D^{20} -25$ (c, 0.3 in CHCl₃). λ_{\max} 218 (€ 21100); 240 (€ 12400) (MeOH) (Derep). λ_{\max} 218 (€ 21000); 240 (€ 12400) (MeOH) (Berdy). λ_{\max} 217 (€ 22000) (EtOH) (Berdy).

Kunstmann, M.P. *et al.*, *Antimicrob. Agents Chemother.*, 1964, **87** (*isol*)

Ellestad, G.A. *et al.*, *Tetrahedron*, 1967, **23**, 3893 (*ms*, *pmr*)

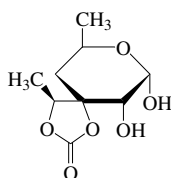
Achenbach, H. *et al.*, *Chem. Ber.*, 1975, **108**, 759; 772; 780 (*struct*, *ir*, *uv*, *ms*, *nmr*)

Mizobuchi, S. *et al.*, *J. Antibiot.*, 1986, **39**, 1776 (*deriv*)

Aldgarose

A-69

3-C-[1-(Carboxyoxo)ethyl]-4,6-dideoxy-D-ribo-hexose intramol. 1',3-ester, 9CI. 4,6-Dideoxy-3-C-(L-glycero-hydroxyethyl)-D-ribo-hexopyranose cyclic 3,1'-carbonate



α -D-Pyranose-form

C₉H₁₄O₆ 218.206

D-form [26428-87-5]

Carbohydrate component of Aldgamycin E, A-68. The epimer with (1'R)-config. is also known.

α -D-Pyranose-form

1,2-O-Isopropylidene:

C₁₂H₁₈O₆ 258.271

Syrup. $[\alpha]_D^{20} +30$ (c, 2 in CHCl₃). ν_{\max} 1818 cm⁻¹ (CO).

Me glycoside: [10343-10-9]

C₁₀H₁₆O₆ 232.233

Mp 91-94°.

β -D-Pyranose-form

Me glycoside: [17184-26-8]

Cryst. (CH₂Cl₂/Et₂O). Mp 178-180° (175-176°). $[\alpha]_D -43.5$ (c, 0.86 in MeOH). ν 1770 cm⁻¹ (CO).

Me glycoside, 2-benzyl:

C₁₇H₂₂O₆ 322.357

Cryst. (Et₂O). Mp 105-107°. $[\alpha]_D^{20} -53.2$ (c, 0.69 in MeOH).

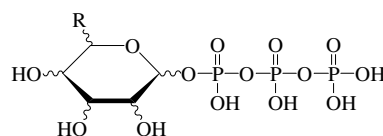
Ellestad, G.A. *et al.*, *Tetrahedron*, 1967, **23**, 3893 (*Me gly*, *isol*, *struct*)

Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 2992; 1976, **109**, 1362 (β -D-Me pyr, β -D-Me pyr benzyl, α -D-pyr isopropylidene, *pmr*)

Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1975, 682 (β -D-Me pyr, *pmr*, *synth*)

Aldose 1-triphosphates

A-70



R = H or CH₂OH

Practical synth. gives mixt. of anomers, ratio depending on the sugar. Characterised by *pmr*, *cmr* and P-31 *nmr*.

D-Ribose 1-triphosphate

[263715-17-9]

C₅H₁₃O₁₄P₃ 390.071

D-Arabinose 1-triphosphate

[263715-21-5]

C₅H₁₃O₁₄P₃ 390.071

D-Xylose 1-triphosphate

[263715-16-8]

C₅H₁₃O₁₄P₃ 390.071

D-Allose 1-triphosphate

C₆H₁₅O₁₅P₃ 420.097

D-Galactose 1-triphosphate

[263715-15-7]

C₆H₁₅O₁₅P₃ 420.097

D-Glucose 1-triphosphate

[207568-17-0]

C₆H₁₅O₁₅P₃ 420.097

D-Mannose 1-triphosphate

[263715-20-4]

C₆H₁₅O₁₅P₃ 420.097

[263715-18-0]

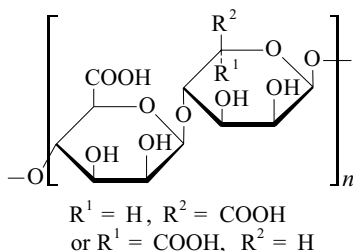
Inoue, H. *et al.*, *Chem. Pharm. Bull.*, 1998, **46**, 681-683 (*synth*, *pmr*, *cmr*, P-31 *nmr*, *hplc*)

Inoue, H. *et al.*, *Carbohydr. Res.*, 2000, **314**, 10-16 (*pmr*, *cmr*)

Alginic acid, BAN

A-71

Gum levan. Levan gum. Kelacid. Norgine. Sazio. E400 [9005-32-7]



[C₆H₈O₆]

A polymer consisting of various proportions of β-D-Mannuronic acid and α-L-Guluronic acid linked 1→4 and arranged in a block fashion. Polymeric. Minimum formula given. Occurs as the major matrix polysaccharide in brown seaweed (Phaeophyceae) as an insol. complex of K, Na, Ca and Mg alginates. Alginates are used to improve food texture, e.g. in ice cream, pie fillings. Used in tablet disintegrants and paper coatings. Food additive: emulsifier, stabiliser, thickener. Pharmaceutical aid for preparation of water-miscible pastes, creams and gels. Co-administered with antacid or H₂-receptor agonist for management of gastro-oesophageal reflux. [α]_D -120 (as Na salt in H₂O). Approx. 200 grades of the acid and its salts (ammonium, Ca, K, Na) com. available. Alginates with the highest guluronic acid content display the strongest gel-forming activity.

► AZ5775000

Na salt: Sodium alginate. Algin. E401 [9005-38-3] Stabiliser, emulsifier, thickener, formulation aid; used in food processing. Pale yellow-brown powder. Sol. H₂O; poorly sol. EtOH, hexane. λ_{max} 260 (H₂O) (Berdy).

► AZ5820000

K salt: Potassium alginate. E402 [9005-36-1] Stabiliser, emulsifier, thickener, formulation aid; used in food processing. Insol. EtOH, Et₂O.

Ca salt: Calcium alginate. E404 [9005-35-0] Stabiliser, emulsifier, thickener, formulation aid; used in food processing. Sl. sol. EtOH; insol. H₂O, Et₂O.

NH₄ salt: Ammonium alginate. E403 [9005-34-9] Stabiliser, emulsifier, thickener, formulation aid; used in food processing. Insol. EtOH, Et₂O.

2-Hydroxypropyl ester: Propylene glycol alginate. Colloid 602. Dricoid. Kelcolloid. FEMA 2941. E405. Many other trade names

[39306-87-1, 51374-11-9, 52441-26-6, 57762-73-9, 59125-52-9, 95328-14-6]

Manuf. by reaction of alginic acid with propylene oxide. White to yellowish fibrous or granular powder. Sol. H₂O.

Composition varies acc. to the degree of esterification.

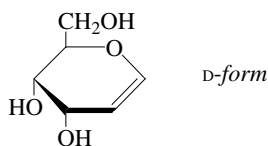
[9005-31-6, 9019-42-5]

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 Hirst, E. et al., Chem. Ind. (London), 1963, 257
 Haug, A. et al., Methods Carbohydr. Chem., 1965, 5, 69 (synth)
 Percival, E. et al., The Carbohydrates, (Pigman, W., Ed.), Academic Press, 1970, 2B, 545
 Ger. Pat., 1971, 2 046 966; CA, 75, 22923d (2-hydroxypropyl ester, manuf)
 Rees, D.A. et al., Angew. Chem., Int. Ed., 1977, 16, 214 (struct, rev)
 Grasdalen, H. et al., Carbohydr. Res., 1977, 56, C11; 1981, 89, 179 (nmr, cmr)
 Kirk-Othmer Encycl. Chem. Technol., 3rd edn., Wiley, 1978, 12, 45 (use)
 Cottrell, I.W. et al., Handb. Water-Soluble Gums Resins, McGraw-Hill, N.Y., 1980, 2/1-2/43 (rev)
 Fed. Regist., 1982, 47, 29946-29952 (propylene glycol alginate)
 Martin, G. et al., Sci. Aliments, 1986, 6, 473 (rev)
 Lewis, R.J. et al., Food Additives Handbook, Van Nostrand Reinhold International, New York, 1989, AFL000
 Beale, J.M. et al., Environ. Sci. Res., 1992, 44, 209 (rev, biosynth, struct)
 Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. et al.), American Pharmaceutical Association/Pharmaceutical Press, 1994, 10-11; 428-430
 Martindale, The Extra Pharmacopoeia, 31st edn., Pharmaceutical Press, 1996, 1535
 Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 71-74; 2349-2352 (props, use)
 Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, AFL000; SEH000; CAM200; PKU700

Allal

A-72

1,5-Anhydro-2-deoxy-ribo-hex-1-enitol, 9CI. 1,2-Dideoxy-ribo-hex-1-enopyranose [25312-13-4]



C₆H₁₀O₄ 146.143

D-form [63949-52-0]

Syrup. [α]_D²⁵ +309 (c, 1.7 in H₂O).

Tri-Ac: 3,4,6-Tri-O-acetyl-1,5-anhydro-2-deoxy-D-ribo-hex-1-enitol. 3,4,6-Tri-O-acetyl-1,2-dideoxy-D-ribo-hex-1-enopyranose. 3,4,6-Tri-O-acetyl-D-allal [52485-06-0]
 C₁₂H₁₆O₇ 272.254
 Mp 81-83°. [α]_D²⁰ +314 (c, 1 in CHCl₃).

4,6-O-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-2-deoxy-D-ribo-hex-1-enitol. 4,6-O-Benzylidene-1,2-dideoxy-D-ribo-hex-1-enopyranose. 4,6-O-Benzylidene-D-allal [5987-33-7]
 C₁₃H₁₄O₄ 234.251
 Cryst. (Et₂O/hexane). Mp 84-85°. [α]_D +210 (EtOH).

4,6-O-Benzylidene, 3-Ac: 3-O-Acetyl-1,5-anhydro-4,6-O-benzylidene-2-deoxy-D-ribo-hex-1-enitol. 3-O-Acetyl-4,6-O-benzylidene-1,2-dideoxy-D-ribo-hex-1-enopyranose. 3-O-Acetyl-4,6-O-benzylidene-D-allal
 C₁₅H₁₆O₅ 276.288
 Cryst. (EtOH). Mp 121-122°. [α]_D²⁴ +253 (c, 0.2 in EtOH).

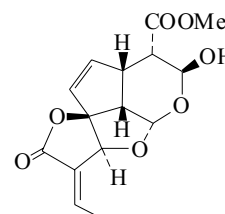
3-Me, 4,6-O-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-2-deoxy-3-O-methyl-D-ribo-hex-1-enitol. 4,6-O-Benzylidene-1,2-dideoxy-3-O-methyl-D-ribo-hex-1-enopyranose. 4,6-O-Benzylidene-3-O-methyl-D-allal [16697-45-3]
 C₁₄H₁₆O₄ 248.278
 Cryst. (hexane). Mp 69.5-70°. [α]_D²⁰ +181.3 (c, 1.03 in CHCl₃).

Micheel, M. et al., Ber., 1930, 63, 347 (D-deoxy, D-deoxy di-Ac)
 Feast, A.A.J. et al., J.C.S., 1965, 7378 (D-benzylidene, D-benzylidene Ac)
 Sharma, M. et al., Can. J. Chem., 1966, 44, 2825 (D-benzylidene)
 Lemieux, R.U. et al., Can. J. Chem., 1968, 46, 61 (D-benzylidene)
 Burfitt, A.I.R. et al., Aust. J. Chem., 1977, 30, 1037 (4,6-benzylidene 3-Me)
 Guthrie, R.D. et al., Carbohydr. Res., 1979, 72, 285-288; 1980, 82, 225-236 (synth, D-form, ir, pmr, D-benzylidene, D-benzylidene Ac)
 Guthrie, R.D. et al., Aust. J. Chem., 1980, 33, 1037-1040 (cmr)

Allamandin

A-73

[51820-82-7]



C₁₅H₁₆O₇ 308.287

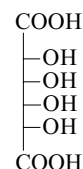
Constit. of *Allamanda cathartica*. Anti-neoplastic agent, possesses antibacterial props. Cryst. (MeOH/EtOAc). Mp 212-215°. [α]_D²¹ +15 (c, 0.06 in MeOH). Log P -1.35 (uncertain value) (calc).

Kupchan, S.M. et al., J.O.C., 1974, 39, 2477 (isol)
 Trost, B.M. et al., Tet. Lett., 1985, 26, 1807 (synth)
 Parkes, K.E.B. et al., J.C.S. Perkin I, 1988, 1119 (synth)

Allaric acid

A-74

Allomucic acid



C₆H₁₀O₈ 210.14

For stereoisomers see, Idaric acid, I-1, Mannaric acid, M-23, Galactaric acid, G-2 and Glucaric acid, G-241. The "Allomucic acid" of lit. prior to 1934 was DL-altraric acid.

D-form

A constit. exotoxin from *Bacillus thuringiensis*.

Mp 188-192° (176°).

Di-Et ester: Diethyl D-allarate

C₁₀H₁₈O₈ 266.247

Mp 137-138°.

Bisphenylhydrazide: Mp 218° (213°) dec.

Diamide: D-Allaric acid diamide

C₆H₁₂N₂O₆ 208.171

Mp 209° dec.

1,4-Lactone, 3,5-dibenzoyl, 6-Me ester:

[52514-33-7]

C₂₁H₁₈O₉ 414.368

Mp 191-193°. [α]_D²⁵ -34 (c, 1.0 in CHCl₃).

1,4-Lactone, 2,3,5-tribenzoyl, 6-Me ester:

C₂₈H₂₂O₁₀ 518.476

Mp 159-160°. [α]_D²⁵ -14.1 (c, 0.5 in CHCl₃).

1,4-Lactone, 3-benzyl, 5-benzoyl, 6-Me ester:

C₂₁H₂₀O₈ 400.384

Cryst. (Et₂O/petrol). Mp 130-131°. [α]_D²⁵ -3.8 (c, 0.5 in CHCl₃).

Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 187
Humoller, F.L. et al., *J.A.C.S.*, 1936, **58**, 2479 (D-form, synth)

Rodd's Chem. Carbon Compd. (1st edn.), 1952, **1B**, 1282 (rev)

Bond, R.P.M. et al., *Chem. Comm.*, 1969, 338 (isol)

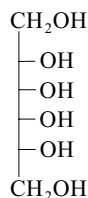
Kalvoda, L. et al., *Tet. Lett.*, 1973, 4671 (D-lactone dibenzoyl Me ester)

Kalvoda, L. et al., *Coll. Czech. Chem. Comm.*, 1976, **41**, 800 (D-lactone tribenzoyl Me ester)

Prystaš, M. et al., *Coll. Czech. Chem. Comm.*, 1976, **41**, 1426 (D-lactone benzyl benzoyl Me ester)

Allitol, 9CI, 8CI**A-75**

Allodulcitol. allo-Hexitol
[488-44-8]



C₆H₁₄O₆ 182.173

A meso compd. which can be rendered optically active by substitution. Occurs in the leaves and branches of *Itea ilicifolia* and *Itea virginica*. Needles (EtOH).
Mp 150-151°.

Hexa-Ac:

C₁₈H₂₆O₁₂ 434.396

Cryst. (Me₂CO aq.). Mp 61°.

2,4:3,5-Di-O-methylene:

C₈H₁₄O₆ 206.195

Cryst. (EtOH). Mp 258-259°.

2,4:3,5-Di-O-methylene, 1,6-di-Ac:

C₁₂H₁₈O₈ 290.269

Mp 177-178°.

2,4:3,5-Di-O-methylene, 1,6-ditosyl:

C₂₂H₂₆O₁₀S₂ 514.573

Hexagonal plates (Ac₂O/AcOH). Mp 200-202°.

D-2,3:5,6-Di-O-isopropylidene, 1-benzoyl:

1-O-Benzoyl-2,3:5,6-di-O-isopropylidene-D-allitol

C₁₉H₂₆O₇ 366.41

Cryst. (EtOH). Mp 62.3°. [α]_D²² -36.7 (c, 0.67 in EtOH).

D-2,3:5,6-Di-O-isopropylidene, 1,4-dibenzoyl:

C₂₆H₃₀O₈ 470.518

Cryst. (EtOH). Mp 107-108°. [α]_D²² +7.4 (c, 2.1 in EtOH).

D-2,3:4,5-Dibenzylidene: 2,3:4,5-Di-O-benzylidene-D-allitol

C₂₀H₂₂O₆ 358.39

Mp 203-205° dec. [α]_D²⁰ +76.7 (c, 0.1 in Py).

D-3-Benzyl: 3-O-Benzyl-D-allitol

C₁₃H₂₀O₆ 272.297

Cryst. (EtOAc). Mp 76-78°.

D-3-Benzyl, penta-Me: 3-O-Benzyl-

1,2,4,5,6-penta-O-methyl-D-allitol

C₁₈H₃₀O₆ 342.431

Bp_{0.05} 168°.

1,2,3,4,6-Penta-Me: 1,2,3,4,6-Penta-O-methyl-D-allitol

[57130-07-1]

C₁₁H₂₄O₆ 252.307

Bp_{0.2} 135°.

1,2,3,4,6-Penta-Me, 5-Ac: 5-O-Acetyl-

1,2,3,4,6-penta-O-methylallitol

C₁₃H₂₆O₇ 294.344

Bp_{0.3} 105°.

1,2,4,5,6-Penta-Me: 1,2,4,5,6-Penta-O-methylallitol

[57098-97-2]

C₁₁H₂₄O₆ 252.307

Bp_{0.05} 122°.

[45007-61-2]

Steiger, M. et al., *Helv. Chim. Acta*, 1936, **19**, 184 (synth)

Haskins, W.T. et al., *J.A.C.S.*, 1943, **65**, 1419 (D-dibenzylidene)

Wolfson, M.L. et al., *J.A.C.S.*, 1946, **68**, 1443 (synth, dimethylene, dimethylene di-Ac, dimethylene ditosyl, hexa-Ac)

Barker, S.A. et al., *Adv. Carbohydr. Chem.*, 1952, **7**, 137 (rev, acetals)

Plouvier, V. et al., *C. R. Hebd. Seances Acad. Sci.*, 1959, **249**, 2828 (occur)

Hough, L. et al., *Phytochemistry*, 1966, **5**, 215 (biosynth)

Wu, G.Y. et al., *Carbohydr. Res.*, 1970, **13**, 89 (diisopropylidene benzoyl, diisopropylidene dibenzoyl)

Azarnia, N. et al., *Acta Cryst. B*, 1972, **28**, 1007 (cryst struct)

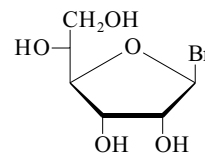
Angyal, S.J. et al., *Carbohydr. Res.*, 1972, **23**, 121 (pmr)

Brimacombe, J.S. et al., *The Carbohydrates*, Academic Press, 2nd Ed., 1972, **1A**, 485 (rev)

Prystaš, M. et al., *Coll. Czech. Chem. Comm.*, 1975, **40**, 1775 (D-benzyl, D-benzyl penta-Me, 1,2,4,5,6-penta-Me, 1,2,3,4,6-penta-Me, 1,2,3,4,6-penta-Me Ac)

Angyal, S.J. et al., *Carbohydr. Res.*, 1980, **84**, 201 (cmr)

Kopf, J. et al., *Carbohydr. Res.*, 1992, **229**, 17 (cryst struct, hexa-Ac)

Allofuranosyl bromide**A-76**

C₆H₁₁BrO₅ 243.054

β-D-form

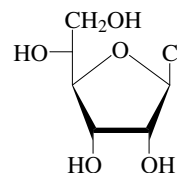
2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene-β-D-allofuranosyl bromide [65502-92-3]

C₁₂H₁₉BrO₅ 323.183

Syrup.

Eitelman, S.J.E. et al., *Chem. Comm.*, 1977, 552 (diisopropylidene, cmr)

Eitelman, S.J.E. et al., *J.C.S. Perkin 1*, 1978, 595 (diisopropylidene, pmr)

Allofuranosyl chloride**A-77****β-D-form**

C₆H₁₁ClO₅ 198.603

D-form

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene-D-allofuranosyl chloride [33823-06-2]

C₁₂H₁₉ClO₅ 278.732

Cryst. Mp 39-42°. Bp_{0.1} 75-76°.

Unstable at ambient temp.

β-D-form

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene-β-D-allofuranosyl chloride [67253-98-9]

Oil. Not clear if this is the same as the D-diisopropylidene deriv.

Kohn, B.D. et al., *Carbohydr. Res.*, 1971, **18**, 349 (D-deriv)

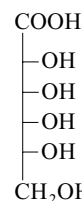
Boegegrain, R.A. et al., *J. Chem. Res., Synop.*, 1978, 85; *J. Chem. Res., Miniprint*, 1978, 1229 (β-D-deriv)

Eitelman, S.J. et al., *J.C.S. Perkin 1*, 1978, 595 (β-D-deriv)

Bischofberger, K. et al., *S. Afr. J. Chem.*, 1981, **34**, 33 (β-D-deriv)

Allonic acid**A-78**

allo-Hexonic acid
[28223-42-9]

**D-form**

C₆H₁₂O₇ 196.157

For stereoisomers see Altronic acid, A-102, Galactonic acid, G-23, Gluconic acid, G-250, Gulonic acid, G-584, Idonic acid, I-4, Mannonic acid, M-36 and Talonic acid, T-5.

D-form [21675-42-3]
[α]_D -10 (H₂O).

1,4-Lactone: D-Allono-1,4-lactone. D-allo-Hexono-1,4-lactone
[29474-78-0]
C₆H₁₀O₆ 178.141
Mp 120°.

L-form

Phenylhydrazide: Mp 143°.

1,4-Lactone: L-Allono-1,4-lactone
[78184-43-7]
C₆H₁₀O₆ 178.141
[α]_D +3.6 (H₂O).

Levene, P.A. *et al.*, *Ber.*, 1910, **43**, 3141

(D-lactone)

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1924, **59**, 123

(D-form)

Humoller, F.L. *et al.*, *J.A.C.S.*, 1936, **58**, 2479

(L-form)

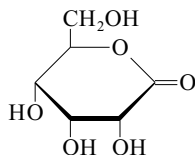
Serianini, A.S. *et al.*, *J.O.C.*, 1980, **45**, 3329 (*glc*)

Sotofte, I. *et al.*, *Acta Cryst. C*, 1994, **50**, 941
(*cryst struct, lactone deriv*)

1,5-Allonolactone

allo-1,5-Hexonolactone

A-79



C₆H₁₀O₆ 178.141

D-form

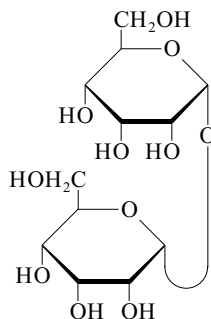
3,4-Cyclohexylidene: 3,4-O-Cyclohexylidene-D-allono-1,5-lactone
[165610-94-6]
C₁₂H₁₈O₆ 258.271
Cryst. solid (EtOAc/hexane). Mp 128-130°. [α]_D²⁰ -68.1 (c, 1.03 in EtOH).

Fairbanks, A.J. *et al.*, *Tetrahedron*, 1995, **51**, 3881 (*synth, pmr, 3,4-cyclohexylidene*)

α -D-Allopyranosyl α -D-allopyranoside, 9CI

α,α -allo-Trehalose. α,α -Allotrehalose
[60967-08-0]

A-80



C₁₂H₂₂O₁₁ 342.299

Non-reducing disaccharide. Mp 109-110°
Mp 182-183°. [α]_D²⁵ +173.9 (c, 0.4 in H₂O). Double Mp due to loss of solvent of recryst.

Bis-4,6-O-benzylidene: 4,6-O-Benzylidene- α -D-allopyranosyl 4,6-O-benzylidene- α -D-allopyranoside
[60949-45-3]
C₂₆H₃₀O₁₁ 518.516

Cryst. (EtOH). Mp 267-267.5° dec. [α]_D²³ +145 (c, 0.3 in Me₂CO).

Bis-4,6-O-benzylidene, bis-2,3-anhydro: 2,3-Anhydro-4,6-O-benzylidene- α -D-allopyranosyl 2,3-anhydro-4,6-O-benzylidene- α -D-allopyranoside
[32849-11-9]
C₂₆H₂₆O₉ 482.486

Needles (DMF). Mp 318-320° dec. [α]_D +103 (c, 0.25 in DMF).

Bis-4,6-O-benzylidene, tetra-Ac: 2,3-Di-O-acetyl-4,6-O-benzylidene- α -D-allopyranosyl 2,3-di-O-acetyl-4,6-O-benzylidene- α -D-allopyranoside
[61161-46-4]
C₃₄H₃₈O₁₅ 686.665

Syrup. [α]_D²³ +53 (c, 0.2 in CHCl₃).

Bis-4,6-O-benzylidene, tetrabenzoyl: 2,3-Di-O-benzoyl-4,6-O-benzylidene- α -D-allopyranosyl 2,3-di-O-benzoyl-4,6-O-benzylidene- α -D-allopyranoside
[60945-35-9]
C₅₄H₄₆O₁₅ 934.948

Mp 163-164°. [α]_D²⁵ +144.6 (c, 0.3 in CHCl₃).

Bis-4,6-O-benzylidene, 2,2'-dibenzoyl: 2-O-Benzoyl-4,6-O-benzylidene- α -D-allopyranosyl 2-O-benzoyl-4,6-O-benzylidene- α -D-allopyranoside
[60930-08-7]
C₄₀H₃₈O₁₃ 726.732

Mp 215-218°. [α]_D²³ +90 (c, 0.25 in CHCl₃).

Richardson, A.C. *et al.*, *J.C.S. (C)*, 1971, 1090

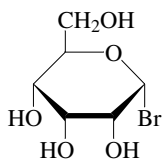
Birch, G.G. *et al.*, *Carbohydr. Res.*, 1976, **49**, 153 (*synth, pmr, deriv*)

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1984, **128**, 165

Linden, A. *et al.*, *Acta Cryst. C*, 1995, **51**, 1007
(*cryst struct*)

Allopyranosyl bromide

A-81



α -D-form

C₆H₁₁BrO₅ 243.054

α -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-allopyranosyl bromide
[53369-42-9]

C₁₄H₁₉BrO₉ 411.203
Pale yellow syrup. [α]_D²³ +170.7 (c, 4.8 in CHCl₃).

β -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-allopyranosyl bromide
[75247-30-2]

Syrup.

Haga, M. *et al.*, *Carbohydr. Res.*, 1974, **34**, 214
(α -tetra-Ac, *pmr*)

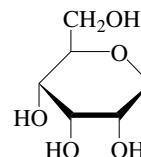
Stowell, C.P. *et al.*, *Biochemistry*, 1980, **19**, 4899
(β -tetra-Ac)

Markham, K.R. *et al.*, *Phytochemistry*, 1983, **22**, 2827 (α -tetra-Ac, *pmr*)

Cano, F.H. *et al.*, *Carbohydr. Res.*, 1986, **145**, 319 (α -tetra-Ac)

Allopyranosyl fluoride

A-82



α -D-form

C₆H₁₁FO₅ 182.148

α -D-form [80409-18-3]

Syrup.

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-allopyranosyl fluoride
[23235-96-3]

C₁₄H₁₉FO₉ 350.297

Syrup.

β -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-allopyranosyl fluoride
[20409-31-8]

C₁₄H₁₉FO₉ 350.297

Needles (EtOH aq.). Mp 149-151°. [α]_D -1.3 (c, 1.55 in CHCl₃).

Foster, A.B. *et al.*, *Chem. Comm.*, 1968, 158
(tetra-Ac, F-19 nmr)

Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **47**, 1
(tetra-Ac, *conformn, pmr*)

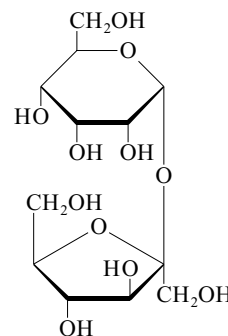
Grier, T.J. *et al.*, *Arch. Biochem. Biophys.*, 1981, **212**, 651 (*synth*)

Kadentsev, V.I. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1987, 2580; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1987, 2395 (*ms*)

α -D-Allopyranosyl β -D-fructofuranoside

allo-Sucrose. Allosucrose

A-83

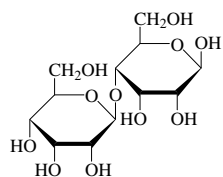


C₁₂H₂₂O₁₁ 342.299

Foam. Tasteless.

Octa-Ac:C₂₈H₃₈O₁₉ 678.597Syrup. [α]_D +39 (c, 1.45 in CHCl₃).**Octabenzoate:**C₆₈H₅₄O₁₉ 1175.163Mp 85–87°. [α]_D +70.6 (c, 0.4 in CHCl₃).Hough, L. *et al.*, *Carbohydr. Res.*, 1980, **84**, 95**4-O-β-D-Allopyranosyl-D-allose**

A-84



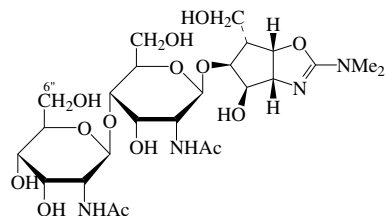
β-Pyranose-form

C₁₂H₂₂O₁₁ 342.299**β-Pyranose-form***Me glycoside: Methyl 4-O-β-D-allopyranosyl-β-D-allopyranoside*
[84129-57-7]C₁₃H₂₄O₁₁ 356.326Mp 206–207°. [α]_D¹⁵ -18.7 (c, 1.1 in H₂O).*Me glycoside, 4',6'-O-benzylidene: Methyl 4-O-(4,6-O-benzylidene-β-D-allopyranosyl)-β-D-allopyranoside*
[84094-20-2]C₂₀H₂₈O₁₁ 444.435Mp 227–229°. [α]_D¹⁵ -41.4 (c, 1.0 in DMF).*Me glycoside, 4',6'-O-benzylidene, penta-Ac: Methyl 2,3,6-tri-O-acetyl-4-O-(2,3-di-O-acetyl-4,6-O-benzylidene-β-D-allopyranosyl)-β-D-allopyranoside*
[84094-19-9]C₃₀H₃₈O₁₆ 654.621Cryst. (EtOH). Mp 211–212°. [α]_D¹⁶ -36.7 (c, 1.1 in CHCl₃).*Me glycoside, hepta-Ac: [84094-21-3]*C₂₇H₃₈O₁₈ 650.586Cryst. (Et₂O/petrol). Mp 150–151°. [α]_D¹⁵ -17.4 (c, 1.2 in CHCl₃).Takeo, K. *et al.*, *Carbohydr. Res.*, 1982, **107**, 71**Allosamidin**

A-85

A 82516. Antibiotic A 82516

[103782-08-7]

C₂₅H₄₂N₄O₁₄ 622.625Aminoglycoside antibiotic. Prod. by *Streptomyces* sp. Chitinase inhibitor. Insecticide. Powder. [α]_D -24.8 (c, 0.5 in 0.1 M AcOH).*N-De-Me: N-Demethylallosamidin*

[124796-31-2]

C₂₄H₄₀N₄O₁₄ 608.598Prod. by *Streptomyces* spp. AT9463 and SA-684. Chitinase inhibitor, insecticideand antifungal agent. Sol. acids; fairly sol. H₂O; poorly sol. Me₂CO, hexane.*N,N-Di-de-Me: N-Didemethylallosamidin*
[152540-89-1]C₂₃H₃₈N₄O₁₄ 594.572Prod. by *Streptomyces* sp. AT9463. Chitinase inhibitor, insecticide. Powder. Sol. H₂O. [α]_D -29.2 (c, 0.16 in AcOH aq.). Mp >231° dec.*6''-Me ether: Methylallosamidin*

[107395-29-9]

C₂₆H₄₄N₄O₁₄ 636.652From *Streptomyces* sp. Insect chitinase inhibitor. Powder.Mp 205–215°. [α]_D²³ -30.2 (c, 0.5 in 0.1 M AcOH).*6''-Me ether, N-de-Me: Methyl-N-de-methylallosamidin*

[136196-62-8]

C₂₅H₄₂N₄O₁₄ 622.625From *Streptomyces* sp. SA-684. No phys. props. reported. Sol. acids; fairly sol. H₂O; poorly sol. butanol, hexane.*3'-Epimer, 6''-Me ether: Glucoallosamidin A*
[136236-41-4]C₂₆H₄₄N₄O₁₄ 636.652From *Streptomyces* sp. SA-684. Sol. acids; fairly sol. H₂O; poorly sol. butanol, hexane.Mp 222–233° dec. [α]_D¹³ -8.5 (c, 0.51 in AcOH aq.).*3'-Epimer, 6''-Me ether, N-de-Me: Glucoallosamidin B*

[136236-42-5]

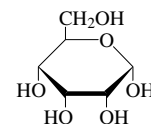
C₂₅H₄₂N₄O₁₄ 622.625From *Streptomyces* sp. SA-684. Sol. acids; fairly sol. H₂O; poorly sol. butanol, hexane.Mp 212–230° dec. [α]_D¹⁴ -14.8 (c, 0.53 in AcOH aq.).*Aglycone: Allosamizoline*

[114673-96-0]

C₉H₁₆N₂O₄ 216.236[α]_D²⁰ -15.7 (c, 0.35 in H₂O). CAS no. refers to hydrochloride.*Aglycone, tri-Ac: [114621-71-5]*Cryst. (EtOAc/hexane). Mp 82–83°. [α]_D²⁶ +28.8 (c, 0.2 in CHCl₃).Koga, D. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 471 (props)Sakuda, S. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 3251–3259; 1988, **52**, 1615–1617 (*isol*, *pmr*, *cmr*, *struct*, *deriv*)Sakuda, S. *et al.*, *CA*, 1987, **106**, 134812 (*isol*, *struct*, *props*)Sakuda, S. *et al.*, *J. Antibiot.*, 1987, **40**, 296–300 (*props*)Somers, P.J.B. *et al.*, *J. Antibiot.*, 1987, **40**, 1751 (*isol*)Nishimoto, Y. *et al.*, *J. Antibiot.*, 1991, **44**, 116; 716–722 (*Glucoallosamidin*, *N-Demethylallosamidin*)Maloisel, J.L. *et al.*, *Helv. Chim. Acta*, 1992, **34**, 1515 (*synth*)Simpkins, N.S. *et al.*, *J.C.S. Perkin 1*, 1992, 2471 (*aglycone*, *synth*)Takahashi, S. *et al.*, *Tet. Lett.*, 1992, **33**, 7565 (*synth*)Kinoshita, M. *et al.*, *Biosci., Biotechnol., Biochem.*, 1993, **57**, 1699–1703 (*synth*)Kitahara, T. *et al.*, *Biosci., Biotechnol., Biochem.*, 1993, **57**, 1906–1909 (*synth*, *pmr*, *aglycone*)Zhou, Z.Y. *et al.*, *J. Antibiot.*, 1993, **46**, 1582–1588 (*N-Didemethylallosamidin*)Blattner, R. *et al.*, *J.C.S. Perkin 1*, 1994, 3411 (*synth*)Griffith, D.A. *et al.*, *J.A.C.S.*, 1996, **118**, 9526–9538 (*synth*)Berecibar, A. *et al.*, *Chem. Rev.*, 1999, **99**, 779–844 (*rev*, *synth*)Wakabayashi, T. *et al.*, *Tetrahedron:**Asymmetry*, 2000, **11**, 2083–2091 (*aglycone derivs*, *synth*)Lu, H. *et al.*, *Tet. Lett.*, 2001, **42**, 4755–4757 (*aglycone*, *synth*)Germer, A. *et al.*, *J.O.C.*, 2002, **67**, 6328–6338 (*pmr*, *cmr*, *conformn*)**Allose, 9CI, 8CI**

A-86

[6038-51-3]



α-D-Pyranose-form

C₆H₁₂O₆ 180.157

For septanose form see LJC74-I. An aq. soln. at 31° contains 14% α-pyr, 77.5% β-pyr, 3.5% α-fur, 5% β-fur and 0.01% aldehyde.

D-form [2595-97-3]Occurs as a 6-O-cinnamyl glycoside in the leaves of *Protea rubropilosa*. Extracts from the fresh-water alga *Ochromonas malhamensis* contain allose of unknown absolute configuration.*Di-Et dithioacetal: [18545-97-6]*C₁₀H₂₂O₃S₂ 286.413Mp 94–95°. [α]_D²⁶ -27.4 (c, 1.84 in MeOH).*3-Tosyl: 3-O-Tosyl-D-allose*

[20847-04-5]

Mp 140–143°. [α]_D +3.4 (c, 1.0 in H₂O).*Pentabenzyl: 2,3,4,5,6-Penta-O-benzyl-D-allose*C₄₁H₄₂O₆ 630.779[α]_D²⁰ +11.7 (c, 0.53 in CHCl₃).*Pentabenzyl, di-Et dithioacetal: 2,3,4,5,6-Penta-O-benzyl-D-allose diethyl dithioacetal*C₄₅H₅₂O₃S₂ 737.035Oil. [α]_D²⁰ +24.4 (c, 0.97 in CHCl₃).*Phenylosazone: See Hexose phenylosazones, H-90***α-D-Pyranose-form** [7282-79-3]*1,2-O-Ethylidene, 3,4,6-tri-Ac: 3,4,6-Tri-O-acetyl-1,2-O-ethylidene-α-D-allopyranose*
[56687-80-0]C₁₄H₂₀O₉ 332.307Cryst. (2-propanol). Mp 111–112°. [α]_D²⁰ +34.7 (c, 1.1 in CHCl₃).*3-Benzyl, 1,2-O-ethylidene, 4,6-di-Ac: 4,6-Di-O-acetyl-3-O-benzyl-1,2-O-ethylidene-α-D-allopyranose*
[56632-48-5]C₁₉H₂₄O₈ 380.394Syrup. [α]_D²⁵ -11.6 (c, 1.1 in CHCl₃).*3-Benzyl, 1,2:4,6-di-O-ethylidene: 3-O-Benzyl-1,2:4,6-di-O-ethylidene-α-D-allopyranose*
[56632-51-0]C₁₇H₂₂O₆ 322.357

Cryst. (heptane). Mp 108-110°. $[\alpha]_D^{25} +119.4$ (c, 1.0 in CHCl_3).

Me glycoside: See Methyl alloside, M-148

β -D-Pyranose-form [7283-09-2]

Cryst. (EtOH aq.). Mp 141-142° (Mp 128° dimorph.). $[\alpha]_D^{25} -2.5 \rightarrow +14.5$ (c, 1.0 in H_2O).

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl- β -D-allopyranose

[4257-94-7]

$\text{C}_{16}\text{H}_{22}\text{O}_{11}$ 390.343

Mp 95-96°. $[\alpha]_D^{25} -15$ (c, 2.9 in CHCl_3).

1,2,6-Tris-O-(3,4,5-trihydroxybenzoyl):

1,2,6-Tri-O-galloyl- β -D-allopyranose

[135093-93-5]

$\text{C}_{27}\text{H}_{24}\text{O}_{18}$ 636.476

Isol. from the root of *Euphorbia fischeriana*. Off-white amorph. powder + $\frac{1}{2}\text{H}_2\text{O}$. $[\alpha]_D^{20} -13.3$ (c, 0.8 in Me_2CO).

1,3,6-Tris-O-(3,4,5-trihydroxybenzoyl):

1,3,6-Tri-O-galloyl- β -D-allopyranose

[135029-93-5]

$\text{C}_{27}\text{H}_{24}\text{O}_{18}$ 636.476

Tannin constit. of the root of *Euphorbia fischeriana*. Cryst. powder (H_2O).

Mp 187-188°. $[\alpha]_D^{20} -76$ (c, 0.6 in Me_2CO).

1,2,3,6-Tetrakis-O-(3,4,5-trihydroxybenzoyl):

1,2,3,6-Tetra-O-galloyl- β -D-allopyranose

[135029-94-6]

$\text{C}_{34}\text{H}_{28}\text{O}_{22}$ 788.582

Gallotannin isol. from the root of *Euphorbia fischeriana*. Pale brown amorph. powder. $[\alpha]_D^{20} -97.5$ (c, 0.7 in Me_2CO).

3-Me: 3-O-Methyl- β -D-allopyranose

$\text{C}_7\text{H}_{14}\text{O}_6$ 194.184

Cryst. (EtOH). Mp 112-114°. $[\alpha]_D^{20} +3.9$ (6 min.) $\rightarrow +17.4$ (19 hr.) (c, 1.0 in H_2O).

3-Me, 1,2,4,6-tetrabenzoyl: 1,2,4,6-Tetra-

O-benzoyl-3-O-methyl- β -D-allopyranose

$\text{C}_{35}\text{H}_{30}\text{O}_{10}$ 610.616

Mp 112-114°. $[\alpha]_D^{20} +3.4$ (c, 1.8 in CHCl_3).

Me glycoside: See Methyl alloside, M-148

α -D-Furanose-form

1,2-O-Isopropylidene: See 1,2-O-Isopropylideneallose, I-58

Me glycoside: See Methyl 2-benzamido-2-deoxyglucopyranoside, M-154

β -D-Furanose-form [36468-80-1]

2,3-O-Ethylidene, tri-Ac: 1,5,6-Tri-O-acetyl-2,3-O-ethylidene- β -D-allofuranose

$\text{C}_{14}\text{H}_{20}\text{O}_9$ 332.307

Syrup. $[\alpha]_D^{22} -59.6$ (c, 0.7 in CHCl_3).

(S,S)-2,3:5,6-Di-O-ethylidene: 2,3:5,6-Di-

O-ethylidene- β -D-allofuranose

$\text{C}_{10}\text{H}_{16}\text{O}_6$ 232.233

Cryst. (Et_2O). Mp 132-133°. $[\alpha]_D^{26} -26.7$ (c, 0.86 in CHCl_3).

2,3:5,6-Isopropylidene: See 2,3:5,6-Di-O-

isopropylideneallofuranose, D-713

Me glycoside: See Methyl alloside, M-148

L-form

Mp 128-129° Mp 141° (dimorph.). $[\alpha]_D^{25} -2 \rightarrow -14$ (c, 4.0 in H_2O).

DL-form

Needles (EtOH aq.). Mp 181-183°.

α,β -Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-DL-allose

$\text{C}_{16}\text{H}_{22}\text{O}_{11}$ 390.343

Needles (Et_2O /pentane). Mp 132-133°.

2-Me: 2-O-Methyl-DL-allose

$\text{C}_7\text{H}_{14}\text{O}_6$ 194.184

Needles ($\text{MeOH}/\text{Et}_2\text{O}$). Mp 111-113°.

2-Me, α,β -tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-O-methyl-DL-allose

$\text{C}_{15}\text{H}_{22}\text{O}_{10}$ 362.333

Needles (CH_2Cl_2 /pentane). Mp 125-126°.

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, 1, 299C (nmr)

Wolfson, M.L. et al., J.A.C.S., 1954, 76, 5816 (dimorphism)

Humoller, F.L. et al., Methods Carbohydr.

Chem., 1962, 1, 102; 105 (β -D-pyr, L-form, synth)

Christensen, J.E. et al., Carbohydr. Res., 1968, 7, 510 (D-tosyl)

Coxon, B. et al., Carbohydr. Res., 1968, 8, 379 (D-di-Et dithioacetal)

Dorman, D.E. et al., J.A.C.S., 1970, 92, 1355 (cmr)

Singh, U.P. et al., Can. J. Chem., 1971, 49, 1179 (DL-form, synth, DL-penta-Ac, DL-tetra-Ac Me, DL-Me)

Beylis, P. et al., Chem. Comm., 1971, 597 (occur)

Naga, M. et al., Carbohydr. Res., 1972, 21, 440 (β -D-pyr-Me)

Baker, D.C. et al., Carbohydr. Res., 1972, 24, 192 (β -D-pyr, synth)

Stevens, J.D. et al., Methods Carbohydr. Chem., 1972, 6, 123 (synth)

Dick, W.E. et al., Carbohydr. Res., 1975, 39, 87 (β -D-fur-ethylidene tri-Ac, β -D-fur, diethylidene)

Dick, W.E. et al., Carbohydr. Res., 1975, 42, 55; 65 (α -D-pyr ethylidene tri-Ac, α -D-pyr ethylidene di-Ac benzyl, α -D-pyr ethylidene benzyl)

Bock, K. et al., Annu. Rep. NMR Spectrosc., (Webb, G.A., ed.), Acad. Press, London and New York, 1982, 13, 37; 41 (pmr, cmr)

Ko, S.Y. et al., Science (Washington, D.C.), 1983, 220, 949 (total synth, L-form)

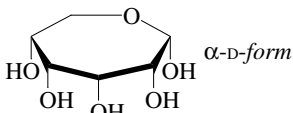
Kroon-Batenburg, L.M.J. et al., Acta Cryst. C, 1984, 40, 1863 (β -D-pyr, cryst struct)

Lee, S.H. et al., Phytochemistry, 1991, 30, 1251 (gallates)

Krülle, T. et al., Carbohydr. Res., 1993, 247, 145 (D-form pentabenzyl)

Alloseptanose

A-87



$\text{C}_6\text{H}_{12}\text{O}_6$ 180.157

D-form

2,5-Anhydro, 3,4-O-isopropylidene: 2,5-

Anhydro-3,4-O-isopropylidene-D-alloseptanose, 9CI

[85761-44-0]

$\text{C}_9\text{H}_{14}\text{O}_5$ 202.207

Mp 168-170°. $[\alpha]_D^{23} +12$ (c, 1.0 in CHCl_3).

α -D-form [41847-23-8]

Me glycoside, 2,3:4,5-diisopropylidene:

Methyl 2,3:4,5-di-O-isopropylidene- α -D-alloseptanoside

[51823-72-4]

$\text{C}_{13}\text{H}_{22}\text{O}_6$ 274.313

Cryst. (EtOAc /petrol).

α -DL-form

2,5-Anhydro, 3,4-O-isopropylidene: 2,5-

Anhydro-3,4-O-isopropylidene-DL-alloseptanose, 9CI

[42756-84-3]

Mp 185-186°.

β -D-form [41846-83-7]

Me glycoside, 2,3,4,5-tetra-Ac: Methyl

2,3,4,5-tetra-O-acetyl- β -D-alloseptanoside

[82438-47-9]

$\text{C}_{15}\text{H}_{22}\text{O}_{10}$ 362.333

[41847-21-6, 41847-22-7]

Craig, D.C. et al., Cryst. Struct. Commun., 1974, 3, 77-81 (cryst struct, α -D-Me gly diisopropylidene)

Just, G. et al., Can. J. Chem., 1976, 54, 2940-2947 (DL-form, 2,5-anhydroisopropylidene)

Grasdalen, H. et al., Acta Chem. Scand., Ser. A, 1978, 32, 31-39 (pmr)

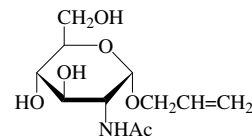
James, V.J. et al., Cryst. Struct. Commun., 1982, 11, 79-83 (cryst struct, β -D-Me gly tetra-Ac)

Robins, M.J. et al., Can. J. Chem., 1983, 61, 312-316 (D-2,5-anhydroisopropylidene)

Allyl 2-acetamido-2-deoxyglucopyranoside

A-88

2-Propenyl 2-acetamido-2-deoxyglucopyranoside



α -D-form

$\text{C}_{11}\text{H}_{19}\text{NO}_6$ 261.274

α -D-form [54400-75-8]

Cryst. ($\text{EtOH}/\text{Et}_2\text{O}$). Mp 172-174°. $[\alpha]_D^{25} +148.8$ (c, 1.62 in H_2O).

β -D-form [54400-77-0]

Mp 171-172°. $[\alpha]_D^{25} -33.9$ (c, 4.99 in H_2O).

Tri-Ac: Allyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy- β -D-glucopyranoside

$\text{C}_{17}\text{H}_{25}\text{NO}_9$ 387.386

Mp 162-163°. $[\alpha]_D^{25} -17.4$ (CHCl_3).

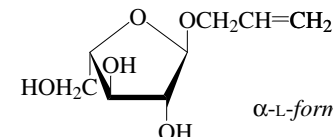
Lee, R.T. et al., Carbohydr. Res., 1974, 37, 193 (α -D-form, β -D-form)

Nashed, M.A. et al., Carbohydr. Res., 1980, 82, 237 (α -D-form, pmr)

Allyl arabinofuranoside

A-89

2-Propenyl arabinofuranoside



α -L-form

$\text{C}_8\text{H}_{14}\text{O}_5$ 190.196

α -D-form

Tribenzoyl: Allyl 2,3,5-tri-O-benzoyl- α -D-arabinofuranoside
[103702-72-3]
 $C_{29}H_{26}O_8$ 502.52
Syrup. $[\alpha]_D^{25}$ -8.2 (c, 1.00 in $CHCl_3$).

5-Trityl, 2,3-dibenzoyl: Allyl 2,3-di-O-benzoyl-5-O-trityl- α -D-arabinofuranoside
[103702-77-8]
 $C_{41}H_{36}O_7$ 640.731
Syrup. $[\alpha]_D^{25}$ -19.6 (c, 1.05 in $CHCl_3$).

 β -D-form

Tri-Ac: Allyl 2,3,5-tri-O-acetyl- β -D-arabinofuranoside
 $C_{14}H_{20}O_8$ 316.307
Oil. $[\alpha]_D^{20}$ -112.4 (c, 2 in CH_2Cl_2).

L-form

Pale yellow syrup. Mixt. of anomers.

 β -L-form [134149-40-9]

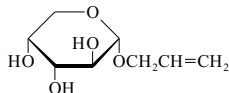
Tribenzyl: Allyl 2,3,5-tri-O-benzyl- β -L-arabinofuranoside
[134149-41-0]
 $C_{29}H_{32}O_5$ 460.569
Syrup. $[\alpha]_D^{25}$ +50 (c, 1 in CH_2Cl_2).

[134149-34-1, 134149-40-9]

Hatanaka, K. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 333 (α -D-tribenzoyl, α -D-dibenzoyl trityl)
Finch, P. *et al.*, *Carbohydr. Res.*, 1991, **210**, 319 (*L*-form, synth, cmr)
Klotz, W. *et al.*, *Annalen*, 1993, 683 (*tri-Ac*, synth, pmr)

Allyl arabinopyranoside
2-Propenyl arabinopyranoside

A-90

 α -D-Pyranose-form

$C_8H_{14}O_5$ 190.196

 α -D-Pyranose-form

Tri-Ac: Allyl 2,4,5-tri-O-acetyl- α -D-arabinopyranoside
[151557-77-6]
 $C_{14}H_{20}O_8$ 316.307
Oil.

 β -D-form [130450-63-4]

Cryst. (EtOH). Mp 121-123°. $[\alpha]_D^{21}$ -216 (c, 1.1 in H_2O).

Tri-Ac: Allyl 2,4,5-tri-O-acetyl- β -D-arabinopyranoside
 $C_{14}H_{20}O_8$ 316.307
Oil. $[\alpha]_D^{20}$ -8.1 (c, 1 in CH_2Cl_2).

2-Tosyl: Allyl 2-O-tosyl- β -D-arabinopyranoside
 $C_{15}H_{20}O_7S$ 344.385
Cryst. (CH_2Cl_2 /Et $_2O$). Mp 69-71°. $[\alpha]_D^{21}$ -125 (c, 1.2 in $CHCl_3$).

3,4-Isopropylidene: Allyl 3,4-O-isopropylidene- β -D-arabinopyranoside
[111192-28-0]
 $C_{11}H_{18}O_5$ 230.26
Cryst. (petrol). Mp 71-73°. $[\alpha]_D^{21}$ -191 (c, 1.2 in $CHCl_3$).

3,4-Isopropylidene, 2-tosyl: Allyl 3,4-O-isopropylidene-2-O-tosyl- β -D-arabinopyranoside
[130450-64-5]
 $C_{18}H_{24}O_7S$ 384.449
Cryst. (Et $_2O$ /hexane). Mp 77-78°. $[\alpha]_D^{21}$ -184 (c, 1.2 in $CHCl_3$).

 β -L-form [134149-43-2]

Needles. Mp 118-120°. $[\alpha]_D^{20}$ +179 (c, 1 in H_2O).

3,4-Isopropylidene: Allyl 3,4-O-isopropylidene- β -L-arabinopyranoside
[134149-44-3]
 $C_{11}H_{18}O_5$ 230.26
Syrup, cryst. on storage. Mp 71°. $[\alpha]_D^{20}$ +209 (c, 1.1 in CH_2Cl_2).

Tribenzyl: Allyl 2,3,4-tri-O-benzyl- β -L-arabinopyranoside
 $C_{29}H_{32}O_5$ 460.569
Syrup. $[\alpha]_D$ +47 (c, 1.1 in CH_2Cl_2).

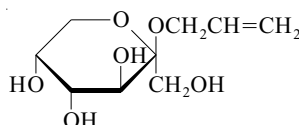
Takeo, K. *et al.*, *Carbohydr. Res.*, 1990, **201**, 261 (β -D-form, β -D-tosyl, β -D-isopropylidene, β -D-isopropylidenetosyl)

Finch, P. *et al.*, *Carbohydr. Res.*, 1991, **210**, 319 (synth, cmr)

Klotz, W. *et al.*, *Annalen*, 1993, 683 (*tri-Ac*, synth, pmr)

Allyl fructopyranoside, 9CI
2-Propenyl fructopyranoside

A-91



$C_9H_{16}O_6$ 220.222

β -D-form [156881-29-7] Alkyl glycoside directly obtainable from D-fructose in good yield (fructose is usually intractable in this respect).
Cryst. (EtOH). Mp 162-164°. $[\alpha]_D$ -149.9 (MeOH).

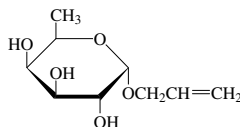
Tetrabenzoyl: Allyl 1,3,4,5-tetra-O-benzoyl- β -D-fructopyranoside
[156916-60-8]
 $C_{37}H_{32}O_{10}$ 636.654
Cryst. (EtOH). Mp 133-135°. $[\alpha]_D$ -169 ($CHCl_3$).

[156881-29-7]

Raaijmakers, H.W.C. *et al.*, *Carbohydr. Res.*, 1994, **257**, 293 (synth, pmr, cmr)

Allyl fucopyranoside
2-Propenyl 6-deoxygalactopyranoside

A-92

 α -D-form

$C_9H_{16}O_5$ 204.222

 α -D-form [201858-29-9]

No phys. props. reported.

2,3-Dibenzyl: 2-Propenyl 2,3-di-O-benzyl-6-deoxy- α -D-galactopyranoside. Allyl 2,3-di-O-benzyl- α -D-fucopyranoside
[100605-72-9]
 $C_{23}H_{28}O_5$ 384.471
Syrup. $[\alpha]_D^{20}$ +47.1 (c, 1.7 in $CHCl_3$).

 α -L-form [41308-77-4]

Cryst. (MeOH). Mp 159°. $[\alpha]_D$ -190 (c, 0.5 in MeOH).

2-Me: 2-Propenyl 6-deoxy-2-O-methyl- α -L-galactopyranoside. Allyl 2-O-methyl- α -L-fucopyranoside
[108182-36-1]
 $C_{10}H_{18}O_5$ 218.249
Syrup. $[\alpha]_D^{20}$ -195 (c, 1.6 in $CHCl_3$).

3,4-O-Isopropylidene: Allyl 3,4-O-isopropylidene- α -L-fucopyranoside
[108182-34-9]
 $C_{12}H_{20}O_5$ 244.287

Cryst. (pentane). Mp 35-36°. $[\alpha]_D^{20}$ -153 (c, 1.1 in $CHCl_3$).

2,4-Dibenzyl: 2-Propenyl 2,4-di-O-benzyl-6-deoxy- α -L-galactopyranoside. Allyl 2,4-di-O-benzyl- α -L-fucopyranoside
[62396-57-0]
 $C_{23}H_{28}O_5$ 384.471

Cryst. (hexane). Mp 86-87°. $[\alpha]_D$ -92 (c, 0.5 in $CHCl_3$).

3,4-Dibenzyl: 2-Propenyl 3,4-di-O-benzyl-6-deoxy- α -L-galactopyranoside. Allyl 3,4-di-O-benzyl- α -L-galactopyranoside
[62396-58-1]
 $C_{23}H_{28}O_5$ 384.471

Cryst. (hexane). Mp 85-86°. $[\alpha]_D$ -126 (c, 0.5 in $CHCl_3$).

 β -L-form [60431-32-5]

$[\alpha]_D^{23}$ +21.5 (c, 1.0 in H_2O).

2,4-Di-Ac: 2-Propenyl 2,4-di-O-acetyl-6-deoxy- β -L-galactopyranoside
 $C_{13}H_{20}O_7$ 288.297
Powder. $[\alpha]_D^{20}$ +6 (c, 1 in $CHCl_3$).

Tri-Ac: 2-Propenyl 2,3,4-tri-O-acetyl-6-deoxy- β -L-galactopyranoside
[60431-31-4]
 $C_{15}H_{22}O_8$ 330.334
Powder. $[\alpha]_D^{20}$ +13 (c, 1 in $CHCl_3$).

James, K. *et al.*, *Aust. J. Chem.*, 1976, **29**, 1159-1162 (β -L-form)

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1976, **52**, 235-240 (α -L-form, synth)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1986, **150**, 133-150 (α -L-2-Me, α -L-3,4-isopropylidene)

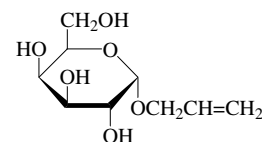
Thiem, J. *et al.*, *Annalen*, 1987, 289-295 (α -D-2,3-dibenzyl)

Kunz, H. *et al.*, *J. Prakt. Chem.*, 1992, **334**, 579-583 (α -L-form, synth, pmr, cmr)

de Souza, A.C. *et al.*, *Eur. J. Org. Chem.*, 2004, 4323-4339 (β -L-2,4-di-Ac, β -L-tri-Ac)

Allyl galactopyranoside
2-Propenyl galactopyranoside, 9CI

A-93

 α -D-form

$C_9H_{16}O_6$ 220.222

α -D-form [48149-72-0]

 Mp 143-145°. [α]_D²⁵ +181.3 (c, 1.6 in H₂O).

4,6-O-Benzylidene: Allyl 4,6-O-benzylidene- α -D-galactopyranoside

[20746-64-9]

 C₁₆H₂₀O₆ 308.33

 Mp 115-117°. [α]_D +121 (c, 1.9 in CHCl₃).

3,4-O-Isopropylidene: Allyl 3,4-O-isopropylidene- α -D-galactopyranoside

[81713-32-8]

 C₁₂H₂₀O₆ 260.286

 Syrup. [α]_D²⁵ +131.5 (c, 1 in CHCl₃).

2,3-Dibenzyl: Allyl 2,3-di-O-benzyl- α -D-galactopyranoside

[100605-69-4]

 C₂₃H₂₈O₆ 400.471

 Syrup. [α]_D²⁰ +96.1 (c, 0.6 in CHCl₃). [α]_D +68 (c, 1.0 in CHCl₃).

2,3-Dibenzyl, 4,6-O-benzylidene: Allyl 2,3-di-O-benzyl-4,6-O-benzylidene- α -D-galactopyranoside

[20746-71-8]

 C₃₀H₃₂O₆ 488.579

 Cryst. (petrol). Mp 123-125°. [α]_D²⁰ +82.4 (c, 1 in CHCl₃).

2,6-Dibenzyl: Allyl 2,6-di-O-benzyl- α -D-galactopyranoside

[37111-91-4]

 C₂₃H₂₈O₆ 400.471

Mp 49-51° (48-49°).

2,6-Dibenzyl, 3,4-isopropylidene: Allyl 2,6-di-O-benzyl-3,4-O-isopropylidene- α -D-galactopyranoside

[81713-34-0]

 C₂₆H₃₂O₆ 440.535

 Syrup. [α]_D²⁵ +112.7 (c, 0.35 in CHCl₃).

4,6-Dibenzyl: Allyl 4,6-di-O-benzyl- α -D-galactopyranoside

 C₂₃H₂₈O₆ 400.471

 [α]_D²⁵ +30.1 (c, 2.6 in CHCl₃).

2,3,6-Tribenzyl: Allyl 2,3,6-tri-O-benzyl- α -D-galactopyranoside

[61893-74-1]

 C₃₀H₃₄O₆ 490.595

 [α]_D²¹ +54 (c, 0.8 in CHCl₃).

2,4,6-Tribenzyl: Allyl 2,4,6-tri-O-benzyl- α -D-galactopyranoside

[61236-87-1]

 C₃₀H₃₄O₆ 490.595

 Solid (Et₂O). Mp 64-65°. [α]_D²⁰ +61.9 (c, 1 in CHCl₃).

 β -D-form [2595-07-5]

 Mp 102-103°. [α]_D²⁵ -11 (c, 3.4 in H₂O).

2,6-Di-Ac: Allyl 2,6-di-O-acetyl- β -D-galactopyranoside

[85207-12-1]

 C₁₃H₂₀O₈ 304.296

 Cryst. (Et₂O/petrol). Mp 75-76.5°. [α]_D²⁰ -9.5 (c, 2.0 in CHCl₃).

2,3,4-Tri-Ac: Allyl 2,3,4-tri-O-acetyl- β -D-galactopyranoside

[101528-71-6]

 C₁₅H₂₂O₉ 346.333

 Mp 96-97°. [α]_D +1.5 (c, 1.5 in CHCl₃).

3,4,6-Tri-Ac: Allyl 3,4,6-tri-O-acetyl- β -D-galactopyranoside

[152772-84-4]

 C₁₅H₂₂O₉ 346.333

 Syrup. [α]_D +59.4 (c, 0.9 in CHCl₃).

3,4-O-Isopropylidene: Allyl 3,4-O-isopropylidene- β -D-galactopyranoside

[85207-10-9]

 C₁₂H₂₀O₆ 260.286

 Cryst. (Me₂CO/petrol). Mp 91-92°. [α]_D²² +10 (c, 2.0 in CHCl₃). [α]_D²⁵ +131.5 (c, 1.0 in CHCl₃).

4,6-O-Isopropylidene: Allyl 4,6-O-isopropylidene- β -D-galactopyranoside

[92516-88-6]

 C₁₂H₂₀O₆ 260.286

 Mp 95.5-97° (88.5-90°). [α]_D²² +4.3 (c, 0.3 in CHCl₃).

4,6-O-Benzylidene: Allyl 4,6-O-benzylidene- β -D-galactopyranoside

[71925-95-6]

 C₁₆H₂₀O₆ 308.33

 Cryst. (EtOH). Mp 178-179°. [α]_D -7 (c, 1.0 in Py).

2,3-Dibenzyl: Allyl 2,3-di-O-benzyl- β -D-galactopyranoside

[97817-99-7]

 C₂₃H₂₈O₆ 400.471

 Needles (C₆H₆/hexane). Mp 70-70.5°. [α]_D²⁰ -3.1 (c, 1.0 in CHCl₃).

2,3-Dibenzyl, 4,6-isopropylidene: Allyl 2,3-di-O-benzyl-4,6-O-isopropylidene- β -D-galactopyranoside

[117780-15-1]

 C₂₆H₃₂O₆ 440.535

 Prisms (hexane/Et₂O). Mp 68-69.5°.

 [α]_D²⁰ -19.6 (c, 1.33 in CHCl₃).

 α -L-form [821794-27-8]

 Cryst. (2-propanol). [α]_D²⁰ -28 (c, 0.4 in MeOH).

 Talley, E.A. *et al.*, *J.A.C.S.*, 1945, **67**, 2037

(synth)

 Gigg, R. *et al.*, *J.C.S. (C)*, 1968, 1903 (α -D-4,6-benzylidene, 2,3-dibenzyl)

 Lee, R.T. *et al.*, *Carbohydr. Res.*, 1974, **37**, 193

(synth)

 Jacquinet, J.C. *et al.*, *Tetrahedron*, 1979, **35**, 365

 (β -D-form, benzylidene, synth)

 Nashed, M.A. *et al.*, *Carbohydr. Res.*, 1982, **102**, 99 (benzylidene, pmr)

 Chernyak, N.Y. *et al.*, *Carbohydr. Res.*, 1984, **128**, 269 (β -D-form derivs)

 Nakahara, Y. *et al.*, *Carbohydr. Res.*, 1988, **173**, 306 (β -D-2,3-dibenzyl derivs)

 Catelani, G. *et al.*, *Carbohydr. Res.*, 1988, **182**, 297 (synth, 3,4-isopropylidene)

 Thiem, J. *et al.*, *Annalen*, 1991, 289-295 (α -D-2,3-dibenzyl)

 He, D.-Y. *et al.*, *Carbohydr. Res.*, 1993, **239**, 267-271 (α -D-3,4-isopropylidene, 2,6-dibenzyl)

 Stevenson, D.E. *et al.*, *Carbohydr. Res.*, 1996, **284**, 279-283 (β -D synth)

 Liu, M.Z. *et al.*, *Carbohydr. Res.*, 1996, **290**, 233-237 (3,4,6-tri-Ac)

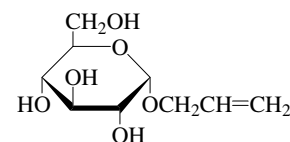
 Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 2000, **73**, 967-976; 2003, **76**, 1603-1615 (α -D-form, α -D-2,3-dibenzyl, α -D-2,3,6-tribenzyl)

 Lay, L. *et al.*, *Eur. J. Org. Chem.*, 2001, 4331-4336 (α -D-2,4,6-tribenzyl)

 de Souza, A.C. *et al.*, *Eur. J. Org. Chem.*, 2004, 4323-4339 (α -L-form, synth)

Allyl glucopyranoside

A-94

2-Propenyl glucopyranoside, 9CI

 α -D-form

 C₉H₁₆O₆ 220.222

 α -D-form [7464-56-4]

 Syrup. Mp 101-102° (95-97°). [α]_D²⁵ +133.8 (c, 1.65 in H₂O) (+151). [α]_D +75.7 (c, 0.9 in CHCl₃).

3,4,6-Tri-Ac: Allyl 3,4,6-tri-O-acetyl- α -D-glucopyranoside

 C₁₅H₂₂O₉ 346.333

 Syrup. [α]_D +75.7 (c, 0.9 in CHCl₃).

Tetra-Ac: Allyl 2,3,4,6-tetra-O-acetyl- α -D-glucopyranoside

[39698-55-0]

 C₁₇H₂₄O₁₀ 388.371

 Cryst. (Et₂O/hexane). Mp 51-53°. [α]_D +131 (c, 1.1 in MeOH).

2,3-Dibenzoyl: Allyl 2,3-di-O-benzoyl- α -D-glucopyranoside

[155786-53-1]

 C₂₃H₂₄O₈ 428.438

 Mp 116-118°. [α]_D²⁰ +169 (c, 1.1 in CHCl₃).

2,6-Dibenzoyl: Allyl 2,6-di-O-benzoyl- α -D-glucopyranoside

[127446-71-3]

 C₂₃H₂₄O₈ 428.438

 Mp 136-137°. [α]_D +74 (CHCl₃) (+70.1).

2,3,4-Tribenzoyl: Allyl 2,3,4-tri-O-benzoyl- α -D-glucopyranoside

[155786-52-0]

 C₃₀H₂₈O₉ 532.546

 [α]_D²⁰ +5 (c, 1.17 in CHCl₃).

3,4-Isopropylidene: Allyl 3,4-O-isopropylidene- α -D-glucopyranoside

[169822-02-0]

 C₁₂H₂₀O₆ 260.286

 Oil. [α]_D +114 (c, 1.3 in CHCl₃).

3,4-Isopropylidene, 2,6-dibenzoyl: Allyl 2,6-di-O-benzoyl-3,4-O-isopropylidene- α -D-glucopyranoside

[169822-01-9]

 C₂₆H₂₈O₈ 468.502

 Pale yellow oil. [α]_D +69.4 (c, 2.2 in CHCl₃).

4,6-Isopropylidene, 2,3-dibenzoyl: Allyl 2,3-di-O-benzoyl-4,6-O-isopropylidene- α -D-glucopyranoside

[155786-54-2]

 C₂₆H₂₈O₈ 468.502

 Cryst. (Et₂O/pentane). Mp 119-121°. [α]_D²⁰ +131 (c, 2.3 in CHCl₃).

2,6-Dibenzyl: Allyl 2,6-di-O-benzyl- α -D-glucopyranoside

[169822-03-1]

 C₂₃H₂₈O₆ 400.471

 Cryst. (diisopropyl ether). [α]_D +76.4 (c, 0.8 in CHCl₃).

2,6-Dibenzyl, 3,4-isopropylidene: Allyl 2,6-di-O-benzyl-3,4-O-isopropylidene- α -D-glucopyranoside

[169822-00-8]

$C_{26}H_{32}O_6$ 440.535
Pale yellow oil. $[\alpha]_D^{25} +27.8$ (c, 2.0 in $CHCl_3$).

2,3-Dibenzyl, 4,6-isopropylidene: Allyl 2,3-dibenzyl-4,6-O-isopropylidene- α -D-glucopyranoside
[181777-10-6]
 $C_{26}H_{32}O_6$ 440.535
Oil. $[\alpha]_D^{20} +26.5$ (c, 0.7 in $CHCl_3$).

β -D-form [34384-79-7]
Syrup. Mp 100-101°. $[\alpha]_D^{25} -40$ (c, 3.52 in H_2O).

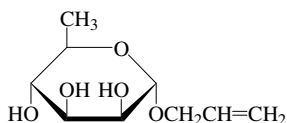
3,4,6-Tri-Ac: Allyl 3,4,6-tri-O-acetyl- β -D-glucopyranoside
 $C_{15}H_{22}O_9$ 346.333
Syrup.

Tetra-Ac: Allyl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside
[10343-15-4]
 $C_{17}H_{24}O_{10}$ 388.371
Cryst. (Et_2O). Mp 89-90° (88°). $[\alpha]_D^{23} -25$ (c, 1 in $CHCl_3$).

[160412-85-1]

Lee, R.T. *et al.*, *Carbohydr. Res.*, 1974, **37**, 193-201 (α -D-form, β -D-form, synth, tetra-Ac)
Nepogodev, S.A. *et al.*, *Carbohydr. Res.*, 1994, **254**, 43-60 (α -D-form, tetra-Ac, 2,3-dibenzoyl, 2,3,4-tribenzoyl, 4,6-isopropylidene 2,3-dibenzoyl)
Liu, M.Z. *et al.*, *Carbohydr. Res.*, 1996, **190**, 233-237 (3,4,6-tri-Ac)
Jenkins, D.J. *et al.*, *Carbohydr. Res.*, 1996, **287**, 169-182 (α -D-2,6-dibenzoyl, 2,6-dibenzoyl 3,4-isopropylidene, 3,4-isopropylidene, 2,6-dibenzoyl, 2,3-dibenzoyl 4,6-isopropylidene)
Yuasa, Y. *et al.*, *Org. Process Res. Dev.*, 2004, **8**, 405-407 (α -D-tetra-Ac, β -D-tetra-Ac)

Allyl rhamnopyranoside A-95 2-Propenyl 6-deoxymannopyranoside



α -D-form

$C_9H_{16}O_5$ 204.222

α -D-form

2,3-O-Isopropylidene: Allyl 2,3-O-isopropylidene- α -D-rhamnopyranoside
[100639-25-6]
 $C_{12}H_{20}O_5$ 244.287
Oil. $[\alpha]_D^{26} +32$ (c, 1 in $CHCl_3$).

4-Benzyl: Allyl 4-O-benzyl- α -D-rhamnopyranoside
[100639-27-8]
 $C_{16}H_{22}O_5$ 294.347
Mp 69-70°. $[\alpha]_D^{25} +70$ (c, 1 in $CHCl_3$).

2,4-Dibenzyl: Allyl 2,4-di-O-benzyl- α -D-rhamnopyranoside
[603962-03-4]
 $C_{23}H_{28}O_5$ 384.471
 $[\alpha]_D^{24} +5$ (c, 1.2 in CH_2Cl_2).

3,4-Dibenzyl: Allyl 3,4-di-O-benzyl- α -D-rhamnopyranoside
[603962-20-5]
 $C_{23}H_{28}O_5$ 384.471
 $[\alpha]_D^{25} +51$ (c, 0.3 in $CHCl_3$).

2,3,4-Tribenzyl: Allyl 2,3,4-tri-O-benzyl- α -D-rhamnopyranoside
[603961-98-4]
 $C_{30}H_{34}O_5$ 474.596
 $[\alpha]_D^{23} +12$ (c, 0.3 in CH_2Cl_2).

α -L-form

Syrup. $[\alpha]_D -49$ (c, 1.0 in $CHCl_3$).

4-Ac: Allyl 4-O-acetyl- α -L-rhamnopyranoside
[155165-95-0]
 $C_{11}H_{18}O_6$ 246.26
Cryst. Mp 50-52°. $[\alpha]_D -80$ (c, 1 in $CHCl_3$).

Tri-Ac: Allyl 2,3,4-tri-O-acetyl- α -L-rhamnopyranoside
[109917-80-8]
 $C_{15}H_{22}O_8$ 330.334
Oil. $[\alpha]_D -53$ (c, 1.4 in $CHCl_3$).

4-Me: Allyl 4-O-methyl- α -L-rhamnopyranoside
[71695-56-2]
 $C_{10}H_{18}O_5$ 218.249
Syrup. $[\alpha]_D -78.5$ (c, 1.0 in MeOH).

2,4-Di-Me: Allyl 2,4-di-O-methyl- α -L-rhamnopyranoside
[155165-91-6]
 $C_{11}H_{20}O_5$ 232.276
Syrup. $[\alpha]_D -59$ (c, 1 in $CHCl_3$).

2,3,4-Tri-Me: Allyl 2,3,4-tri-O-methyl- α -L-rhamnopyranoside
[155165-92-7]
 $C_{12}H_{22}O_5$ 246.303
Syrup. $[\alpha]_D -32$ (c, 1 in $CHCl_3$).

2,3-O-Isopropylidene: Allyl 2,3-O-isopropylidene- α -L-rhamnopyranoside
[71695-57-3]
 $C_{12}H_{20}O_5$ 244.287
Syrup. $[\alpha]_D^{24} -36.6$ (c, 1 in $CHCl_3$).

4-Benzyl: Allyl 4-O-benzyl- α -L-rhamnopyranoside
[89821-78-3]
 $C_{16}H_{22}O_5$ 294.347
Prisms (CH_2Cl_2 /hexane). Mp 66-67.5°. $[\alpha]_D^{25} -75.2$ (c, 1.0 in $CHCl_3$).

3,4-Dibenzyl: Allyl 3,4-di-O-benzyl- α -L-rhamnopyranoside
[119471-45-3]
 $C_{23}H_{28}O_5$ 384.471
Syrup. $[\alpha]_D -43.6$ (c, 1 in $CHCl_3$).

Gigg, R. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 207-223 (α -L-isopropylidene, α -L-4-benzyl)
Gigg, J. *et al.*, *Carbohydr. Res.*, 1985, **141**, 91-97 (α -D-isopropylidene, α -D-4-benzyl)
Chatterjee, D. *et al.*, *Carbohydr. Res.*, 1986, **156**, 39-56 (α -L-form, α -L-isopropylidene)

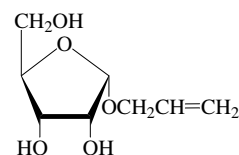
Pinto, B.M. *et al.*, *J.C.S. Perkin 1*, 1987, 9-14 (α -L-4-benzyl)
Westerduin, P. *et al.*, *Carbohydr. Res.*, 1988, **180**, 195-205 (α -L-tri-Ac, α -L-3,4-dibenzyl)
Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1991, **216**, 337-355 (α -L-4-Me)

Mahajan, R. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 63-73 (α -L-4-Ac, α -L-2,4-di-Me, α -L-2,3,4-tri-Me)

Zhang, J. *et al.*, *Tetrahedron: Asymmetry*, 1994, **5**, 2283-2290 (α -L-form, α -L-4-benzyl)
Bousquet, E. *et al.*, *Carbohydr. Res.*, 1998, **311**, 171-181 (α -L-3,4-dibenzyl)

Hirooka, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2003, **76**, 1409-1421 (α -D-2,4-dibenzyl, α -D-3,4-dibenzyl, α -D-2,3,4-tribenzyl)

Allyl ribofuranoside A-96 2-Propenyl ribofuranoside



α -D-form

$C_8H_{14}O_5$ 190.196

D-form

Syrup. Anomeric mixt.

Tribenzyl: Allyl 2,3,5-tri-O-benzyl-D-ribofuranoside
[134149-48-7]
 $C_{29}H_{32}O_5$ 460.569
Syrup. Anomeric mixt.

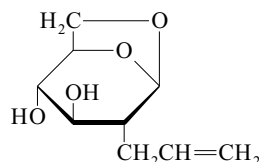
[121682-55-1, 134149-38-5, 185809-26-1]

Finch, P. *et al.*, *Carbohydr. Res.*, 1991, **210**, 319 (synth, cmr)

Liu, M.Z. *et al.*, *Carbohydr. Res.*, 1991, **290**, 233-237 (3,4-di-Ac)

2-C-Allyl-1,6-anhydro-2-deoxyglucose A-97

1,6-Anhydro-2-deoxy-2-C-(2-propenyl)glucose



$C_9H_{14}O_4$ 186.207

β -D-Pyranose-form

[149300-19-6]

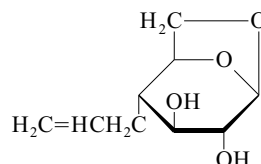
$[\alpha]_D^{22} -52$ (c, 1.3 in MeOH).

4-Ac: 4-O-Acetyl-2-C-allyl-1,6-anhydro-2-deoxy- β -D-glucopyranose
[149300-20-9]
 $C_{11}H_{16}O_5$ 228.244
Syrup. $[\alpha]_D^{22} -49$ (c, 1.25 in MeOH).

Di-Ac: 3,4-Di-O-acetyl-2-C-allyl-1,6-anhydro-2-deoxy- β -D-glucopyranose
[149300-18-5]
 $C_{13}H_{18}O_6$ 270.282
Syrup. $[\alpha]_D^{22} -66$ (c, 1.13 in $CHCl_3$).

Leteux, C. *et al.*, *Carbohydr. Res.*, 1993, **242**, 119 (β -D-pyr-form, β -D-di-Ac, pmr)

4-C-Allyl-1,6-anhydro-4-deoxyglucose A-98



$C_9H_{14}O_4$ 186.207

D-form

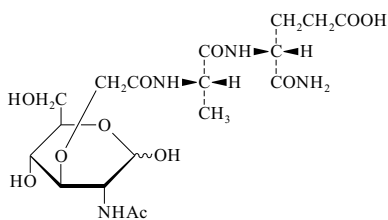
2-Tosyl: 4-C-Allyl-1,6-anhydro-4-deoxy-2-O-tosyl- β -D-glucopyranose
[74878-90-3]
 $C_{16}H_{20}O_6S$ 340.396
Synthon. Cryst. Mp 70-71°. $[\alpha]_D^{25}$ -58 (c, 0.9 in $CHCl_3$).

Kelly, A.G. *et al.*, *Chem. Comm.*, 1980, 228 (synth)

Kale, V.N. *et al.*, *J.O.C.*, 1984, **49**, 1554 (synth, ir, pmr, cmr)

Almurtide, BAN, INN**A-99**

N^2 -[N-(N-Acetylmuramoyl)glycyl]- α -D-glutamine, 9CI. N^2 -[(2-Acetamido-2-deoxy-D-glucopyranos-3-O-yl)acetyl-L-alanyl]-D-glutamic 1-amide. Nor MDP. Des-methyl muramyl dipeptide
[61136-12-7]



$C_{18}H_{30}N_4O_{11}$ 478.455
Immunostimulant, potentiates cytotoxicity of human monocytes. Cryst. (MeOH). Mp 234° dec. $[\alpha]_D^{28}$ +33 (c, 0.46 in H_2O).

Adam, A. *et al.*, *Biochem. Biophys. Res. Commun.*, 1976, **72**, 339 (pharmacol)

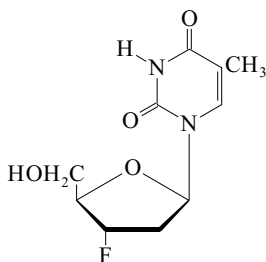
Lefrancier, P. *et al.*, *Int. J. Pept. Protein Res.*, 1977, **9**, 249 (synth)

Kusumoto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1979, **52**, 1665 (synth)

Utsugi, T. *et al.*, *J. Immunol.*, 1986, **136**, 1117 (pharmacol)

Alovudine, INN, USAN**A-100**

3'-Deoxy-3'-fluorothymidine. CL 184824
[25526-93-6]



$C_{10}H_{13}FN_2O_4$ 244.222

Antiviral agent. Potent HIV inhibitor, use limited by haemotoxicity. Mp 178-180° (176-177°).

► Exp. and human haematopoietic effects. XP2073000

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 375C (nmr)

Herdewijn, P. *et al.*, *J. Med. Chem.*, 1987, **30**, 1270-1278 (synth, pmr, activity)

Motawia, M.A. *et al.*, *Annalen*, 1990, 1137-1139 (synth, bibl)

Kong, X.-B. *et al.*, *Antimicrob. Agents Chemother.*, 1992, **36**, 808-818 (activity)

Sandstroem, E. *et al.*, *Drugs*, 1993, **45**, 488-508 (pharmacol, rev)

Sundseth, R. *et al.*, *Antimicrob. Agents Chemother.*, 1996, **40**, 331-335 (pharmacol, tox)

Rusconi, S. *et al.*, *Curr. Opin. Invest. Drugs*, 2003, **4**, 219-223 (rev)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAR200

Alternan**A-101**

B-1355 dextran fraction S

[136510-13-9]

$[-\alpha$ -D-Glc-(1→3)- α -D-Glc-(1→6)-] $_n$

Contains alternating (1→3) and (1→6) linkages. Prod. by *Leuconostoc mesenteroides* NRRL B-1355.

$[\alpha]_D$ +220. Resistant to hydrol. by most enzymes.

Misaki, A. *et al.*, *Carbohydr. Res.*, 1980, **84**, 273-285 (isol, struct, bibl)

Côté, G.L. *et al.*, *Carbohydr. Res.*, 1982, **101**, 57-74 (isol, struct)

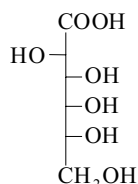
Côté, G.L. *et al.*, *Carbohydr. Polym.*, 1992, **19**, 249-252 (props)

Biely, P. *et al.*, *Eur. J. Biochem.*, 1994, **226**, 633-639 (purifn, props)

Altronic acid**A-102**

altro-Hexonic acid

[24871-35-0]



$C_6H_{12}O_7$ 196.157

For stereoisomers see Allonic acid, A-78, Galactonic acid, G-23, Gluconic acid, G-250, Gulonic acid, G-584, Idonic acid, I-4, Mannonic acid, M-36 and Talonic acid, T-5.

D-form

2,5-Anhydro, 3,4,6-tribenzoyl: 2,5-Anhydro-3,4,6-tri-O-benzoyl-D-altronic acid
[61407-83-8]

$C_{27}H_{22}O_9$ 490.465

Amorph. solid. $[\alpha]_D^{19}$ -494.6 (c, 1.9 in $CHCl_3$). λ_{max} 230 (log ϵ 4.36); 275 (log ϵ 3.37) (no solvent reported).

1,4-Lactone: D-1,4-Altronolactone

[28060-83-5]

[83602-36-2]

$C_6H_{10}O_6$ 178.141

1,4-Lactone, tetrabenzoyl: 2,3,5,6-Tetra-O-benzoyl-D-1,4-altronolactone

$C_{34}H_{26}O_{10}$ 594.573

Needles ($CHCl_3$ /EtOH). Mp 189-190°. $[\alpha]_D$ -69.8 (c, 4.04 in CH_2Cl_2).

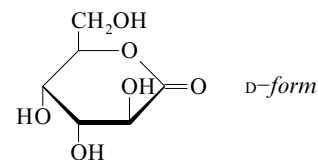
Kohn, P. *et al.*, *J.A.C.S.*, 1965, **87**, 5475-5480 (1,4-lactone tetrabenzoyl)

Arakawa, K. *et al.*, *Chem. Lett.*, 1976, 1119 (D-anhydro tribenzoyl)

London, R.E. *et al.*, *Org. Magn. Reson.*, 1981, **15**, 333 (cmr, lactone)

1,5-Altronolactone**A-103**

altrono-1,5-Lactone. altro-1,5-Hexonolactone



$C_6H_{10}O_6$ 178.141

D-form

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-D-altrono-1,5-lactone
[137126-34-2]

$C_9H_{14}O_6$ 218.206

Cryst. Mp 120-122°. $[\alpha]_D^{20}$ +101.3 (c, 0.9 in EtOH).

3,4-O-Cyclohexylidene: 3,4-O-Cyclohexylidene-D-altrono-1,5-lactone
[150496-21-2]

$C_{12}H_{18}O_6$ 258.271

Cryst. solid. Mp 119-120°. $[\alpha]_D$ +80.4 (c, 1.02 in EtOH).

3,4-Cyclohexylidene, 6-O-(tert-butyltrimethylsilyl): 3,4-O-Isopropylidene-6-O-(tert-butyltrimethylsilyl)-D-altrono-1,5-lactone
[150496-22-3]

$C_{18}H_{32}O_6Si$ 372.533

Cryst. solid (MeOH aq.). Mp 74-75°. $[\alpha]_D^{20}$ +71.3 (c, 1.02 in $CHCl_3$).

3,4-O-Cyclohexylidene, 6-O-(tert-butyltrimethylsilyl), 2-O-(trifluoromethanesulfonyl): 6-O-(tert-Butyltrimethylsilyl)-3,4-O-cyclohexylidene-2-O-triflyl-D-altrono-1,5-lactone
[145372-71-0]

$C_{19}H_{31}F_3O_8SSi$ 504.596

Cryst. solid (MeOH aq.). Mp 76-78°. $[\alpha]_D$ +19 (c, 1.1 in $CHCl_3$).

L-form

2,3,4,6-Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl-L-altrono-1,5-lactone
[167904-07-6]

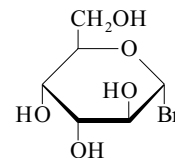
$C_{34}H_{34}O_6$ 538.639

$[\alpha]_D^{24}$ +14.3 (c, 1.01 in $CHCl_3$).

Bichard, C.J.F. *et al.*, *Tetrahedron: Asymmetry*, 1991, **2**, 901 (isopropylidene)

Fairbanks, A.J. *et al.*, *Tetrahedron*, 1995, **51**, 3881 (synth, pmr, 3,4-cyclohexylidene derivs)

Takahashi, H. *et al.*, *J.A.C.S.*, 2000, **122**, 2995-3000 (L-form, tetrabenzoyl)

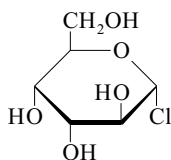
Altopyranosyl bromide**A-104**

$C_6H_{11}BrO_5$ 243.054

α -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-al-
topyranosyl bromide
[29907-26-4]
 $C_{14}H_{19}BrO_9$ 411.203
Cryst. Mp 107-108°. $[\alpha]_D^{20} +160$ (c, 2.2 in
 $CHCl_3$).

de Pascual, J. *et al.*, *An. Quim., Ser. B*, 1967, **63**,
221; *CA*, **67**, 82333f (*tetra-Ac*)
Paulsen, H. *et al.*, *Chem. Ber.*, 1970, **103**, 2463;
1973, **106**, 3850 (*tetra-Ac*)

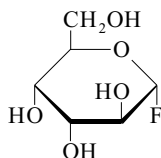
Altopyranosyl chloride
A-105

 $C_6H_{11}ClO_5$ 198.603

 α -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-al-
topyranosyl chloride
[17081-03-7]
 $C_{14}H_{19}ClO_9$ 366.751
Cryst. ($CHCl_3/Et_2O/2$ -methylbutane).
Mp 102°. $[\alpha]_D^{20} +110$ (c, 5 in $CHCl_3$).

Richtmyer, N.K. *et al.*, *J.A.C.S.*, 1941, **63**, 1727
(*tetra-Ac*)

de Pascual, J. *et al.*, *An. Quim., Ser. B*, 1967, **63**,
221; *CA*, **67**, 82333f (*tetra-Ac*)

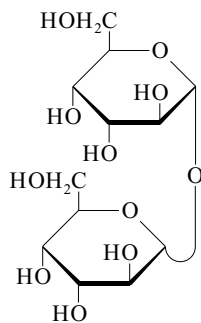
Altopyranosyl fluoride
A-106

 $C_6H_{11}FO_5$ 182.148

 α -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-al-
topyranosyl fluoride
[51897-75-7]
 $C_{14}H_{19}FO_9$ 350.297
Syrup. $[\alpha]_D^{20} +35.9$ (c, 4.3 in $CHCl_3$).

Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **49**, 1
(*tetra-Ac*, pmr)

Bock, K. *et al.*, *Acta Chem. Scand.*, 1973, **27**,
2701; *Acta Chem. Scand., Ser. B*, 1975, **29**,
682 (*tetra-Ac*, cmr, F-19 nmr)

 **α -D-Altopyranosyl- α -D-alto-
pyranoside**
A-107

 $C_{12}H_{22}O_{11}$ 342.299

Non-reducing disaccharide.

4,6:4',6'-Di-O-benzylidene, 2,2'-dibenzyl:
2-O-Benzyl-4,6-O-benzylidene- α -D-alto-
pyranosyl 2-O-benzyl-4,6-O-benzylidene-
 α -D-altopyranoside
 $C_{40}H_{42}O_{11}$ 698.765
Cryst. (MeOH). Mp 197-199°. $[\alpha]_D$
+94.7 (c, 0.5 in $CHCl_3$).

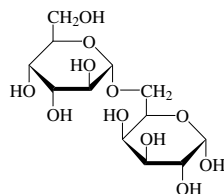
4,6:4',6'-Di-O-benzylidene, 2,2'-dibenzyl,
3,3'-ditriflyl: [96530-47-1]
 $C_{42}H_{40}F_6O_{15}S_2$ 962.891
Cryst. (EtOH). Mp 98-102°. $[\alpha]_D^{25} +80$
(c, 0.5 in $CHCl_3$).

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1984, **128**,
165

Baer, H.H. *et al.*, *Can. J. Chem.*, 1985, **63**, 440
(*triflyl*)

**6-O- α -D-Altopyranosyl-D-ga-
lactose, 8CI**
A-108

[19940-03-5]


 α -Pyranose-form

 $C_{12}H_{22}O_{11}$ 342.299

 $[\alpha]_D +100$ (H_2O).

 α -Pyranose-form

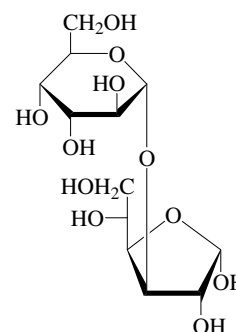
1,2:3,4-Di-O-isopropylidene: [19940-08-0]

$C_{18}H_{30}O_{11}$ 422.428
 $[\alpha]_D +13$ (EtOH).

Ferrier, R.J. *et al.*, *Chem. Comm.*, 1968, 476

**3-O- α -D-Altopyranosyl-D-
glucose**
A-109

[57820-43-6]


 α -Furanose-form

 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. Amorph. powder.
 $[\alpha]_D^{20} +114$ (c, 1.0 in H_2O).

 α -Furanose-form

1,2:5,6-Di-O-isopropylidene: [57800-19-8]

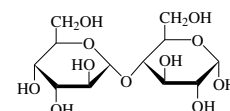
$C_{18}H_{30}O_{11}$ 422.428

Amorph. powder. $[\alpha]_D^{20} +40.2$ (c, 1.4 in
 $CHCl_3$).

David, S. *et al.*, *J.C.S. Perkin 1*, 1976, 1836
(*synth*)

**4-O- α -D-Altopyranosyl-D-
glucose, 9CI**
A-110

[78215-52-8]


 α -Pyranose-form

 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. Amorph. hygro-
scopic powder + 1.5 H_2O . $[\alpha]_D^{23} +110.5$
(c, 1.17 in H_2O).

 α -Pyranose-form

Octa-Ac: [78215-51-7]

$C_{28}H_{38}O_{19}$ 678.597

Amorph. powder. $[\alpha]_D^{20} +93.5$ (c, 0.62 in
 $CHCl_3$).

 β -Pyranose-form

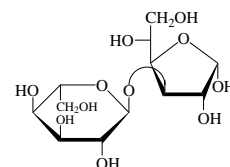
Octa-Ac: [78215-50-6]

Amorph. powder. $[\alpha]_D^{20} +51.5$ (c, 0.74 in
 $CHCl_3$).

Mori, M. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**,
421 (*synth*)

**3-O- α -L-Altopyranosyl-D-
glucose**
A-111

[61914-39-4]


 α -Furanose-form

 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. $[\alpha]_D^{20}$ -27.8 (c, 0.5 in H₂O).

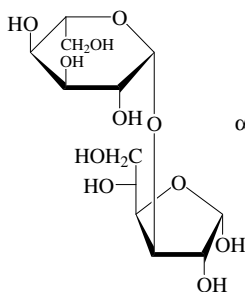
 α -Furanose-form

1,2:5,6-Di-O-isopropylidene: [57800-16-5]
C₁₈H₃₀O₁₁ 422.428
 $[\alpha]_D^{20}$ -108 (c, 0.6 in CHCl₃).

David, S. *et al.*, *J.C.S. Perkin 1*, 1976, 1836
(*synth*)

3-O- β -L-Altropyranosyl-D-glucose, 9CI
[61914-38-3]

A-112

 α -Furanose-formC₁₂H₂₂O₁₁ 342.299

Reducing disaccharide. $[\alpha]_D^{20}$ +42.3 (c, 0.6 in H₂O).

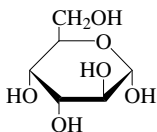
 α -Furanose-form

1,2:5,6-Di-O-isopropylidene: [57800-17-6]
C₁₈H₃₀O₁₁ 422.428
Amorph. powder. $[\alpha]_D^{20}$ +1.7 (c, 0.7 in CH₂Cl₂).

David, S. *et al.*, *J.C.S. Perkin 1*, 1976, 136,
(*synth*)

Altrose, 9CI, 8CI
[5987-68-8]

A-113

 α -D-Pyranose-formC₆H₁₂O₆ 180.157

An aq. soln. at 22° contains 27% α -pyr, 43% β -pyr, 17% α -fur, 13% β -fur and 0.04% aldehyde. Crystallises in β -form.

D-form [1990-29-0]

Mp 103-105° Mp 141°. $[\alpha]_D^{20}$ -69 \rightarrow +32.8 (c, 3.5 in H₂O).

Benzylphenylhydrazone: Mp 146-147°. $[\alpha]_D$ +22 (c, 0.37 in MeOH).

Di-Et dithioacetal: [4258-05-3]

C₁₀H₂₂O₅S₂ 286.413
Needles (MeOH/Et₂O). Mp 98-100°. $[\alpha]_D$ +11.7 (c, 2.42 in H₂O).

Dibenzyl dithioacetal:

Cryst. (EtOAc/petrol). Mp 119-120°. $[\alpha]_D^{24}$ +39.8 (c, 1.75 in Py).

2,3,4,5,6-Pentabenzyl: 2,3,4,5,6-Penta-O-benzyl-D-altrose

C₄₁H₄₂O₆ 630.779
 $[\alpha]_D$ -13.9 (c, 0.83 in CHCl₃).

Phenylosazone: See Hexose phenylosazones, H-90

 α -D-Pyranose-form [7282-80-6]

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl- α -D-altropyranose
[4257-96-9]
C₁₆H₂₂O₁₁ 390.343

Mp 118-119°. $[\alpha]_D^{20}$ +63 (CHCl₃).

Me glycoside: See Methyl altroside, M-149

 β -D-Pyranose-form [7283-10-5]

1,2-O-Isopropylidene: See 1,2-O-Isopropylidenealtrose, I-59

Me glycoside: See Methyl altroside, M-149

 β -D-Furanose-form [40461-79-8]

1,2-O-Isopropylidene: See 1,2-O-Isopropylidenealtrose, I-59

L-form [1949-88-8]

Mp 107-109.5°. $[\alpha]_D^{20}$ -32.3 (H₂O).

Benzylphenylhydrazone: [15354-63-9]
Cryst. (EtOH aq.). Mp 146-147°. $[\alpha]_D$ -20 (c, 0.33 in MeOH).

2,3,4,6-Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl-L-altrose
[222416-57-1]
C₃₄H₃₆O₆ 540.655

$[\alpha]_D^{24}$ +8.64 (c, 1.1 in CHCl₃).

 α -L-Furanose-form

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl- α -L-altrofuranside
[16895-96-8]
C₂₁H₂₆O₆ 374.433

Syrup. $[\alpha]_D^{20}$ -55.8 (c, 2.69 in CHCl₃).

 β -L-Furanose-form

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl- β -L-altrofuranside
[16895-97-9]
C₂₁H₂₆O₆ 374.433

Amorph. powder. $[\alpha]_D^{20}$ +55.5 (c, 2.73 in CHCl₃).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 301B (nmr)

Richtmyer, N.K. *et al.*, *Adv. Carbohydr. Chem.*, 1945, 1, 37 (rev)

Richtmyer, N.K. *et al.*, *Methods Carbohydr. Chem.*, 1962, 1, 107 (D-form, *synth*)

Humoller, F.L. *et al.*, *Methods Carbohydr. Chem.*, 1962, 1, 114 (L-form, *synth*)

Williams, D.J. *et al.*, *Can. J. Chem.*, 1967, 45, 741 (L-form, *synth*)

Iwashige, T. *et al.*, *Chem. Pharm. Bull.*, 1967, 15, 132 (α -L-Me fur dibenzyl, β -L-Me fur dibenzyl)

Hough, L. *et al.*, *Rodd's Chem. Carbon Compd. (2nd edn.)*, 1967, 1F, 234 (rev)

Coxon, B. *et al.*, *Carbohydr. Res.*, 1968, 8, 379 (D-di-Et dithioacetal)

Sowa, W. *et al.*, *Can. J. Chem.*, 1972, 50, 1092 (D-form, *synth*, dibenzyl dithioacetal)

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, 29, 258 (pmr)

Ollis, J. *et al.*, *Cryst. Struct. Commun.*, 1975, 4, 215 (cryst struct)

Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, 41, 27 (cmr)

Ko, S.Y. *et al.*, *Science (Washington, D.C.)*, 1983, 220, 949 (total *synth*, L-form)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, 42, 15 (equil)

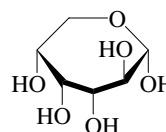
Matsumoto, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1991, 64, 2309 (D-form, *synth*, cmr)

Krülle, T. *et al.*, *Carbohydr. Res.*, 1994, 254, 141 (pentabenzyl)

Takahashi, H. *et al.*, *J.A.C.S.*, 2000, 122, 2995-3000 (L-form, tetrabenzyl)

Altroseptanose

A-114

 α -D-formC₆H₁₂O₆ 180.157 **β -L-form**

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene- β -L-altroseptanose

C₁₂H₂₀O₆ 260.286
Cryst. (C₆H₆/petrol). Mp 101-102°. $[\alpha]_D^{24}$ +38.7 (c, 0.6 in CHCl₃).

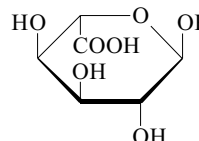
1,2:3,4-Di-O-isopropylidene, 5-Ac: 5-O-Acetyl-1,2:3,4-di-O-isopropylidene- β -L-altroseptanose

C₁₄H₂₂O₇ 302.324
Liq. $[\alpha]_D^{24}$ +23.9 (c, 1.2 in CHCl₃).

Driver, G.E. *et al.*, *Carbohydr. Res.*, 2001, 334, 81-89 (1,2:3,4-diisopropylidene, 1,2:3,4-diisopropylidene 5-Ac)

Altruronic acid, 9CI

A-115

 α -L-Pyranose-formC₆H₁₀O₇ 194.141**L-form** [39737-41-2]

Mp 124-127°. $[\alpha]_D^{18}$ +5.3 (c, 0.568 in H₂O).

[21675-51-4]

Fisher, F.G. *et al.*, *Chem. Ber.*, 1959, 92, 2184
(*synth*)

Carlsson, B. *et al.*, *Acta Chem. Scand.*, 1969, 23, 261 (*synth*)

Kjölberg, O. *et al.*, *Acta Chem. Scand.*, 1972, 26, 3245 (*synth*)

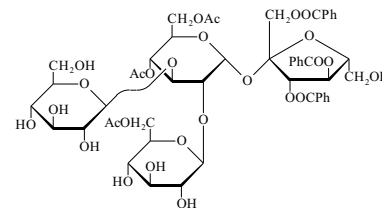
Bilik, V. *et al.*, *Chem. Zvesti.*, 1982, 36, 831
(*synth*)

Zhan, D. *et al.*, *Carbohydr. Res.*, 2001, 330, 357-363 (occur)

Amarelloside, 9CI

A-116

1,3,4-Tri-O-benzoyl- β -D-fructofuranosyl 6-O-acetyl- β -D-glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-4,6-di-O-acetyl- α -D-glucopyranoside, 9CI
[126025-05-6]

C₅₁H₆₀O₂₇ 1105.019

Not to be confused with Amarelloside.

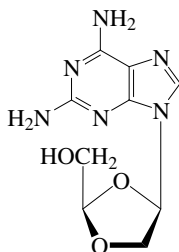
Isol. from the aerial parts of *Polygala amarella*. Plants of the genus *Polygala*

(widely distributed in America, Europe and Asia) are used in traditional medicine for treatment of parasitical diseases. Amorph. powder. Mp 137-142° dec. $[\alpha]_D^{25}$ -12 (c, 0.1 in MeOH). Bitter taste.

Dubois, M.A. *et al.*, *Phytochemistry*, 1989, **28**, 3355 (*isol*, *pmr*, *ms*)

Amdoxovir, INN, USAN A-117

4-(2,6-Diamino-9H-purin-9-yl)-1,3-dioxolane-2-methanol, 9CI. 2,6-Diamino-9-[2-(hydroxymethyl)-1,3-dioxolan-4-yl]purine. DAPD [153611-19-9]



C₉H₁₂N₆O₃ 252.232

Strictly the name Amdoxovir refers to the (2R,4R)-form. Anti-HIV agent. Pro-drug of 9-[2-(Hydroxymethyl)-1,3-dioxolan-4-yl]guanine, H-161.

(2R,4R)-form [145514-04-1]

Microneedles (MeOH). Mp 236-237°. $[\alpha]_D^{25}$ -71.44 (c, 0.25 in MeOH). Pharmacol. active isomer.

(2S,4R)-form [147060-53-5]

Solid (Et₂O). Mp 148-149°. $[\alpha]_D^{25}$ -24.24 (c, 0.26 in MeOH).

(2S,4S)-form [147060-52-4]

Cryst. (2-propanol). Mp 176-178°. $[\alpha]_D^{25}$ +29.4 (c, 0.32 in MeOH).

Kim, H.O. *et al.*, *J. Med. Chem.*, 1993, **36**, 30-37; 519-528 (*synth*, *pharmacol*)

Pat. Coop. Treaty (WIPO), 1994, 94 09 793, (*Emory Univ.*); CA, **121**, 99776j (*synth*, *isomers*, *pharmacol*)

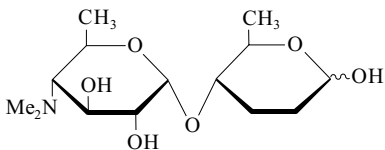
Gu, Z. *et al.*, *Antimicrob. Agents Chemother.*, 1999, **43**, 2376-2382 (*activity*)

Furman, P.A. *et al.*, *Antimicrob. Agents Chemother.*, 2001, **45**, 158-165 (*activity*)

Corbett, A.H. *et al.*, *Curr. Opin. Invest. Drugs*, 2001, **2**, 348-353 (*rev*)

Amicetamine A-118

4-O-(4,6-Dideoxy-4-dimethylamino-α-D-glucopyranosyl)-2,3,6-trideoxy-D-erythrohexose



C₁₄H₂₇NO₆ 305.37

Obt. by mild acid hydrol. of Amicetin, A-119. $[\alpha]_D^{26}$ +124 (c, 1.0 in 0.1M HCl). An earlier Stevens ref. (1962) gave the wrong struct.

Hydrochloride: Mp 168-171.5°.

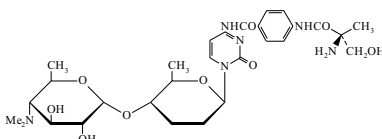
Haskell, T.H. *et al.*, *J.A.C.S.*, 1958, **80**, 747 (*isol*)

Stevens, C.L. *et al.*, *J.A.C.S.*, 1963, **85**, 1552 (*struct*)

Hanessian, S. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1970, 139 (*rev*)

Amicetin

Allomycin. Amicetin A. Sacromycin. Antibiotic 4009A. NSC 5340. U 4761 [17650-86-1]



C₂₉H₄₂N₆O₉ 618.686

Nucleoside antibiotic. Obt. from *Streptomyces vinaceus-drappus*, *Streptomyces fasciculatus* and *Streptomyces coeruleoaurantiacus*. Antitubercular and antileukaemic factor. Bacterial peptidyl transferase inhibitor. Needles (H₂O). Mp 165-169° (from cold H₂O) Mp 244-245° (from hot H₂O). $[\alpha]_D^{25}$ +98 (c, 0.8 in 0.05N HCl). $[\alpha]_D$ +116.5 (c, 0.5 in 1N HCl). pK_{a1} 1.1; pK_{a2} 7; pK_{a3} 7; pK_{a4} 10.4 (acidic). Log P -1.43 (uncertain value) (calc). λ_{\max} 316 (ε 26800) (0.1N HCl) (Derep). λ_{\max} 265 (sh) (ε 15000); 322 (ε 29000) (0.1N NaOH) (Derep). λ_{\max} 265 (sh) (ε); 305 (ε 28700) (pH 7 phosphate buffer) (Derep).

► LD₅₀ (mus, orl) 2000 mg/kg. LD₅₀ (mus, ipr) 530 mg/kg. BE5950000

Hydrochloride (1:2):

Cryst. (MeOH/Me₂CO). Mp 190-192°. $[\alpha]_D^{24.5}$ +117 (c, 0.4 in EtOH).

Tribenzoyl:

Cryst. (EtOH). Mp 177-179°.

N-De-Me: **Bamicitin**

[43043-14-7]

C₂₈H₄₀N₆O₉ 604.659

From *Streptomyces plicatus*. Shows antibiotic props. Cryst. Sol. MeOH, EtOH, acids; fairly sol. EtOH, butanol, CHCl₃, H₂O; poorly sol. hexane. Mp 240-241°. $[\alpha]_D^{25}$ +123 (c, 0.5 in 0.1M HCl). Log P -2.01 (uncertain value) (calc). λ_{\max} 316 (ε 26800) (0.1N HCl) (Derep). λ_{\max} 265 (sh) (ε 15000); 322 (ε 29000) (0.1N NaOH) (Derep). λ_{\max} 265 (sh) (ε); 305 (ε 28700) (pH 7 phosphate buffer) (Derep). λ_{\max} 302 (E1%/1cm 455) (pH 7 buffer) (Berdy). λ_{\max} 314 (E1%/1cm 437) (HCl) (Berdy). λ_{\max} 322 (E1%/1cm 525) (NaOH) (Berdy). λ_{\max} 304 (E1%/1cm 400) (H₂O) (Berdy).

Hinman, J.W. *et al.*, *J.A.C.S.*, 1953, **75**, 499; 5864; 5867

Stevens, C.L. *et al.*, *J.A.C.S.*, 1963, **85**, 1552 (*struct*)

Hanessian, S. *et al.*, *Tet. Lett.*, 1964, 2451 (*config*)

Smith, J.L. *et al.*, *Acta Cryst. B*, 1981, **37**, 1095 (*cryst struct*)

Gauze, G.F. *et al.*, *Antibiotiki (Moscow)*, 1982, **27**, 243; 403 (*isol*, *pharmacol*)

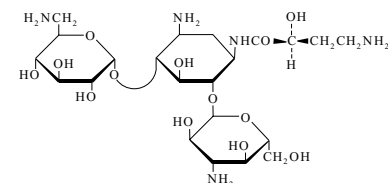
Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)

Gu, Z. *et al.*, *J. Bacteriol.*, 1995, **177**, 3616 (*pharmacol*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AHL000

Amikacin, BAN, INN, USAN A-120

1-N-(4-Amino-2-hydroxybutyryl)kanamycin. Amikin. Akim. Biclin. Chemacin. Flexelite. Negasin. Antibiotic BB-K8. BB-K8. Many other names [37517-28-5]



C₂₂H₄₃N₅O₁₃ 585.607

Aminoglycoside antibiotic. Semisynthetically derived from Kanamycin A, K-3. Shows antimicrobial activity incl. synergism with third-generation cephalosporins. Cryst. + 6H₂O (MeOH/2-propanol). Sol. H₂O, MeOH; poorly sol. butanol, hexane. Mp 203-204° dec. $[\alpha]_D^{23}$ +99 (c, 1 in H₂O). Log P -9.09 (uncertain value) (calc).

► Main adverse effects are ototoxicity and nephrotoxicity. LD₅₀ (mus, ipr) 750 mg/kg. Exp. fetotoxic and teratogenic effects; LD₅₀ (mus, ivn) 340 mg/kg, LD₅₀ (mus, ivn) 560 mg/kg. WK1955000

Sulfate (1:2): **Amikacin sulfate, JAN, USAN. Biklin. Novamin**

[39831-55-5] Amorph. Mp 220-230° dec. $[\alpha]_D^{22}$ +74 (H₂O).

► WK1961200

[40732-88-5, 50896-99-6, 50897-00-2, 56086-43-2, 75282-58-5]

Naito, T. *et al.*, *J. Antibiot.*, 1972, **25**, 695; 1973, **26**, 297; 1974, **27**, 851 (*synth*)

Price, K.E. *et al.*, *J. Antibiot.*, 1972, **25**, 709 (*props*)

Kerridge, A. *et al.*, *Pharmacol. Biochem. Prop. Drug Subst.*, 1977, **1**, 125 (*rev*, *pharmacol*)

Horii, S. *et al.*, *Carbohydr. Res.*, 1978, **60**, 275 (*synth*)

Cooper, A.B. *et al.*, *J. Antibiot.*, 1978, **31**, 681 (*synth*, *use*, *pmr*, *cmr*)

Cron, M.J. *et al.*, *Chem. Comm.*, 1979, 266 (*synth*)

Aminoglycosides, (Eds. Whelton, A. *et al.*), M. Dekker, 1982, (*book*)

Jones, R.N. *et al.*, *Antimicrob. Agents Chemother.*, 1982, **22**, 985 (*props*)

Monteleone, P.M. *et al.*, *Anal. Profiles Drug Subst.*, 1983, **12**, 37 (*rev*, *synth*, *metab*, *anal*) *Textbook of Adverse Drug Reactions*, 4th edn., (ed. Davies, D.M.), Oxford University Press, 1991, 578

Papp, E.A. *et al.*, *J. Chromatogr.*, 1992, **574**, 93 (*hplc*)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 114

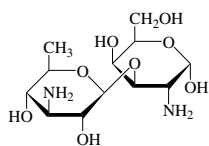
Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 9336 (*synonyms*)

Bau, R. *et al.*, *Tetrahedron*, 1999, **55**, 14839-14846 (*cryst struct*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, APS750; APT000

2-Amino-3-O-(3-amino-3,6-dideoxy-β-D-glucopyranosyl)-2-deoxy-D-galactose

A-121

 α -Pyranose-form $C_{12}H_{24}N_2O_8$ 324.33

N,N'-Di-Ac: 2-Acetamido-3-O-(3-acetamido-3,6-dideoxy-β-D-glucopyranosyl)-2-deoxy-D-galactopyranose
[126247-65-2]

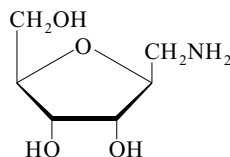
 $C_{16}H_{28}N_2O_{10}$ 408.405

Isol. from hydrol. of *Vibrio parahaemolyticus* O12 lipopolysaccharide. Isol. as a mixt. of α - and β -Me glycosides after methylation.

Kondo, S. *et al.*, *Carbohydr. Res.*, 1990, **196**, 191 (isol)

1-Amino-2,5-anhydro-1-deoxyallitol, 9CI

A-122

 $C_6H_{13}NO_4$ 163.173**D-form**

N-Ac: 1-Acetamido-2,5-anhydro-1-deoxy-D-allitol
[73853-56-2]

 $C_8H_{15}NO_5$ 205.21

Syrup.

3,4,6-Tribenzoyl: 1-Amino-2,5-anhydro-3,4,6-tri-O-benzoyl-1-deoxy-D-allitol
[137272-74-3]

 $C_{27}H_{25}NO_7$ 475.497

Pale yellow syrup.

3,4,6-Tribenzoyl, N-Ac: 1-Acetamido-2,5-anhydro-3,4,6-tri-O-benzoyl-1-deoxy-D-allitol
[137272-88-9]

 $C_{29}H_{27}NO_8$ 517.534

Syrup.

3,4,6-Tribenzyl, N-Ac: 1-Acetamido-2,5-anhydro-3,4,6-tri-O-benzyl-1-deoxy-D-allitol
[68628-85-3]

 $C_{29}H_{33}NO_5$ 475.583Solid (Et₂O/cyclohexane). Mp 68°.

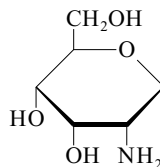
Acton, E.M. *et al.*, *Nucleic Acid Chem.*, 1st edn., Wiley, New York, 1978, **1**, 475-480

Sauer, D.R. *et al.*, *Synthesis*, 1991, 747

(tribenzoyl, tribenzoyl N-Ac, tribenzyl N-Ac)

2-Amino-1,5-anhydro-2-deoxyallitol

A-123

 $C_6H_{13}NO_4$ 163.173**D-form**

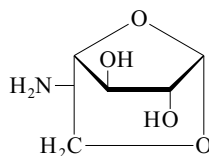
4,6-O-Isopropylidene: 2-Amino-1,5-anhydro-2-deoxy-4,6-O-isopropylidene-D-allitol
[106708-38-7]

 $C_9H_{17}NO_4$ 203.238

Japan. Pat., 1986, 61 197 586; *CA*, **106**, 84992t (isopropylidene)

5-Amino-1,6-anhydro-5-deoxyaltrose

A-124

 $C_6H_{11}NO_4$ 161.157**β-L-Furanose-form** [75124-14-0]

Cryst. Mp 162°. [α]_D²⁰ +20.6 (c, 1.4 in H₂O).

2,3,5N-Tri-Ac: 5-Acetamido-2,3-di-O-acetyl-1,6-anhydro-5-deoxy-β-L-altrofuranose
[75124-20-8]

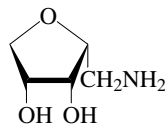
 $C_{12}H_{17}NO_7$ 287.269

Syrup. [α]_D²⁰ +92.5 (c, 1.1 in CHCl₃).

Paulsen, H. *et al.*, *Chem. Ber.*, 1980, **113**, 2601 (synth, β-L-form, tri-Ac, pmr)

1-Amino-2,5-anhydro-1-deoxyarabinitol, 9CI

A-125

 $C_5H_{11}NO_3$ 133.147**D-form** [183507-02-0]

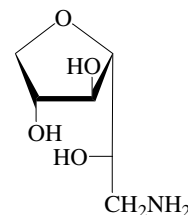
[183623-19-0, 188478-39-9]

Flakes (EtOH aq.) (as hydrobromide). Mp 128-129° (hydrobromide). [α]_D²⁵ +8.6 (c, 1.25 in H₂O).

Norrild, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (synth, cmr)

1-Amino-3,6-anhydro-1-deoxygalactitol

A-126

 $C_6H_{13}NO_4$ 163.173**D-form** [183506-99-2]

Cryst. Mp 140-141°. [α]_D²⁵ +14 (c, 1.52 in H₂O).

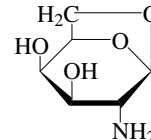
Oxalate salt: [183623-21-4]

Cryst. Mp 142-144°. [α]_D²⁵ +3.6 (c, 1.16 in H₂O).

Norrild, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (synth, cmr)

2-Amino-1,6-anhydro-2-deoxygalactose

A-127

 $C_6H_{11}NO_4$ 161.157**β-D-Pyranose-form**

Cryst. (2-propanol). Mp 168-170°. [α]_D¹⁸ -27.5 (c, 0.64 in H₂O).

Hydrochloride:

Cryst. (MeOH aq.). Mp 215° dec. [α]_D²² -15.5 (c, 2.2 in H₂O).

N-Ac: 2-Acetamido-1,6-anhydro-2-deoxy-β-D-galactopyranose
[61074-38-2]

 $C_8H_{13}NO_5$ 203.194

Cryst. (Et₂O/MeOH). Mp 205°. [α]_D -5.8 (c, 1 in MeOH).

Di-O-Ac, N-Ac: 2-Acetamido-3,4-di-O-acetyl-1,6-anhydro-2-deoxy-β-D-galactopyranose
[61074-19-9]

 $C_{12}H_{17}NO_7$ 287.269

Cryst. (EtOH). Mp 213-215° (207°). [α]_D -76.5 (c, 0.5 in H₂O).

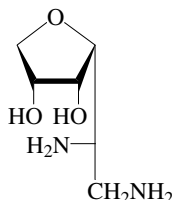
James, S.P. *et al.*, *J.C.S.*, 1946, 625-628 (synth, tri-Ac)

Gent, P.A. *et al.*, *J.C.S. Perkin I*, 1976, 1395-1404 (N-Ac, tri-Ac)

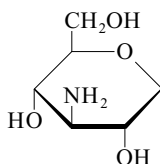
Hawley, J. *et al.*, *Eur. J. Org. Chem.*, 2002, 1925-1936 (synth, pmr)

2-Amino-3,6-anhydro-2-deoxyglucitol, 9CI

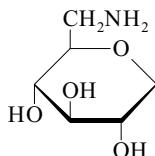
A-128

 $C_6H_{13}NO_4$ 163.173**D-form** [183294-09-9]Mp 97-102°. $[\alpha]_D^{25} +4.5$ (c, 1.64 in H_2O).Norriid, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (*synth*, *cmr*)**3-Amino-1,5-anhydro-3-deoxyglucitol**

A-129

 $C_6H_{13}NO_4$ 163.173**D-form** [114529-52-1] Shows anorexic activity in rats.
Syrup.Fujimoto, K. *et al.*, *Eur. J. Pharmacol.*, 1988, **147**, 477; *CA*, **108**, 215835k (*synth*)**6-Amino-1,5-anhydro-6-deoxyglucitol**

A-130

 $C_6H_{13}NO_4$ 163.173**D-form** [102419-16-9]

Syrup.

2,3,4-Tri-Ac: [106445-60-7]

 $C_{12}H_{19}NO_7$ 289.285Syrup. $[\alpha]_D^{20} +9$ (c, 1.6 in $CHCl_3$).

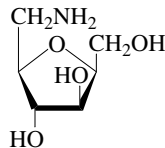
N-Mesyl, 2,3,4-tri-Ac: [106466-49-3]

 $C_{13}H_{21}NO_9S$ 367.376Cryst. (EtOH). Mp 148-150°. $[\alpha]_D^{20} +66$ (c, 1.0 in MeOH).

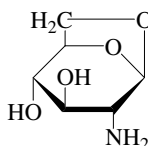
N-Tosyl, 2,3,4-tri-Ac: [106445-61-8]

 $C_{19}H_{25}NO_9S$ 443.474Cryst. (EtOAc/Et₂O). Mp 124-126° dec. $[\alpha]_D^{20} +59$ (c, 1.0 in $CHCl_3$).Witzak, Z.J. *et al.*, *Carbohydr. Res.*, 1986, **150**, 121 (*tri-Ac* derivs)Fujimoto, K. *et al.*, *Eur. J. Pharmacol.*, 1988, **147**, 477 (*synth*)**6-Amino-2,5-anhydro-6-deoxyglucitol**

A-131

 $C_6H_{13}NO_4$ 163.173**D-form** [571177-13-4] $[\alpha]_D^{20} +25$ (c, 1 in H_2O).McCort, I. *et al.*, *J.A.C.S.*, 2003, **125**, 2693-2700 (*synth*, *pmr*, *cmr*)**2-Amino-1,6-anhydro-2-deoxyglucose**

A-132

 $C_6H_{11}NO_4$ 161.157**β-D-Pyranose-form** [50447-93-3]Cryst. (MeOH/Et₂O). Mp 176° dec. $[\alpha]_D -74$ (c, 1 in H_2O).

Hydrochloride: [53437-21-1]

Solid + H_2O . Mp 120° (94-98°). $[\alpha]_D -46$ (c, 0.83 in H_2O).

N-Ac: 2-Acetamido-1,6-anhydro-2-deoxy-β-D-glucopyranose

[37042-52-7]

 $C_8H_{13}NO_5$ 203.194Prisms (EtOH/Et₂O). Mp 190-191°. $[\alpha]_D^{20} -45.2$ (c, 2.3 in H_2O).O³,N-Di-Ac: 2-Acetamido-3-O-acetyl-1,6-anhydro-2-deoxy-β-D-glucopyranose

[37042-50-5]

 $C_{10}H_{15}NO_6$ 245.232Cryst. (EtOAc/Et₂O). Mp 143-144°. $[\alpha]_D^{20} -82$ (c, 1 in MeOH).O⁴,N-Di-Ac: 2-Acetamido-4-O-acetyl-1,6-anhydro-2-deoxy-β-D-glucopyranose

[50604-70-1]

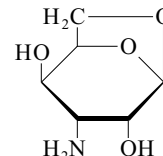
 $C_{10}H_{15}NO_6$ 245.232Cryst. + H_2O (EtOAc/Et₂O). Mp 81°. $[\alpha]_D^{20} -68$ (c, 1 in MeOH).

O,O,N-Tri-Ac: 2-Acetamido-3,4-di-O-acetyl-1,6-anhydro-2-deoxy-β-D-glucopyranose

[50604-71-2]

 $C_{12}H_{17}NO_7$ 287.269Cryst. (EtOH/Et₂O/petrol). Mp 137-139°. $[\alpha]_D -91$ (c, 0.75 in $CHCl_3$).Akagi, M. *et al.*, *Chem. Pharm. Bull.*, 1962, **10**, 1039-1042 (*N-Ac*, *tri-Ac*)Micheel, F. *et al.*, *Chem. Ber.*, 1963, **96**, 1959-1964 (*synth*)Schmitt, F. *et al.*, *Carbohydr. Res.*, 1973, **29**, 99-111 (*N-Ac*, *N,3-di-Ac*, *N,4-di-Ac*)Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1391-1396 (*synth*, *tri-Ac*)Oguri, S. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 3196-3202 (*N,3-di-Ac*)Hawley, J. *et al.*, *Eur. J. Org. Chem.*, 2002, 1925-1936 (*synth*, *pmr*)**3-Amino-1,6-anhydro-3-deoxyglucose**

A-133

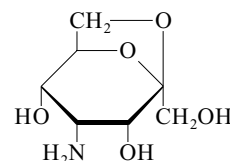
 $C_6H_{11}NO_4$ 161.157**β-D-Pyranose-form**

N-Ac: 3-Acetamido-1,6-anhydro-3-deoxy-β-D-gulopyranose

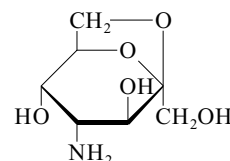
[34296-92-9]

 $C_8H_{13}NO_5$ 203.194Mp 203-204° (201-203°). $[\alpha]_D +8.3$ (c, 0.4 in MeOH).Jeanloz, R.W. *et al.*, *J.O.C.*, 1961, **26**, 537 (*N-Ac*)**4-Amino-2,7-anhydro-4-deoxy-*allo*-heptulose**

A-134

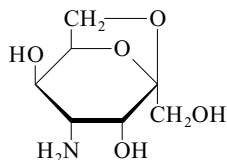
 $C_7H_{13}NO_5$ 191.183**β-D-Pyranose-form**Prismatic columns (AcOH aq.) (as hydrochloride). $[\alpha]_D^{23} -54.7$ (c, 1 in H_2O) (hydrochloride).1,3,4N,5-Tetra-Ac: 4-Acetamido-1,3,5-tri-O-acetyl-2,7-anhydro-4-deoxy-β-D-*allo*-heptulopyranose $C_{15}H_{21}NO_9$ 359.332Platelets ($CHCl_3$ /Et₂O). Mp 213-214° dec. $[\alpha]_D^{25} -60.9$ (c, 1 in $CHCl_3$).Baer, H.H. *et al.*, *J.O.C.*, 1963, **28**, 1287; 1964, **29**, 2014 (*synth*, *tetra-Ac*, *pmr*)**4-Amino-2,7-anhydro-4-deoxy-*altro*-heptulose**

A-135

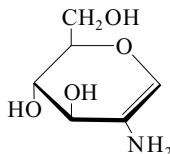
 $C_7H_{13}NO_5$ 191.183**β-D-Pyranose-form**Needles (AcOH aq.) (as hydrochloride). $[\alpha]_D^{23} -126$ (c, 1 in H_2O).1,3,4N,5-Tetra-Ac: 4-Acetamido-1,3,5-tri-O-acetyl-2,7-anhydro-4-deoxy-β-D-*altro*-heptulopyranose $C_{15}H_{21}NO_9$ 359.332Needles ($CHCl_3$ /Et₂O). Mp 189-190°. $[\alpha]_D^{22} -145.5$ (c, 1 in $CHCl_3$).Baer, H.H. *et al.*, *J.O.C.*, 1963, **28**, 1287; 1964, **29**, 2014 (*synth*, *tetra-Ac*, *pmr*)

4-Amino-2,7-anhydro-4-deoxy-gulo-heptulose

A-136

D-form $C_7H_{13}NO_5$ 191.183 **β -D-Pyranose-form**Prisms (AcOH aq.) (as hydrochloride).
[α]_D²³ +39 (c, 1 in H₂O).1,3,4N,5-Tetra-Ac: 4-Acetamido-1,3,5-tri-O-acetyl-2,7-anhydro-4-deoxy- β -D-gulo-heptulopyranose $C_{15}H_{21}NO_9$ 359.332Prisms (CHCl₃/Et₂O). Mp 128-129°.[α]_D²² +43.7 (c, 1 in CHCl₃).Baer, H.H. *et al.*, *J.O.C.*, 1963, **28**, 1287; 1964, **29**, 2014 (*synth, tetra-Ac, pmr*)**2-Amino-1,5-anhydro-2-deoxy-arabino-hex-1-enitol**

A-137

 $C_6H_{11}NO_4$ 161.157**D-form**

N-Ac: 2-Acetamido-1,2-dideoxy-D-arabino-hex-1-enopyranose, 8CI

[10293-59-1]

 $C_8H_{13}NO_5$ 203.194Cryst. (2-propanol). Mp 124-125°. [α]_D²² +64.7 (c, 0.34 in H₂O).

N,3,4,6-Tetra-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-1,2-dideoxy-D-arabino-hex-1-enopyranose

[10293-60-4]

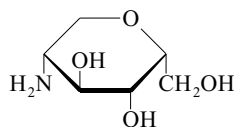
 $C_{14}H_{19}NO_8$ 329.306Syrup. [α]_D²³ -24.6 (c, 0.5 in CHCl₃).

N,N,3,4,6-Penta-Ac: 3,4,6-Tri-O-acetyl-2-(diacetylamino)-1,2-dideoxy-D-arabino-hex-1-enopyranose

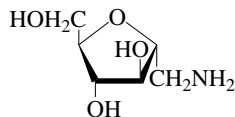
[10293-54-6]

 $C_{16}H_{21}NO_9$ 371.343Cryst. (EtOH or C₆H₆). Mp 95-96°.[α]_D²⁰ -18.3 (c, 1.0 in CHCl₃).Pravdić, N. *et al.*, *J.O.C.*, 1967, **32**, 1806 (*synth*)Pravdić, N. *et al.*, *Carbohydr. Res.*, 1975, **45**, 302 (*D-penta-Ac*)Kojic-Prodic, B. *et al.*, *Acta Cryst. B*, 1978, **34**, 858 (*cryst struct*)**5-Amino-2,6-anhydro-5-deoxyiditol**

A-138

 $C_6H_{13}NO_4$ 163.173**1-Amino-2,5-anhydro-1-deoxymannitol**

A-139

 $C_6H_{13}NO_4$ 163.173**D-form**Oil. [α]_D²⁵ +28.7 (c, 1 in MeOH).

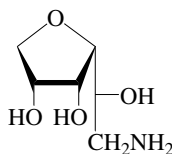
N-Benzyl:

 $C_{13}H_{19}NO_4$ 243.218Oil. [α]_D²⁵ +75.3 (c, 1.1 in MeOH).

N-Ph:

 $C_{12}H_{17}NO_4$ 239.271Hygrosopic pale yellow solid + 1H₂O.
[α]_D²⁵ +35.6 (c, 1.15 in H₂O).Claustre, S. *et al.*, *Carbohydr. Res.*, 1999, **315**, 339-344 (*synth, pmr, cmr*)**1-Amino-3,6-anhydro-1-deoxymannitol**

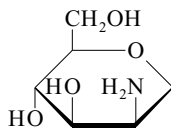
A-140

 $C_6H_{13}NO_4$ 163.173**D-form** [109445-43-4]

[114579-55-4]

Cryst. (as hydrochloride). Mp 165-167° (hydrochloride). [α]_D²⁵ -10.7 (c, 1.57 in H₂O).Skinner, G.S. *et al.*, *J.A.C.S.*, 1958, **80**, 3788-3790 (*synth*)Norrild, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (*synth, cmr*)**2-Amino-1,5-anhydro-2-deoxymannitol**

A-141

 $C_6H_{13}NO_4$ 163.173**D-form**

N-Ac: 2-Acetamido-1,5-anhydro-2-deoxy-D-mannitol

[10293-61-5]

 $C_8H_{15}NO_5$ 205.21

Foam.

3,4-Dibenzyl, N-Ac: 2-Acetamido-1,5-anhydro-3,4-di-O-benzyl-2-deoxy-D-mannitol

[135186-28-6]

 $C_{22}H_{27}NO_5$ 385.459

Foam.

3-Benzyl, 4,6-O-benzylidene, N-Ac: 2-Acetamido-1,5-anhydro-3-O-benzyl-4,6-O-benzylidene-2-deoxy-D-mannitol

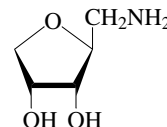
[135186-24-2]

 $C_{22}H_{25}NO_5$ 383.443Cryst. (Et₂O/hexane). Mp 188°.

[135269-03-3]

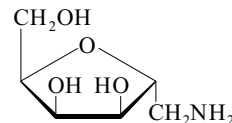
Broxterman, H.J. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 215 (*N-Ac derivs, pmr, cmr*)**1-Amino-2,5-anhydro-1-deoxyribitol, 9CI**

A-142

 $C_5H_{11}NO_3$ 133.147**D-form** [17019-59-9]Long needles (EtOH aq.) (as hydrochloride). Mp 166-168° (hydrochloride). [α]_D²⁵ -57.3 (c, 1.56 in H₂O). CAS no. refers to hydrochloride.Cleophas, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1968, 1415-1417 (*synth*)Norrild, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (*synth, cmr*)**1-Amino-2,5-anhydro-1-deoxytalitol**

A-143

6-Amino-2,5-anhydro-6-deoxyaltritol, 9CI

 $C_6H_{13}NO_4$ 163.173**D-form**

3,4-O-Isopropylidene, N,6-di-Ac: 1-Acetamido-6-O-acetyl-2,5-anhydro-1-deoxy-3,4-O-isopropylidene-D-talitol

[110911-40-5]

 $C_{13}H_{21}NO_6$ 287.312Cryst. (Et₂O/hexane). Mp 140°. [α]_D²⁰ +128 (c, 1.2 in CH₂Cl₂).

3,4-O-Isopropylidene, N-allyl, N-Ac: [110911-47-2]

 $C_{14}H_{23}NO_5$ 285.339Cryst. (Et₂O/hexane). Mp 73°.

3,4,6-Tri-Me, N-Ac: 1-Acetamido-2,5-anhydro-1-deoxy-3,4,6-tri-O-methyl-D-talitol

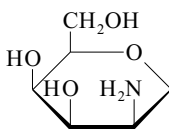
[110911-51-8]

 $C_{11}H_{21}NO_5$ 247.291Cryst. (MeOH/Et₂O). Mp 75°. [α]_D²⁰ +16.5 (c, 1.5 in CH₂Cl₂).Fleet, G.W.J. *et al.*, *Tet. Lett.*, 1987, **28**, 3015

2-Amino-1,5-anhydro-2-deoxytalitol

A-144

5-Amino-2,6-anhydro-5-deoxyaltritol, 8CI

C₆H₁₃NO₄ 163.173**D-form**

N-Ac: 2-Acetamido-1,5-anhydro-2-deoxy-D-talitol

[26302-25-0]

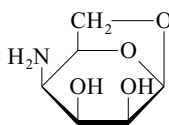
C₈H₁₅NO₅ 205.21Cryst. Mp 110-112°. [α]_D -76.8 (H₂O).

2N,3,4,6-Tetra-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-1,5-anhydro-2-deoxy-D-talitol

[26302-26-1]

C₁₄H₂₁NO₈ 331.322Syrup. [α]_D -13.9 (CHCl₃).Pravdic, N. *et al.*, *Croat. Chem. Acta*, 1969, **41**, 125; *CA*, **72**, 3692z (N-Ac, tetra-Ac)**4-Amino-1,6-anhydro-4-deoxytalose**

A-145

C₆H₁₁NO₄ 161.157**β-D-Pyranose-form** [14166-59-7]

Mp 175-180° dec. (as hydrochloride).

[α]_D²⁰ -68 (c, 1.5 in H₂O). CAS no. refers to hydrochloride.

2,3,4N-Tri-Ac: 4-Acetamido-2,3-di-O-acetyl-1,6-anhydro-4-deoxy-β-D-talopyranose

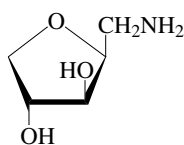
[14166-61-1]

C₁₂H₁₇NO₇ 287.269

Cryst. Mp 146°.

Horton, D. *et al.*, *Carbohydr. Res.*, 1966, **3**, 255 (synth, tri-Ac)**1-Amino-2,5-anhydro-1-deoxyxylitol, 9CI**

A-146

C₅H₁₁NO₃ 133.147**D-form** [183507-03-1][183623-20-3] Mp 152-154° (as hemioxalate salt). [α]_D²⁵ +1.4 (c, 1.43 in H₂O). Racemate previously known.Norrild, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (synth, cmr)**3-Amino-1,5-anhydro-3-deoxyxylitol**

A-147

D-form

N-Ac: 2-Acetamido-1,5-anhydro-2,6-di-deoxy-D-mannitol

[135269-02-2]

C₈H₁₅NO₄ 189.211

Foam.

3,4-Dibenzyl, N-Ac: 2-Acetamido-1,5-anhydro-3,4-di-O-benzyl-2,6-dideoxy-D-mannitol

[135186-20-8]

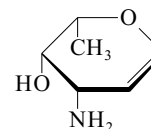
C₂₂H₂₇NO₄ 369.46

Oil.

Broxterman, H.J.G. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 215 (N-Ac derivs, pmr, cmr)**4-Amino-2,6-anhydro-1,4,5-trideoxy-arabino-hex-5-enitol**

A-150

3-Amino-1,5-anhydro-2,3,6-trideoxy-lyxo-hex-1-enitol

C₆H₁₁NO₂ 129.158**L-form**

N-(Trifluoroacetyl): 2,6-Anhydro-1,4,5-trideoxy-4-(trifluoroacetamido)-L-arabino-hex-5-enitol. 1,5-Anhydro-2,3,6-trideoxy-3-(trifluoroacetamido)-L-lyxo-hex-1-enitol

[100164-94-1]

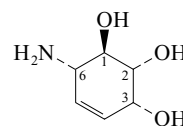
C₈H₁₀F₃NO₃ 225.167Cryst. Mp 90-92°. [α]_D²³ +11.3 (c, 0.12 in CHCl₃).

N-Trifluoroacetyl, O-Ac: 1-O-Acetyl-2,6-anhydro-1,4,5-trideoxy-4-(trifluoroacetamido)-L-arabino-hex-5-enitol. 4-O-Acetyl-1,5-anhydro-2,3,6-trideoxy-3-trifluoroacetamido-L-lyxo-hex-1-enitol

[73352-88-2]

C₁₀H₁₂F₃NO₄ 267.204Key intermed. in synth. of daunosamine glycosides. Cryst. (Me₂CO/hexane). Mp 118-119°. [α]_D²⁵ -98 (c, 1.0 in CHCl₃).Dyong, I. *et al.*, *Annalen*, 1986, 545 (synth, ir, pmr, ms)Horton, D. *et al.*, *Carbohydr. Res.*, 1989, **187**, 145 (synth, pmr, cmr)**6-Amino-4-cyclohexene-1,2,3-triol, 9CI**

A-152



(1R,2R,3R,6S)-form

C₆H₁₁NO₃ 145.158**(1R,2R,3R,6S)-form**

Conduramine F4

[157752-14-2]

Mp 189°.

(1R,2R,3S,6R)-form

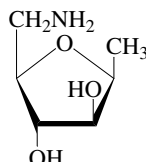
Conduramine F1

[79435-30-6]

6-Amino-2,5-anhydro-1,6-dideoxyglucitol, 9CI

A-148

1-Amino-2,5-anhydro-1,6-dideoxygulitol



D-form

C₆H₁₃NO₃ 147.174The *gluco*- name is preferred by the IUPAC special nomenclature rules for carbohydrates. The D- enantiomer of the the *gluco*- name corresponds to the L-enantiomer of the *gulo*- name.**D-form** [79698-09-2]Syrup (as hydrochloride). [α]_D²⁰ +46 (H₂O).**L-form** [183507-00-8]Sl. hygroscopic fine needles (as oxalate salt). Mp 143-145° (oxalate salt). [α]_D²⁵ -41.1 (c, 1.72 in H₂O). CAS no. refers to oxalate salt.

N,N-Di-Me: 2,5-Anhydro-1,6-dideoxy-1-dimethylamino-D-gulitol

[183507-01-9]

C₈H₁₇NO₃ 175.227

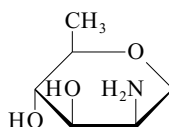
Cryst. (EtOH) (as hydrochloride). Mp

154-155°. [α]_D²⁵ -59.5 (c, 1.70 in H₂O).

Enantiomer also known. CAS no refers to hydrochloride.

Norrild, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (synth, cmr)**2-Amino-1,5-anhydro-2,6-dideoxymannitol**

A-149

C₆H₁₃NO₃ 147.174

Hydrochloride: [78774-27-3]

Cryst. (MeOH/EtOH/H₂O 8:6:1). Mp 165°. [α]_D²⁰ +39.5 (c, 0.22 in MeOH).

Tetra-Ac:

C₁₄H₁₉NO₇ 313.307
Mp 142°.

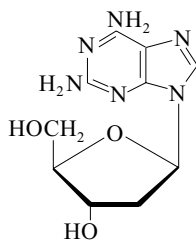
Kresze, G. *et al.*, *Annalen*, 1981, 610 (synth)

Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 3242 (synth)

Balci, M. *et al.*, *Synth. Commun.*, 1994, **24**, 2103 (synth, pmr, cmr, ir)

2-Amino-2'-deoxyadenosine, A-153 9CI

2-Amino-9-(2-deoxy- β -D-ribofuranosyl)-adenine
[4546-70-7]



C₁₀H₁₄N₆O₃ 266.259

Nucleoside antibiotic. Prod. by certain aerobic bacteria in the presence of purine and *Actinomyces* sp. Shows antitumour activity. Needles (H₂O). Mp 146-148°. [α]_D²⁶ -39.2 (c, 0.83 in H₂O).

► UO7523300

Fr. Pat., 1965, 1 402 909, (*Takeda*); *CA*, **63**, 17100 (biosynth)

Christensen, L.F. *et al.*, *J. Med. Chem.*, 1972, **15**, 735 (synth, pmr)

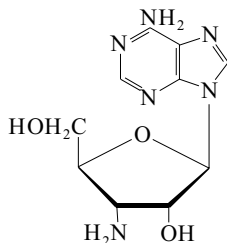
Ueda, T. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 2122 (synth)

Muraoka, M. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 3449 (synth)

Japan. Pat., 1981, 81 42 595, (*Kitasato Inst.*); *CA*, **95**, 22948 (biosynth)

3'-Amino-3'-deoxyadenosine, A-154 9CI, 8CI

9-(3-Amino-3-deoxy- β -D-ribofuranosyl)-adenine
[2504-55-4]



C₁₀H₁₄N₆O₃ 266.259

Nucleoside antibiotic. Obt. from the mould *Cordyceps militaris* and from *Helminthosporium* spp. culture filtrates. Antineoplastic agent. Sol. MeOH, DMF; fairly sol. EtOH; poorly sol. H₂O, butanol, hexane, THF.

Mp 275-278° dec. (265-267°). [α]_D²⁵ -37 (c, 2.0 in 0.1M HCl) (c, 0.4 in DMF). Log P -2.83 (calc). λ_{\max} 260 (ε 17300) (H₂O).

► LD₅₀ (mus, ipr) 28 mg/kg.

Dipicrate: Mp 222-224° dec.

3'-N-Ac: [21299-78-5]

C₁₂H₁₆N₆O₄ 308.296

Prod. by *Helminthosporium* sp. 215. Sol. MeOH, H₂O. λ_{\max} 260 (ε 15600) (H₂O) (Berdy).

3'-N-Me: [25787-43-3]

C₁₁H₁₆N₆O₃ 280.286

Cryst. (H₂O). Mp 247-250° dec. [α]_D¹⁹ -103 (c, 1.0 in 1M NaOH). λ_{\max} 207 (ε 20400); 259 (ε 15100) (pH 7). λ_{\max} 206 (ε 22100); 256 (ε 14800) (pH 1). λ_{\max} 259 (ε 15200) (pH 13).

3'-N-Me, 2',3',5'-tri-Ac: [25834-71-3]

C₁₇H₂₂N₆O₆ 406.397

Cryst. (EtOH). Mp 224-225.5°. [α]_D²¹ -15 (c, 1.0 in Py). λ_{\max} 259 (ε 13900) (pH 7). λ_{\max} 257 (ε 13800) (pH 1). λ_{\max} 260 (ε 14200) (pH 13).

6,6-Di-N-Me: Puromycin aminonucleoside [58-60-6]

C₁₂H₁₈N₆O₃ 294.313

Cryst. (MeOH or EtOH). Mp 215-216°. [α]_D²⁵ -24.6 (c, 3.0 in H₂O).

► Nephritis inducer.

3',6,6-Tri-N-Me: [34522-43-5]

C₁₃H₂₀N₆O₃ 308.339

Cryst. (H₂O). Mp 216-218°. [α]_D²³ -52 (c, 0.97 in EtOH). λ_{\max} 214 (ε 17100); 275 (ε 19400) (pH 7). λ_{\max} 208 (ε 20100); 267 (ε 19200) (pH 1). λ_{\max} 275 (ε 19700) (pH 13).

3',3',6,6-Tetra-N-Me: [25787-42-2]

C₁₄H₂₂N₆O₃ 322.366

Cryst. (H₂O). Mp 184.5-186°. [α]_D²² -27 (c, 1.0 in H₂O). λ_{\max} 214 (ε 16100); 275 (ε 19000) (pH 7). λ_{\max} 209 (ε 17700); 267 (ε 18600) (pH 1). λ_{\max} 276 (ε 700) (pH 13).

Baker, B.R. *et al.*, *J.A.C.S.*, 1954, **76**, 2838; 1955, **77**, 1-7 (di-N-Me)

Gerber, N.N. *et al.*, *J.O.C.*, 1962, **27**, 1731 (isol) Guarino, A.J. *et al.*, *Biochim. Biophys. Acta*, 1963, **68**, 317 (isol)

Suhadolnik, R.J. *et al.*, *Biochim. Biophys. Acta*, 1969, **179**, 258-267; **182**, 316-321 (isol, 3'-Ac)

Lee, W.W. *et al.*, *J.O.C.*, 1970, **35**, 3808 (N-Me, tri-N-Me, tetra-N-Me, N-Me N,O-tri-Ac)

Nagasawa, H.T. *et al.*, *J. Med. Chem.*, 1972, **15**, 177 (tri-N-Me, tetra-N-Me)

Azhayev, A.V. *et al.*, *Coll. Czech. Chem. Comm.*, 1978, **43**, 1520 (synth, pmr)

Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1979, **112**, 2588 (synth, pmr, cmr)

Klimke, G. *et al.*, *Z. Naturforsch., C*, 1979, **34**, 1075 (conformn)

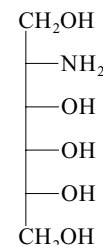
Sheldrick, W.S. *et al.*, *Acta Cryst. B*, 1980, **36**, 2328 (cryst struct)

Padmaja, N. *et al.*, *Acta Cryst. C*, 1988, **44**, 2176-2178 (cryst struct, di-N-Me)

Samano, M.C. *et al.*, *Tet. Lett.*, 1989, **30**, 2329 (synth)

Morr, M. *et al.*, *Angew. Chem., Int. Ed.*, 1994, **33**, 1396 (phosphates)

2-Amino-2-deoxyallitol A-155



C₆H₁₅NO₅ 181.188

D-form

N-Benzoyl: 2-Benzamido-2-deoxy-D-allitol [35477-70-4]

C₁₃H₁₉NO₆ 285.296

Cryst. (butanol). Mp 142-143°. [α]_D²⁸ -7.5 (c, 1.0 in H₂O).

1,2N,3,4,5,6-Hexabenzoyl: 2-Benzamido-1,3,4,5,6-penta-O-benzoyl-D-allitol [35477-71-5]

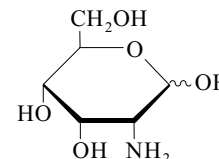
C₄₈H₃₉NO₁₁ 805.836

Cryst. (C₆H₆/petrol). Mp 178-180°. [α]_D²⁸ -6.3 (c, 1.0 in CHCl₃).

Gent, P.A. *et al.*, *J.C.S. Perkin I*, 1972, 248 (N-benzoyl, hexabenzoyl)

2-Amino-2-deoxyallose, 9CI, A-156 8CI

Allosamine



C₆H₁₃NO₅ 179.172

D-form [14635-95-1]

Hydrochloride: [2861-47-4]

Mp 145-148° dec. [α]_D²² +26 → +17 (c, 1.0 in H₂O). [α]_D +1 → +16 (H₂O). Hygroscopic.

N-(2-Hydroxy-1-naphthylidene):

Yellow prisms (Py/MeOH/Me₂CO). Mp 199-200° dec. [α]_D²⁵ -80 (c, 0.2 in MeOH).

N-Ac: 2-Acetamido-2-deoxy-D-allose

C₈H₁₅NO₆ 221.21

Cryst. (EtOH). Mp 207-208°. [α]_D²⁴ -88 (c, 0.2 in H₂O).

N-Benzoyl: 2-Benzamido-2-deoxy-D-allose

C₁₃H₁₇NO₆ 283.28

Needles (EtOH aq.). Mp 201-204°. [α]_D -16 (c, 1 in H₂O).

Jeanloz, R.W. *et al.*, *J.A.C.S.*, 1957, **79**, 2591

(D-form, synth, D-N-Ac, N-2-hydroxy-1-naphthylidene)

Kuhn, R. *et al.*, *Annalen*, 1961, **641**, 143 (D-form, synth)

Jeanloz, R.W. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 212 (synth)

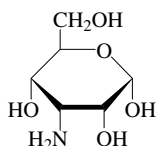
Gigg, R. *et al.*, *J.C.S.*, 1965, 1351 (D-form, D-N-benzoyl)

Perry, M.B. *et al.*, *Can. J. Chem.*, 1968, **46**, 2859 (D-form, D-N-Ac)

Perry, M.B. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 25 (D-N-Ac)

3-Amino-3-deoxyallose

A-157

 α -D-Pyranose-form $C_6H_{13}NO_5$ 179.172**D-form**

Mp 209° dec. (as hydrochloride). $[\alpha]_D$ -28 (c, 0.6 in H_2O). Hydrochloride crystallises as β -D-furanose-form.

Di-Et dithioacetal, N-Ac: 3-Acetamido-3-deoxy-D-allose diethyl dithioacetal
 $C_{12}H_{25}NO_5S_2$ 327.465
 Cryst. (EtOH/petrol). Mp 160°. $[\alpha]_D$ -24.5 (c, 1.88 in MeOH).

 α -D-Pyranose-form

Me glycoside: Methyl 3-amino-3-deoxy- α -D-allopyranoside
 $C_7H_{15}NO_5$ 193.199
 Extremely hygroscopic cryst. (EtOH/ Et_2O) (as hydrochloride). $[\alpha]_D$ +103.3 (c, 2 in D_2O).

Me glycoside, N,2,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl-3-deoxy- α -D-allopyranoside
 $C_{15}H_{23}NO_9$ 361.348
 Cryst. (EtOAc/hexane). Mp 114° Mp 127-128° (double Mp). $[\alpha]_D$ +83 (c, 1.3 in $CHCl_3$).

Me glycoside, 4,6-benzylidene, N-Ac: Methyl 3-acetamido-4,6-O-benzylidene-3-deoxy- α -D-allopyranoside
 $C_{16}H_{21}NO_6$ 323.345
 Glass.

Me glycoside, 4,6-benzylidene, N,2-di-Ac: Methyl 3-acetamido-2-O-acetyl-4,6-O-benzylidene-3-deoxy- α -D-allopyranoside
 $C_{18}H_{23}NO_7$ 365.382
 Noncryst. $[\alpha]_D^{24}$ +32.7 (c, 2.4 in $CHCl_3$).

 β -D-Pyranose-form

Me glycoside: Methyl 3-amino-3-deoxy- β -D-allopyranoside
 $C_7H_{15}NO_5$ 193.199
 Mp 199-200°.

Me glycoside, N,2,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl-3-deoxy- β -D-allopyranoside
 $C_{15}H_{23}NO_9$ 361.348
 Cryst. (butanone). Mp 179°. $[\alpha]_D$ -41.2 (c, 2 in $CHCl_3$).

 α -D-Furanose-form

1,2:5,6-Diisopropylidene: 3-Amino-3-deoxy-1,2:5,6-di-O-isopropylidene- α -D-allofuranose
 $C_{12}H_{21}NO_5$ 259.302
 Cryst. (Et_2O). Mp 92-93°.

1,2-Isopropylidene, N-Ac: 3-Acetamido-3-deoxy-1,2-O-isopropylidene- α -D-allofuranose
 $C_{11}H_{19}NO_6$ 261.274
 Needles (MeOH/ Et_2O). Mp 158-159°. $[\alpha]_D$ +150 (c, 1.89 in H_2O).

1,2:5,6-Diisopropylidene, N-Ac: 3-Acetamido-3-deoxy-1,2:5,6-di-O-isopropylidene- α -D-allofuranose
 $C_{14}H_{23}NO_6$ 301.339
 Cryst. (Et_2O). Mp 132-133° (123-128°). $[\alpha]_D$ +71.8 (c, 2.12 in $CHCl_3$).

1,2:5,6-Di-O-cyclohexylidene:

$C_{18}H_{29}NO_5$ 339.431
 Cryst. (Et_2O). Mp 140-144°. $[\alpha]_D^{14}$ +118 (c, 0.5 in $CHCl_3$).

1,2:5,6-Di-O-cyclohexylidene, N-Ac: 3-Acetamido-1,2:5,6-di-O-cyclohexylidene-3-deoxy- α -D-allofuranose
 $C_{20}H_{31}NO_6$ 381.468
 $[\alpha]_D^{12}$ +78 (c, 1.0 in MeOH).

Me glycoside, N-Ac: Methyl 3-acetamido-3-deoxy- α -D-allofuranoside
 $C_9H_{17}NO_6$ 235.236
 Stout cryst. Obt. only in small yield, characterised spectroscopically.

 β -D-Furanose-form

Me glycoside: Methyl 3-amino-3-deoxy- β -D-allofuranoside
 $C_7H_{15}NO_5$ 193.199
 Cryst. (EtOH). Mp 169-170°. $[\alpha]_D$ -45.2 (c, 1 in H_2O).

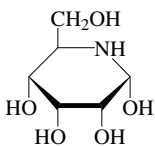
Me glycoside, N-Ac: Methyl 3-acetamido-3-deoxy- β -D-allofuranoside
 $C_9H_{17}NO_6$ 235.236
 Mp 102-103°. $[\alpha]_D$ -6.7 (c, 2 in H_2O).

Me glycoside, N,2,4,6-tetra-Ac: Methyl 3-acetamido-2,5,6-tri-O-acetyl-3-deoxy- β -D-allofuranoside
 $C_{15}H_{23}NO_9$ 361.348
 Syrup, cryst. on standing. Mp 89-90°. $[\alpha]_D$ +18.4 (c, 1.2 in $CHCl_3$).

Baker, B.R. *et al.*, *J.O.C.*, 1954, **19**, 646 (α -D-Me pyr benzylidene N-Ac, N,O-di-Ac)
 Lemieux, R.U. *et al.*, *J.A.C.S.*, 1958, **80**, 4745 (diisopropylidene)
 Coxon, B. *et al.*, *J.C.S.*, 1961, 1643 (N-Ac derivs)
 Onodera, K. *et al.*, *Carbohydr. Res.*, 1972, **21**, 159 (dicyclohexylidene derivs)
 Baer, H.H. *et al.*, *Carbohydr. Res.*, 1991, **210**, 233 (synth, pmr, cmr, derivs)

5-Amino-5-deoxyallose

A-158

 α -D-Pyranose-form $C_6H_{13}NO_5$ 179.172**D-Pyranose-form**

Mp 104-106° (as bisulfite adduct). $[\alpha]_D^{20}$ -3.8 (c, 1.55 in H_2O).

 α -D-Furanose-form

1,2-O-Isopropylidene, 3,5N-dibenzoyl: 5-Benzamido-3-O-benzoyl-5-deoxy-1,2-O-isopropylidene- α -D-allofuranose
 $C_{23}H_{25}NO_7$ 427.453
 Mp 206-208°. $[\alpha]_D^{22}$ +100 (c, 1.2 in $CHCl_3$).

1,2-O-Isopropylidene, 3,5N-dibenzoyl, 6-trityl: 5-Benzamido-3-O-benzoyl-5-deoxy-1,2-O-isopropylidene-6-O-trityl- α -D-allofuranose
 $C_{42}H_{39}NO_7$ 669.773
 Syrup. $[\alpha]_D^{22}$ +67 (c, 1.1 in $CHCl_3$).

 β -D-Furanose-form

Allyl glycoside, 2,3-O-isopropylidene: Allyl 5-amino-5-deoxy-2,3-O-isopropylidene- β -D-allofuranoside
 $C_{12}H_{21}NO_5$ 259.302
 Solid. Mp 83.5-84.5°. $[\alpha]_D^{20}$ -46.5 (c, 0.72 in CH_2Cl_2).

[123149-59-7, 123237-48-9]

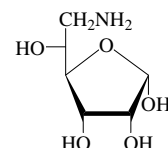
Naka, T. *et al.*, *Tet. Lett.*, 1971, 95 (α -D-fur deriv, pmr)

Auberson, Y. *et al.*, *Angew. Chem., Int. Ed.*, 1989, **28**, 1498 (synth, allyl glycoside, ir)

6-Amino-6-deoxyallose

A-159

[119181-88-3]

 α -D-Furanose-form $C_6H_{13}NO_5$ 179.172**D-form** [24384-96-1]

Inhibitor of glycon-binding site of human acid β -glucosidase from spleens of Gaucher disease patients. Mp 145-147° dec. (as hydrochloride). $[\alpha]_D^{20}$ +7.8 \rightarrow +17.7 (c, 0.99 in H_2O). CAS no. refers to hydrochloride.

Diethyl dithioacetal:

$C_{10}H_{23}NO_4S_2$ 285.428
 Hygroscopic foam (as hydrochloride). CAS no. refers to hydrochloride.

 α -D-Furanose-form

1,2-Isopropylidene: 6-Amino-6-deoxy-1,2-O-isopropylidene- α -D-allofuranose
 $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOAc). Mp 150-152°. $[\alpha]_D^{21}$ +39.03 (c, 0.8 in H_2O).

1,2-Isopropylidene, hydrochloride: [24384-95-0]
 Cryst. (2-propanol). Mp 165-168°. $[\alpha]_D^{24}$ +49.6 (c, 1.1 in H_2O).

1,2-Isopropylidene, 3-tosyl: 6-Amino-6-deoxy-1,2-O-isopropylidene-3-O-tosyl- α -D-allofuranose
 $C_{16}H_{23}NO_7S$ 373.426
 Cryst. (EtOAc/ Et_2O). Mp 173° dec. $[\alpha]_D^{20}$ +88 (c, 1.0 in MeOH).

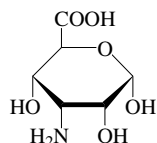
Jary, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 1452 (synth, D-form, α -D-fur isopropylidene)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1971, **18**, 157 (α -D-fur isopropylidene deriv)

Osiecki-Newman, K. *et al.*, *Enzyme*, 1988, **40**, 173; *C.A.*, 1989, **110**, 91215c (use)

3-Amino-3-deoxyalluronic acid

A-160

 α -D-Pyranose-form $C_6H_{11}NO_6$ 193.156**D-form**

Me ester: Methyl 3-amino-3-deoxy-D-alluronate
 $C_7H_{13}NO_6$ 207.183
 Solid. Mp 138-153°. $[\alpha]_D +35$ (10 min.)
 $\rightarrow +27$ (60 min.). Obt. as a mixt. of α -Pyr (20%), β -Pyr (50%), α -Fur (10%)
 and β -Fur (20%) isomers.

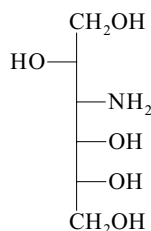
[144368-71-8, 144368-72-9, 144368-73-0,
 144368-74-1]

Gomtsyan, A. *et al.*, *Carbohydr. Res.*, 1992, **232**,
 341

3-Amino-3-deoxyaltritol, 9CI

A-161

4-Amino-4-deoxyaltritol

 $C_6H_{15}NO_5$ 181.188**D-form**

1,2:5,6-Diisopropylidene: 3-Amino-3-deoxy-1,2:5,6-di-O-isopropylidene-D-altritol
 [29709-67-9]
 $C_{12}H_{23}NO_5$ 261.317
 Cryst. (EtOAc/petrol). Mp 115-115.5°. $[\alpha]_D^{24} +2.1$ (c, 1.0 in $CHCl_3$).

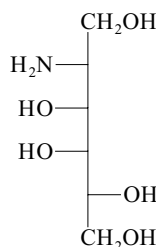
1,2:5,6-Di-O-isopropylidene, 3N,4-dimesyl:
 [29919-83-3]
 $C_{14}H_{27}NO_9S_2$ 417.501
 Cryst. (EtOH). Mp 112-114°. $[\alpha]_D^{21} +24$
 (c, 1.0 in $CHCl_3$).

Barford, A.D. *et al.*, *Carbohydr. Res.*, 1970, **14**,
 231 (*diisopropylidene deriv*)

Kim, B.M. *et al.*, *Tet. Lett.*, 1989, **30**, 655
 (*diisopropylidene*)

5-Amino-5-deoxyaltritol, 9CI

A-162

2-Amino-2-deoxyaltritol
[82768-53-4]

D-form

 $C_6H_{15}NO_5$ 181.188

The name 5-Amino-5-deoxyaltritol is preferred acc. to the IUPAC special rules for carbohydrates.

D-form [91685-30-2]

N-Ac: [20874-63-9]

 $C_8H_{17}NO_6$ 223.225

Cryst. (MeOH). Mp 153°. $[\alpha]_D +33$
 (c, 0.8 in H_2O).

L-form

N-Ac: [22430-19-9]

Needles (MeOH/Et₂O). Mp 143-146°. $[\alpha]_D -39.8$ (c, 0.98 in H_2O).

4,5-Dibenzyl, 1,3-O-benzylidene, 2N,6-di-Ac: [22435-20-7]

$C_{31}H_{35}NO_7$ 533.62
 Needles (C_6H_6 /petrol). Mp 100°. $[\alpha]_D^{22} +34.7$ (c, 0.9 on $CHCl_3$) (lit. gives a temp. range).

1,4,5-Tribenzyl: $C_{27}H_{33}NO_5$ 451.561

Cryst. (petrol). Mp 74-76°. $[\alpha]_D -5.9$
 (c, 1.0 in $CHCl_3$).

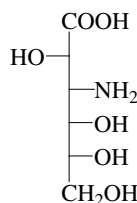
Perry, M.B. *et al.*, *Can. J. Chem.*, 1968, **46**, 2481
 (*D-N-Ac*)

Gigg, R. *et al.*, *J.C.S. (C)*, 1968, 2661 (*L-N-Ac*,
L-dibenzyl deriv, *L-tribenzyl*)

Kontrohr, T. *et al.*, *J. Chromatogr.*, 1984, **291**,
 119 (*gle*)

3-Amino-3-deoxyaltronic acid

A-163

 $C_6H_{13}NO_6$ 195.172**D-form**

2,4,5,6-Tetra-Me: 3-Amino-3-deoxy-2,4,5,6-tetra-O-methyl-D-altronic acid
 [312714-58-2]

 $C_{10}H_{21}NO_6$ 251.279

Mp 163-164° dec. (as hydrochloride). $[\alpha]_D -40$ (c, 0.87 in MeOH) (hydrochloride). CAS no. refers to hydrochloride.

2,4,5,6-Tetra-Me, N-Ac, Me ester:

[312714-56-0]

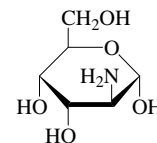
 $C_{13}H_{25}NO_7$ 307.343Oil. $[\alpha]_D +17$ (c, 1.63 in MeOH).

de García-Martín, M. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 805-815 (*synth, cmr*)

2-Amino-2-deoxyaltrose

A-164

Altrosamine

 α -D-Pyranose-form $C_6H_{13}NO_5$ 179.172**D-form** [14307-09-6]*Hydrochloride:* [20880-44-8]Syrup. $[\alpha]_D -17.3$ (c, 2.2 in H_2O).

N-Ac: *2-Acetamido-2-deoxy-D-altrose*
 [20880-43-7]

 $C_8H_{15}NO_6$ 221.21

Cryst. (EtOH). Mp 99-100°. $[\alpha]_D -2.4 \rightarrow +5$ (c, 1.0 in H_2O).

alpha-D-Pyranose-form

Me glycoside, N-Ac: Methyl 2-acetamido-2-deoxy-alpha-D-altropyranoside

[17327-09-2]

 $C_9H_{17}NO_6$ 235.236

Cryst. (EtOH/Et₂O). Mp 132°. $[\alpha]_D^{17} +80.1$ (c, 1.1 in H_2O).

Me glycoside, 6-tosyl, N-Ac: Methyl 2-acetamido-2-deoxy-6-O-tosyl-alpha-D-altropyranoside

[17495-04-4]

 $C_{16}H_{23}NO_8S$ 389.426

Mp 170° dec. $[\alpha]_D^{21} +57.9$ (c, 0.35 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene: Methyl 2-amino-4,6-O-benzylidene-2-deoxy-alpha-D-altropyranoside

[6038-60-4]

 $C_{14}H_{19}NO_5$ 281.308

Mp 168-169°. $[\alpha]_D^{21} +110.5$ (c, 1.4 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene, N-Ac:

Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy-alpha-D-altropyranoside

[17327-07-0]

 $C_{16}H_{21}NO_6$ 323.345

Mp 193-194°. $[\alpha]_D^{21} +72.5$ (c, 0.7 in $CHCl_3$).

beta-D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 2-amino-4,6-O-benzylidene-2-deoxy-beta-D-altropyranoside

[25605-61-2]

 $C_{14}H_{19}NO_5$ 281.308

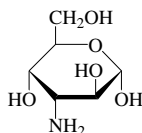
Cryst. (EtOH/petrol). Mp 188-190°. $[\alpha]_D^{22} -36.6$ (c, 0.45 in $CHCl_3$).

Horton, D. *et al.*, *Adv. Carbohydr. Chem.*, 1960, **15**, 159 (*rev, derivs*)

Zobáčová, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1967, **32**, 3560 (*alpha-D-Me pyr N-Ac benzylidene, alpha-D-Me pyr-N-Ac, alpha-D-Me pyr N-Ac tosyl*)

Perry, M.B. *et al.*, *Can. J. Chem.*, 1968, **46**, 2859
 (*D-form, D-N-Ac*)

Guthrie, R.D. *et al.*, *J.C.S. (C)*, 1970, 1961
(β -*D*-Me pyr benzylidene)
Richardson, A.C. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 218 (α -*D*-Me pyr benzylidene)
Jary, J. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 238 (α -*D*-Me pyr *N*-Ac benzylidene)
Perry, M.B. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 25 (*D*-*N*-Ac)

3-Amino-3-deoxyaltrose**A-165** α -*D*-Pyranose-formC₆H₁₃NO₅ 179.172

D-form [176779-91-2]
Glassy solid. $[\alpha]_D^{20}$ +11.7 (c, 0.5 in MeOH).

 α -*D*-Pyranose-form

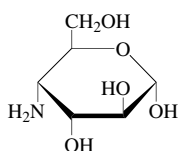
Me glycoside: Methyl 3-amino-3-deoxy- α -*D*-altropyranoside
[55274-73-2]
C₇H₁₅NO₅ 193.199
Mp 208° (188°) dec. (hydrochloride).
 $[\alpha]_D^{25}$ +91 (c, 1.1 in H₂O). CAS no. refers to hydrochloride.

Me glycoside, 2,3*N*,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -*D*-altropyranoside
[72523-30-9]
C₁₅H₂₃NO₉ 361.348
Cryst. (EtOAc/CHCl₃). Mp 177° (171-172°). $[\alpha]_D$ +42.2 (CHCl₃).

 β -*D*-Pyranose-form

Benzyl glycoside: Benzyl 3-amino-3-deoxy- β -*D*-altropyranoside
C₁₃H₁₉NO₅ 269.297
Cryst. (EtOH) (as hydrochloride). Mp 200-250° dec. (hydrochloride). $[\alpha]_D^{25}$ -72 (c, 0.5 in D₂O).

Baker, B.R. *et al.*, *J.O.C.*, 1954, **19**, 646 (α -*Me pyr tetra-Ac*)
Baer, H.H. *et al.*, *Carbohydr. Res.*, 1979, **76**, 141 (α -*Me pyr*)
Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, **42**, 605 (α -*Me pyr deriv*)
Matsumoto, K. *et al.*, *Carbohydr. Res.*, 1995, **267**, 187-201 (*synth, N-Ac*)
Spanu, P. *et al.*, *Tetrahedron*, 1996, **52**, 4829-4838 (*synth, pmr, cmr*)

4-Amino-4-deoxyaltrose, 9CI**A-166** α -*D*-Pyranose-formC₆H₁₃NO₅ 179.172***D*-Pyranose-form**

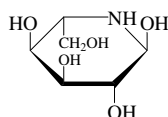
N-Ac: 4-Acetamido-4-deoxy-*D*-altropyranose
[163356-97-6]
C₈H₁₅NO₆ 221.21

$[\alpha]_D^{23}$ +54.1 (c, 1.28 in H₂O). 2:1 Mixt. of anomers.

1,2,3,4-*N*,6-Penta-Ac: 4-Acetamido-1,2,3,6-tetra-*O*-acetyl-4-deoxy-*D*-altropyranose

[163438-29-7, 163438-30-0]
C₁₆H₂₃NO₁₀ 389.358
Amorph. solid. $[\alpha]_D^{28}$ +62.4 (c, 1.13 in CHCl₃). 2:1 Mixt. of anomers.

Matsumoto, K. *et al.*, *Carbohydr. Res.*, 1995, **267**, 187-201 (*synth, pmr, cmr*)

5-Amino-5-deoxyaltrose**A-167**altro-*Nojirimycin* α -*L*-Pyranose-formC₆H₁₃NO₅ 179.172***L*-form**

Syrup.

α -*L*-Pyranose-form [109718-64-1]
Mp 165-170° dec. (as H₂SO₃ adduct).

 β -*L*-Furanose-form [109718-65-2]

6-Trityl, 1,2-isopropylidene: 5-Amino-5-deoxy-1,2-*O*-isopropylidene-6-*O*-trityl- β -*L*-altrofuranose
C₂₈H₃₁NO₅ 461.557
Pale yellow viscous oil. $[\alpha]_D^{20}$ -29 (CHCl₃).

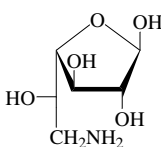
 β -*DL*-Pyranose-form

Me glycoside, *N*-benzoyl: Methyl 5-benzamido-5-deoxy- β -*DL*-altropyranoside
[69538-38-1]
C₁₄H₁₉NO₆ 297.307
Prisms (2-propanol). Mp 190-192°.

Me glycoside, 3,4-*O*-isopropylidene, *N*-benzoyl, 2,6-di-Ac: Methyl 2,6-di-*O*-acetyl-5-benzamido-5-deoxy-3,4-*O*-isopropylidene- β -*DL*-altropyranoside
[69538-41-6]
C₂₁H₂₇NO₈ 421.446
Prisms (2-propanol/hexane). Mp 146.5-147°.

Natsume, M. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 3364 (β -*DL*-*Me pyr* derivs, *pmr*)

Legler, G. *et al.*, *Carbohydr. Res.*, 1986, **155**, 119 (β -*L*-fur isopropylidene deriv, *pmr*)

6-Amino-6-deoxyaltrose**A-168** α -*L*-Furanose-formC₆H₁₃NO₅ 179.172***L*-form**

1-Dibenzyl dithioacetal, *N*-benzoyl: [23567-73-9]
C₂₇H₃₁NO₅S₂ 513.678
Needles (EtOH). Mp 156-156.5°.

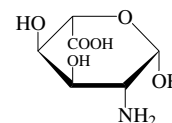
 α -*L*-Furanose-form

Me glycoside, 2,3-dibenzyl, *N*-Ac: Methyl 6-acetamido-2,3-di-*O*-benzyl-6-deoxy- α -*L*-altrofuranose
[23567-78-4]
C₂₃H₂₉NO₆ 415.485
Syrup.

Saeki, H. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 2410 (*L*-dibenzylidithioacetal deriv, α -*L*-fur *N*-Ac deriv)

2-Amino-2-deoxyaltruronic acid**A-169**

Altrosaminuronic acid

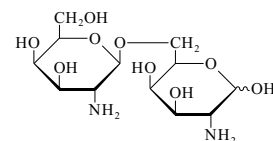
 β -*L*-Pyranose-formC₆H₁₁NO₆ 193.156***L*-form** [64838-34-2]

Constit. of the lipopolysaccharide of *Shigella sonnei*.

Kontrohr, T. *et al.*, *Carbohydr. Res.*, 1977, **58**, 498

2-Amino-2-deoxy-6-*O*-(2-amino-2-deoxy- β -*D*-galactopyranosyl)-*D*-galactose**A-170**

2-Amino-2-deoxy- β -*D*-galactopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-*D*-galactose. 6- β -*D*-Galactosaminylgalactosamine



Pyranose-form

C₁₂H₂₄N₂O₉ 340.33

N,N'-Di-Ac: 2-Acetamido-2-deoxy-6-*O*-(2-acetamido-2-deoxy- β -*D*-galactopyranosyl)-*D*-galactose. 6-*N*-Acetylgalactosaminyl-*N*-acetylgalactosamine
[56981-05-6]
Mp 182°. $[\alpha]_D^{25}$ +46 (c, 2.05 in H₂O).

[134108-94-4]

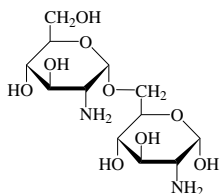
King, R.R. *et al.*, *Can. J. Chem.*, 1975, **53**, 1970
Colson, P. *et al.*, *Carbohydr. Res.*, 1976, **47**, 1 (*cmr*)

Larsson, P.O. *et al.*, *Methods Enzymol.*, 1987, **136**

Defaye, J. *et al.*, *Carbohydr. Res.*, 1989, **186**, 177 (*synth*)

2-Amino-2-deoxy-6-O-(2-amino-2-deoxy- α -D-glucopyranosyl)-D-glucose A-171

2-Amino-6-O-(2-amino-2-deoxy- α -D-glucopyranosyl)-D-glucose. 2-Amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucopyranose. 6- α -D-Glucosaminyl-D-glucosamine

 α -Pyranose-form

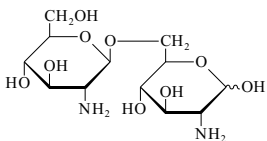
$C_{12}H_{24}N_2O_9$ 340.33

N,N'-Di-Ac: 2-Acetamido-2-deoxy-6-O-(2-acetamido-2-deoxy- α -D-glucopyranosyl)-D-glucose. 6- α -N-Acetylglucosaminyl-N-acetylglucosamine
 $C_{16}H_{28}N_2O_{11}$ 424.404
 Mp 215°. $[\alpha]_D^{25} +125$ (H₂O).

Foster, A.B. *et al.*, *J.C.S.*, 1958, 1890 (*synth*)

2-Amino-2-deoxy-6-O-(2-amino-2-deoxy- β -D-glucopyranosyl)-D-glucose A-172

2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranose. 6- β -D-Glucosaminylglucosamine



Pyranose-form

$C_{12}H_{24}N_2O_9$ 340.33

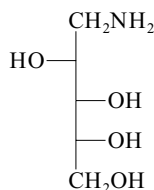
N,N'-Di-Ac: 2-Acetamido-2-deoxy-6-O-(2-acetamido-2-deoxy- β -D-glucopyranosyl)-D-glucose. 6- β -N-Acetylglucosaminyl-N-acetylglucosamine
 [35385-05-8]
 $C_{16}H_{28}N_2O_{11}$ 424.404
 Mp 200° (163°) dec. $[\alpha]_D^{25} +8 \rightarrow +1.2$ (H₂O). $[\alpha]_D^{25} +0.7$ (c, 4.56 in H₂O).

[33289-65-5, 133773-83-8, 134108-93-3]

Foster, A.B. *et al.*, *J.C.S.*, 1958, 1890 (*synth*)
 Wang, Y. *et al.*, *Acta Chim. Sin. (Engl. edn.)*, 1959, **25**, 50; *CA*, 1960, **54**, 6561 (*synth*)
 Bundle, D. *et al.*, *Carbohydr. Res.*, 1972, **21**, 211
 Defaye, J. *et al.*, *Carbohydr. Res.*, 1989, **186**, 177 (*synth*, *pmr*, *cmr*)

1-Amino-1-deoxyarabinitol A-173

5-Amino-5-deoxylyxitol



D-form

$C_5H_{13}NO_4$ 151.162

D-form [69686-08-4]

Hydrochloride: [69686-09-5]

Cryst. (MeOH aq.). Mp 136.5-137.5° (135-135.5°).

N-Ac: [92283-19-7]

$C_7H_{15}NO_5$ 193.199

Cryst.

2,3:4,5-Di-O-benzylidene, N-Ac: [23263-08-3]

$C_{21}H_{23}NO_5$ 369.416

Cryst. (EtOH). Mp 156°. $[\alpha]_D^{20} +1$ (c, 2.40 in DMF).

2,3:4,5-Di-O-isopropylidene: [59055-70-8]

$C_{11}H_{21}NO_4$ 231.291

Liq. $[\alpha]_D^{22} +9$ (CHCl₃).

N-Ph, N-Me: [56782-91-3]

$C_{12}H_{16}NO_4$ 241.286

Mp 150-160°. $[\alpha]_D^{23} -7.8$ (c, 1.5 in MeOH).

L-form [42015-12-3]

Cryst. Mp 96-98°.

N-Ph, N-Me:

Cryst. Mp 154-156°. $[\alpha]_D^{23} +8.1$ (c, 1.5 in MeOH).

Zinner, H. *et al.*, *Carbohydr. Res.*, 1969, **9**, 5 (*dibenzylidene N-Ac*)

Heard, D.D. *et al.*, *J.O.C.*, 1970, **35**, 464 (*synth*, *D-form*)

Israel, M. *et al.*, *J. Het. Chem.*, 1973, **10**, 209 (*synth*, *L-form*)

Tronchet, J.M.J. *et al.*, *Carbohydr. Res.*, 1975, **42**, 347 (*diisopropylidene*, *pmr*, *ms*)

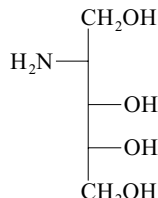
Bognar, R. *et al.*, *Org. Prep. Proced. Int.*, 1975, **7**, 111 (*N-Ph N-Me*)

Blanc-Muesser, M. *et al.*, *Carbohydr. Res.*, 1979, **68**, 175 (*synth*, *D-form*, *pmr*)

Andrews, M.A. *et al.*, *J.O.C.*, 1989, **54**, 5257 (*N-Ac*)

2-Amino-2-deoxyarabinitol A-174

4-Amino-4-deoxylyxitol



$C_5H_{13}NO_4$ 151.162

D-form

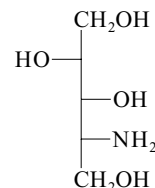
4,5-O-Isopropylidene, 1,2N,3-tri-Ac: 2-Acetamido-1,3-di-O-acetyl-2-deoxy-4,5-O-isopropylidene-D-mannitol
 [80581-32-4]
 $C_{14}H_{23}NO_7$ 317.338

Syrup.

Minami, N. *et al.*, *J.A.C.S.*, 1982, **104**, 1109 (*isopropylidene tri-Ac*)

4-Amino-4-deoxyarabinitol A-175

2-Amino-2-deoxylyxitol



$C_5H_{13}NO_4$ 151.162

The name 4-amino-4-deoxyarabinitol has precedence acc. to the IUPAC special rules for carbohydrates.

D-form

1,2-O-Isopropylidene, 3,4N,5-tri-Ac: 4-Acetamido-3,5-di-O-acetyl-4-deoxy-1,2-O-isopropylidene-D-arabinitol
 [80581-31-3]
 $C_{14}H_{23}NO_7$ 317.338

Syrup.

5-tert-Butyl, 1,2,3,4N-tetra-Ac: [100837-94-3]

$C_{17}H_{29}NO_8$ 375.418

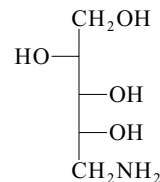
Cryst. (heptane). Mp 128° (120-122°).

Minami, N. *et al.*, *J.A.C.S.*, 1982, **104**, 1109 (*isopropylidene tri-Ac*)

Jaeger, V. *et al.*, *Tet. Lett.*, 1985, **26**, 2997 (*tert-butyl tetra-Ac*, *cryst struct*)

5-Amino-5-deoxyarabinitol A-176

1-Amino-1-deoxylyxitol. Lyxitylamine
 [54676-23-2]



$C_5H_{13}NO_4$ 151.162

5-Amino-5-deoxyarabinitol is preferred over 1-amino-1-deoxylyxitol acc. to the IUPAC special nomenclature rules for carbohydrates.

D-form [55700-83-9]

Syrup.

N-Ac: [122741-77-9]

$C_7H_{15}NO_5$ 193.199

Cryst. (EtOH/Et₂O) or syrup. Mp 126-127°.

N-Salicylidene: [22566-19-4]

Mp 184-186°.

1,3:2,4-Di-O-benzylidene, N-Ac: [23263-07-2]

$C_{21}H_{23}NO_5$ 369.416

Cryst. (Me₂CO aq.). Mp 284-285.5°.

L-form

$[\alpha]_D -8.2$ (c, 1.72 in MeOH).

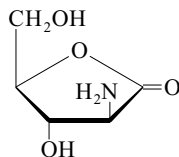
[22566-18-3]

Winestock, C.H. *et al.*, *J.O.C.*, 1961, **26**, 4456 (*synth*)

Zinner, H. *et al.*, *Carbohydr. Res.*, 1969, **9**, 5 (*dibenzylidene*, *N-Ac*)

Heard, D.D. *et al.*, *J.O.C.*, 1970, **35**, 464 (*deriv*)
 Blanc-Muesser, M. *et al.*, *Carbohydr. Res.*, 1979, **68**, 175 (*pmr, conformn*)
 Andrews, M.A. *et al.*, *J.O.C.*, 1989, **54**, 5257 (*synth, pmr, N-Ac*)
 Bouchez, V. *et al.*, *Carbohydr. Res.*, 2000, **323**, 213-217 (*L-form, synth, pmr, cmr*)

2-Amino-2-deoxy-1,4-arabinonolactone A-177



$C_5H_9NO_4$ 147.13

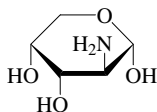
D-form

Solid (EtOH). Mp 175°. $[\alpha]_D^{20} +44$ (c, 0.665 in H_2O).

Depezay, J.C. *et al.*, *Carbohydr. Res.*, 1983, **112**, 51 (*synth, pmr, cmr, cryst struct*)

2-Amino-2-deoxyarabinose, 9CI, 8CI A-178

Arabinosamine



α -D-Pyranose-form

$C_5H_{11}NO_4$ 149.146

D-form [5840-75-5]

Hydrochloride: Mp 154-157° dec. $[\alpha]_D^{23} -158 \rightarrow -124$ (c, 1.17 in H_2O).

Di-Et mercaptal: [56206-87-2]

$C_9H_{21}NO_3S_2$ 255.402
 Cryst. (EtOAc). Mp 131-132°. $[\alpha]_D^{22} -23.4$ (c, 0.87 in MeOH).

N-Ac: 2-Acetamido-2-deoxy-D-arabinose
 $C_7H_{13}NO_5$ 191.183
 Cryst. (EtOH/EtOAc/petrol). Mp 160-163°. $[\alpha]_D^{24} -149$ (2 min.) $\rightarrow -97$ (c, 0.94 in H_2O).

α -D-Pyranose-form

Me glycoside: Methyl 2-amino-2-deoxy- α -D-arabinopyranoside
 [52706-45-3]

$C_6H_{13}NO_4$ 163.173
 Cryst. (EtOAc). Mp 75-77°. $[\alpha]_D^{25} +100.8$ (c, 0.75 in $CHCl_3$).

β -D-Pyranose-form

Me glycoside: Methyl 2-amino-2-deoxy- β -D-arabinopyranoside
 $C_6H_{13}NO_4$ 163.173
 Solid by subl. Mp 135° (crude). $[\alpha]_D^{22} -226$ (c, 1.02 in H_2O).

Me glycoside, tribenzyl: Methyl 2-benzamido-3,4-di-O-benzoyl- β -D-arabinopyranoside
 $C_{27}H_{25}NO_7$ 475.497
 Cryst. (cyclohexane). Mp 128-129°. $[\alpha]_D^{23} -290$ (c, 0.55 in EtOH). MF incorrectly given as $C_{27}H_{27}NO_7$.

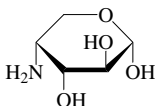
L-form

Hydrochloride: Mp 153-155° dec. $[\alpha]_D +174 \rightarrow +115$ (H_2O).

N-Ac: 2-Acetamido-2-deoxy-L-arabinose
 $C_7H_{13}NO_5$ 191.183
 Mp 154-156°. $[\alpha]_D +147.5 \rightarrow +94$ (H_2O).

Kuhn, R. *et al.*, *Annalen*, 1959, **628**, 193 (*D-form, synth, D-N-Ac*)
 Horton, D. *et al.*, *Adv. Carbohydr. Chem.*, 1960, **15**, 159 (*rev, L-form, derivs*)
 Montgomery, J.A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 404 (*α -D-Me pyr*)
 Wolfrom, M.L. *et al.*, *Carbohydr. Res.*, 1975, **41**, 117 (*D-di-Et mercaptal*)
 Drivas, I. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 243-251 (*Me β -D-pyr*)
 Wolfrom, M.L. *et al.*, *Carbohydr. Res.*, 1986, **153**, 150 (*synth*)

4-Amino-4-deoxyarabinose A-179



α -D-Pyranose-form

$C_5H_{11}NO_4$ 149.146

D-form [86288-09-7]

Constit. of lipopolysaccharide of some gram negative bacteria e.g. *Salmonella minnesota*, *Salmonella typhimurium*, *Proteus mirabilis*, *Rhodocyclus purpureus*.

N-Ac: 4-Acetamido-4-deoxy-D-arabinose
 $C_7H_{13}NO_5$ 191.183
 Cryst. (MeOH/Et₂O). Mp 157.5-158.5°. $[\alpha]_D^{23} -65 \rightarrow -73$ (c, 2.53 in H_2O).

α -D-Pyranose-form

Me glycoside: Methyl 4-amino-4-deoxy- α -D-arabinopyranoside
 $C_6H_{13}NO_4$ 163.173
 Cryst. (EtOH) (as hydrochloride). Mp 180-183° (hydrochloride). $[\alpha]_D^{23} +3$ (c, 1.75 in H_2O).

Me glycoside, N-Ac: Methyl 4-acetamido-4-deoxy- α -D-arabinopyranoside
 $C_8H_{15}NO_5$ 205.21
 Cryst. (EtOH). Mp 129-130°. $[\alpha]_D^{23} +1.6$ (c, 1.83 in H_2O).

α -D-Furanose-form

1,2,3,4N,5-Penta-Ac: 4-Acetamido-1,2,3,5-tetra-O-acetyl-4-deoxy- α -D-arabinofuranose
 $C_{15}H_{21}NO_9$ 359.332
 Syrup. $[\alpha]_D^{23} -31$ (c, 0.45 in $CHCl_3$).

Me glycoside, N-Ac: Methyl 4-acetamido-4-deoxy- α -D-arabinofuranoside
 $C_8H_{15}NO_5$ 205.21
 Cryst. (MeOH/Et₂O/heptane). Mp 145.5-146.5°. $[\alpha]_D^{23} -44$ (c, 1 in H_2O).

β -D-Furanose-form

1,2,3,4N,5-Penta-Ac: 4-Acetamido-1,2,3,5-tetra-O-acetyl-4-deoxy- β -D-arabinofuranose
 $C_{15}H_{21}NO_9$ 359.332
 Syrup. $[\alpha]_D^{23} -70$ (c, 1.35 in $CHCl_3$).

Me glycoside, N-Ac: Methyl 4-acetamido-4-deoxy- β -D-arabinofuranoside
 $C_8H_{15}NO_5$ 205.21
 Syrup. $[\alpha]_D^{23} -68$ (c, 0.5 in H_2O).

L-Pyranose-form

Hydrochloride:

Yellow glass. $[\alpha]_D^{20} +49.6$ (c, 0.8 in D_2O).

α -L-Pyranose-form

Me glycoside: Methyl 4-amino-4-deoxy- α -L-arabinopyranoside
 [19140-34-2]
 $C_6H_{13}NO_4$ 163.173

Cryst. (as hydrochloride). Mp 184.5-185° dec. (hydrochloride). $[\alpha]_D -3$ (c, 0.98 in H_2O). CAS no. refers to hydrochloride.

Me glycoside, N-Ac: Methyl 4-acetamido-4-deoxy- α -L-arabinopyranoside
 [19140-35-3]
 $C_8H_{15}NO_5$ 205.21
 Cryst. Mp 129-130°. $[\alpha]_D -1.8$ (c, 3.43 in H_2O).

Me glycoside, 2,3,4N-tri-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4-deoxy- α -L-arabinopyranoside
 [19210-07-2]
 $C_{12}H_{19}NO_7$ 289.285
 Glass. $[\alpha]_D -34$ (c, 1.35 in $CHCl_3$).

β -L-Pyranose-form

1-Dihydrogen phosphate: [83364-05-0]
 $C_5H_{12}NO_7P$ 229.126

Constit. of lipopolysaccharide of *Salmonella minnesota*. Syrup.

Me glycoside: Methyl 4-amino-4-deoxy- β -L-arabinopyranoside
 $C_6H_{13}NO_4$ 163.173
 Syrup. $[\alpha]_D^{22} +185$ (c, 0.4 in H_2O).

Me glycoside, 2,3,4N-tri-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4-deoxy- β -L-arabinopyranoside
 [76800-61-8]
 $C_{12}H_{19}NO_7$ 289.285
 Prisms + 0.5 H_2O (EtOAc/hexane). Mp 72-75°.

Me glycoside, 2,3-dimesyl, N-Ac: Methyl 4-acetamido-4-deoxy-2,3-di-O-mesyl- β -L-arabinopyranoside
 [89195-93-7]
 $C_{10}H_{19}NO_9S_2$ 361.393
 Prisms (pentane). Mp 162-163° (158-159°).

[29973-49-7, 118117-12-7, 118149-40-9]

Dick, A.J. *et al.*, *Can. J. Chem.*, 1968, **46**, 425 (*D-deriv, α -D-pyr derivs, α -D-fur derivs, β -D-fur derivs, α -L-pyr derivs*)

Arnarp, J. *et al.*, *Carbohydr. Res.*, 1980, **86**, 143 (*β -L-Me pyr*)

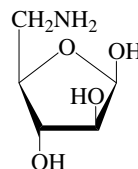
Batley, M. *et al.*, *Biochemistry*, 1982, **21**, 6580 (*phosphate, pmr, occur*)

Naleway, J.J. *et al.*, *Carbohydr. Res.*, 1988, **179**, 199 (*L-pyr*)

Bhat, R. *et al.*, *J. Bacteriol.*, 1990, **172**, 6631 (*occur*)

Dimitriev, B.A. *et al.*, *FEMS Microbiol. Lett.*, 1991, **77**, 39 (*occur*)

5-Amino-5-deoxyarabinose A-180



β -D-Furanose-form

$C_5H_{11}NO_4$ 149.146

α -D-Furanose-form

Benzyl glycoside: Benzyl 5-amino-5-deoxy- α -D-arabinofuranoside
[154919-50-3]
C₁₂H₁₇NO₄ 239.271
Syrup. [α]_D²⁰ +111.5 (c, 0.2 in dioxan).

 β -D-Furanose-form

1,2-O-Isopropylidene, 3-mesyl, N-Ac: 5-Acetamido-5-deoxy-1,2-O-isopropylidene-3-O-mesyl- β -D-arabinofuranose
[7687-67-4]
C₁₁H₁₉NO₇S 309.34
Cryst. (Me₂CO/Et₂O/pentane). Mp 127-128°. [α]_D²⁵ +6.5 (c, 1.16 in MeOH).
1,2-O-Isopropylidene, 3-mesyl, N-benzoyl: 5-Benzamido-5-deoxy-1,2-O-isopropylidene-3-O-mesyl- β -D-arabinofuranose
[7687-68-5]
C₁₆H₂₁NO₇S 371.41
Mp 117-118°. [α]_D²⁵ +9 (c, 0.55 in MeOH).

L-form

5N-Ac, benzylphenylhydrazone:
Cryst. (Me₂CO/Et₂O/pentane). Mp 155-156°. [α]_D²⁵ -12.2 (c, 2.05 in MeOH).
1-Diethylthioacetal, N-Ac:
C₁₁H₂₃NO₄S₂ 297.439
Cryst. (EtOH/Et₂O/2,2,4-trimethylpentane). Mp 133-134°. [α]_D²³ +90 (c, 1.0 in CHCl₃).

L-Pyranose-form

N-Ac: 5-Acetamido-5-deoxy-L-arabinopyranose
[13428-12-1]
C₇H₁₃NO₅ 191.183
Mp 145-146°. [α]_D²⁴ +18.5 (c, 2.02 in H₂O). [α]_D²⁴ +8.6 (0.1M HCl).

L-Furanose-form

1,2,3,5N-Tetra-Ac: 5-Acetamido-1,2,3-tri-O-acetyl-5-deoxy-L-arabinofuranose
C₁₃H₁₉NO₈ 317.295
Syrup. [α]_D +5 (c, 2.62 in CHCl₃).

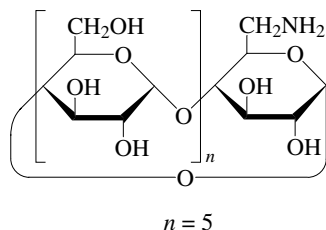
 β -L-Furanose-form

1,2-O-Isopropylidene, N-Ac: 5-Acetamido-5-deoxy-1,2-O-isopropylidene- β -L-arabinofuranose
C₁₀H₁₇NO₅ 231.248
Cryst. Mp 143-144°. [α]_D -45 (c, 2.0 in MeOH).

Jones, J.K.N. *et al.*, *J.C.S.*, 1962, 4699 (*L-form, β -L-fur*)
Hanessian, S. *et al.*, *J.O.C.*, 1963, 28, 2604; 1967, 32, 163 (*L-form, L-pyr, β -D-fur*)
Wessel, H.P. *et al.*, *J. Carbohydr. Chem.*, 1993, 12, 1173-1186 (*benzyl α -D-fur*)

6^A-Amino-6^A-deoxy- α -cyclodextrin, 9CI

6-Amino-6-deoxycyclohexaamylose
[29556-37-4]



C₃₆H₆₁NO₂₉ 971.867

Forms inclusion complexes. Intermed. for synth. of derivatives and conjugates of α -Cyclodextrin, C-171. Mp 200° dec. (180° dec.). [α]_D²⁵ +135 (c, 0.38 in H₂O).

Melton, L.D. *et al.*, *Carbohydr. Res.*, 1971, 18, 29-37 (*synth*)
Brown, S.E. *et al.*, *Aust. J. Chem.*, 1993, 46, 953-958 (*synth, cmr*)
Hamasaki, K. *et al.*, *J.A.C.S.*, 1993, 115, 5035-5040 (*synth, pmr*)
Hanessian, S. *et al.*, *J.O.C.*, 1995, 60, 4786-4797 (*synth, pmr, cmr*)
Yuan, D.Q. *et al.*, *Tet. Lett.*, 2003, 44, 565-568 (*synth*)

6^A-Amino-6^A-deoxy- β -cyclodextrin, 9CI

6-Amino-6-deoxycyclomaltoheptaose.

6-Amino-6-deoxycycloheptaamylose

[2930-67-8]

As 6^A-Amino-6^A-deoxy- α -cyclodextrin, A-181 with n = 6

C₄₂H₇₁NO₃₄ 1134.009

Forms inclusion complexes. Intermed. for synth. of derivatives and conjugates of β -Cyclodextrin, C-172. Powder. Mp 203° dec. [α]_D²⁰ +129.6 (c, 0.5 in H₂O).

Hydrochloride: [126927-47-7]

Fluffy solid. Mp 222-224° dec. (201° dec.). [α]_D²³ +86.4.

N,N-Di-Me: [158258-31-2]

C₄₄H₇₅NO₃₄ 1162.063

Powder. Mp 200-205° dec.

Petter, R.C. *et al.*, *J.A.C.S.*, 1990, 112, 3860-3864 (*synth, pmr, cmr*)

Brown, S.E. *et al.*, *Aust. J. Chem.*, 1993, 46, 953-958 (*synth, cmr*)

Beeson, J.C. *et al.*, *Bioorg. Med. Chem.*, 1994, 2, 297-303 (*synth, pmr, cmr*)

Matsumoto, K. *et al.*, *Inorg. Chim. Acta*, 1998, 272, 162-167 (*synth*)

Christian, A.E. *et al.*, *J. Lipid Res.*, 1999, 40, 1475-1482 (*synth, pmr, cmr*)

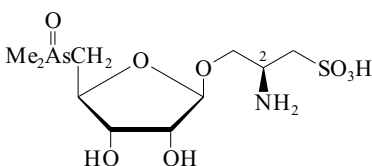
Crémignon, C. *et al.*, *J. Pharm. Sci.*, 1999, 88, 302-305 (*pharmacokinetic*)

Ferruti, P. *et al.*, *Macromol. Chem. Phys.*, 1999, 200, 1644-1654 (*synth, ir, cmr*)

Jicsinszky, L. *et al.*, *Carbohydr. Polym.*, 2001, 45, 139-145 (*synth*)

Lo Meo, P. *et al.*, *Tetrahedron*, 2002, 58, 6039-6045 (*N,N-di-Me*)

Bonnet, V. *et al.*, *Eur. J. Org. Chem.*, 2003, 4810-4818 (*synth, pmr, cmr*)

2-Amino-3-[[5-deoxy-5-(di-methylarsinoyl)ribofuranosyl]oxy]-1-propanesulfonic acid

C₁₀H₂₂AsNO₈S 391.273

(2S)- β -D-form [138382-72-6]

Constit. of the seaweeds *Hizikia fusiforme*, *Sargassum lacerifolium* and *Sphaerotrichia divaricata*.

[109028-17-3]

Edmonds, J.S. *et al.*, *J.C.S. Perkin 1*, 1987, 577 (*isol, pmr*)

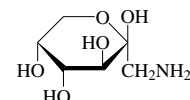
Jin, K. *et al.*, *Agric. Biol. Chem.*, 1988, 52, 1965 (*isol*)

Francesconi, K.A. *et al.*, *J.C.S. Perkin 1*, 1991, 2707 (*isol, pmr, cryst struct*)

1-Amino-1-deoxyfructose

Fructosamine. Isoglucosamine

[27968-74-7]



β -D-Pyranose-form

C₆H₁₃NO₅ 179.172

D-form [4429-04-3]

Found in blood serum of human diabetics.

Hydrochloride: [39002-30-7]

Cryst. (EtOH aq.). Mp 118° Mp 140-141°. [α]_D²⁵ -68 (c, 0.34 in H₂O) (final).

Acetate salt: [6333-49-9]

Cryst. (EtOH). Mp 145-146° (137°). [α]_D²³ -63 (c, 1 in Py). [α]_D²² -69.8 (c, 1.6 in H₂O).

 β -D-Pyranose-form

2,3:4,5-Di-O-isopropylidene: 1-Amino-1-deoxy-2,3:4,5-di-O-isopropylidene- β -D-fructopyranose

[128316-82-5]

C₁₂H₂₁NO₅ 259.302

Syrup. [α]_D²⁵ -30.7 (c, 1.0 in CHCl₃).

2,3:4,5-Di-O-isopropylidene, hydrochloride: [122470-00-2]

Powder (CH₂Cl₂/Et₂O). Mp 159-173° dec.

 α -D-Furanose-form

Me glycoside: Methyl 1-amino-1-deoxy- α -D-fructofuranoside

[106220-86-4]

C₇H₁₅NO₅ 193.199

Syrup. [α]_D²⁵ +37 (c, 1.0 in H₂O).

Me glycoside, oxalate: [129933-49-9]

Cryst. (EtOH). Mp 144-146°. [α]_D²⁵ +59 (c, 1.0 in H₂O).

 β -D-Furanose-form

Me glycoside: Methyl 1-amino-1-deoxy- β -D-fructofuranoside

[83031-88-3]

C₇H₁₅NO₅ 193.199

Cryst. Mp 144-145°. [α]_D²⁵ -1.5 (MeOH).

Me glycoside, N,3,4,6-tetra-Ac: Methyl 1-acetamido-3,4,6-tri-O-acetyl-1-deoxy- β -D-fructofuranoside

[82877-63-2]

C₁₅H₂₃NO₉ 361.348

Syrup. [α]_D²⁵ -44.9 (CHCl₃).

[39002-30-7]

Neilson, T. *et al.*, *J.C.S.*, 1962, 44 (*synth*)

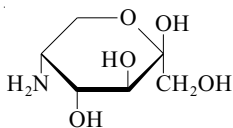
Hodge, J.E. *et al.*, *Methods Carbohydr. Chem.*, 1963, 2, 99 (*synth*)

Wolfrom, M.L. *et al.*, *J.O.C.*, 1964, 29, 3284 (*synth, uv*)

Haas, H.J. *et al.*, *Annalen*, 1972, 759, 208 (*synth*)

Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, 35, 1003; 1019 (β -D-Me fur, β -D-Me fur tetra-Ac, pmr)

Gomez-Sanchez, A. *et al.*, *Carbohydr. Res.*, 1986, **149**, 329 (*cmr*, *conformn*, *equilib*, α -D-Me fur)
 Goodwin, J.C. *et al.*, *Carbohydr. Res.*, 1989, **195**, 150 (β -D-fur diisopropylidene)
 Reitz, A.B. *et al.*, *J. Med. Chem.*, 1989, **32**, 2110 (β -D-pyr diisopropylidene, *ir*, *ms*, *pmr*)
 Caldwell, G.W. *et al.*, *Org. Mass Spectrom.*, 1989, **24**, 1051 (β -D-pyr diisopropylidene, *ms*)
 Garcia, M. *et al.*, *Carbohydr. Res.*, 1990, **199**, 139 (α -D-Me pyr, *pmr*)

5-Amino-5-deoxyfructose**A-185**C₆H₁₃NO₅ 179.172 **β -D-Pyranose-form**

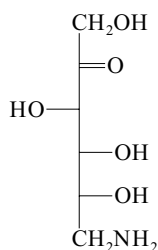
Me glycoside, 1,3-O-benzylidene: Methyl 5-amino-1,3-O-benzylidene-5-deoxy- β -D-fructopyranoside [18610-11-2]
 C₁₄H₁₉NO₅ 281.308
 Cryst. (EtOH/petrol). Mp 92-94°. [α]_D²⁰ -77.4 (c, 0.62 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 1,3-O-benzylidene, N-Ac: Methyl 5-acetamido-1,3-O-benzylidene-5-deoxy- β -D-fructopyranoside [18610-13-4]
 C₁₆H₂₁NO₆ 323.345
 Cryst. (EtOH/petrol). Mp 199-201° dec. [α]_D -77.5 (c, 0.50 in CHCl₃).

Me glycoside, 1,3-O-benzylidene, 4,5N-di-Ac: Methyl 5-acetamido-4-O-acetyl-1,3-O-benzylidene-5-deoxy- β -D-fructopyranoside [18610-12-3]
 C₁₈H₂₃NO₇ 365.382
 Cryst. Mp 220-222°. [α]_D²⁰ -67.3 (c, 0.40 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 1,3-O-benzylidene, 4-mesyl: Methyl 5-amino-1,3-O-benzylidene-5-deoxy-4-O-mesyl- β -D-fructopyranoside [18610-10-1]
 C₁₅H₂₁NO₇S 359.399
 Cryst. (EtOH/petrol). Mp 175-176°. [α]_D²⁰ -95.9 (c, 0.91 in CHCl₃) (lit. gives a temp. range).

Murphy, D. *et al.*, *J.C.S. (C)*, 1967, 1732 (β -D-Me pyr benzylidene derivs)

6-Amino-6-deoxyfructose**A-186**C₆H₁₃NO₅ 179.172**D-form**

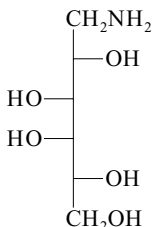
N-Trifluoroacetyl: [115827-09-3]
 C₈H₁₂F₃NO₆ 275.181
 Syrup. Unstable at r.t.

6N-Phosphonyl, 1-dihydrogen phosphate: [133473-45-7]
 C₆H₁₅NO₁₁P₂ 339.132
 Syrup.

Durrwachter, J.R. *et al.*, *J.O.C.*, 1988, **53**, 4175 (*N*-trifluoroacetyl, *pmr*)
 Sem, D.S. *et al.*, *Biochemistry*, 1991, **30**, 4978 (*phosphate*, *P*-31 *nmr*)

1-Amino-1-deoxygalactitol**A-187**

[488-42-6]

C₆H₁₅NO₅ 181.188**D-form** [42015-13-4]

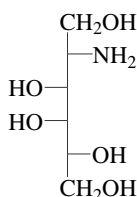
Cryst. Mp 143° (138-140°).

Hydrochloride: [104833-42-3]

Cryst. Mp 143-145°.

Hydrobromide: [55399-81-0]Cryst. (MeOH aq.). Mp 136°. [α]_D²⁰ -10.5 (c, 4.59 in H₂O).*N-Me*: [7115-46-0]C₇H₁₇NO₅ 195.215Mp 133-136°. [α]_D²⁰ -16 (c, 1 in MeOH).*N-Ph, N-Me, 2,3,4,5,6-penta-Ac*: [56782-94-6]C₂₃H₃₁NO₁₀ 481.499Cryst. Mp 128-130°. [α]_D²³ +16.2 (c, 1.5 in MeOH).Wolfrom, M.L. *et al.*, *J.O.C.*, 1958, **23**, 571 (*synth*)Israel, M. *et al.*, *J. Het. Chem.*, 1973, **10**, 209 (*synth*)Gassmann, N. *et al.*, *Helv. Chim. Acta*, 1975, **58**, 182 (*synth*)Bognar, R. *et al.*, *Org. Prep. Proced. Int.*, 1975, **7**, 111 (*N-Ph N-Me penta-Ac*)Van Dam, J.E.G. *et al.*, *Carbohydr. Res.*, 1989, **187**, 25 (*glc, ms*)**2-Amino-2-deoxygalactitol****A-188**

5-Amino-5-deoxygalactitol. *Galacosaminitol* [23018-80-6]

**D-form**C₆H₁₅NO₅ 181.188

2-Amino-2-deoxy-D-galactitol \equiv 5-amino-5-deoxy-L-galactitol. Stabiliser of biological and pharmaceutical products during autoclaving.

D-form [20706-37-0]

Cryst. (MeOH aq.). Mp 174-178°.

N-Ac: 2-Acetamido-2-deoxy-D-galactitol [10486-91-6]C₈H₁₇NO₆ 223.225Cryst. Mp 176°. [α]_D -44 (c, 0.5 in H₂O).*2,3,4,6-Di-O-isopropylidene*: [130281-95-7]C₁₂H₂₃NO₅ 261.317Oil. [α]_D²⁵ +7.61 (c, 0.7 in CHCl₃).*2,3,4,6-Di-O-isopropylidene, N-(p-methoxybenzyloxycarbonyl)*:

[130114-47-5]

Oil. [α]_D²⁵ -32.7 (c, 1.3 in CHCl₃).

Perry, M.B. *et al.*, *Can. J. Chem.*, 1968, **46**, 2481 (*synth, N-Ac*)

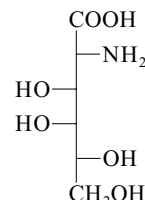
Shabas, M.A.E. *et al.*, *Carbohydr. Res.*, 1977, **59**, 213 (*synth, glc-ms*)

Shashkov, A.V. *et al.*, *Carbohydr. Res.*, 1979, **72**, 218 (*N-Ac, cmr*)

Carter, S.R. *et al.*, *J.C.S. Perkin 1*, 1985, 2775 (*synth, N-Ac*)

U.S. Pat., 1989, 4 876 241; *CA*, **112**, 240487p (*use*)

Aoyagi, S. *et al.*, *J.O.C.*, 1991, **56**, 815 (*diisopropylidene, ir, pmr, cmr*)

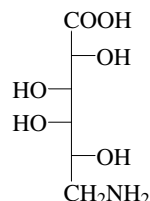
2-Amino-2-deoxygalactonic acid**A-189**C₆H₁₃NO₆ 195.172**D-form**

1,4-Lactone, N-Ac: 2-Acetamido-2-deoxy-D-galactono-1,4-lactone [28876-38-2]

C₈H₁₃NO₆ 219.194

Cryst. (MeOH). Mp 173-175°. [α]_D²⁵ -16 (c, 1.7 in H₂O).

Zsoldos-Mády, V. *et al.*, *Carbohydr. Res.*, 1994, **252**, 85 (*synth*)

6-Amino-6-deoxygalactonic acid**A-190**C₆H₁₃NO₆ 195.172**D-form**

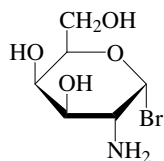
Tetra-O-Me: 6-Amino-6-deoxy-2,3,4,5-tetra-O-methyl-D-galactonic acid [408360-24-7]

C₁₀H₂₁NO₆ 251.279

V. hygroscopic cryst. Mp 161°. [α]_D +13 (MeOH).

Romero Zaliz, C.L. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 689-701 (*tetra-Me*)

2-Amino-2-deoxygalactopyranosyl bromide **A-191**



α -D-form

$C_6H_{12}BrNO_4$ 242.069

α -D-form

Tri-Ac: 3,4,6-Tri-O-acetyl-2-amino-2-deoxy- α -D-galactopyranosyl bromide
 $C_{12}H_{18}BrNO_7$ 368.181
Plates (CH_2Cl_2/Et_2O) (as hydrobromide). Mp 144-148° dec. $[\alpha]_D^{23} +160$ (c, 0.7 in $CHCl_3$).

Tribenzoyl: 2-Amino-3,4,6-tri-O-benzoyl-2-deoxy- α -D-galactopyranosyl bromide
 $C_{27}H_{24}BrNO_7$ 554.393
Cryst. (Et_2O/THF) (as hydrobromide). Mp 163-164° dec. $[\alpha]_D^{32} +139$ (c, 1.2 in THF).

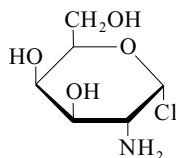
N-Trifluoroacetyl, tri-Ac: 3,4,6-Tri-O-acetyl-2-deoxy-2-trifluoroacetyl- α -D-galactopyranosyl bromide
[25324-48-5]
 $C_{14}H_{17}BrF_3NO_8$ 464.189
Mp 60-62°. $[\alpha]_D^{22} +146$ (c, 1.5 in $CHCl_3$).

Wolfrom M.L., *et al.*, *J.O.C.*, 1963, **28**, 3231 (α -D-tri-Ac)

Strong, R.S. *et al.*, *Annalen*, 1966, **692**, 215 (α -D-tribenzoyl)

Wolfrom, M.L. *et al.*, *Carbohydr. Res.*, 1969, **11**, 63 (α -D-N-trifluoroacetyl tri-Ac)

2-Amino-2-deoxygalactopyranosyl chloride **A-192**



$C_6H_{12}ClNO_4$ 197.618

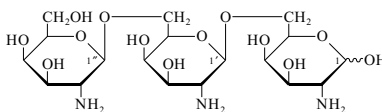
α -D-form

N,3,4,6-Tetra-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-2-deoxy- α -D-galactopyranosyl chloride. Acetochlorogalactosamine
[41355-44-6]
 $C_{14}H_{20}ClNO_8$ 365.767
Plates ($EtOAc$), rectangular stout prisms ($EtOAc/Et_2O$). Mp 131-136° dec. (130°). $[\alpha]_D^{18} +138$ (c, 0.7 in $CHCl_3$).

Tarasiejska, Z. *et al.*, *J.A.C.S.*, 1958, **80**, 6325 (α -D-tetra-Ac)

Heyworth, R. *et al.*, *J.C.S.*, 1959, 4121 (α -D-tetra-Ac)

2-Amino-2-deoxy-β-D-galactopyranosyl-(1→6)-2-amino-2-deoxy-β-D-galactopyranosyl-(1→6)-2-amino-2-deoxy-D-galactose, 9CI **A-193**



Pyranose-form

$C_{18}H_{35}N_3O_{13}$ 501.487

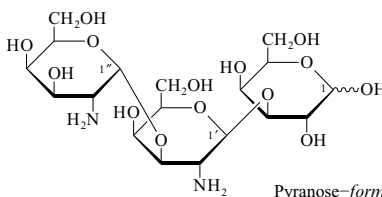
N,N,N'-Tri-Ac: [121388-64-5]

$C_{24}H_{41}N_3O_{16}$ 627.598

Cryst. Mp 202°. $[\alpha]_D^{25} +32.5$ (c, 0.73 in H_2O).

Defaye, J. *et al.*, *Carbohydr. Res.*, 1989, **186**, 177 (*tri-N-Ac, cmr*)

2-Amino-2-deoxy-α-D-galactopyranosyl-(1→3)-2-amino-2-deoxy-β-D-galactopyranosyl-(1→3)-D-galactose, 9CI **A-194**



Pyranose-form

$C_{18}H_{34}N_2O_{14}$ 502.472

Constit. of the pentasaccharide chain of the Forssman antigen.

N,N'-Di-Ac: [80856-63-9]

$C_{22}H_{38}N_2O_{16}$ 586.546

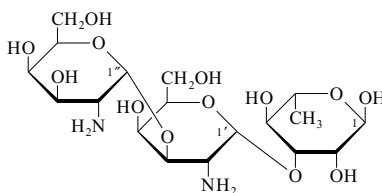
Syrup. $[\alpha]_D^{20} +53.2$ (c, 0.5 in H_2O).

[80856-73-1]

Paulsen, H. *et al.*, *Annalen*, 1981, 2204 (*di-N-Ac, pmr*)

2-Amino-2-deoxy-α-D-galactopyranosyl-(1→3)-2-amino-2-deoxy-α-D-galactopyranosyl-(1→3)-L-rhamnose **A-195**

2-Amino-2-deoxy- α -D-galactopyranosyl-(1→3)-2-amino-2-deoxy- α -D-galactopyranosyl-(1→3)-6-deoxy-L-mannose, 9CI



$C_{18}H_{34}N_2O_{13}$ 486.472

α -Pyranose-form

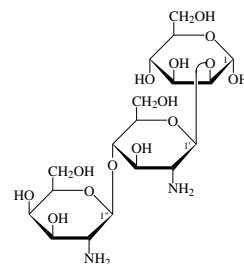
8-Methoxycarbonyloctyl glycoside, *N,N'*-di-Ac: [79276-35-0]

$C_{32}H_{56}N_2O_{17}$ 740.798

Syrup. $[\alpha]_D^{20} +146.5$ (c, 0.5 in H_2O).

Iversen, T. *et al.*, *J.C.S. Perkin 1*, 1981, 2379 (α -methoxycarbonyloctyl pyr di-N-Ac, cmr)

2-Amino-2-deoxy-β-D-galactopyranosyl-(1→4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→2)-D-mannose, 9CI **A-196**



α -Pyranose-form

$C_{18}H_{34}N_2O_{14}$ 502.472

Found in the peripheral trisaccharide sequence of Lutropin, L-54.

α -Pyranose-form

Me glycoside, 3,3',3'',4,6,6',6''-heptabenzyl, 2',N,2''N-di-Ac: [131222-03-2]

$C_{72}H_{82}N_2O_{16}$ 1231.444

Powder. $[\alpha]_D^{23} +5.5$ (c, 0.11 in $CHCl_3$).

Me glycoside, 3,3',3'',4,6,6',6''-heptabenzyl, 2',N,2''N,4''-tri-Ac: [131222-02-1]

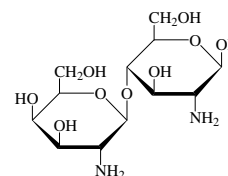
$C_{74}H_{84}N_2O_{17}$ 1273.481

Powder. $[\alpha]_D^{25} +2.7$ (c, 0.55 in $CHCl_3$).

[131221-94-8, 131222-04-3]

Nishimura, S. *et al.*, *Carbohydr. Res.*, 1990, **206**, 207 (occur, α -Me pyr derivs, pmr, cmr)

2-Amino-2-deoxy-β-D-galactopyranosyl-(1→4)-2-amino-2-deoxy-D-glucose **A-197**
Lactosediamine



β -D-Pyranose-form

$C_{12}H_{24}N_2O_9$ 340.33

N,N'-Di-Ac: [136198-41-9]

$C_{16}H_{28}N_2O_{11}$ 424.404

Structural element of a diverse group of glycans. Allergenicity specific epitope of sea-squirt H-antigen.

β -D-Pyranose-form

Me glycoside, *N,N'*-di-Ac: [136198-40-8]

$C_{17}H_{30}N_2O_{11}$ 438.431

Solid. $[\alpha]_D -3$ (c, 0.3 in H_2O).

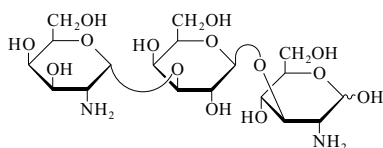
Ohta, M. *et al.*, *Arch. Biochem. Biophys.*, 1991, **290**, 471-483 (occur, *N,N'*-di-Ac)

Hokke, C.H. *et al.*, *Glycoconjugate J.*, 1993, **10**, 82-90 (β -D-Me gly *N,N'*-di-Ac, synth, pmr, cmr)

Needleman, A.P. *et al.*, *Proc. Natl. Acad. Sci., India*, 1996, **93**, 10111-10116 (*bibl, N,N'*-di-Ac)

2-Amino-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose
3²- α -Galactosaminyl-3- β -galactosylglucosamine

A-198



Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

N,N'-Di-Ac: 2-Acetamido-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy-D-glucose. 3²- α -N-Acetylgalactosaminyl-3- β -galactosyl-N-acetylglucosamine [5536-47-0]

C₂₂H₃₈N₂O₁₆ 586.546

Isol. from the partial acid hydrolysates of human ovarian cyst blood-group A substance and human blood-group A substance.

[α]_D +136 (H₂O) (+110).

Undeca-Ac: [67313-34-2]

C₄₀H₅₆N₂O₂₅ 964.881

Syrup.

[5536-47-0, 85304-86-5]

Lister-Cheese, I.A.F. *et al.*, *Nature (London)*, 1961, **191**, 149 (*isol*)

Schiffman, G. *et al.*, *J.A.C.S.*, 1962, **84**, 73 (*isol*)

Paulsen, H. *et al.*, *Chem. Ber.*, 1978, **111**, 2370 (*di-N-Ac*)

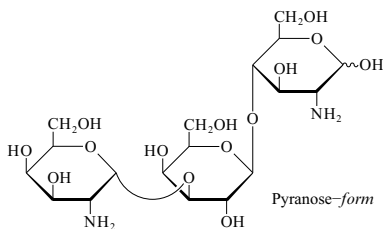
Bovin, N.Y. *et al.*, *Bioorg. Khim.*, 1981, **7**, 1271; *CA*, **95**, 204316d (*synth*)

Bovin, N.V. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1982, 1148; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1982, 1023 (*undeca-Ac*)

Bovin, N.V. *et al.*, *Carbohydr. Res.*, 1983, **112**, 23 (*di-N-Ac*, *pmr*)

2-Amino-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose
3²- β -Galactosaminyl-4-galactosylglucosamine

A-199



Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

N,N'-Di-Ac: 2-Acetamido-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy-D-glucose. 3²- β -N-Acetylgalactosaminyl-4- β -galactosyl-N-acetylglucosamine [62897-09-0]

C₂₂H₃₈N₂O₁₆ 586.546

Isol. from the partial acid hydrolysate of human blood group A substance.

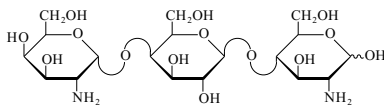
[α]_D +147 (H₂O).

Lister-Cheese, I.A.F. *et al.*, *Nature (London)*, 1961, **191**, 149 (*isol*)

Donald, A.S.R. *et al.*, *J. Chromatogr.*, 1977, **134**, 199 (*chromatog*)

2-Amino-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose

A-200



Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

N,N'-Di-Ac: 2-Acetamido-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy-D-glucose. 4²- α -D-Acetylgalactosaminyl-4- β -galactosyl-N-acetylglucosamine. Gastro-N-trisaccharide

C₂₂H₃₈N₂O₁₆ 586.546

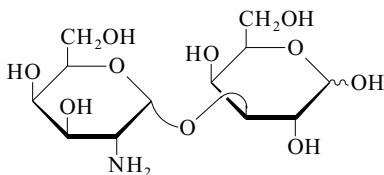
Isol. from the partial acetolysate of hog gastric mucin.

Mp 273-275°. [α]_D +140 (H₂O).

Masamune, H. *et al.*, *Tohoku J. Exp. Med.*, 1956, **64**, 257; 1958, **69**, 65 (*isol*)

3-O-(2-Amino-2-deoxy- α -D-galactopyranosyl)-D-galactose
3- α -Galactosaminylgalactose

A-201



Pyranose-form

C₁₂H₂₃NO₁₀ 341.314

Reducing disaccharide.

N-Ac: 3-O-(2-Acetamido-2-deoxy- α -D-galactopyranosyl)-D-galactose. 3- α -N-Acetylgalactosaminylgalactose [66781-75-7]

C₁₄H₂₅NO₁₁ 383.352

Isol. from partial acid hydrolysates of human-blood group A substance and other sources.

Mp 179-181°. [α]_D +200.7 (+150) (H₂O).

Cote, R.H. *et al.*, *Nature (London)*, 1961, **178**, 1171 (*isol*)

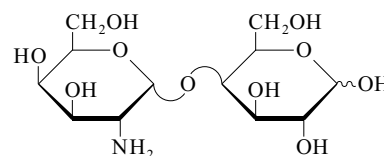
Yosizawa, Z. *et al.*, *J. Biochem. (Tokyo)*, 1962, **51**, 1 (*isol*)

Schiffman, G. *et al.*, *J.A.C.S.*, 1962, **84**, 73 (*isol*)

Uhlenbruck, G. *et al.*, *CA*, 1986, **105**, 40665p (*props*)

4-O-(2-Amino-2-deoxy- α -D-galactopyranosyl)-D-galactose
4- α -Galactosaminylgalactose

A-202



Pyranose-form

C₁₂H₂₃NO₁₀ 341.314

N-Ac: 4-O-(2-Acetamido-2-deoxy- α -D-galactopyranosyl)-D-galactose. 4- α -N-Acetylgalactosaminylgalactose. Gastro-N-disaccharide

C₁₄H₂₅NO₁₁ 383.352

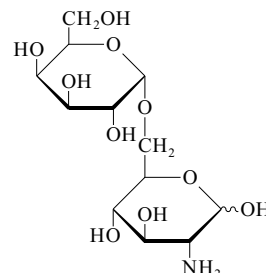
Isol. from the partial acetolysate of hog gastric mucin.

Mp 186-187°. [α]_D +203 (H₂O).

Shinohara, H. *et al.*, *Tohoku J. Exp. Med.*, 1958, **67**, 141

2-Amino-2-deoxy-6-O-(α -D-galactopyranosyl)-D-glucose
 α -D-Galactopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose. 6- α -Galactosylglucosamine. Melibiosamine. Allolactosamine

A-203



Pyranose-form

C₁₂H₂₃NO₁₀ 341.314

N-Ac: 2-Acetamido-2-deoxy-6-O- α -(D-galactopyranosyl)-D-glucose. 6- α -Galactosyl-N-acetylglucosamine. N-Acetylme-libiosamine

[13071-21-1]

C₁₄H₂₅NO₁₁ 383.352[α]_D +118 (H₂O).

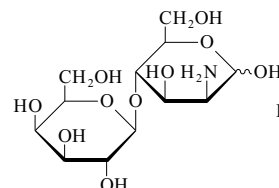
Watkins, W.M. *et al.*, *Nature (London)*, 1958, **181**, 117 (*synth*)

Clancy, M.J. *et al.*, *Arch. Biochem. Biophys.*, 1967, **118**, 730 (*synth*)

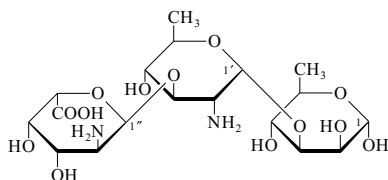
Sakai, K. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 553-565 (*enzymic synth*)

2-Amino-2-deoxy-4-O-(β -D-galactopyranosyl)-D-mannose
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-mannose

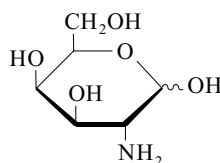
A-204



Pyranose-form

C₁₂H₂₃NO₁₀ 341.314N-Ac: 2-Acetamido-2-deoxy-4-O-(β -D-galactopyranosyl)-D-mannose
[50787-11-6]C₁₄H₂₅NO₁₁ 383.352Mp 233°. [α]_D +38.5 (H₂O).Kuhn, R. et al., Chem. Ber., 1961, **94**, 842
(synth)**2-Amino-2-deoxy- α -L-galactopyranuronosyl-(1→3)-2-amino-2-deoxy- α -D-quinovosyl-(1→3)-D-rhamnose**2-Amino-2-deoxy- α -L-galactopyranuronosyl-(1→3)-2-amino-2,6-dideoxy- α -D-glucopyranosyl-(1→3)-6-deoxy-D-mannose, 9CIC₁₈H₃₂N₂O₁₃ 484.456 **α -Pyranose-form**

2''N,2''N-Di-Ac: [94345-38-7]

C₂₂H₃₆N₂O₁₅ 568.531Repeating unit of the O-polysaccharide of *Pseudomonas aeruginosa*. Syrup.Stanislavskii, E.S. et al., CA, 1988, **109**, 168481a (struct)Kaya, S. et al., J. Biochem. (Tokyo), 1989, **105**, 35 (isol, pmr, cmr)**2-Amino-2-deoxygalactose, 9CI, 8CI**Galactosamine
[1948-54-5]C₆H₁₃NO₅ 179.172**D-form**

Chondrosamine

[7535-00-4]

Widespread in nature, found in many mucopolysaccharides (e.g. chondroitin sulphate from tendons, tracheae, nasal septa), glycoproteins, glycolipids, fungi, bacteria, antibiotics and uridine diphosphate complexes.

Mp 185°. [α]_D²⁰ +59.3 (H₂O).

► LW5498000

Hydrochloride: [1772-03-8]

Mp 178-190° (168°) dec. [α]_D²³ +47.3 → +91.5 (c, 0.95 in H₂O). [α]_D²² +119.3 → +94.1 (c, 0.75 in H₂O).

► LW5500000

N-Ac: 2-Acetamido-2-deoxy-D-galactose
[14215-68-0]

[1811-31-0]

C₈H₁₅NO₆ 221.21Constit. of casein. Cryst. (EtOAc/MeOH). Mp 172-173° (159-160°) Mp 120-122° (monohydrate). [α]_D²⁷ +86.1 (c, 1.0 in H₂O). [α]_D²¹ +115. **α -D-Pyranose-form** [14196-84-0]Penta-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy- α -D-galactopyranose
[10385-50-9]C₁₆H₂₃NO₁₀ 389.358Mp 178° Mp 197°. [α]_D²⁰ +102 (CHCl₃).3-Me: 2-Amino-2-deoxy-3-O-methyl- α -D-galactopyranoseC₇H₁₅NO₅ 193.199[α]_D +119 (H₂O) (as hydrochloride).4-Me: 2-Amino-2-deoxy-4-O-methyl- α -D-galactopyranoseC₇H₁₅NO₅ 193.199Mp 179° dec. (as hydrochloride). [α]_D +125 → +100 (H₂O).6-Me: 2-Amino-2-deoxy-6-O-methyl- α -D-galactopyranoseC₇H₁₅NO₅ 193.199Mp 190-195° dec. (as hydrochloride). [α]_D +107 → +92 (H₂O).3,4-Di-Me: 2-Amino-2-deoxy-3,4-di-O-methyl- α -D-galactopyranoseC₈H₁₇NO₅ 207.226[α]_D +108 (H₂O) (as hydrochloride).4,6-Di-Me: 2-Amino-2-deoxy-4,6-di-O-methyl- α -D-galactopyranoseC₈H₁₇NO₅ 207.226Mp 190° dec. (as hydrochloride). [α]_D +107 → +91 (H₂O).3,4,6-Tri-Me: 2-Amino-2-deoxy-3,4,6-tri-O-methyl- α -D-galactopyranoseC₉H₁₉NO₅ 221.253Mp 178° (as hydrochloride). [α]_D +152.5 → +105 (H₂O).Benzyl glycoside, N-Ac: Benzyl 2-acetamido-2-deoxy- α -D-galactopyranoside
[3554-93-6]C₁₅H₂₁NO₆ 311.334Cryst. (MeOH/Et₂O). Mp 203-205°. [α]_D²³ +204 (c, 1 in H₂O).Benzyl glycoside, 4,6-O-benzylidene, N-Ac: Benzyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-galactopyranosideC₂₂H₂₅NO₆ 399.443Needles (Py aq.). Mp 246-247°. [α]_D²⁸ +219 (c, 2.1 in Py).Me glycoside, 3,6-dibenzoyl, N-Ac: Methyl 2-acetamido-3,6-di-O-benzoyl-2-deoxy- α -D-galactopyranosideC₂₃H₂₅NO₈ 443.452Tiny needles. Mp 202-205° (188-189°). [α]_D +85.1 (c, 1 in CHCl₃). **β -D-Pyranose-form** [14196-86-2]Penta-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy- β -D-galactopyranose
[3006-60-8]C₁₆H₂₃NO₁₀ 389.358Mp 235-237°. [α]_D²⁰ +7 (CHCl₃).Me glycoside, 3,6-dibenzoyl, N-Ac: Methyl 2-acetamido-3,6-di-O-benzoyl-2-deoxy- β -D-galactopyranosideC₂₃H₂₅NO₈ 443.452Tiny needles. Mp 249-252° (232-242°). [α]_D +13.6 (c, 1 in MeOH/CHCl₃ (1:1)). **β -D-Furanose-form**Me glycoside, 5,6-isopropylidene, N-Ac: Methyl 2-acetamido-2-deoxy-5,6-O-isopropylidene- β -D-galactofuranoside
C₁₅H₂₁NO₆ 275.301
[α]_D³⁵ -31.2 (c, 3.05 in CHCl₃).

[14131-60-3]

Aldrich Library of NMR Spectra, 2nd edn., 1983, **1**, 305D (nmr)Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 349D; 757C (ir)Stacey, M. et al., J.C.S., 1944, 272 (D-form N-Ac, α -D-penta-Ac, β -D-penta-Ac)Foster, A.B. et al., Adv. Carbohydr. Chem., 1952, **7**, 247 (rev)Jeanloz, R.W. et al., Adv. Carbohydr. Chem., 1958, **13**, 189 (Me ethers, rev)Brossmer, R. et al., Methods Carbohydr. Chem., 1962, **1**, 216 (synth)Jeanloz, R.W. et al., Methods Carbohydr. Chem., 1962, **1**, 221 (isol)Biochem. Prep., 1963, **10**, 52 (isol)Van der Veen, J.M. et al., J.O.C., 1963, **28**, 564 (pmr)Flowers, H.M. et al., J.O.C., 1965, **30**, 2041 (α -D-benzyl pyr Ac, α -D-benzyl pyr benzylidene Ac)Takai, M. et al., Acta Cryst. B, 1972, **28**, 2370 (cryst struct)

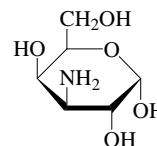
Gent, P.A. et al., J.C.S. Perkin I, 1972, 277

Panagiotopoulos, N.C. et al., Acta Cryst. B, 1974, **30**, 1402 (cryst struct)Ghosh, R. et al., J. Carbohydr. Chem., 1992, **11**, 71-75 (Me β -D-fur isopropylidene N-Ac)Chaplin, D. et al., J.C.S. Perkin I, 1992, 235, (α -D-penta-Ac, synth, pmr, cmr)Berkin, A. et al., Carbohydr. Res., 2000, **326**, 250-263 (Me gly dibenzoyl N-Ac)Ito, N. et al., Bull. Chem. Soc. Jpn., 2004, **77**, 1181-1186 (N-Ac, α -D-penta-Ac)

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, GAT000

3-Amino-3-deoxygalactose

A-207

 α -D-Pyranose-formC₆H₁₃NO₅ 179.172 **α -D-Pyranose-form**Me glycoside: Methyl 3-amino-3-deoxy- α -D-galactopyranoside
[122204-77-7]C₇H₁₅NO₅ 193.199

Cryst. Mp 96-99°.

Me glycoside, hydrochloride: [37073-85-1]
Mp 219-221° (197°) dec. [α]_D²⁰ +159 (c, 0.3 in H₂O).Me glycoside, 2,3N,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl- α -D-galactopyranoside
C₁₅H₂₃NO₉ 361.348
Syrup. [α]_D +104 (c, 0.6 in CHCl₃). **β -D-Pyranose-form**N-Ac: 3-Acetamido-3-deoxy- β -D-galactopyranose
[135684-04-7]C₈H₁₅NO₆ 221.21Cryst. (MeOH). Mp 173-174°. [α]_D +99 → +119 (c, 2.5 in H₂O).

1,6-Anhydro: 3-Amino-1,6-anhydro-3-deoxy- β -D-galactopyranose
 $C_6H_{11}NO_4$ 161.157
 Cryst. (MeOH/Me₂CO) (as hydrochloride). Mp 180-185° dec. (hydrochloride). $[\alpha]_D^{20}$ -9 (c, 1.0 in H₂O).

Kuhn, R. *et al.*, *Annalen*, 1960, **636**, 164 (β -N-Ac)

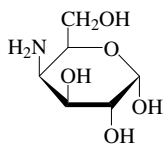
Heyns, K. *et al.*, *Chem. Ber.*, 1965, **98**, 327 (anhydro)

Baer, H.H. *et al.*, *Can. J. Chem.*, 1972, **50**, 1216 (α -Me pyr)

Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, **42**, 605 (deriv, pmr, cmr)

Defaye, J. *et al.*, *Carbohydr. Res.*, 1991, **212**, 129 (α -N-Ac, β -N-Ac, pmr, cmr)

4-Amino-4-deoxygalactose, 9CI, 8CI A-208



α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form [24558-85-8]

Hydrochloride: [51015-70-4]

Mp 120° dec. $[\alpha]_D^{20}$ +48.2 (c, 1 in H₂O).

N-Ac: 4-Acetamido-4-deoxy-D-galactose

$C_8H_{15}NO_6$ 221.21

Cryst. (EtOH). Mp 193-195° dec. $[\alpha]_D^{25}$ +45 \rightarrow +65 (c, 1 in H₂O).

α -D-Pyranose-form

Me glycoside, N-Ac: Methyl 4-acetamido-4-deoxy- α -D-galactopyranoside

$C_9H_{17}NO_6$ 235.236

Mp 203-205°. $[\alpha]_D^{25}$ +182 (c, 1 in MeOH).

Me glycoside, 2,3,4,6-tetra-Ac: Methyl 4-acetamido-2,3,6-tri-O-acetyl-4-deoxy- α -D-galactopyranoside

$C_{15}H_{23}NO_9$ 361.348

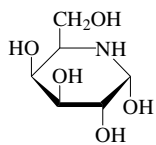
Syrup. $[\alpha]_D^{25}$ +129 (c, 1 in CHCl₃).

Paulsen, H. *et al.*, *Chem. Ber.*, 1970, **103**, 1599 (D-form, synth)

Lichtenthaler, F.W. *et al.*, *J.O.C.*, 1974, **39**, 1457 (D-form, synth, D-N-Ac, α -D-Me pyr N-Ac, α -D-Me pyr)

5-Amino-5-deoxygalactose A-209

6-Hydroxymethyl-2,3,4,5-piperidinetetrol, 9CI. *Galactostatin*. galacto-Nojirimycin. 5-Amino-5-deoxygalactopyranose



α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172Log P -3.55 (calc).

D-form [107537-94-0]

Isol. from *Streptomyces lydicus*. β -Galactosidase inhibitor.

Amorph. solid + $\frac{1}{2}$ H₂O or syrup.

Mp 94-98°. $[\alpha]_D^{23}$ +85.6 (c, 1 in H₂O).

Stable up to 5d at 4°.

Bisulfite adduct: Mp 149-150°. $[\alpha]_D$ +19 (c, 0.8 in H₂O).

D-Pyranose-form

Pentakis(trimethylsilyl): [40222-80-8]

$C_{21}H_{53}NO_5Si_5$ 540.081

Liq.

α -D-Furanose-form

6-Trityl, 1,2-isopropylidene: 5-Amino-5-deoxy-1,2-O-isopropylidene-6-O-trityl- α -D-galactofuranose

$C_{28}H_{31}NO_5$ 461.557

Mp 135°. $[\alpha]_D^{23}$ -11.5 (c, 1.0 in CHCl₃).

[40222-81-9, 108147-56-4, 109718-63-0]

Inouye, S. *et al.*, *CA*, 1973, **78**, 47847g (silyl deriv)

Legler, G. *et al.*, *Carbohydr. Res.*, 1986, **155**, 119 (α -D-fur deriv)

Miyake, Y. *et al.*, *J. Antibiot.*, 1987, **40**, 122-123 (isol)

Miyake, Y. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 153-158; 661-666 (isol, pmr, cmr, struct, props)

Aoyagi, S. *et al.*, *J.O.C.*, 1991, **56**, 815-819 (synth)

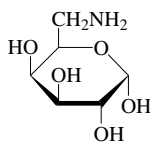
Chida, N. *et al.*, *Chem. Comm.*, 1994, 1247-1248 (synth)

Kirihata, M. *et al.*, *Heterocycles*, 1995, **41**, 2271 (synth)

Dondoni, A. *et al.*, *J.O.C.*, 1995, **60**, 4749 (synth, pmr)

6-Amino-6-deoxygalactose A-210

6-Aminofucose



α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form [80255-40-9]

Syrup.

Hydrochloride: [4460-60-0]

Mp 229°.

N-Benzoyl: 6-Benzamido-6-deoxy-D-galactose

$C_{13}H_{17}NO_6$ 283.28

Cryst. (petrol). Mp 132.5°. $[\alpha]_D^{18}$ -26.7 (Me₂CO).

N-Benzoyl, phenylhydrazone: Mp 201°.

α -D-Pyranose-form

1,2:3,4-Di-O-isopropylidene: 6-Amino-6-deoxy-1,2:3,4-di-O-isopropylidene- α -D-galactopyranose

[4711-01-7]

$C_{12}H_{21}NO_5$ 259.302

Syrup. Bp_{0.75} 122-126° (lit. gives a pressure range). $[\alpha]_D$ -70.9.

Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-amino-6-deoxy- α -D-galactopyranoside

[172911-54-5]

$C_{13}H_{21}NO_8$ 319.311

$[\alpha]_D^{25}$ +132.3 (c, 1.1 in MeOH) (as hydrochloride). CAS no. refers to hydrochloride.

Me glycoside, 3,4-isopropylidene: Methyl 6-amino-6-deoxy-3,4-O-isopropylidene- α -D-galactopyranoside

$C_{10}H_{19}NO_5$ 233.264

Cryst. (MeOH/Me₂CO/Et₂O) (as 4-methylbenzenesulfonate salt). Mp 175-176° (4-methylbenzenesulfonate salt). $[\alpha]_D^{20}$ +94.6 (c, 1.7 in H₂O) (4-methylbenzenesulfonate salt).

Freudenberg, K. *et al.*, *Ber.*, 1925, **58**, 294 (D-form, N-benzoyl, D-diisopropylidene)

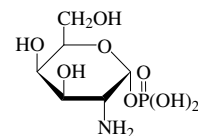
Wolfson, M.L. *et al.*, *J.A.C.S.*, 1959, **81**, 3716 (α -D-Me pyr isopropylidene)

Coxon, B. *et al.*, *Carbohydr. Res.*, 1980, **78**, 1 (diisopropylidene)

Ortiz Mellet, C. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 1133-1152 (Me α -D-gly tri-Ac)

2-Amino-2-deoxygalactose 1-(dihydrogen phosphate), 8CI A-211

Galactosamine 1-phosphate. Chondrosamine 1-phosphate



α -Pyranose-form

$C_6H_{14}NO_8P$ 259.152

α -D-Pyranose-form [35946-79-3]

$[\alpha]_D^{25}$ +142.6 (c, 2.0 in H₂O).

N-Ac: N-Acetylgalactosamine 1-phosphate

$C_8H_{16}NO_9P$ 301.189

$[\alpha]_D$ +178 (H₂O).

N-Ac, Di-K salt: $[\alpha]_D^{25}$ +112.4 (c, 2.9 in H₂O).

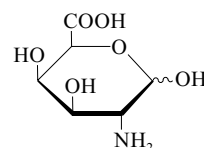
Biochem. Prep., 1971, **13**, 3 (synth)

Bauer, C. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1972, **353**, 1053; *CA*, **77**, 85209n (pharmacol)

MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (rev)

2-Amino-2-deoxygalacturonic acid A-212

Galactosaminuronic acid



D-Pyranose-form

$C_6H_{11}NO_6$ 193.156

D-form [14307-17-6]

Isol. as N-acetate upon hydrol. of Vi antigen from *E. coli*. Amine component of the lipopolysaccharide of *Pseudomonas aeruginosa* NCTC 8505. Mp 160° (blackens). $[\alpha]_D^{20}$ +84.5 (c, 1.0 in HCl, pH2).

N-Formyl: 2-Deoxy-2-formamido-D-galacturonic acid [93772-80-6]

$C_7H_{11}NO_7$ 221.166

Component of *Pseudomonas aeruginosa* type 1 lipopolysaccharide.

N-Ac: 2-Acetamido-2-deoxy-D-galacturonic acid

$C_8H_{13}NO_7$ 235.193

Component of *Acinetobacter bowmanii*, *Pseudomonas fluorescens* and the marine *Pseudoalteromonas distincta* polysaccharides. Amorph. powder. $[\alpha]_D^{22} +29$ (c, 1.4 in H₂O). Stored as Na salt.

N-Ac, amide: 2-Acetamido-2-deoxy-D-galacturonamide
[93790-40-0]

C₈H₁₄N₂O₆ 234.208

Component of *Pseudomonas aeruginosa* type 1 lipopolysaccharide.

L-form

N-Ac: 2-Acetamido-2-deoxy-L-galacturonic acid

[82838-35-5]

C₈H₁₃NO₇ 235.193

The *O*-specific polysaccharide chains of the two serotypes of *Pseudomonas aeruginosa* are composed of repeating trisaccharide units consisting of L-rhamnose, *N*-acetyl-D-quinovosamine and *N*-acetyl-L-galactosaminuronic acid residues.

Heyns, K. *et al.*, *Chem. Ber.*, 1957, **90**, 2443; 1959, **92**, 2435 (isol, synth, D-form)

Brownlee, S.T. *et al.*, *Anal. Biochem.*, 1966, **14**, 414 (anal)

Wilkinson, S.G. *et al.*, *Biochem. J.*, 1977, **161**, 103 (occur)

Dimitriev, B.A. *et al.*, *Bioorg. Khim.*, 1979, **5**, 77 (occur)

Darakas, E. *et al.*, *Carbohydr. Res.*, 1982, **103**, 176 (synth, N-Ac)

Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1984, **133**, C12 (occur, synth, derivs)

Haseley, S.R. *et al.*, *Eur. J. Biochem.*, 1996, **237**, 229 (occur, N-Ac)

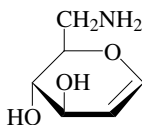
Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 1998, **306**, 297-303 (occur, N-Ac)

Muldoon, J. *et al.*, *Carbohydr. Res.*, 2001, **330**, 231-239 (occur, N-Ac)

6-Amino-6-deoxyglucal

A-213

6-Amino-1,5-anhydro-6-deoxy-arabino-hex-1-enitol



C₆H₁₁NO₃ 145.158

D-form [117136-34-2]

3,4-Di-Ac: 3,4-Di-O-acetyl-6-amino-1,5-anhydro-6-deoxy-D-arabino-hex-1-enitol, 3,4-Di-O-acetyl-6-amino-6-deoxy-D-glucal

[165274-74-8]

C₁₀H₁₅NO₅ 229.232

Golden gum. $[\alpha]_D^{23} -80.7$ (c, 1 in CHCl₃).

3,4,N-Tri-Ac: 6-Acetamido-3,4-di-O-acetyl-1,5-anhydro-6-deoxy-D-arabino-hex-1-enitol, 6-Acetamido-3,4-di-O-acetyl-6-deoxy-D-glucal

[117136-29-5]

C₁₂H₁₇NO₆ 271.269

Orange syrup. $[\alpha]_D^{23} -5.45$ (c, 0.18 in CHCl₃).

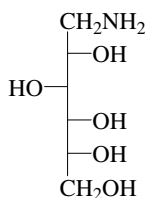
Dunkerton, L.V. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 49-65 (D-form, tri-Ac)

Mathews, W.B. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 287-297 (D-form, di-Ac, tri-Ac, synth, pmr, cmr)

1-Amino-1-deoxyglucitol, 9CI, 8CI

A-214

1-Amino-1-deoxysorbitol. Sorbitylamine



C₆H₁₅NO₅ 181.188

D-form

Glucamine

[488-43-7]

Mp 126-128°. $[\alpha]_D^{25} -8$ (c, 5.9 in H₂O).

Slightly sweet taste.

Oxalate salt: Mp 177-179° dec. $[\alpha]_D^{25} -14$ (c, 1.2 in H₂O).

Penta-O-Ac: 2,3,4,5,6-Penta-O-acetyl-1-amino-1-deoxy-D-glucitol

C₁₆H₂₅NO₁₀ 391.374

Cryst. (EtOH aq.) (as hydrochloride). Mp 178-180° (hydrochloride). $[\alpha]_D^{25} +1.5$ (c, 0.7 in H₂O) (hydrochloride).

N-Me: 1-Deoxy-1-(methylamino)glucitol, 9CI, 8CI. Meglumine, BAN, INN, JAN, USAN. Methylglucamine

[6284-40-8]

C₇H₁₇NO₅ 195.215

Forms salts with iodinated carboxylic acids which are used as contrast media. V. sol. H₂O. Mp 128-129°. $[\alpha]_D^{18} -18.5$ (H₂O). Forms salts with acids and complexes with metals.

N-Me; antimonate: Glucantime. Protostib.

RP 2168

[133-51-7]

C₇H₁₈NO₅Sb 365.971

Antileishmanial agent. Powder.

► LZ4370000

N-Me, N-octanoyl: [85316-98-9]

C₁₅H₃₁NO₆ 321.413

Mp 84-88°. $[\alpha]_D^{20} -16$ (c, 1 in H₂O).

N-Me, N-decanoyl: 1-Deoxy-1-[methyl(1-oxodecyl)amino]-D-glucitol, 9CI. N-Decanoyl-N-methylglucamine. MEG-10

[85261-20-7]

C₁₇H₃₅NO₆ 349.467

Used in membrane research and chromatog. of proteins and nucleic acids. Readily removed by dialysis. Does not interfere with monitoring of proteins at 280 nm.

Cryst. (MeOH/Et₂O). Mp 91-93°.

N,N,N-Tri-Me:

[95260-08-5, 155836-19-4]

C₉H₂₂NO₅⁺ 224.276

Mp 111° (as iodide).

N-Trityl: [162104-94-1]

C₂₅H₂₉NO₅ 423.508

Mp 125-126°. $[\alpha]_D^{18.5} -9.8$ (c, 1 in MeOH).

[8064-12-8]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 349C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 554A (nmr)

Karrer, P. *et al.*, *Helv. Chim. Acta*, 1937, **20**, 83 (synth)

Holly, F. *et al.*, *J.A.C.S.*, 1950, **72**, 5416 (synth)

Long, J.W. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 79 (rev)

Yakovleva, V.Y. *et al.*, *Khim.-Farm. Zh.*, 1967, **1**, 51 (Meglumine)

Ger. Pat., 1975, 2 404 071, (Henkel); *CA*, **84**, 8854m (Meglumine)

Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 183-197 (synth)

Quesada, A.R. *et al.*, *Biochem. J.*, 1988, **255**, 963 (use, N-decanoyl-N-methylglucamine)

Hildreth, J.E.K. *et al.*, *Biochem. J.*, 1988, **255**, 963 (synth, use, N-decanoyl-N-methylglucamine)

Josic, D. *et al.*, *J. Chromatogr.*, 1988, **476**, 309 (use, N-decanoyl-N-methylglucamine)

Silveria, F.T. *et al.*, *Rev. Inst. Med. Trop. Sao Paulo*, 1993, **35**, 177 (N-Me antimonate, use)

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. *et al.*), American Pharmaceutical Association/Pharmaceutical Press, 1994, 302-303

Ortiz Mellet, C. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 1133-1152 (penta-O-Ac)

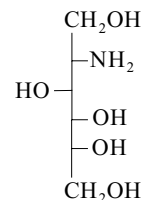
Kilonda, A. *et al.*, *Tetrahedron*, 1995, **51**, 849 (trityl)

Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1724

2-Amino-2-deoxyglucitol, 9CI, 8CI

A-215

Glucosaminol. Glucosaminitol



D-form

C₆H₁₅NO₅ 181.188

D-form [14307-03-0]

Mp 131-132°. pK_{a1} 8.81 (23°).

Hydrochloride: Mp 159-161°. $[\alpha]_{365}^{19} -6.8$ (c, 0.76 in H₂O).

N-Ac: 2-Acetamido-2-deoxy-D-glucitol

C₈H₁₇NO₆ 223.225

Cryst. (MeOH). Mp 153°. $[\alpha]_D^{18} -11$ (H₂O).

3,4:5,6-Di-O-isopropylidene, *N*-Ac: 2-Acetamido-2-deoxy-3,4:5,6-di-O-isopropylidene-D-glucitol

C₁₄H₂₅NO₆ 303.355

Mp 155-156°. $[\alpha]_D^{20} -19.9$ (c, 1.72 in H₂O).

3-Phosphate:

C₆H₁₆NO₈P 261.168

Mp 193-195°. $[\alpha]_D^{22} -20.5$ (c, 0.25 in H₂O).

L-form

Hydrochloride:

Cryst. (EtOH/H₂O). Mp 159-161°. $[\alpha]_D^{19} +7$ (c, 0.7 in H₂O).

Karrer, P. *et al.*, *Helv. Chim. Acta*, 1937, **20**, 626 (D-form, N-Ac)

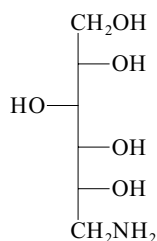
Lambert, R. *et al.*, *Chem. Ber.*, 1963, **96**, 2350 (phosphate)

Karkkainen, J. *et al.*, *Carbohydr. Res.*, 1969, **10**, 113 (glc, ms)

Paulsen, H. *et al.*, *Chem. Ber.*, 1969, **102**, 459
(*N*-Ac diisopropylidene)
Kuzuhara, H. *et al.*, *Carbohydr. Res.*, 1975, **45**,
245 (*L*-form)

6-Amino-6-deoxyglucitol
1-Amino-1-deoxygulitol

A-216



C₆H₁₅NO₅ 181.188

D-form

6-Amino-6-deoxy-D-glucitol. 1-Amino-1-deoxy-L-gulitol
[134354-65-7]

1,3:2,4-Di-O-benzylidene-6-Amino-1,3:2,4-di-O-benzylidene-6-deoxy-D-glucitol
[128369-97-1]

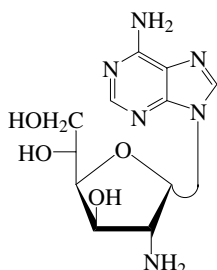
C₂₀H₂₃NO₅ 357.405

Emulsion base for cosmetics. Syrup.

Japan. Pat., 1990, 02 67285; *CA*, **113**, 59775m
(dibenzylidene, use)

9-(2-Amino-2-deoxyglucofuranosyl)adenine, 8Cl

A-217

 α -D-form

C₁₁H₁₆N₆O₄ 296.285

 α -D-form [13190-59-5]

Mp 223-224° dec. [α]_D²² -3 (c, 1.0 in H₂O). λ_{\max} 262 nm (ϵ 14 500) (H₂O).

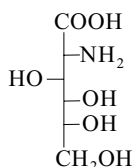
 β -D-form [14402-55-2]

Mp 225-226° dec. [α]_D²² -57 (c, 1.2 in H₂O). λ_{\max} 262 nm (ϵ 14 400) (H₂O).

Wolf from, M.L. *et al.*, *Chem. Comm.*, 1966, 533
(*synth*)

2-Amino-2-deoxygluconic acid
Glucosaminic acid

A-218



C₆H₁₃NO₆ 195.172

D-form [3646-68-2]

Mp 250° dec. [α]_D¹⁸ -14.3 (dil. HCl). p*K*_{a1} 9.24 (20°).

Me ester: [35813-12-8]

C₇H₁₅NO₆ 209.199

Mp 133-134° (as hydrochloride). [α]_D²⁰ -12 (c, 2.0 in H₂O).

N-Ac: 2-Acetamido-2-deoxy-D-gluconic acid

[34051-47-3]

C₈H₁₅NO₇ 237.209

Mp 191-194° (as dicyclohexylammonium salt). [α]_D -2.9 (c, 1.0 in H₂O).

N-Ac, Me ester: Methyl 2-acetamido-2-deoxy-D-gluconate

[23558-10-3]

C₉H₁₇NO₇ 251.236

Cryst. (MeOH). Mp 145-147°. [α]_D +12.4 (c, 1.0 in H₂O).

N,3,4,5,6-Penta-Ac, Me ester: Methyl 2-acetamido-3,4,5,6-tetra-O-acetyl-2-deoxy-D-gluconate

C₁₇H₂₅NO₁₁ 419.385

Mp 113-114°. [α]_D²³ -16.6 (c, 1.0 in CH₂Cl₂).

N-Benzoyl, Et ester: Ethyl 2-benzamido-2-deoxy-D-gluconate

C₁₅H₂₁NO₇ 327.333

Mp 144-145°. [α]_D +11.8 (H₂O).

4,6-O-Isopropylidene, N-Ac: 2-Acetamido-2-deoxy-4,6-O-isopropylidene-D-gluconic acid

[51844-22-5]

C₁₁H₁₉NO₇ 277.274

Mp 72° dec. [α]_D -35.1 (c, 1.0 in H₂O).

5,6-O-Isopropylidene, N-Ac, Me ester:

Methyl 2-acetamido-2-deoxy-5,6-O-isopropylidene-D-gluconate

[51844-21-4]

C₁₂H₂₁NO₇ 291.3

Mp 83-85°. [α]_D +5.8 (c, 1.0 in Me₂CO).

3,4:5,6-Di-O-isopropylidene, N-Ac: 2-Acetamido-2-deoxy-3,4:5,6-di-O-isopropylidene-D-gluconic acid

C₁₄H₂₃NO₇ 317.338

Needles. Mp 195-196°. [α]_D²² -14.9 (c, 0.77 in MeOH).

4,6-O-Benzylidene, N-benzoyl, Et ester: Ethyl 2-benzamido-4,6-O-benzylidene-2-deoxy-D-gluconate

C₂₂H₂₅NO₇ 415.442

Cryst. (EtOH). Mp 175°. [α]_D²⁷ -72 (c, 0.6 in CHCl₃).

N-Me: 2-Deoxy-2-methylamino-D-gluconic acid

C₇H₁₅NO₆ 209.199

Mp 230°. [α]_D +7.5 (dil. HCl).

3-Me: 2-Amino-2-deoxy-3-O-methyl-D-gluconic acid

C₇H₁₅NO₆ 209.199

Mp 230° (as hydrochloride). [α]_D -12 (dil. HCl).

3,4,6-Tri-Me: 2-Amino-2-deoxy-3,4,6-tri-O-methyl-D-gluconic acid

C₉H₁₉NO₆ 237.252

Mp 178-179°. [α]_D +10.5 (MeOH).

3,4,5,6-Tetra-Me: 2-Amino-2-deoxy-3,4,5,6-tetra-O-methyl-D-gluconic acid

C₁₀H₂₁NO₆ 251.279

Monohydrate (as hydrochloride). Mp 178-180° (hydrochloride). [α]_D 0 (c, 1 in MeOH).

3,4,6-Tribenzyl, N-Ac, Me ester: Methyl 2-acetamido-3,4,6-tri-O-benzyl-2-deoxy-D-gluconate

[34051-38-2]

C₃₀H₃₅NO₇ 521.609

[α]_D +24.8 (c, 1.0 in CHCl₃).

1,4-Lactone, N-Ac: 2-Acetamido-2-deoxy-D-1,4-gluconolactone

[5469-77-2]

C₈H₁₃NO₆ 219.194

Cryst. (Me₂CO). Mp 104-107°. [α]_D +112.7 → +100.9 (2 d) (c, 1.0 in H₂O).

1,4-Lactone, 5,6-O-isopropylidene, N-Ac: 2-Acetamido-2-deoxy-5,6-O-isopropylidene-D-1,4-gluconolactone

[51844-19-0]

C₁₁H₁₇NO₆ 259.258

Cryst. (Me₂CO). Mp 163-164°. [α]_D +140.8 (c, 0.5 in Me₂CO).

1,5-Lactone, 3,4-di-Me, N-Ac: 2-Acetamido-2-deoxy-3,4-di-O-methyl-D-1,5-gluconolactone

[53685-01-1]

C₁₀H₁₇NO₆ 247.247

Unstable foam. [α]_D +130.5 (c, 0.6 in Me₂CO).

1,5-Lactone, 4,6-O-isopropylidene, N-Ac: 2-Acetamido-2-deoxy-4,6-O-isopropylidene-D-1,5-gluconolactone

[51844-23-6]

C₁₁H₁₇NO₆ 259.258

Mp 148-150° Mp 162-164°. [α]_D +130.2 (c, 0.7 in Me₂CO).

1,5-Lactone, 4,6-O-benzylidene, N-Ac: 2-Acetamido-4,6-O-benzylidene-2-deoxy-D-1,5-gluconolactone

[53684-94-9]

C₁₅H₁₇NO₆ 307.302

[α]_D -32.1 (c, 0.5 in Me₂CO).

1,5-Lactone, N-Ac: 2-Acetamido-2-deoxy-D-1,5-gluconolactone

[19026-22-3]

C₈H₁₃NO₆ 219.194

Mp 148-150°. [α]_D +137.7 (c, 0.5 in H₂O).

1,5-Lactone, 3,4,6-tribenzyl, N-Ac: 2-Acetamido-3,4,6-tri-O-benzyl-2-deoxy-D-1,5-gluconolactone

C₂₉H₃₁NO₆ 489.567

Cryst. (EtOH). Mp 141-142°. [α]_D +123.3 (c, 1.0 in CHCl₃).

Pringsheim, H. *et al.*, *Ber.*, 1915, **48**, 680
(*D*-form, *synth*)

Foster, A.B. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 247 (rev. derivs)

Wolf from, M.L. *et al.*, *J.A.C.S.*, 1952, **74**, 1715
(*D*-form, *synth*)

Kuzuhara, H. *et al.*, *Agric. Biol. Chem.*, 1962, **26**, 334 (*N*-benzoyl Et ester benzylidene)

Yoshimura, Y.J. *et al.*, *Bull. Chem. Soc. Jpn.*, 1962, **35**, 467 (*N*-Ac diisopropylidene)

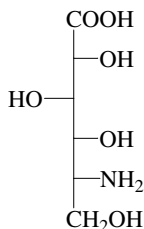
Pravdić, N. *et al.*, *Carbohydr. Res.*, 1971, **19**, 339; 353; 1974, **32**, 115; **36**, 167 (*N*-Ac derivs)

Horton, D. *et al.*, *Carbohydr. Res.*, 1972, **22**, 151
(*Me ester*)

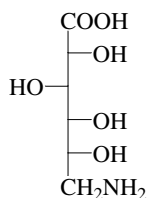
de Gracia Garcia Martin, M. *et al.*, *Carbohydr. Res.*, 1993, **240**, 301 (3,4,5,6-tetra-Me)

5-Amino-5-deoxygluconic acid, 9CI

A-219

 $C_6H_{13}NO_6$ 195.172**D-form** [146979-27-3]*Lactam: D-Glucono-1,5-lactam* $C_6H_{11}NO_5$ 177.157Prisms (EtOH aq.). Mp 203-205°. $[\alpha]_D^{22} +63$ (H₂O).*3,4,6-Tri-O-benzyl, lactam:* $C_{27}H_{29}NO_5$ 447.53Cryst. (EtOAc/hexane). Mp 95°. $[\alpha]_D^{20} +51.1$ (c, 0.95 in CHCl₃).Inouye, S. et al., *Tetrahedron*, 1968, **24**, 2125-2144 (*synth*)*Japan. Pat.*, 1971, 71 24 382; *CA*, **75**, 141114a (*synth*)Ogura, H. et al., *Bull. Chem. Soc. Jpn.*, 1984, **57**, 2687-2688 (*cryst struct*)Panday, N. et al., *Helv. Chim. Acta*, 2000, **83**, 513-538 (*derivs*)**6-Amino-6-deoxygluconic acid, 9CI**

A-220



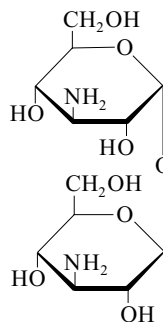
D-form

 $C_6H_{13}NO_6$ 195.172**D-form** [72402-40-5]Mp 200-202°. $[\alpha]_D^{21} +23$ (c, 1 in H₂O).*1,6-Lactam: Hexahydro-3,4,5,6-tetrahydroxy-2H-azepin-2-one, 9CI. 3,4,5,6-Tetrahydroxyazepan-2-one*

[14199-62-3]

 $C_6H_{11}NO_5$ 177.157Cryst. (MeOH aq.). Mp 212-214°. $[\alpha]_D^{25} -71$ (c, 0.4 in H₂O).Hanessian, S. et al., *J.O.C.*, 1969, **34**, 675-681 (*D-form, lactam*)Kefurt, K. et al., *Coll. Czech. Chem. Comm.*, 1979, **44**, 2526-2535 (*D-form, synth*)Joseph, C.C. et al., *Tetrahedron*, 2002, **58**, 6907-6911 (*D-form, synth, lactam*)**3-Amino-3-deoxy-β-D-glucopyranosyl 3-amino-3-deoxy-α-D-glucopyranoside, 9CI**

A-221

3,3'-Neotrehalosadamine. BMY 28251. BU 2797. Antibiotic BMY 28251. Antibiotic Bu 2797
[104196-14-7] $C_{12}H_{24}N_2O_9$ 340.33

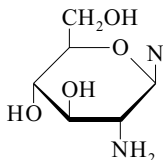
Aminoglycoside antibiotic. Prod. by

Bacillus pumilus and *Bacillus circulans*.

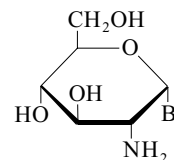
Active against gram-positive bacteria.

Powder. Sol. H₂O.Mp 116-119° dec. $[\alpha]_D^{24} +36$ (c, 0.4 in H₂O).Tsuno, T. et al., *J. Antibiot.*, 1986, **39**, 1001 (*isol, struct, props*)Numata, K. et al., *J. Antibiot.*, 1986, **39**, 1346 (*isol*)**2-Amino-2-deoxyglucopyranosyl azide**

A-222

 $C_6H_{12}N_4O_4$ 204.185**β-D-form***N-Ac: 2-Acetamido-2-deoxy-β-D-glucopyranosyl azide*
[29847-23-2] $C_8H_{14}N_4O_5$ 246.222Cryst. (EtOH/EtOAc). Mp 146-147° (142° dec.). $[\alpha]_D$ -45 (c, 0.6 in H₂O) (-30).*N,3,4,6-Tetra-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-2-deoxy-β-D-glucopyranosyl azide*
[6205-69-2] $C_{14}H_{20}N_4O_8$ 372.334Chiral reagent for synth. of a variety of amino compds. Needles (EtOAc/hexane). Mp 166-167° dec. (160-161°). $[\alpha]_D^{25} -43.2$ (c, 0.86 in CHCl₃).Szilágyi, L. et al., *Carbohydr. Res.*, 1985, **143**, 21 (*β-D-form, synth*)Sabesan, S. et al., *Carbohydr. Res.*, 1992, **223**, 169 (*synth, pmr*)Unverzagt, C. et al., *J. Prakt. Chem.*, 1992, **334**, 570 (*synth*)Troppe, F.D. et al., *Synthesis*, 1992, 618 (*synth, pmr, cmr*)**2-Amino-2-deoxyglucopyranosyl bromide**

A-223

 $C_6H_{12}BrNO_4$ 242.069**α-D-form***Tri-Ac: 3,4,6-Tri-O-acetyl-2-amino-2-deoxy-α-D-glucopyranosyl bromide* $C_{12}H_{18}BrNO_7$ 368.181Mp 149-150° (as hydrochloride). $[\alpha]_D +148.4$ (Me₂CO).*Tri-Ac; hydrobromide:* [4710-88-7]Mp 154-155°. $[\alpha]_D^{20} +150$ (Me₂CO).*N,3,4,6-Tetra-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-2-deoxy-α-D-glucopyranosyl bromide*
[51533-00-7] $C_{14}H_{20}BrNO_8$ 410.218Mp 89-91° (128°). $[\alpha]_D^{20} +148$ (CHCl₃). $[\alpha]_D^{24} +110$ (c, 1 in CHCl₃).*N-Benzoyl, tri-Ac: 3,4,6-Tri-O-acetyl-2-benzamido-2-deoxy-α-D-glucopyranosyl bromide*
[38191-63-8] $C_{19}H_{22}BrNO_8$ 472.289Mp 104°. $[\alpha]_D^{20} +166$ (c, 1 in CHCl₃).*N,3,4,6-Tetrabenzoyl: 2-Benzamido-3,4,6-tri-O-benzoyl-2-deoxy-α-D-glucopyranosyl bromide*
[38191-64-9] $C_{34}H_{28}BrNO_8$ 658.501Cryst. (Et₂O). Mp 130-132°.*N-(3-Nitrobenzoyl), tribenzoyl:* [50604-53-0]
Cryst. (Et₂O/petrol). Mp 102-104°.*N-(4-Nitrobenzoyl), tribenzoyl:* [50604-52-9]
Cryst. (Et₂O/petrol). Mp 109-110°.*N-Trifluoroacetyl, tri-Ac:* [6736-63-6]Cryst. (Et₂O/hexane). Mp 96-97°. $[\alpha]_D^{20} +125$ (c, 2.7 in CHCl₃).*N-Trifluoroacetyl, tribenzoyl:* [50604-60-9]
Cryst. (petrol). Mp 135-137°.*N-(2,4-Dinitrophenyl), tri-Ac:* [3068-36-8]
Cryst. (Me₂CO/petrol). Mp 162-164° (155-157°). $[\alpha]_D^{19} +45.6$ (c, 0.8 in CHCl₃).Irvine, J.C. et al., *J.C.S.*, 1922, **121**, 2370 (*α-D-tri-Ac*)May, E.L. et al., *J.O.C.*, 1950, **15**, 890 (*α-D-tri-Ac*)Lloyd, P.F. et al., *Tetrahedron*, 1960, **9**, 116 (*α-D-N-dinitrophenyl tri-Ac*)Horton, D. et al., *J.O.C.*, 1962, **27**, 1794 (*α-D-N-dinitrophenyl tri-Ac*)Wolfson, M.L. et al., *Carbohydr. Res.*, 1969, **11**, 63 (*α-D-N-trifluoroacetyl tri-Ac*)Horton, D. et al., *Methods Carbohydr. Chem.*, 1972, **6**, 282 (*tetraacetyl*)Weidmann, H. et al., *Carbohydr. Res.*, 1973, **29**, 135; **31**, 135 (*α-D-benzamido tri-Ac, α-D-tetrabenzoyl, α-D-nitrobenzoyl derivs, α-D-N-trifluoroacetyl tribenzoyl*)Stoeckl, P. et al., *J. Carbohydr. Nucleosides, Nucleotides*, 1974, **1**, 169 (*α-D-tetra-Ac, pmr*)

2-Amino-2-deoxyglucopyranosyl fluoride

A-224

β-D-Pyranose-form

1-N-Ac: [18615-50-4]
 $C_8H_{16}N_2O_5$ 220.225
 Solid (Et₂O/MeOH aq.). Mp 233-234° dec. $[\alpha]_D^{25}$ -38.1 (c, 0.7 in H₂O).

2-N-Ac: 2-Acetamido-2-deoxy-β-D-glucopyranosylamine
 [4229-38-3]
 $C_8H_{16}N_2O_5$ 220.225

Starting compd. for synth. of glycoconjugates. Hygroscopic solid. Mp 115° Mp 140-143° dec. $[\alpha]_D^{23}$ -9.2 (c, 1.49 in H₂O). Sinters at 70°, foams at 104-110°.

1,2-Di-N-Ac: [6205-72-7]

$C_{10}H_{18}N_2O_6$ 262.262
 Cryst. (EtOH). Mp 265-266°. $[\alpha]_D^{24}$ +26.4 (c, 1.0 in H₂O).

2-N-Ac, 3,4,6-tri-O-Ac: [4515-24-6]

$C_{14}H_{22}N_2O_8$ 346.336
 Cryst. (EtOH). Mp 235° dec. $[\alpha]_D^{24}$ -22.9 (c, 1.15 in CHCl₃). $[\alpha]_D$ +18 (c, 0.5 in Py).

1,2-Di-N-Ac, 3,4,6-tri-O-Ac: [6205-71-6]

$C_{16}H_{24}N_2O_9$ 388.374
 Needles (EtOH). Mp 239-240° dec. $[\alpha]_D^{32}$ +17.9 (c, 1.0 in Py).

1-N-(4-L-Aspartyl), 2-N-Ac: See N-[2-(Acetylamino)-2-deoxy-β-D-glucopyranosyl]-L-asparagine, A-12

Makino, M. *et al.*, *J. Biochem. (Tokyo)*, 1968, **63**, 186-192 (2-N-Ac)

Kiyozumi, M. *et al.*, *Carbohydr. Res.*, 1970, **14**, 355-364 (2-N-Ac, penta-Ac)

Cowley, D.E. *et al.*, *Carbohydr. Res.*, 1971, **19**, 231-241 (1-N-Ac)

Paul, B. *et al.*, *Carbohydr. Res.*, 1978, **67**, 457-468; 1980, **80**, 99-115 (2-N-Ac, 1,2-di-N-Ac, penta-Ac)

Tamura, M. *et al.*, *Carbohydr. Res.*, 1984, **133**, 207-218 (2-N-Ac)

Likhoshershtov, L.M. *et al.*, *Carbohydr. Res.*, 1986, **146**, C1-C5 (2-N-Ac, 1,2-di-N-Ac)

Manger, I.D. *et al.*, *Biochemistry*, 1992, **31**, 10724-10732 (2-N-Ac)

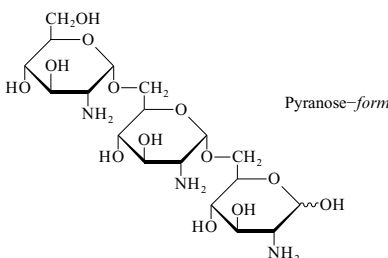
Christiansen-Brams, I. *et al.*, *J.C.S. Perkin 1*, 1993, 1461-1471 (2-N-Ac tri-O-Ac)

Isac-Garcia, J. *et al.*, *Eur. J. Org. Chem.*, 2001, 383-390 (2-N-Ac tri-O-Ac)

2-Amino-2-deoxy-α-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-D-glucose, 9CI

A-227

[67546-30-9]

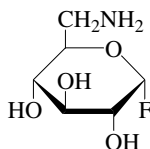


$C_{18}H_{35}N_3O_{13}$ 501.487
 Amorph. solid +3H₂O (as trihydrochloride). $[\alpha]_D$ +92 (c, 1.03 in H₂O). CAS no. refers to trihydrochloride.

Paulsen, H. *et al.*, *Chem. Ber.*, 1978, **111**, 2334 (synth)

6-Amino-6-deoxyglucopyranosyl fluoride

A-225



$C_6H_{12}FNO_4$ 181.164

α-D-form [161925-19-5]
 Amorph. solid.

N-Ac: 6-Acetamido-6-deoxy-α-D-glucopyranosyl fluoride
 [161925-20-8]

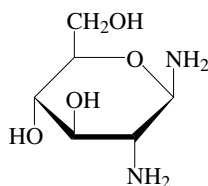
$C_8H_{14}FNO_5$ 223.201
 Cryst. (MeOH/Et₂O). Mp 156-157°. $[\alpha]_D^{20}$ +74.1 (c, 1.02 in H₂O).

Horneman, A.M. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 1-8 (α-D-form, N-Ac, synth, pmr, cmr)

2-Amino-2-deoxyglucopyranosylamine, 9CI

A-226

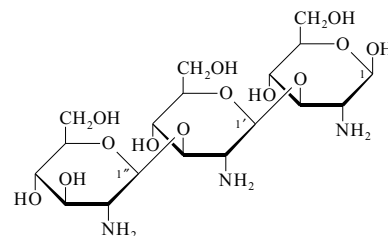
[103172-84-5]



$C_6H_{14}N_2O_4$ 178.188

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-2-amino-2-deoxy-D-glucose, 9CI

A-228



$C_{18}H_{35}N_3O_{13}$ 501.487

Constit. of the capsular polysaccharide of *Neisseria meningitidis*.

β-Pyranose-form

N,N',N''-Tri-Ac: [99088-39-8]

$C_{24}H_{41}N_3O_{16}$ 627.598

Amorph. $[\alpha]_D^{20}$ +15.4 (c, 0.5 in H₂O).

Undeca-Ac: [99088-38-7]

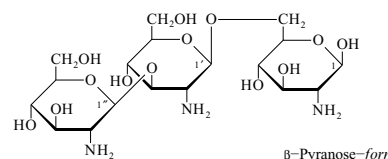
$C_{40}H_{57}N_3O_{24}$ 963.896

Cryst. Mp 194° dec. $[\alpha]_D^{20}$ +7 (c, 1.0 in CHCl₃).

Kinzy, W. *et al.*, *Annalen*, 1985, 1537 (tri-Ac, undeca-Ac, pmr)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-D-glucose, 8CI

A-229



$C_{18}H_{35}N_3O_{13}$ 501.487

β-Pyranose-form

4-Nitrophenyl glycoside, N,N',N''-tri-Ac: [30688-44-9]

Cryst. (EtOH aq.). Mp 209-210° dec. $[\alpha]_D^{20}$ +8 (c, 0.18 in MeOH aq.).

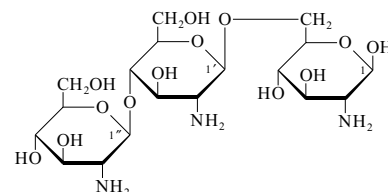
4-Nitrophenyl glycoside, deca-Ac: [30902-48-8]

Cryst. (MeOH). Mp 280-281° (MeOH). $[\alpha]_D^{20}$ +75 (c, 0.13 in CHCl₃/MeOH).

Zurabyan, S.E. *et al.*, *Carbohydr. Res.*, 1970, **15**, 21 (synth)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-D-glucose, 8CI

A-230



$C_{18}H_{35}N_3O_{13}$ 501.487

β-Pyranose-form

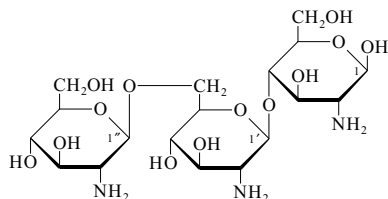
4-Nitrophenyl glycoside, N,N',N''-tri-Ac: [23262-60-4]
Cryst. + 2H₂O (MeOH aq.). Mp 239-241° dec. [α]_D²⁰ -47.5 (c, 1.19 in H₂O).

4-Nitrophenyl glycoside, deca-Ac: [23262-61-5]
Cryst. (MeOH). Mp 289-290° dec. [α]_D²⁰ -31 (c, 0.55 in MeOH/MeNO₂).

Zurabian, S.E. *et al.*, *Carbohydr. Res.*, 1969, **9**, 215 (*synth*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-2-amino-2-deoxy-D-glucose, 9CI

A-231



C₁₈H₃₅N₃O₁₃ 501.487

β-Pyranose-form

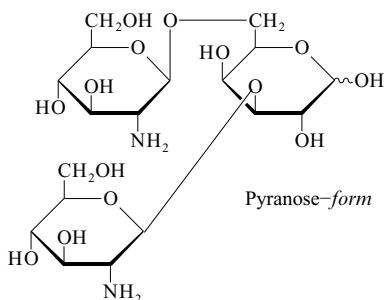
4-Nitrophenyl glycoside, N,N',N''-tri-Ac: [35942-04-2]
Cryst. (MeOH aq.). Mp 257.5-259°. [α]_D²⁰ -2 (c, 0.21 in H₂O).

4-Nitrophenyl glycoside, 2N,2'N,2''N,3,3',3'',4',4'',6,6''-nona-Ac: [35942-03-1]
Cryst. (MeNO₂). Mp 273.5-275° dec. [α]_D²⁰ -44 (c, 0.2 in DMF).

Zurabian, S.E. *et al.*, *Khim. Pri. Soedin.*, 1971, **7**, 689; *Chem. Nat. Compd. (Engl. Transl.)*, 1971, **7**, 670 (*synth*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-[2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)]-D-galactose 6'-β-Glucosaminyl-lacto-N-biose II, 3,6-Di-glucosaminylgalactose

A-232



C₁₈H₃₄N₂O₁₄ 502.472

N,N'-Di-Ac: 2-Acetamido-2-deoxy-β-D-glucopyranosyl-(1 → 3)-[2-acetamido-2-deoxy-β-D-glucopyranosyl-(1 → 6)]-D-glucose, 6'-β-N-Acetylglucosaminyl-lacto-N-biose II [55612-66-3]

C₂₂H₃₈N₂O₁₆ 586.546

Isol. from the partial acid hydrolysate of the hydrazinolysate of blood group A

mucopolysaccharide from hog gastric mucin.

[α]_D +6.5 (H₂O).

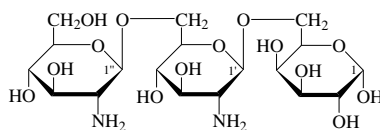
Yosizawa, Z. *et al.*, *J. Biochem. (Tokyo)*, 1962, **51**, 145

Blanken, W.M. *et al.*, *Anal. Biochem.*, 1985, **145**, 322 (*hplc*)

Seppo, A. *et al.*, *Biochem. Cell Biol.*, 1990, **68**, 44 (*synth*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-D-galactose

A-233



α-Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

α-Pyranose-form

1,2:3,4-Di-O-isopropylidene, 2'N,2''N,3',3'',4',4'',6''-hepta-Ac: [128358-55-4]

C₃₈H₅₆N₂O₂₁ 876.861

Cryst. (EtOAc/MeOH/hexane). Mp 246-248° dec. [α]_D -48.2 (c, 1.03 in CHCl₃).

1,2:3,4-Di-O-isopropylidene, 3',3'',4',4'',6''-pentabenzyl, N,N'-bis(benzenesulfonyl): [128358-54-3]

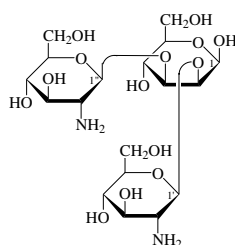
C₇₁H₈₀N₂O₁₈S₂ 1313.548

Glass. [α]_D -37.2 (c, 1.30 in CHCl₃).

Griffith, D.A. *et al.*, *J.A.C.S.*, 1990, **112**, 5811 (*diisopropylidene derivs, ir, pmr, cmr, ms*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 2)-[2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)]-D-mannose, 9CI

A-234



β-Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

β-Pyranose-form

1,2'N,2''N,3',3'',4',4'',6,6',6''-Undeca-Ac: [131940-22-2]

C₄₀H₅₆N₂O₂₅ 964.881

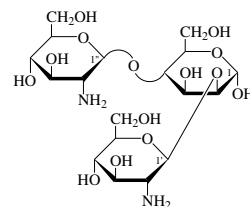
Cryst. (Me₂CO/hexane). Mp 230-232°. [α]_D²⁰ -18 (c, 0.8 in CHCl₃).

Lafont, D. *et al.*, *Bull. Soc. Chim. Fr.*, 1990, 576 (*undeca-Ac*)

Lafont, D. *et al.*, *Can. J. Chem.*, 1990, **68**, 828 (*undeca-Ac, pmr, cmr*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 2)-[2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)]-D-mannose, 9CI

A-235



α-Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

Constit. of the primary struct. of the carbohydrate units of desialysed human plasma α₁-acid glycoprotein, e.g. orosomucoid.

N,N'-Di-Ac: [39523-54-1]

C₂₂H₃₈N₂O₁₆ 586.546

Amorph. powder. [α]_D²¹ -16 (c, 1.0 in H₂O).

α-Pyranose-form

Me glycoside, N,N'-di-Ac: [80599-59-3]

C₂₃H₄₀N₂O₁₆ 600.573

Amorph. solid + 1.5 H₂O. [α]_D²⁵ +9.1 (c, 0.9 in MeOH).

Me glycoside, 3,6-dibenzyl, N,N'-di-Ac: [80599-58-2]

C₃₇H₅₂N₂O₁₆ 780.822

Syrup. [α]_D²⁵ +6.7 (c, 0.57 in MeOH).

Benzyl glycoside, 3,6-dibenzyl, octa-Ac: [80859-29-6]

C₅₅H₆₈N₂O₂₂ 1109.142

Syrup. [α]_D²¹ +7 (c, 1.0 in CHCl₃).

[129670-26-4, 129670-41-3, 136945-21-6]

Fournet, B. *et al.*, *Biochemistry*, 1978, **17**, 5206 (*occur*)

Ogawa, T. *et al.*, *Agric. Biol. Chem.*, 1981, **45**, 2329 (*α-Me pyr di-Ac derivs, pmr*)

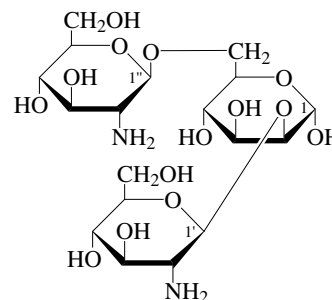
Arnarp, J. *et al.*, *Carbohydr. Res.*, 1981, **97**, 307 (*synth, α-benzyl pyr octa-Ac deriv, pmr, cmr*)

Lafont, D. *et al.*, *Can. J. Chem.*, 1990, **68**, 828 (*synth, pmr, derivs*)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1991, **216**, 289 (*derivs*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 2)-[2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)]-D-mannose, 9CI

A-236



C₁₈H₃₄N₂O₁₄ 502.472

Constit. of hen ovomucoid oligosaccharides.

α-Pyranose-form

1,2'-N,N',3,3',3'',4,4',4'',6',6''-Undeca-Ac: [136945-04-5]
C₄₀H₅₆N₂O₂₅ 964.881
Syrup.

2'-N,N',3,3',3'',4,4',4'',6',6''-Deca-Ac: [136945-05-6]
C₃₈H₅₄N₂O₂₄ 922.844
Syrup. [α]_D²⁰ -11.5 (c, 1.2 in CHCl₃).

3,4-Dibenzyl, 2'-N,N',3,3',3'',4,4',4'',6',6''-octa-Ac: [136945-03-4]
C₄₈H₆₂N₂O₂₂ 1019.018
Syrup. [α]_D²⁰ +0.85 (c, 1.05 in CHCl₃).

Me glycoside, N,N'-di-Ac: [109976-96-7]
C₂₃H₄₀N₂O₁₆ 600.573
Syrup.

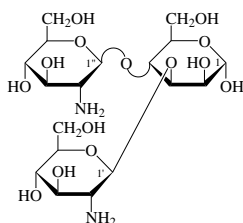
[136945-22-7]

Cumming, D.A. *et al.*, *Biochemistry*, 1987, **26**, 6664 (α-Me pyr, conform, pmr)

Brockhausen, I. *et al.*, *J. Biol. Chem.*, 1989, **264**, 11211 (α-Me pyr di-Ac, ms, hplc, occur)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1991, **216**, 289 (α-pyr Ac derivs, pmr)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-[2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)]-D-mannose **A-237**



α-Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

α-Pyranose-form

Undeca-Ac:
C₄₀H₅₆N₂O₂₅ 964.881
Foam. [α]_D²⁰ -17.9 (c, 1.0 in CHCl₃).

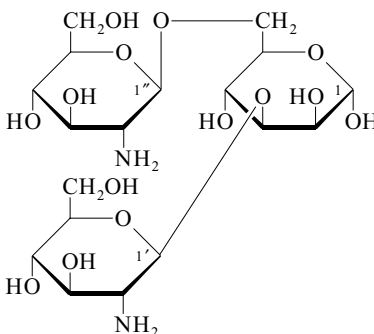
2'-N,N'-Di-allyloxycarbonyl, nona-Ac:
C₄₄H₆₀N₂O₂₇ 1048.955
Cryst. (2-propanol). [α]_D²⁰ +2.8 (c, 1.0 in CHCl₃).

β-Pyranose-form

1,6-Anhydro, 2'-N,N'-di-allyloxycarbonyl, 3',3'',4,4',4'',6',6''-hexa-Ac:
C₃₈H₅₂N₂O₂₃ 904.828
Cryst. (EtOH). Mp 208-210°. [α]_D²⁰ -21.5 (c, 1.0 in CHCl₃).

Lafont, D. *et al.*, *Can. J. Chem.*, 1990, **68**, 828
(α-undeca-Ac, α-nona-Ac deriv, β-anhydro hexa-Ac deriv)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-[2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)]-D-mannose, 9CI **A-238**



C₁₈H₃₄N₂O₁₄ 502.472

Constit. of complex type glycan chains N-linked to proteins.

α-Pyranose-form

Me glycoside, N,N'-di-Ac: [80612-73-3]
C₂₃H₄₀N₂O₁₆ 600.573
Amorph. + 2H₂O. [α]_D²⁵ -6.9 (c, 0.8 in H₂O).

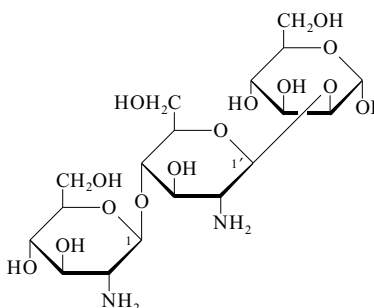
Me glycoside, 2,4-dibenzyl, N,N'-di-Ac: [80599-61-7]

C₃₇H₅₂N₂O₁₆ 780.822
Syrup. [α]_D²⁵ -1.8 (c, 0.85 in MeOH).

Montreuil, J. *et al.*, *Pure Appl. Chem.*, 1975, **42**, 431 (occur)

Ogawa, T. *et al.*, *Agric. Biol. Chem.*, 1981, **45**, 2329 (α-Me pyr di-Ac derivs, pmr, cmr)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 2)-D-mannose, 9CI **A-239**



C₁₈H₃₄N₂O₁₄ 502.472

α-Pyranose-form

Me glycoside, 3,4,6-tribenzyl, N,N'-di-Ac: [131221-99-3]

C₄₄H₅₈N₂O₁₆ 870.946
Amorph. powder + 1.5H₂O. [α]_D²³ +32.8 (c, 0.082 in MeOH).

Me glycoside, 3,4,6-tribenzyl, 2'-N,N',3,3',3'',4,4',4'',6',6''-hepta-Ac: [131221-74-4]

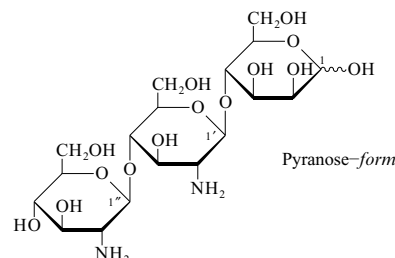
C₅₄H₆₈N₂O₂₁ 1081.132
Powder + H₂O. [α]_D²³ +16.5 (c, 0.065 in CHCl₃).

Me glycoside, 3,3',3'',4,6,6',6''-heptabenzyl, N,N'-di-Ac: [131222-01-0]

C₇₂H₈₂N₂O₁₆ 1231.444
Syrup. [α]_D²⁵ +3.8 (c, 0.40 in CHCl₃).

Nishimura, S. *et al.*, *Carbohydr. Res.*, 1990, **206**, 207 (α-Me pyr derivs, pmr)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-D-mannose, 9CI **A-240**



Pyranose-form

C₁₈H₃₄N₂O₁₄ 502.472

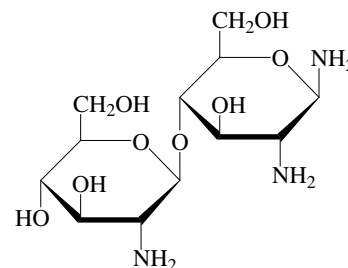
2,5-Anhydro, 2'-N,N',3,3',3'',4,4',4'',6',6''-nona-Ac: [101667-44-1]
C₃₆H₅₀N₂O₂₂ 862.791

Depolymerised product of partially N-acetylated chitosan. Syrup + H₂O. [α]_D²⁴ +1 (c, 1.0 in CHCl₃).

Hirano, S. *et al.*, *Carbohydr. Res.*, 1985, **144**, 338 (anhydro nona-Ac)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-2-amino-2-deoxy-D-glucosylamine **A-241**

2-Amino-4-O-(2-amino-2-deoxy-β-D-glucopyranosyl)-2-deoxyglucopyranosylamine, 9CI. Chitobiosylamine



C₁₂H₂₅N₃O₈ 339.345

β-D-Pyranose-form

2,2'-N-Di-Ac: N,N'-Diacetylchitobiosamine [102039-77-0]

C₁₆H₂₉N₃O₁₀ 423.419

Starting compd. for synth. of glycoconjugates. Cryst. Mp 221-222° dec. [α]_D²⁰ -11 (c, 1.1 in H₂O).

1,2,2'-N-Tri-Ac: [102039-78-1]

C₁₈H₃₁N₃O₁₁ 465.456
Solid (MeOH). Mp 303-304° dec. [α]_D²⁰ +2.5 (c, 1.0 in H₂O).

2,2',3,3',4',6,6'-O,O,O,O,O,N,N-Hepta-Ac: [29673-51-6]

C₂₆H₃₉N₃O₁₅ 633.605
Cryst. (MeOH). Mp 232-233° dec. [α]_D²⁰ -33 (c, 1 in CHCl₃).

1-N-(4-L-Aspartyl), 2,2'-di-N-Ac: [29625-73-8]

$C_{20}H_{34}N_4O_{13}$ 538.508

Model glycopeptide. Cryst. (EtOH or H₂O). Mp 259-260° dec. $[\alpha]_D^{20} +5.6$ (c, 1 in H₂O).

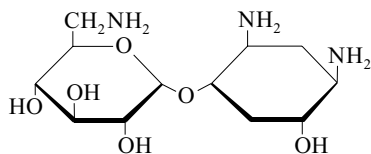
Spinola, M. *et al.*, *J. Biol. Chem.*, 1970, **245**, 4158-4162 (4-L-aspartyl, penta-O-Ac)

Likhoshesterov, L.M. *et al.*, *Carbohydr. Res.*, 1986, **146**, C1-C5 (synth, cmr, N-Ac)

Likhoshesterov, L.M. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1986, 1663-1669; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1986, 1512-1517 (synth, 4-L-aspartyl)

U.S. Pat., 1993, 5 212 298; *CA*, **122**, 188026 (synth)

4-O-(6-Amino-6-deoxyglucopyranosyl)-2,5-dideoxystreptamine A-242
[61403-83-6]



$C_{12}H_{25}N_3O_6$ 307.346

Aminoglycoside antibiotic. Isol. from *Streptomyces kanamyceticus* with 2,5-Dideoxystreptamine. Active against gram-positive bacteria. Sol. H₂O; poorly sol. EtOH, hexane.

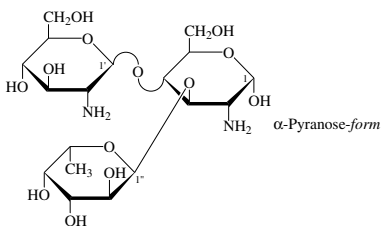
Carbonate (3:1): Mp 153°. $[\alpha]_D^{21} +104.6$ (c, 1.39 in H₂O).

Ogawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1976, **49**, 1975 (synth, ir, pmr)

Kavadias, G. *et al.*, *Can. J. Chem.*, 1978, **56**, 2086 (synth)

Japan. Pat., 1978, 78 34 988; *CA*, **89**, 127758 (isol)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-[α-L-fucopyranosyl-(1 → 3)]-2-amino-2-deoxy-D-glucose A-243
2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-[6-deoxy-α-L-galactopyranosyl-(1 → 3)]-2-amino-2-deoxy-D-glucose, 9CI. 3-O-Fucopyranosylchitobiose



$C_{18}H_{34}N_2O_{13}$ 486.472

N,N'-Di-Ac: [77735-22-9]

$C_{22}H_{38}N_2O_{15}$ 570.547

Cryst. + 3H₂O. Mp 169-172°. $[\alpha]_D^{22} +8.3$ → +6.7 (c, 0.6 in H₂O).

α-Pyranose-form

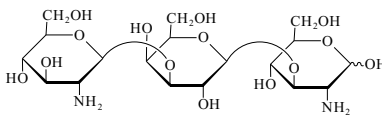
2'',3'',4''-Tribenzyl, 1,2N,2',3',4',6,6'-hepta-Ac: [77735-21-8]

$C_{53}H_{66}N_2O_{20}$ 1051.106

Cryst. (EtOAc/Et₂O/hexane). Mp 165-166°. $[\alpha]_D^{22} -39.7$ (c, 0.72 in MeOH).

Oguri, S. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 3196 (di-Ac, α-tribenzyl hepta-Ac, pmr, cmr)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-β-D-galactopyranosyl-(1 → 3)-2-amino-2-deoxy-D-glucose A-244
3'-β-N-Glucosaminylacto-N-biose I



Pyranose-form

$C_{18}H_{34}N_2O_{14}$ 502.472

N,N'-Di-Ac: 2-Acetamido-2-deoxy-β-D-glucopyranosyl-(1 → 3)-β-D-galactopyranosyl-(1 → 3)-2-acetamido-2-deoxy-D-glucose. 3'-β-N-Acetylglucosaminylacto-N-biose I

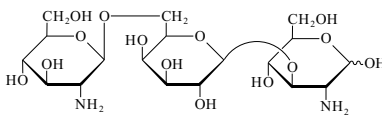
$C_{22}H_{38}N_2O_{16}$ 586.546

Isol. from the partial hydrolysate of hog gastric mucin.

$[\alpha]_D +19.5$ (H₂O).

Okuyama, T. *et al.*, *CA*, 1961, **55**, 88817; 1962, **57**, 1880 (isol)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-β-D-galactopyranosyl-(1 → 3)-2-amino-2-deoxy-D-glucose A-245
6'-N-Glucosaminylacto-N-biose I



Pyranose-form

$C_{18}H_{34}N_2O_{14}$ 502.472

N,N'-Di-Ac: 2-Acetamido-2-deoxy-β-D-glucopyranosyl-(1 → 6)-β-D-galactopyranosyl-(1 → 3)-2-acetamido-2-deoxy-D-glucose. 6'-β-N-Acetylglucosaminylacto-N-biose I

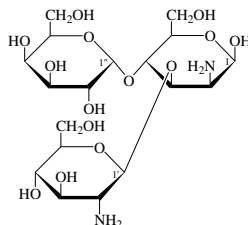
$C_{22}H_{38}N_2O_{16}$ 586.546

Isol. from the partial hydrolysate of hog gastric mucin.

$[\alpha]_D +51.6$ (H₂O).

Okuyama, T. *et al.*, *CA*, 1961, **55**, 88817; 1962, **57**, 8880 (isol)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-[α-D-galactopyranosyl-(1 → 4)]-2-amino-2-deoxy-D-mannose, 9CI A-246



β-Pyranose-form

$C_{18}H_{34}N_2O_{14}$ 502.472

Repeating unit in the surface layer glycoproteins of the outermost cell envelope of

Clostridium thermosaccharolyticum D120-70.

β-Pyranose-form

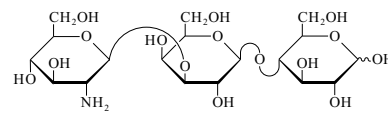
N,N'-Di-Ac: [126595-66-2]

$C_{22}H_{38}N_2O_{16}$ 586.546

Liq.

Altman, E. *et al.*, *Eur. J. Biochem.*, 1990, **188**, 73 (isol, pmr, cmr, glc, ms)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose A-247
3'-Glucosaminylactose



Pyranose-form

$C_{18}H_{33}NO_{15}$ 503.456

N-Ac: 2-Acetamido-2-deoxy-β-D-glucopyranosyl-(1 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose. 3'-β-N-Acetylglucosaminylactose. Lacto-N-triose II

[75645-27-1]

$C_{20}H_{35}NO_{16}$ 545.494

Isol. from the partial acid hydrolysates of the tetra and higher saccharides obt. from human milk; does not occur free in milk. Mp 201-202°. $[\alpha]_D +40.7$ (in H₂O).

N-Ac, phenyllosazone: Mp 230°.

[24741-60-4]

Kuhn, R. *et al.*, *Chem. Ber.*, 1958, **91**, 364; 1960, **93**, 647; 1962, **95**, 513; 518 (isol)

Okuyama, T. *et al.*, *CA*, 1961, **55**, 18817; 1962, **57**, 8880 (isol)

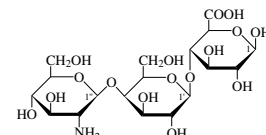
Acher, A.J. *et al.*, *J.O.C.*, 1970, **35**, 2436 (synth)

Koenderman, A.H.L. *et al.*, *Biomed.*

Chromatogr., 1986, **1**, 104; *CA*, **106**, 191579k

(synth)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 4)-β-D-galactopyranosyl-(1 → 4)-D-glucose, 9CI A-248



β-Pyranose-form

$C_{18}H_{33}NO_{15}$ 503.456

Pyranose-form

2',6'-Dibenzyl, 2,3,6-tribenzoyl,

2''N,3',3'',4'',6''-penta-Ac:

$C_{63}H_{67}NO_{23}$ 1206.215

Syrup + H₂O.

β-Pyranose-form

Benzyl glycoside, 2,2',3,6,6'-pentabenzyl,

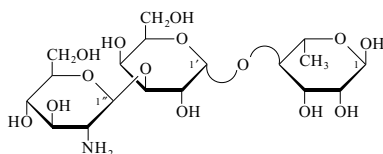
2''N,3',3'',4'',6''-penta-Ac: [95580-55-5]

$C_{70}H_{79}NO_{20}$ 1254.389

Syrup. $[\alpha]_D +12.1$ (c, 1.2 in CHCl₃).

Ito, Y. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 359 (penta-Ac deriv, β-benzyl pyr penta-Ac deriv, pmr)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-α-D-galactopyranosyl-(1 → 4)-L-rhamnose **A-249**
 2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-α-D-galactopyranosyl-(1 → 4)-6-deoxy-L-mannose, 9CI

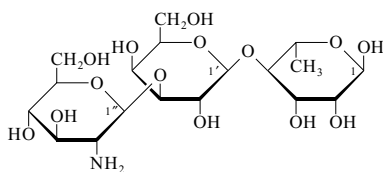


C₁₈H₃₃NO₁₄ 487.457
 Repeating trisaccharide unit of the lipopolysaccharide from *Escherichia coli* O 75.

α-Pyranose-form

Benzyl glycoside, 2,3-O-isopropylidene, 2',4'-dibenzyl, 2''N,3'',4'',6'',6'''-penta-Ac: [79705-63-8]
 C₅₂H₆₅NO₁₉ 1008.081
 Syrup. [α]_D²⁰ -17.8 (c, 0.32 in CHCl₃).
 Paulsen, H. et al., *Chem. Ber.*, 1981, **114**, 3079 (α-benzyl pyr penta-Ac deriv, pmr, occur)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-β-D-galactopyranosyl-(1 → 4)-L-rhamnose **A-250**
 2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 3)-β-D-galactopyranosyl-(1 → 4)-6-deoxy-L-mannose, 9CI

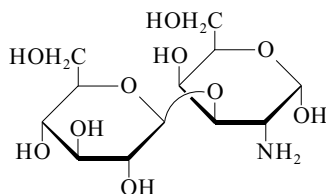


C₁₈H₃₃NO₁₄ 487.457

α-Pyranose-form

Benzyl glycoside, 2,3-O-isopropylidene, 2',4'-dibenzyl, 2''N,3'',4'',6'',6'''-penta-Ac: [79705-64-9]
 C₅₂H₆₅NO₁₉ 1008.081
 Syrup. [α]_D²⁰ -45.5 (c, 1.8 in CHCl₃).
 Paulsen, H. et al., *Chem. Ber.*, 1981, **114**, 3079 (α-benzyl pyr penta-Ac deriv, pmr)

2-Amino-2-deoxy-3-O-β-D-glucopyranosyl-D-galactose, 8CI **A-251**
 β-D-Glucopyranosyl-(1 → 3)-2-amino-2-deoxy-D-galactose. 3-β-Glucosylgalactosamine [1811-33-2]

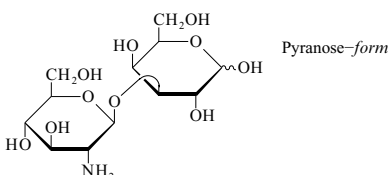


C₁₂H₂₃NO₁₀ 341.314

α-Pyranose-form

N-Ac: 3-β-Glucosyl-N-acetyl-galactosamine [31718-87-3]
 C₁₄H₂₅NO₁₁ 383.352
 Isol. from the partial acid hydrolysate of reduced chondroitin. Cryst. + 2H₂O. Mp 155-157°. [α]_D²⁰ +19 (H₂O).
 Davidson, E.A. et al., *J.A.C.S.*, 1954, **76**, 5686
 Wolfrom, M.L. et al., *J.A.C.S.*, 1960, **82**, 1673 (isol)

3-O-(2-Amino-2-deoxy-β-D-glucopyranosyl)-D-galactose **A-252**
 3-β-Glucosaminylgalactose

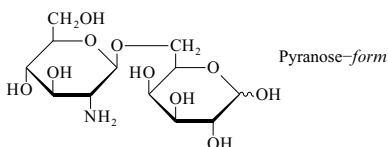


C₁₂H₂₃NO₁₀ 341.314

N-Ac: 3-O-(2-Acetamido-2-deoxy-β-D-glucopyranosyl)-D-galactose. 3-β-N-Acetylglucosaminylgalactose. Lacto-N-biose II [67006-44-4]
 C₁₄H₂₅NO₁₁ 383.352
 Important repeating unit in many of the higher oligosaccharides obt. from milk. Repeating unit in mucopolysaccharides from partial acid hydrol. of human blood group A substance, *Pneumococcus* type XIV polysaccharide and blood group A mucopolysaccharide from hog gastric mucin.
 Mp 131-133°. [α]_D²⁰ +35.7 (H₂O).
 [38711-46-5, 63121-25-5]

Kuhn, R. et al., *Chem. Ber.*, 1954, **87**, 283; 1553; 1956, **89**, 1027; 1960, **93**, 647 (isol)
 Malpress, F.H. et al., *Biochem. J.*, 1958, **68**, 708 (isol)
 Barker, S.A. et al., *J.C.S.*, 1958, 3468 (isol)
 Glick, M.C. et al., *J. Biol. Chem.*, 1962, **237**, 981 (isol)
 Bailey, R.W. et al., *Oligosaccharides*, Pergamon Press, London, 1965, **4**, 123 (occur)
 Hounsell, E.F. et al., *Eur. J. Biochem.*, 1986, **157**, 375 (pmr)

6-O-(2-Amino-2-deoxy-β-D-glucopyranosyl)-D-galactose, 8CI **A-253**
 6-β-Glucosaminylgalactose



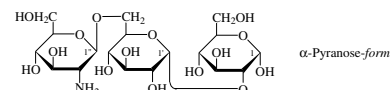
C₁₂H₂₃NO₁₀ 341.314

N-Ac: 6-O-(2-Acetamido-2-deoxy-β-D-glucopyranosyl)-D-galactose. 6-β-N-Acetylglucosaminylgalactose
 C₁₄H₂₅NO₁₁ 383.352
 Isol. from the partial acid hydrolysate from hog gastric mucin.
 [α]_D²⁰ +9.2 (H₂O).

Pyranose-form [5987-40-6]

Octa-Ac: [35014-63-2]
 C₂₈H₃₉NO₁₈ 677.612
 Mp 197-198°. [α]_D²⁰ +6.3 (CHCl₃).
 Kuhn, R. et al., *Chem. Ber.*, 1954, **87**, 384 (synth)
 Yosizawa, Z. et al., *J. Biochem. (Tokyo)*, 1962, **51**, 145 (isol)
 Aston, W.P. et al., *Biochem. Biophys. Res. Commun.*, 1968, **30**, 1

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-α-D-glucopyranosyl-(1 → 2)-D-glucose, 9CI **A-254**

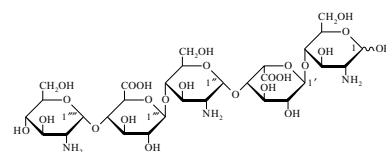


C₁₈H₃₃NO₁₅ 503.456
 [α]_D²² +74 (c, 0.55 in H₂O).

α-Pyranose-form

Me glycoside, N-Ac: [130051-18-2]
 C₂₁H₃₇NO₁₆ 559.52
 Amorph. [α]_D²² +74 (c, 0.55 in H₂O).
 Me glycoside, deca-Ac: [130074-05-4]
 C₃₉H₅₅NO₂₅ 937.855
 Cryst. (Et₂O/hexane). Mp 123-125°. [α]_D²² +125 (c, 1.2 in CHCl₃).
 Me glycoside, N-chloroacetyl, nona-Ac: [130074-04-3]
 C₃₉H₅₄ClNO₂₅ 972.3
 Cryst. (Et₂O/hexane). Mp 125-126° (softens at 112°). [α]_D²² +126 (c, 0.9 in CHCl₃).
 Dasgupta, F. et al., *Carbohydr. Res.*, 1990, **202**, 225 (α-Me pyr derivs, pmr, cmr)

2-Amino-2-deoxy-α-D-glucopyranosyl-(1 → 4)-β-D-glucopyranosyluronic acid-(1 → 4)-2-amino-2-deoxy-α-D-glucopyranosyl-(1 → 4)-α-L-idopyranosyluronic acid-(1 → 4)-2-amino-2-deoxy-D-glucopyranose **A-255**



C₃₀H₅₁N₃O₂₅ 853.738

2N,2',2''N,3'',6,6'',6'''-Heptasulfo, 2'''N-Ac: Occurs as a sequence in Heparin, H-5 and is the structural domain responsible for the binding to antithrombin III.

2N,2',2''N,2'''N,3'',6,6'',6'''-Octasulfo: SR 90107. *Org* 31540 [99095-61-1]

[88096-19-9]
 C₃₀H₅₁N₃O₄₉S₈ 1494.252
 Synthetic pentasaccharide representing the antithrombin III binding site of heparin. Antithrombotic agent; the first synthetic material having a high binding affinity for antithrombin III. [α]_D²² +42 (c, 1.0 in H₂O) (as di-Na salt).

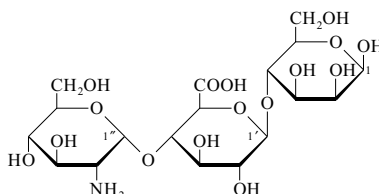
Me α -glycoside,
2N,2',2''N,2'''N,3'',6,6'',6'''-octasulfo:
Fondaparin. SR 90107/ ORG 31540
[104993-28-4]
C₃₁H₅₃N₃O₄₉S₈ 1508.278
Novel anti-factor Xa antithrombotic
agent.

Me α -glycoside,
2N,2',2''N,2'''N,3'',6,6'',6'''-octasulfo,
deca-Na salt: Fondaparinux sodium.
Arixtra
[114870-03-0]
Approved by FDA (Dec 2001) for the
prophylaxis of deep vein thrombosis.
Powder. $[\alpha]_D^{25} +48$ (c, 0.61 in H₂O).

[87925-53-9, 87925-80-2, 93358-30-6, 99497-87-7]

Choay, J. *et al.*, *Biochem. Biophys. Res. Commun.*, 1983, **116**, 492-499 (*synth, sar, pmr*)
Sinay, P. *et al.*, *Carbohydr. Res.*, 1984, **132**, C5 (*synth*)
Torri, G. *et al.*, *Biochem. Biophys. Res. Commun.*, 1985, **128**, 134-140 (*pmr*)
Atha, D.H. *et al.*, *Biochemistry*, 1985, **24**, 6723-6729 (*pharmacol*)
Van Boeckel, C.A.A. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 293-321 (*synth*)
Uhlrich, S. *et al.*, *Biochem. Biophys. Res. Commun.*, 1986, **139**, 728-732 (*activity*)
Ichikawa, Y. *et al.*, *Tet. Lett.*, 1986, **27**, 611-614 (*bibl, synth, pmr*)
Petitou, M. *et al.*, *Carbohydr. Res.*, 1987, **167**, 67-75; 1990, **195**, 169-185 (*pmr, cmr, activity, conformn, synth, fondaparinux sodium*)
Walenga, J.M. *et al.*, *Thromb. Res.*, 1988, **52**, 553-563 (*activity*)
Hobbelen, P.M.J. *et al.*, *Thromb. Haemostasis*, 1990, **63**, 265-270 (*pharmacol*)
Van Boeckel, C.A.A. *et al.*, *Angew. Chem., Int. Ed.*, 1993, **32**, 1671-1690 (*rev, analogues*)
Cadroy, Y. *et al.*, *Thromb. Haemostasis*, 1993, **70**, 631-635 (*pharmacol*)
Carrie, D. *et al.*, *Blood*, 1994, **84**, 2571-2577 (*pharmacol*)
Boneu, B. *et al.*, *Thromb. Haemostasis*, 1995, **74**, 1468-1473; 1474-1477 (*bibl, pharmacol, pharmacokin*)
Herbert, J.M. *et al.*, *Circ. Res.*, 1996, **79**, 590-600 (*pharmacol, bibl*)
Herbert, J.M. *et al.*, *Cardiovasc. Drug Rev.*, 1997, **15**, 1-26 (*rev, pharmacol*)
Petitou, M. *et al.*, *J. Med. Chem.*, 1997, **40**, 1600-1607 (*sar*)
Lormeau, J.C. *et al.*, *Thromb. Res.*, 1997, **85**, 67-75 (*pharmacol*)
Vuilleminot, A. *et al.*, *Thromb. Haemostasis*, 1999, **81**, 214-220 (*pharmacol*)
Turpie, A.G. *et al.*, *N. Engl. J. Med.*, 2001, **344**, 619-625 (*pharmacol*)
Bauer, K.A. *et al.*, *Cardiovasc. Drug Rev.*, 2002, **20**, 37-52 (*fondaparinux, rev*)
Keam, S.J. *et al.*, *Drugs*, 2002, **62**, 1673-1685 (*fondaparinux sodium, rev*)
Reverter, J.C. *et al.*, *Drugs of the Future*, 2002, **27**, 122-131 (*rev*)
Reynolds, N.A. *et al.*, *Drugs*, 2004, **64**, 1575-1596 (*fondaparinux sodium*)

2-Amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranuronosyl-(1 \rightarrow 4)-D-mannose, 9CI



C₁₈H₃₁NO₁₆ 517.44

β-Pyranose-form

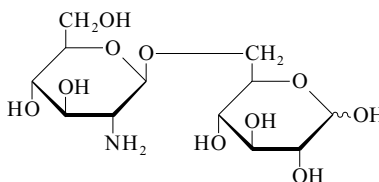
1,6:2,3-Dianhydro, 2',3',3'',4''-tetrabenzyl, 6'-Me, 2''N,6''-di-Ac: [87907-26-4]

C₅₁H₅₇NO₁₆ 940.008

Cryst. Mp 147-149°. $[\alpha]_D +35$ (CHCl₃).

Duchaussoy, P. *et al.*, *Bioorg. Med. Chem. Lett.*, 1991, **1**, 99 (*dianhydro deriv, pmr*)

6-O-(2-Amino-2-deoxy-β-D-glucopyranosyl)-D-glucose 6-β-Glucosaminylglucose



Pyranose-form

C₁₂H₂₃NO₁₀ 341.314

Pyranose-form

N-Ac: 6-O-(2-Acetamido-2-deoxy-β-D-glucopyranosyl)-D-glucose. 6-β-N-Acetylglucosaminylglucose
[31981-93-8]

C₁₄H₂₅NO₁₁ 383.352

$[\alpha]_D +3.7$ (H₂O).

Octa-Ac: [32590-28-6]

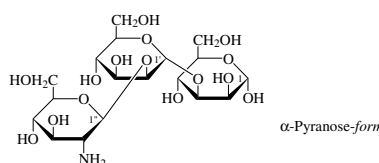
C₂₈H₃₉NO₁₈ 677.612

Mp 218-219°. $[\alpha]_D -9.5$ (CHCl₃).

Kuhn, R. *et al.*, *Chem. Ber.*, 1954, **87**, 384

(*synth*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 \rightarrow 2)-α-D-mannopyranosyl-(1 \rightarrow 3)-D-mannose, 9CI



α-Pyranose-form

C₁₈H₃₃NO₁₅ 503.456

Constit. of glycolipid from the spermatozoa of bivalve *Hyriopsis schlegelii*. Isol. from the acetolysis product of a sialoglycopeptide β obtd. by enzymatic hydrolysis of avian ovomucoid.

N-Ac: [39523-56-3]
C₂₀H₃₅NO₁₆ 545.494
Syrup.

α-Pyranose-form

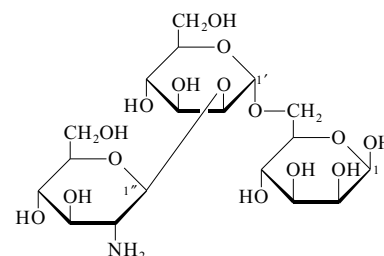
Me glycoside, 4,6-benzylidene, 2''-phthalimidoyl, 2,3',3'',4',4'',6',6'''-hepta-Ac: [98293-09-5]

Syrup. $[\alpha]_D^{25} +12.9$ (c, 0.43 in CHCl₃).

Bayard, B. *et al.*, *Carbohydr. Res.*, 1972, **24**, 445 (*isol, chromatog*)

Takeda, T. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 540 (*N-Ac, α-Me pyr hepta-Ac deriv, pmr, cmr, occur*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 \rightarrow 2)-α-D-mannopyranosyl-(1 \rightarrow 6)-D-mannose, 9CI



C₁₈H₃₃NO₁₅ 503.456

Partial struct. of naturally occurring asparagine linked oligosaccharides. Functions as a selective substrate in N-acetylglucosaminyl transferase assays.

β-Pyranose-form

8-Methoxycarbonyloctyl glycoside, N-Ac: [106444-87-5]

C₃₀H₅₃NO₁₈ 715.745

Powder. $[\alpha]_D^{25} -19.3$ (c, 0.91 in H₂O).

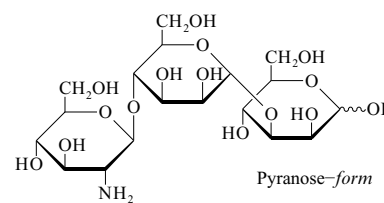
8-Methoxycarbonyloctyl glycoside, 2,3',4',6'-pentabenzyl, N-Ac: [106444-86-4]

C₆₅H₈₃NO₁₈ 1166.367

Foam. $[\alpha]_D^{25} -20.46$ (c, 0.88 in CHCl₃).

Tahir, S.H. *et al.*, *Can. J. Chem.*, 1986, **64**, 1771 (*β-methoxycarbonyloctyl pyr N-Ac derivs, synth, pmr, cmr*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 \rightarrow 4)-α-D-mannopyranosyl-(1 \rightarrow 3)-D-mannose, 9CI



Pyranose-form

C₁₈H₃₃NO₁₅ 503.456

Isol. from the acetolysis product of a sialoglycopeptide β obtd. by enzymatic hydrolysis of avian ovomucoid.

N-Ac: [39523-55-2]

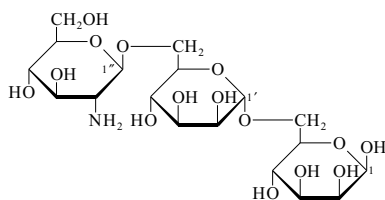
C₂₀H₃₅NO₁₆ 545.494

Syrup.

Bayard, B. *et al.*, *Carbohydr. Res.*, 1972, **24**, 445 (*isol, chromatog*)

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-α-D-mannopyranosyl-(1 → 6)-D-mannose, 9CI

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β-Pyranose-form

C₁₈H₃₃NO₁₅ 503.456

Constit. of branched asparagine linked oligosaccharides in murine tissues and in human breast carcinomas.

β-Pyranose-form

N-Ac: [120136-62-1]

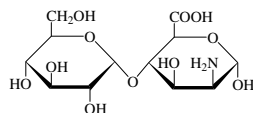
C₂₀H₃₅NO₁₆ 545.494

Syrup.

Pierce, M. *et al.*, *J. Biol. Chem.*, 1986, **261**, 10772 (*occur*)Dennis, J.W. *et al.*, *Cancer Res.*, 1989, **49**, 945 (*occur*, *pmr*)**2-Amino-2-deoxy-4-O-α-D-glucopyranosyl-D-mannopyranuronic acid**

A-262

α-D-Glucopyranosyl-(1 → 4)-2-amino-2-deoxy-D-mannopyranuronic acid



α-Pyranose-form

C₁₂H₂₁NO₁₁ 355.298**Pyranose-form**

N-Ac: 2-Acetamido-2-deoxy-4-O-α-D-glucopyranosyl-D-mannopyranuronic acid

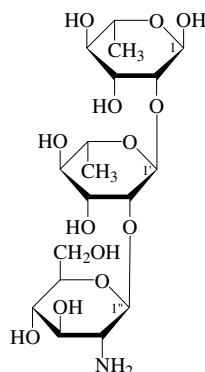
C₁₄H₂₃NO₁₂ 397.335Repeat unit of the teichuronic acid from *Micrococcus luteus*. [α]_D²⁰ +78 (c, 1.3 in H₂O). Isol. as anomeric mixt., α:β ratio 1.8:1.

[106837-34-7, 106837-35-8]

Paulsen, H. *et al.*, *Annalen*, 1987, 431 (*synth*, *pmr*)**2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 2)-α-L-rhamnopyranosyl-(1 → 2)-L-rhamnose**

A-263

2-Amino-2-deoxy-β-D-glucopyranosyl-(1 → 2)-6-deoxy-α-L-mannopyranosyl-(1 → 2)-6-deoxy-L-mannose, 9CI



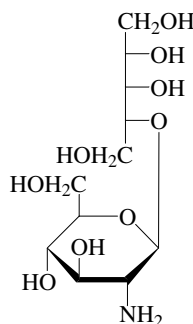
α-Pyranose-form

C₁₈H₃₃NO₁₃ 471.458Constit. of the repeating unit of *Shigella flexneri* serogroup Y O-antigen.**α-Pyranose-form**

8-Methoxycarbonyloctyl glycoside, N-Ac: [72599-92-9]

C₃₀H₅₃NO₁₆ 683.746Syrup. [α]_D -36.4 (c, 1.1 in MeOH).Josephson, S. *et al.*, *Can. J. Chem.*, 1979, **57**, 3073 (α-methoxycarbonyloctyl pyr N-Ac, *cmr*)
Wessel, H.P. *et al.*, *J.C.S. Perkin 1*, 1985, 2251 (α-methoxycarbonyloctyl pyr N-Ac, *cmr*, *pmr*)**4-O-(2-Amino-2-deoxy-D-glucopyranosyl)-D-ribose**

A-264



β-form

C₁₁H₂₃NO₉ 313.304

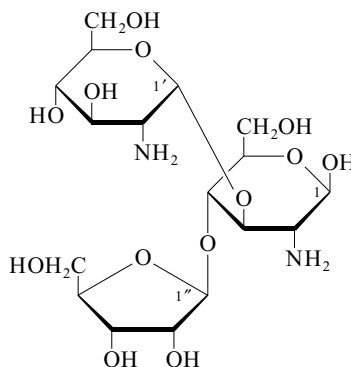
N-Ac: 4-N-Acetylglucosaminylribitol

C₁₃H₂₅NO₁₀ 355.341The phosphate of this disaccharide is the repeating unit of *Staphylococcus aureus* teichoic acid from which it is obtained by mild alkaline hydrolysis followed by dephosphorylation. On isol. the disaccharide is a mixt. of 1 → 4 linked α and β isomers, the proportions varying from sample to sample of teichoic acid. [α]_D +12 (H₂O).**β-form**

N-Ac: 4-O-(2-Acetamido-2-deoxy-β-D-glucopyranosyl)-D-ribose

C₁₃H₂₅NO₁₀ 355.341Powder + ½H₂O. Mp 85-87°. [α]_D²⁰ -11.6 (c, 2.1 in H₂O).Baddiley, J. *et al.*, *Biochim. Biophys. Acta*, 1961, **52**, 406 (*isol*)Boullanger, P. *et al.*, *Carbohydr. Res.*, 1982, **110**, 153 (*synth*, *cmr*, N-Ac)**2-Amino-2-deoxy-α-D-glucopyranosyl-(1 → 3)-[β-D-ribofuranosyl-(1 → 4)]-2-amino-2-deoxy-D-glucose, 9CI**

A-265

C₁₇H₃₂N₂O₁₃ 472.445**β-Pyranose-form**

1,6-Anhydro, 2N-benzoyloxycarbonyl, 2'-N-(2,4-dinitrophenyl): [96182-10-4]

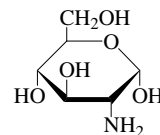
C₃₁H₃₈N₄O₁₈ 754.657Cryst. Mp 103-105°. [α]_D -4 (MeOH).

[96182-09-1]

Yoshikawa, M. *et al.*, *Chem. Lett.*, 1984, 2097 (*synth*, *pmr*)**2-Amino-2-deoxyglucose**

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NSC 758



α-D-Pyranose-form

C₆H₁₃NO₅ 179.172**D-form**

Glucosamine, 9CI, 8CI. Chitosamine [3416-24-8]

Present in mucopolysaccharides and in polysaccharides found in bacteria, fungi, higher plants, invertebrates, vertebrates, antibiotics and UDP complexes. Obt. comly. by hydrol. of seashells. Inexpensive starting material for synthesis. Antiarthritic agent. pK_a 7.75 (24°).**► LZ6664000****3-Sulfate:**C₆H₁₃NO₈S 259.237Monohydrate. [α]_D²⁰ +54 (c, 2.0 in H₂O).**6-Sulfate:**C₆H₁₃NO₈S 259.237[α]_D²⁰ +66 (c, 2.0 in H₂O).**6-Phosphate:** [3616-42-0]C₆H₁₄NO₈P 259.152[α]_D²⁰ +60 (c, 2 in 1M H₂SO₄). pK_{a1} 6.1; pK_{a2} 8.14 (26°).

Oxime: [21537-55-3]
 $C_6H_{14}N_2O_5$ 194.187
 Mp 127°.

Oxime; hydrochloride: [54947-34-1]
 Mp 166°.

Semicarbazone: Mp 165°.

Di-Et acetal, 5,6-O-isopropylidene: [18422-17-8]
 $C_{13}H_{27}NO_6$ 293.359
 Mp 78-79°. [α]_D²⁰ -3 (c, 1 in $CHCl_3$).

Di-Et dithioacetal: [18467-82-8]
 $C_{10}H_{23}NO_4S_2$ 285.428
 Mp 121-122° (as hydrochloride). [α]_D -24 (H_2O).

N-Ac: See 2-Acetamido-2-deoxyglucose, A-8

N-Benzoyl: See 2-Benzamido-2-deoxyglucose, B-7

N-(tert-Butyloxycarbonyl): [75251-80-8]
 $C_{11}H_{21}NO_7$ 279.289
 Mp 194° dec. [α]_D²⁵ +64 (c, 1 in MeOH).

N-Benzoyloxycarbonyl: [16684-31-4]
 $C_{14}H_{19}NO_7$ 313.307
 Mp 214°. [α]_D -75.4 (Py).

N-(3,4-Dihydroxycinnamoyl): *N-Caffeoylglucosamine* [29028-19-1]
 $C_{15}H_{19}NO_8$ 341.317
 Isol. from tobacco tumours (*Nicotiana tabacum*).

N-Carbamoyl: See *N-Carbamoylglucosamine*, C-11

N-Salicylidene: Mp 183-184°. [α]_D +11 (MeOH).

1,3,4-Tri-Ac, 6-phosphate:
 $C_{12}H_{20}NO_{11}P$ 385.264
 Mp 166-167°. [α]_D²⁰ +48.9 (c, 2.7 in HCl).

1,3,4-Tri-Ac, di-Ph ester, 6-phosphate:
 $C_{24}H_{28}NO_{11}P$ 537.459
 Mp 190-191°. [α]_D²⁰ +49.6 (c, 4 in MeOH).

N-Me: 2-Deoxy-2-methylamino-D-glucose [3329-30-4]
 $C_7H_{15}NO_5$ 193.199
 Mp 164-166° (hydrochloride). [α]_D +104 → +89 (H_2O).

3-Me: See 2-Amino-2-deoxy-3-O-methylglucose, A-318

4-Me: See 2-Amino-2-deoxy-4-O-methylglucose, A-319

6-Me: See 2-Amino-2-deoxy-6-O-methylglucose, A-320

3,4,6-Tribenzyl: 3,4,6-Tri-O-benzyl-D-glucosamine [70279-93-5]
 $C_{27}H_{31}NO_5$ 449.546
 Mp 114-115°. [α]_D²⁰ +76 (c, 1.1 in $CHCl_3$).

3,4,6-Tribenzyl; hydrochloride: Mp 184-185°. [α]_D²⁰ +55.3 (c, 2.1 in 2-methoxyethanol).

α -D-Pyranose-form [6490-70-6]
 Mp 88°. [α]_D +100 → +47.5 (H_2O).

Hydrochloride: [66-84-2]
 Mp 190-210°. [α]_D +100 → +72.5 (H_2O).

► LZ6665000

Me glycoside: See Methyl 2-amino-2-deoxyglucopyranoside, M-150

Et glycoside: Ethyl 2-amino-2-deoxy- α -D-glucopyranoside [57120-97-5]
 $C_8H_{17}NO_5$ 207.226
 Cryst. (EtOH). Mp 137-138°. [α]_D²⁹ +155 (c, 1 in EtOH).

Allyl glycoside: Allyl 2-amino-2-deoxy- α -D-glucopyranoside [112146-92-6]
 $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOH). Mp 117-118°. [α]_D²⁵ +142.5 (c, 0.8 in H_2O).

Benzyl glycoside: See Benzyl 2-amino-2-deoxyglucopyranoside, B-13

β -D-Pyranose-form [14257-69-3]
 Mp 110-111°. [α]_D +28 → +47.5 (H_2O).
 Most common form.

Hydrochloride: Mp 185° dec.

Pentakis(3-pyridinecarbonyl): *Glucosamine pentanicotinate*. **Glunicate**, INN. LG 13979 [80763-86-6]
 $C_{36}H_{28}N_6O_{10}$ 704.651
 Antilipidaemic, cardiovascular agent. Log P 1.55 (calc).

Et glycoside: Ethyl β -D-glucosaminide [57121-00-3]
 $C_8H_{17}NO_5$ 207.226
 Mp 213-214° (as hydrochloride). [α]_D +27.8 (H_2O).

Et glycoside, 3,4,6-tri-Ac: Ethyl 3,4,6-tri-O-acetyl-2-amino-2-deoxy- β -D-glucopyranoside [28708-20-5]
 $C_{14}H_{23}NO_8$ 333.338
 Mp 250-251° (as hydrochloride). [α]_D +12.5 (MeOH).

Allyl glycoside, N-phthaloyl: Allyl 6-O-benzyl-2-deoxy-2-phthalimido- β -D-glucopyranoside [114853-29-1]
 $C_{17}H_{19}NO_7$ 349.34
 Mp 116-117°. [α]_D²⁵ -27 (c, 0.8 in $CHCl_3$).

Benzyl glycoside: See Benzyl 2-amino-2-deoxyglucopyranoside, B-13

Ph glycoside, N-propanoyl:
 $C_{15}H_{21}NO_6$ 311.334
 Mp 230°. [α]_D +8 (Py).

2,3-Dihydroxypropyl glycoside: 2,3-Dihydroxypropyl 2-amino-2-deoxy- β -D-glucopyranoside [172760-00-8]
 $C_9H_{19}NO_7$ 253.252
 Prod. by *Streptomyces albus* ATCC 21838. Config. of 2,3-dihydroxypropyl residue not detd.

1,3,4,5, N,N-Hexa-Ac: 1,3,4,5-Tetra-O-acetyl-2-deoxy-2-(diacetyl-amino)- β -D-glucopyranose. 1,3,4,6-Tetra-O-acetyl-2-(N-acetylacetamido)-2-deoxy- β -D-glucopyranose
 $C_{18}H_{25}NO_{11}$ 431.396
 Cryst. Mp 111-113°. [α]_D²⁰ +8.9 (c, 2.06 in $CHCl_3$). An Mp of 84-85° was given by earlier workers but this appears to refer to the α -anomer.

 α -D-Furanose-form

Me glycoside: Methyl 2-amino-2-deoxy- α -D-glucufuranoside [57120-96-4]

$C_7H_{15}NO_5$ 193.199
 Syrup. [α]_D²⁵ +105 (c, 1 in H_2O).

Et glycoside: Ethyl 2-amino-2-deoxy- α -D-glucufuranoside [112146-91-5]
 $C_8H_{17}NO_5$ 207.226
 Foam. [α]_D³⁰ +101 (c, 1.5 in EtOH).

Allyl glycoside: Allyl 2-amino-2-deoxy- α -D-glucufuranoside [112154-62-8]
 $C_9H_{17}NO_5$ 219.237
 Syrup. [α]_D¹⁸ +102 (c, 1 in H_2O).

Allyl glycoside, N-Ac: Allyl 2-acetamido-2-deoxy- α -D-glucufuranoside [112146-93-7]
 $C_{11}H_{19}NO_6$ 261.274
 [α]_D¹⁸ +89.5 (c, 0.8 in EtOH).

L-form

N-Me: 2-Deoxy-2-methylamino-L-glucose [6032-19-5]
 $C_7H_{15}NO_5$ 193.199
 Residue present in Streptomycin, S-83. [α]_D²⁵ -65 (c, 1 in MeOH). [38899-05-7, 84868-34-8]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 350A; 758A (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 1238C (nmr)

Horton, D. et al., *Adv. Carbohydr. Chem.*, 1960, 15, 159 (rev. derivs)

Stacey, M. et al., *Methods Carbohydr. Chem.*, 1962, 1, 228 (isol)

Ramachandran, G.N. et al., *Biochim. Biophys. Acta*, 1967, 148, 317 (cryst struct)

Heyns, K. et al., *Chem. Ber.*, 1967, 100, 2655 (di-Et acetal isopropylidene)

Horton, D. et al., *The Amino Sugars*, (Jeanloz, R.W., Ed.), Academic Press, 1969, 1A, 1 (rev)

Buta, J.G. et al., *Phytochemistry*, 1970, 9, 1143-1144 (*N-Caffeoylglucosamine*)

Belg. Pat., 1981, 888 890; CA, 96, 85934 (Glunicate)

Fehér, J. et al., *Drugs Exp. Clin. Res.*, 1985, 11, 413 (Glunicate)

Renzetti, A.R. et al., *J. Pharm. Pharmacol.*, 1985, 37, 906 (Glunicate)

Garcia-Martin, M.G. et al., *Carbohydr. Res.*, 1987, 162, 181 (α -D-pyr Et gly, α -D-fur Et gly, α -D-fur Me gly, α -D-pyr allyl gly, α -D-fur allyl gly)

Sato, S. et al., *Carbohydr. Res.*, 1987, 167, 197 (β -D-pyr allyl gly N-phthaloyl)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 990; 1374 (Glunicate, Glucosamine)

Vertesy, L. et al., *Angew. Chem., Int. Ed.*, 1994, 33, 1844 (α -D-pyr dihydroxypropyl gly)

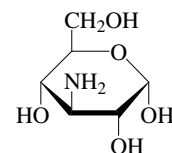
Mackie, W. et al., *Carbohydr. Res.*, 1995, 266, 65-74 (cryst struct, 3-sulfate, 6-sulfate)

Suihko, M. et al., *Carbohydr. Res.*, 2001, 334, 337-341 (hexa-Ac, synth, ir, pmr, cmr, cryst struct)

Merk Index, 13th edn., 2001, No. 4471 (bibl)

3-Amino-3-deoxyglucose, 9CI, 8CI

Kanosamine

 α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form [576-44-3]

Isol. from the antibiotic Kanamycin. Occurs as the free sugar in fermentation broths of *Bacillus aminoglucosidicus*, a deep-sea strain of *Bacillus* sp. and *Streptomyces latus*. Has bactericidal props. The only amino sugar antibiotic.

Hydrochloride:

Hygroscopic solid. Mp 132-137° Mp 150° dec. approx. $[\alpha]_D^{20} +47$ (c, 1.0 in H₂O).

 α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 3-amino-4,6-O-benzylidene-3-deoxy- α -D-glucopyranoside [4603-89-8]

C₁₄H₁₉NO₅ 281.308

Cryst. (petrol/EtOH). Subl. 186. $[\alpha]_D^{22} +102$ (c, 1.02 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 3-acetamido-4,6-O-benzylidene-3-deoxy- α -D-glucopyranoside C₁₆H₂₁NO₆ 323.345

Cryst. (EtOH). Mp 283-286° dec.

Me glycoside, 4,6-O-ethylidene, N-Ac: Methyl 3-acetamido-3-deoxy-4,6-O-ethylidene- α -D-glucopyranoside C₁₁H₁₉NO₆ 261.274

Cryst. (MeOH). Subl. 320.

Me glycoside, N,2,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl-3-deoxy- α -D-glucopyranoside [2595-38-2]

C₁₅H₂₃NO₉ 361.348

Cryst. (EtOH). Mp 182-184°. $[\alpha]_D^{20} +109$ (c, 1.1 in CHCl₃).

 β -D-Pyranose-form

N-Ac: 3-Acetamido-3-deoxy- β -D-glucopyranose

C₈H₁₅NO₆ 221.21

Needles (EtOH aq.). Mp 204-205° dec. $[\alpha]_D +37$ (5 min.) $\rightarrow +50$ (equilib.) (c, 2.5 in H₂O).

Me glycoside: Methyl 3-amino-3-deoxy- β -D-glucopyranoside [14133-36-9]

C₇H₁₅NO₅ 193.199

Cryst. (EtOH). Mp 205-207° (201-202°). $[\alpha]_D^{20} -38$ (c, 2 in H₂O).

Me glycoside, N-Ac: Methyl 3-acetamido-3-deoxy- β -D-glucopyranoside

C₉H₁₇NO₆ 235.236

Mp 214-215°. $[\alpha]_D -21$ (H₂O).

Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 3-acetamido-4,6-O-benzylidene-3-deoxy- β -D-glucopyranoside

C₁₆H₂₁NO₆ 323.345

Subl. 277-278. $[\alpha]_D^{23} -80.8$ (c, 0.5 in DMF).

Me glycoside, 4,6-O-benzylidene, N,2-di-Ac: Methyl 3-acetamido-2-O-acetyl-4,6-O-benzylidene-3-deoxy- β -D-glucopyranoside

C₁₈H₂₃NO₇ 365.382

Subl. 276. $[\alpha]_D^{21} -96.2$ (c, 1.0 in CHCl₃).

Me glycoside, N,2,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl-3-deoxy- β -D-glucopyranoside [4338-42-5]

C₁₅H₂₃NO₉ 361.348

Cryst. (C₆H₆/petrol). Mp 156°. $[\alpha]_D^{22} -21.4$ (c, 2.5 in CHCl₃).

 α -D-Furanose-form

1,2-O-Isopropylidene, N-Ac: 3-Acetamido-3-deoxy-1,2-O-isopropylidene- α -D-glucopyranose

C₁₁H₁₉NO₆ 261.274

$[\alpha]_D^{24} -2$ (c, 1.5 in CHCl₃).

1,2:5,6-Di-O-Isopropylidene, N-Ac: 3-Acetamido-3-deoxy-1,2:5,6-di-O-isopropylidene- α -D-glucopyranose

C₁₄H₂₃NO₆ 301.339

Mp 76-77° Mp 108-109° (double Mp).

$[\alpha]_D -30$ (c, 3.5 in CHCl₃).

Cron, M.J. et al., *J.A.C.S.*, 1958, **80**, 2342; 4115; 4741 (isol, struct)

Lindberg, B. et al., *Acta Chem. Scand.*, 1959, **13**, 1226 (β -D-Me pyr, β -D-Me pyr tetra-Ac)

Foster, A.B. et al., *Adv. Carbohydr. Chem.*, 1959, **14**, 213 (rev)

Baer, H.H. et al., *J.A.C.S.*, 1961, **83**, 1882

(struct, β -D-N-Ac)

Guthrie, R.D. et al., *J.C.S.*, 1961, 4166 (α -D-Me pyr benzylidene, α -D-Me pyr benzylidene N-Ac, α -D-Me pyr tetra-Ac)

Chittenden, G.J.F. et al., *Carbohydr. Res.*, 1965, **1**, 196 (α -D-Me pyr benzylidene, α -D-Me pyr ethylidene N-Ac, β -D-Me pyr benzylidene di-Ac, β -D-Me pyr tetra-Ac)

Meyer zu Reckendorf, W. et al., *Angew. Chem., Int. Ed.*, 1966, **5**, 967 (β -D-N-Ac)

Bishop, E.O. et al., *Carbohydr. Res.*, 1967, **5**, 477 (α -D-Me pyr benzylidene N-Ac)

Lichtenthaler, F.W. et al., *Chem. Ber.*, 1969, **102**, 994 (β -D-Me pyr tetra-Ac, pmr)

Horton, D. et al., *The Amino Sugars*, (Ed. Jeanloz, R.W.), Academic Press, 1969, **1A**, 1 (rev)

Richardson, A.C. et al., *Methods Carbohydr. Chem.*, 1972, **6**, 218 (β -D-pyr-N-Ac, α -D-fur diisopropylidene N-Ac)

Lichtenthaler, F.W. et al., *Methods Carbohydr. Chem.*, 1972, **6**, 250 (β -D-Me pyr)

Trnka, T. et al., *Coll. Czech. Chem. Comm.*, 1975, **40**, 3038 (β -form, synth)

Uchida, K. et al., *Tetrahedron*, 1975, **31**, 2315 (cmr)

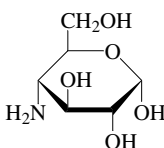
Dolak, L.A. et al., *J. Antibiot.*, 1980, **33**, 900 (isol)

Horton, D. et al., *The Carbohydrates*, 2nd Ed., Academic Press, 1980, **1B**, 644 (rev)

Fusetani, N. et al., *Experientia*, 1987, **43**, 464 (isol)

4-Amino-4-deoxyglucose, 8CI

A-268

 α -D-Pyranose-formC₆H₁₃NO₅ 179.172**D-form** [24558-84-7]

A constit. of antibiotics Apramycin, A-787 and P-2563 from *Pseudomonas fluorescens*.

2,3:5,6-Di-O-isopropylidene, di-Me acetal: [28441-69-2]

C₁₄H₂₇NO₆ 305.37

Syrup.

D-Pyranose-form

Hydrochloride: [28535-73-1]

Hygroscopic powder (Et₂O). $[\alpha]_D^{20} +25.2$ (c, 1 in H₂O).

 α -D-Pyranose-form

N-Ac: 4-Acetamido-4-deoxy- α -D-glucopyranose

[24558-81-4]

C₈H₁₅NO₆ 221.21

Cryst. (EtOH). Mp 190-191°. $[\alpha]_D^{20} +91$ $\rightarrow +66$ (c, 1.0 in H₂O).

1,2,3,4N,6-Penta-Ac: 4-Acetamido-1,2,3,6-tetra-O-acetyl-4-deoxy- α -D-glucopyranose

[4337-07-9]

C₁₆H₂₃NO₁₀ 389.358

Syrup. $[\alpha]_D^{20} +83$ (c, 0.5 in CHCl₃). No anomeric config. assigned but presumably the α -anomer since the props. differ from those of the β -anomer below.

Me glycoside: Methyl 4-amino-4-deoxy- α -D-glucopyranoside

[4097-95-4]

C₇H₁₅NO₅ 193.199

Cryst. Mp 159-160°. $[\alpha]_D^{25} +148$ (c, 1.1 in H₂O).

Me glycoside, 2,3,4N,6-tetra-Ac: Methyl 4-acetamido-2,3,6-tri-O-acetyl-4-deoxy- α -D-glucopyranoside

[2595-35-9]

C₁₅H₂₃NO₉ 361.348

Cryst. (CHCl₃/hexane). Mp 139-140°. $[\alpha]_D^{25} +147.2$ (c, 1.0 in CHCl₃).

 β -D-Pyranose-form

1,2,3,4N,6-Penta-Ac: 4-Acetamido-1,2,3,6-tetra-O-acetyl-4-deoxy- β -D-glucopyranose

[39937-65-0]

Needles (Me₂CO/Et₂O/petrol). Mp 164-166°. $[\alpha]_D^{20} +21$ (c, 1.0 in CHCl₃).

1,2,3,4N,6-Pentabenzoyl: 4-Benzamido-1,2,3,6-tetra-O-benzoyl-4-deoxy- β -D-glucopyranose

[39937-67-2]

C₄₁H₃₃NO₁₀ 699.712

Cryst. (EtOH). Mp 197-204°. $[\alpha]_D^{22} +32.8$ (c, 1.0 in CHCl₃).

Me glycoside, 2,3,4N,6-tetra-Ac: Methyl 4-acetamido-2,3,6-tri-O-acetyl-4-deoxy- β -D-glucopyranoside

[21209-55-2]

C₁₅H₂₃NO₉ 361.348

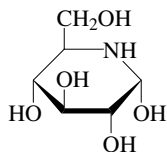
Cryst. (THF). Mp 196-197°. $[\alpha]_D^{25} +7.9$ (c, 0.95 in CHCl₃).

[24558-83-6, 39937-73-0]

Paulsen, H. et al., *Chem. Ber.*, 1970, **103**, 1599; 1972, **105**, 3456 (synth, pmr)

Uchida, K. et al., *Tetrahedron*, 1975, **31**, 2315 (synth, cmr)

O'Connor, S. et al., *J.O.C.*, 1976, **41**, 2087 (synth, ms, occur)

5-Amino-5-deoxyglucose, 9CI, 8CI A-269 α -D-Pyranose-form $C_6H_{13}NO_5$ 179.172**D-Pyranose-form****Nojirimycin**

[15218-38-9]

Amino sugar antibiotic. Produced by several *Streptomyces* spp. Primarily active against gram-positive bacteria. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane. Mp 126-130° dec. $[\alpha]_D^{24} +100$ (3 min.) \rightarrow +73.5 (20 hr.).

► LD₅₀ (mus, ipr) 1600 mg/kg; LD₅₀ (mus, ivn) 1250 mg/kg. LZ5655000

1-Deoxy: See 2-(Hydroxymethyl)-3,4,5-pi-peridinetriol, H-175

L-Pyranose-form

Mp 122-124°. $[\alpha]_D^{20} -72.1$ (c, 0.3 in H_2O).

Inouye, S. *et al.*, *J. Antibiot.*, 1966, **19**, 288

(struct, nmr)

Saeki, H. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 962 (synth)

Inouye, S. *et al.*, *Tetrahedron*, 1968, **24**, 2125 (ir, ms, nmr, struct, synth)

Ger. Pat., 1978, 2 658 561; *CA*, **89**, 152713 (use)

Kinast, G. *et al.*, *Angew. Chem., Int. Ed.*, 1981, **20**, 805 (bibl)

Austrian Pat., 1982, 366 032; *CA*, **97**, 90401

(synth)

Vasella, A. *et al.*, *Helv. Chim. Acta*, 1982, **65**,

1134 (synth)

Ezure, Y. *et al.*, *Agric. Biol. Chem.*, 1985, **49**,

1119 (isol, bibl)

Iida, H. *et al.*, *J.O.C.*, 1987, **52**, 3337 (synth)

Tsuda, Y. *et al.*, *Heterocycles*, 1988, **27**, 63

(synth)

Chida, N. *et al.*, *Carbohydr. Res.*, 1992, **237**, 185

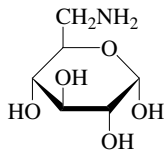
(synth)

Dondoni, A. *et al.*, *Tetrahedron*, 1993, **49**, 2939

(synth, L-form)

Moutel, S. *et al.*, *J.C.S. Perkin I*, 1999, 1403-

1406 (synth)

6-Amino-6-deoxyglucose, 9CI A-270 α -D-Pyranose-form $C_6H_{13}NO_5$ 179.172**D-form** [576-47-6]

Hydrol. prod. of Kanamycin A, K-3.

Hydrochloride: [55324-97-5]

Cryst. (AcOH). Mp 161-162° dec. $[\alpha]_D^{25} +23 \rightarrow +50.1$ (c, 1 in H_2O).

► LZ6667000

N-Ac: 6-Acetamido-6-deoxy-D-glucose [55701-80-9]

 $C_8H_{15}NO_6$ 221.21

Cryst. (EtOH aq.). Mp 196-198° dec.

$[\alpha]_D^{25} +44 \rightarrow +34.9$ (c, 1 in H_2O).

Di-Et dithioacetal: [24384-90-5]

 $C_{10}H_{23}NO_4S_2$ 285.428

Cryst. (EtOH) (as hydrochloride). Mp

119-121° (as hydrochloride). $[\alpha]_D^{20} -25.5$

(c, 0.5 in H_2O).

 α -D-Pyranose-form [103119-91-1]

Penta-Ac: 6-Acetamido-1,2,3,4-tetra-O-

acetyl-6-deoxy- α -D-glucopyranose

[55443-23-7]

 $C_{16}H_{23}NO_{10}$ 389.358

Mp 141-142°. $[\alpha]_D^{23} +92.6$ (c, 0.4 in

 $CHCl_3$).

Me glycoside: Methyl 6-amino-6-deoxy- α -D-glucopyranoside

[14257-74-0]

 $C_7H_{15}NO_5$ 193.199

Cryst. (MeOH/Et₂O) (as hydrochloride). Mp 195-200° dec. (hydrochloride).

$[\alpha]_D^{25} +147$ (c, 1 in H_2O). CAS no. refers

to hydrochloride.

Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-amino-6-deoxy- α -D-glucopyranoside

[109410-55-1]

 $C_{13}H_{21}NO_8$ 319.311

Cryst. (MeOH/Et₂O) (as hydrochloride). Mp 200-210° dec. (hydrochloride).

$[\alpha]_D^{25} +121$ (c, 1.3 in H_2O). CAS no.

refers to hydrochloride.

Me glycoside, 2,3,4-tribenzyl: Methyl 2,3,4-tri-O-benzyl-6-amino-6-deoxy- α -D-glucopyranoside

[72471-11-5]

 $C_{28}H_{33}NO_5$ 463.572

Solid. Mp 86-89°. $[\alpha]_D^{22} +67$ (c, 1.1 in

 $CHCl_3$). **β -D-Pyranose-form**

Penta-Ac: 6-Acetamido-1,2,3,4-tetra-O-

acetyl-6-deoxy- β -D-glucopyranose

 $C_{16}H_{23}NO_{10}$ 389.358

Mp 114-120°. $[\alpha]_D^{25} +9.9$ (c, 0.8 in

 $CHCl_3$).

Cron, M.J. *et al.*, *J.A.C.S.*, 1958, **80**, 2342 (isol, D-N-Ac, α -D-penta-Ac, β -D-penta-Ac)

Cramer, F. *et al.*, *Chem. Ber.*, 1959, **92**, 384-391

(D-N-Ac, α -D-Me pyr, α -D-Me pyr tri-Ac)

Cramer, F. *et al.*, *Methods Carbohydr. Chem.*,

1962, **1**, 242-246 (D-N-Ac, α -D-Me pyr tri-Ac)

Hardegger, E. *et al.*, *Helv. Chim. Acta*, 1963, **46**,

282-287 (D-form, synth, D-N-Ac)

Jarý, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1969,

34, 1452-1458 (D-form, synth, di-Et

dithioacetal)

Csuk, R. *et al.*, *Carbohydr. Res.*, 1985, **140**, 167-

168 (synth, D-N-Ac)

Ortiz Mellet, C. *et al.*, *J. Carbohydr. Chem.*,

1995, **14**, 1133-1152 (α -D-Me gly 2,3,4-tri-Ac)

Kobertz, W.R. *et al.*, *J.O.C.*, 1996, **61**, 1894-

1897 (α -D-Me pyr, tribenzyl, synth, ir, pmr,

cmr)

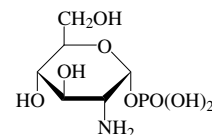
Tagmose, T.M. *et al.*, *Chem. Eur. J.*, 1997, **3**,

453-462 (α -D-Me pyr, tribenzyl, synth, pmr,

cmr)

2-Amino-2-deoxyglucose A-271**1-(dihydrogen phosphate)**

Glucosylamine 1-phosphate

 α -Pyranose-form $C_6H_{14}NO_8P$ 259.152**D-form**

Mp 178-179° dec. $[\alpha]_D -20$ (calc) (H_2O).

 α -D-form

N-Ac: 2-Acetamido-2-deoxy- α -D-glucose 1-

(dihydrogen phosphate)

 $C_8H_{16}NO_9P$ 301.189

$[\alpha]_D +79$ (H_2O) (as mono-K salt).

N-Ac, di-K salt:

Monohydrate. $[\alpha]_D^{25} +76.1$ (c, 3.4 in

 H_2O).

3,4,6-Tri-O-Ac, diphenyl ester, hydrochloride: Mp 137-138°. $[\alpha]_D^{23} +110$ (c, 2.44 in

MeOH).

 β -D-form

N-Ac: 2-Acetamido-2-deoxy- β -D-glucose

1-(dihydrogen phosphate)

 $C_8H_{16}NO_9P$ 301.189

Mp 170-171° dec. (as mono-Na salt).

$[\alpha]_D -1.7$ (H_2O).

N-Ac, di-Na salt: $[\alpha]_D^{25} -1.6$ (c, 2.9 in H_2O).

Maley, F. *et al.*, *J.A.C.S.*, 1956, **78**, 5303

Buluja, G. *et al.*, *J.C.S.*, 1960, 4678

O'Brien, P.J. *et al.*, *Biochim. Biophys. Acta*,

1964, **86**, 628**2-Amino-2-deoxyglucose** A-272**3-(dihydrogen phosphate)**

Glucosylamine 3-phosphate

 $C_6H_{14}NO_8P$ 259.152**D-form**

Mp 180°. $[\alpha]_D^{20} +70$ (c, 0.03 in H_2O).

 α -D-Pyranose-form

Benzyl glycoside, 4,6-O-benzylidene: Ben-

zyl 2-amino-4,6-O-benzylidene-2-deoxy-

α -D-glucopyranoside 3-(dihydrogen

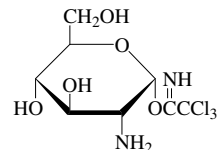
phosphate)

 $C_{20}H_{24}NO_8P$ 437.385

Mp 212-213°. $[\alpha]_D^{20} +40$ (c, 0.25 in DMF).

Lambert, R. *et al.*, *Chem. Ber.*, 1963, **96**, 2350

Westphal, O. *et al.*, *Angew. Chem., Int. Ed.*,

1963, **2**, 327**2-Amino-2-deoxyglucosyl tri-** A-273**chloroacetimidate** α -D-Pyranose-form $C_8H_{13}Cl_3N_2O_5$ 323.559

α-D-Pyranose-form

3,4,6-Tri-Ac, N-trichloroacetyl: 3,4,6-Tri-O-acetyl-2-deoxy-2-trichloroacetamido-α-D-glucopyranosyl trichloroacetimidate [161545-19-3]
C₁₆H₁₈Cl₆N₂O₉ 595.042
Mp 160-161°. [α]_D²⁵ +75 (c, 1.0 in CHCl₃).

3,4,6-Tribenzyl, N-trichloroacetyl: 3,4,6-Tri-O-benzyl-2-deoxy-2-trichloroacetamido-α-D-glucopyranosyl trichloroacetimidate [161545-22-8]
C₃₁H₃₀Cl₆N₂O₆ 739.304
[α]_D²⁵ +77 (c, 1.0 in CHCl₃).

β-D-Pyranose-form

3,4,6-Tri-Ac, N-phthalimide: 3,4,6-Tri-O-acetyl-2-deoxy-2-phthalimido-β-D-glucopyranosyl trichloroacetimidate C₂₂H₂₁Cl₃N₂O₁₀ 579.773
Mp 146°. [α]_D²⁵ +76 (c, 1.0 in CHCl₃).

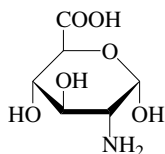
3,4,6-Tri-Ac, N-dithiasuccinimide deriv.: 3,4,6-Tri-O-acetyl-2-deoxy-2-(dithiasuccinimido)-β-D-glucopyranosyl trichloroacetimidate [162894-83-9]
C₁₆H₁₇Cl₃N₂O₁₀S₂ 567.808
[α]_D²⁵ +35.3 (c, 1.1 in CHCl₃).

Grundler, G. *et al.*, *Carbohydr. Res.*, 1985, **135**, 203 (β-D-tri-Ac N-phthalimide)
Blatter, G. *et al.*, *Carbohydr. Res.*, 1994, **260**, 189 (α-D tri-Ac N-trichloroacetyl)
Meinjohns, E. *et al.*, *J.C.S. Perkin 1*, 1995, 405 (β-D tri-Ac N-dithiasuccinimide)
Coutant, C. *et al.*, *J.C.S. Perkin 1*, 1995, 1573 (α-D-tribenzyl trichloroacetyl)

2-Amino-2-deoxyglucuronic acid, 9CI, 8CI

A-274

Glucosaminuronic acid



α-D-Pyranose-form

C₆H₁₁NO₆ 193.156**D-form** [13237-23-5]

Constit. of an extracellular polysaccharide occurring in culture fluids of two black yeast-like fungi *Rhinocladiella elatior* and *Rhinocladiella mansorii*. Present in the polysaccharide of *Haemophilus influenzae* type d. Associated as a polym. Mp 172°. [α]_D²⁰ +55 (H₂O).

4-Me, N-Ac: 2-Acetamido-2-deoxy-4-O-methyl-D-glucuronic acid C₉H₁₅NO₇ 249.22
Component of the glycopeptides *Flavobacterium columnare*.

α-D-Pyranose-form

Benzyl glycoside, 3,4-dibenzyl, N-Ac: Benzyl 2-acetamido-3,4-di-O-benzyl-2-deoxy-α-D-glucopyranosiduronic acid [69940-06-3]
C₂₉H₃₁NO₇ 505.566
Cryst. (Me₂CO/hexane). Mp 210-212.5°. [α]_D¹⁸ +80.4 (c, 1.3 in Me₂CO).

Benzyl glycoside, N-benzyloxycarbonyl: Benzyl N-benzyloxycarbonyl-2-deoxy-α-D-glucopyranosiduronic acid C₂₁H₂₃NO₈ 417.415
Mp 186° dec. [α]_D²⁰ +132.3 (c, 2.5 in Py).

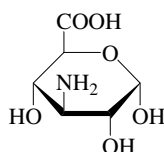
D-Furanose-form

6,3-Lactone, N-Ac: 2-Acetamido-2-deoxy-D-mannofuranurono-6,3-lactone C₈H₁₁NO₆ 217.178
Mp 175-178°. [α]_D²¹ +44 (c, 0.6 in H₂O).

Heyns, K. *et al.*, *Chem. Ber.*, 1955, **88**, 188 (synth, α-D-benzyl pyr N-benzyloxycarbonyl)
Horton, D. *et al.*, *Adv. Carbohydr. Chem.*, 1960, **15**, 159 (rev)
Williamson, A.R. *et al.*, *J. Biol. Chem.*, 1963, **238**, 2255 (isol)
Hanessian, S. *et al.*, *J. Biol. Chem.*, 1964, **239**, 2758 (occur)
Karakawa, W.W. *et al.*, *J. Immunol.*, 1972, **108**, 1199 (occur)
Kitagawa, I. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 3825 (α-D-benzyl pyr N-Ac dibenzyl)
Sandford, P.A. *et al.*, *J. Appl. Polym. Sci.*, 1978, **22**, 701; *CA*, **89**, 1978z (isol)
Dakaras, E. *et al.*, *Carbohydr. Res.*, 1982, **103**, 176 (synth, lactone N-Ac)
Vinogradov, E. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2653-2658 (4-Me N-Ac, occur)

3-Amino-3-deoxyglucuronic acid

A-275



α-D-Pyranose-form

C₆H₁₁NO₆ 193.156**D-form** [37073-95-3]

Amorph. solid. [α]_D²⁰ +28.5 (c, 0.6 in H₂O).

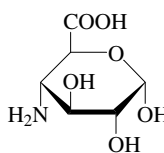
α-D-Furanose-form

1,2-Isopropylidene: 3-Amino-3-deoxy-1,2-O-isopropylidene-α-D-glucufuranuronic acid [37073-93-1]
C₉H₁₅NO₆ 233.221
Needles (dioxan). Mp 206-209° dec. [α]_D²⁰ -16.6 (c, 1.0 in H₂O).

Paulsen, H. *et al.*, *Chem. Ber.*, 1972, **105**, 1524 (D-pyr-form, synth, α-D-fur isopropylidene)

4-Amino-4-deoxyglucuronic acid

A-276



α-D-Pyranose-form

C₆H₁₁NO₆ 193.156**D-form**

The glucuronamide has been identified as the carbohydrate moiety of the nucleoside antibiotic Gougerotin, G-563.

α-D-Pyranose-form

Me glycoside: Methyl 4-amino-4-deoxy-α-D-glucopyranosiduronic acid, 8CI [26302-28-3]
C₇H₁₃NO₆ 207.183
Cryst. + ½ H₂O (H₂O). Mp 250°. [α]_D²⁶ +95 (c, 1.1 in H₂O).

Me glycoside, N-Ac: Methyl 4-acetamido-4-deoxy-α-D-glucopyranosiduronic acid, 8CI [26398-56-1]
C₉H₁₅NO₇ 249.22
Cryst. +1EtOH (EtOH). Mp 133-137°. [α]_D²⁶ +117 (c, 0.5 in H₂O).

Me glycoside, N-Ac, Me ester: [26302-29-4]
C₁₀H₁₇NO₇ 263.247
Needles (EtOH/petrol). Mp 159-160°. [α]_D²⁶ +92 (c, 0.79 in CHCl₃).

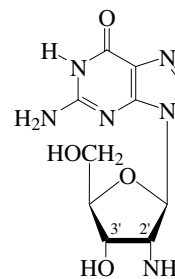
Me glycoside, N,2,3-tri-Ac, Me ester: [26398-57-2]
C₁₄H₂₁NO₉ 347.321
Foam. [α]_D²⁶ +107 (c, 1.3 in CHCl₃).

Kotick, M.P. *et al.*, *Carbohydr. Res.*, 1969, **11**, 369 (Me gly, Me gly N-Ac, Me gly Me ester N-Ac, Me gly Me ester tri-Ac)
Lichtenthaler, F.W. *et al.*, *Tet. Lett.*, 1975, 665 (glucuronamide, occur)

2'-Amino-2'-deoxyguanosine, 9CI

A-277

9-(2-Amino-2-deoxy-β-D-ribofuranosyl)-guanine, 2AG [60966-26-9]

C₁₀H₁₄N₆O₄ 282.258

Nucleoside antibiotic. Isol. from *Enterobacter cloacae*. Possesses antitumour and limited antibacterial activity. Needles + ½H₂O (H₂O). Sol. H₂O; poorly sol. butanol, hexane. Mp 252-254° dec. [α]_D²⁶ -56.6 (c, 0.5 in H₂O). λ_{max} 256 (ε 12700); 280 (sh) (ε 8800) (pH 2) (Derep). λ_{max} 256 (ε 12000); 268 (ε 12100) (pH 12) (Derep). λ_{max} 252 (ε 13900); 275 (sh) (ε 9500) (H₂O at pH 7) (Derep). λ_{max} 255 (ε 13000) (-12) (Berdy).

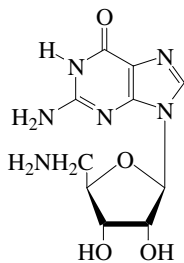
► MF8752000

Nakanishi, T. *et al.*, *Agric. Biol. Chem.*, 1974, **38**, 2465 (isol, ir, pmr, props)
Nakanishi, T. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 2955 (cmr, struct)
Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 240 (synth)
Sato, A. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 821 (synth)
Imazawa, M. *et al.*, *J.O.C.*, 1979, **44**, 2039 (synth, uv, ir, pmr, cd)
Morisawa, H. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 3191 (synth)

Patnaik, L.N. *et al.*, *J. Biol. Phys.*, 1984, **12**, 12 (conform)
Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

5'-Amino-5'-deoxyguanosine, 9CI A-278

9-(5-Amino-5-deoxy-β-D-ribofuranosyl)-guanine
[4099-84-7]



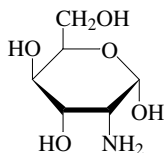
C₁₀H₁₄N₆O₄ 282.258
Cryst. + H₂O (H₂O). Mp 219-220°. [α]_D -41.6 (c, 0.5 in DMSO).

Jahn, W. *et al.*, *Chem. Ber.*, 1965, **98**, 1705-1708 (synth)

Schatka, K. *et al.*, *Chem. Ber.*, 1972, **105**, 3824-3832 (synth, uv)

Dean, D.K. *et al.*, *Synth. Commun.*, 2002, **32**, 1517-1521 (synth, uv, pmr, cmr)

2-Amino-2-deoxygulose, 9CI A-279
Gulosamine
[26315-48-0]



α-D-Pyranose-form

C₆H₁₃NO₅ 179.172

D-form

Obt. by acid hydrol. of Streptothricin, S-86.

Hydrochloride: Mp 152-162° Mp 165-170° dec. [α]_D +5.6 → -18.7 (c, 2.9 in H₂O).

N-Ac: 2-Acetamido-2-deoxy-D-gulose

C₈H₁₅NO₆ 221.21

Cryst. (EtOH). Mp 125-126°. [α]_D -55 → -59 (H₂O). [α]_D -66 (H₂O).

N-Me: 2-Deoxy-2-(N-methylamino)-D-gulose

C₇H₁₅NO₅ 193.199

Isol. from acid hydrol. of the antibiotic LL-AC 541 prod. by *Streptomyces hygroscopicus*. Active against Gram-negative and Gram-positive bacteria. Mp 155° (as hydrochloride). [α]_D²⁵ +39 → -22 (c, 0.79 in H₂O).

α-D-Pyranose-form

Me glycoside, N-Ac: Methyl 2-acetamido-2-deoxy-α-D-gulopyranoside

C₉H₁₇NO₆ 235.236

Mp 79-82°. [α]_D²⁵ +72 (c, 0.74 in MeOH).

Me glycoside, tetra-Ac: Methyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy-α-D-gulopyranoside

C₁₅H₂₃NO₉ 361.348

Mp 123-124°. [α]_D²¹ +76 (c, 0.91 in CHCl₃).

β-D-Pyranose-form

Me glycoside, tetra-Ac: Methyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy-β-D-gulopyranoside

C₁₅H₂₃NO₉ 361.348

Mp 116-119°. [α]_D²³ -54 (CHCl₃).

L-form

A constit. of Adenomycin, A-30.

Hydrochloride: Mp 153-164° dec. [α]_D -8.5 → +17.8 (H₂O).

Van Tamelen, E.E. *et al.*, *J.A.C.S.*, 1956, **78**, 4817 (isol)

Tarasiejska, Z. *et al.*, *J.A.C.S.*, 1957, **79**, 2660 (D-form, synth, α-D-Me pyr N-Ac, α-D-Me pyr tetra-Ac)

Sowden, J.C. *et al.*, *J.O.C.*, 1961, **26**, 2153 (D-form, synth)

Jeanloz, R.W. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 231 (synth)

Borders, D.B. *et al.*, *Tet. Lett.*, 1967, 4187 (α-D-N-Me, isol)

Yaguchi, M. *et al.*, *Can. J. Biochem.*, 1970, **48**, 386 (chromatog)

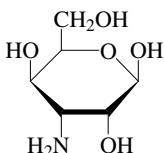
Perry, M.B. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 29 (D-N-Ac)

Ogita, T. *et al.*, *Tet. Lett.*, 1980, **21**, 3203

(L-form, isol)

Suami, T. *et al.*, *Carbohydr. Res.*, 1985, **135**, 319 (synth)

3-Amino-3-deoxygulose A-280



β-D-Pyranose-form

C₆H₁₃NO₅ 179.172

β-D-Pyranose-form

Me glycoside: Methyl 3-amino-3-deoxy-β-D-gulopyranoside
[122291-79-6]

C₇H₁₅NO₅ 193.199

Syrup (as hydrochloride). CAS no. refers to hydrochloride.

α-D-Furanose-form

1,2-O-Isopropylidene, N-Ac: 3-Acetamido-3-deoxy-1,2-O-isopropylidene-α-D-gulofuranose

[34296-93-0]

C₁₁H₁₉NO₆ 261.274

Cryst. (MeOH/Et₂O). Mp 146-147°.

[α]_D +14 (c, 1.0 in MeOH).

1,2:5,6-Di-O-isopropylidene, N-Ac:

3-Acetamido-3-deoxy-1,2:5,6-di-O-isopropylidene-α-D-gulofuranose

[34296-91-8]

C₁₄H₂₃NO₆ 301.339

Cryst. (CHCl₃/petrol). Mp 141.5-142.5°.

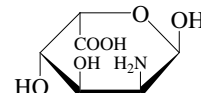
[α]_D -45 (c, 1.0 in CHCl₃).

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1971, **16**, 303 (α-D-fur N-Ac derivs, pmr)

Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, **42**, 605 (β-D-Me pyr, pmr)

2-Amino-2-deoxyguluronic acid, 9CI A-281

Gulosaminuronic acid
[51166-45-1]



α-L-form

C₆H₁₁NO₆ 193.156

L-form

Constit. of the cell wall of *Halococcus morrhuae* and of *Vibrio parahaemolyticus* K15 antigen.

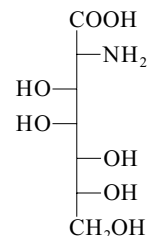
Torii, M. *et al.*, *Eur. J. Biochem.*, 1973, **37**, 401 (isol)

Reistad, R. *et al.*, *Carbohydr. Res.*, 1974, **36**, 420 (isol)

Reistad, R. *et al.*, *Arch. Microbiol.*, 1975, **102**, 71; *CA*, **82**, 167189y (occur)

Steber, J. *et al.*, *Arch. Microbiol.*, 1979, **123**, 209; *CA*, **92**, 18498c (isol)

2-Amino-2-deoxy-D-glycero-D-galacto-heptonic acid A-282



C₇H₁₅NO₇ 225.198

Cryst. + 1H₂O (MeOH aq.). Mp 221-223° dec. [α]_D -6.6 (c, 1 in 0.1M NaOH).

[α]_D -13 (12M HCl).

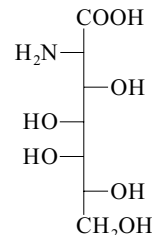
N-Benzyl:

C₁₄H₂₁NO₇ 315.322

Cryst. + 1H₂O (Me₂CO aq.). Mp 175-177° dec. [α]_D +0.4 (c, 0.5 in 0.1M NaOH). [α]_D -5 (12M HCl).

Peréz, J.A.G. *et al.*, *Carbohydr. Res.*, 1983, **114**, 158

2-Amino-2-deoxy-D-glycero-L-gluco-heptonic acid A-283



C₇H₁₅NO₇ 225.198

Cryst. + 1H₂O (H₂O). Mp 236-238° dec. [α]_D +1.1 (c, 1 in 0.1M NaOH). [α]_D +11.1 (12M HCl).

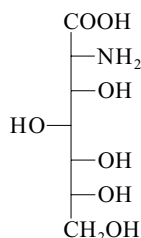
N-Benzyl:

C₁₄H₂₁NO₇ 315.322

Mp 229-231° dec. [α]_D -47.1 (c, 1 in 0.1M NaOH). [α]_D -13.5 (12M HCl).

Pérez, J.A.G. *et al.*, *Carbohydr. Res.*, 1983, **114**, 158

2-Amino-2-deoxy-D-glycero-D-gulo-heptonic acid A-284

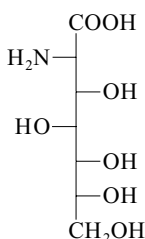


$C_7H_{15}NO_7$ 225.198
Cryst. (MeOH aq.). Mp 155-157° dec. $[\alpha]_D$ 0 (c, 1 in 0.1M NaOH). $[\alpha]_D$ -17.2 (12M HCl).

N-Benzyl:
 $C_{14}H_{21}NO_7$ 315.322
Cryst. (H₂O). Mp 180-182° dec. $[\alpha]_D$ +9.2 (c, 1 in 0.1M NaOH). $[\alpha]_D$ -7.3 (12M HCl).

Peréz, J.A.G. *et al.*, *Carbohydr. Res.*, 1983, **114**, 158

2-Amino-2-deoxy-D-glycero-D-ido-heptonic acid A-285

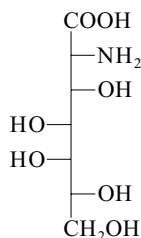


$C_7H_{15}NO_7$ 225.198
Cryst. (MeOH aq.). Mp 213-215° dec. $[\alpha]_D$ -6.2 (c, 0.5 in 1M NaOH). $[\alpha]_D$ +4.4 (12M HCl).

N-Benzyl:
 $C_{14}H_{21}NO_7$ 315.322
Cryst. (Me₂CO aq.). Mp 163-163.5° dec. $[\alpha]_D$ -14 (c, 1 in 0.1M NaOH). $[\alpha]_D$ -10.3 (12M HCl).

Peréz, J.A.G. *et al.*, *Carbohydr. Res.*, 1983, **114**, 158

2-Amino-2-deoxy-D-glycero-L-manno-heptonic acid A-286



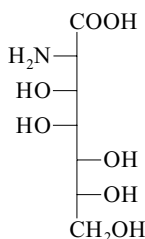
$C_7H_{15}NO_7$ 225.198

Cryst. (MeOH aq.). Mp 184-186°. $[\alpha]_D$ +4.9 (c, 1 in 0.1M NaOH). $[\alpha]_D$ -6.2 (12M HCl).

N-Benzyl:
 $C_{14}H_{21}NO_7$ 315.322
Cryst. (EtOH aq.). Mp 205-207° dec. $[\alpha]_D$ +10 (c, 1 in 0.1M NaOH). $[\alpha]_D$ +0.8 (12M HCl).

Peréz, J.A.G. *et al.*, *Carbohydr. Res.*, 1983, **114**, 158

2-Amino-2-deoxy-D-glycero-D-talo-heptonic acid A-287

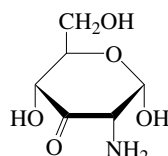


$C_7H_{15}NO_7$ 225.198
Cryst. (MeOH aq.). Mp 223-225° dec. $[\alpha]_D$ -3.4 (c, 0.5 in 0.1M NaOH). $[\alpha]_D$ +3.2 (12M HCl).

N-Benzyl:
 $C_{14}H_{21}NO_7$ 315.322
Cryst. + 1/2 H₂O (H₂O). Mp 189-191° dec. $[\alpha]_D$ -9.8 (c, 0.5 in 0.1M NaOH). $[\alpha]_D$ +2.4 (12M HCl).

Peréz, J.A.G. *et al.*, *Carbohydr. Res.*, 1983, **114**, 158

2-Amino-2-deoxy-ribo-hexo-pyranos-3-ulose A-288



α -D-Pyranose-form

$C_6H_{11}NO_5$ 177.157

α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-ribo-hexopyranosid-3-ulose
 $C_{16}H_{19}NO_6$ 321.329
Mp 222°. $[\alpha]_D^{25}$ +128 (c, 1.0 in DMF).

Me glycoside, 4,6-O-benzylidene, N-benzoyl: Methyl 2-benzamido-4,6-O-benzylidene-2-deoxy- α -D-ribo-hexopyranosid-3-ulose
 $C_{21}H_{21}NO_6$ 383.4
Mp 204-206°. $[\alpha]_D^{25}$ +114 (DMF).

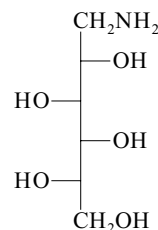
β -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- β -D-ribo-hexopyranosid-3-ulose
 $C_{16}H_{19}NO_6$ 321.329
Mp 204-205°. $[\alpha]_D$ -49.8 (c, 1.0 in DMSO).

Baker, B.R. *et al.*, *J.O.C.*, 1965, **30**, 2306

Onedera, K. *et al.*, *Carbohydr. Res.*, 1968, **6**, 276
Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1972, 2596
Kumazawa, S. *et al.*, *Angew. Chem., Int. Ed.*, 1973, **12**, 921

1-Amino-1-deoxyiditol A-289



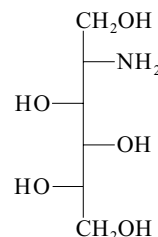
$C_6H_{15}NO_5$ 181.188

L-form

N-Ac: [55780-32-0]
 $C_8H_{17}NO_6$ 223.225
Syrup.

Kiely, D.E. *et al.*, *J.O.C.*, 1975, **40**, 2630 (N-Ac)

2-Amino-2-deoxyiditol A-290
5-Amino-5-deoxyiditol



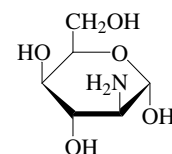
$C_6H_{15}NO_5$ 181.188

L-form

2,3,6-Tribenzyl: 2-Amino-1,4,5-tri-O-benzyl-2-deoxy-L-iditol
[22430-18-8]
 $C_{27}H_{33}NO_5$ 451.561
Needles (diisopropyl ether). Mp 90-92°. $[\alpha]_D^{23}$ -25.1 (c, 1.0 in CHCl₃).

Gigg, R. *et al.*, *J.C.S. (C)*, 1968, 2661 (tribenzyl)

2-Amino-2-deoxyidose A-291
Idosamine



α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form

Hydrochloride: $[\alpha]_D^{23}$ +1 (c, 3.0 in H₂O).

N-Ac: 2-Acetamido-2-deoxy-D-idose
[23655-50-7]
 $C_8H_{15}NO_6$ 221.21
Syrup. $[\alpha]_D$ -38 (c, 2.0 in H₂O). $[\alpha]_D^{22}$ -45 (c, 4.7 in H₂O).

α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 2-amino-4,6-O-benzylidene-2-deoxy- α -D-idopyranoside
[52941-73-8]
C₁₄H₁₉NO₅ 281.308
[α]_D²⁰ +48 (c, 0.8 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-idopyranoside
[52885-36-6]
C₁₆H₂₁NO₆ 323.345
Cryst. (EtOAc). Mp 195-196° (201-202°). [α]_D -12 (c, 0.7 in CHCl₃). [α]_D -18 (c, 1.0 in CHCl₃).

Me glycoside, N,3-di-Ac: Methyl 2-acetamido-3-O-acetyl-2-deoxy- α -D-idopyranoside
[52885-38-8]
C₁₁H₁₉NO₇ 277.274
Cryst. (EtOAc/petrol). Mp 193°. [α]_D²⁰ +49 (c, 1.0 in CHCl₃) (lit. gives a temp. range).

Me glycoside, N-Ac, 3-tosyl: Methyl 2-acetamido-2-deoxy-3-O-tosyl- α -D-idopyranoside
[52885-39-9]
C₁₆H₂₃NO₈S 389.426
Mp 152-154°. [α]_D²⁰ 0 (c, 0.8 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 4,6-O-benzylidene, N-benzoyl, 3-tosyl: Methyl 2-benzamido-4,6-O-benzylidene-2-deoxy-3-O-tosyl- α -D-idopyranoside
[52941-74-9]
C₂₈H₂₉NO₈S 539.605
Cryst. (CHCl₃/Et₂O). Mp 164-165°. [α]_D²⁰ -39 (c, 0.7 in CHCl₃) (lit. gives a temp. range).

 β -D-Pyranose-form

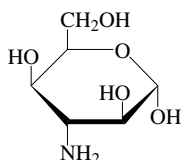
Me glycoside, 4,6-O-benzylidene: Methyl 2-amino-4,6-O-benzylidene-2-deoxy- β -D-idopyranoside
[52885-44-6]
C₁₄H₁₉NO₅ 281.308
Syrup. [α]_D²⁰ -55 (c, 0.7 in CHCl₃) (lit. gives a temp. range).

L-form [14307-12-1]

Hydrochloride: [α]_D -4.8 (c, 1 in H₂O).
Heyns, K. et al., *Chem. Ber.*, 1957, **90**, 2039 (L-form, synth)
Kuhn, R. et al., *Annalen*, 1958, **617**, 92 (D-form, D-N-Ac)
Perry, M.B. et al., *Methods Carbohydr. Chem.*, 1967, **7**, 29 (D-N-Ac)
Guthrie, R.D. et al., *J.C.S. Perkin 1*, 1974, 650 (α -D-Me pyr deriv, β -D-Me pyr deriv)

3-Amino-3-deoxyidose

A-292

 α -D-Pyranose-formC₆H₁₃NO₅ 179.172 **α -D-Pyranose-form**

Me glycoside, N-Ac: Methyl 3-acetamido-3-deoxy- α -D-idopyranoside
C₉H₁₇NO₆ 235.236
Mp 157-158°. [α]_D +66 (MeOH).

Me glycoside, 2,4,3N,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl-3-deoxy- α -D-idopyranoside
[113951-07-8]
C₁₅H₂₃NO₉ 361.348
Cryst. (EtOH). Mp 135-135.6° (134-135°). [α]_D +49 (c, 0.1 in CHCl₃).

Me glycoside, 4,6-benzylidene: Methyl 3-amino-4,6-O-benzylidene-3-deoxy- α -D-idopyranoside
[52918-89-5]
C₁₄H₁₉NO₅ 281.308
Cryst. (EtOAc). Mp 140-141°. [α]_D²⁰ +65 (c, 0.8 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 4,6-benzylidene, N-Ac: Methyl 3-acetamido-4,6-O-benzylidene-3-deoxy- α -D-idopyranoside
[15384-59-5]
C₁₆H₂₁NO₆ 323.345
Cryst. (EtOH). Mp 226° (216-218°). [α]_D²⁴ +47 (c, 0.98 in CHCl₃).

 β -D-Pyranose-form

Me glycoside, 4,6-benzylidene, N-Ac: Methyl 3-acetamido-4,6-O-benzylidene-3-deoxy- β -D-idopyranoside
[52885-41-3]
C₁₆H₂₁NO₆ 323.345
Mp 100-103°. [α]_D²⁰ -52 (c, 0.8 in CHCl₃) (lit. gives a temp. range).

 β -D-Furanose-form

1,2:5,6-Diisopropylidene: 3-Amino-3-deoxy-1,2:5,6-di-O-isopropylidene- β -D-idofuranose
[91067-83-3]
C₁₂H₂₁NO₅ 259.302
Cryst. (EtOH). Mp 98-98.5°. [α]_D²² +40 (c, 0.26 in CHCl₃).

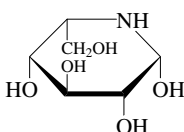
 β -L-Furanose-form

1,2:5,6-Diisopropylidene, N-Ac: 3-Acetamido-3-deoxy-1,2:5,6-di-O-isopropylidene- β -L-idofuranose
[27581-58-4]
C₁₄H₂₃NO₆ 301.339
Cryst. Mp 158.5-159.5°. [α]_D -18.5 (c, 0.6 in CHCl₃).

Jeanloz, R.W. et al., *J.O.C.*, 1961, **26**, 537 (α -Me pyr N-Ac, β -Me pyr N-Ac)
Brimacombe, J.S. et al., *Carbohydr. Res.*, 1970, **12**, 475 (β -L-fur isopropylidene N-Ac, pmr)
Guthrie, R.D. et al., *J.C.S. Perkin 1*, 1974, 650 (β -Me pyr benzylidene N-Ac)
Tachibana, Y. et al., *Bull. Chem. Soc. Jpn.*, 1984, **57**, 237 (β -D-fur, diisopropylidene, pmr)
Defaye, J. et al., *Carbohydr. Res.*, 1991, **212**, 129 (α -D-Me pyr tetra-Ac, pmr)

5-Amino-5-deoxyidose

A-293

 β -L-Pyranose-formC₆H₁₃NO₅ 179.172 **β -L-Pyranose-form**

1,6-Anhydro: 5-Amino-1,6-anhydro-5-deoxy- β -L-idopyranose
[15065-80-2]
C₆H₁₁NO₄ 161.157
Cryst. (MeOH). Mp 140° dec. [α]_D²³ +114.5 (c, 1.0 in H₂O).

1,6-Anhydro, N-Ac: 5-Acetamido-1,6-anhydro-5-deoxy- β -L-idopyranose
[14679-59-5]
C₈H₁₃NO₅ 203.194
Cryst. (MeOH). Mp 190-191°. [α]_D²⁰ +79.3 (c, 2.0 in H₂O).

1,6-Anhydro, 2,3,4,5N-tetra-Ac: 5-Acetamido-2,3,4-tri-O-acetyl-1,6-anhydro-5-deoxy- β -L-idopyranose
[15072-72-7]
C₁₄H₁₉NO₈ 329.306
Syrup. [α]_D²⁰ +48.9 (c, 2.0 in MeOH).

 β -L-Furanose-form

1,2-O-Isopropylidene: 5-Amino-5-deoxy-1,2-O-isopropylidene- β -L-idofuranose
[14685-99-5]
C₉H₁₇NO₅ 219.237
Leaflets (EtOH/Et₂O). Mp 184-185° (178°). [α]_D²⁰ -3.7 (c, 1.1 in MeOH).

1,2-O-Isopropylidene, 3,5N,6-tri-Ac: 5-Acetamido-3,6-di-O-acetyl-5-deoxy-1,2-O-isopropylidene- β -L-idofuranose
[25474-01-5]
C₁₅H₂₃NO₈ 345.349
Cryst. (Et₂O). Mp 92-94°. [α]_D²³ -14.4 (c, 2.3 in CHCl₃).

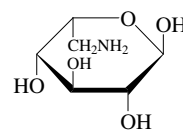
1,2-O-Isopropylidene, 3-benzyl, N-Ac: 5-Acetamido-3-O-benzyl-5-deoxy-1,2-O-isopropylidene- β -L-idofuranose
[22412-62-0]
C₁₈H₂₅NO₆ 351.399
Needles (2-propanol/hexane). Mp 143-144°. [α]_D²⁰ -7.4 (c, 5.3 in CHCl₃).

1,2-O-Isopropylidene, N-benzoyloxycarbonyl: [129279-37-4]
C₁₇H₂₃NO₇ 353.371
Cryst. (EtOAc). Mp 140-141°. [α]_D -24.5 (c, 0.5 in CHCl₃).

Gramera, R.E. et al., *J.O.C.*, 1963, **28**, 1401 (isopropylidene)
Paulsen, H. et al., *Chem. Ber.*, 1966, **99**, 3450 (β -L-pyr deriv)
Saeki, H. et al., *Chem. Pharm. Bull.*, 1968, **16**, 962; 2471 (isopropylidene, ir)
Tsuda, Y. et al., *Chem. Pharm. Bull.*, 1989, **37**, 2673 (tri-Ac, ir, pmr, cmr)
Kayakiri, H. et al., *Chem. Pharm. Bull.*, 1991, **39**, 1397 (N-benzoyloxycarbonyl, pmr, cmr, ms)

6-Amino-6-deoxyidose

A-294

 α -L-Pyranose-formC₆H₁₃NO₅ 179.172 **α -L-Pyranose-form**

Me glycoside: Methyl 6-amino-6-deoxy- α -L-idopyranoside
C₇H₁₅NO₅ 193.199
Solid + 1/2 H₂CO₃. [α]_D²⁰ -88 (c, 1 in H₂O).

Isopropyl glycoside: Isopropyl 6-amino-6-deoxy- α -L-idopyranoside
 $C_9H_{19}NO_5$ 221.253
 Solid + $\frac{1}{6}$ H_2CO_3 . $[\alpha]_D^{24}$ -73 (c, 1 in H_2O).

 β -L-Pyranose-form

Me glycoside: Methyl 6-amino-6-deoxy- β -L-idopyranoside
 $C_7H_{15}NO_5$ 193.199
 Solid + $\frac{1}{2}$ H_2CO_3 . $[\alpha]_D^{20}$ +52 (c, 0.9 in H_2O).

Isopropyl glycoside: Isopropyl 6-amino-6-deoxy- β -L-idopyranoside
 $C_9H_{19}NO_5$ 221.253
 Solid + $\frac{1}{6}$ H_2CO_3 . $[\alpha]_D^{24}$ +42 (c, 1 in H_2O).

 β -L-Furanose-form

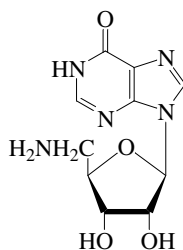
1,2:3,5-Di-O-isopropylidene, tosyl: 6-Deoxy-1,2:3,5-di-O-isopropylidene-6-tosylamino- β -D-idofuranose
 $C_{19}H_{27}NO_7S$ 413.491
 Mp 198-200° dec. $[\alpha]_D$ +0.84 (EtOH).

Grosheintz, J.M. *et al.*, *J.A.C.S.*, 1948, **70**, 1476 (deriv)
 Matsuda, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1986, **59**, 1397 (synth, pmr)

5'-Amino-5'-deoxyinosine, 9CI

A-295

[18945-35-2]

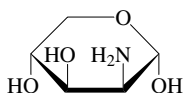


$C_{10}H_{13}N_5O_4$ 267.244
 Cryst. (H_2O). Mp 179°.

Morr, M. *et al.*, *Annalen*, 1983, 575-584 (synth, pmr, uv)
 Sato, H. *et al.*, *Tetrahedron*, 2003, **59**, 7871-7878 (synth, pmr)

2-Amino-2-deoxylyxose

A-296

Lyxosamine α -D-Pyranose-form $C_5H_{11}NO_4$ 149.146**D-form**

Prod. by cultures of *Streptomyces alboniger*.

Hydrochloride:

Cryst. (MeOH). Mp 148-155° dec. $[\alpha]_D^{25}$ +54 \rightarrow -3.6 (c, 2.3 in H_2O).

N-Ac: 2-Acetamido-2-deoxy-D-lyxose

[30100-62-0]

 $C_7H_{13}NO_5$ 191.183Syrup. $[\alpha]_D^{25}$ +22.6 (c, 1.1 in H_2O). **α -D-Furanose-form**

Me glycoside: Methyl 2-amino-2-deoxy- α -D-lyxofuranoside
 $C_6H_{13}NO_4$ 163.173
 Mp 150-151°. $[\alpha]_D^{29}$ +109.5 (c, 1.7 in H_2O).

L-form

Hydrochloride: Mp 150-160°. $[\alpha]_D$ -16 \rightarrow +5 (H_2O).

N-Ac: 2-Acetamido-2-deoxy-L-lyxose $C_7H_{13}NO_5$ 191.183 $[\alpha]_D$ -31 (H_2O).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1959, **81**, 3716 (*D*-form, synth)

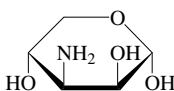
Horton, D. *et al.*, *Adv. Carbohydr. Chem.*, 1960, **15**, 159 (rev. derivs)

Rebello, P.F. *et al.*, *Biochim. Biophys. Acta*, 1969, **177**, 468 (isol)

McLean, R.L. *et al.*, *J. Biol. Chem.*, 1971, **246**, 803 (*D*-N-Ac, synth)

3-Amino-3-deoxylyxose

A-297

 α -D-Pyranose-form $C_5H_{11}NO_4$ 149.146 **α -D-Pyranose-form**

Me glycoside: Methyl 3-amino-3-deoxy- α -D-lyxopyranoside
 [122291-84-3]
 $C_6H_{13}NO_4$ 163.173
 Syrup.

Me glycoside, hydrochloride: [122291-85-4]
 Cryst. (EtOAc/EtOH). Mp 194° dec.
 $[\alpha]_D^{25}$ +42 (c, 0.8 in H_2O).

L-form

Hydrochloride: [34296-95-2]
 Syrup. $[\alpha]_D$ -24 (c, 0.5 in H_2O).

N,1,2,4-Tetra-Ac: 3-Acetamido-1,2,4-tri-O-acetyl-3-deoxy-L-lyxose

 $C_{13}H_{19}NO_8$ 317.295Amorph. solid. $[\alpha]_D$ +5 (c, 0.5 in $CHCl_3$). **β -L-Pyranose-form**

Me glycoside, 2,3N-di-Ac, 4-mesyl: Methyl 3-acetamido-2-O-acetyl-3-deoxy-4-O-mesyl- β -L-lyxopyranoside
 $C_{11}H_{19}NO_8S$ 325.339
 Mp 172-173°. $[\alpha]_D$ -11 (Py).

 β -L-Furanose-form

1,2-O-Isopropylidene, N-Ac: 3-Acetamido-3-deoxy-1,2-O-isopropylidene- β -L-lyxofuranose
 [34296-94-1]
 $C_{10}H_{17}NO_5$ 231.248
 Cryst. (EtOAc/hexane). Mp 166-167°.
 $[\alpha]_D$ -5 (c, 1.0 in MeOH).

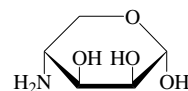
 α -DL-Pyranose-form

Me glycoside, 2,3N,4-tribenzoyl: Methyl 3-benzamido-2,4-di-O-benzoyl-3-deoxy- α -DL-lyxopyranoside
 [92051-10-0]
 $C_{27}H_{25}NO_7$ 475.497
 Cryst. (Et₂O). Mp 163°.
 [34296-95-2, 92051-09-7]

Baker, B.R. *et al.*, *J.O.C.*, 1954, **19**, 646 (β -L-Me pyr di-Ac)
 Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1971, **16**, 303 (*L*-form, α -L-fur isopropylidene N-Ac)
 Picq, D. *et al.*, *Carbohydr. Res.*, 1984, **128**, 283 (α -DL-Me pyr tribenzoyl, pmr)
 Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, **42**, 605 (α -D-Me pyr, pmr)

4-Amino-4-deoxylyxose

A-298

 α -D-Pyranose-form $C_5H_{11}NO_4$ 149.146 **α -D-Pyranose-form**

Benzyl glycoside, 2,3-anhydro: Benzyl 4-amino-2,3-anhydro-4-deoxy- α -D-lyxopyranoside
 [78907-34-3]
 $C_{12}H_{15}NO_3$ 221.255
 Cryst. $[\alpha]_D^{20}$ +91 ($CHCl_3$).

 α -L-Pyranose-form

Me glycoside, 2-mesyl: Methyl 4-amino-4-deoxy-2-O-mesyl- α -L-lyxopyranoside
 [101305-43-5]
 $C_7H_{15}NO_6S$ 241.265
 Cryst. (EtOAc). Mp 134°. $[\alpha]_{365}^{25}$ -99 (c, 0.53 in $CHCl_3$).

Me glycoside, N,N-di-Me, 2,3-dimesyl: Methyl 4-deoxy-2,3-di-O-mesyl-4-(N-dimethylamino)- α -L-lyxopyranoside
 [87908-09-6]
 $C_{10}H_{21}NO_8S_2$ 347.41
 Cryst. Mp 118°.

 β -L-Pyranose-form

Benzyl glycoside, 2,3-anhydro: Benzyl 4-amino-2,3-anhydro-4-deoxy- β -L-lyxopyranoside
 [78907-33-2]
 Cryst. Mp 37-38°. $[\alpha]_D^{20}$ +105 ($CHCl_3$).

L-Furanose-form [28441-49-8]

Amorph. powder (MeOH). $[\alpha]_D$ +4 (c, 0.92 in H_2O).

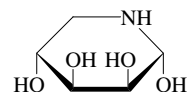
Paulsen, H. *et al.*, *Chem. Ber.*, 1970, **103**, 1621 (*L*-fur)

Picq, D. *et al.*, *Tetrahedron*, 1983, **39**, 1797; 1985, **41**, 2681 (*Me gly deriv*, pmr)

Malik, A. *et al.*, *Chem. Comm.*, 1984, 1530 (*benzyl gly deriv*)

5-Amino-5-deoxylyxose

A-299

 α -D-Pyranose-form $C_5H_{11}NO_4$ 149.146**D-form**

N-Ac, benzylphenylhydrazone: [13391-66-7]
 Cryst. (Me₂CO/Et₂O). Mp 155-156°.
 $[\alpha]_D^{25}$ +23.4 (c, 0.17 in MeOH).

 α -D-Pyranose-form

N-Ac: 5-Acetamido-5-deoxy- α -D-lyxopyranoside
 [7687-55-0]

C₇H₁₃NO₅ 191.183
Mp 166-167° (156-158°). [α]_D²⁵ -71 (c, 1.0 in H₂O). [α]_D -55 (c, 1.0 in H₂O).

1,2,3,4,5N-Penta-Ac: 5-Acetamido-1,2,3,4-tetra-O-acetyl-5-deoxy-α-D-lyxopyranose
[7700-00-7]
C₁₅H₂₁NO₉ 359.332
Mp 131-132° (121-122°). [α]_D -20 (c, 0.6 in CHCl₃).

α-D-Furanose-form

2,3-O-Isopropylidene, N-Ac: 5-Acetamido-5-deoxy-2,3-O-isopropylidene-α-D-lyxofuranose
[20750-25-8]
C₁₀H₁₇NO₅ 231.248
Cryst. (EtOAc). Mp 125-125.5°. [α]_D +23 (c, 1.0 in MeOH).

Benzyl glycoside, N-Ac: Benzyl 5-acetamido-5-deoxy-α-D-lyxofuranoside
[20750-26-9]
C₁₄H₁₉NO₅ 281.308
Syrup. [α]_D +84 (c, 0.9 in MeOH).

Benzyl glycoside, 2,3-O-isopropylidene, N-Ac: Benzyl 5-acetamido-5-deoxy-2,3-O-isopropylidene-α-D-lyxofuranoside
[20750-24-7]
C₁₇H₂₃NO₅ 321.372
Cryst. (CHCl₃/petrol). Mp 86-87°. [α]_D +84 (c, 1.0 in CHCl₃).

Hanessian, S. et al., *J.O.C.*, 1967, **32**, 163

(synth, derivs)

Brimacombe, J.S. et al., *J.C.S. (C)*, 1968, 181

(α-D-fur deriv)

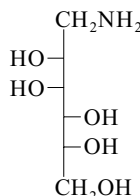
Poh, B. et al., *Aust. J. Chem.*, 1984, **37**, 971

(α-D-pyr deriv, pmr, ir)

1-Amino-1-deoxymannitol, 9CI

A-300

Mannamine



C₆H₁₅NO₅ 181.188

D-form [57027-74-4]

Mp 134-135° dec. [α]_D²³ +1 (H₂O).

Hydrochloride: [53833-78-6]

Mp 161.5-162.5°. [α]_D²⁰ +3 (c, 0.3 in H₂O).

Hydrobromide: [55324-98-6]

Mp 147-148°. [α]_D +3.7 (c, 1.0 in H₂O).

N-Ac:

C₈H₁₇NO₆ 223.225

Mp 153°. [α]_D²³ +13 (H₂O).

3,4:5,6-Di-O-isopropylidene, N-succinoyl: [53766-08-8]

C₁₆H₂₅NO₇ 343.376

Mp 146-147°. [α]_D²⁰ +10.7 (c, 1.1 in CHCl₃).

Jones, J.K.N. et al., *Can. J. Chem.*, 1962, **40**, 503

(synth)

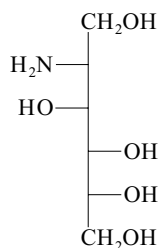
Komura, H. et al., *Carbohydr. Res.*, 1973, **31**, 154 (synth)

Gassmann, N. et al., *Helv. Chim. Acta*, 1975, **58**, 182 (synth)

Kiely, D.E. et al., *J. Carbohydr. Chem.*, 1986, **5**, 183-197 (synth)

2-Amino-2-deoxymannitol, 9CI

A-301



C₆H₁₅NO₅ 181.188

D-form [14635-94-0]

Used in cosmetics and hair conditioners.

Internal standard for hplc detn. of hexosamines and hexosaminotols. Sol. H₂O.

N-Ac: 2-Acetamido-2-deoxy-D-mannitol [10486-92-7]

C₈H₁₇NO₆ 223.225

Cryst. (EtOH). Mp 137-138.5°. [α]_D²⁰ +46.7 (c, 0.5 in 5% ammonium molybdate). [α]_D +163 (c, 0.4 in acid ammonium molybdate).

Zissis, E. et al., *Carbohydr. Res.*, 1973, **26**, 323

(N-Ac)

Japan. Pat., 1984, 59 212 421; CA, **102**,

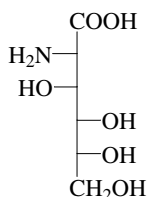
119443m (use)

Cheng, P.W. et al., *Anal. Biochem.*, 1987, **167**,

265 (hplc)

2-Amino-2-deoxymannonic acid, 9CI

A-302



C₆H₁₃NO₆ 195.172

D-form [16932-62-0]

N-Ac: 2-Acetamido-2-deoxy-D-mannonic acid

[50257-06-2]

C₈H₁₅NO₇ 237.209

Cryst. Mp 173.5-174°. [α]_D²⁰ -10.8 (5 min.) → +83.4 (5 days) (c, 2.5 in AcOH aq.). Converted to lactone in hot AcOH.

1,4-Lactone, N-Ac: 2-Acetamido-2-deoxy-D-1,4-mannonolactone

[28876-37-1]

C₈H₁₃NO₆ 219.194

Cryst. (MeOH). Mp 172-173°. [α]_D +87.4 (c, 1 in H₂O).

1,4-Lactone, 5,6-O-isopropylidene, N-Ac:

2-Acetamido-2-deoxy-5,6-O-isopropylidene-D-1,4-mannonolactone

[34044-52-5]

C₁₁H₁₇NO₆ 259.258

Mp 161-164°. [α]_D +75.8 (c, 1.04 in MeOH).

Pravdic, N. et al., *Carbohydr. Res.*, 1970, **12**, 471-474; 1971, **19**, 339-352 (lactone N-Ac)

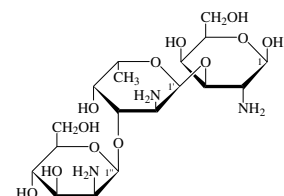
Zissis, E. et al., *Carbohydr. Res.*, 1973, **28**, 327-337 (N-Ac)

Otaka, K. et al., *Eur. J. Org. Chem.*, 1999, 1795-1802 (lactone N-Ac)

2-Amino-2-deoxy-β-D-mannopyranosyl-(1→3)-2-amino-2-deoxy-α-L-fucopyranosyl-(1→3)-2-amino-2-deoxy-D-galactose

A-303

2-Amino-2-deoxy-β-D-mannopyranosyl-(1→3)-2-amino-2,6-dideoxy-α-L-galactopyranosyl-(1→3)-2-amino-2-deoxy-D-galactose, 9CI



β-Pyranose-form

C₁₈H₃₅N₃O₁₂ 485.487

Constit. of the capsular polysaccharide of *Streptococcus pneumoniae* type 4.

Pyranose-form

N,N',N''-Tri-Ac: [103751-44-6]

C₂₄H₄₁N₃O₁₅ 611.599

Syrup. [α]_D -93 → -89.4 (MeOH).

β-Pyranose-form

Benzyl glycoside, 4,6-O-benzylidene, 3'',4'',6''-tribenzyl, 2N,2'N,2''N, 4'-tetra-Ac: [103751-42-4]

C₆₁H₇₁N₃O₁₆ 1102.242

Syrup. [α]_D²⁰ -59.4 (c, 1.5 in CHCl₃).

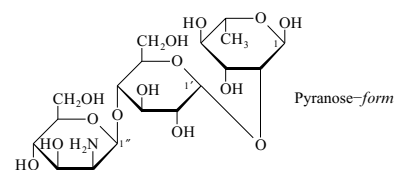
[103751-45-7]

Horito, S. et al., *Annalen*, 1986, 1880 (tri-Ac, β-benzyl pyr tetra-Ac deriv, pmr, cmr)

2-Amino-2-deoxy-β-D-mannopyranosyl-(1→4)-α-D-glucopyranosyl-(1→2)-L-rhamnose

A-304

2-Amino-2-deoxy-β-D-mannopyranosyl-(1→4)-α-D-glucopyranosyl-(1→2)-6-deoxy-L-mannose, 9CI



Pyranose-form

C₁₈H₃₃NO₁₄ 487.457

Constit. of the repeating unit of the capsular polysaccharide of *Streptococcus pneumoniae* type 19F.

Pyranose-form

N-Ac: [115964-33-5]

C₂₀H₃₅NO₁₅ 529.494

Amorph. powder. [α]_D²⁰ +50 (c, 0.9 in MeOH). [α]_D +15.9 (c, 0.3 in H₂O).

2''N,6'',6'-Tri-Ac: [116306-82-2]
 C₂₄H₃₉NO₁₇ 613.569
 Syrup. [α]_D²⁰ +28 (c, 0.5 in MeOH).
 2',3,3',3'',4,6'-Hexabenzyl, N-Ac: [115946-03-7]
 C₆₂H₇₁NO₁₅ 1070.241
 Powder. [α]_D²⁰ +16.8 (c, 0.43 in CHCl₃).

α-Pyranose-form

1,2''N,4,6'-Tetra-Ac: [118581-36-5]
 C₂₆H₄₁NO₁₈ 655.606
 Syrup. [α]_D²⁰ +23 (c, 1.3 in MeOH).
 1,2,2'',N,3,3',3'',4,4'',6'-Deca-Ac: [118561-22-1]
 C₃₈H₅₃NO₂₄ 907.829
 Syrup. [α]_D²⁰ +27 (c, 0.6 in CHCl₃).

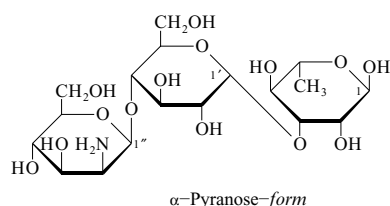
β-Pyranose-form

8-Methoxycarbonyloctyl glycoside, N-Ac: [115946-07-1]
 C₃₀H₅₃NO₁₇ 699.745
 Powder. [α]_D²⁰ +30.4 (c, 0.286 in H₂O).
 [115946-04-8, 115964-34-6]

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1980, **58**, 1069 (occur)
 Ohno, N. *et al.*, *Carbohydr. Res.*, 1980, **80**, 297 (occur)
 Panza, L. *et al.*, *J.C.S. Perkin 1*, 1987, 2745 (synth, pmr)
 Sugawara, T. *et al.*, *Carbohydr. Res.*, 1988, **172**, 195 (hexabenzyl N-Ac, β-methoxycarbonyloctyl pyr N-Ac, pmr, ms)
 Paulsen, H. *et al.*, *Carbohydr. Res.*, 1988, **179**, 173 (N-Ac, α-tetra-Ac, α-deca-Ac, pmr)

2-Amino-2-deoxy-β-D-manno-pyranosyl-(1 → 4)-α-D-glucopyranosyl-(1 → 3)-L-rhamnose

2-Amino-2-deoxy-β-D-mannopyranosyl-(1 → 4)-α-D-glucopyranosyl-(1 → 3)-6-deoxy-L-mannose, 9CI



C₁₈H₃₃NO₁₄ 487.457

Pyranose-form

N-Ac: [118561-28-7]
 C₂₀H₃₅NO₁₅ 529.494
 Amorph. powder. [α]_D²⁰ +31 (c, 0.75 in H₂O). [α]_D²⁰ +49 (c, 1.0 in MeOH).
 2N'',3',6',6''-Tetra-Ac: [119927-44-5]
 C₂₆H₄₁NO₁₈ 655.606
 Syrup. [α]_D²⁰ +44 (c, 1.5 in MeOH).
 1,2,2'',N,3',3'',4,4'',6',6''-Deca-Ac: [118561-38-9]
 C₃₈H₅₃NO₂₄ 907.829
 Syrup.

α-Pyranose-form

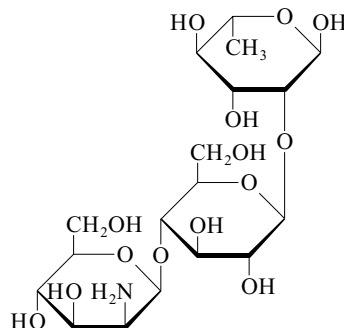
Benzyl glycoside, 2',3',4-tribenzyl, N-Ac: [118561-25-4]
 C₄₈H₅₉NO₁₅ 889.992
 Syrup. [α]_D²⁰ +8.3 (c, 1.2 in MeOH).
 Benzyl glycoside, 2',3',4-tribenzyl, 2,2''N,3'',4'',6',6''-hexa-Ac: [118561-24-3]

C₅₈H₆₉NO₂₀ 1100.178
 Syrup. [α]_D²⁰ +33 (c, 1.0 in CHCl₃).
 Benzyl glycoside, 2,2',3'',4,4''-pentabenzyl, 2N'',3',6',6''-tetra-Ac: [119927-42-3]
 C₆₈H₇₇NO₁₈ 1196.352
 Syrup. [α]_D²⁰ -3 (c, 2.6 in CHCl₃).
 [118561-27-6, 118561-39-0]

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1988, **179**, 173 (N-Ac, α-benzyl pyr tribenzyl derivs, pmr)
 Panza, L. *et al.*, *Carbohydr. Res.*, 1988, **181**, 242 (N-Ac, tetra-Ac, deca-Ac, α-benzyl pyr pentabenzyl deriv, pmr)

2-Amino-2-deoxy-β-D-manno-pyranosyl-(1 → 4)-β-D-glucopyranosyl-(1 → 2)-L-rhamnose

2-Amino-2-deoxy-β-D-mannopyranosyl-(1 → 4)-β-D-glucopyranosyl-(1 → 2)-6-deoxy-L-mannose, 9CI



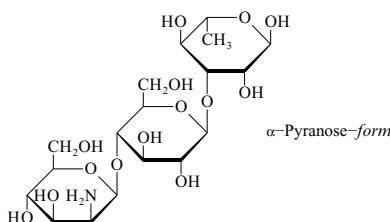
C₁₈H₃₃NO₁₄ 487.457

α-Pyranose-form

2',3,3',3'',4'',6''-Hexabenzyl, 1,2''N,4,6'-tetra-Ac: [118561-20-9]
 C₆₈H₇₇NO₁₈ 1196.352
 Syrup. [α]_D²⁰ -7.8 (c, 1.3 in CHCl₃).
 Paulsen, H. *et al.*, *Carbohydr. Res.*, 1988, **179**, 173 (hexabenzyl tetra-Ac, pmr)

2-Amino-2-deoxy-β-D-manno-pyranosyl-(1 → 4)-β-D-glucopyranosyl-(1 → 3)-L-rhamnose

2-Amino-2-deoxy-β-D-mannopyranosyl-(1 → 4)-β-D-glucopyranosyl-(1 → 3)-6-deoxy-L-mannose, 9CI



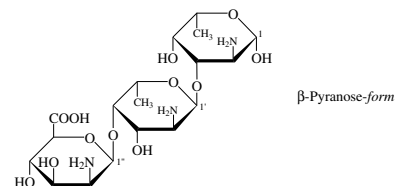
C₁₈H₃₃NO₁₄ 487.457

α-Pyranose-form

Benzyl glycoside, 2',3',4-tribenzyl, 2,2''N,3'',4'',6',6''-hexa-Ac: [118561-26-5]
 C₅₈H₆₉NO₂₀ 1100.178
 Syrup. [α]_D²⁰ +1.8 (c, 0.5 in CHCl₃).
 Paulsen, H. *et al.*, *Carbohydr. Res.*, 1988, **179**, 173 (α-benzyl pyr hexa-Ac deriv)

2-Amino-2-deoxy-β-D-manno-pyranuronosyl-(1 → 4)-2-amino-2-deoxy-α-L-fucopyranosyl-(1 → 3)-2-amino-2-deoxy-L-fucose

2-Amino-2-deoxy-β-D-mannopyranuronosyl-(1 → 4)-2-amino-2,6-dideoxy-α-L-galactopyranosyl-(1 → 3)-2-amino-2,6-dideoxy-L-galactose, 9CI



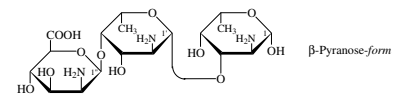
C₁₈H₃₃N₃O₁₂ 483.472
 Repeating unit of *Staphylococcus aureus* type 8 polysaccharide.

β-Pyranose-form

N,N',N''-Tri-Ac: [117048-28-9]
 C₂₄H₃₉N₃O₁₅ 609.583
 Foam.
 Vann, W.F. *et al.*, *UCLA Symp. Mol. Cell. Biol.*, 1988, **64**, 287; *C.A.*, **109**, 168479f (occur, struct, pmr, anal, immunochem)

2-Amino-2-deoxy-β-D-manno-pyranuronosyl-(1 → 4)-2-amino-2-deoxy-β-L-fucopyranosyl-(1 → 3)-2-amino-2-deoxy-L-fucose

2-Amino-2-deoxy-β-D-mannopyranuronosyl-(1 → 4)-2-amino-2,6-dideoxy-β-L-galactopyranosyl-(1 → 3)-2-amino-2,6-dideoxy-L-galactose, 9CI

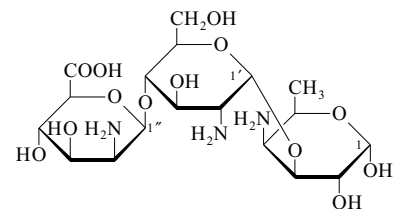


C₁₈H₃₃N₃O₁₂ 483.472
 Repeating unit of *Staphylococcus aureus* type 5 polysaccharide.
 [117048-27-8]

Vann, W.F. *et al.*, *UCLA Symp. Mol. Cell. Biol.*, 1988, **64**, 187; *C.A.*, **109**, 168479f (occur, struct, pmr, anal, immunochem)

2-Amino-2-deoxy-β-D-manno-pyranuronosyl-(1 → 4)-2-amino-2-deoxy-α-D-glucopyranosyl-(1 → 3)-4-amino-4-deoxy-D-fucose

2-Amino-2-deoxy-β-D-mannopyranuronosyl-(1 → 4)-2-amino-2-deoxy-α-D-glucopyranosyl-(1 → 3)-4-amino-4,6-dideoxy-D-galactose, 9CI



C₁₈H₃₃N₃O₁₃ 499.471

Repeating unit of the enterobacterial common antigen.

α-Pyranose-form

Me glycoside, 2''N,2''N,4N-tri-Ac: [109898-82-0]

C₂₅H₄₁N₃O₁₆ 639.609

Amorph. [α]_D²⁰ +74 (c, 1.1 in H₂O). [α]_D²⁰ +84.6 (c, 1.1 in MeOH).

Me glycoside, 2,2''N,2''N,3',3'',4N,4',4''-octa-Ac, Me ester: [109898-80-8]

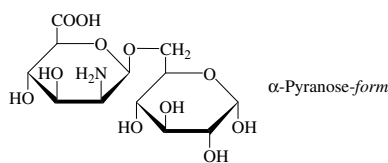
C₃₆H₅₃N₃O₂₁ 863.822

Syrup. [α]_D²⁰ +57 (c, 1.1 in CHCl₃).

[97783-82-9, 109898-79-5, 109911-81-1]

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1986, **150**, 63 (*α-Me pyr tri-Ac, α-Me pyr octa-Ac Me ester, pmr, occur*)

6-(2-Amino-2-deoxy-β-D-mannopyranuronosyl)-D-glucose A-311



C₁₂H₂₁NO₁₁ 355.298

Pyranose-form

N-Ac: 6-(2-Acetamido-2-deoxy-β-D-mannopyranuronosyl)-D-glucose

C₁₄H₂₃NO₁₂ 397.335

Repeat unit of the teichuronic acid from *Micrococcus luteus*. Amorph. solid. [α]_D²⁰ -19 (c, 0.6 in H₂O). Isol. ad α:β anomeric ratio *ca.* 1:2.

[2-(Octadecanoylamino)ethyl] glycoside, *N-Ac: N-[2-[6-O-[2-(Acetyl amino)-2-deoxy-β-D-mannopyranuronosyl]-D-glucopyranosyl]oxy]ethyl]octadecanamide*

C₃₄H₆₂N₂O₁₃ 706.869

Teichuronic acid residue prod. by *Micrococcus luteus*. [α]_D²⁵ -5.3 (c, 1 in MeOH). Isol. as a mixt. of anomers (α,β ratio 4:1 approx.).

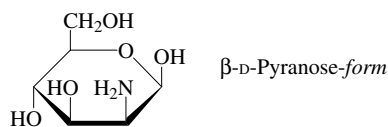
[40879-33-2, 106837-36-9, 152252-29-4, 152252-52-3]

Paulsen, H. *et al.*, *Annalen*, 1987, 431 (*N-Ac*)
Osa, Y. *et al.*, *Chem. Lett.*, 1993, 1567 (*synth, pmr, cmr, deriv*)

2-Amino-2-deoxymannose, 9CI, 8CI A-312

Mannosamine

[2636-92-2]



C₆H₁₃NO₅ 179.172

D-form [14307-02-9]

[5505-63-5]

Constit. of the lipopolysaccharides of several strains of *Salmonella*, *Arizona*,

Proteus vulgaris and *Clostridium welchii*. Cryst. (EtOH/Me₂CO aq.) (as hydrochloride). Mp 187° (178-180°) (hydrochloride). [α]_D²⁰ -4.6 (c, 10 in 5% HCl aq.) (hydrochloride). pK_a 7.28 (25°).

6-Phosphate:

C₆H₁₅NO₈P 260.16

Powder. Mp 141-143°.

N-Ac: 2-Acetamido-2-deoxy-D-mannose.

N-Acetyl-D-mannosamine

[3615-17-6]

C₈H₁₅NO₆ 221.21

Intermed. in biosynth. of bacterial anti-gens. Cryst. (Me₂CO aq.).

Mp 128-129° (112-114°). [α]_D²⁰ -9.4 → +9.7 (c, 10 in H₂O). Rapidly equilibrates in alk. soln. to form the *gluco* isomer.

N-Ac, 6-phosphate:

C₈H₁₇NO₉P 302.197

Important intermed. in biosynth. of *N*-Acetylneuraminic acid, A-20 in bacteria and higher animals. Powder.

Mp 53-55°.

β-D-Pyranose-form

N,1,3,4,6-Penta-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy-β-D-mannopyranose

C₁₆H₂₃NO₁₀ 389.358

Cryst. (EtOH/Et₂O). Mp 162-163°. [α]_D²⁴ -17 (c, 1.8 in CHCl₃).

Me glycoside, N-Ac: Methyl 2-acetamido-2-deoxy-β-D-mannopyranoside

C₉H₁₇NO₆ 235.236

[α]_D -68 (-62) (H₂O).

Mel glycoside, N,O,O,O-tetra-Ac: Methyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy-β-D-mannopyranoside

C₁₅H₂₃NO₉ 361.348

Cryst. (toluene). Mp 154-156°. [α]_D -36 (c, 0.5 in CHCl₃).

β-D-Furanose-form

Me glycoside, 3,5,6-tri-Me: Methyl 2-amino-2-deoxy-3,5,6-tri-O-methyl-β-D-mannofuranoside

C₁₀H₂₁NO₅ 235.28

Cryst. (EtOH). Mp 227-232° (as hydrochloride). [α]_D²⁰ -57.2 (c, 1.0 in H₂O).

L-form

Mp 175-177° dec. (as hydrochloride). [α]_D²⁵ +4.7 (c, 10 in 5% HCl aq.) (hydrochloride).

β-L-Pyranose-form

N,1,3,4,6-Penta-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy-β-L-mannopyranose

C₁₆H₂₃NO₁₀ 389.358

Mp 162°. [α]_D +18 (c, 1.8 in CHCl₃).

[4773-29-9]

O'Neill, A.N. *et al.*, *Can. J. Chem.*, 1959, **37**, 1747 (*D-form, synth, β-D-pyr penta-Ac, β-L-pyr penta-Ac*)

Spivak, C.T. *et al.*, *J.A.C.S.*, 1959, **81**, 2403

(*D-form, synth, D-N-Ac*)

Roth, W. *et al.*, *J.O.C.*, 1961, **26**, 2455 (*β-D-Me fur tri-Me*)

Sowden, J.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 235 (*synth*)

Pickering, B.T. *et al.*, *Nature (London)*, 1965, **206**, 400 (*isol*)

Lemieux, R.U. *et al.*, *Tet. Lett.*, 1965, 2143

(*D-form, synth*)

Luederitz, O. *et al.*, *J. Bacteriol.*, 1968, **95**, 490 (*isol*)

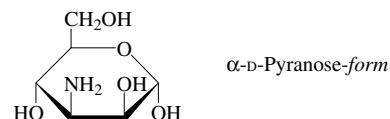
Goustin, A.S. *et al.*, *Carbohydr. Res.*, 1983, **119**, 258 (*pmr*)

Mack, H. *et al.*, *Carbohydr. Res.*, 1988, **175**, 311 (*synth, D-N-Ac*)

Classon, B. *et al.*, *Carbohydr. Res.*, 1991, **216**, 187 (*β-D-tetra-Ac, β-D-Me N-Ac*)

Liu, M.Z. *et al.*, *Carbohydr. Res.*, 2001, **230**, 413-419 (*6-phosphates*)

3-Amino-3-deoxymannose A-313



C₆H₁₃NO₅ 179.172

α-D-Pyranose-form

Hydrochloride: [32795-22-5]

Cryst. Mp 165-167° dec. [α]_D²⁰ +17 → +6 (c, 1.0 in H₂O).

1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-amino-3-deoxy-α-D-mannopyranose

[33034-49-0]

C₁₄H₂₁NO₉ 347.321

Syrup (as hydrochloride). CAS no. refers to hydrochloride.

1,3N,4,6-Tetra-Ac: 3-Acetamido-1,4,6-tri-O-acetyl-3-deoxy-α-D-mannopyranose

[32795-23-6]

C₁₄H₂₁NO₉ 347.321

Cryst. Mp 142-143°. [α]_D²⁰ +98 (c, 0.9 in H₂O).

1,2,3N,4,6-Penta-Ac: 3-Acetamido-1,2,4,6-tetra-O-acetyl-3-deoxy-α-D-mannopyranose

[33034-50-3]

C₁₆H₂₃NO₁₀ 389.358

Cryst. (Me₂CO/Et₂O/petrol). Mp 117-119°. [α]_D²⁰ +35 (c, 1.0 in CHCl₃).

N-Benzoyl, 1,2,4,6-tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-benzamido-3-deoxy-α-D-mannopyranose

[32795-21-4]

C₂₁H₂₅NO₁₀ 451.429

Mp 150-153° (Et₂O/petrol). [α]_D²⁰ +8 (c, 1.0 in CHCl₃).

Me glycoside: Methyl 3-amino-3-deoxy-α-D-mannopyranoside

[14193-51-2]

C₇H₁₅NO₅ 193.199

Syrup.

Me glycoside, hydrochloride: [14133-35-8]

Cryst. Mp 205° dec. [α]_D +60 (H₂O).

Me glycoside, N-Ac: Methyl 3-acetamido-3-deoxy-α-D-mannopyranoside

[14196-89-5]

C₉H₁₇NO₆ 235.236

Cryst. (EtOH). Mp 241-243° (192-193°) dec. [α]_D +44 (c, 1.66 in H₂O).

Me glycoside, 3N,4,6-tri-Ac: Methyl 3-acetamido-4,6-di-O-acetyl-3-deoxy-α-D-mannopyranoside

[22412-70-0]

C₁₃H₂₁NO₈ 319.311

Cryst. Mp 139-140°.

Me glycoside, 2,3N,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl-3-deoxy- α -D-mannopyranoside [72523-35-4]
 $C_{15}H_{23}NO_9$ 361.348
 Cryst. (Me_2CO/Et_2O). Mp 153° (142-143°). $[\alpha]_D^{20} +24.6$ (c, 2.0 in $CHCl_3$). $[\alpha]_D^{20} +41$ (c, 1.8 in H_2O). $[\alpha]_D^{20} +28$ (c, 0.7 in H_2O).

Me glycoside, N-benzoyl: Methyl 3-benzamido-3-deoxy- α -D-mannopyranoside [22412-65-3]
 $C_{14}H_{19}NO_6$ 297.307
 Amorph. solid.

Me glycoside, N-benzoyl, 2,4,6-tri-Ac: Methyl 2,4,6-tri-O-acetyl-3-benzamido-3-deoxy- α -D-mannopyranoside [22412-66-4]
 $C_{20}H_{25}NO_9$ 423.419
 Needles ($EtOH$). Mp 144°.

Me glycoside, 4,6-O-benzylidene, N-benzoyl: Methyl 3-benzamido-4,6-O-benzylidene-3-deoxy- α -D-mannopyranoside [22412-67-5]
 $C_{21}H_{23}NO_6$ 385.416
 Needles ($EtOH$). Mp 178-180°.

β -D-Pyranose-form

Me glycoside: Methyl 3-amino-3-deoxy- β -D-mannopyranoside
 $C_7H_{15}NO_5$ 193.199
 Cryst. (as hydrochloride). Mp 230-231° dec. (hydrochloride). $[\alpha]_D^{20} -68.5$ (H_2O).

1,6-Anhydro: 3-Amino-1,6-anhydro-3-deoxy- β -D-mannopyranose [122204-79-9]
 $C_6H_{11}NO_4$ 161.157
 Syrup.

1,6-Anhydro, hydrochloride: [122204-83-5]
 Cryst. ($EtOH$). Mp 187° dec. $[\alpha]_D^{25} -102$ (c, 0.7 in H_2O).

Baer, H.H. *et al.*, *J.A.C.S.*, 1960, **82**, 3709 (α -Me gly)

Baer, H.H. *et al.*, *Can. J. Chem.*, 1963, **41**, 1606 (β -Me gly)

Shigeharu, I. *et al.*, *Chem. Pharm. Bull.*, 1966, **14**, 902; 1210; 1972, **20**, 2320 (*deriv, ms*)

Shibata, H. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 1006 (α -Me pyr N-benzoyl *deriv, ir*)

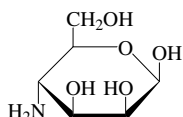
Paulsen, H. *et al.*, *Chem. Ber.*, 1971, **104**, 1311 (α -pyr tetra-Ac, α -pyr penta-Ac)

Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, **42**, 605 (β -pyr *deriv, pmr*)

Defaye, J. *et al.*, *Carbohydr. Res.*, 1991, **212**, 129 (α -Me gly N-Ac, *pmr*)

4-Amino-4-deoxymannose

A-314

 β -D-Pyranose-form
 $C_6H_{13}NO_5$ 179.172

D-form [114912-49-1]

Syrup.

β -D-Pyranose-form

1,6-Anhydro: 4-Amino-1,6-anhydro-4-deoxy- β -D-mannopyranose
 $C_6H_{11}NO_4$ 161.157
 Cryst. ($EtOH$ aq.) (as hydrochloride).

Mp 175-180° dec. (hydrochloride). $[\alpha]_D^{18} -100.4$ (c, 4.56 in H_2O).

1,6-Anhydro, 2,3,4N-tri-Ac: 4-Acetamido-2,3-di-O-acetyl-1,6-anhydro-4-deoxy- β -D-mannopyranose
 $C_{12}H_{17}NO_7$ 287.269
 Needles ($EtOH$). Mp 180°. $[\alpha]_D^{18} -76$ (c, 0.54 in $CHCl_3$).

α -D-Furanose-form

Benzyl glycoside, 2,3-O-isopropylidene: Benzyl 4-amino-4-deoxy-2,3-O-isopropylidene- α -D-mannofuranoside
 $C_{16}H_{23}NO_5$ 309.361
 Syrup.

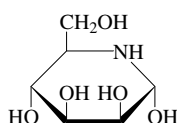
James, S.P. *et al.*, *J.C.S.*, 1946, 625 (β -D-pyr *derivs*)

Bashyal, B.P. *et al.*, *Tetrahedron*, 1987, **43**, 3083 (α -D-fur *deriv, pmr, ms*)

5-Amino-5-deoxymannose

A-315

Nojirimycin B. Mannoijirimycin

 α -D-Pyranose-form
 $C_6H_{13}NO_5$ 179.172

Aminoglycoside antibiotic.

D-Pyranose-form [62362-40-7]

Prod. by *Streptomyces lavendulae* SF-425. Weakly active against *Xanthomonas oryzae*. Glucosidase and mannosidase inhibitor.

Pale yellow powder. Sol. H_2O ; poorly sol. Me_2CO , hexane. Unstable.

Bisulfite adduct:

Needles (H_2O). Mp 163-165° dec. $[\alpha]_D^{20} +4.6$ (c, 0.5 in H_2O).

L-Pyranose-form

Mp 162-164° (as bisulfite adduct). $[\alpha]_D^{20} -4.5$ (c, 0.31 in H_2O).

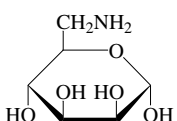
Japan. Pat., 1976, 76 151 393; *CA*, **86**, 153954 (*isol*)

Niwa, T. *et al.*, *J. Antibiot.*, 1984, **37**, 1579 (*isol, cryst struct, props, nmr, ir*)

Dondoni, A. *et al.*, *Tetrahedron*, 1993, **49**, 2939 (*L-form*)

6-Amino-6-deoxymannose

A-316

 α -D-Pyranose-form
 $C_6H_{13}NO_5$ 179.172

D-Pyranose-form [78003-52-8]

Hydrochloride: [20744-44-9]

Syrup. Anomeric mixt.

α -D-Pyranose-form [18439-59-3]

Me glycoside: Methyl 6-amino-6-deoxy- α -D-mannopyranoside [79695-15-1]
 $C_7H_{15}NO_5$ 193.199
 Syrup or hygroscopic foam. $[\alpha]_D^{20} +78$ (c, 1.2 in $MeOH$).

Me glycoside; hydrochloride: [20744-43-8]
 Cryst. ($EtOH$). Mp 161-162° dec. $[\alpha]_D^{20} +65.7$ (c, 2.2 in H_2O).

Me glycoside, N-Ac: Methyl 6-acetamido-6-deoxy- α -D-mannopyranoside [18439-62-8]
 $C_9H_{17}NO_6$ 235.236
 Leaflets ($MeOH/Et_2O$). Mp 171-172°. $[\alpha]_D^{20} +63.5$ (c, 2.0 in H_2O). $[\alpha]_D^{30.5} +70$ (c, 2.0 in $MeOH$).

Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-amino-6-deoxy- α -D-mannopyranoside [172911-51-2]
 $C_{13}H_{21}NO_8$ 319.311
 $[\alpha]_D^{22} +20.4$ (c, 1.1 in $MeOH$) (as hydrochloride). CAS no. refers to hydrochloride.

Ito, Y. *et al.*, *CA*, 1967, **67**, 117217 (α -D-Me pyr N-Ac, *pmr*)

Horton, D. *et al.*, *Carbohydr. Res.*, 1968, **7**, 101 (*synth, α -D-Me pyr*)

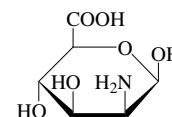
Castro, B. *et al.*, *Bull. Soc. Chim. Fr.*, 1973, 3034 (α -D-Me pyr N-Ac)

Cottaz, S. *et al.*, *Carbohydr. Res.*, 1993, **247**, 341 (α -D-Me pyr)

Ortiz Mellet, C. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 1133-1152 (α -D-Me gly tri-Ac)

2-Amino-2-deoxymannuronic acid, 9CI, 8CI

A-317

 β -D-Pyranose-form
 $C_6H_{11}NO_6$ 193.156

D-form [21940-29-4]

Constit. of the cell wall polysaccharides associated with *Micrococcus lysodeikticus*, *Vibrio parahaemolyticus* and in *E. coli* K7 antigen.

Mp 92-94° dec. $[\alpha]_D^{20} -9.9$ (c, 0.6 in H_2O).

N-Ac:

 $C_8H_{13}NO_7$ 235.193

Present in the enterobacterial common antigen from *Streptomyces montivideo* SH 94 and *Streptomyces aureus*.

6,3-Lactone, N-Ac: 2-Acetamido-2-deoxy-D-mannofuranurono-6,3-lactone

 $C_8H_{11}NO_6$ 217.178

Cryst. (H_2O). Mp 198-201°. $[\alpha]_D^{21} +121$ (c, 0.4 in H_2O).

Benzyl glycoside, N-benzoyloxycarbonyl:
 Needles ($EtOH$ aq.). Mp 160-161°. $[\alpha]_D^{25} +45.7$ (c, 0.4 in dioxan).

α -D-Pyranose-form

Benzyl glycoside, N-Ac: Benzyl 2-acetamido-2-deoxy- α -D-mannopyranosiduronic acid [38191-77-4]
 $C_{15}H_{19}NO_7$ 325.318

Cryst. (H_2O). Mp 197° dec. $[\alpha]_D^{23} +52.6$ (c, 0.5 in H_2O).

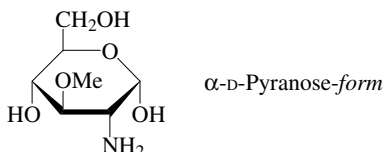
Benzyl glycoside, O,O,N-tri-Ac, Me ester:
 $C_{20}H_{25}NO_9$ 423.419

Syrup. $[\alpha]_D^{22} +77.3$ (c, 0.8 in $MeOH$).

Perkins, H.R. *et al.*, *Biochem. J.*, 1963, **86**, 475; **89**, 104P (*N-Ac, isol*)

Mayer, H. *et al.*, *Eur. J. Biochem.*, 1969, **8**, 139 (isol)
 Kundu, N.G. *et al.*, *Carbohydr. Res.*, 1970, **12**, 225 (synth, *N*-BOC benzyl gly)
 Hase, S. *et al.*, *J. Biochem. (Tokyo)*, 1971, **69**, 559 (occur)
 Yoshimura, J. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, **45**, 2027 (*N*-Ac benzyl gly, benzyl gly *N*-O-tri-Ac Me ester)
 Torri, M. *et al.*, *Eur. J. Biochem.*, 1973, **37**, 401 (isol)
 Maennel, D. *et al.*, *Eur. J. Biochem.*, 1978, **86**, 371 (isol)
 Dakaras, E. *et al.*, *Carbohydr. Res.*, 1982, **103**, 176 (synth, lactone *N*-Ac)
 Moreau, M. *et al.*, *Carbohydr. Res.*, 1990, **201**, 285 (isol, *N*-Ac)

2-Amino-2-deoxy-3-O-methylglucose A-318
 3-O-Methylglucosamine



$C_7H_{15}NO_5$ 193.199

D-form [25521-07-7] pK_a 6.92 (30°, 0.1M KNO_3). pK_a 7.1 (30°, 0.1M KNO_3).
 Hydrochloride: Mp 215° dec. $[\alpha]_D +123 \rightarrow +91.3$ (H_2O). α -Anomeric config. assigned.

4-Me: 3,4-Di-O-methyl-D-glucosamine [25521-10-2]
 $C_8H_{17}NO_5$ 207.226
 Mp 215-225° (200-205° dec.) (as hydrochloride). $[\alpha]_D +121 \rightarrow +115$ (H_2O). α -Anomeric config. assigned.

6-Me: 3,6-Di-O-methyl-D-glucosamine [25521-11-3]
 $C_8H_{17}NO_5$ 207.226
 $[\alpha]_D +84$ (H_2O) (as hydrochloride).

4,6-Di-Me: 3,4,6-Tri-O-methyl-D-glucosamine [28872-62-0]
 $C_9H_{19}NO_5$ 221.253
 Mp 210° dec. (as hydrochloride). $[\alpha]_D +49.2 \rightarrow +99.4$ (H_2O). β -Anomeric config. assigned.

Jeanloz, R.W. *et al.*, *Adv. Carbohydr. Chem.*, 1958, **13**, 189 (rev)
 Perry, M.B. *et al.*, *Can. J. Chem.*, 1969, **47**, 4091 (glc)
 Horton, D. *et al.*, *The Amino Sugars*, (Jeanloz, R.W., Ed.), Academic Press, 1969, **1A**, 1
 Adams, G.A. *et al.*, *Carbohydr. Res.*, 1970, **12**, 267 (chromatog)

2-Amino-2-deoxy-4-O-methylglucose A-319
 4-O-Methylglucosamine
 $C_7H_{15}NO_5$ 193.199

D-form

Hydrochloride: $[\alpha]_D +90$ (H_2O).

6-Me: 2-Amino-2-deoxy-4,6-di-O-methyl-D-glucose [25521-12-4]
 $C_8H_{17}NO_5$ 207.226
 $[\alpha]_D +88$ (H_2O) (as hydrochloride).

Jeanloz, R.W. *et al.*, *Adv. Carbohydr. Chem.*, 1958, **13**, 189 (rev)
 Perry, M.B. *et al.*, *Can. J. Chem.*, 1969, **47**, 4091 (glc)
 Horton, D. *et al.*, *The Amino Sugars*, (Jeanloz, R.W., Ed.), Academic Press, 1969, **1A**, 1
 Adams, G.A. *et al.*, *Carbohydr. Res.*, 1970, **12**, 267 (chromatog)

2-Amino-2-deoxy-6-O-methylglucose A-320
 $C_7H_{15}NO_5$ 193.199

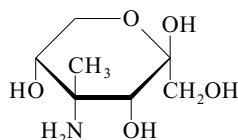
D-form

Component of the lipopolysaccharide of *Rhodopseudomonas palustris*.

Hydrochloride: Mp 185-186° dec. $[\alpha]_D +92 \rightarrow +68$ (H_2O).

Jeanloz, R.W. *et al.*, *Adv. Carbohydr. Chem.*, 1958, **13**, 189
 Perry, M.B. *et al.*, *Can. J. Chem.*, 1969, **47**, 4091 (glc)
 Horton, D. *et al.*, *The Amino Sugars*, (Jeanloz, R.W., Ed.), Academic Press, 1969, **1A**, 1
 Adams, G.A. *et al.*, *Carbohydr. Res.*, 1970, **12**, 267 (chromatog)
 Mayer, H. *et al.*, *Eur. J. Biochem.*, 1974, **44**, 181

4-Amino-4-deoxy-4-C-methylpsicose A-321



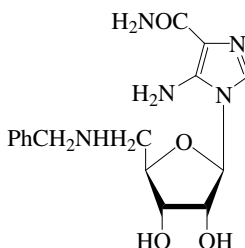
$C_7H_{15}NO_5$ 193.199

β -D-Pyranose-form

1,2-O-Isopropylidene, 3,4N,5-tri-Ac: 4-Acetamido-3,5-di-O-acetyl-4-deoxy-1,2-O-isopropylidene-4-C-methyl- β -D-psicopyranose [113863-65-3]
 $C_{16}H_{25}NO_8$ 359.375
 Cryst. (EtOH). Mp 167°. $[\alpha]_D^{20} -53$ (c, 0.2 in $CHCl_3$).

Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1987, **164**, 357 (isopropylidene, pmr)

5-Amino-1-[5-deoxy-5-[(phenylmethyl)amino]ribofuranosyl]-1H-imidazole-4-carboxamide, 9CI A-322
 GP 531

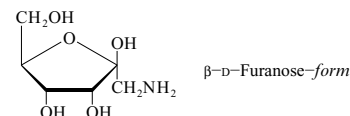


$C_{16}H_{21}N_5O_4$ 347.373
 Adenosine regulating agent. Cardioprotective agent.

β -D-form [142344-87-4]
 Off-white foam.

Pat. Coop. Treaty (WIPO), 1992, 92 02 213, (Gensia); CA, **117**, 40462t (synth, pmr, pharmacol)
 Kurz, M.A. *et al.*, *Eur. J. Pharmacol.*, 1997, **322**, 211-220 (pharmacol)

1-Amino-1-deoxypsicose A-323



$C_6H_{13}NO_5$ 179.172

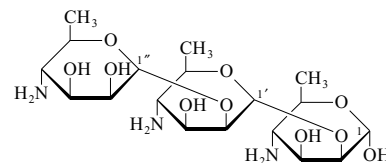
D-form

N,3,4,5,6-Penta-Ac: 1-Acetamido-3,4,5,6-tetra-O-acetyl-1-deoxy-D-psicose [51296-46-9]
 $C_{16}H_{23}NO_{10}$ 389.358
 Cryst. (diisopropyl ether/EtOH). Mp 111-112°. $[\alpha]_D^{25} -19.1$ (c, 0.5 in EtOAc).

β -D-Furanose-form

Me glycoside, 3,4,6-tribenzoyl, N-Ac: Methyl 1-acetamido-3,4,6-tri-O-benzoyl-1-deoxy- β -D-psicofuranoside [51296-41-4]
 $C_{30}H_{29}NO_9$ 547.56
 Foam. $[\alpha]_D^{25} -1$ (c, 0.5 in EtOAc).
 Hrebabecky, H. *et al.*, *Coll. Czech. Chem. Comm.*, 1973, **38**, 3181 (*D*-penta-Ac, β -D-Me fur *N*-Ac deriv, ir)

4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy-D-rhamnose A-324
4-Amino-4,6-dideoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-4-amino-4,6-dideoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-4-amino-4,6-dideoxy-D-mannose, 9CI

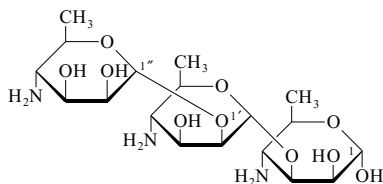


$C_{18}H_{35}N_3O_{10}$ 453.489
 Constit. of the cell wall polysaccharides of *Brucella* M and A antigens.

α -Pyranose-form

Me glycoside, N,N',N''-triformyl: [115197-09-6]
 $C_{22}H_{37}N_3O_{13}$ 551.547
 Syrup. $[\alpha]_D^{20} +48.7$ (c, 0.2 in H_2O).
Me glycoside, 3,3',3''-tribenzoyl, N,N',N''-triformyl: [115197-04-1]
 $C_{43}H_{55}N_3O_{13}$ 821.92
 Syrup. $[\alpha]_D^{20} +40.16$ (c, 1.02 in $CHCl_3$).
 Peters, T.H. *et al.*, *Chem. Comm.*, 1987, 1648 (α -Me pyr derivs, occur)
 Peters, T.H. *et al.*, *Can. J. Chem.*, 1989, **67**, 491 (α -Me pyr derivs, pmr)
 Bundle, D.R. *et al.*, *Infect. Immun.*, 1989, **57**, 2829

4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-rhamnose A-325
 4-Amino-4,6-dideoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-4-amino-4,6-dideoxy- α -D-mannopyranosyl-(1 \rightarrow 3)-4-amino-4,6-dideoxy-D-mannose, 9CI



$C_{18}H_{35}N_3O_{10}$ 453.489
 Constit. of the cell wall polysaccharide of *Brucella* M antigen.

α -Pyranose-form

Me glycoside, N,N',N''-triformyl: [115197-08-5]

$C_{22}H_{37}N_3O_{13}$ 551.547

Syrup. $[\alpha]_D^{20} +80.5$ (c, 0.65 in H_2O).

Me glycoside, 2,3',3''-tribenzyl, N,N',N''-triformyl: [121803-93-8]

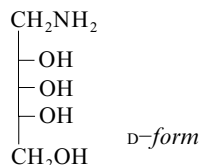
$C_{43}H_{55}N_3O_{13}$ 821.92

Syrup. $[\alpha]_D^{20} +34.6$ (c, 1.1 in $CHCl_3$).

Peters, T.H. *et al.*, *Can. J. Chem.*, 1989, **67**, 491 (α -*Me* pyr derivs)

1-Amino-1-deoxyribose, 9CI A-326

Ribitylamine. Ribamine. 5-Amino-5-deoxy-ribose
 [51108-70-4]



$C_5H_{13}NO_4$ 151.162

D-form [527-47-9]

Syrup. $[\alpha]_D^{23} +5$ (H_2O).

Hydrochloride: [22566-17-2]

Mp 132.5-134°. $[\alpha]_D^{23} -8$ (H_2O).

N-Ac: 1-Acetamido-1-deoxy-D-ribose.

N-Acetyl-D-ribitylamine

$C_7H_{15}NO_5$ 193.199

Cryst. Mp 92°. $[\alpha]_D^{23} -24$ (H_2O).

Penta-Ac: 1-Acetamido-2,3,4,5-tetra-O-acetyl-1-deoxy-D-ribose

$C_{15}H_{23}NO_9$ 361.348

Mp 114-115°.

N-Ph: N-Phenyl-D-ribitylamine

$C_{11}H_{17}NO_4$ 227.26

Mp 125-127°. $[\alpha]_D^{25} -43$ (Py).

L-form 5-Amino-5-deoxy-D-ribose

[263330-61-6]

$[\alpha]_D -47.6$ (c, 0.47 in MeOH). The name 5-amino-5-deoxy-D-ribose is preferred acc. to the IUPAC special rules for carbohydrates.

N-(3,4-Dimethylphenyl): N-(3,4-Dimethylphenyl)-L-ribitylamine

[83916-71-6]

Cryst. (EtOH). Mp 142-143° (135-137°). $[\alpha]_D^{21} +31$ (Py).

Weygand, F. *et al.*, *Ber.*, 1940, **73**, 1259 (*L*-N-dimethylphenyl)

Kuhn, R. *et al.*, *Chem. Ber.*, 1948, **81**, 553

(*D*-form, synth)

Jones, J.K.N. *et al.*, *Can. J. Chem.*, 1962, **40**, 503

(*D*-form, synth, N-Ac)

Heard, D.D. *et al.*, *J.O.C.*, 1970, **35**, 464

(*D*-form, synth)

Plant, G.W.E. *et al.*, *Methods Enzymol.*, 1971, **18B**, 515 (*D*-form, synth)

Israel, M. *et al.*, *J. Het. Chem.*, 1973, **10**, 209

(*D*-form, synth)

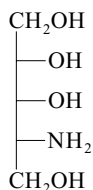
Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 183-197 (synth)

Smith, D.B. *et al.*, *Tetrahedron*, 1990, **46**, 4793

(*L*-N-dimethylphenyl)

Bouchez, V. *et al.*, *Carbohydr. Res.*, 2000, **323**, 213-217 (*L*-form, synth, pmr, cmr)

4-Amino-4-deoxyribose A-327



$C_5H_{13}NO_4$ 151.162

D-form

2-Benzyl, 5-trityl, N-(tert-butyloxycarbonyl): [127298-76-4]

$C_{36}H_{41}NO_6$ 583.723

Cryst. + H_2O (EtOAc/hexane). Mp 73°. $[\alpha]_D^{20} +14.9$ (c, 0.4 in $CHCl_3$).

2-Benzyl, 5-trityl, N-(tert-butyloxycarbonyl), 1-(tert-butyldimethylsilyl): [127298-77-5]

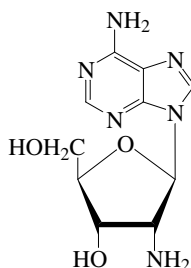
$C_{42}H_{55}NO_6Si$ 697.985

Liq. $[\alpha]_D^{20} +5.3$ (c, 1.0 in $CHCl_3$).

Ikota, N. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 3399 (benzyl derivs, ir, pmr, cmr)

9-(2-Amino-2-deoxyribofuranosyl)adenine, 8CI A-328

9-(2-Amino-2-deoxyribofuranosyl)-9H-purin-6-amine, 9CI



$C_{10}H_{14}N_6O_3$ 266.259

α -D-form [10407-64-4]

Mp 149-151°. $[\alpha]_D^{23} +90$ (c, 0.7 in MeOH). λ_{max} 262 (14500) (H_2O).

β -D-form

2'-Amino-2'-deoxyadenosine, 9CI. 9-(2-Amino-2-deoxy- β -D-ribofuranosyl)adenine. 2-AA. SA 4427

Prod. by *Actinomadura* sp. SA-4427 and an actinomycete. Antiviral, antineoplastic and antimycoplasmal agent. Cryst. Mp 197-198° (190-191°). $[\alpha]_D^{24} -67$ (c, 1.0 in MeOH). Log P -2.83 (calc). λ_{max} (no shifts reported) (Derep). λ_{max} (no shifts reported) (Derep). λ_{max} 259 (ϵ 14600) (H_2O) (Derep). λ_{max} 262 (14700) (H_2O).

Wolfson, M.L. *et al.*, *J.O.C.*, 1967, **32**, 1823

(synth, pmr)

Rohrer, D. *et al.*, *J.A.C.S.*, 1970, **92**, 4956 (cryst struct)

Sundaralingam, M. *et al.*, *J.A.C.S.*, 1971, **93**, 6644 (conform)

Saran, A. *et al.*, *Biochim. Biophys. Acta*, 1973, **299**, 497 (conform)

Ikehara, M. *et al.*, *Tetrahedron*, 1978, **34**, 1133

(synth, bibl)

Iwai, Y. *et al.*, *J. Antibiot.*, 1979, **32**, 1367 (isol, props)

Imazawa, M. *et al.*, *J.O.C.*, 1979, **44**, 2039

(synth, bibl)

Klimke, G. *et al.*, *Z. Naturforsch., C*, 1979, **34**, 1075 (conform)

Okawa, N. *et al.*, *Agric. Biol. Chem.*, 1980, **44**, 1671 (isol, props)

Uesugi, S. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 2199 (cmr)

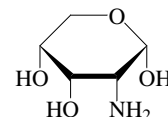
Morisawa, H. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 3191 (synth)

Ikehara, M. *et al.*, *Heterocycles*, 1984, **21**, 75

(conform, props)

2-Amino-2-deoxyribose A-329

Ribosamine



α -D-Pyranose-form

$C_5H_{11}NO_4$ 149.146

D-form

Occurs naturally in 2'-Amino-2'-deoxy-guanosine, A-277.

Cryst. (EtOH) (as hydrochloride).

Mp 147-148° dec. (hydrochloride). $[\alpha]_D^{22} +14 \rightarrow -3$ (c, 1 in H_2O).

N-Ac: 2-Acetamido-2-deoxy-D-ribose

$C_7H_{13}NO_5$ 191.183

Mp 141-143°. $[\alpha]_D -73 \rightarrow -39$ (H_2O).

β -D-Pyranose-form

Me glycoside: Methyl 2-amino-2-deoxy- β -D-ribofuranoside

$C_6H_{13}NO_4$ 163.173

Mp 175-183° dec. (as hydrochloride).

$[\alpha]_D^{25} -91.8$ (c, 3.04 in H_2O).

β -D-Furanose-form

Me glycoside, 2-benzoyl, 3,5-di-Ac: Methyl 3,5-di-O-acetyl-2-benzamido-2-deoxy- β -D-ribofuranoside

$C_{17}H_{21}NO_7$ 351.355

Mp 115°. $[\alpha]_D^{22} +29$ (c, 1 in $CHCl_3$).

L-form

Mp 153-154° (as hydrochloride). $[\alpha]_D^{20} -11.2$ (2 min) $\rightarrow +5.6$ (c, 0.4 in H_2O).

N-Ac: 2-Acetamido-2-deoxy-L-ribose
 $C_7H_{13}NO_5$ 191.183
 Mp 115-123°.

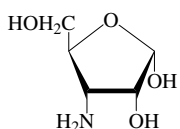
β-L-Pyranose-form

Me glycoside: Methyl 2-amino-2-deoxy-β-L-ribofuranoside
 $C_6H_{13}NO_4$ 163.173
 Mp 186-187° (as hydrochloride). $[\alpha]_D^{20}$ +94 (c, 0.2 in H_2O).

Horton, D. et al., *Adv. Carbohydr. Chem.*, 1960, **15**, 159; 195 (β-D-Me pyr, β-L-Me pyr, rev)
 Shafizadeh, F. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 206 (synth)
 Gigg, R. et al., *J.C.S.*, 1965, 1351 (D-form)
 Collins, P.M. et al., *J.C.S.*, 1965, 3448 (L-form)
 Horton, D. et al., *The Amino Sugars*, (Jeanloz, R.W., Ed.), Academic Press, 1969, **1A**, 1 (D-Ac, L-Ac, rev)
 Nakanishi, T. et al., *Chem. Pharm. Bull.*, 1976, **24**, 2955 (D-form isol, D-N-Ac)

3-Amino-3-deoxyribose

A-330



α-D-Furanose-form

$C_5H_{11}NO_4$ 149.146

D-form

Present as a component of Puromycin, P-111. Isol. as 3'-amino-3'-deoxyadenosine from *Helminthosporium* spp.

Hydrochloride: [20590-58-3]
 Cryst. (EtOH). Mp 160° dec. (164-165°). $[\alpha]_D$ -25 (c, 2.0 in H_2O). $[\alpha]_D^{26}$ -38.4 → -25.6 (10 min., c, 1.2 in H_2O).

α-D-Furanose-form

1,2-O-Isopropylidene: 3-Amino-3-deoxy-1,2-O-isopropylidene-α-D-ribofuranose [14125-95-2]
 $C_8H_{15}NO_4$ 189.211
 Cryst. (petrol). Mp 63-67°. $[\alpha]_D^{24}$ +43.9 (c, 0.5 in H_2O).

1,2-O-Isopropylidene, N,5-di-Ac: 3-Acetamido-5-O-acetyl-3-deoxy-1,2-O-isopropylidene-α-D-ribofuranose [29881-54-7]
 $C_{12}H_{19}NO_6$ 273.285
 Cryst. (Et_2O /hexane). Mp 165°. $[\alpha]_D^{25}$ +101 (c, 1.5 in $CHCl_3$).

1,2-O-Isopropylidene, N-trifluoroacetyl: 3-Deoxy-1,2-O-isopropylidene-3-trifluoroacetamido-α-D-ribofuranose
 $C_{10}H_{14}F_3NO_5$ 285.219
 Cryst. (2-propanol/petrol). Mp 156-158°.

Me glycoside, N,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3-deoxy-α-D-ribofuranoside
 $C_{12}H_{19}NO_7$ 289.285
 Mp 116-117°. $[\alpha]_D^{24}$ +93.7 (c, 1.6 in $CHCl_3$).

Me glycoside, N,2,5-tri-Ac: Methyl 3-acetamido-2,5-di-O-acetyl-3-deoxy-α-D-ribofuranoside
 $C_{12}H_{19}NO_7$ 289.285
 Cryst. (C_6H_6 /heptane). Mp 90-91°. $[\alpha]_D^{23}$ +135 (c, 2 in $CHCl_3$).

β-D-Furanose-form

N,1,2,5-Tetra-Ac: 3-Acetamido-1,2,5-tri-O-acetyl-3-deoxy-β-D-ribofuranose [35085-30-4]
 $C_{13}H_{19}NO_8$ 317.295
 Cryst. (EtOAc/heptane). Mp 102-103°. $[\alpha]_D^{25}$ +44 (c, 1.5 in $CHCl_3$).

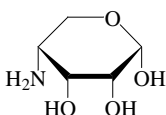
Me glycoside: Methyl 3-amino-3-deoxy-β-D-ribofuranoside, 8CI
 $C_6H_{13}NO_4$ 163.173
 Cryst. (EtOH/petrol). Mp 108-110°.

Me glycoside, N,2,5-tri-Ac: Methyl 3-acetamido-2,5-di-O-acetyl-3-deoxy-β-D-ribofuranoside
 $C_{12}H_{19}NO_7$ 289.285
 Cryst. (C_6H_6 /heptane). Mp 98-99°. $[\alpha]_D^{24}$ +34.6 (c, 2.0 in $CHCl_3$).

Waller, C.W. et al., *J.A.C.S.*, 1953, **75**, 2025 (struct)
 Baker, B.R. et al., *J.A.C.S.*, 1953, **75**, 3864; 1955, **77**, 7 (α-D-Me fur N,2,4-tri-Ac, synth, α-D-Me fur N,2,5-tri-Ac, β-D-Me fur N,2,5-tri-Ac)
 Sowa, W. et al., *Can. J. Chem.*, 1968, **46**, 1586 (D-form, synth)
 Defaye, J. et al., *Carbohydr. Res.*, 1969, **9**, 250 (D-form, synth)
 Fujiwara, A.N. et al., *J. Het. Chem.*, 1970, **7**, 891 (α-D-fur isopropylidene, α-D-fur isopropylidene trifluoroacetyl, β-D-Me fur)
 Anisuzzaman, A.K.M. et al., *J.O.C.*, 1972, **37**, 3187 (α-D-fur isopropylidene N,5-di-Ac, β-D-fur tetra-Ac)
 Joseph, J.P. et al., *J.O.C.*, 1996, **31**, 3404 (α-D-fur isopropylidene)

4-Amino-4-deoxyribose

A-331



α-D-Pyranose-form

$C_5H_{11}NO_4$ 149.146

α-D-Pyranose-form

Hydrochloride: [136766-50-2]
 Syrup.

β-D-Pyranose-form

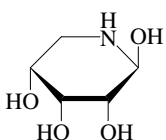
Hydrochloride: [136766-51-3]
 Syrup.

Benzyl glycoside, 2,3-anhydro: Benzyl 4-amino-2,3-anhydro-4-deoxy-β-D-ribofuranoside [65518-85-6]
 $C_{12}H_{15}NO_3$ 221.255
 Cryst. Mp 55°. $[\alpha]_D^{20}$ +54.4 ($CHCl_3$).

Kimmich, R. et al., *Annalen*, 1981, 1100 (benzyl gly)
 Malik, A. et al., *Chem. Comm.*, 1984, 1530 (benzyl gly)
 Witte, J.F. et al., *Tet. Lett.*, 1991, **32**, 3927 (synth, pmr, cmr)

5-Amino-5-deoxyribose

A-332



β-D-Pyranose-form

$C_5H_{11}NO_4$ 149.146

D-form

Benzylphenylhydrazones, 5N-Ac:
 Cryst. (MeOH/ Et_2O /petrol). Mp 143-144°. $[\alpha]_D^{23}$ -36.4 (c, 1.72 in MeOH).

β-D-Pyranose-form

3,4,5N-Tri-Ac: 5-Acetamido-3,4-di-O-acetyl-5-deoxy-β-D-ribofuranose
 $C_{11}H_{17}NO_7$ 275.258
 Cryst. (EtOAc). Mp 139-140°.

2,3,4,5N-Tetra-Ac: 5-Acetamido-2,3,4-tri-O-acetyl-5-deoxy-β-D-ribofuranose
 $C_{13}H_{19}NO_8$ 317.295
 Cryst. (EtOAc). Mp 147-148°.

D-Furanose-form

N-Ac: 5-Acetamido-5-deoxy-β-D-ribofuranose
 $C_7H_{13}NO_5$ 191.183
 Amorph. solid. $[\alpha]_D^{24}$ +19 (c, 1.6 in H_2O).

α-D-Furanose-form

Me glycoside: 5-Amino-5-deoxy-O-methyl-α-D-ribofuranose [262600-85-1]
 $C_6H_{13}NO_4$ 163.173
 Characterised spectroscopically.

β-D-Furanose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 5-amino-5-deoxy-2,3-O-isopropylidene-β-D-ribofuranoside [14131-74-9]
 $C_9H_{17}NO_4$ 203.238
 Oil. $[\alpha]_D^{25}$ -71.6 (c, 0.8 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene, hydrochloride:
 Needles (EtOH). Mp 201.5-202°. $[\alpha]_D^{25}$ -34.5 (c, 6.3 in H_2O).

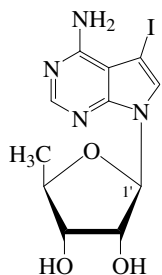
Benzyl glycoside, 2,3-O-isopropylidene, N-Ac: Benzyl 5-acetamido-5-deoxy-2,3-O-isopropylidene-β-D-ribofuranoside
 $C_{17}H_{23}NO_5$ 321.372
 Cryst. (Et_2O /pentane). Mp 50° Mp 65° (solvate).

DL-form

Di-Me acetal, 2,3,4,5N-tetra-Ac: [119830-25-0]
 $C_{15}H_{25}NO_9$ 363.364
 Cryst. (EtOAc/cyclohexane). Mp 101-102°.

Hanessian, S. et al., *J.O.C.*, 1963, **28**, 2604 (D-fur deriv, ir, cryst struct)
 Leonard, N.J. et al., *J. Het. Chem.*, 1966, **3**, 485 (Me β-D-fur deriv, pmr)
 Defoin, A. et al., *Helv. Chim. Acta*, 1988, **71**, 1642 (DL-form, β-D-pyr deriv, ir, pmr, cmr)
 Han, M.J. et al., *Org. Biomol. Chem.*, 2003, **1**, 2276-2286 (α-D-fur Me gly)

4-Amino-7-(5-deoxyribosyl)-5-iodopyrrolo[2,3-d]pyrimidine A-333
 7-(5-Deoxyribofuranosyl)-5-iodo-7H-pyrrolo[2,3-d]pyrimidin-4-amine, 9Cl.
 5'-Deoxy-5-iodotubercidin



1'β-form

C₁₁H₁₃IN₄O₃ 376.153
 Smooth muscle relaxant, hypothermic, inhibitor of adenosine kinase. λ_{max} 239 (ε 19500); 286 (ε 8320) (pH 1) (Derep). λ_{max} 232 (sh) (ε 13200); 280 (ε 8920) (pH 12) (Derep). λ_{max} 239 (ε 19500); 286 (ε 8320) (pH 1) (Derep). λ_{max} 205 (ε 21000); 283 (ε 8200) (H₂O) (Berdy). λ_{max} 203 (ε 19450); 240 (ε 18850); 287 (ε 8000) (HCl) (Berdy). λ_{max} 282 (ε 8400) (NaOH) (Berdy).

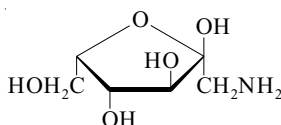
1'α-form [85209-85-4]

Isol. from the red alga *Hypnea valendiae*. Muscle relaxant. Pale yellow gum. Sol. H₂O. [α]_D²² -50 (c, 0.36 in MeOH). Structural identification of this anomer not certain. λ_{max} 203; 240; 287 (HCl) (Berdy). λ_{max} 283 (H₂O) (Berdy). λ_{max} 282 (NaOH) (Berdy).

1'β-form [85209-84-3]

Isol. from *Hypnea valendiae*. Needles (Py). Mp 227-228° dec. [α]_D²⁵ -55 (c, 0.2 in MeOH). Kazlauskas, R. et al., *Aust. J. Chem.*, 1983, **36**, 165 (isol, uv, pmr, cmr, ms, struct)

1-Amino-1-deoxysorbose A-334



C₆H₁₃NO₅ 179.172

α-L-Furanose-form

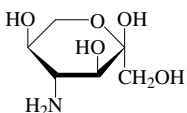
2,3:4,6-Di-O-isopropylidene: 1-Amino-1-deoxy-2,3:4,6-di-O-isopropylidene-α-L-sorbofuranose
 C₁₂H₂₁NO₅ 259.302
 Cryst. (hexane). Mp 71.5°. [α]_D²³ -3.7 (c, 1.04 in CHCl₃).

2,3:4,6-Di-O-isopropylidene, N-Ac: 1-Acetamido-1-deoxy-2,3:4,6-di-O-isopropylidene-α-L-sorbofuranose
 [35170-84-4]
 C₁₄H₂₃NO₆ 301.339
 Cryst. (Et₂O). Mp 146-148°. [α]_D²⁵ -62.2 (c, 2.27 in EtOH).

2,3:4,6-Di-O-isopropylidene, N-benzoyl: 1-Benzamido-1-deoxy-2,3:4,6-di-O-isopropylidene-α-L-sorbofuranose
 [35170-85-5]
 C₁₉H₂₅NO₆ 363.41
 Oil.

Tokuyama, K. et al., *Bull. Chem. Soc. Jpn.*, 1964, **37**, 1133 (diisopropylidene)
 Glass, R.S. et al., *J.O.C.*, 1972, **37**, 3366 (diisopropylidene derivs, ms, pmr)

4-Amino-4-deoxysorbose A-335



α-L-Pyranose-form

C₆H₁₃NO₅ 179.172

α-L-Pyranose-form

1,2-O-Isopropylidene, 3,4N,5-tri-Ac: 4-Acetamido-3,5-di-O-acetyl-4-deoxy-1,2-O-isopropylidene-α-L-sorbofuranose
 [113863-56-2]
 C₁₅H₂₃NO₈ 345.349
 Cryst. (EtOH). Mp 164°. [α]_D²² -77 (c, 0.5 in CHCl₃). [α]_D -61 (c, 0.3 in MeOH).

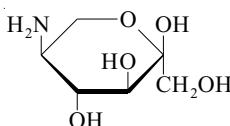
Me glycoside: Methyl 4-amino-4-deoxy-α-L-sorbofuranoside
 [17184-33-7]
 C₇H₁₅NO₅ 193.199
 Syrup (as hydrochloride). [α]_D²¹ -71 (c, 1.4 in H₂O). CAS no. refers to hydrochloride.

Me glycoside, N-Ac: Methyl 4-acetamido-4-deoxy-α-L-sorbofuranoside
 [17184-34-8]
 C₉H₁₇NO₆ 235.236
 Needles (EtOH). Mp 162°. [α]_D²¹ -51.2 (c, 0.52 in H₂O).

Me glycoside, 1,3,4N,5-tetra-Ac: Methyl 4-acetamido-1,3,5-tri-O-acetyl-4-deoxy-α-L-sorbofuranoside
 [17184-35-9]
 C₁₅H₂₃NO₉ 361.348
 Cryst. (EtOH). Mp 156°. [α]_D²¹ -52 (c, 1.0 in CHCl₃).

Lichtenthaler, F.W. et al., *Chem. Ber.*, 1967, **100**, 2389 (α-L-Me pyr, α-L-Me pyr Ac derivs)
 Lichtenthaler, F.W. et al., *Carbohydr. Res.*, 1987, **164**, 357 (isopropylidene tri-Ac, pmr)

5-Amino-5-deoxysorbose A-336



C₆H₁₃NO₅ 179.172

α-L-Pyranose-form

Me glycoside, 1,3-O-benzylidene: Methyl 5-amino-1,3-O-benzylidene-5-deoxy-α-L-sorbofuranoside
 [18610-14-5]
 C₁₄H₁₉NO₅ 281.308
 Cryst. (EtOH/petrol). Mp 171-172°.

[α]_D²⁰ -56.3 (c, 0.59 in CHCl₃) (lit. gives a temp. range).

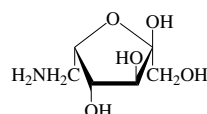
Me glycoside, 1,3-O-benzylidene, N-Ac: Methyl 5-acetamido-1,3-O-benzylidene-5-deoxy-α-L-sorbofuranoside
 [18610-16-7]
 C₁₆H₂₁NO₆ 323.345
 Cryst. Mp 210° dec. [α]_D²⁰ -63.8 (c, 0.61 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 1,3-O-benzylidene, 4,5N-di-Ac: Methyl 5-acetamido-4-O-acetyl-1,3-O-benzylidene-5-deoxy-α-L-sorbofuranoside
 [18610-15-6]
 C₁₈H₂₃NO₇ 365.382
 Cryst. Mp 226-228° dec. [α]_D²⁰ -64.6 (c, 0.7 in CHCl₃) (lit. gives a temp. range).

Barlow, C.B. et al., *J.C.S. (C)*, 1967, 1194 (props)

Murphy, D. et al., *J.C.S. (C)*, 1967, 1732 (α-L-Me pyr benzylidene derivs)

6-Amino-6-deoxysorbose A-337



α-L-Pyranose-form

C₆H₁₃NO₅ 179.172

1-Furanose-form

N-Ac: 6-Acetamido-6-deoxy-L-sorbofuranose
 C₈H₁₅NO₆ 221.21
 Syrup. [α]_D²⁰ -41.2 (c, 0.32 in EtOH).

α-L-Furanose-form

Hydrochloride: [73980-92-4] Glucosidase inhibitor for diet therapy.
 Cryst. (EtOH aq.). Mp 127-129° dec. [α]_D²⁰ -26.5 (c, 1.0 in H₂O).

N-Benzoyloxycarbonyl: [75016-28-3]
 C₁₄H₁₉NO₇ 313.307
 Cryst. Mp 106-110°. [α]_D²⁰ -15.1 (c, 1.0 in MeOH).

2,3-Isopropylidene: 6-Amino-6-deoxy-2,3-O-isopropylidene-α-L-sorbofuranose
 [4698-00-4]
 C₉H₁₇NO₅ 219.237
 Cryst. (2-propanol). Mp 141-143° (138-140°). [α]_D²⁰ +11.4 (c, 1.0 in EtOH). [α]_D²⁰ +15.1 (c, 1.0 in MeOH).

2,3-Isopropylidene, N-Ac: 6-Acetamido-6-deoxy-2,3-O-isopropylidene-α-L-sorbofuranose
 C₁₁H₁₉NO₆ 261.274
 Cryst. Mp 164-166°. [α]_D²⁰ -53.7 (c, 1.0 in EtOH).

2,3-Isopropylidene, N-tosyl: C₁₆H₂₃NO₇S 373.426
 Cryst. (MeOH/Et₂O). Mp 110-112°. [α]_D²⁰ +11.1 (c, 1.36 in EtOH).

2,3-Isopropylidene, N-benzoyloxycarbonyl: [126210-26-2]
 C₁₇H₂₃NO₇ 353.371
 Cryst. Mp 111-113°. [α]_D²⁰ -14.9 (c, 1.0 in MeOH).

2,3-Isopropylidene, N-Me: 6-Deoxy-2,3-O-isopropylidene-6-methylamino- α -L-sorbofuranose
[28079-73-4]
 $C_{10}H_{19}NO_5$ 233.264
Syrup. $[\alpha]_D^{25}$ -1.9 (c, 0.5 in MeOH).

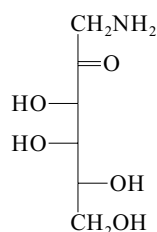
1-Me 2,3-isopropylidene: 6-Amino-6-deoxy-2,3-O-isopropylidene-1-O-methyl- α -L-sorbofuranose
[17331-47-4]
 $C_{10}H_{19}NO_5$ 233.264
Cryst. Mp 55°. Bp₃ 125°. $[\alpha]_D^{24.5}$ +8.3 (c, 1.07 in MeOH).

[74244-24-9, 74815-37-5]

Tokuyama, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1966, **39**, 2728 (isopropylidene 1-Me)
Paulsen, H. *et al.*, *Chem. Ber.*, 1967, **100**, 802 (N-Ac, isopropylidene, isopropylidene N-Ac)
Paulsen, H. *et al.*, *Chem. Ber.*, 1970, **103**, 475 (isopropylidene N-Me)
Eur. Pat., 1982, 49 858; *CA*, **97**, 182801v (synth)
Beaupere, D. *et al.*, *Carbohydr. Res.*, 1989, **191**, 163 (N-benzoyloxycarbonyl deriv, cmr)

1-Amino-1-deoxytagatose

A-338



$C_6H_{13}NO_5$ 179.172

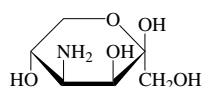
D-form

N-Benzyl, N-Me: [100759-89-5]
 $C_{14}H_{21}NO_5$ 283.324
Cryst. (EtOH). Mp 146-148°. $[\alpha]_D^{22}$ +27 (c, 1.0 in Py).
N,N-Dibenzyl: [23568-26-5]
 $C_{20}H_{25}NO_5$ 359.421
Cryst. (EtOH). Mp 128-131°. $[\alpha]_D^{21}$ +60 (c, 1.0 in Py).
N-Hexyl: [74043-64-4]
 $C_{12}H_{25}NO_5$ 263.333
Cryst. (as oxalate salt). Mp 143-144° (oxalate). $[\alpha]_D^{23}$ -7 (c, 1.0 in MeOH).
CAS no. refers to oxalate.

Gruennagel, R. *et al.*, *Annalen*, 1969, **721**, 234 (N,N-dibenzyl)
Fernandez-Bolanos, J. *et al.*, *An. Quim.*, 1979, **75**, 1010 (N-hexyl)
Fernandez-Bolanos, J. *et al.*, *Carbohydr. Res.*, 1985, **143**, 260 (N-benzyl N-Me)

4-Amino-4-deoxytagatose

A-339



β -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form [70490-89-0]
Syrup.

β -D-Pyranose-form

1,3,5-Tri-Ac: 1,3,5-Tri-O-acetyl-4-amino-4-deoxy- β -D-tagatopyranose
[17184-36-0]
 $C_{12}H_{19}NO_8$ 305.284
Syrup (as hydrochloride). CAS no. refers to hydrochloride.

1,2,3,4N,5-Penta-Ac: 4-Acetamido-1,2,3,5-tetra-O-acetyl-4-deoxy- β -D-tagatopyranose
[17184-37-1]
 $C_{16}H_{23}NO_{10}$ 389.358
Needles (EtOH). Mp 230°. $[\alpha]_D^{21}$ -42 (c, 0.5 in $CHCl_3$).

α -L-Pyranose-form

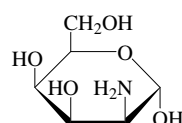
1,2,3,4N,5-Penta-Ac: 4-Acetamido-1,2,3,5-tetra-O-acetyl-4-deoxy- α -L-tagatopyranose
[113863-52-8]
 $C_{16}H_{23}NO_{10}$ 389.358
Cryst. (EtOH). Mp 230-231°. $[\alpha]_D^{20}$ -45 (c, 0.3 in $CHCl_3$) (-42).

Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1967, **100**, 2389 (β -D-pyr tri-Ac, β -D-pyr penta-Ac)
Delaware, D.L. *et al.*, *CA*, 1979, **91**, 20927q (synth)
Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1987, **164**, 357 (α -L-pyr penta-Ac, pmr)

2-Amino-2-deoxytalose, 8CI

A-340

Talosamine



α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form [14307-14-3]

Present (possibly as its enantiomer) as amino component of ovine and bovine cartilage.
Hydrochloride: [4773-26-6]
Mp 152-153°. $[\alpha]_D^{23}$ -5.8 (c, 1.0 in H_2O).
N-Ac: 2-Acetamido-2-deoxy-D-talose
 $C_8H_{15}NO_6$ 221.21
Syrup. $[\alpha]_D^{20}$ -8.8 (c, 2.0 in H_2O).

α -D-Pyranose-form

Me glycoside, N-Ac: Methyl 2-acetamido-2-deoxy- α -D-talopyranoside
 $C_9H_{17}NO_6$ 235.236
Syrup. $[\alpha]_D^{26}$ +7 (c, 1.2 in MeOH).

Me glycoside, tetra-Ac: Methyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy- α -D-talopyranoside
 $C_{15}H_{23}NO_9$ 361.348
Prisms (Et_2O /pentane). Mp 102-103°. $[\alpha]_D^{23}$ +61 (c, 1.54 in $CHCl_3$).

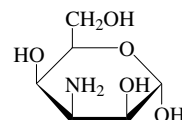
Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-talopyranoside
 $C_{16}H_{21}NO_6$ 323.345
Platelets (Me_2CO/Et_2O). Mp 193-195°. $[\alpha]_D^{27}$ +45 (c, 1.27 in $CHCl_3$).

Crompton, M.J. *et al.*, *Nature (London)*, 1957, **180**, 605 (sepn)
Jeanloz, R.W. *et al.*, *J.O.C.*, 1961, **26**, 533 (D-form, synth, α -D-Me pyr N-Ac, α -D-Me pyr tetra-Ac, α -D-Me pyr N-Ac benzylidene)

Lemieux, R.U. *et al.*, *Tet. Lett.*, 1965, 2143 (D-form, synth)
Perry, M.B. *et al.*, *Can. J. Chem.*, 1968, **46**, 2481 (D-form, synth, D-N-Ac)
Perry, M.B. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 32
Barili, P.L. *et al.*, *Carbohydr. Res.*, 1996, **290**, 17-31 (synth, bibl, derivs)

3-Amino-3-deoxytalose

A-341



α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

α -D-Pyranose-form

Prisms and needles (as hydrochloride). Mp 160-161° (hydrochloride). $[\alpha]_D^{20}$ +29.5 \rightarrow +23.7 (c, 1.0 in H_2O).

Me glycoside: Methyl 3-amino-3-deoxy- α -D-talopyranoside
 $C_7H_{15}NO_5$ 193.199
Prisms (EtOH) (as hydrochloride). Mp 191° dec. (hydrochloride). $[\alpha]_D^{20}$ +90 (c, 2.0 in H_2O).

Me glycoside, N-Ac: Methyl 3-acetamido-3-deoxy- α -D-talopyranoside
[135635-16-4]
 $C_9H_{17}NO_6$ 235.236
Cryst. (EtOH). Mp 200-201°. $[\alpha]_D$ +99 (c, 1.6 in H_2O).

Me glycoside, 2,3N,4,6-tetra-Ac: Methyl 3-acetamido-2,4,6-tri-O-acetyl-3-deoxy- α -D-talopyranoside
[135684-05-8]
 $C_{15}H_{23}NO_9$ 361.348
Syrup.

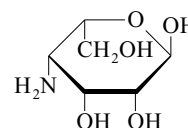
α -DL-Pyranose-form

Me glycoside, N,N-di-Me, 2,4,6-tri-Ac: Methyl 2,4,6-tri-O-acetyl-3-deoxy-3-dimethylamino- α -DL-talopyranoside
[51785-33-2]
 $C_{15}H_{25}NO_8$ 347.364
Syrup.

Baer, H.H. *et al.*, *J.A.C.S.*, 1962, **84**, 83 (synth, α -D-Me pyr)
Banaszek, A. *et al.*, *Bull. Acad. Pol. Sci., Ser. Sci. Chim.*, 1974, **22**, 79; *CA*, 1974, **80**, 108769y (α -DL-Me pyr di-Me tri-Ac)
Defaye, J. *et al.*, *Carbohydr. Res.*, 1991, **212**, 129 (α -D-Me pyr Ac derivs, pmr, cmr)

4-Amino-4-deoxytalose

A-342

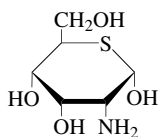


$C_6H_{13}NO_5$ 179.172

α -L-Pyranose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 4-amino-4-deoxy-2,3-O-isopropylidene- α -L-talopyranoside
[30572-82-8]
 $C_{10}H_{19}NO_5$ 233.264
Syrup.

Al-Radhi, A.K. *et al.*, *Chem. Comm.*, 1970, 1250 (α -L-Me pyr isopropylidene)

2-Amino-2-deoxy-5-thioallose A-343 α -D-Pyranose-form

$C_6H_{13}NO_4S$ 195.239

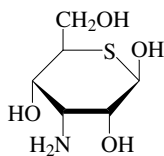
D-form

N-Ac: [81893-43-8]

$C_8H_{15}NO_5S$ 237.276

No phys. props. reported in abstract.

Tanahashi, E. *et al.*, *CA*, 1982, **96**, 218155h

3-Amino-3-deoxy-5-thioallose A-344 β -D-Pyranose-form

$C_6H_{13}NO_4S$ 195.239

D-form [149001-79-6]

Mp 236-241° (as hydrochloride). $[\alpha]_D -12 \rightarrow +65$ (0.78 in H_2O) (equilib.). CAS no. refers to hydrochloride.

 β -D-Pyranose-form

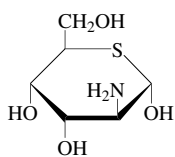
N,1,2,4,6-Penta-Ac: 3-Acetamido-1,2,4,6-tetra-O-acetyl-3-deoxy-5-thio- β -D-allopyranose

[149001-80-9]

$C_{16}H_{23}NO_9S$ 405.425

Cryst. (EtOH/diisopropyl ether). Mp 84-88°. $[\alpha]_D -13$ (c, 0.95 in $CHCl_3$).

Al-Masoudi, N.A.L. *et al.*, *Carbohydr. Res.*, 1993, **239**, 273-278

2-Amino-2-deoxy-5-thioallose, 9CI A-345 α -D-Pyranose-form

$C_6H_{13}NO_4S$ 195.239

 α -D-Pyranose-form

Me glycoside: Methyl 2-amino-2-deoxy-5-thio- α -D-altropyranoside, 9CI

[171079-39-3]

$C_7H_{15}NO_4S$ 209.266

Syrup. $[\alpha]_D +138$ (c, 2.01 in MeOH).

Me glycoside, N-Ac: Methyl 2-acetamido-2-deoxy-5-thio- α -D-altropyranoside, 9CI

[171079-38-2]

$C_9H_{17}NO_5S$ 251.303

Cryst. (EtOH/EtOAc). Mp 178-180°.

$[\alpha]_D +132$ (c, 1.14 in MeOH).

Me glycoside, 4,6-isopropylidene: Methyl 2-amino-2-deoxy-4,6-O-isopropylidene-5-thio- α -D-altropyranoside, 9CI

[171079-48-4]

$C_{10}H_{19}NO_4S$ 249.33

Cryst. (diisopropyl ether). Mp 127-129°.

$[\alpha]_D +230$ (c, 2.05 in CH_2Cl_2).

Me glycoside, 4,6-isopropylidene, N-Ac: Methyl 2-acetamido-2-deoxy-4,6-O-isopropylidene-5-thio- α -D-altropyranoside, 9CI

[171079-49-5]

$C_{12}H_{21}NO_5S$ 291.368

Cryst. (Et₂O). Mp 198-200°. $[\alpha]_D +184$

(c, 0.81 in $CHCl_3$).

Me glycoside, 4,6-isopropylidene, N,3-di-Ac: Methyl 2-acetamido-3-O-acetyl-2-deoxy-4,6-O-isopropylidene-5-thio- α -D-altropyranoside, 9CI

[171079-50-8]

$C_{14}H_{23}NO_6S$ 333.405

Mp 211-213°. $[\alpha]_D +164$ (c, 1.06 in

$CHCl_3$).

 β -D-Pyranose-form

N-Ac: 2-Acetamido-2-deoxy-5-thio- β -D-altropyranoside, 9CI

[171079-41-7]

$C_8H_{15}NO_5S$ 237.276

Mp 215-217°. $[\alpha]_D -70.4$ (5 min) $\rightarrow -62.8$ (equilib.) (c, 1.00 in H_2O).

N,1,3,4,6-Penta-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy-5-thio- β -D-altropyranoside, 9CI

[171079-53-1]

$C_{16}H_{23}NO_9S$ 405.425

Syrup. $[\alpha]_D -132$ (c, 2.23 in CH_2Cl_2).

Me glycoside, N-Ac: Methyl 2-acetamido-2-deoxy-5-thio- β -D-altropyranoside, 9CI

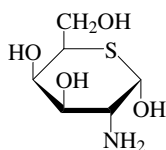
[171079-40-6]

$C_9H_{17}NO_5S$ 251.303

Cryst. (EtOAc). Mp 168-170°. $[\alpha]_D -207$ (c, 1.20 in MeOH).

[171079-42-8]

Al-Masoudi, N.A.L. *et al.*, *Carbohydr. Res.*, 1995, **272**, 111-119

2-Amino-2-deoxy-5-thiogalactose A-346 α -D-Pyranose-form

$C_6H_{13}NO_4S$ 195.239

 α -D-Pyranose-form

N-Ac: 2-Acetamido-2-deoxy-5-thio- α -D-galactopyranose

[89950-73-2]

$C_8H_{15}NO_5S$ 237.276

Needles (EtOH). Mp 189° dec. $[\alpha]_D +173.8$ (c, 0.37 in MeOH).

D-Furanose-form

Penta-Ac: 2-Acetamido-1,3,6-tri-O-acetyl-2-deoxy-5-thio-D-galactofuranose

[89950-72-1]

[89950-74-3]

$C_{16}H_{23}NO_9S$ 405.425

Syrup. $[\alpha]_D -15$ (c, 0.5 in $CHCl_3$). Approx. 1:1 anomer ratio.

 β -D-Furanose-form

Me glycoside, tetra-Ac: Methyl 2-acetamido-3,6-di-O-acetyl-5-S-acetyl-2-deoxy-5-thio- β -D-galactofuranoside

[89950-71-0]

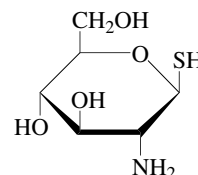
$C_{15}H_{23}NO_8S$ 377.415

Syrup. $[\alpha]_D -96$ (c, 0.9 in MeOH).

Tanahashi, E. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 129-137 (α -D-pyr N-Ac, D-fur penta-Ac, β -D-fur Me gly tetra-Ac)

2-Amino-2-deoxy-1-thioglucose A-347

1-Thioglucosamine



$C_6H_{13}NO_4S$ 195.239

 β -D-Pyranose-form [91288-32-3]

2-N,3,4,6-Tetra-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-2-deoxy-1-thio- β -D-glucopyranose

[51450-09-0]

$C_{14}H_{21}NO_8S$ 363.388

Mp 173° (160-162°). $[\alpha]_D^{23} -16$ (c, 1.08 in $CHCl_3$).

1-S,2-N,3,4,6-Penta-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-1-S-acetyl-2-deoxy-1-thio- β -D-glucopyranose. 2-Acetamido-1,3,4,6-tetraacetyl-2-deoxy-1-thio- β -D-glucopyranose

[10043-46-6]

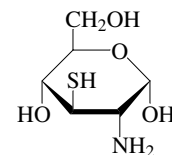
$C_{16}H_{23}NO_9S$ 405.425

Needles (MeOH/Et₂O). Mp 199-200°.

$[\alpha]_D^{23} -2$ (c, 1.29 in $CHCl_3$).

Horton, D. *et al.*, *J.O.C.*, 1962, **27**, 1794 (penta-Ac, synth, ir)

Brajeswar, P. *et al.*, *Carbohydr. Res.*, 1984, **126**, 27 (tetra-Ac)

2-Amino-2-deoxy-3-thioglucose A-348 α -D-Pyranose-form

$C_6H_{13}NO_4S$ 195.239

D-form [87236-55-3]

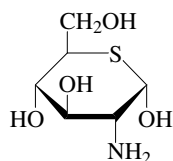
Hygroscopic brownish solid (as hydrochloride). $[\alpha]_{\text{D}}^{17.5} +126.5 \rightarrow +66.6$ (c, 0.5 in MeOH).

Yamaguchi, T. *et al.*, *Carbohydr. Res.*, 1983, **119**, 279 (*synth*)

2-Amino-2-deoxy-5-thioglucose

A-349

5-Thioglucosamine

 α -D-form $\text{C}_6\text{H}_{13}\text{NO}_4\text{S}$ 195.239**D-Pyranose-form**

N-Ac: 2-Acetamido-2-deoxy-5-thio-D-glucopyranose. N-Acetyl-5-thio-D-glucosamine

 $\text{C}_8\text{H}_{15}\text{NO}_5\text{S}$ 237.276

Cryst. (EtOH/Et₂O). Mp 115-117° Mp 101-102°. $[\alpha]_{\text{D}}^{23} +88$ (c, 1 in MeOH). $[\alpha]_{\text{D}}^{20} +61$ (c, 0.3 in MeOH).

 α -D-Pyranose-form

N-Ac: 2-Acetamido-2-deoxy-5-thio- α -D-glucopyranose

 $\text{C}_8\text{H}_{15}\text{NO}_5\text{S}$ 237.276

Cryst. (MeOH/CH₂Cl₂). Mp 152-163° (as hydrate). $[\alpha]_{\text{D}} +141$.

N,1,3,4,6-Penta-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy-5-thio- α -D-glucopyranose

Needles. Mp 174-175° Mp 166-167°.

$[\alpha]_{\text{D}}^{23} +195.5$ (c, 0.4 in MeOH). $[\alpha]_{\text{D}}^{23} +178.5$ (c, 0.23 in CHCl₃).

Me glycoside, N-Ac: Methyl 2-acetamido-2-deoxy-5-thio- α -D-glucopyranoside

 $\text{C}_9\text{H}_{17}\text{NO}_5\text{S}$ 251.303

Cryst. (EtOH). Mp 197-199° dec. $[\alpha]_{\text{D}}^{25} +219$ (c, 1 in MeOH).

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1979, **63**, 131; 1983, **117**, 304 (*synth*, N-Ac, penta-Ac)

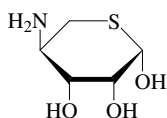
Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1981, **34**, 2225 (α -D-N-Ac, penta-Ac, Me gly, cmr)

Bognar, R. *et al.*, *Carbohydr. Res.*, 1981, **90**, 138 (N-Ac, penta-Ac)

Csuk, R. *et al.*, *Chem. Comm.*, 1986, 343 (*synth*)

4-Amino-4-deoxy-5-thiolyxose

A-350

 β -L-Pyranose-form $\text{C}_5\text{H}_{11}\text{NO}_3\text{S}$ 165.213**L-form**

N-Ac: 4-Acetamido-4-deoxy-5-thio-L-lyxopyranose

[142544-16-9]

 $\text{C}_7\text{H}_{13}\text{NO}_4\text{S}$ 207.25

Cryst. (EtOH). Mp 205-206°. $[\alpha]_{\text{D}}^{25} -66 \rightarrow -74$ (equilib.) (c, 0.6 in MeOH).

 α -L-Pyranose-form

N,1,2,3-Tetra-Ac: 4-Acetamido-1,2,3-tri-O-acetyl-4-deoxy-5-thio- α -L-lyxopyranose

[142544-15-8]

 $\text{C}_{13}\text{H}_{19}\text{NO}_7\text{S}$ 333.362

Cryst. (EtOH/hexane). Mp 182-184°

dec. $[\alpha]_{\text{D}}^{23} -71$ (c, 1.4 in CHCl₃). **β -L-Pyranose-form**

Me glycoside: Methyl 4-amino-4-deoxy-5-thio- β -L-lyxopyranoside

[142544-13-6]

 $\text{C}_6\text{H}_{13}\text{NO}_3\text{S}$ 179.24Mp 191-192°. $[\alpha]_{\text{D}}^{22} +164$ (c, 0.88 in MeOH).

Me glycoside, N,2,3-tri-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4-deoxy-5-thio- β -L-lyxopyranoside

[142544-14-7]

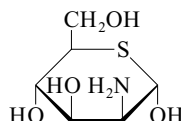
 $\text{C}_{12}\text{H}_{19}\text{NO}_6\text{S}$ 305.351

Cryst. (EtOH). Mp 162-163°. $[\alpha]_{\text{D}}^{25} +166$ (c, 1.3 in CHCl₃).

Al-Masoudi, N.A.L. *et al.*, *Carbohydr. Res.*, 1992, **228**, 339

2-Amino-2-deoxy-5-thiomanose

A-351

 $\text{C}_6\text{H}_{13}\text{NO}_4\text{S}$ 195.239 **α -D-Pyranose-form**

N-Ac: 2-Acetamido-2-deoxy-5-thio- α -D-mannopyranose

[88043-82-7]

 $\text{C}_8\text{H}_{15}\text{NO}_5\text{S}$ 237.276

Needles (EtOH/Et₂O). Mp 189°. $[\alpha]_{\text{D}} +28.8$ (c, 0.4 in MeOH).

N,1,3,4,6-Penta-Ac: 2-Acetamido-1,3,4,6-tetra-O-acetyl-2-deoxy-5-thio- α -D-mannopyranose

[88043-81-6]

 $\text{C}_{16}\text{H}_{23}\text{NO}_9\text{S}$ 405.425

Amorph. Mp 64-66°. $[\alpha]_{\text{D}}^{25} +122.5$ (c, 0.5 in MeOH).

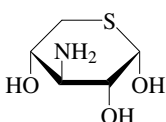
[102996-86-1]

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1983, **122**, 168 (N-Ac, N-penta-Ac, pmr)

Csuk, R. *et al.*, *Chem. Comm.*, 1986, 343 (N-Ac)

3-Amino-3-deoxy-5-thioxylose

A-352

 α -D-Pyranose-form $\text{C}_5\text{H}_{11}\text{NO}_3\text{S}$ 165.213**D-form**

N-Ac: 3-Acetamido-3-deoxy-5-thio-D-xylose

[142544-11-4]

 $\text{C}_7\text{H}_{13}\text{NO}_4\text{S}$ 207.25

Mp 107-111°. $[\alpha]_{\text{D}}^{24} +49.5 \rightarrow +52$ (equilib.) (c, 0.84 in MeOH).

 α -D-Pyranose-form

N,1,2,4-Tetra-Ac: 3-Acetamido-1,2,4-tri-O-acetyl-3-deoxy-5-thio- α -D-xylopyranose

[142544-10-3]

 $\text{C}_{13}\text{H}_{19}\text{NO}_7\text{S}$ 333.362Syrup. $[\alpha]_{\text{D}}^{27} +61$ (c, 0.56 in CHCl₃).

Me glycoside: Methyl 3-amino-3-deoxy-5-thio- α -D-xylopyranoside

[142544-08-9]

 $\text{C}_6\text{H}_{13}\text{NO}_3\text{S}$ 179.24

Mp 169-171°. $[\alpha]_{\text{D}}^{22} +310$ (c, 0.69 in MeOH).

Me glycoside, N,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3-deoxy-5-thio- α -D-xylopyranoside

[142544-09-0]

 $\text{C}_{12}\text{H}_{19}\text{NO}_6\text{S}$ 305.351

Cryst. (CH₂Cl₂/Et₂O). Mp 79-80°. $[\alpha]_{\text{D}} +161$ (c, 1.1 in CHCl₃).

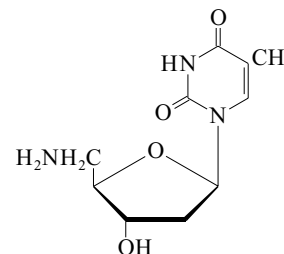
Al-Masoudi, N.A.L. *et al.*, *Carbohydr. Res.*, 1992, **228**, 339

5'-Amino-5'-deoxythymidine, 9CI, 8CI

A-353

5'-Azathymidine

[25152-20-9]

 $\text{C}_{10}\text{H}_{15}\text{N}_3\text{O}_4$ 241.246

Cryst. (EtOH). Mp 178-180° (173.5-174.5°). $[\alpha]_{\text{D}}^{26} +39$ (c, 1 in MeOH).

Horwitz, J.P. *et al.*, *J.O.C.*, 1962, **27**, 3045-3048 (*synth*, *ir*, *uv*)

Jastorff, B. *et al.*, *Chem. Ber.*, 1969, **102**, 4119 (*uv*, *ms*)

Hata, T. *et al.*, *Chem. Lett.*, 1976, 601 (*synth*)

Nottol, E.M. *et al.*, *J.A.C.S.*, 1977, **99**, 3486 (*pmr*)

Lin, T.S. *et al.*, *J. Med. Chem.*, 1987, **30**, 440 (*activity*)

Bannwarth, W. *et al.*, *Helv. Chim. Acta*, 1988, **71**, 1517-1527 (*synth*)

Nyilas, A. *et al.*, *Tetrahedron*, 1990, **46**, 2149-2164 (*pmr*, *cmr*, *uv*)

Huang, B. *et al.*, *Synthesis*, 1993, 769 (*synth*)

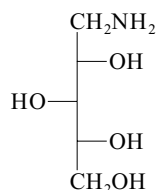
Altmann, K.H. *et al.*, *Angew. Chem., Int. Ed.*, 1994, **33**, 1655 (*synth*, N-Ac)

Tetzlaff, C.N. *et al.*, *Tet. Lett.*, 1998, **39**, 4215-4218 (*synth*)

Beilstein, A.E. *et al.*, *J. Organomet. Chem.*, 2001, **637-639**, 398-406 (*synth*, *pmr*)

1-Amino-1-deoxyxylitol

A-354



D-form

 $\text{C}_5\text{H}_{13}\text{NO}_4$ 151.162

D-form [55700-82-8]

Hydrochloride: [22566-18-3]

Cryst. Mp 139-140° (108-113°).

2,4:3,5-Di-O-benzylidene, N-Ac: [23843-33-6]

C₂₁H₂₃NO₅ 369.416Cryst. (Me₂CO/petrol). Mp 250.5-252.5°. [α]_D²⁰ -38.6 (c, 1.34 in DMF).

N,2,3,4-Tetrabenzyl: [133437-07-7]

C₃₃H₃₇NO₄ 511.66

Syrup.

DL-form[α]_D -2.8 (c, 0.35 in MeOH).

N,N-Di-Me, 2,4:3,5-di-O-benzylidene:

[34050-72-1]

C₂₁H₂₅NO₄ 355.433

Cryst. (EtOH). Mp 154-155°.

N,N-Di-Me, 2,4:3,5-di-O-methylene:

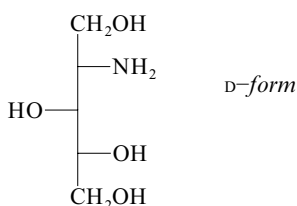
[34050-71-0]

C₉H₁₇NO₄ 203.238

Mp 112-113°.

Zinner, H. *et al.*, *Carbohydr. Res.*, 1969, **9**, 5 (*D*-dibenzylidene N-Ac)Heard, D. *et al.*, *J.O.C.*, 1970, **35**, 464 (*synth*)Veksler, V.I. *et al.*, *Zh. Obshch. Khim.*, 1971, **41**, 1399; *J. Gen. Chem. USSR (Engl. Transl.)*, 1971, **41**, 1404 (*DL*-di-Me derivs)Blanc-Mueller, M. *et al.*, *Carbohydr. Res.*, 1979, **68**, 175 (*synth*, *pmr*)Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 183-197 (*synth*)Bernotas, R.C. *et al.*, *Tet. Lett.*, 1991, **32**, 161 (*D*-tetrabenzyl)Bouchez, V. *et al.*, *Carbohydr. Res.*, 2000, **323**, 213-217 (*L*-form, *synth*, *pmr*, *cmr*)**2-Amino-2-deoxyxylitol**

A-355

C₅H₁₃NO₄ 151.162

Used in skin and hair conditioners.

D-form [62445-77-6]

N-Ac: 2-Acetamido-2-deoxy-D-xylitol

[30077-03-3]

C₇H₁₅NO₅ 193.199Cryst. Mp 81-82°. [α]_D²⁰ -14 (c, 2.3 in MeOH).

3-Benzyl, N-Ac: 2-Acetamido-3-O-benzyl-2-deoxy-D-xylitol

[65947-44-6]

C₁₄H₂₁NO₅ 283.324Needles (MeOH/Et₂O). Mp 131-132°. [α]_D²⁵ -32 (c, 0.4 in MeOH).

3,4-Dibenzyl, N-Ac: 2-Acetamido-3,4-di-O-benzyl-2-deoxy-D-xylitol

[65947-43-5]

C₂₁H₂₇NO₅ 373.448Syrup. [α]_D²⁰ -42 (c, 2.4 in CHCl₃).

4,5-O-Isopropylidene, 1,2N,3-tri-Ac: 2-Acetamido-1,3-di-O-acetyl-2-deoxy-4,5-O-isopropylidene-D-xylitol

[80581-33-5]

C₁₄H₂₃NO₇ 317.338

Syrup.

DL-form

1-tert-Butyl, 3,5-isopropylidene: [100743-24-6]

C₁₂H₂₅NO₄ 247.334

Pale yellow oil.

1-tert-Butyl, 2N,3,4,5-tetra-Ac: [100743-22-4]

C₁₇H₂₉NO₈ 375.418

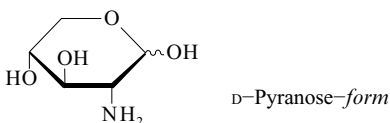
Oil or cryst. Mp 133-134°. 2 Diastereomers: one is crystalline and the other is an oil.

Shaban, M.A.E. *et al.*, *Carbohydr. Res.*, 1977, **59**, 213 (*D*-N-Ac derivs)Minami, N. *et al.*, *J.A.C.S.*, 1982, **104**, 1109 (*isopropylidene tri-Ac*)Japan. Pat., 1984, 59 212 421; *CA*, 119443m (*use*)Volker, J. *et al.*, *Tet. Lett.*, 1985, **26**, 2997 (*DL*-tert-butyl derivs)**2-Amino-2-deoxyxylose, 9CI**

A-356

Xylosamine

[6790-34-7]

C₅H₁₁NO₄ 149.146

Present in Seldomycin 1, S-21.

α-D-form [22738-07-4]Hydrochloride: Mp 165-167° dec. [α]_D³¹ +80 → +40 (c, 0.8 in H₂O).

N-Ac: 2-Acetamido-2-deoxy-α-D-xylose

C₇H₁₃NO₅ 191.183Mp 186-189° dec. [α]_D²⁹ +56 → +9 (c, 0.8 in H₂O).**β-D-Pyranose-form**

Tetra-Ac:

C₁₃H₁₉NO₈ 317.295Mp 214-215°. [α]_D³⁰ -48 (c, 1.3 in CHCl₃).**β-D-Furanose-form**

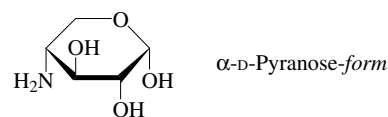
Me glycoside, N-benzoyl, di-Ac: Methyl 3,5-di-O-acetyl-2-benzamido-2-deoxy-α-D-xylofuranoside

C₁₇H₂₁NO₇ 351.355Mp 142-143°. [α]_D^{22.5} +21 (c, 1.0 in CHCl₃).**α-L-form**Hydrochloride: Mp 160-162° dec. [α]_D¹⁹ -63.9 → -46.3 (c, 0.58 in H₂O).

N-Ac: 2-Acetamido-2-deoxy-α-L-xylose

C₇H₁₃NO₅ 191.183Mp 194-195° dec. [α]_D -41.7.Wolfson, M.L. *et al.*, *J.A.C.S.*, 1953, **75**, 1038 (*synth*)Kuhn, R. *et al.*, *Annalen*, 1959, **628**, 193Wolfson, M.L. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 209 (*synth*)Gigg, R. *et al.*, *J.C.S.*, 1965, 1351 (*synth*)Kazuhara, H. *et al.*, *Agric. Biol. Chem.*, 1973, **37**, 349**4-Amino-4-deoxyxylose**

A-357

C₅H₁₁NO₄ 149.146**D-form**

Di-Et dithioacetal, N-benzoyl: [91876-89-0]

C₁₆H₂₅NO₄S₂ 359.51Cryst. (MeOH/EtOAc/hexane). Mp 144-147°. [α]_D²⁰ +15 (c, 0.9 in Pyr).

Di-Et dithioacetal, N-benzoyl, 5-Ac:

[91876-88-9]

C₁₈H₂₇NO₅S₂ 401.547Cryst. (EtOAc/hexane). Mp 139-141°. [α]_D²² -10 (c, 2 in CHCl₃).

Di-Et dithioacetal, 5-benzoyl, N-Ac:

[91876-87-8]

C₁₈H₂₇NO₅S₂ 401.547Cryst. (EtOAc/hexane). Mp 120-125°. [α]_D²² +27 (c, 2.5 in CHCl₃).

Di-Et dithioacetal, 4N,5-dibenzoyl: [91876-99-2]

C₂₃H₂₉NO₅S₂ 463.618Cryst. (CHCl₃/Et₂O). Mp 113-115°. [α]_D²² +21 (c, 1.4 in CHCl₃).

Di-Et dithioacetal, 2,3-O-isopropylidene,

4N,5-dibenzoyl: [91876-86-7]

C₂₆H₃₃NO₅S₂ 503.682Cryst. (CHCl₃/Et₂O). Mp 125-128°. [α]_D²² -41 (c, 1 in CHCl₃).

N,N-Di-Me: 4-Deoxy-4-(N-dimethylamino)-D-xylose

C₇H₁₅NO₄ 177.2Cryst. (as hydrochloride). Mp 166-169° dec. (hydrochloride). [α]_D²⁴ -18 (c, 2 in H₂O).**α-D-Pyranose-form**

Me glycoside: Methyl 4-amino-4-deoxy-α-D-xylopyranoside

C₆H₁₃NO₄ 163.173Mp 196-197° dec. [α]_D +44 (c, 1 in H₂O).

Benzyl glycoside, 2,3-anhydro: Benzyl 4-amino-2,3-anhydro-4-deoxy-α-D-xylopyranoside

C₁₂H₁₅NO₃ 221.255Cryst. Mp 48-49°. [α]_D²⁰ +91 (CHCl₃).**α-D-Furanose-form**

1,2-O-Isopropylidene, N-Ac: 4-Acetamido-4-deoxy-1,2-O-isopropylidene-α-D-xylofuranose

[91876-94-7]

C₁₀H₁₇NO₅ 231.248Oil. [α]_D²² -92 (c, 0.3 in CHCl₃).

1,2-O-Isopropylidene, 5-benzoyl, N-Ac:

4-Acetamido-5-O-benzoyl-4-deoxy-1,2-O-isopropylidene-α-D-xylofuranose

[91876-95-8]

C₁₇H₂₁NO₆ 335.356Mp 135-137°. [α]_D²² -2 (c, 0.4 in CHCl₃).

1,2:3,5-Di-O-isopropylidene, N-benzoyl:

4-Benzamido-4-deoxy-1,2:3,5-di-O-isopropylidene-α-D-xylofuranose

[91876-90-3]

C₁₈H₂₃NO₅ 333.383

Cryst. Mp 106-110°. $[\alpha]_D^{22}$ -22 (c, 1.1 in CHCl_3).

 β -L-Pyranose-form

Benzyl glycoside, 2,3-anhydro: Benzyl 4-amino-2,3-anhydro-4-deoxy- β -L-xylopyranoside

$\text{C}_{12}\text{H}_{15}\text{NO}_3$ 221.255

Mp 37-38°. $[\alpha]_D^{20}$ +105 (CHCl_3).

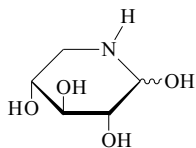
Overend, W.G. *et al.*, *Chem. Ind. (London)*, 1963, 1840 (α -D-Me pyr)

Malik, A. *et al.*, *Chem. Comm.*, 1984, 1530 (*benzyl gly, pmr*)

Coetzee, I. *et al.*, *S. Afr. J. Chem.*, 1984, 37, 11 (*D-derivs, α -D-fur derivs, pmr, ms*)

5-Amino-5-deoxyxylose

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D-Pyranose-form

$\text{C}_5\text{H}_{11}\text{NO}_4$ 149.146

D-form

5N-Ac, *benzylphenylhydrazone*:

Cryst. ($\text{MeOH}/\text{Et}_2\text{O}$). Mp 132-133°.

$[\alpha]_D^{25}$ 0 (c, 3.56 in MeOH).

D-Pyranose-form

N-Ac: 5-Acetamido-5-deoxy-D-xylopyranose

$\text{C}_7\text{H}_{13}\text{NO}_5$ 191.183

Mp 163-164° (153-154°). $[\alpha]_D$ -21.8

(c, 2.69 in H_2O). $[\alpha]_D$ -11.3 (MeOH).

D-Furanose-form

N-Ac: 5-Acetamido-5-deoxy-D-xylofuranose

$\text{C}_7\text{H}_{13}\text{NO}_5$ 191.183

Amorph. solid. $[\alpha]_D$ +13.2 (c, 1.36 in MeOH). $[\alpha]_D^{23}$ +30 (c, 0.6 in H_2O).

1,2,3,5N-Tetra-Ac: 5-Acetamido-1,2,3-tri-O-acetyl-5-deoxy-D-xylofuranose

$\text{C}_{13}\text{H}_{19}\text{NO}_8$ 317.295

$[\alpha]_D^{30}$ +94 (c, 1.4 in MeOH).

 α -D-Furanose-form

1,2-O-Isopropylidene: 5-Amino-5-deoxy-1,2-O-isopropylidene- α -D-xylofuranose

[4613-58-5]

$\text{C}_8\text{H}_{15}\text{NO}_4$ 189.211

Mp 100-102°. $[\alpha]_D^{17}$ -12 (c, 2.6 in EtOH).

1,2-O-Isopropylidene, 3-benzyl: 5-Amino-3-O-benzyl-5-deoxy-1,2-O-isopropylidene- α -D-xylofuranose

[59055-65-1]

$\text{C}_{15}\text{H}_{21}\text{NO}_4$ 279.335

Syrup. $[\alpha]_D^{22}$ -70 (CHCl_3).

1,2-O-Isopropylidene, N-Ac: 5-Acetamido-5-deoxy-1,2-O-isopropylidene- α -D-xylofuranose

$\text{C}_{10}\text{H}_{17}\text{NO}_5$ 231.248

Rectangular plates. Mp 111-112°. $[\alpha]_D^{23}$

+31 (c, 2.29 in MeOH).

1,2-O-Isopropylidene, 3-Me: 5-Amino-5-deoxy-1,2-O-isopropylidene-3-O-methyl- α -D-xylofuranose

[59055-64-0]

$\text{C}_9\text{H}_{17}\text{NO}_4$ 203.238

Syrup. $[\alpha]_D^{22}$ -70 (CHCl_3).

1,2-O-Cyclohexylidene, N-Ac: 5-Acetamido-1,2-O-cyclohexylidene-5-deoxy- α -D-xylofuranose

$\text{C}_{13}\text{H}_{21}\text{NO}_5$ 271.313

Mp 125-126°. $[\alpha]_D^{20}$ +39.2 (c, 1.0 in MeOH).

$[\alpha]_D^{20}$ +18.2 (c, 1.0 in 0.1M HCl).

Akiya, S. *et al.*, *Yakugaku Zasshi*, 1956, 76, 1280 (α -D-fur deriv)

Paulsen, H. *et al.*, *Annalen*, 1963, 670, 121 (*fur deriv, ir*)

Jones, J.K.N. *et al.*, *Can. J. Chem.*, 1963, 41, 636 (*deriv*)

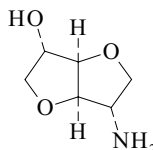
Jones, J.K.N. *et al.*, *J.O.C.*, 1963, 28, 2604 (*fur deriv, pyr deriv*)

Tronchet, J.M.J. *et al.*, *Carbohydr. Res.*, 1981, 96, 167 (α -D-fur deriv, pmr, ms)

2-Amino-1,4:3,6-dianhydro-2-deoxyditol

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5-Amino-1,4:3,6-dianhydro-5-deoxyditol



$\text{C}_6\text{H}_{11}\text{NO}_3$ 145.158

L-form [81621-58-1]

Cryst. ($\text{CHCl}_3/\text{H}_2\text{O}/\text{EtOAc}$). Mp 103-104°. $[\alpha]_D$ +31.6 (c, 2.0 in H_2O).

Methanesulfonate salt: [81621-59-2]

Cryst. ($\text{EtOH}/\text{CHCl}_3$). Mp 151-154°.

$[\alpha]_D^{25}$ +27.6 (c, 1.0 in H_2O).

N,N-Di-Me: [81621-70-7]

$\text{C}_8\text{H}_{15}\text{NO}_3$ 173.211

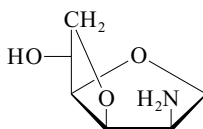
Cryst. (2-propanol) (as hydrochloride).

Mp 227-229° (hydrochloride). $[\alpha]_D^{25}$ +46.8 (c, 0.58 in H_2O). CAS no. refers to hydrochloride.

Eur. Pat., 1982, 44932; 44940; *CA*, 96, 218188w; 97, 110337a (*synth, L-form, di-Me*)

2-Amino-1,4:3,6-dianhydro-2-deoxymannitol

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$\text{C}_6\text{H}_{11}\text{NO}_3$ 145.158

D-form [81621-64-9]

Cryst. (EtOH) (as hydrochloride). Mp

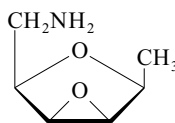
263-268° dec. (hydrochloride). $[\alpha]_D^{25}$

+77.8 (c, 1.0 in H_2O). CAS no. refers to hydrochloride.

Eur. Pat., 1982, 44 932; *CA*, 97, 110337a (*synth*)

6-Amino-2,5:3,4-dianhydro-1,6-dideoxygalactitol

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$\text{C}_6\text{H}_{11}\text{NO}_2$ 129.158

D-form

4-Methylbenzenesulfonate salt:

Cryst. (Et_2O). Mp 171-174°. $[\alpha]_D^{20}$ 0 (c, 1.0 in CHCl_3).

N,N-Di-Me: [100778-22-1]

$\text{C}_8\text{H}_{15}\text{NO}_2$ 157.212

Syrup. $[\alpha]_D^{20}$ -9.3 (c, 1.0 in CHCl_3).

N,N,N-Tri-Me: [100778-23-2]

$\text{C}_9\text{H}_{18}\text{NO}_2^+$ 172.247

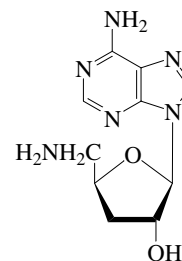
Pale yellow amorph. solid (as iodide).

Kuszman, J. *et al.*, *Carbohydr. Res.*, 1985, 142, 71 (*synth, Me derivs, pmr*)

5'-Amino-3',5'-dideoxyadenosine, 9CI

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[125944-06-1]



$\text{C}_{10}\text{H}_{14}\text{N}_6\text{O}_2$ 250.26

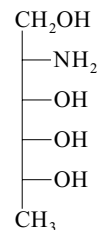
Cryst. (H_2O). Mp 215-217° (dec.).

Herdewijn, P. *et al.*, *Nucleosides Nucleotides*, 1989, 8, 1231-1257 (*synth*)

Kvasnyuk, E.T. *et al.*, *Helv. Chim. Acta*, 1999, 82, 19-29 (*synth, uv, pmr*)

2-Amino-2,6-dideoxyallitol

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$\text{C}_6\text{H}_{15}\text{NO}_4$ 165.189

D-form

1,2N,3,4,5-Penta-Ac: [51250-08-9]

$\text{C}_{16}\text{H}_{25}\text{NO}_9$ 375.375

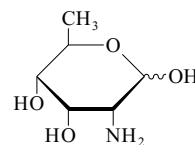
Syrup.

Perry, M.B. *et al.*, *Can. J. Biochem.*, 1973, 51, 1335 (*chromatog*)

Perry, M.B. *et al.*, *Carbohydr. Res.*, 1973, 31, 131 (*penta-Ac, glc*)

2-Amino-2,6-dideoxyxylose

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D-Pyranose-form

$\text{C}_6\text{H}_{13}\text{NO}_4$ 163.173

D-form [55385-63-2]

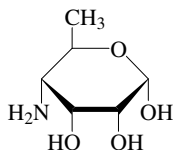
Hydrochloride: [51250-05-6]

Cryst. (Me₂CO/MeOH). Mp 135° dec. [α]_D²⁰ +4 (c, 0.9 in H₂O).

N-Ac: 2-Acetamido-2,6-dideoxy-D-allose [51250-01-2]

C₈H₁₅NO₅ 205.21Cryst. (EtOH). Mp 169-170°. [α]_D²⁰ -88.5 (c, 0.4 in H₂O).Brendel, K. *et al.*, *Annalen*, 1966, **691**, 192 (N-Ac)Perry, M.B. *et al.*, *Carbohydr. Res.*, 1973, **31**, 131 (synth)**4-Amino-4,6-dideoxyallose**

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α-D-Pyranose-form

C₆H₁₃NO₄ 163.173**D-form**

N,N-Di-Me: 4,6-Dideoxy-4-(N-dimethylamino)-D-allose

[42213-97-8]

C₈H₁₇NO₄ 191.227Cryst. (EtOH/Et₂O) (as hydrochloride).Mp 166-168° (hydrochloride). [α]_D²⁶

+38.09 → +33.2 (c, 1.52 in MeOH).

CAS no. refers to hydrochloride.

α-D-Pyranose-form

Me glycoside: Methyl 4-amino-4,6-dideoxy-α-D-allopyranoside

[37699-08-4]

C₇H₁₅NO₄ 177.2

Gum.

Me glycoside, N-Ac: Methyl 4-acetamido-4,6-dideoxy-α-D-allopyranoside

[42214-19-7]

C₉H₁₇NO₅ 219.237Cryst. (MeOH/Et₂O). Mp 150-152°.[α]_D²⁵ +235 (c, 0.75 in MeOH).

Me glycoside, 2,3-anhydro, N-Ac: Methyl 4-acetamido-2,3-anhydro-4,6-dideoxy-α-D-allopyranoside

[51255-03-9]

C₉H₁₅NO₄ 201.222

Cryst. (EtOAc/petrol). Mp 186-187°.

[α]_D +209 (c, 1 in CHCl₃).**β-D-Pyranose-form**

Me glycoside: Methyl 4-amino-4,6-dideoxy-β-D-allopyranoside

[35942-00-8]

C₇H₁₅NO₄ 177.2Cryst. (EtOH/Et₂O). Mp 174-176°. [α]_D²⁶-50.6 (c, 0.75 in MeOH). pK_a 7.2 (50% MeOH aq.).

Me glycoside, N-Ac: Methyl 4-acetamido-4,6-dideoxy-β-D-allopyranoside

[35941-99-2]

C₉H₁₇NO₅ 219.237Cryst. (EtOH/Et₂O). Mp 224-225°. [α]_D²⁶

+3.9 (c, 0.4 in MeOH).

Bryant, C.P. *et al.*, *CA*, 1972, **76**, 86058d

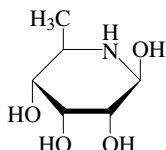
(D-form)

Stevens, C.L. *et al.*, *Carbohydr. Res.*, 1972, **21**, 166 (β-Me pyr deriv)Stevens, C.L. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 235 (α-Me pyr deriv)Stevens, C.L. *et al.*, *J.O.C.*, 1973, **38**, 4311

(α-Me-pyr deriv, β-Me pyr deriv, ir)

Capek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1987, **52**, 2248 (anhydro, pmr)**5-Amino-5,6-dideoxyallose**

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β-D-Pyranose-form

C₆H₁₃NO₄ 163.173**β-D-Pyranose-form**

2,3,4,5N-Tetra-Ac: 5-Acetamido-2,3,4-tri-O-acetyl-5,6-dideoxy-β-D-allopyranose

C₁₄H₂₁NO₈ 331.322

Cryst. (EtOAc/cyclohexane). Mp 165-

166°.

β-D-Furanose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 5-amino-5,6-dideoxy-2,3-O-isopropylidene-β-D-allofuranoside

[41545-21-5]

C₁₀H₁₉NO₄ 217.264Syrup. Bp_{0.35} 48-50° (bath). [α]_D -72(c, 1.0 in CHCl₃).**DL-form**

1,1-Di-Me acetal, 2,3,4,5N-tetra-Ac:

[110261-74-0]

C₁₆H₂₇NO₉ 377.391Cryst. (Et₂O/C₆H₆). Mp 110.5-111.5°.Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1972, **25**, 267; 1974, **35**, 55 (β-D-Me fur

isopropylidene, pmr)

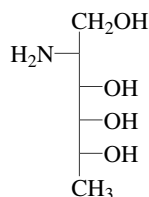
Defoin, A. *et al.*, *Tet. Lett.*, 1986, **27**, 4727 (DL-

tetra-Ac, ir)

2-Amino-2,6-dideoxyaltritol, 9CI

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5-Amino-1,5-dideoxytalitol

C₆H₁₅NO₄ 165.189**D-form**

1,2N3,4,5-Penta-Ac: 2-Acetamido-1,3,4,5-tetra-O-acetyl-2,6-dideoxy-D-altritol.

5-Acetamido-2,3,4,6-tetra-O-acetyl-1,5-

dideoxy-D-talitol

[51268-89-4]

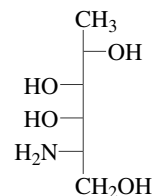
C₁₆H₂₅NO₉ 375.375

Syrup.

Perry, M.B. *et al.*, *Can. J. Biochem.*, 1973, **51**, 1335 (chromatog)Perry, M.B. *et al.*, *Carbohydr. Res.*, 1973, **31**, 131 (penta-Ac, glc)**5-Amino-1,5-dideoxyaltritol, 9CI**

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2-Amino-2,6-dideoxytalitol

C₆H₁₅NO₄ 165.189**L-form**

2,3,4,5N,6-Penta-Ac: 5-Acetamido-2,3,4,6-tetra-O-acetyl-1,5-dideoxy-L-altritol.

2-Acetamido-1,3,4,5-tetra-O-acetyl-2,6-

dideoxy-L-talitol

[51268-95-2]

C₁₆H₂₅NO₉ 375.375

Syrup.

2,3-Dibenzyl, 4,6-O-benzylidene: 5-Amino-2,3-di-O-benzyl-4,6-O-benzylidene-1,5-

dideoxy-L-altritol. 2-Amino-4,5-di-O-

benzyl-1,3-O-benzylidene-2,6-dideoxy-L-

talitol

[22435-28-5]

C₂₇H₃₁NO₄ 433.546Cryst. Mp 91-93°. [α]_D²² +17.6 (c, 1.0 inCHCl₃) (lit. gives a temp. range).

2,3-Dibenzyl, 4,6-O-benzylidene, sulfate

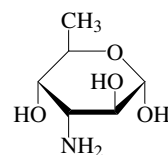
salt (2:1): [22430-15-5]

Cryst. Mp 193-194°. [α]_D +34.3 (c, 1.0 inCHCl₃).Gigg, R. *et al.*, *J.C.S. (C)*, 1968, 2661

(benzylidene derivs)

Perry, M.B. *et al.*, *Can. J. Biochem.*, 1973, **51**, 1335 (penta-Ac)**3-Amino-3,6-dideoxyaltrose**

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α-D-Pyranose-form

C₆H₁₃NO₄ 163.173**D-form** [29475-88-5]Mp 215-220° (as dihydrochloride). [α]_D -142 (c, 0.52 in H₂O).**α-D-Pyranose-form**

Me glycoside, N-Ac: Methyl 3-acetamido-

3,6-dideoxy-α-D-altropyranoside

C₉H₁₇NO₅ 219.237

Cryst. (EtOAc/petrol). Mp 130.5-132°.

[α]_D²² +84.7 (c, 0.61 in MeOH).

Me glycoside, 2,3N,4-tri-Ac: Methyl

3-acetamido-2,4-di-O-acetyl-3,6-di-

deoxy-α-D-altropyranoside

C₁₃H₂₁NO₇ 303.311

Cryst. (EtOAc/petrol). Mp 98.5-99.5°.

[α]_D²³ +56.5 (c, 1.26 in CHCl₃).

Me glycoside, 2,4-dimesyl, N-Ac: Methyl

3-acetamido-3,6-dideoxy-2,4-di-O-

mesyl-α-D-altropyranoside

C₁₁H₂₁NO₉S₂ 375.42

Cryst. (EtOAc/petrol). Mp 123.5-125.5°. $[\alpha]_D^{25} +38.3$ (c, 0.45 in CHCl_3).

Me glycoside, N,N-di-Me: *Methyl 3,6-dideoxy-3-dimethylamino- α -D-altropyranoside*

$\text{C}_9\text{H}_{19}\text{NO}_4$ 205.253

Syrup. Bp_{0.7} 101-102°. $[\alpha]_D^{21} -3.7$ (c, 1.86 in H_2O).

Me glycoside, N,N-di-Me, hydrochloride: Cryst. (EtOH/Et₂O). Mp 178-179° dec. $[\alpha]_D^{21} -14.1$ (c, 1.14 in H_2O).

L-form

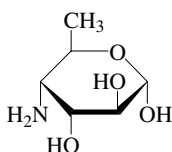
Mp 212-213° (as dihydrochloride). $[\alpha]_D^{20} +149$ (c, 1.5 in H_2O).

Jarý, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1965, **30**, 1144 (*D-form*)

Florent, J.C. *et al.*, *Carbohydr. Res.*, 1980, **85**, 243 (*L-form*)

4-Amino-4,6-dideoxyaltrose

A-370



α -D-Pyranose-form

$\text{C}_6\text{H}_{13}\text{NO}_4$ 163.173

D-form

N,N-Di-Me: 4,6-Dideoxy-4-(N-dimethylamino)-D-altrose
[55570-42-8]

$\text{C}_8\text{H}_{17}\text{NO}_4$ 191.227

Cryst. (2-propanol/Et₂O) (as hydrochloride). Mp 176-177° (hydrochloride). $[\alpha]_D^{25} +86.8$ (c, 1 in H_2O). CAS no. refers to hydrochloride.

α -D-Pyranose-form

Me glycoside: *Methyl 4-amino-4,6-dideoxy- α -D-altropyranoside*

[55637-43-9]

$\text{C}_7\text{H}_{15}\text{NO}_4$ 177.2

Cryst. (propanol/Et₂O). Mp 116-117°. $[\alpha]_D^{24} +128.5$ (c, 0.85 in MeOH).

Me glycoside, N-Ac: *Methyl 4-acetamido-4,6-dideoxy- α -D-altropyranoside*
[51255-06-2]

$\text{C}_9\text{H}_{17}\text{NO}_5$ 219.237

Cryst. (2-propanol/Et₂O). Mp 151-153°. $[\alpha]_D^{22} +198.3$ (c, 1 in MeOH).

Me glycoside, 2,3,4N-tri-Ac: *Methyl 4-acetamido-2,3-di-O-acetyl-4,6-dideoxy- α -D-altropyranoside*

[51269-16-0]

$\text{C}_{13}\text{H}_{21}\text{NO}_7$ 303.311

Cryst. (2-propanol/pentane). Mp 168-169°. $[\alpha]_D^{24} +129.2$ (c, 1 in CHCl_3).

Me glycoside, N,N-di-Me: *Methyl 4,6-dideoxy-4-(N-dimethylamino)- α -D-altropyranoside*
[55570-40-6]

$\text{C}_9\text{H}_{19}\text{NO}_4$ 205.253

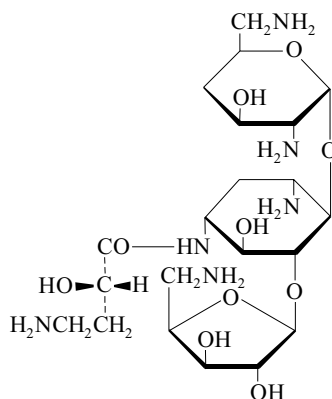
Cryst. (Et₂O/petrol). Mp 110-112°. pK_a 7.52 (50% EtOH aq.).

Stevens, C.L. *et al.*, *J.O.C.*, 1975, **40**, 2471 (*D-deriv*, α -Me pyr derivs, pmr)

5''-Amino-4',5''-dideoxybutirosin A

[55480-22-3]

A-371



$\text{C}_{21}\text{H}_{42}\text{N}_6\text{O}_{10}$ 538.597

Aminoglycoside antibiotic. Semisynthetic.

Log P -7.77 (uncertain value) (calc).

Japan. Pat., 1975, 75 35 132; *CA*, **83**, 97868

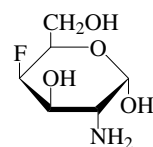
(synth)

U.S. Pat., 1976, 3 983 102; *CA*, **86**, 16916

(synth)

2-Amino-2,4-dideoxy-4-fluorogalactose

A-372



α -D-Pyranose-form

$\text{C}_6\text{H}_{12}\text{FNO}_4$ 181.164

β -D-Pyranose-form

N-Ac: 2-Acetamido-2,4-dideoxy-4-fluoro-D-galactopyranose

$\text{C}_8\text{H}_{14}\text{FNO}_5$ 223.201

Tiny needles (EtOH/Et₂O). Mp 205-209° (195°). $[\alpha]_D +87.7$ (c, 1 in MeOH) (equilib.). Mixt. of anomers.

O,O,O,N-Tetra-Ac: 2-Acetamido-1,3,6-tri-O-acetyl-2,4-dideoxy-4-fluoro-D-galactopyranose

$\text{C}_{14}\text{H}_{20}\text{FNO}_8$ 349.312

Cryst. (EtOAc/hexane). Mp 155-158° (140-142°). $[\alpha]_D +144$ (c, 1 in CHCl_3) (+114). Mixt. of anomers.

α -D-Pyranose-form

Me glycoside, N-Ac: *Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-galactopyranoside*

$\text{C}_9\text{H}_{16}\text{FNO}_5$ 237.228

Amorph. solid (EtOH/Me₂CO). Mp 227-228°. $[\alpha]_D +173.4$ (c, 1 in MeOH).

Me glycoside, O,O,N-tri-Ac: *Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- α -D-galactopyranoside*

$\text{C}_{13}\text{H}_{20}\text{FNO}_7$ 321.302

Needles (EtOAc/hexane). Mp 166-168°. $[\alpha]_D +101.6$ (c, 1 in CHCl_3).

Me glycoside, 3,6-dibenzyl, N-Ac: *Methyl 2-acetamido-3,6-di-O-benzyl-2,4-dideoxy-4-fluoro- α -D-galactopyranoside*

$\text{C}_{23}\text{H}_{28}\text{FNO}_5$ 417.476

Tiny needles (EtOAc/hexane). Mp 203-204°. $[\alpha]_D +131.7$ (c, 1 in CHCl_3).

β -D-Pyranose-form

Me glycoside, N-Ac: *Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-galactopyranoside*

$\text{C}_9\text{H}_{16}\text{FNO}_5$ 237.228

Tiny cryst. (EtOH/hexane). Mp 209-211°. $[\alpha]_D -24.8$ (c, 1 in MeOH).

Me glycoside, 3,6-dibenzyl, N-Ac: *Methyl 2-acetamido-3,6-di-O-benzyl-2,4-dideoxy-4-fluoro- β -D-galactopyranoside*

$\text{C}_{23}\text{H}_{28}\text{FNO}_5$ 417.476

Amorph. solid. Mp 208-210°. $[\alpha]_D +29.9$ (c, 1.1 in CHCl_3).

Me glycoside, O,O,N-tri-Ac: *Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- β -D-galactopyranoside*

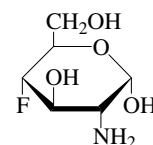
$\text{C}_{13}\text{H}_{20}\text{FNO}_7$ 321.302

Tiny needles (EtOAc). Mp 235-236°. $[\alpha]_D -19.4$ (c, 1 in MeOH/ CHCl_3 1:1).

Berkin, A. *et al.*, *Carbohydr. Res.*, 2000, **326**, 250-263

2-Amino-2,4-dideoxy-4-fluoroglucose

A-373



α -D-Pyranose-form

$\text{C}_6\text{H}_{12}\text{FNO}_4$ 181.164

D-form

N-Ac: 2-Acetamido-2,4-dideoxy-4-fluoro-D-glucose

$\text{C}_8\text{H}_{14}\text{FNO}_5$ 223.201

Mp 176-180° dec. (174-175°). $[\alpha]_D +59.3$ (c, 1 in MeOH) (equilib.). 5.7:1 mixt. of α - and β -pyranose anomers.

α -D-Pyranose-form

Me glycoside, N-Ac: *Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-glucopyranoside*

$\text{C}_9\text{H}_{16}\text{FNO}_5$ 237.228

Needles (EtOH). Mp 189-190°. $[\alpha]_D +139$ (c, 1 in MeOH).

Me glycoside, N,O,O-tri-Ac: *Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- α -D-glucopyranoside*

$\text{C}_{13}\text{H}_{20}\text{FNO}_7$ 321.302

Cryst. (EtOAc/hexane). Mp 112-113°. $[\alpha]_D +58.9$ (c, 1 in CHCl_3).

Benzyl glycoside, N-Ac: *Benzyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-glucopyranoside*

$\text{C}_{15}\text{H}_{20}\text{FNO}_5$ 313.325

Tiny cryst. (EtOH). Mp 197-198°. $[\alpha]_D +206.3$ (c, 1 in MeOH).

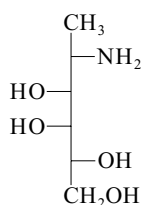
β -D-Pyranose-form

N,O,O,O-Tetra-Ac: 2-Acetamido-1,3,6-tri-O-acetyl-2,4-dideoxy-4-fluoro- β -D-glucopyranose
 $C_{14}H_{20}FNO_8$ 349.312
 Cryst. (EtOAc/hexane). Mp 188-189°. $[\alpha]_D^{20}$ -29.2 (c, 1 in $CHCl_3$).

Me glycoside, N-Ac: Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-glucopyranoside
 $C_9H_{16}FNO_5$ 237.228
 Amorph. solid (EtOH). Mp 192-194°. $[\alpha]_D^{20}$ -50 (c, 0.61 in MeOH).

Me glycoside, N,O,O-tri-Ac: Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- β -D-glucopyranoside
 $C_{13}H_{20}FNO_7$ 321.302
 Rods (EtOAc/Et₂O). Mp 174-176°. $[\alpha]_D^{20}$ -61.4 (c, 1 in MeOH).

Berkin, A. *et al.*, *Carbohydr. Res.*, 2000, **326**, 250-263

2-Amino-1,2-dideoxygalactitol A-374

$C_6H_{15}NO_4$ 165.189

D-form

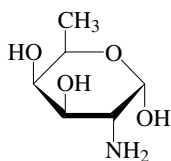
Syrup (as hydrochloride).

[144218-99-5, 144409-91-6]

Adelhorst, K. *et al.*, *Carbohydr. Res.*, 1992, **232**, 187

2-Amino-2,6-dideoxygalactose, 8CI A-375

Fucosamine
 [24724-90-1]



α -D-form

$C_6H_{13}NO_4$ 163.173

D-form [6931-59-5]

[49694-68-0]

Obt. from polysaccharides of *Chromobacterium violaceum*, *Bacillus licheniformis*, *Bacillus subtilis*, *Bacillus cereus* and *Staphylococcus aureus*. Also in swine erysipelas bacteria (*Erysipelothrix insidiosus*).

Mp 192-193° (170-175°) dec. (as hydrochloride). $[\alpha]_D^{20}$ +93 (c, 0.4 in H₂O) (hydrochloride).

N-Ac: 2-Acetamido-2,6-dideoxy-D-galactose. N-Acetyl-D-fucosamine
 [35233-39-7]
 $C_8H_{15}NO_5$ 205.21

Intermed. in biosynth. of bacterial anti-gens. Cryst. (EtOH).

Mp 201-202°. $[\alpha]_D^{20}$ +87 (c, 0.4 in H₂O).

N-Me: [78183-98-9]

$C_7H_{15}NO_4$ 177.2

Mp 158-162° dec. $[\alpha]_D^{25}$ +73.1 (c, 0.1 in H₂O, equilib.).

N-Me, N-Ac: 2,6-Dideoxy-2-(N-methylacetamido)-D-galactose. N-Acetyl-N-methyl-D-fucosamine
 [156780-16-4]

$C_9H_{17}NO_5$ 219.237

Present in some type-specific polysaccharides of *Bordetella pertussis* endotoxins. Hemihydrate. $[\alpha]_D^{20}$ +37 (c, 0.5 in H₂O, equilib.). V. sensitive to acid-catalysed glycosidation. The abs. config. of the natural sugar does not yet appear to have been demonstrated (1994).

 α -D-form

Me glycoside, N-Ac: Methyl 2-acetamido-2,6-dideoxy- α -D-galactopyranoside
 [53958-43-3]

$C_9H_{17}NO_5$ 219.237

$[\alpha]_D^{24}$ +177 (c, 1.1 in EtOH).

Me glycoside, 3,4-O-isopropylidene, N-Ac: Methyl 2-acetamido-2,6-dideoxy-3,4-O-isopropylidene- α -D-galactopyranoside
 [116556-66-2]

$C_{12}H_{21}NO_5$ 259.302

$[\alpha]_D^{24}$ +124 (c, 0.6 in EtOH).

L-form [7577-62-0]

[7577-63-1] Constit. of type V *Pneumococcus* capsular polysaccharide and the mucopolysaccharide of *Citrobacter freundii*.

Mp 191-193° dec. (as hydrochloride). $[\alpha]_D^{20}$ -95 (c, 1.0 in Py/EtOH 2:3) (hydrochloride).

N-Ac: 2-Acetamido-2,6-dideoxy-L-galactose. N-Acetyl-L-fucosamine
 [49694-69-1]

$C_8H_{15}NO_5$ 205.21

Intermed. in biosynth. of bacterial anti-gens. Cryst. (EtOH).

Mp 195-198°. $[\alpha]_D^{20}$ -83 (c, 0.2 in H₂O).

DL-form [22875-25-8]

Constit. of the polysaccharide from *Pseudomonas aeruginosa*.

Monohydrate (as hydrochloride).

Mp 107° dec. (hydrochloride).

Kuhn, R. *et al.*, *Annalen*, 1959, **628**, 186 (L-form, L-N-Ac)

Barker, S.A. *et al.*, *Nature (London)*, 1961, **189**, 303 (L-form, isol)

Sharon, N. *et al.*, *Biochem. J.*, 1964, **93**, 210 (D-form, isol)

Wheat, R. *et al.*, *Nature (London)*, 1964, **202**, 492 (D-form, isol)

Suzuki, N. *et al.*, *Biophys. Acta*, 1969, **177**, 371 (DL-form, isol, pmr)

Perry, M.B. *et al.*, *Can. J. Chem.*, 1973, **51**, 974 (D-form, D-N-Ac, L-form, L-N-Ac)

Horton, D. *et al.*, *Carbohydr. Res.*, 1977, **59**, 607; 1978, **63**, 270 (synth)

Anisuzzaman, A.K.M. *et al.*, *Carbohydr. Res.*, 1987, **169**, 258 (L-N-Ac)

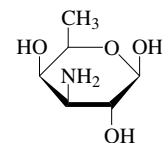
Roy, A. *et al.*, *Indian J. Chem., Sect. B*, 1987, **26**, 1165 (α -D-Me pyr N-Ac, α -D-Me pyr N-Ac isopropylidene)

Szabó, P. *et al.*, *Carbohydr. Res.*, 1994, **257**, 145 (D-N-Me N-Ac)

Ruiz, M. *et al.*, *Tetrahedron: Asymmetry*, 2002, **13**, 1535-1549 (D-form, synth, N-Me)
 Samuel, G. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2503-2519 (N-Ac, biosynth)

3-Amino-3,6-dideoxygalactose, 8CI A-376

3-Amino-3-deoxyfucose. 3-Aminofucose (incorr.)
 [15435-24-2]



β -D-Pyranose-form

$C_6H_{13}NO_4$ 163.173

D-form

N-Formyl: 3-Formamido-3,6-dideoxy-D-galactose

$C_7H_{13}NO_5$ 191.183

Terminal residue in the O-polysaccharide of *Providencia alcalifaciens* O21.

N-Ac: 3-Acetamido-3,6-dideoxy-D-galactose. 3-Acetamido-3-deoxy-D-fucose
 $C_8H_{15}NO_5$ 205.21

Constit. of a lipopolysaccharide in *Salmonella tranora*, Arizona 24, *Pseudomonas fluorescens*, *Xanthomonas campestris* and in *Citrobacter* serotypes.
 Mp 174-176°. $[\alpha]_D^{24}$ +114 (c, 0.8 in H₂O).

 β -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- β -D-galactopyranoside, 9CI

[53911-08-3]

$C_7H_{15}NO_4$ 177.2

Cryst. (EtOH). Mp 192-194°. $[\alpha]_D^{20}$ -15.3 (c, 1 in H₂O). Change of crystal form at 150°.

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- β -D-galactopyranoside

[53911-18-5]

$C_9H_{17}NO_5$ 219.237

Cryst. (EtOH). Mp 230° (subl., sealed tube) Mp 246-248°.

Me glycoside, N,2-di-Ac: Methyl 3-acetamido-2-O-acetyl-3,6-dideoxy- β -D-galactopyranoside
 [59150-41-3]

$C_{11}H_{19}NO_6$ 261.274

Mp 167-168°. Bp_{0.1} 150° subl. $[\alpha]_D^{20}$ -21 (c, 1.0 in $CHCl_3$).

Me glycoside, N,4-di-Ac: Methyl 3-acetamido-4-O-acetyl-3,6-dideoxy- β -D-galactopyranoside
 [59150-40-2]

$C_{11}H_{19}NO_6$ 261.274

Cryst. (EtOAc). Mp 238-239°. $[\alpha]_D^{20}$ +49 (c, 1.0 in $CHCl_3$).

Me glycoside, N-Ac, 2,4-di-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- β -D-galactopyranoside
 [53911-22-1]

$C_{13}H_{21}NO_7$ 303.311

Cryst. (EtOH/petrol). Mp 188-189.5° (change of crystal modification at 160°). $[\alpha]_D^{20}$ +22 (c, 1.0 in $CHCl_3$).

Me glycoside, N,4-di-Ac, 2-mesyl: Methyl 3-acetamido-4-O-acetyl-3,6-dideoxy-2-O-mesyl- β -D-galactopyranoside
C₁₂H₂₁NO₈S 339.366
Cryst. (EtOH/petrol). Mp 179-180°. [α]_D²⁰ +20.5 (c, 1.0 in CHCl₃).

Me glycoside, N-Ac, 4-mesyl: Methyl 3-acetamido-3,6-dideoxy-4-O-mesyl- β -D-galactopyranoside
[59150-43-5]
C₁₀H₁₉NO₇S 297.329

Cryst. (EtOH). Mp 188-189° dec. [α]_D²⁰ +72 (c, 1.0 in MeOH).

Me glycoside, N-Ac, 2,4-dimesyl: Methyl 3-acetamido-3,6-dideoxy-2,4-di-O-mesyl- β -D-galactopyranoside
[59150-42-4]
C₁₁H₂₁NO₉S₂ 375.42

Cryst. (Me₂CO/petrol). Mp 192-194° dec. [α]_D²⁰ +8 (c, 1.0 in CHCl₃).

α -L-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- α -L-galactopyranoside
C₉H₁₇NO₅ 219.237
Cryst. (EtOAc). Mp 202-203°. [α]_D²⁵ -238 (c, 0.4 in H₂O).

Me glycoside, N-Ac, 2-mesyl: Methyl 3-acetamido-3,6-dideoxy-2-O-mesyl- α -L-galactopyranoside
C₁₀H₁₉NO₇S 297.329
Mp 191-192°. [α]_D²⁸ -14 (c, 0.5 in MeOH).

Me glycoside, N-Ac, 2,4-dimesyl: Methyl 3-acetamido-3,6-dideoxy-2,4-di-O-mesyl- α -L-galactopyranoside
C₁₁H₂₁NO₉S₂ 375.42
Cryst. (Me₂CO). Mp 199-200°.

β -L-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- β -L-galactopyranoside
C₉H₁₇NO₅ 219.237
Cryst. (EtOH). Mp 245-248°. [α]_D -46.5 (c, 0.5 in H₂O).

Kapek, K. *et al.*, Coll. Czech. Chem. Comm., 1966, **31**, 1854; 1974, **39**, 1462 (synth, derivs)
Hickman, J. *et al.*, J. Biol. Chem., 1966, **241**, 1424 (isol)

Luederitz, O. *et al.*, J. Bacteriol., 1967, **93**, 1681 (occur)

Keleti, J. *et al.*, Eur. J. Biochem., 1971, **20**, 237 (occur)

Wilkinson, S.G. *et al.*, J. Gen. Microbiol., 1972, **70**, 365 (occur)

Staněk, J. *et al.*, Coll. Czech. Chem. Comm., 1975, **40**, 3698 (α -D-pyr Me gly N-Ac mesyl)

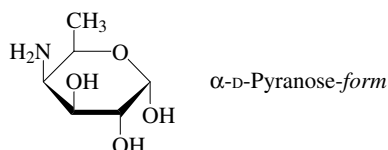
Bystricky, S. *et al.*, Coll. Czech. Chem. Comm., 1979, **44**, 174 (cd)

Adinolfi, M. *et al.*, J. Carbohydr. Chem., 1995, **14**, 913-928 (Me α -L-pyr N-Ac, Me β -L-pyr N-Ac)

Kocharova, N.A. *et al.*, Carbohydr. Res., 2003, **338**, 1425-1430 (N-formyl)

4-Amino-4,6-dideoxygalactose, 8CI A-377

4-Amino-4-deoxyfucose. Thomosamine



C₆H₁₃NO₄ 163.173

D-Pyranose-form [17272-51-4]

Constit. of *E. coli* strain Y-10.

Amorph. powder.

N-Ac: 4-Acetamido-4,6-dideoxy-D-galactopyranose. N-Acetylthomosamine
C₈H₁₅NO₅ 205.21

Present in the endobacterial common antigen. Amorph. powder.

Mp 72-84°. [α]_D²⁵ +170.5 (c, 1.86 in H₂O).

α -D-Pyranose-form

Tetra-Ac: 4-Acetamido-1,2,3-tri-O-acetyl-4,6-dideoxy- α -D-galactopyranose

C₁₄H₂₁NO₈ 331.322

Mp 207-208°. [α]_D²⁵ +95 (c, 1.1 in CHCl₃).

Me glycoside: Methyl 4-amino-4,6-dideoxy- α -D-galactopyranoside

C₇H₁₅NO₄ 177.2

Mp 233-234° dec. (as hydrochloride). [α]_D²⁵ +209 (c, 1.81 in H₂O).

β -D-Pyranose-form

Tetra-Ac: 4-Acetamido-1,2,3-tri-O-acetyl-4,6-dideoxy- β -D-galactopyranose

C₁₄H₂₁NO₈ 331.322

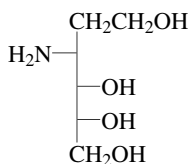
Mp 85-87°. [α]_D²⁵ +21.3 (c, 1.1 in CHCl₃).

Stevens, C.L. *et al.*, J.A.C.S., 1964, **86**, 2937 (D-form, synth, D-N-Ac, α -D-tetra-Ac, β -D-tetra-Ac, α -D-Me pyr)

Jann, B. *et al.*, Eur. J. Biochem., 1967, **2**, 26 (isol)

3-Amino-2,3-dideoxyglucitol A-378

3-Amino-2,3-dideoxymannitol



C₆H₁₅NO₄ 165.189

D-form

6-Benzyl, 4,5-bis(methoxymethyl):

[112709-31-6]

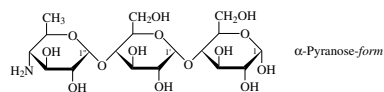
C₁₇H₂₉NO₆ 343.419

Syrup. Named as a deriv. of 4-amino-4,5-dideoxymannitol in the ref.

Iida, H. *et al.*, Chem. Comm., 1987, 746 (benzyl deriv)

4-Amino-4,6-dideoxy- α -D-glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI A-379

[123941-05-9]



C₁₈H₃₃NO₁₄ 487.457

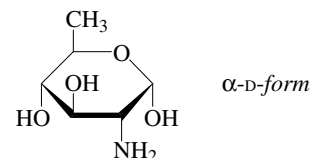
Formed by degradation of Acarbose, A-3. Exhibits antidiabetic props. Hygroscopic syrup. Deliquesces at 30° in 75% relative humidity.

Takahashi, Y. *et al.*, CA, 1990, **112**, 25451s (synth, ir, pmr, ms, hplc)

Bock, K. *et al.*, Carbohydr. Res., 1991, **221**, 1 (synth, pmr, cmr)

2-Amino-2,6-dideoxyglucose A-380

6-Deoxyglucosamine. Chinovosamine. Iso-rhodosamine. Quinovosamine



C₆H₁₃NO₄ 163.173

D-form [6018-53-7]

[6189-58-8]

Constit. of the lipopolysaccharide from the cells of *Pseudomonas aeruginosa*. Also present in *Achromobacter georgii politanum* *Salmonella*, spp. *Proteus vulgaris*, *Neurospora crassa*, *Vibrio cholerae*, and *Brucella* spp. The lipopolysaccharide is used as antiviral agent for influenza A/PR8, encephalomyocarditis virus and columbia SK virus. Cryst. (EtOH/Et₂O).

Mp 172-173° dec. (as hydrochloride). [α]_D²² +88 \rightarrow +53 (c, 1.2 in H₂O) (hydrochloride).

N-Ac: 2-Acetamido-2,6-dideoxy-D-glucose.

N-Acetyl-D-quinovosamine

[40614-71-9]

C₈H₁₅NO₅ 205.21

Intermed. in biosynth. of bacterial antigens. Cryst. (EtOH).

Mp 210-211° dec. [α]_D²² +66 \rightarrow +15 (c, 1.08 in H₂O).

α -D-form

Tetra-Ac: 2-Acetamido-1,3,4-tri-O-acetyl-2,6-dideoxy- α -D-glucopyranose

C₁₄H₂₁NO₈ 331.322

Cryst. (H₂O). Mp 178°. [α]_D²² +114 (c, 1.21 in CHCl₃).

Me glycoside, N-Ac: Methyl 2-acetamido-2,6-dideoxy- α -D-glucopyranoside

C₉H₁₇NO₅ 219.237

Cryst. (MeOH) or powder (2-propanol). Mp 172-173° (168-170°). [α]_D²⁴ +117.4 (c, 1.1 in MeOH).

β -D-form

Tetra-Ac: 2-Acetamido-1,3,4-tri-O-acetyl-2,6-dideoxy- β -D-glucopyranose

C₁₄H₂₁NO₈ 331.322

Rods (H₂O). Mp 209-210°. [α]_D²³ +15 (c, 1.07 in CHCl₃).

L-form

Mp 173-175° dec. (as hydrochloride). [α]_D²² -91 \rightarrow -53 (c, 1.08 in H₂O) (hydrochloride).

N-Ac: 2-Acetamido-2,6-dideoxy-L-glucose.

N-Acetyl-L-quinovosamine

[42859-69-8]

C₈H₁₅NO₅ 205.21

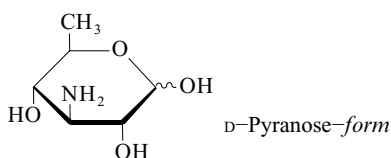
Intermed. in biosynth. of bacterial antigens.

Mp 201-204°. [α]_D²⁴ -54 \rightarrow -14 (c, 1 in H₂O).

N-Me: 2,6-Dideoxy-2-(*N*-methylamino)-*L*-glucose
 $C_7H_{15}NO_4$ 177.2
 A constit. of Streptomycin. Mp 160-163°. $[\alpha]_D^{25}$ -103 \rightarrow -88 (H_2O/HCl).
 3,4-Di-Me, *N*-Ac: 2-Acetamido-2,6-dideoxy-3,4-di-O-methyl-*L*-glucose
 $C_{10}H_{19}NO_5$ 233.264
 Mp 211-213°. $[\alpha]_D^{25}$ -56.3 \rightarrow +17.2 (c, 0.14 in H_2O).

 β -L-form

Tetra-Ac: 2-Acetamido-1,3,4-tri-O-acetyl-2,6-dideoxy- β -*L*-glucopyranose
 $C_{14}H_{21}NO_8$ 331.322
 Cryst. (H_2O). Mp 208-209°. $[\alpha]_D^{22}$ -14 (c, 1.05 in $CHCl_3$).
 Kuhn, R. *et al.*, *Annalen*, 1958, **617**, 115 (*D*-form, *D*-*N*-Ac, α -*D*-tetra-Ac, β -*D*-tetra-Ac, *L*-form, *L*-*N*-Ac, β -*L*-tetra-Ac)
 Morel, C.J. *et al.*, *Helv. Chim. Acta*, 1958, **41**, 1501 (*D*-form, *D*-*N*-Ac)
 Perry, M.B. *et al.*, *Can. J. Chem.*, 1974, **52**, 2425 (*L*-*N*-Ac di-Me)
 Barrow, R.O. *et al.*, *CA*, 1975, **82**, 1843g (*biosynth*)
 Burger, P.J. *et al.*, *Carbohydr. Res.*, 1983, **119**, 221 (*D*-*N*-Ac, α -*D*-Me pyr *N*-Ac)
 Galemno, R.A. *et al.*, *Carbohydr. Res.*, 1983, **119**, 231 (*synth*, α -*D*-Me pyr *N*-Ac)
 Roy, A. *et al.*, *Indian J. Chem., Sect. B*, 1987, **26**, 1165 (α -*D*-Me pyr *N*-Ac)
 Ito, M. *et al.*, *Carbohydr. Res.*, 1993, **242**, 173 (*isol*)
 Samuel, G. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2503-2519 (*N*-Ac, *biosynth*)

3-Amino-3,6-dideoxyglucose**A-381** $C_6H_{13}NO_4$ 163.173**D-form** [15435-23-1]

Constit. of the lipopolysaccharides of *E. coli*, *Citrobacter* and *Salmonella*.
 $[\alpha]_D^{24}$ +56.3 (c, 6 in H_2O) (as hydrochloride).
N-Formyl: 3,6-Dideoxy-3-formamido-*D*-glucose
 $C_7H_{13}NO_5$ 191.183
 Occurs in *O*-specific polysaccharide of *Hafnia alvei* strain 1204.
N,N-Di-Me: 3,6-Dideoxy-3-dimethylamino-*D*-glucose. *Mycaminose*
 [519-21-1]
 $C_8H_{17}NO_4$ 191.227
 Component of the antibiotics Carbomycin, Spiramycin (see Foromacidin A, F-24), Leucomycin (see Leucomycin A₁) and Turimycins. Also obt. by acid hydrolysis of antibiotic B 58941 (see Cirramycin A₁).
 Mp 115-116° (as hydrochloride). $[\alpha]_D^{25}$ +31 (c, 1 in H_2O , equilib.).
N-(2*S*,3-Dihydroxypropanoyl): 3,6-Dideoxy-3-(*L*-glyceroylamino)-*D*-glucose [74240-45-2]
 $C_9H_{17}NO_7$ 251.236

Constit. of the antigenic polysaccharide of *Eubacterium saburreum* strain V5. Needles.
 Mp 190-196°. $[\alpha]_D^{28}$ +60.8 (c, 2.6 in H_2O equilib.).

N-(3*S*-Hydroxybutanoyl): 3,6-Dideoxy-3-(3-hydroxybutyramido)-*D*-glucose
 $C_{10}H_{19}NO_6$ 249.263
 Component of the *O*-specific polysaccharide of *Pseudomonas fluorescens* biovar B strain IMV 247.

 α -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- α -*D*-glucopyranoside [43138-54-1]
 $C_7H_{15}NO_4$ 177.2
 Mp 175-177°. $[\alpha]_D^{20}$ +148 (c, 0.57 in H_2O).
Me glycoside, *N,N*-di-Me: Methyl 3,6-dideoxy-3-dimethylamino- α -*D*-glucopyranoside [56569-92-7]
 $C_9H_{19}NO_4$ 205.253
 Mp 81-82°. Bp_{0.25} 80°. $[\alpha]_D^{25}$ +123 (c, 0.43 in H_2O).

 β -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- β -*D*-glucopyranoside [53910-77-3]
 $C_7H_{15}NO_4$ 177.2
 Cryst. (EtOH). Mp 194-196°. $[\alpha]_D^{25}$ -55 (H_2O).
Me glycoside, *N*-Ac: Methyl 3-acetamido-3,6-dideoxy- β -*D*-glucopyranoside [53911-17-4]
 $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOH). Mp 247-249°. $[\alpha]_D^{25}$ -43.
Me glycoside, *N*,2-di-Ac: Methyl 3-acetamido-2-O-acetyl-3,6-dideoxy- β -*D*-glucopyranoside [53829-53-1]
 $C_{11}H_{19}NO_6$ 261.274
 Mp 189.5°. $[\alpha]_D^{20}$ -8 (c, 0.5 in $CHCl_3$).

Me glycoside, *N*,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-2,6-dideoxy- β -*D*-glucopyranoside [53911-21-0]
 $C_{13}H_{21}NO_7$ 303.311
 Mp 210°. $[\alpha]_D^{20}$ -7.4 (c, 0.5 in $CHCl_3$).

N,N-Di-Me: [51607-62-6]
 Solid + $1H_2O$ (as hydrochloride). Mp 116-118° (hydrochloride). $[\alpha]_D^{25}$ +11 \rightarrow +31 (c, 1.08 in H_2O) (hydrochloride).
 Appears identical with the mycaminose hydrochloride above.

L-form [18118-75-7]

Constit. of the lipopolysaccharide of *Eubacterium coli*.
 Hygroscopic syrup (as hydrochloride).
 $[\alpha]_D^{20}$ -46 (c, 5.25 in H_2O).
N-Ac: 3-Acetamido-3,6-dideoxy-*L*-glucose
 Constit. of the core oligosaccharide of *Aeromonas hydrophila* and *Vibrio anguillarum*.
 $[\alpha]_D^{23}$ -26 (c, 0.01 in H_2O).

 α -L-Pyranose-form

Tetra-Ac: 3-Acetamido-1,2,4-tri-O-acetyl-3,6-dideoxy- α -*L*-glucopyranoside
 $C_{14}H_{21}NO_8$ 331.322
 $[\alpha]_D^{20}$ -111 (c, 1.1 in $CHCl_3$).

Me glycoside: Methyl 3-amino-3,6-dideoxy- α -*L*-glucopyranoside [5817-28-7]
 $C_7H_{15}NO_4$ 177.2
 Mp 175-176°. $[\alpha]_D^{20}$ -145 (c, 1.9 in H_2O).
Me glycoside, *N*-Ac: Methyl 3-acetamido-3,6-dideoxy- α -*L*-glucopyranoside [17225-66-0]
 $C_9H_{17}NO_5$ 219.237
 Mp 223-224°. $[\alpha]_D^{20}$ -145 (c, 1.08 in H_2O).

Me glycoside, *N*,2-Di-Ac: Methyl 3-acetamido-2-O-acetyl-3,6-dideoxy- α -*L*-glucopyranoside [10350-08-0]
 $C_{11}H_{19}NO_6$ 261.274
 Mp 204-205°. $[\alpha]_D^{20}$ -110.6 (c, 0.37 in EtOH).

Me glycoside, *N*,4-di-Ac: Methyl 3-acetamido-4-O-acetyl-3,6-dideoxy- α -*L*-glucopyranoside
 $C_{11}H_{19}NO_6$ 261.274
 Cryst. (EtOAc). Mp 244°. $[\alpha]_D^{21}$ -219 (c, 0.5 in EtOH).

Me glycoside, 2,4-di-Ac: Methyl 2,4-di-O-acetyl-3-amino-3,6-dideoxy- α -*L*-glucopyranoside
 $C_{11}H_{19}NO_6$ 261.274
 Mp 195-197°. $[\alpha]_D^{22}$ -126.4 (c, 0.7 in $CHCl_3$).

Me glycoside, tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- α -*L*-glucopyranoside [10230-06-5]
 $C_{13}H_{21}NO_7$ 303.311
 Mp 194-197°. $[\alpha]_D^{20}$ -128 (c, 1.94 in $CHCl_3$).

Me glycoside, *N,N*-di-Me: Methyl 3,6-dideoxy-3-dimethylamino- α -*L*-glucopyranoside [55053-27-5]
 $C_9H_{19}NO_4$ 205.253
 Mp 83.5-86°. $[\alpha]_D^{22}$ -125 (H_2O).

 β -L-Pyranose-form

Tetra-Ac: 3-Acetamido-1,2,4-tri-O-acetyl-3,6-dideoxy- β -*L*-glucopyranoside
 $C_{14}H_{21}NO_8$ 331.322
 Mp 232-234°. $[\alpha]_D^{20}$ -22.5 (c, 1.2 in $CHCl_3$).

Me glycoside: Methyl 3-amino-3,6-dideoxy- β -*L*-glucopyranoside
 $C_7H_{15}NO_4$ 177.2
 Mp 194-196°. $[\alpha]_D^{20}$ -55 (c, 1.0 in H_2O).

Me glycoside, *N*-Ac: Methyl 3-acetamido-3,6-dideoxy- β -*L*-glucopyranoside
 $C_9H_{17}NO_5$ 219.237
 Mp 247-249°. $[\alpha]_D^{20}$ -43 (c, 1.0 in H_2O).

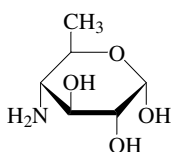
Me glycoside, tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- β -*L*-glucopyranoside
 $C_{13}H_{21}NO_7$ 303.311
 Mp 208-209°. $[\alpha]_D^{20}$ -11 (c, 1.0 in $CHCl_3$).

N,N-Di-Me: *L*-Mycaminose
 Solid + $1H_2O$ (as hydrochloride). Mp 116-117° (hydrochloride). $[\alpha]_D^{25}$ -13 \rightarrow -30 (c, 1.0 in H_2O) (hydrochloride).

Hochstein, F.A. *et al.*, *J.A.C.S.*, 1955, **77**, 3353-3355 (*Mycaminose, struct*)
 Richardson, A.C. *et al.*, *J.C.S.*, 1962, 2499-2506; 2758-2760 (*synth*, α -*L*-derivs)

Cápek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1966, **31**, 1854-1867; 1974, **39**, 1462-1478 (α -L-N-Ac, Ac derivs, β -D-2,4-Di-Ac derivs)
 Jann, B. *et al.*, *Nature (London)*, 1967, **215**, 170 (isol)
 Suzuki, T. *et al.*, *Chem. Lett.*, 1973, 789 (Mycaminose)
 Koga, K. *et al.*, *Carbohydr. Res.*, 1974, **36**, C9 (synth, pmr, DL-mycaminose)
 Omura, S. *et al.*, *J.A.C.S.*, 1975, **97**, 4001 (cmr)
 Kondo, W. *et al.*, *Carbohydr. Res.*, 1980, **83**, 129-134 (N-2,3-dihydroxypropanoyl, D-form)
 Redlich, H. *et al.*, *Annalen*, 1981, 1223-1233 (β -D-N-Ac derivs, pmr)
 Banoub, J.H. *et al.*, *Can. J. Biochem.*, 1981, **59**, 877-879 (L-form N-Ac, isol)
 Katzenellenbogen, E. *et al.*, *Carbohydr. Res.*, 1995, **273**, 187-195 (occur, N-formyl)
 Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 1998, **306**, 297-303 (3-hydroxybutanoyl)

4-Amino-4,6-dideoxyglucose, 8CI A-382
Viosamine



α -D-Pyranose-form

$C_6H_{13}NO_4$ 163.173

D-form [3317-97-3]
 Isol. from lipopolysaccharides of *E. coli* strain B and *Chromobacterium violaceum*.
 Hydrochloride: Mp 132-138° dec. $[\alpha]_D^{27}$ -9 \rightarrow +21 (c, 1 in H_2O).
 N-Ac: 4-Acetamido-4,6-dideoxy-D-glucose
 $C_8H_{15}NO_5$ 205.21
 Present in *E. coli* O7 polysaccharide.
 Mp 188-189.5°. $[\alpha]_D^{25}$ +151 (c, 0.43 in H_2O).
 N-Me: 4,6-Dideoxy-4-(N-methylamino)-D-glucose. *Bamosamine*
 $C_7H_{15}NO_4$ 177.2
 N,N-Di-Me: 4,6-Dideoxy-4-dimethylaminoglucose. *Amosamine*
 [20225-11-0]
 $C_8H_{17}NO_4$ 191.227
 Constit. of Amicetin, A-119. pK_a 7.2.
 N,N-Di-Me; hydrochloride: Mp 192-193°. $[\alpha]_D^{25}$ +45.5 (c, 1 in H_2O).

α -D-Pyranose-form

Me glycoside: Methyl 4-amino-4,6-dideoxy- α -D-glucopyranoside
 $C_7H_{15}NO_4$ 177.2
 Cryst. ($CHCl_3$ /petrol). Mp 117-118°. $[\alpha]_D^{25}$ +144 (c, 0.85 in H_2O).
Me glycoside, N-Me: Methyl 4,6-dideoxy-4-methylamino- α -D-glucopyranoside
 $C_8H_{17}NO_4$ 191.227
 Cryst. ($CHCl_3$ /Et₂O). Mp 64-65°. $[\alpha]_D^{25}$ +175 (c, 1 in $CHCl_3$).
Me glycoside, N-Me, N-Ac: Methyl 4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside
 $C_{10}H_{19}NO_5$ 233.264
 Cryst. (EtOH). Mp 157-158°. $[\alpha]_D^{24}$ +133 (c, 1.9 in $CHCl_3$).

Me glycoside, N-Me, N,2,3-tri-Ac: Methyl 2,3-di-O-acetyl-4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside
 $C_{14}H_{23}NO_7$ 317.338
 Cryst. ($CHCl_3$ /Et₂O/pentane). Mp 119-120°. $[\alpha]_D^{23}$ +119 (c, 1.1 in $CHCl_3$).
Me glycoside, N,N-di-Me: Methyl 4,6-dideoxy-4-dimethylamino- α -D-glucopyranoside. Methyl α -amosaminide
 $C_9H_{19}NO_4$ 205.253
 Needles (Et₂O/hexane). Mp 93-94°. $[\alpha]_D^{25}$ +138.2 (c, 0.5 in H_2O). pK_a 7.2.
Me glycoside, N,N-di-Me; hydrochloride: Needles (EtOH/Et₂O). Mp 195-196° dec. $[\alpha]_D^{25}$ +113.7 (c, 0.7 in H_2O).

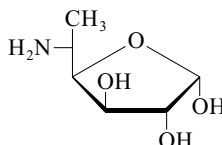
β -D-Pyranose-form

Me glycoside, N,N-di-Me: Methyl 4,6-dideoxy-4-dimethylamino- β -D-glucopyranoside. Methyl β -amosaminide
 $C_9H_{19}NO_4$ 205.253
 Cubes (EtOH/Et₂O) (as hydrochloride). Mp 209-210° dec. (as hydrochloride). $[\alpha]_D^{25}$ -32.4 (c, 0.5 in H_2O). pK_a 7.2.

[20225-11-0]

Hinman, J.W. *et al.*, *J.A.C.S.*, 1953, **75**, 5864 (Amicetin, isol)
 Stevens, C.L. *et al.*, *J.A.C.S.*, 1956, **78**, 6212; 1963, **85**, 1552; 3061; 1964, **86**, 2939 (D-form, D-N-Ac, α -D-Me pyr, D-N,N-di-Me, struct, synth)
 Stevens, C.L. *et al.*, *J.O.C.*, 1962, **27**, 2991; 1966, **31**, 2822 (D-N,N-di-Me, struct, α -D-Me pyr N,N-di-Me, β -D-Me pyr N,N-di-Me, D-N-Me derivs)
 Jann, B. *et al.*, *Eur. J. Biochem.*, 1967, **2**, 26 (D-form, isol)
 Edmundowicz, J.M. *et al.*, *CA*, 1968, **68**, 47304w (biosynth)

5-Amino-5,6-dideoxyglucose A-383

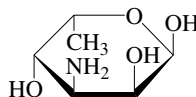


$C_6H_{13}NO_4$ 163.173

α -D-Furanose-form

1,2-O-Isopropylidene: 5-Amino-5,6-dideoxy-1,2-O-isopropylidene- α -D-glucopyranose
 [37073-72-6]
 $C_9H_{17}NO_4$ 203.238
 Syrup.
 Inouye, S. *et al.*, *CA*, 1972, **77**, 48736m (isopropylidene)

3-Amino-3,6-dideoxygulose A-384



$C_6H_{13}NO_4$ 163.173

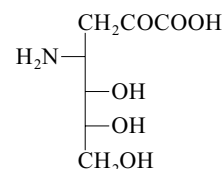
α -L-Pyranose-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- α -L-gulopyranoside
 [170998-59-1]
 $C_9H_{17}NO_5$ 219.237
 Cryst. (Me₂CO/hexane). Mp 166-167°. $[\alpha]_D$ -99 (c, 0.8 in H_2O).

β -L-Pyranose-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- β -L-gulopyranoside
 [170998-62-6]
 $C_9H_{17}NO_5$ 219.237
 Cryst. + 1H₂O (wet EtOAc). Mp 76-78°. $[\alpha]_D$ +45 (c, 0.6 in MeOH).
 Adinolfi, M. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 913-928 (Me α -L-pyr N-Ac, Me β -L-pyr N-Ac)

4-Amino-3,4-dideoxy-arabino-2-heptulosonic acid A-385

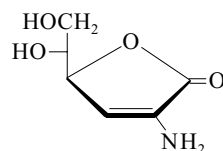


$C_7H_{13}NO_6$ 207.183

D-form

6-Phosphate: [156726-69-1]
 $C_7H_{14}NO_9P$ 287.163
 Thought to be present in bacteria producing ansamycins and mitomycins. Proposed key intermed. in biosynth. of 3-Amino-5-hydroxybenzoic acid residues. Mp 115-120° (dec., gas evolution). CD₂₄₁ -0.9, θ_{220} -0.2, θ_{208} -0.05 (H_2O).
 Kirschning, A. *et al.*, *Carbohydr. Res.*, 1994, **256**, 245 (synth, pmr, cmr, phosphate)

2-Amino-2,3-dideoxy-erythro-hex-2-enono-1,4-lactone A-386



$C_6H_9NO_4$ 159.141

D-form

N-Ac: 2-Acetamido-2,3-dideoxy-D-erythro-hex-2-enono-1,4-lactone
 [28876-39-3]
 $C_8H_{11}NO_5$ 201.179
 Cryst. (MeOH). Mp 186-188°. $[\alpha]_D^{20}$ +41.1 (c, 1.04 in H_2O) (lit. gives a temp. range).
 N,5,6-Tri-Ac: 2-Acetamido-5,6-di-O-acetyl-2,3-dideoxy-D-erythro-hex-2-enono-1,4-lactone
 [34044-50-3]
 $C_{12}H_{15}NO_7$ 285.253
 Syrup. $[\alpha]_D^{20}$ +58.1 (c, 0.9 in $CHCl_3$) (lit. gives a temp. range).

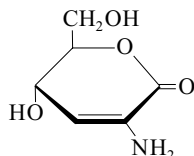
5,6-O-Isopropylidene, N-Ac: 2-Acetamido-2,3-dideoxy-5,6-O-isopropylidene-D-erythro-hex-2-enono-1,4-lactone [28876-41-7]
C₁₁H₁₅NO₅ 241.243
Mp 124-125°. [α]_D²⁰ -29.1 (c, 1.0 in CHCl₃) (lit. gives a temp. range).

Pravdić, N. *et al.*, *Carbohydr. Res.*, 1971, **19**, 339 (D-N-Ac, D-tri-Ac, D-N-Ac isopropylidene)

Pokorny, M. *et al.*, *Carbohydr. Res.*, 1975, **43**, 345 (D-N-Ac)

Ruzic-Torres, Z. *et al.*, *Acta Cryst. B*, 1978, **34**, 854 (D-N-Ac, cryst struct)

2-Amino-2,3-dideoxy-erythro-hex-2-enono-1,5-lactone A-387



C₆H₉NO₄ 159.141

D-form

N-Ac: 2-Acetamido-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone [53685-02-2]
C₈H₁₁NO₅ 201.179

Cryst. (Me₂CO). Mp 130-132°. [α]_D²⁰ +29.8 (c, 0.7 in Me₂CO) (lit. gives a temp. range).

N,4,6-tri-Ac: 2-Acetamido-4,6-di-O-acetyl-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone [34051-46-2]
C₁₂H₁₅NO₇ 285.253

Syrup. [α]_D +144.5 (c, 1.0 in CHCl₃).

4,6-O-Benzylidene, N-Ac: 2-Acetamido-4,6-O-benzylidene-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone [53684-93-8]
C₁₅H₁₅NO₅ 289.287

Cryst. (MeOH). Mp 193-194° (189-190°). [α]_D -32.9 (CHCl₃).

4,6-O-Isopropylidene, N-Ac: 2-Acetamido-2,3-dideoxy-4,6-O-isopropylidene-D-erythro-hex-2-enono-1,5-lactone [53684-95-0]
C₁₁H₁₅NO₅ 241.243

Cryst. (Me₂CO/Et₂O). Mp 162-163°. [α]_D -45.6 (c, 0.8 in CHCl₃).

N-Ac, 4-Me: 2-Acetamido-2,3-dideoxy-4-O-methyl-D-erythro-hex-2-enono-1,5-lactone [53684-99-4]
C₉H₁₃NO₅ 215.205

Cryst. (Me₂CO/Et₂O). Mp 142-144°. [α]_D +96 (c, 0.9 in Me₂CO).

N-Benzoyl: 2-Benzamido-4,6-O-benzylidene-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone

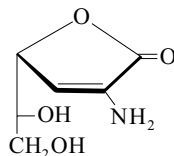
C₁₃H₁₃NO₅ 263.249

Cryst. (MeOH). Mp 181°. [α]_D -25 (c, 1.0 in CHCl₃).

Kuzuhara, H. *et al.*, *Agric. Biol. Chem.*, 1962, **26**, 334 (D-N-benzoyl)

Pravdić, N. *et al.*, *Carbohydr. Res.*, 1971, **19**, 353; 1974, **36**, 167 (D-tri-Ac, D-benzylidene N-Ac, D-isopropylidene N-Ac, D-N-Ac, D-N-Ac Me)

2-Amino-2,3-dideoxy-threo-hex-2-enono-1,4-lactone A-388



C₆H₉NO₄ 159.141

D-form

N-Ac: 2-Acetamido-2,3-dideoxy-D-threo-hex-2-enonic acid γ-lactone, 8CI [34051-49-5]
C₈H₁₁NO₅ 201.179

Cryst. (MeOH). Mp 176-178°. [α]_D²⁰ -101.2 (c, 0.6 in H₂O) (lit. gives a temp. range). [α]_D²⁰ -112.3 (c, 0.4 in H₂O) (lit. gives a temp. range).

5,6-O-Isopropylidene, N-Ac: 2-Acetamido-2,3-dideoxy-5,6-O-isopropylidene-D-threo-hex-2-enonic acid γ-lactone, 8CI [34044-51-4]
C₁₁H₁₅NO₅ 241.243

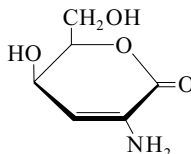
Mp 156-158°. [α]_D²⁰ -46.2 (c, 0.8 in CHCl₃) (lit. gives a temp. range).

Pravdić, N. *et al.*, *Carbohydr. Res.*, 1971, **19**, 339 (D-N-Ac, D-N-Ac isopropylidene)

Pokorny, M. *et al.*, *Carbohydr. Res.*, 1975, **43**, 345 (D-N-Ac)

Ruzic-Torres, Z. *et al.*, *Acta Cryst. B*, 1976, **32**, 2333; 1978, **34**, 1226 (cryst struct)

2-Amino-2,3-dideoxy-threo-hex-2-enono-1,5-lactone A-389



C₆H₉NO₄ 159.141

D-form

N-Ac: 2-Acetamido-2,3-dideoxy-D-threo-hex-2-enono-1,5-lactone [57467-01-3]
C₈H₁₁NO₅ 201.179

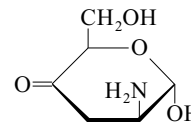
Cryst. (Me₂CO). Mp 142-143°. [α]_D -15.9 (c, 0.44 in H₂O).

4,6-O-Isopropylidene, N-Ac: 2-Acetamido-2,3-dideoxy-4,6-O-isopropylidene-D-threo-hex-2-enono-1,5-lactone [57467-02-4]
C₁₁H₁₅NO₅ 241.243

Cryst. (Me₂CO/Et₂O). Mp 155-156°. [α]_D +47.3 (c, 0.9 in CHCl₃).

Pokorny, M. *et al.*, *Carbohydr. Res.*, 1975, **43**, 345

2-Amino-2,3-dideoxy-threo-hexopyranos-4-ulose A-390



C₆H₁₁NO₄ 161.157

α-D-form

Me glycoside, 6-benzoyl, N-Ac: [64879-47-6]
C₁₆H₁₉NO₆ 321.329

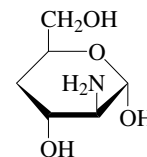
Syrup.

Me glycoside, 6-benzoyl, N-Ac, 2,4-dinitrophenylhydrazone:

Cryst. Mp 216-217°. [α]_D²⁰ +167 (c, 1.0 in CHCl₃).

Sakakibara, T. *et al.*, *Carbohydr. Res.*, 1977, **58**, 39 (α-D-Me gly N-Ac derivs)

2-Amino-2,4-dideoxy-arabino-hexose A-391



α-D-Pyranose-form

C₆H₁₃NO₄ 163.173

D-Pyranose-form

N-Ac: 2-Acetamido-2,4-dideoxy-D-arabino-hexopyranose

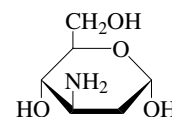
C₈H₁₅NO₅ 205.21

Viscous oil. [α]_D²² -13.5 (c, 1.92 in H₂O, 10 min.). Mixt. of anomers.

[135256-31-4, 135256-46-1]

Mulzer, J. *et al.*, *Annalen*, 1991, 947 (synth, pmr, cmr, N-Ac)

3-Amino-2,3-dideoxy-arabino-hexose A-392



α-D-Pyranose-form

C₆H₁₃NO₄ 163.173

α-D-Pyranose-form

Me glycoside: Methyl 3-amino-2,3-dideoxy-α-D-arabino-hexopyranoside [16697-56-6]
C₇H₁₅NO₄ 177.2

Syrup. [α]_D +136 (c, 0.4 in MeOH).

Me glycoside, N-Ac: Methyl 3-acetamido-2,3-dideoxy-α-D-arabino-hexopyranoside [17016-59-0]
C₉H₁₇NO₅ 219.237

Cryst. (EtOH/hexane). Mp 134-136°. [α]_D +132 (c, 0.7 in CHCl₃).

β-D-Pyranose-form

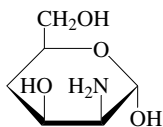
Me glycoside: Methyl 3-amino-2,3-dideoxy-β-D-arabino-hexopyranoside [116724-60-8]
 $C_7H_{15}NO_4$ 177.2
 Syrup. $[\alpha]_D$ -51 (c, 0.7 in MeOH).

Me glycoside, N-Ac: Methyl 3-acetamido-2,3-dideoxy-β-D-arabino-hexopyranoside [501091-23-2]
 $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOH/hexane). Mp 174-176°. $[\alpha]_D$ -17 (c, 0.5 in $CHCl_3$).

Liberek, B. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1803-1810 (α -D-Me pyr, β-D-Me pyr, α-D-Me pyr N-Ac, β-D-Me pyr N-Ac, synth, pmr, cmr)

2-Amino-2,4-dideoxy-lyxo-hexose

A-393



α-D-Pyranose-form

 $C_6H_{13}NO_4$ 163.173
D-form

Cryst. (as hydrochloride). Mp 160-161° dec. (hydrochloride). $[\alpha]_D$ -10.8 (3 min.) → -1.6 (equilib.) (c, 1.66 in H_2O).

D-Pyranose-form

N-Ac: 2-Acetamido-2,4-dideoxy-D-lyxo-hexopyranose [89157-32-4]
 $C_8H_{15}NO_5$ 205.21
 Cryst. (MeOH/Et₂O). Mp 112-114°. $[\alpha]_D^{25}$ +11.5 (c, 0.80 in H_2O) (+4.5).
 Mixt. of anomers.

[88146-23-0, 88146-24-1, 88146-25-2]

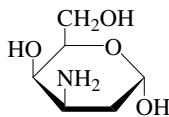
Černý, I. *et al.*, *Coll. Czech. Chem. Comm.*, 1983, **48**, 2386 (synth, pmr)

Mulzer, J. *et al.*, *Annalen*, 1991, 947; 957 (synth, ir, pmr, cmr, N-Ac)

Halcomb, R.L. *et al.*, *Tetrahedron: Asymmetry*, 1994, **5**, 2437 (synth)

3-Amino-2,3-dideoxy-lyxo-hexose

A-394


 $C_6H_{13}NO_4$ 163.173
α-D-Pyranose-form

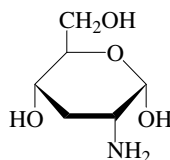
1,3,4,6-O,N,O,O-Tetra-Ac: 3-Acetamido-1,4,6-tri-O-acetyl-2,3-dideoxy-α-D-lyxo-hexopyranose [501091-53-8]
 $C_{14}H_{21}NO_8$ 331.322
 Cryst. (toluene/EtOAc). Mp 159-160°. $[\alpha]_D$ +136 (c, 0.5 in $CHCl_3$).

Liberek, B. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1803-1810 (α -D-pyr tetra-Ac, synth, pmr)

2-Amino-2,3-dideoxy-ribo-hexose

A-395

2-Amino-2,3-dideoxyglucose. Lividosamine



α-D-form

 $C_6H_{13}NO_4$ 163.173
D-form [58772-80-8]

[61708-07-4] Component of Lividomycin A, L-46 and Lividomycin B.

Hygroscopic powder (as hydrochloride). $[\alpha]_D^{25}$ +13 (c, 0.7 in H_2O) (hydrochloride).

N-Ac: 2-Acetamido-2,3-dideoxy-D-ribo-hexopyranose. N-Acetyl-lividomycin [40555-67-7]
 $C_8H_{15}NO_5$ 205.21
 Cryst. (EtOH/Et₂O). Mp 150-152°. $[\alpha]_D$ +54 (2h) → +30 (equilib.) (c, 0.6 in H_2O).

α-D-Pyranose-form

N,1,4,6-Tetra-Ac: 2-Acetamido-1,4,6-tri-O-acetyl-2,3-dideoxy-α-D-ribo-hexopyranose [73745-61-6]

$C_{14}H_{21}NO_8$ 331.322
 Needles (Et₂O/hexane). Mp 151-152°. $[\alpha]_D^{23}$ +107.4 (c, 0.5 in $CHCl_3$).

Me glycoside: Methyl 2-amino-2,3-dideoxy-α-D-ribo-hexopyranoside, 9CI [61348-64-9]
 $C_7H_{15}NO_4$ 177.2
 $[\alpha]_D^{25}$ +130 (c, 1.0 in H_2O) (hydrochloride).

Me glycoside, N-Ac: Methyl 2-acetamido-2,3-dideoxy-α-D-ribo-hexopyranoside, 8CI [25541-56-4]
 $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOH/EtOAc). Mp 204-206°. $[\alpha]_D^{25}$ +80 (c, 1.0 in H_2O).

Me glycoside, N,4,6-tri-Ac: Methyl 2-acetamido-4,6-di-O-acetyl-2,3-dideoxy-α-D-ribo-hexopyranoside [61348-65-0]
 $C_{13}H_{21}NO_7$ 303.311
 Mp 138°. $[\alpha]_D^{23}$ +112 (c, 0.38 in MeOH).

Me glycoside, 4,6-dimesyl, N-Ac: Methyl 2-acetamido-2,3-dideoxy-4,6-di-O-mesyl-α-D-ribo-hexopyranoside [52850-86-9]
 $C_{11}H_{21}NO_9S_2$ 375.42
 Cryst. (EtOH). Mp 159-161°. $[\alpha]_D$ +91.5 (c, 2.0 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 2-acetamido-4,6-O-benzylidene-2,3-dideoxy-α-D-ribo-hexopyranoside, 8CI [22595-95-5]
 $C_{16}H_{21}NO_5$ 307.346
 Cryst. (Et₂O/EtOAc). Mp 244-245° subl
 Mp 264°. $[\alpha]_D^{22}$ +52 (c, 1 in $CHCl_3$).

Me glycoside, 4,6-O-cyclohexylidene, N-tosyl: Methyl 4,6-O-cyclohexylidene-2,3-dideoxy-2-N-tosyl-α-D-ribo-hexopyranoside [78151-16-3]
 $C_{20}H_{29}NO_6S$ 411.518
 Solid. $[\alpha]_D^{25}$ +44 (c, 0.5 in $CHCl_3$).

Et glycoside, N-Ac: Ethyl 2-acetamido-2,3-dideoxy-α-D-ribo-hexopyranoside [58780-54-4]
 $C_{10}H_{19}NO_5$ 233.264
 Cryst. (EtOAc). Mp 185-187°. $[\alpha]_D$ +149 (c, 1.05 in MeOH).

Et glycoside, 4,6-dibenzoyl, N-Ac: Ethyl 2-acetamido-4,6-di-O-benzoyl-2,3-dideoxy-α-D-ribo-hexopyranoside [58780-50-0]
 $C_{24}H_{27}NO_7$ 441.48
 Cryst. ($CHCl_3$ /hexane). Mp 176-178°. $[\alpha]_D$ +74 (c, 0.91 in $CHCl_3$).

β-D-Pyranose-form

Me glycoside, N-benzoyl: Methyl 2-benzamido-2,3-dideoxy-β-D-ribo-hexopyranoside $C_{14}H_{19}NO_5$ 281.308
 Prisms (EtOH/Et₂O). Mp 189-190°. $[\alpha]_D^{23}$ -43 (c, 1.2 in EtOH).

Me glycoside, 4,6-O-benzylidene, N-benzoyl: Methyl 2-benzamido-4,6-O-benzylidene-2,3-dideoxy-β-D-ribo-hexopyranoside $C_{21}H_{23}NO_5$ 369.416
 Cryst. (MeOH). Mp 247° dec. $[\alpha]_D^{23}$ -48.1 (c, 0.9 in DMSO).

1-form [58825-09-5]

Solid (MeOH/Me₂CO) (as hydrochloride). $[\alpha]_D^{28}$ -48.6 (c, 1.4 in H_2O) (hydrochloride). CAS no. refers to hydrochloride.

Meyer zu Reckendorf, W. *et al.*, *Tetrahedron*, 1963, **19**, 1711 (*D*-form, synth, β-D-Me pyr N-benzoyl, β-D-Me pyr N-benzoyl benzylidene)
 Rosenthal, A. *et al.*, *Can. J. Chem.*, 1969, **47**, 2747 (α -D-Me pyr N-Ac, α-D-Me pyr N-Ac benzylidene)

Oda, T. *et al.*, *J. Antibiot.*, 1971, **24**, 503-510 (*D*-form, isol)

Brewer, C.L. *et al.*, *J.C.S. Perkin 1*, 1974, 657 (α -D-Me pyr N-Ac, α-D-Me pyr N-Ac benzylidene, α-D-Me pyr N-Ac dimesyl)

Jegou, E. *et al.*, *Carbohydr. Res.*, 1975, **45**, 323 (*D*-N-Ac, α-D-Et pyr N-Ac, α-D-Et pyr N-Ac dibenzoyl)

Sano, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 1976, **49**, 313-316 (*L*-form)

Haskell, T.H. *et al.*, *J.O.C.*, 1977, **42**, 1302 (α -D-Me pyr, α-D-Me pyr N-Ac, α-D-Me pyr N,4,6-tri-Ac)

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1980, **79**, 255 (α -D-pyr tetra-Ac)

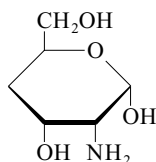
Miyake, T. *et al.*, *Carbohydr. Res.*, 1981, **89**, 255 (α -D-Me pyr tosyl cyclohexylidene)

Calvo-Mateo, A. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 461-473 (synth)

Ravindran, B. *et al.*, *Tetrahedron*, 2001, **57**, 1093-1098 (synth)

2-Amino-2,4-dideoxy-ribo-hexose

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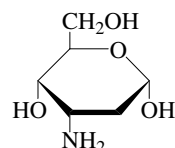
D-Pyranose-form α -D-Pyranose-form $C_6H_{13}NO_4$ 163.173**D-Pyranose-form**

N-Ac: 2-Acetamido-2,4-dideoxy-D-ribo-hexopyranose
 $C_8H_{15}NO_5$ 205.21
 Cryst. Mp 143°. $[\alpha]_D^{25}$ -79 (c, 1.21 in H_2O , 24h). Mixt. of anomers.

[135256-32-5, 135256-47-2]

Mulzer, J. *et al.*, *Annalen*, 1991, 947 (synth, ir, pmr, cmr)**3-Amino-2,3-dideoxy-ribo-hexose**

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 α -D-Pyranose-form $C_6H_{13}NO_4$ 163.173 **α -D-Pyranose-form**

Me glycoside: Methyl 3-amino-2,3-dideoxy- α -D-ribo-hexopyranoside

[92283-32-4]

 $C_7H_{15}NO_4$ 177.2Syrup. $[\alpha]_D^{25}$ +71 (c, 0.6 in MeOH). **β -D-Pyranose-form**

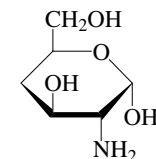
1,3,6-O,N,O-Tri-Ac: 3-Acetamido-1,6-di-O-acetyl-2,3-dideoxy- β -D-ribo-hexopyranose
 [501090-98-8]
 $C_{12}H_{19}NO_7$ 289.285
 Syrup. $[\alpha]_D^{25}$ -12 (c, 0.5 in $CHCl_3$).

1,3,4,6-O,N,O,O-Tetra-Ac: 3-Acetamido-1,4,6-tri-O-acetyl-2,3-dideoxy- β -D-ribo-hexopyranose
 [501091-01-6]
 $C_{14}H_{21}NO_8$ 331.322
 Syrup. $[\alpha]_D^{25}$ -4 (c, 0.5 in $CHCl_3$).

Liberek, B. *et al.*, *Carbohydr. Res.*, 2002, 337, 1803-1810 (α -D-Me pyr, β -D-pyr tri-Ac, β -D-pyr tetra-Ac, synth, pmr)

2-Amino-2,4-dideoxy-xylo-hexose

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 α -D-Pyranose-form $C_6H_{13}NO_4$ 163.173**D-Pyranose-form**

N-Ac: 2-Acetamido-2,4-dideoxy-D-xylo-hexopyranose
 [40555-55-3]
 $C_8H_{15}NO_5$ 205.21
 Cryst. Mp 146°. $[\alpha]_D^{25}$ +78 (c, 1.58 in H_2O) (+63). Mixt. of anomers. Also descr. as a syrup or glass.

O,O,O,N-Tetra-Ac: 2-Acetamido-1,3,6-tri-O-acetyl-2,4-dideoxy-D-xylo-hexopyranoside
 $C_{14}H_{21}NO_8$ 331.322
 Oil. $[\alpha]_D^{25}$ +77.6 (c, 1 in $CHCl_3$). Mixt. of anomers α : β 2:1.

 α -D-Pyranose-form

Me glycoside, N-Ac: Methyl 2-acetamido-2,4-dideoxy- α -D-xylo-hexopyranoside
 $C_9H_{17}NO_5$ 219.237
 Solid (MeOH/EtOAc). Mp 153-155°. $[\alpha]_D^{25}$ +186.7 (c, 0.95 in MeOH).

Me glycoside, O,O,N-tri-Ac: Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy- α -D-xylo-hexopyranoside
 $C_{13}H_{21}NO_7$ 303.311
 Tiny needles (hexane/EtOAc). Mp 158-160°. $[\alpha]_D^{25}$ +88.8 (c, 1 in $CHCl_3$).

Me glycoside, 3,6-dibenzoyl, N-Ac: Methyl 2-acetamido-3,6-di-O-benzoyl-2,4-dideoxy- α -D-xylo-hexopyranoside
 $C_{23}H_{25}NO_7$ 427.453
 Tiny needles (EtOAc). Mp 166-167°. $[\alpha]_D^{25}$ +106.8 (c, 1 in $CHCl_3$).

Benzyl glycoside, N-Ac: Benzyl 2-acetamido-2,4-dideoxy- α -D-xylo-hexopyranoside
 [40555-54-2]
 $C_{15}H_{21}NO_5$ 295.335
 Cryst. (EtOH). Mp 176-177° (170.5-171°). $[\alpha]_D^{25}$ +243.9 (c, 1 in MeOH) (+200.6).

Benzyl glycoside, N,3,6-tri-Ac: Benzyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy- α -D-xylo-hexopyranoside
 [40555-53-1]
 $C_{19}H_{25}NO_7$ 379.409
 Needles (EtOH). Mp 105-107°. $[\alpha]_D^{25}$ +101 (c, 0.87 in $CHCl_3$).

L-Pyranose-form

N-Ac: 2-Acetamido-2,4-dideoxy-L-xylo-hexopyranose
 $C_8H_{15}NO_5$ 205.21
 Syrup. $[\alpha]_D^{25}$ -63 (c, 0.8 in H_2O) (25h).

 β -D-Pyranose-form

Me glycoside, N-Ac: Methyl 2-acetamido-2,4-dideoxy- β -D-xylo-hexopyranoside
 $C_9H_{17}NO_5$ 219.237
 Solid (MeOH/ Me_2CO). Mp 200-201°. $[\alpha]_D^{25}$ -33.2 (c, 0.16 in MeOH).

Me glycoside, O,O,N-tri-Ac: Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy- β -D-xylo-hexopyranoside
 $C_{13}H_{21}NO_7$ 303.311
 Needles (EtOAc). Mp 203-205°. $[\alpha]_D^{25}$ -38.7 (c, 1 in $CHCl_3$).

Me glycoside, 3,6-dibenzoyl, N-Ac: Methyl 2-acetamido-3,6-di-O-benzoyl-2,4-dideoxy- β -D-xylo-hexopyranoside
 $C_{23}H_{25}NO_7$ 427.453
 Solid. Mp 217-220°. $[\alpha]_D^{25}$ +1.2 (c, 1 in $CHCl_3$).

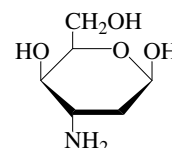
 β -L-Pyranose-form

Allyl glycoside, N-Ac: Allyl 2-acetamido-2,4-dideoxy- β -L-xylo-hexopyranoside
 [149034-69-5]
 $C_{11}H_{19}NO_5$ 245.275
 Cryst. (EtOH/ Et_2O). Mp 170-171°. $[\alpha]_D^{25}$ +7 (c, 1 in H_2O).

[83085-11-4, 135256-30-3, 135256-45-0, 149034-70-8, 149063-53-6]

Arita, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, 45, 3614 (benzyl α -D-pyr N-Ac)Černý, I. *et al.*, *Coll. Czech. Chem. Comm.*, 1984, 49, 433 (N-Ac)Mulzer, J. *et al.*, *Annalen*, 1991, 947 (synth, ir, pmr, cmr)Paulsen, H. *et al.*, *Annalen*, 1992, 735 (benzyl α -D-pyr-N-Ac, synth, pmr)Lehmann, J. *et al.*, *Carbohydr. Res.*, 1993, 239, 317 (synth)Berkin, A. *et al.*, *Carbohydr. Res.*, 2000, 325, 30-45 (α -D-Me gly derivs, β -D-Me gly derivs)**3-Amino-2,3-dideoxy-xylo-hexose**

A-399

 $C_6H_{13}NO_4$ 163.173 **α -D-Pyranose-form**

Me glycoside, 3,4,6-N,O,O-tri-Ac: Methyl 3-acetamido-4,6-di-O-acetyl-2,3-dideoxy- α -D-xylo-hexopyranoside
 [501091-56-1]
 $C_{13}H_{21}NO_7$ 303.311
 Syrup. $[\alpha]_D^{25}$ +56 (c, 0.6 in $CHCl_3$).

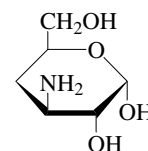
 β -D-Pyranose-form

1,3,4,6-O,N,O,O-Tetra-Ac: 3-Acetamido-1,4,6-tri-O-acetyl-2,3-dideoxy- β -D-xylo-hexopyranose
 [501091-51-6]
 $C_{14}H_{21}NO_8$ 331.322
 Cryst. (toluene/EtOAc). $[\alpha]_D^{25}$ +4 (c, 0.5 in $CHCl_3$).

Liberek, B. *et al.*, *Carbohydr. Res.*, 2002, 337, 1803-1810 (α -D-Me pyr tri-Ac, α -D-pyr-form tetra-Ac, synth, pmr)

3-Amino-3,4-dideoxy-xylo-hexose

A-400

 α -D-Pyranose-form $C_6H_{13}NO_4$ 163.173 **α -D-Pyranose-form**

Me glycoside: Methyl 3-amino-3,4-dideoxy- α -D-xylo-hexopyranoside
 [120878-57-1]
 $C_7H_{15}NO_4$ 177.2

Cryst. Mp 130-134°. [α]_D +163 (c, 0.9 in CHCl₃).

 β -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,4-dideoxy- β -D-xylo-hexopyranoside [120878-58-2]
C₇H₁₅NO₄ 177.2
Cryst. (MeCN). Mp 155-158°. [α]_D -43.5 (c, 0.7 in MeOH).

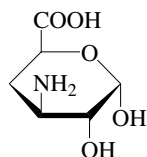
Me glycoside, 6-benzyl, N-Ac: Methyl 3-acetamido-6-O-benzyl-3,4-dideoxy- β -D-xylo-hexopyranoside [154919-29-6]
C₁₆H₂₃NO₅ 309.361
Mp 169°. [α]_D²⁰ -35 (c, 0.8 in CHCl₃).

Roger, P. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 853-861; 1993, **12**, 1105-1115 (*Me gly, Me gly 6-benzyl N-Ac*)

3-Amino-3,4-dideoxy-xylo-hexuronic acid, 9CI

A-401

Ezoaminuroic acid

 α -D-Pyranose-formC₆H₁₁NO₅ 177.157**D-form** [54230-70-5]

Component of Ezomycin A₁, E-41 and Ezomycin A₂, E-42.

 α -D-Pyranose-form

Me glycoside, 2,3-dibenzoyl, Me ester: Methyl (methyl 3-benzamido-2-O-benzoyl-3,4-dideoxy- α -D-xylo-hexopyranosid)uronate [54230-55-6]
C₂₂H₂₃NO₇ 413.426
Amorph. powder. [α]_D¹⁸ +133 (c, 0.91 in MeOH).

 β -D-Pyranose-form

Me glycoside, 2,3-dibenzoyl, Me ester: Methyl (methyl 3-benzamido-2-O-benzoyl-3,4-dideoxy- β -D-xylo-hexopyranosid)uronate [54230-53-4]
C₂₂H₂₃NO₇ 413.426
Needles (EtOAc). Mp 241-242° (237-238°). [α]_D²⁵ +60.7 (c, 0.44 in MeOH).

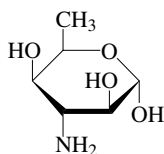
Sakata, K. *et al.*, *Tet. Lett.*, 1974, 1533 (*isol, struct, α -D-Me pyr Me ester dibenzoyl, β -D-Me pyr Me ester dibenzoyl*)

Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 885 (*isol*)

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1975, **44**, C22 (*β -D-Me pyr Me ester dibenzoyl*)

3-Amino-3,6-dideoxyidose

A-402

 α -D-Pyranose-formC₆H₁₃NO₄ 163.173**D-form**

N,N-Di-Me: 3,6-Dideoxy-3-dimethylamino-D-idose [28528-74-7]
C₈H₁₇NO₄ 191.227
Cryst. (EtOH/Et₂O). Mp 149-150°. [α]_D^{25,8} +30.94 (c, 0.85 in H₂O).

 α -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- α -D-idopyranoside [20881-86-1]
C₇H₁₅NO₄ 177.2
Cryst. (EtOH/Et₂O). Mp 166-167.5°. [α]_D²⁵ +91.1 (c, 1.0 in H₂O).

Me glycoside, hydrochloride: Cryst. (EtOH/Et₂O). Mp 141-143°. [α]_D²⁸ +89.4 (c, 1.0 in MeOH).

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- α -D-idopyranoside [28528-69-0]
C₉H₁₇NO₅ 219.237
Cryst. (CHCl₃/Et₂O). Mp 164-165°. [α]_D^{25,8} +86.7 (c, 1.0 in H₂O).

Me glycoside, 2,3N,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- α -D-idopyranoside [28528-68-9]
C₁₃H₂₁NO₇ 303.311
Cryst. (CHCl₃/petrol). Mp 134.5°. [α]_D²⁸ +61.5 (c, 1.0 in CHCl₃).

Me glycoside, 2,3N,4-tribenzoyl: Methyl 3-benzamido-2,4-di-O-benzoyl-3,6-dideoxy- α -D-idopyranoside [28528-70-3]
C₂₈H₂₇NO₇ 489.524
Cryst. (Et₂O/pentane). Mp 128-130°. [α]_D^{25,8} +68.43 (c, 0.96 in CHCl₃).

Me glycoside, N,N-di-Me: Methyl 3,6-dideoxy-3-dimethylamino- α -D-idopyranoside [28528-72-5]
C₉H₁₉NO₄ 205.253
Syrup. Bp_{0.01} 135-140° (bath). [α]_D^{24,8} +83.9 (c, 1.05 in H₂O).

*Me glycoside, N,N-di-Me, hydrochloride: [28528-71-4]
Cryst. (EtOH/Et₂O). Mp 187-188° (176-178°). [α]_D^{25,8} +65.43 (c, 0.975 in H₂O).*

 β -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- β -D-idopyranoside [53911-11-8]
C₇H₁₅NO₄ 177.2
Cryst. (EtOH/petrol). Mp 153-155°. [α]_D²⁰ -83 (c, 1.0 in H₂O).

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- β -D-idopyranoside [53911-20-9]
C₉H₁₇NO₅ 219.237
Cryst. (EtOH). Mp 201-203°. [α]_D²⁰ -66 (c, 1.0 in H₂O).

Me glycoside, 2,3N,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- β -D-idopyranoside [53911-25-4]
C₁₃H₂₁NO₇ 303.311
Cryst. (EtOAc). Mp 188-190°. [α]_D²⁰ -72 (c, 1.0 in CHCl₃).

 α -L-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- α -L-idopyranoside C₇H₁₅NO₄ 177.2
Mp 168-169°. [α]_D²⁰ -93.83 (c, 1.04 in H₂O).

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- α -L-idopyranoside [19131-24-9]
C₉H₁₇NO₅ 219.237
Cryst. Mp 164.5-165.5°. [α]_D²³ -83.95 (c, 0.75 in H₂O).

Me glycoside, 2,3N,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl- α -L-idopyranoside [19131-25-0]
C₁₃H₂₁NO₇ 303.311
Cryst. Mp 143.5-144.5°. [α]_D²¹ -61.25 (c, 0.72 in CHCl₃).

Me glycoside, N,N-di-Me: Methyl 3,6-dideoxy-3-dimethylamino- α -L-idopyranoside
Syrup. [α]_D²⁵ -82.29 (c, 0.51 in H₂O).

 β -L-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- β -L-idopyranoside [34299-84-8]
C₇H₁₅NO₄ 177.2
Cryst. (MeOH/Et₂O). Mp 146-148°. [α]_D²¹ +93 (c, 1.0 in MeOH).

Jary, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1963, **28**, 2171 (*α -L-Me pyr derivs*)

Stevens, C. *et al.*, *J.A.C.S.*, 1970, **92**, 3160 (*α -Me pyr derivs*)

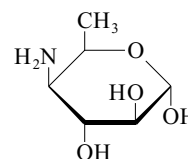
Ikeda, D. *et al.*, *Bull. Chem. Soc. Jpn.*, 1971, **44**, 2529 (*β -L-Me pyr*)

Caepke, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1462 (*β -D-pyr Me derivs, pmr, ms*)

Elkin, Y.N. *et al.*, *CA*, 1986, **104**, 110052s (*α -L-pyr derivs, ms*)

4-Amino-4,6-dideoxyidose

A-403

C₆H₁₃NO₄ 163.173 **α -D-Pyranose-form**

Me glycoside: Methyl 4-amino-4,6-dideoxy- α -D-idopyranoside [55637-42-8]
C₇H₁₅NO₄ 177.2

Cryst. (EtOH/Et₂O/pentane). Mp 118-119°. [α]_D⁴ +82.2 (c, 0.6 in MeOH). pK_a 7.9 (50% MeOH aq.).

Me glycoside, N-Ac: Methyl 4-acetamido-4,6-dideoxy- α -D-idopyranoside [55570-18-8]
C₉H₁₇NO₅ 219.237
Cryst. (CHCl₃/pentane). Mp 131-133°. [α]_D²⁶ +155.8 (c, 1 in EtOH).

Me glycoside, 2,3,4N-tri-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4,6-dideoxy- α -D-idopyranoside [55570-19-9]
C₁₃H₂₁NO₇ 303.311

Cryst. (Me₂CO/pentane). Mp 97-98°. $[\alpha]_D^{25} +65.2$ (c, 0.9 in MeOH).

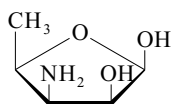
Me glycoside, 2,3-dibenzyl, N-Ac: Methyl 4-acetamido-2,3-di-O-benzyl-4,6-dideoxy- α -D-idopyranoside [55570-17-7]
C₂₃H₂₉NO₅ 399.486
Cryst. (EtOH aq.). Mp 102-103°. $[\alpha]_D^{26} +20.8$ (c, 1.18 in EtOH).

Me glycoside, N,N-di-Me: Methyl 4,6-dideoxy-4-(N-dimethylamino)- α -D-ido-pyranoside [55570-21-3]
C₉H₁₉NO₄ 205.253
Cryst. (Me₂CO/pentane). Mp 86-87°. $[\alpha]_D^{29} +88.1$ (c, 1.2 in CHCl₃). p*K*_a 7.19 (50% MeOH aq.).

Stevens, C.L. *et al.*, *J.O.C.*, 1975, **40**, 2468 (synth, *Me gly derivs*, pmr)

3-Amino-3,5-dideoxylyxose

A-404



C₅H₁₁NO₃ 133.147

β -D-Furanose-form

N-(3,5-Dinitrobenzoyl): [39798-39-5]
Cryst. (EtOAc/hexane). Mp 163-164°. $[\alpha]_D^{22} +38.8$ (c, 0.4 in MeOH).

1,2-O-Isopropylidene: 3-Amino-3,5-dideoxy-1,2-O-isopropylidene- α -D-lyxo-furanose [28948-07-4]
C₈H₁₅NO₃ 173.211
Syrup. $[\alpha]_D^{23} -38.6$ (c, 2.8 in Me₂CO).

1,2-O-Isopropylidene, hydrochloride: [28948-08-5]
Cryst. Mp 160-165° dec. $[\alpha]_D^{22} -9.5$ (c, 1.3 in H₂O).

1,2-O-Isopropylidene, N-trifluoroacetyl: [28980-72-5]
Syrup. $[\alpha]_D^{25} +41.1$ (c, 3.6 in CHCl₃).

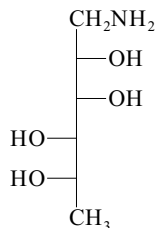
1,2-O-Isopropylidene, N-(3,5-dinitrobenzoyl): [28948-09-6]
Cryst. (MeOH/Et₂O). Mp 149-150°. $[\alpha]_D^{19} -5.8$ (c, 0.9 in CHCl₃).

Tronchet, J.M.J. *et al.*, *Helv. Chim. Acta*, 1972, **55**, 2286 (dinitrobenzoyl, isopropylidene, ir, pmr)

1-Amino-1,6-dideoxymannitol, 9CI

A-405

6-Amino-1,6-dideoxymannitol. 1-Amino-1-deoxyrhamnitol



C₆H₁₅NO₄ 165.189

L-form

N,N-Di-Me:
C₈H₁₉NO₄ 193.242
Cryst. (EtOAc). Mp 77-94°. Mp could not be sharpened by recryst.

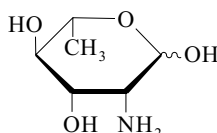
N-(α -Methylbenzyl), N,2,3,4,5-tetra-Ac: [83680-89-1]
C₂₄H₃₃NO₉ 479.526
Used to resolve enantiomeric aldoses by hplc. Cryst. Mp 69-70°. $[\alpha]_D^{25} -10$ (CHCl₃).

Oshima, R. *et al.*, *Carbohydr. Res.*, 1982, **107**, 169 (*tetra-Ac deriv*, hplc)
Norrild, J.C. *et al.*, *Carbohydr. Res.*, 1996, **291**, 85-98 (*N,N-di-Me*)

2-Amino-2,6-dideoxymannose

A-406

Rhamnosamine



L-form

C₆H₁₃NO₄ 163.173

D-form [4270-87-5]

Hydrochloride: [4270-89-7]
Cryst. (MeOH/2-propanol/Et₂O). Mp 175° dec. $[\alpha]_D -23$ (c, 0.3 in H₂O).

L-form [20256-91-1]

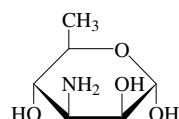
Isol. from the lipopolysaccharide of *E. coli* 0.3:K2ab(L):H2.

Hydrochloride: [42859-71-2]
Mp 180° dec. $[\alpha]_D^{22} +26$ (c, 1.75 in H₂O).
Brimacombe, J.S. *et al.*, *J.C.S.*, 1964, 2663 (*L-form*, synth)
Gross, P.H. *et al.*, *Naturwissenschaften*, 1965, **52**, 185
Gross, P.H. *et al.*, *Annalen*, 1966, **691**, 198 (*D-form*, synth)
Perry, M.B. *et al.*, *Carbohydr. Res.*, 1973, **27**, 460 (*L-form*, synth)

3-Amino-3,6-dideoxymannose, 9CI

A-407

[527-38-8]

 α -D-Pyranose-form

C₆H₁₃NO₄ 163.173

D-form

Mycosamine [32817-12-2]
Obt. by hydrol. of Amphotericin B, A-473, Flavumycin A, Nystatin, N-86, Pimaricin and Rimocidin.

Hydrochloride: [53989-77-8]
Prismatic rods (EtOH/Et₂O). Mp 162°. $[\alpha]_D^{24} -11.5$ (c, 1.0 in H₂O).

N-Ac: 3-Acetamido-3,6-dideoxy-D-mannose
C₈H₁₅NO₅ 205.21
Needles (MeOH/Me₂CO). Mp 195-196°. $[\alpha]_D^{22} -46$ (c, 1.0 in EtOH).

α -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- α -D-mannopyranoside
C₇H₁₅NO₄ 177.2
Needles (EtOH/Et₂O) (as hydrochloride). Mp 188-190° dec. (as hydrochloride). $[\alpha]_D^{23} +54$ (c, 1.5 in MeOH).

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- α -D-mannopyranoside
C₉H₁₇NO₅ 219.237
Prisms (Me₂CO/CHCl₃). Mp 168-170°. $[\alpha]_D^{23} +47$ (c, 0.9 in EtOH).

Me glycoside, N,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- α -D-mannopyranoside
C₁₃H₂₁NO₇ 303.311
Cryst. (Me₂CO). Mp 140-141°. $[\alpha]_D^{23} +33$ (c, 1.0 in EtOH).

Me glycoside, N-Et: Methyl 3,6-dideoxy-3-ethylamino- α -D-mannopyranoside
C₉H₁₉NO₄ 205.253
Needles (CHCl₃/hexane). Mp 90.5°. $[\alpha]_D^{23} +25$ (c, 3.0 in H₂O).

β -D-Pyranose-form

Me glycoside: Methyl 3-amino-3,6-dideoxy- β -D-mannopyranoside
C₇H₁₅NO₄ 177.2
Mp 149-151°. $[\alpha]_D^{20} -91$ (c, 1 in H₂O).

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- β -D-mannopyranoside
C₉H₁₇NO₅ 219.237
Cryst. (EtOH). Mp 238-240° (sealed tube). $[\alpha]_D^{20} -117$ (c, 1.0 in H₂O).

Me glycoside, N,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- β -D-mannopyranoside
C₁₃H₂₁NO₇ 303.311
Cryst. (EtOAc/petrol). Mp 180-181°. $[\alpha]_D^{20} -59$ (c, 1.0 in CHCl₃).

β -L-Pyranose-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- β -L-mannopyranoside
C₉H₁₇NO₅ 219.237
Mp 169-172°. $[\alpha]_D^{26} -50.3$ (c, 0.7 in EtOH).

Me glycoside, N,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- β -L-mannopyranoside
C₁₃H₂₁NO₇ 303.311
Mp 145-146°. $[\alpha]_D^{21} -29$ (c, 0.7 in EtOH).

Dutcher, J.D. *et al.*, *J.O.C.*, 1963, **28**, 995 (isol, struct, *D-form*, *D-N-Ac*, *α -D-Me pyr*, *α -D-Me pyr N-Et*, *α -D-Me pyr N-Ac*)
v. Saltza, M. *et al.*, *J.O.C.*, 1963, **28**, 999 (stereochem)

Čápek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1462 (*β -D-Me pyr*, *β -D-Me pyr N-Ac*, *β -D-Me pyr N-tri-Ac*)

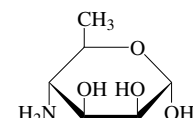
Kruglikova, L.F. *et al.*, *Antibiotiki (Moscow)*, 1976, **21**, 407; *CA*, **85**, 108914v (isol)

Franck-Neumann, M. *et al.*, *Tet. Lett.*, 1999, **40**, 2829-2832 (synth)

4-Amino-4,6-dideoxymannose

A-408

Perosamine

 α -D-Pyranose-form

C₆H₁₃NO₄ 163.173**D-form** [31348-80-8]

Constit. of Perimycin and of lipopolysaccharides of *Vibrio cholerae*. *N*-Acylperosamine residues are components of the *O*-specific side chains in the lipopolysaccharides from *Vibrio cholerae* 0:1, *Brucella abortus* 1119-3 and *Yersinia enterocolitica* serotype 0:9.

Hydrochloride: $[\alpha]_D^{23} -20 \rightarrow -13$ (c, 1.3 in H₂O).

N-Ac: 4-Acetamido-4,6-dideoxy-D-mannose

C₈H₁₅NO₅ 205.21

Amorph. solid. Mp 178-180°. $[\alpha]_D^{23} +34$ (c, 2.0 in H₂O).

2-Me: 4-Amino-4,6-dideoxy-2-O-methyl-D-mannose. 2-O-Methylperosamine

C₇H₁₅NO₄ 177.2

Component of the liposaccharide of *Vibrio cholerae* O1 serotype Ogawa.

 α -D-Pyranose-form

Me glycoside: Methyl 4-amino-4,6-dideoxy- α -D-mannopyranoside

[20881-87-2]

C₇H₁₅NO₄ 177.2

Cryst. (EtOH/Et₂O). Mp 150-151° (142-143°). $[\alpha]_D^{23} +67$ (c, 2.0 in H₂O). $[\alpha]_D +82.5$ (c, 1.0 in MeOH).

Me glycoside, *N*-Ac: Methyl 4-acetamido-4,6-dideoxy- α -D-mannopyranoside

C₉H₁₇NO₅ 219.237

Cryst. (toluene/2,2,4-trimethylpentane). Mp 183-185°. $[\alpha]_D^{22} +66$ (c, 0.3 in H₂O).

Me glycoside, *tri*-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4,6-dideoxy- α -D-mannopyranoside

C₁₃H₂₁NO₇ 303.311

Cryst. (Et₂O/pentane). Mp 159-160°. $[\alpha]_D^{23} +95.6$ (c, 0.98 in MeOH).

 α -L-Pyranose-form

Me glycoside: Methyl 4-amino-4,6-dideoxy- α -L-mannopyranoside

[22594-28-1]

C₇H₁₅NO₄ 177.2

Cryst. (EtOAc/petrol). Mp 151-152°. $[\alpha]_D -82$ (c, 1.0 in MeOH).

Me glycoside, *tri*-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4,6-dideoxy- α -L-mannopyranoside

C₁₃H₂₁NO₇ 303.311

Cryst. (Et₂O/pentane). Mp 160-161°. $[\alpha]_D -94$ (c, 1.0 in MeOH).

[26552-82-9]

Lee, C.H. *et al.*, *Tet. Lett.*, 1966, 5837 (*isol. struct.*, *D*-*N*-Ac, α -*D*-Me pyr)

Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1969, 1270 (α -L-Me pyr, α -L-Me pyr *tri*-Ac)

Stevens, C.L. *et al.*, *J.A.C.S.*, 1970, **92**, 3160 (α -*D*-Me pyr, α -*D*-Me pyr *N*-Ac, α -*D*-Me pyr *tri*-Ac)

Caroff, M. *et al.*, *Eur. J. Biol.*, 1984, **139**, 195 (*occur*)

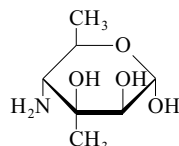
Eis, M.J. *et al.*, *Carbohydr. Res.*, 1988, **176**, 316 (*D*-form, *synth.*, α -*D*-Me pyr, *pmr*)

Kenne, L. *et al.*, *J.C.S. Perkin 1*, 1988, 1183 (α -*D*-Me pyr, α -*D*-Me pyr *N*-Ac, *pmr*)

Ito, T. *et al.*, *Carbohydr. Res.*, 1994, **256**, 113 (*2*-O-Methylperosamine)

4-Amino-4,6-dideoxy-3-C-methylmannose

A-409

 α -D-Pyranose-formC₇H₁₅NO₄ 177.2**D-form**

N-Me: 4,6-Dideoxy-3-C-methyl-4-(methylamino)-D-mannose. **Sibirosamine** [35665-47-5]

Constit. of Sibiromycin, S-39. Struct. revised in 1982.

 α -D-Pyranose-form

Me glycoside, *N*-Me: Methyl 4,6-dideoxy-3-C-methyl-4-(methylamino)- α -D-mannopyranoside [49754-58-7]

C₉H₁₉NO₄ 205.253

Cryst. (as hydrochloride). Mp 184-187°. $[\alpha]_D^{20} -50$ (in H₂O).

 β -D-Pyranose-form

Me glycoside, *N*-Me: Methyl 4,6-dideoxy-3-C-methyl-4-(methylamino)- β -D-mannopyranoside

C₉H₁₉NO₄ 205.253

Amorph. (as hydrochloride). Mp 178-179°. $[\alpha]_D^{20} +75$ (H₂O).

Me glycoside, *N*-Me, *N*-Ac: [49754-59-8] C₁₁H₂₁NO₅ 247.291

Mp 125-126°. $[\alpha]_D^{20} -121$ (c, 0.3 in MeOH).

Me glycoside, *N*-Me, *N*,2-di-Ac: [49812-99-9] C₁₃H₂₃NO₆ 289.328

Mp 135-136°. $[\alpha]_D^{20} -70$ (c, 0.4 in MeOH).

Me glycoside, *N*,2,3-tri-Ac:

C₁₅H₂₅NO₇ 331.365

Mp 127-128°. $[\alpha]_D^{20} -25$ (c, 0.3 in MeOH).

L-form

2-Me: 4,6-Dideoxy-3-C-methyl-2-O-methyl-L-mannose. **Kansosamine**

[115374-44-2]

C₈H₁₇NO₄ 191.227

Residue present in lipooligopolysaccharides of *Mycobacterium kansasii*.

2-Me, *N*-(2-methoxypropanoyl):

***N*-Acylkansosamine**

[101978-82-9]

[92355-88-9]

C₁₂H₂₃NO₆ 277.317

Isol. from lipooligosaccharides of *Mycobacterium kansasii*. Sol. H₂O. $[\alpha]_D^{24} +14.73$ (c, 0.019 in H₂O).

Mesentsev, A.S. *et al.*, *Tet. Lett.*, 1973, 2225 (*synth.*, *pmr.*, *derivs.*)

Parker, K.A. *et al.*, *Tet. Lett.*, 1982, **23**, 1763 (*struct.*)

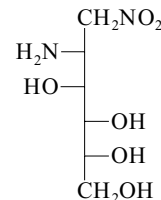
Hunter, S.W. *et al.*, *J. Biol. Chem.*, 1984, **259**, 9729 (*Kansosamine*, *N*-acylkansosamine)

Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1987, **166**, 253 (*synth.*)

Giuliano, R.M. *et al.*, *Carbohydr. Res.*, 1988, **183**, 277 (*synth.*)

2-Amino-1,2-dideoxy-1-nitro-mannitol

A-410

C₆H₁₄N₂O₆ 210.186**D-form**

N-Ac: 2-Acetamido-1,2-dideoxy-1-nitro-mannitol

[14199-86-1]

C₈H₁₆N₂O₇ 252.224

Cryst. (EtOH). Mp 172-173°. $[\alpha]_D^{25} -16.8$ (c, 2.4 in H₂O).

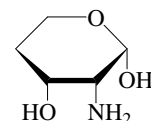
Sowden, J.C. *et al.*, *J.A.C.S.*, 1960, **82**, 2303

(*synth.*)

Sowden, J.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 235 (*synth.*)

2-Amino-2,4-dideoxy-erythro-pentose

A-411

 α -D-Pyranose-formC₅H₁₁NO₃ 133.147 **α -DL-Pyranose-form**

Me glycoside: Methyl 2-amino-2,4-dideoxy- α -DL-erythro-pentopyranoside [82753-62-6]

C₆H₁₃NO₃ 147.174

Cryst. (EtOH) (as hydrochloride). Mp 213° (hydrochloride). CAS no. refers to hydrochloride.

Me glycosides, *N*-Ac: Methyl 2-acetamido-2,4-dideoxy- α -DL-erythro-pentopyranoside

[82753-72-8]

C₈H₁₅NO₄ 189.211

Cryst. (C₆H₆/cyclohexane). Mp 132°.

Me glycoside, *N*,O-di-Ac: Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- α -DL-erythro-pentopyranoside

[82753-74-0]

C₁₀H₁₇NO₅ 231.248

Cryst. (cyclohexane). Mp 89°.

 β -DL-Pyranose-form

Me glycoside, *N*-Ac: Methyl 2-acetamido-2,4-dideoxy- β -DL-erythro-pentopyranoside

[82753-73-9]

C₈H₁₅NO₄ 189.211

Cryst. (C₆H₆/EtOAc). Mp 124°.

Me glycoside, *N*,O-di-Ac: Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- β -DL-erythro-pentopyranoside

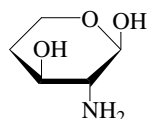
[82753-75-1]

C₁₀H₁₇NO₅ 231.248

Cryst. (cyclohexane). Mp 150°.

Decours, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 9-17 (*Me glycoside derivs, synth*)

2-Amino-2,4-dideoxy-threo-pentose A-412



α -L-Pyranose-form

$C_5H_{11}NO_3$ 133.147

L-Pyranose-form

N-Ac: 2-Acetamido-2,4-dideoxy-L-threo-pentopyranose
[269065-51-2]
 $C_7H_{13}NO_4$ 175.184
Cryst. (EtOAc). Mp 139-141°. $[\alpha]_D^{25} +3.19$ (5 min) $\rightarrow +5.97$ (c, 0.72 in H_2O).

N,O: Tri-Ac: 2-Acetamido-1,3-di-O-acetyl-2,4-dideoxy- α,β -L-threo-pentopyranose
[269065-52-3]
 $C_{11}H_{17}NO_6$ 259.258
Solid ($CHCl_3$ /diisopropyl ether). Mp 143-144°. $[\alpha]_D^{25} +0.34$ (c, 1.19 in $CHCl_3$).

α -L-Pyranose-form

Me glycoside, *N-Ac*: Methyl 2-acetamido-2,4-dideoxy- α -L-threo-pentopyranoside
[269065-49-8]
 $C_8H_{15}NO_4$ 189.211
Cryst. (MeOH). Mp 134.5-136°. $[\alpha]_D^{25} -58.6$ (c, 0.64 in $CHCl_3$).

Me glycoside, *N,O*: di-Ac: Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- α -L-threo-pentopyranoside
[269065-50-1]
 $C_{10}H_{17}NO_5$ 231.248
Cryst. (hexane/EtOAc). Mp 146-149°. $[\alpha]_D^{25} -45.7$ (c, 1.06 in $CHCl_3$).

β -L-Pyranose-form

Me glycoside, *N-Ac*: Methyl 2-acetamido-2,4-dideoxy- β -L-threo-pentopyranoside
[269065-54-5]
 $C_8H_{15}NO_4$ 189.211
Cryst. (EtOAc). Mp 142-142.5°. $[\alpha]_D^{25} +99.2$ (c, 1.33 in $CHCl_3$).

Me glycoside, *N,O*: di-Ac: Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- β -L-threo-pentopyranoside
[269065-55-6]
 $C_{10}H_{17}NO_5$ 231.248
Cryst. (EtOAc/hexane). Mp 146-147°. $[\alpha]_D^{25} +95.2$ (c, 1.74 in $CHCl_3$).

α -DL-Pyranose-form

Me glycoside: Methyl 2-amino-2,4-dideoxy- α -DL-threo-pentopyranoside
[86578-83-8]
 $C_6H_{13}NO_3$ 147.174
Cryst. (toluene).

Me glycoside, *N-Ac*: Methyl 2-acetamido-2,4-dideoxy- α -DL-threo-pentopyranoside
[82753-70-6]
 $C_8H_{15}NO_4$ 189.211
Cryst. (C_6H_6 /EtOAc). Mp 164°.

Me glycoside, *N,O*: di-Ac: Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- α -DL-threo-pentopyranoside
[82771-11-7]
 $C_{10}H_{17}NO_5$ 231.248
Cryst. (toluene). Mp 160°.

Me glycoside, *N,N*: dibenzyl, *O-Ac*: Methyl 3-O-acetyl-2,4-dideoxy-2-dibenzylamino- α -DL-threo-pentopyranoside
[82753-65-9]
 $C_{22}H_{27}NO_4$ 369.46
Cryst. (pentane/Et₂O). Mp 108°.

β -DL-Pyranose-form

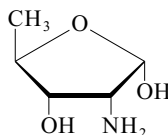
Me glycoside, *N-Ac*: Methyl 2-acetamido-2,4-dideoxy- β -DL-threo-pentopyranoside
[82753-71-7]
 $C_8H_{15}NO_4$ 189.211
Cryst. (toluene). Mp 133°.

Me glycoside, *N,O*: di-Ac: Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- β -DL-threo-pentopyranoside
[82753-69-3]
 $C_{10}H_{17}NO_5$ 231.248
Cryst. (toluene). Mp 162°.

Me glycoside, *N,N*: dibenzyl, *O-Ac*: Methyl 3-O-acetyl-2,4-dideoxy-2-dibenzylamino- β -DL-threo-pentopyranoside
[82753-66-0]
 $C_{22}H_{27}NO_4$ 369.46
Cryst. (pentane/Et₂O). Mp 74°.

Descours, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 9-17 (*DL-pyr derivs*)
Berkin, A. *et al.*, *Carbohydr. Res.*, 2000, **325**, 30-45 (*L-pyr derivs*)

2-Amino-2,5-dideoxyribose A-413



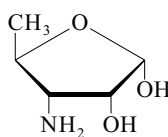
$C_5H_{11}NO_3$ 133.147

α -D-Furanose-form

Benzyl glycoside, *N*: benzoyl: Benzyl 2-benzamido-2,5-dideoxy- α -D-ribofuranoside
[119447-75-5]
 $C_{19}H_{21}NO_4$ 327.379
Gum.

Shiozaki, M. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 2027 (*benzyl gly deriv, ir, pmr*)

3-Amino-3,5-dideoxyribose A-414



$C_5H_{11}NO_3$ 133.147

α -D-Furanose-form

N: Trifluoroacetyl, *1,2*: di-Ac: [57032-42-5]
 $C_{11}H_{14}F_3NO_6$ 313.23
Cryst. (Et₂O/petrol). Mp 89-90.5°.

1,2-O: Isopropylidene: 3-Amino-3,5-dideoxy-1,2-O-isopropylidene- α -D-ribofuranose
[39798-26-0]
 $C_8H_{15}NO_3$ 173.211
Syrup. $[\alpha]_D^{25} +164.8$ (c, 1.7 in Me_2CO).

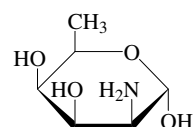
1,2-O: Isopropylidene, hydrochloride: [39798-27-1]
Cryst. Mp 152° dec. $[\alpha]_D^{25} +48.1$ (c, 1.0 in H_2O).

1,2-O: Isopropylidene, *N-Ac*: 3-Acetamido-3,5-dideoxy-1,2-O-isopropylidene- α -D-ribofuranose
[29873-55-0]
 $C_{10}H_{17}NO_4$ 215.249
Cryst. (Et₂O). Mp 106-107°. $[\alpha]_D^{25} +169$ (c, 2.12 in MeOH).

Tronchet, J.M.J. *et al.*, *Helv. Chim. Acta*, 1972, **55**, 2286 (*isopropylidene, ir, pmr*)

Almqvist, R.G. *et al.*, *J. Med. Chem.*, 1973, **16**, 1396 (*isopropylidene N-Ac*)
Israel, M. *et al.*, *J. Med. Chem.*, 1982, **25**, 28 (*N*: trifluoroacetyl di-Ac)

2-Amino-2,6-dideoxytalose A-415



α -D-Pyranose-form

$C_6H_{13}NO_4$ 163.173

D-form

[55385-65-4]
Hydrochloride: [49694-66-8]
Mp 164-165°. $[\alpha]_D^{25} -10$ (c, 0.5 in H_2O).

L-form Pneumosamine

[5867-12-9]
Prod. by hydrol. of type 5 *Pneumococcus* capsular polysaccharide.
Hydrochloride: [4282-67-1]
Mp 162-163°. $[\alpha]_D^{25} +10$ (c, 1.7 in H_2O).

N-Ac: 2-Acetamido-2,6-dideoxy-L-talose
 $C_8H_{15}NO_5$ 205.21
Component of the capsular polysaccharide of *Alteromonas nigrifaciens*.

Barker, S.A. *et al.*, *Nature (London)*, 1961, **189**, 303 (*L-form, isol*)

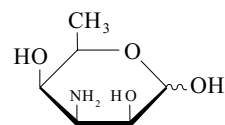
Brimacombe, J.S. *et al.*, *J.C.S.*, 1962, 5037 (*D-form, synth*)

Collins, P.M. *et al.*, *Chem. Ind. (London)*, 1963, 375 (*L-form, synth*)

Perry, M.B. *et al.*, *Can. J. Chem.*, 1973, **51**, 974 (*D-form, L-form, synth*)

Gorshkova, R.P. *et al.*, *Carbohydr. Res.*, 1997, **299**, 69-76 (*N-Ac*)

3-Amino-3,6-dideoxytalose A-416



D-form

$C_6H_{13}NO_4$ 163.173

D-form

Bp_{0.1} 85-100° subl. $[\alpha]_D^{20} -52$ (c, 1.0 in H_2O).

Hydrochloride: Mp 162°. $[\alpha]_D^{20} -11.2$ (c, 1 in H_2O).

α -D-Pyranose-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- α -D-talopyranoside [20595-24-8]
 $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOAc/petrol). Mp 201-202°. $[\alpha]_D^{20}$ +106 (c, 1 in H_2O).

 β -D-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- β -D-talopyranoside [53911-19-6]
 $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOAc). Mp 146-148° (111-114°). $[\alpha]_D^{20}$ -29 (c, 1.0 in H_2O).
Me glycoside, N,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- β -D-talopyranoside [53911-24-3]
 $C_{13}H_{21}NO_7$ 303.311
 Cryst. (EtOAc/petrol). Mp 204-205°. $[\alpha]_D^{20}$ -28 (c, 1.0 in H_2O).

L-form

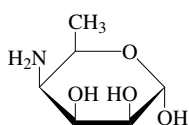
Hydrochloride: Mp 168-170° dec. $[\alpha]_D$ -30 \rightarrow -26 (c, 1.07 in H_2O).

 α -L-Pyranose-form

Me glycoside, N-Ac: Methyl 3-acetamido-3,6-dideoxy- α -L-talopyranoside $C_9H_{17}NO_5$ 219.237
 Cryst. (EtOH/petrol). Mp 195-196°. $[\alpha]_D$ -104 (c, 3.16 in H_2O).
Me glycoside, N,2,4-tri-Ac: Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- α -L-talopyranoside $C_{13}H_{21}NO_7$ 303.311
 Cryst. (Me_2CO/Et_2O /petrol). Mp 166-167°. $[\alpha]_D$ -72 (c, 4.3 in $CHCl_3$).
 Richardson, A.C. *et al.*, *J.C.S.*, 1962, 2499 (L-form, synth, α -L-Me pyr N-Ac, α -L-Me pyr tri-Ac)
 Čapek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, 33, 1750; 1974, 39, 1462 (α -D-Me pyr N-Ac, β -D-Me pyr N-Ac, β -D-Me pyr tri-Ac)

4-Amino-4,6-dideoxytalose

A-417

 α -D-Pyranose-form $C_6H_{13}NO_4$ 163.173 **α -D-Pyranose-form**

N,N-Di-Me: 4,6-Dideoxy-4-dimethylamino- α -D-talopyranose [15830-75-8]
 $C_8H_{17}NO_4$ 191.227
 Cryst. Mp 180-182° dec. (as hydrochloride) (softens at 155°). $[\alpha]_D^{24}$ +30.8 \rightarrow +19 (H_2O). pK_a 7.6 (50% MeOH aq.). CAS no. refers to hydrochloride.
Me glycoside: Methyl 4-amino-4,6-dideoxy- α -D-talopyranoside [15830-69-0]
 $C_7H_{15}NO_4$ 177.2
 Cryst. ($EtOH/Et_2O$) (as hydrochloride). Mp 177-177.5° dec. (hydrochloride). $[\alpha]_D^{25}$ +99.3 (c, 0.66 in H_2O). pK_a 8.45 (50% MeOH aq.).

Me glycoside, N-Ac: Methyl 4-acetamido-4,6-dideoxy- α -D-talopyranoside [15856-46-9]
 $C_9H_{17}NO_5$ 219.237
 Cryst. ($EtOH/Et_2O$ /pentane). Mp 182-183° dec. (softens at 168°). $[\alpha]_D^{27}$ +167.5 (c, 0.69 in MeOH). $[\alpha]_D^{27}$ +139.5 (c, 0.38 in H_2O).

Me glycoside, 2,3,4N-tri-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4,6-dideoxy- α -D-talopyranoside [15856-47-0]
 $C_{13}H_{21}NO_7$ 303.311
 Cryst. (Et_2O /pentane). Mp 135-135.5°. $[\alpha]_D^{27}$ +87 (c, 0.49 in $CHCl_3$). $[\alpha]_D^{27}$ +67.8 (c, 0.82 in MeOH).

Me glycoside, 2,3-O-isopropylidene, N-Ac: Methyl 4-acetamido-4,6-dideoxy-2,3-O-isopropylidene- α -D-talopyranoside [15856-43-6]
 $C_{12}H_{21}NO_5$ 259.302
 Cryst. ($EtOAc$ /hexane). Mp 148.5-150°.

Me glycoside, 2,3-O-isopropylidene, N-Me: Methyl 4,6-dideoxy-2,3-O-isopropylidene-4-methylamino- α -D-talopyranoside [15889-54-0]
 $C_{11}H_{21}NO_4$ 231.291
 Cryst. ($Et_2O/EtOH$ /pentane) (as hydrochloride). Mp 174-175° dec. (as hydrochloride). $[\alpha]_D^{28}$ +86.2 (c, 0.76 in MeOH). pK_a 7.08 (in 50% MeOH aq.). CAS no. refers to hydrochloride.

Me glycoside, N,N-di-Me: Methyl 4,6-dideoxy-4-dimethylamino- α -D-talopyranoside [15830-70-3]
 $C_9H_{19}NO_4$ 205.253
 Cryst. ($EtOAc$) (as picrate). Mp 173-174.5° (picrate). $[\alpha]_D^{27}$ +62.8 (c, 0.88 in MeOH). pK_a 7.7 (50% MeOH aq.). CAS no. refers to picrate.

Me glycoside, N,N-di-Me, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,6-dideoxy-4-dimethylamino- α -D-talopyranoside [15830-72-5]
 $C_{13}H_{23}NO_6$ 289.328
 Cryst. (hexane). Mp 84-86°. $[\alpha]_D^{29}$ +107 (c, 6.60 in MeOH). pK_a 5.78 (50% MeOH aq.).

Me glycoside, N,N-di-Me, 2,3-di-Ac, hydrochloride: [15830-73-6]
 Cryst. Mp 209-210° dec.

 β -D-Pyranose-form

N,N-Di-Me: 4,6-Dideoxy-4-dimethylamino- β -D-talopyranose [15830-74-7]
 $C_8H_{17}NO_4$ 191.227
 Cryst. ($MeOH/Et_2O$) (as hydrochloride). Mp 154-156° (hydrochloride). $[\alpha]_D^{29}$ +7 \rightarrow +21 (c, 0.5 in H_2O). pK_a 8.22 (50% MeOH aq.).

 α -L-Pyranose-form

Me glycoside, N-Ac: Methyl 4-acetamido-4,6-dideoxy- α -L-talopyranoside [17495-06-6]
 $C_9H_{17}NO_5$ 219.237
 Cryst. ($EtOAc$). Mp 169-170.5°. $[\alpha]_D^{18}$ -162 (c, 0.95 in EtOH).
Me glycoside, 2,3,4N-tri-Ac: Methyl 4-acetamido-2,3-di-O-acetyl-4,6-dideoxy- α -L-talopyranoside [17495-07-7]

$C_{13}H_{21}NO_7$ 303.311
 Cryst. (C_6H_6 /petrol). Mp 136-137°. $[\alpha]_D^{20}$ -67 (c, 0.73 in EtOH).

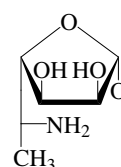
Me glycoside, 2,3-O-isopropylidene: Methyl 4-amino-6-dideoxy-2,3-O-isopropylidene- α -L-talopyranoside [18530-87-5]
 $C_{10}H_{19}NO_4$ 217.264
 Syrup. $Bp_{0.1}$ 87°. $[\alpha]_D^{20}$ -63 (c, 0.77 in EtOH).

Me glycoside, 2,3-O-isopropylidene, N-Ac: Methyl 4-acetamido-4,6-dideoxy-2,3-O-isopropylidene- α -L-talopyranoside [20595-13-5]
 $C_{12}H_{21}NO_5$ 259.302
 Cryst. (toluene/petrol). Mp 150-151.5°. $[\alpha]_D^{20}$ -35 (c, 1.4 in EtOH).

Stevens, C.L. *et al.*, *J.O.C.*, 1968, 33, 1586 (α -D-Me pyr derivs, pmr, ms)
 Jary, J. *et al.*, *Annalen*, 1970, 740, 98 (α -L-Me pyr isopropylidene N-Ac)
 Knapp, S. *et al.*, *J.O.C.*, 1990, 55, 5700 (α -D-Me pyr tetra-Ac, pmr)

5-Amino-5,6-dideoxytalose

A-418

 α -D-Furanose-form $C_6H_{13}NO_4$ 163.173 **α -D-Furanose-form**

Me glycoside, 2,3-O-isopropylidene: Methyl 5-amino-5,6-dideoxy-2,3-O-isopropylidene- α -D-talofuranoside [10503-87-4]
 $C_{10}H_{19}NO_4$ 217.264
 Cryst. (2-propanol/pentane) (as hydrochloride). Mp 183-183.5° dec. (hydrochloride). $[\alpha]_D^{24}$ +29 (c, 1.0 in H_2O). CAS no. refers to hydrochloride.

L-Furanose-form

N-Ac: 5-Acetamido-5,6-dideoxy-L-talofuranose [13322-81-1]
 $C_8H_{15}NO_5$ 205.21
 Syrup. $[\alpha]_D^{20}$ -26 (c, 0.9 in H_2O) (-19.2).

 α -L-Furanose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 5-amino-5,6-dideoxy-2,3-O-isopropylidene- α -L-talofuranoside [18530-86-4]
 $C_{10}H_{19}NO_4$ 217.264
 Liq. $Bp_{0.05}$ 69-73°. $[\alpha]_D^{17}$ -62 (c, 1.4 in EtOH).

Me glycoside, 2,3-O-isopropylidene, hydrochloride: [30572-32-8]
 Cryst. (Me_2CO/Et_2O). Mp 186-187° (183-184°). $[\alpha]_D^{19}$ -24.6 (c, 0.9 in H_2O).

Me glycoside, 2,3-O-isopropylidene, N-Ac: Methyl 5-acetamido-5,6-dideoxy-2,3-O-isopropylidene- α -L-talofuranoside [13322-85-5]
 $C_{12}H_{21}NO_5$ 259.302
 Syrup. $Bp_{0.1}$ 104°. $[\alpha]_D^{20}$ -87 (c, 0.58 in EtOH).

β -L-Furanose-form

1,2-O-Isopropylidene: 5-Amino-5,6-dideoxy-1,2-O-isopropylidene- β -L-talofuranose
[23537-44-2]
 $C_9H_{17}NO_4$ 203.238
Cryst. (EtOH). Mp 137-141.5°. $[\alpha]_D^{20}$ +44.3 (c, 1.1 in $CHCl_3$).

1,2-O-Isopropylidene, N-Ac: 5-Acetamido-5,6-dideoxy-1,2-O-isopropylidene- β -L-talofuranose
[23537-45-3]
 $C_{11}H_{19}NO_5$ 245.275
Cryst. (Et₂O/petrol). Mp 130-131.5°. $[\alpha]_D^{20}$ -1.8 (c, 1.2 in $CHCl_3$).

1,2-O-Isopropylidene, 3-benzyl: 5-Amino-3-O-benzyl-5,6-dideoxy-1,2-O-isopropylidene- β -L-talofuranose
[19272-44-7]
 $C_{16}H_{23}NO_4$ 293.362
Syrup. $[\alpha]_D^{20}$ +108.3 (c, 1.2 in $CHCl_3$).

1,2-O-Isopropylidene, 3-benzyl, N-Ac: 5-Acetamido-3-O-benzyl-5,6-dideoxy-1,2-O-isopropylidene- β -L-talofuranose
[19272-08-3]
 $C_{18}H_{25}NO_5$ 335.399
Cryst. ($CHCl_3$ /petrol). Mp 106-107°. $[\alpha]_D^{20}$ +80.3 (c, 0.9 in $CHCl_3$).

Paulsen, H. *et al.*, *Chem. Ber.*, 1969, **102**, 820 (L-fur Ac, β -L-fur isopropylidene derivs)

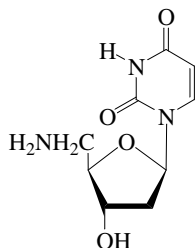
Jary, J. *et al.*, *Annalen*, 1970, **740**, 98 (α -L-Me fur derivs)

Stevens, C.L. *et al.*, *J.O.C.*, 1970, **35**, 592 (α -D-Me fur isopropylidene)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1974, **35**, 55 (α -L-Me fur derivs, pmr)

5'-Amino-2',5'-dideoxyuridine, 9CI

[35959-38-7]



$C_9H_{13}N_3O_4$ 227.219
Solid (Et₂O/EtOH aq.). Mp 230° (210°) dec.

5'-N-Ac: [85144-76-9]

$C_{11}H_{15}N_3O_5$ 269.257

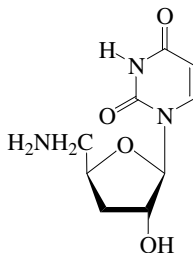
Cryst. + H₂O (EtOH aq.). Mp 149°.

Logue, M.W. *et al.*, *J.A.C.S.*, 1972, **94**, 2842-2846 (synth, pmr)

Henn, T.F.G. *et al.*, *J. Med. Chem.*, 1993, **36**, 1570-1579 (synth, uv, ir, pmr)

5'-Amino-3',5'-dideoxyuridine, 9CI

A-420



$C_9H_{13}N_3O_4$ 227.219

Potential use in synth of mureidomycin antibiotics. Solid. $[\alpha]_D$ +7.1 (c, 0.6 in 1M HCl).

tert-Butyldimethylsilyl ether:

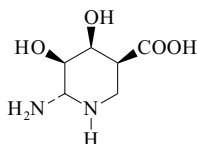
$C_{15}H_{27}N_3O_4Si$ 341.482

Cryst. Mp 89-91°. $[\alpha]_D$ -26.3 (c, 0.3 in CH_2Cl_2).

Bender, D.M. *et al.*, *Synthesis*, 2000, 399-402 (synth, pmr, cmr)

6-Amino-4,5-dihydroxy-3-piperidinecarboxylic acid

A-421



(3S,4S,5R,6S)-form

$C_6H_{12}N_2O_4$ 176.172

(3S,4S,5R,6S)-form

N-Ac: *Siastatin B*. A 72363B. Antibiotic A 72363B

[54795-58-3]

$C_8H_{14}N_2O_5$ 218.209

Isol. from *Streptomyces verticillus* var. *quintum* and *Streptomyces nobilis*. Potent neuraminidase inhibitor. Needles. Mp 137° dec. $[\alpha]_D^{25}$ +57.2 (c, 1 in H₂O).

► TM6125400

(3R*,4R*,5R*,6R*)-form

N-Ac: Antibiotic A 72363A1. A 72363A-1
 $C_8H_{14}N_2O_5$ 218.209

Prod. by *Streptomyces nobilis*. Heparanase inhibitor. Sol. H₂O; poorly sol. Me₂CO, hexane. $[\alpha]_D^{23}$ +29 (c, 1 in H₂O).

(3R*,4S*,5R*,6R*)-form

N-Ac: Antibiotic A 72363A2. A 72363A-2
 $C_8H_{14}N_2O_5$ 218.209

Prod. by *Streptomyces nobilis*. Heparanase inhibitor. Sol. H₂O; poorly sol. Me₂CO, hexane. $[\alpha]_D^{23}$ -31 (c, 1 in H₂O).

(3R*,4R*,5S*,6S*)-form

N-Ac: Antibiotic A 72363C. A 72363C
 $C_8H_{14}N_2O_5$ 218.209

Prod. by *Streptomyces nobilis*. Heparanase inhibitor. Sol. H₂O; poorly sol. Me₂CO, hexane. $[\alpha]_D^{27}$ -59 (c, 0.7 in H₂O).

Umezawa, H. *et al.*, *J. Antibiot.*, 1974, **27**, 963 (isol, ir, props)

Aoyagi, T. *et al.*, *Experientia*, 1975, **31**, 896 (struct)

Nishimura, Y. *et al.*, *J.A.C.S.*, 1988, **110**, 7249 (synth, abs config)

Nishimura, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1992, **65**, 978 (synth)

Nishimura, Y. *et al.*, *Stud. Nat. Prod. Chem.*, 1995, **16**, 75 (rev, synth)

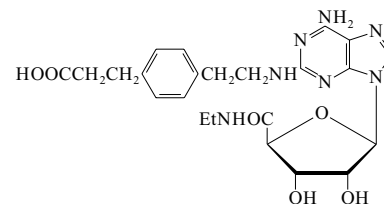
Takatsu, T. *et al.*, *J. Antibiot.*, 1996, **49**, 54; 61 (A 73263, pmr, cmr, activity)

Knapp, S. *et al.*, *Org. Lett.*, 2000, **2**, 4037-4040 (*Siastatin B*, synth)

4-[2-[[6-Amino-9-(N-ethyl- β -D-ribofuranuronamidoyl)-9H-purin-2-yl]amino]ethyl]benzenepropanoic acid, 9CI

A-422

2-[p-(Carboxyethyl)phenylethylamino]-5'-N-ethylcarboxamidoadenosine. CGS 21680 [120225-54-9]



$C_{23}H_{29}N_7O_6$ 499.525

Adenosine A_{2A}-receptor agonist. Hypotensive agent. Log P -0.1 (calc).

Hydrochloride: [124431-80-7]

Mp 200-203°.

Me ester: [127258-46-2]

$C_{24}H_{31}N_7O_6$ 513.552

Mp 90-95° (as hydrochloride). CAS number refers to hydrochloride.

[120225-59-4, 120225-64-1, 129681-39-6]

Eur. Pat., 1988, 277 917, (Ciba-Geigy); *CA*, **110**, 193332f (synth, pharmacol)

Hutchinson, A.J. *et al.*, *J. Pharmacol. Exp. Ther.*, 1989, **251**, 47; 888 (pharmacol)

Hutchinson, A.J. *et al.*, *J. Med. Chem.*, 1990, **33**, 1919 (synth)

Webb, R.L. *et al.*, *Cardiovasc. Drug Rev.*, 1992, **10**, 26 (rev)

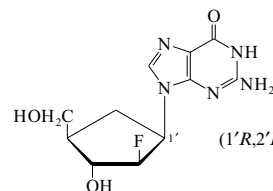
Irth, H. *et al.*, *J. Chromatogr. B: Biomed. Appl.*, 1994, **658**, 207 (hplc)

Kirk, I.P. *et al.*, *Br. J. Pharmacol.*, 1995, **114**, 537 (pharmacol)

2-Amino-9-[2-fluoro-3-hydroxy-4-(hydroxymethyl)cyclopentyl]-1,9-dihydro-6H-purin-6-one, 9CI

A-423

Carbocyclic 2'-ara-fluoroguanosine



(1'R,2'R,3'R,4'R)-form

$C_{11}H_{14}FN_5O_3$ 283.262

Carbocyclic nucleoside which shows significant activity against herpes simplex virus. Log P -3.28 (calc).

(1'R,2'R,3'R,4'R)-form [110312-77-1] Twice as active as racemate against herpes simplex virus.

Solid. Mp 257-258°. $[\alpha]_D^{22}$ +69 (c, 1.0 in H₂O).

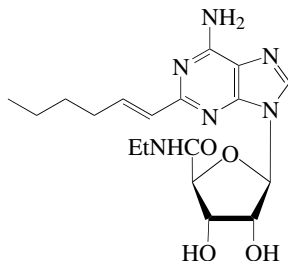
(1'S,2'S,3'S,4'S)-form [110312-78-2]
[α]_D²⁰ -68 (c, 1.93 in H₂O).

(1'RS,2'RS,3'RS,4'RS)-form [110289-24-2]
Fine needles (H₂O). Mp 273-275°.

(1'RS,2'SR,3'RS,4'RS)-form [131101-25-2]
Solid. Mp 236-239°.
[110312-79-3, 110312-81-7]

Borthwick, A.D. *et al.*, *J. Med. Chem.*, 1991, **34**, 907 (synth, ir, uv, pmr)

1-[6-Amino-2-(1-hexenyl)-9H-purin-9-yl]-1-deoxy-N-ethyl-β-D-ribofuranuronamide, 9CI A-424
2-(1-Hexenyl)adenosine-5'-N-ethyluramide



C₁₈H₂₆N₆O₄ 390.441

Adenosine A_{2A}-receptor agonist. Relat. to 1-[6-Amino-2-(1-hexenyl)-9H-purin-9-yl]-1-deoxy-N-ethyl-β-D-ribofuranuronamide.

(E)-form [181873-15-4]

Mp 180-183°. Pharmacol. active isomer.

(Z)-form [181873-19-8]

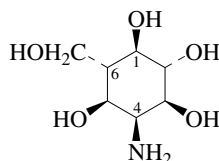
Mp 164-167°.

Vittori, S. *et al.*, *J. Med. Chem.*, 1996, **39**, 4211-4217 (synth, isomers, pmr, pharmacol)

Cunha, R.A. *et al.*, *Br. J. Pharmacol.*, 1997, **122**, 1279-1284 (pharmacol)

Pinna, A. *et al.*, *Brain Res.*, 1997, **759**, 41-49 (pharmacol)

4-Amino-6-hydroxymethyl-1,2,3,5-cyclohexanetetrol A-425



C₇H₁₅NO₅ 193.199

(1R,2S,3S,4S,5S,6S)-form

2-Amino-2,6-dideoxy-6-C-(hydroxymethyl)-D-myo-inositol. **Hydroxyvalidamine**

[33034-94-5]

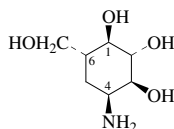
Prod. by *Streptomyces hygroscopicus* var. *limoneus* IFO 12703.

Cryst.

Mp 164-165°. [α]_D +80.7 (H₂O).

Horii, S. *et al.*, *J. Antibiot.*, 1971, **24**, 59-63 (isol)
Chen, X. *et al.*, *Chem. Rev.*, 2003, **103**, 1955-1977 (rev)

4-Amino-6-hydroxymethyl-1,2,3-cyclohexanetriol



(1R,2S,3S,4S,6R)-form

C₇H₁₅NO₄ 177.2

Aminocyclitol antibiotic.

(1R,2S,3S,4S,6R)-form

1-Amino-1,5,6-trideoxy-5-(hydroxymethyl)-D-chiro-inositol, 9CI. **Validamine** [32780-32-8]

Constit. and hydrol. prod. of Validoxylamine G, V-4. Prod. by *Streptomyces hygroscopicus* ssp. *limoneus* (Atcc21431, Ifo12703). Glucosidase inhibitor. Syrup. Sol. H₂O, DMSO, MeOH; poorly sol. EtOH, hexane. [α]_D +56 (c, 0.38 in H₂O).

Hydrochloride: [32780-31-7]

Mp 229-232° dec. [α]_D +57.4 (1M HCl).

(1R,2S,3S,4S,6S)-form 4-Amino-2,3,4-trideoxy-2-(hydroxymethyl)-D-epi-inositol, 9CI. **Epivalidamine** [38231-87-7]

Obt. by microbiological degradn. of validamycin B. Mp 210°. [α]_D +5.8 (H₂O).

(1S,2R,3S,4R,6R)-form 1-Amino-1,2,3-trideoxy-3-(hydroxymethyl)-D-allo-inositol, 9CI

[248273-48-5]

Glassy solid. [α]_D²⁰ -82 (c, 0.5 in D₂O).

N,O,O,O,O-Penta-Ac:

C₁₇H₂₅NO₉ 387.386

Solid. Mp 194-195°. [α]_D²⁰ +5 (c, 0.6 in CHCl₃). CAS no. not found to 14CI.

(1S,2S,3S,4S,6R)-form 6-Amino-1,2,6-trideoxy-2-(hydroxymethyl)-D-allo-inositol, 9CI. **Galacto-validamine**. 5a-Carba-α-D-galactopyranosylamine [191740-47-3]

Solid. [α]_D +73.8 (c, 1 in H₂O).

(1RS,2RS,3RS,4RS,6SR)-form 5a-Carba-α-DL-galactopyranosylamine Syrup.

(1RS,2SR,3SR,4SR,6RS)-form (±)-Validamine [112067-62-6]

N,O,O,O,O-Penta-Ac: [64589-26-0]

Cryst. (as hydrochloride). Mp 197-198° (hydrochloride).

Horii, S. *et al.*, *J. Antibiot.*, 1971, **24**, 57; 59 (isol)

Kamiya, K. *et al.*, *J. Antibiot.*, 1971, **24**, 317 (cryst struct)

Kameda, Y. *et al.*, *Chem. Comm.*, 1972, 746-747 (epivalidamine)

Suami, T. *et al.*, *Carbohydr. Res.*, 1977, **58**, 240 (synth, (±)-form)

Ogawa, S. *et al.*, *CA*, 1984, **100**, 192193 (synth)

Kameda, Y. *et al.*, *J. Antibiot.*, 1984, **37**, 1301 (isol, struct)

Yoshikawa, M. *et al.*, *Chem. Pharm. Bull.*, 1988, **36**, 4236; 1993, **41**, 1197 (synth)

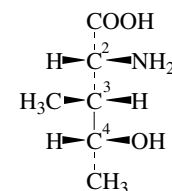
Yoshikawa, M. *et al.*, *Tetrahedron*, 1994, **50**, 9619 (synth)

A-426

Kameda, Y. *et al.*, *Carbohydr. Res.*, 1997, **300**, 259-264 (galacto-validamine, synth, pmr, cmr)
Ogawa, S. *et al.*, *Eur. J. Org. Chem.*, 2000, 2089-2093 (galacto-validamine, synth, pmr)
Tatsuka, K. *et al.*, *J. Antibiot.*, 2000, **53**, 430-435 (synth, pmr)
Rassu, G. *et al.*, *J.O.C.*, 2000, **65**, 6307-6318 (1S,2R,3S,4R,6R-form, synth, pmr, cmr)

2-Amino-4-hydroxy-3-methylpentanoic acid A-427

2-Amino-2,3,5-trideoxy-3-methylpentonic acid. 4-Hydroxyisoleucine [50764-07-3]



(2R,3R,4R)-form

C₆H₁₃NO₃ 147.174

(2R,3R,4R)-form

D-xylo-form. 2-Amino-2,3,5-trideoxy-3-methyl-D-xyloic acid

[60010-78-8]

Cryst. (EtOH aq.). Mp ca. ° 230. [α]_D²⁰ -35.6 (c, 1.2 in D₂O).

1,4-Lactone: 3-Aminodihydro-4,5-dimethyl-2(3H)-furanone

C₆H₁₁NO₂ 129.158

Cryst. (EtOH/petrol) (as hydrochloride). Mp 222° (hydrochloride). [α]_D²⁵ +88.7 (c, 1 in MeOH).

1,4-Lactone, N-Ac:

Needles (EtOH). Mp 140°. [α]_D²⁵ +88 (c, 1 in DMSO).

(2R,3R,4S)-form L-arabino-form. 2-Amino-2,3,5-trideoxy-3-methyl-L-arabinonic acid [60010-73-3]

Minor amino acid constit. of *Trigonella foenum-graecum* (fenugreek) seeds.

[α]_D²⁰ +1 (c, 1 in H₂O). Originally thought to be the (2R,3R,4R) form.

1,4-Lactone:

Cryst. (as hydrochloride). Mp 170-175° (hydrochloride).

1,4-Lactone, N-Ac: 3-Acetamidodihydro-4,5-dimethyl-2(3H)-furanone. **Desmodilactone**

[60010-74-4]

C₈H₁₃NO₃ 171.196

Constit. of *Desmodium styracifolium*.

Component of Guang Jin Qian Cao.

Cryst. Mp 84-85°. [α]_D¹⁸ -16.4 (c, 0.11 in MeOH).

(2S,3R,4R)-form D-lyxo-form. 2-Amino-2,3,5-trideoxy-3-methyl-D-lyxonic acid [55399-92-3]

Cryst. (EtOH aq.). Mp ca. ° 220. [α]_D²⁰ -24.9 (c, 1.17 in D₂O).

1,4-Lactone:

Needles (EtOH/petrol) (as hydrochloride). Mp 255° (hydrochloride). [α]_D²⁵ +24.3 (c, 1 in MeOH).

1,4-Lactone, N-Ac:

Needles (EtOH). Mp 141°.

(2S,3R,4S)-form *L*-ribo-form. 2-Amino-2,3,5-trideoxy-3-methyl-*L*-ribonic acid [55399-93-4]
Major constit. of *Trigonella foenum-graecum* (fenugreek). Cryst. (EtOH aq.). Mp 224-225°. $[\alpha]_D^{20} +31$ (c, 1 in H₂O). Stereochem. revised in 1989.

1,4-Lactone:

Needles (EtOH/petrol) (as hydrochloride). Mp 230° (hydrochloride). $[\alpha]_D^{25} -15.5$ (c, 1 in MeOH).

1,4-Lactone, N-Ac:

Needles (EtOH). Mp 94°.

(2S,3S,4R)-form *D*-arabino-form. 2-Amino-2,3,5-trideoxy-3-methyl-*D*-arabinonic acid [21704-86-9]

Constit. of the flowers of *Quararibea funebris*.

Mp 205-207°. $[\alpha]_D^{27} +2.9$ (c, 0.1 in H₂O). λ_{\max} 197 (ε 250) (H₂O).

1,4-Lactone: [71392-28-4]

[90693-46-2]

Constit. of the flowers of *Quararibea funebris*. Powder (as hydrochloride). Mp 212-215° (hydrochloride). $[\alpha]_D^{25} -14.8$ (c, 0.7 in MeOH).

Fowden, L. *et al.*, *Phytochemistry*, 1973, **12**, 1707-1711 (*Trigonella foenum-graecum* constits)

Gieren, A. *et al.*, *Annalen*, 1974, 1561-1569 (*synth*)

Hasan, M. *et al.*, *Annalen*, 1976, 781-787 (*lactone, synth, pmr*)

Raffauf, R.F. *et al.*, *J.O.C.*, 1984, **49**, 2714-2718 (*Quararibea funebris* constiti)

Alcock, N.W. *et al.*, *Phytochemistry*, 1989, **28**, 1835-1841 (*struct*)

Inghardt, T. *et al.*, *Tetrahedron*, 1991, **47**, 6469-6482 (*synth, abs config, cryst struct*)

Yang, J. *et al.*, *Yaoxue Xuebao*, 1993, **28**, 197-201; *CA*, **119**, 156209m (*Desmodilactone*)

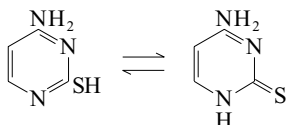
Wang, Q. *et al.*, *Eur. J. Org. Chem.*, 2002, 834-839 (*synth, pmr, cmr*)

Rolland-Fulcrand, V. *et al.*, *Eur. J. Org. Chem.*, 2004, 873-877 (*synth, pmr, cmr*)

4-Amino-2-mercaptopyrimidine A-428

4-Amino-2(1H)-pyrimidinethione, 9CI. 4-Amino-2-pyrimidinethiol, 8CI. Thiocytosine

[333-49-3]



C₄H₅N₃S 127.17

Tautomerism is possible. Long needles (H₂O). Mp 285-290° dec. p*K*_{a1} 3.32; p*K*_{a2} 10.63 (20°, H₂O).

NH-form

1-β-*D*-Ribofuranosyl: 2-Thiocytidine

[13239-97-9]

C₉H₁₃N₃O₄S 259.285

Modified nucleoside present in tRNA's. Cryst. (EtOH).

Mp 208-209°. $[\alpha]_D^{25} +64.2$ (c, 1.8 in H₂O). λ_{\max} 220 (sh) (ε 10300); 248 (ε 22300); 270 (sh) (ε 17100) (H₂O).

[5807-22-7, 28542-33-8, 31983-36-5]

Hitchings, G.H. *et al.*, *J. Biol. Chem.*, 1949, **117**, 357 (*synth*)

Russell, P.B. *et al.*, *J.A.C.S.*, 1949, **71**, 2279 (*synth*)

Brown, D.J. *et al.*, *Aust. J. Chem.*, 1965, **18**, 559 (*uv, tautom*)

Ueda, T. *et al.*, *Chem. Pharm. Bull.*, 1966, **14**, 666 (2-thiocytidine, *synth, ir, uv*)

Lee, H.-J. *et al.*, *Biochemistry*, 1968, **7**, 1427-1431 (2-thiocytidine, *synth*)

Ueda, T. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 1788-1794 (2-thiocytidine, *synth*)

Furberg, S. *et al.*, *Acta Cryst. B*, 1970, **26**, 1260 (*cryst struct*)

Sundaralingam, M. *et al.*, *J.A.C.S.*, 1971, **93**, 1235-1241 (2-thiocytidine, *cryst struct*)

Cleve, G. *et al.*, *Chem. Ber.*, 1973, **106**, 3062 (2-thiocytidine, *pmr, cd*)

Yokoyama, S. *et al.*, *Nucleic Acids Res.*, 1979, **6**, 2611-2626 (2-thiocytidine, *isol, pmr, conformn*)

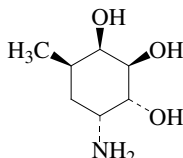
Igarashi-Yamamoto, N. *et al.*, *Biochim. Biophys. Acta*, 1981, **656**, 1-15 (2-thiocytidine, *uv, cd*)

Thomas, G. *et al.*, *Eur. J. Biochem.*, 1981, **119**, 381-387 (2-thiocytidine, *occur*)

Yadav, R.A. *et al.*, *Spectrochim. Acta A*, 1988, **44**, 1201 (*ir*)

4-Amino-6-methyl-1,2,3-cyclohexanetriol

A-429



C₇H₁₃NO₃ 161.2

(1R,2R,3R,4R,6R)-form

5-Amino-3,4,5-trideoxy-3-methyl-*D*-allo-inositol, 9CI. 5a-Carba-α-*L*-fucopyranosylamine

[333327-02-9]

Potent inhibitor of α-*L*-fucosidase.

Syrup. $[\alpha]_D^{20} -38$ (c, 0.15 in MeOH).

(1RS,2RS,3RS,4RS,6RS)-form [288846-

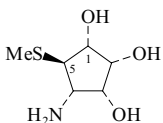
13-9]

Syrup.

Ogawa, S. *et al.*, *Eur. J. Org. Chem.*, 2000, 2089-2093; 2001, 967-974 (*all-R-form, synth, pmr*)

4-Amino-5-(methylthio)-1,2,3-cyclopentanetriol

A-430



(1R,2R,3R,4S,5R)-form

C₆H₁₃NO₃S 179.24

(1R,2R,3R,4S,5R)-form

Mannostatin A

[102822-56-0]

Prod. by *Streptomyces* sp. and *Streptovorticillium verticillium* var. *quantum*. α-*D*-Mannosidase inhibitor. Sol. H₂O; poorly sol. Me₂CO, hexane.

► GY4701040

N₂O₂O₂-Tetra-Ac:

C₁₄H₂₁NO₇S 347.388

Needles. Mp 121° dec.

S-Oxide: Mannostatin B

[102822-66-2]

C₆H₁₃NO₄S 195.239

From *Streptovorticillium verticillium* var. *quantum*. α-*D*-Mannosidase inhibitor. Sol. H₂O; poorly sol. Me₂CO, hexane.

► GY4701020

S-Oxide, N₂O₂O₂-tetra-Ac:

C₁₄H₂₁NO₈S 363.388

Prisms (EtOAc). Mp 146° dec.

Aoyagi, T. *et al.*, *J. Antibiot.*, 1989, **42**, 883; 1008 (*isol, struct, props*)

Ogawa, S. *et al.*, *Chem. Comm.*, 1991, 890 (*synth*)

King, S.B. *et al.*, *J.A.C.S.*, 1991, **113**, 5089 (*synth*)

Trost, B.M. *et al.*, *J.A.C.S.*, 1991, **113**, 6317; 1993, **115**, 444 (*synth*)

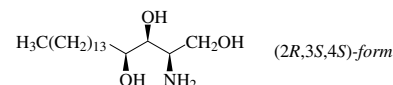
Ogawa, S. *et al.*, *Bioorg. Med. Chem.*, 1995, **3**, 939 (*synth*)

Ling, R. *et al.*, *J.O.C.*, 1998, **63**, 6072-6076 (*synth*)

Berecibar, A. *et al.*, *Chem. Rev.*, 1999, **99**, 779-844

2-Amino-1,3,4-octadecanetriol, 8CI A-431

C₁₈-Phytosphingosine. 4-Hydroxysphinganine



C₁₈H₃₉NO₃ 317.511

(2R,3S,4S)-form

D-xylo-form

O₂O₂O₂N-Tetra-Ac: [517920-39-7]

C₂₆H₄₇NO₇ 485.66

Viscous liq. $[\alpha]_D^{25} -6.9$ (c, 0.9 in CHCl₃).

(2S,3S,4R)-form *D*-ribo-form

[554-62-1]

Present in cerebrosides and gangliosides.

Isol. from the basidiomycete *Russula cyanoxantha*. Amorph. powder. Mp 103° (95-97°). $[\alpha]_D^{20} +10.3$ (Py) (+9.4).

1-O-β-*D*-Glucopyranoside: [126374-02-5]

C₂₄H₄₉NO₈ 479.653

Isol. from human thyroid.

N-Benzoyl:

Cryst. (EtOAc). Mp 137.8-138.8°. $[\alpha]_D +5$ (c, 5.2 in Py).

O₂O₂O₂N-Tetra-Ac: [13018-48-9]

C₂₆H₄₇NO₇ 485.66

Isol. from yeast *Hansenula ciferrii*. Cryst. (petrol). Mp 49-50°. $[\alpha]_D^{25} +5$ (c, 4.8 in DMF).

Tri-O-Ac, N-benzoyl:

Cryst. (petrol). Mp 78-80°. $[\alpha]_D +22$ (c, 0.5 in CHCl₃).

N-Hexadecanoyl: Armillaramide

[111149-09-8]

C₃₄H₆₉NO₄ 555.923

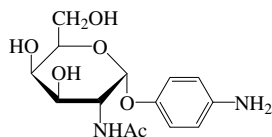
Isol. from *Armillaria mellea* (honey mushroom). Amorph. powder. Mp 113-117°. $[\alpha]_D^{26} +14.3$ (c, 0.21 in Py).

- N-Octadecanoyl:** N-Octadecanoylphyto-sphingosine [34354-88-6] Mp 99-100°.
- N-Octadecanoyl, 1-O-β-D-galactopyranoside:** N-Octadecanoylphytolactocerebroside [139973-77-6] C₄₂H₈₃NO₉ 746.119 Cryst. (CHCl₃/MeOH). Mp 197-198°. [α]_D²⁰ -1.4 (c, 3 in Py). [α]_D²⁰ +10.4 (c, 3 in EtOH/CHCl₃).
- N-Tetracosanoyl:** [34437-74-6] C₄₂H₈₅NO₄ 668.138 Constit. of various marine sources and *Physalis philadelphica*. Amorph. powder. Mp 114-116°. [α]_D²⁰ +19.5 (c, 0.2 in Py).
- N-(2R-Hydroxyoctadecanoyl):** [65913-97-5] C₃₆H₇₃NO₅ 599.976 Constit. of the coral *Sinularia leptoclados*. Powder (as tetra-Ac). Mp 54-57° (tetra-Ac). [α]_D²⁸ +8 (c, 0.1 in CHCl₃) (tetra-Ac).
- N-(2R-Hydroxydocosanoyl):** [305363-08-0] C₄₀H₈₁NO₅ 656.084 Isol. from the mushroom *Grifola frondosa* (maitake). Amorph. powder. [α]_D²² +12.9 (c, 0.1 in Py).
- N-(2R-Hydroxydocosanoyl), 1-O-β-D-glucopyranoside: Reguloside A** [193412-76-9] C₄₆H₉₁NO₁₀ 818.226 Isol. from the starfish *Pentaceraster regulus*. Amorph. powder. Mp 218-219°. [α]_D²⁷ +10 (c, 0.05 in Py).
- N-(2R-Hydroxytricosanoyl):** [305363-09-1] C₄₁H₈₃NO₅ 670.11 Isol. from the mushroom *Grifola frondosa* (maitake) and the truffle *Tuber indicum*. Amorph. powder. [α]_D²⁰ +14.9 (c, 0.07 in Py).
- N-(2R-Hydroxytricosanoyl), 1-O-β-D-glucopyranoside: Reguloside B** [193412-77-0] C₄₇H₉₃NO₁₀ 832.252 Isol. from the starfish *Pentaceraster regulus*.
- N-(2R-Hydroxytetracosanoyl): Russulaceraamide** [154801-30-6] C₄₂H₈₅NO₅ 684.137 Constit. of various marine sources and *Physalis philadelphica*. Also from the basidiomycete *Russula cyanoxantha*. Amorph. powder. Mp 123-125°. [α]_D +12.6 (c, 0.45 in Py). [α]_D +9.4 (c, 0.21 in Py).
- N-(2R-Hydroxytetracosanoyl), 1-O-β-D-glucopyranoside: Reguloside C** [193412-78-1] C₄₈H₉₅NO₁₀ 846.279 Isol. from the starfish *Pentaceraster regulus*.
- N-(2R-Hydroxypentacosanoyl):** [305363-10-4] C₄₃H₈₇NO₅ 698.164 Isol. from the mushrooms *Grifola frondosa* (maitake) and *Phellinus ribis*. Also found in the marine sponge *Iotrochota baculifera*. Amorph. powder. Mp 145°. [α]_D²¹ +13.8 (c, 0.1 in Py).
- N-(2R-Hydroxyhexacosanoyl):** [164988-96-9] C₄₄H₈₉NO₅ 712.191 Isol. from the mushroom *Grifola frondosa* (maitake). Amorph. powder. [α]_D²² +11.1 (c, 0.1 in Py).
- N-(2-Hydroxynonacosanoyl):** [182007-30-3] C₄₇H₉₅NO₅ 754.271 Prod. by the fungus *Phellinus pini*.
- N-(2-Hydroxytriacontanoyl):** [182007-31-4] C₄₈H₉₇NO₅ 768.298 Prod. by *Phellinus pini*.
- N-(2R-Hydroxy-4E-tetracosenoyl), 1-O-β-D-glucopyranoside: Iotroridoside B** [639088-52-1] C₄₈H₉₃NO₁₀ 844.263 Isol. from the sponge *Iotrochota baculifera*. Mp 205°. [α]_D²⁸ +12 (c, 0.15 in Py).
- N-(2R-Hydroxy-4Z-tetracosenoyl), 1-O-β-D-glucopyranoside: Iotroridoside A** [277756-38-4] C₄₈H₉₃NO₁₀ 844.263 Isol. from the sponge *Iotrochota ridleyi*. Cytotoxic. Amorph. solid. [α]_D²⁵ -7.2 (c, 0.003 in Py).
- N-(2R-Hydroxy-9Z-tetracosenoyl): Hygrophamide** C₄₂H₈₃NO₅ 682.121 Isol. from the basidiomycete *Hygrophorus eburnesis*. Powder. Mp 121-123°. [α]_D²² +7.6 (c, 0.3 in Py). λ_{max} 194 (log ε 3.09); 205 (log ε 3.43) (MeOH).
- N-(2R-Hydroxy-17Z-tetracosenoyl), 1-O-β-D-glucopyranoside: Catacerebroside B** [593261-19-9] C₄₈H₉₃NO₁₀ 844.263 Isol. from the fungus *Catathelasma ventricosa*. Amorph. powder. [α]_D²⁰ +5 (c, 3.0 in Py).
- N-(2ξ,3ξ-Dihydroxy-17Z-tetracosenoyl), 1-O-β-D-glucopyranoside: Catacerebroside C** [593261-20-2] C₄₈H₉₃NO₁₁ 860.263 Isol. from the fungus *Catathelasma ventricosa*. Amorph. powder. [α]_D²⁰ +3 (c, 1.0 in Py).
- (2ξ,3ξ,4ξ)-form**
- N-Tricosanoyl, 1-O-β-D-glucopyranoside: Cornutaglycolipid** [119830-12-5] C₄₇H₉₃NO₉ 816.253 Constit. of *Ilex cornuta*. A mixt. of 2 stereoisomers.
- N-Pentacosanoyl, 1-O-β-D-glucopyranoside:** [193976-45-3] C₄₉H₉₇NO₉ 844.307 Constit. of *Mirabilis himalaica*. Powder. [α]_D²⁵ +19 (c, 0.1 in Py). Mp >180° dec. Config. not determined.
- N-Hexacosanoyl, 1-O-β-D-glucopyranoside:** [193976-46-4] C₅₀H₉₉NO₉ 858.333 Constit. of *Mirabilis himalaica*. Powder. [α]_D²⁵ -22 (c, 0.1 in Py). Mp >180° dec.
- N-(2ξ,3ξ-Dihydroxy-?-tetracosenoyl): Tuberceramide** [260545-65-1] C₄₂H₈₃NO₆ 698.121 Constit. of the seeds of *Allium tuberosum* (Chinese chives). Amorph. powder. Mp 148-149°. [α]_D²⁵ +28 (c, 0.02 in MeOH). Posn. of double bond not determined.
- Stodola, F.H. et al., *J. Biol. Chem.*, 1960, **235**, 2584-2585 (tetra-Ac, isol)
- Prostenik, M. et al., *Tetrahedron*, 1965, **21**, 651-655 (synth)
- Gigg, J. et al., *J.C.S. (C)*, 1966, 1872-1876; 1876-1879 (2S,3S,4R, synth)
- Gigg, R. et al., *Chem. Phys. Lipids*, 1969, **3**, 106-107 (stereochem)
- Hammarström, S. et al., *J. Lipid Res.*, 1971, **12**, 760-765 (N-acyl derivs, synth)
- Dahlen, B. et al., *Acta Cryst. B*, 1972, **28**, 2396-2404 (N-tetracosanoyl, cryst struct)
- Pascher, I. et al., *Chem. Phys. Lipids*, 1974, **12**, 303-315 (Octadecanoylphytolactocerebroside, synth)
- Schmidt, R.R. et al., *Carbohydr. Res.*, 1988, **174**, 169-179 (stereoisomers, synth)
- Qin, W. et al., *Zhongcaoyao*, 1988, **19**, 486-488; *CA*, **110**, 147457c (Cornutaglycolipid)
- Bouchon, B. et al., *Biochim. Biophys. Acta*, 1990, **1051**, 1-5 (glucoside, isol)
- Wild, R. et al., *Annalen*, 1995, 755-764 (2S,3S,4R-form, synth)
- Lourenco, A. et al., *Phytochemistry*, 1996, **43**, 617-620 (*Phellinus* ceramides)
- Lin, G. et al., *Tetrahedron*, 1996, **52**, 2187-2192 (synth)
- Venkannababu, U. et al., *Liebigs Ann./Recl.*, 1997, 1245-1247 (Regulosides)
- Zhang, G.-L. et al., *Phytochemistry*, 1997, **45**, 1213 (Mirabilis cerebrosides)
- Bala, S.R.G. et al., *Chem. Pharm. Bull.*, 1999, **47**, 1214-1220 (N-2-hydroxyoctadecanoyl)
- Zou, Z.-M. et al., *J. Asian Nat. Prod. Res.*, 1999, **2**, 55-61 (Tuberceramide)
- Figuerola-Pérez, S. et al., *Carbohydr. Res.*, 2000, **328**, 95-102 (galactocerebroside, synth)
- Yaoita, Y. et al., *Chem. Pharm. Bull.*, 2000, **48**, 1356-1358 (*Grifola frondosa* ceramides)
- He, L. et al., *J.O.C.*, 2000, **65**, 7618-7626 (synth)
- Gao, J.M. et al., *Chin. Chem. Lett.*, 2001, **12**, 139-140 (Armillaramide)
- Deng, S.-Z. et al., *Chin. J. Chem.*, 2001, **19**, 362-364 (Iotroridoside A)
- Gao, J.M. et al., *Lipids*, 2001, **36**, 175-180 (Russulaceraamide, 2S,3S,4R-form, isol)
- Gao, J.M. et al., *Chin. Chem. Lett.*, 2002, **13**, 325-326 (*Tuber indicum* ceramide)
- Su, B.-N. et al., *Tetrahedron*, 2002, **58**, 3453-3466 (N-tetracosanoyl, N-2-hydroxytetracosanoyl)
- Muralidhar, P. et al., *Chem. Pharm. Bull.*, 2003, **51**, 1193-1195 (*Iotrochota baculifera* ceramides)
- Zhan, Z.-J. et al., *J. Nat. Prod.*, 2003, **66**, 1013-1016 (Catacerebrosides B,C)
- Lin, C.-C. et al., *Tet. Lett.*, 2003, **44**, 5281-5283 (synth, bibl)
- Raghaven, S. et al., *Tetrahedron: Asymmetry*, 2003, **14**, 2093-2099 (2R,3S,4S-form, tetra-Ac)
- van den Berg, R.J.B.H.N. et al., *J.O.C.*, 2004, **69**, 5699-5704 (synth)
- Qu, Y. et al., *Z. Naturforsch., B*, 2004, **59**, 241-244 (Hygrophamide)

4-Aminophenyl 2-acetamido-2-deoxygalactopyranoside

A-432

Isemura, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1966, **39**, 2553 (*synth*)
 Junowicz, E. *et al.*, *Biochim. Biophys. Acta*, 1973, **321**, 234
 Shafizadeh, F. *et al.*, *J.O.C.*, 1973, **38**, 1190

 α -D-form $C_{14}H_{20}N_2O_6$ 312.322 **α -D-form** [58769-30-5]

Carbohydrate ligand for preparing affinity adsorbents. Comly. available.
 Mp 246-248°. $[\alpha]_D^{20}$ +274 (c, 0.34 in MeOH aq.).

4'-N-Ac: [58707-29-2]

Mp 270-271.5°. $[\alpha]_D^{20}$ +196 (c, 0.43 in DMF).

 β -D-form [50271-52-8]

Cryst. (EtOH aq.). Mp 211-214°. $[\alpha]_D^{20}$ +47 (c, 1.1 in H₂O).

4'-N-Ac: [50271-53-9]

Cryst. (MeOH). Mp 243-244°. $[\alpha]_D^{20}$ -3 (c, 0.59 in DMF).

4'-N, 3,4,6-tetra-Ac: [50271-54-0]

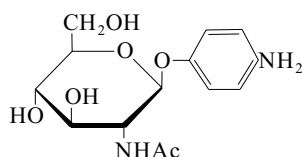
Cryst. (EtOAc/Et₂O). Mp 256-257°. $[\alpha]_D^{20}$ +0.6 (c, 0.89 in CHCl₃).

Petitou, M. *et al.*, *Carbohydr. Res.*, 1973, **29**, 502; 1975, **42**, 180 (*synth*)

4-Aminophenyl 2-acetamido-2-deoxyglucopyranoside, 8CI

A-433

[14419-59-1]

 $C_{14}H_{20}N_2O_6$ 312.322 **β -D-form**

Used as a carbohydrate ligand for preparing affinity adsorbents. Commercially available.

Cryst. (EtOH). Mp 225-228°. $[\alpha]_D^{16}$ +7.6 (c, 0.92 in H₂O).

3,4,6-Tri-Ac: [65907-85-9] $C_{20}H_{26}N_2O_9$ 438.433

Cryst. (EtOH/Et₂O). Mp 168°. $[\alpha]_D^{18}$ -35.5 (Py).

4'-N-Ac: [14419-61-5] $C_{16}H_{22}N_2O_7$ 354.359

Cryst. (MeOH). Mp 244° (236-237°). $[\alpha]_D^{16}$ +6.1 (c, 1.02 in H₂O).

4'-N-Ac, 4,6-O-Benzylidene: [14419-62-6] $C_{23}H_{26}N_2O_7$ 442.468

Cryst. (EtOH). Mp 258-262°. $[\alpha]_D^{16}$ -10 (c, 1.83 in DMF).

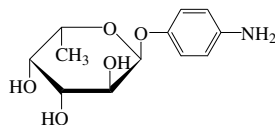
4'-N, 3,4,6-Tetra-Ac: [14419-60-4] $C_{22}H_{28}N_2O_{10}$ 480.471

Cryst. (EtOH). Mp 252° (245°). $[\alpha]_D^{16}$ -40.3 (c, 0.92 in Py).

Westphal, O. *et al.*, *Annalen*, 1952, **575**, 84 (*synth*)

4-Aminophenyl fucopyranoside

A-434

 α -L-form $C_{12}H_{17}NO_5$ 255.27 **α -D-form** [23644-28-2]

Mp 173-175°. $[\alpha]_D^{25}$ +216 (c, 1.6 in MeOH).

α -L-form [42935-25-1] Carbohydrate ligand for preparing affinity adsorbents. Comly. available. Cryst. (petrol). Mp 175°. $[\alpha]_D^{26}$ -204 (c, 1 in MeOH).

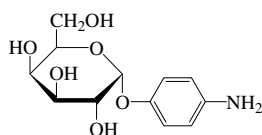
Westphal, O. *et al.*, *Chem. Ber.*, 1956, **89**, 582 (*synth*)

Siewert, G. *et al.*, *Annalen*, 1969, **720**, 188

Downs, F.J. *et al.*, *Carbohydr. Res.*, 1981, **88**, 323 (*synth*)

4-Aminophenyl galactopyranoside

A-435

 α -D-form $C_{12}H_{17}NO_6$ 271.269 **α -D-form** [3398-86-5]

Needles. Mp 178°. $[\alpha]_D^{20}$ +224 (MeOH).

β -D-form [5094-33-7] Used in prepn. of affinity chromatography adsorbents. Cryst. Mp 158-159°. $[\alpha]_D^{25}$ -40.5 (MeOH).

Tetra-O-Ac: [101685-97-6] $C_{20}H_{25}NO_{10}$ 439.418

Mp 134-135°. $[\alpha]_D^{22}$ +5.83 (c, 2 in CHCl₃).

Goebel, W.F. *et al.*, *J. Exp. Med.*, 1929, **50**, 521; *CA*, **24**, 887 (*synth*)

Westphal, O. *et al.*, *Chem. Ber.*, 1956, **89**, 582-588 (α -D-form, *synth*)

Rüde, E. *et al.*, *Immunochemistry*, 1966, **3**, 137-151 (*use*)

Junowicz, E. *et al.*, *Biochim. Biophys. Acta*, 1973, **321**, 234-245 (*use*)

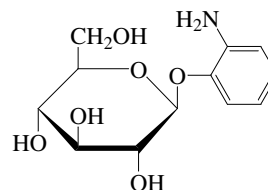
Delmotte, F.M. *et al.*, *Eur. J. Biochem.*, 1980, **112**, 219-223 (*use*)

Plessas, N.R. *et al.*, *Carbohydr. Res.*, 1981, **89**, 211-220 (β -D-form)

Amaiike, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2000, **73**, 2553-2558 (α -D-form, β -D-form, *synth*, *ir*, *pmr*)

2-Aminophenyl glucopyranoside, 9CI

A-436

 $C_{12}H_{17}NO_6$ 271.269 **β -D-form** [7265-01-2]

Solid (H₂O). Mp 187.5-188° (174-176°). $[\alpha]_D^{20}$ -71.2 (c, 0.55 in H₂O).

O-Tetra-Ac: [36874-79-0] $C_{20}H_{25}NO_{10}$ 439.418

Mp 131-133°. $[\alpha]_D^{21}$ -34.1 (c, 1.1 in MeOH).

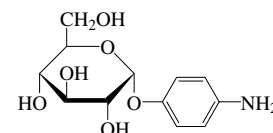
Latham, H.G. *et al.*, *J.O.C.*, 1950, **15**, 884-889 (β -D-form, *tetra-Ac*)

Capon, B. *et al.*, *J.C.S.*, 1961, 5172-5176 (β -D-form, *tetra-Ac*)

Amaiike, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2000, **73**, 2553-2558 (β -D-form, *synth*, *ir*, *pmr*)

4-Aminophenyl glucopyranoside

A-437

 α -D-form $C_{12}H_{17}NO_6$ 271.269 **α -D-form** [31302-52-0]

Isol. from leaves of *Hydrangea macrophylla*. Carbohydrate ligand for preparing affinity adsorbents. Comly. available. Mp 189-191° (185-186°). $[\alpha]_D^{24}$ +194.1 (MeOH).

β -D-form [20818-25-1] Ligand for prepn. of affinity adsorbents. Comly. available. Cryst. Mp 160-161° (156-157°). $[\alpha]_D^{20}$ -55.5 (H₂O). $[\alpha]_D^{26}$ -64.1 (MeOH).

Tetra-Ac: [42011-36-9] $C_{20}H_{25}NO_{10}$ 439.418

Mp 132-133.5°. $[\alpha]_D^{20}$ -14.7 (c, 1.2 in CHCl₃).

Goebel, W.F. *et al.*, *J. Exp. Med.*, 1929, **50**, 521; *CA*, **24**, 887 (*synth*)

Goebel, W.F. *et al.*, *J. Exp. Med.*, 1932, **55**, 761 (*synth*)

Latham, H.G. *et al.*, *J.O.C.*, 1950, **15**, 884-889 (β -D-form)

Cogoli, A. *et al.*, *J. Biol. Chem.*, 1975, **250**, 7802-7809 (*props*)

Suzuki, H. *et al.*, *Phytochemistry*, 1976, **15**, 555 (*isol*, *struct*)

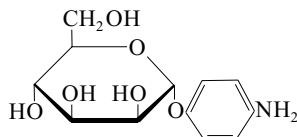
Arita, H. *et al.*, *Carbohydr. Res.*, 1978, **62**, 143-154 (β -D-form)

Tokutake, S. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 13-18 (β -D-form, *synth*, *ir*, *uv*, *pmr*)

Amaiike, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2000, **73**, 2571-2578 (α -D-form, β -D-form, *synth*, *ir*, *pmr*)

4-Aminophenyl mannopyranoside, 8CI

A-438

C₁₂H₁₇NO₆ 271.269

α-D-form [34213-86-0] Used as a carbohydrate ligand for preparing affinity adsorbents. Commercially available. Cryst. (EtOH). Mp 171°. [α]_D²⁰ +128 (c, 1.0 in MeOH).

4,6-O-Benzylidene, 2-benzyl: [79726-87-7] Cryst. (EtOAc/hexane). Mp 130-131°. [α]_D +77 (c, 0.5 in CHCl₃).

N-Trifluoroacetyl, 4,6-O-benzylidene, 2-benzyl: Cryst. (EtOAc/hexane). Mp 210-212°. [α]_D +79 (c, 0.5 in CHCl₃).

N,N-Di-Me: [74590-39-9] C₁₄H₂₁NO₆ 299.323 Cryst. (2-propanol). Mp 153-157°. [α]_D²⁷ +127 (c, 1.0 in MeOH).

Westphal, O. *et al.*, *Chem. Ber.*, 1956, **89**, 582-588 (*α-D-form*, *synth*)

Durette, P.L. *et al.*, *Carbohydr. Res.*, 1980, **81**, 261-274 (*α-D-N,N-di-Me*)

Cerovsky, V. *et al.*, *J. Biochem. Biophys. Methods*, 1980, **3**, 163

Downs, F.J. *et al.*, *Carbohydr. Res.*, 1981, **88**, 323-325 (*α-D-form*, *synth*)

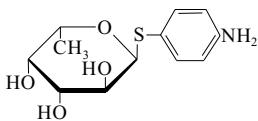
Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1981, **96**, 59-64 (*derivs*)

Amaike, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2000, **73**, 2553-2558 (*α-D-form*, *synth*, *ir*, *pmr*)

4-Aminophenyl 1-thiofucopyranoside

A-439

4-Aminophenyl 6-deoxy-1-thiogalactopyranoside, 9CI



α-L-form

C₁₂H₁₇NO₄S 271.337**β-D-form**

4-Aminophenyl 1-thio-β-D-fucopyranoside [51885-04-2] Light-yellow cryst. (propanol). Mp 75-78°. [α]_D -76.6 (c, 0.75 in MeOH).

α-L-form

4-Aminophenyl 1-thio-α-L-fucopyranoside [51885-72-4] Cryst. (propanol). Mp 138-139°. [α]_D -357 (c, 1.0 in MeOH).

β-L-form

4-Aminophenyl 1-thio-β-L-fucopyranoside [51885-73-5] Comly. available carbohydrate ligand for prepn. of affinity adsorbents. Pale-yellow cryst. Mp 65-78°. [α]_D +66 (c, 1.0 in MeOH).

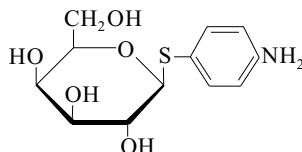
Chawla, M.L. *et al.*, *Carbohydr. Res.*, 1974, **32**, 25 (*synth*)

Shah, R.H. *et al.*, *Carbohydr. Res.*, 1974, **32**, 15 (*synth*)

Jain, R.M. *et al.*, *J. Chromatogr.*, 1977, **139**, 283

4-Aminophenyl 1-thiogalactopyranoside, 9CI

A-440

C₁₂H₁₇NO₅S 287.336

β-D-form [29558-05-2] Comly. available carbohydrate ligand for prepn. of affinity adsorbents.

Cryst. (EtOH). Mp 175-177°. [α]_D²³ -44.4 (c, 1.0 in MeOH).

N,2,3,4,6-Penta-Ac: [62205-45-2]

C₂₂H₂₇NO₁₀S 497.522 Mp 134-135°. [α]_D¹⁹ -9.2 (c, 0.25 in CHCl₃).

Chipowsky, S. *et al.*, *Carbohydr. Res.*, 1973, **31**, 339 (*synth*, *pmr*)

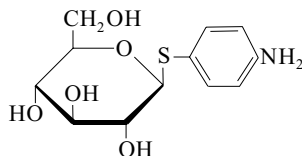
Iino, N. *et al.*, *Carbohydr. Res.*, 1976, **51**, 223 (*synth*)

Mega, T. *et al.*, *J. Biochem. (Tokyo)*, 1976, **79**, 185

Distler, J.J. *et al.*, *Methods Enzymol.*, 1978, **50**, 514; *CA*, 1979, **90**, 82700y

4-Aminophenyl 1-thiogluco-pyranoside, 9CI

A-441

C₁₂H₁₇NO₅S 287.336

β-D-form [58737-22-7] Comly. available carbohydrate ligand for prepn. of affinity adsorbents.

Cryst. (EtOH). Mp 147-148°. [α]_D²² -35.4 (c, 1.0 in MeOH). [α]_D²² -63.5 (c, 5.0 in H₂O).

N,2,3,4,6-Penta-Ac: [62205-46-3]

C₂₂H₂₇NO₁₀S 497.522 Cryst. (EtOH). Mp 155-156°. [α]_D²⁴ -34 (c, 1.0 in CHCl₃).

Wagner, G. *et al.*, *Arch. Pharm. (Weinheim, Ger.)*, 1962, **295**, 415 (*synth*)

Hasegawa, Y. *et al.*, *Chem. Pharm. Bull.*, 1972, **20**, 800

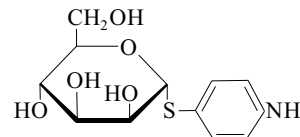
Iino, N. *et al.*, *Carbohydr. Res.*, 1976, **51**, 223 (*synth*)

Mega, T. *et al.*, *J. Biochem. (Tokyo)*, 1976, **79**, 185

Iino, N. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 2212

4-Aminophenyl 1-thiomanno-pyranoside

A-442

C₁₂H₁₇NO₅S 287.336

α-D-form [51885-06-4] Carbohydrate ligand for prepn. of affinity adsorbents. Amorph. [α]_D²⁷ +267 (c, 0.9 in H₂O).

Hydrochloride: [51885-05-3]

Pale-yellow cryst. Mp 175-185° dec. [α]_D +220.2 (c, 1.14 in H₂O).

N-Ac: [74590-45-7]

C₁₄H₁₉NO₆S 329.373

Syrup. [α]_D²⁷ +162 (c, 0.9 in MeOH).

N, 2,3,4,6-penta-Ac: [51885-07-5]

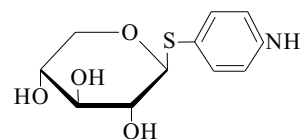
C₂₂H₂₇NO₁₀S 497.522 Cryst. (MeOH aq.). Mp 138-140°. [α]_D²⁷ +97.5 (c, 1.0 in CHCl₃).

Shah, R.M. *et al.*, *Carbohydr. Res.*, 1974, **32**, 15

Durette, P.L. *et al.*, *Carbohydr. Res.*, 1980, **81**, 261 (*synth*)

4-Aminophenyl 1-thioxypyranoside

A-443

C₁₁H₁₅NO₄S 257.31**β-D-form**

Comly. available carbohydrate ligand for prepn. of affinity adsorbents. Cryst. (EtOH). Mp 150-151°. [α]_D²² -80.6 (c, 1.0 in MeOH).

N,2,3,4-Tetra-Ac: [62205-47-4]

C₁₉H₂₃NO₈S 425.459

Cryst. (EtOH aq.). Mp 117-118.5°. [α]_D²⁵ -69.2 (c, 1.0 in CHCl₃).

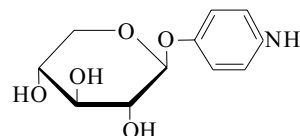
Claeysens, M. *et al.*, *Carbohydr. Res.*, 1972, **22**, 460 (*synth*)

Iino, N. *et al.*, *Carbohydr. Res.*, 1976, **51**, 223 (*synth*)

Claeysens, M. *et al.*, *Affinity Chromatogr. Proc. Int. Symp.*, 1977, 107; *CA*, **90**, 82708g

4-Aminophenyl xylopyranoside, 8CI

A-444

C₁₁H₁₅NO₅ 241.243

β -D-form [17306-95-5] Used as a carbohydrate ligand for preparing affinity adsorbents. Commercially available. Cryst. (EtOH). Mp 192-193°. $[\alpha]_D^{22}$ -41.7 (c, 1 in H₂O).

N-Ac: [17306-97-7]

C₁₃H₁₇NO₆ 283.28

Cryst. (MeOH). Mp 174-175°. $[\alpha]_D^{22}$ -32 (c, 1.0 in H₂O).

2,3,4-Tri-Ac: [17306-77-3]

C₁₇H₂₁NO₈ 367.355

Mp 154-155°. $[\alpha]_D^{22}$ -41.9 (c, 1.0 in CHCl₃).

N,2,3,4-tetra-Ac: [17453-88-2]

C₁₉H₂₃NO₉ 409.392

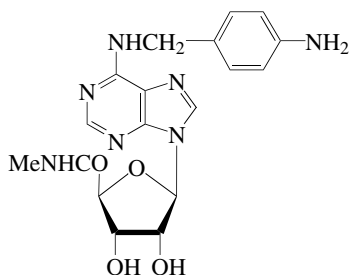
Mp 173-174°. $[\alpha]_D^{22}$ -41.6 (c, 2.0 in CHCl₃).

De Bruyne, C.K. *et al.*, *Carbohydr. Res.*, 1967, **4**, 102 (*synth*)

Shafizadeh, F. *et al.*, *Carbohydr. Res.*, 1974, **33**, 191

Schwabe, K. *et al.*, *Pharmazie*, 1975, **30**, 70

1-[6-[[[(4-Aminophenyl)methyl]amino]-9H-purin-9-yl]-1-deoxy-N-methyl- β -D-ribofuranuronamide, 9CI A-445
N⁶-(4-Aminobenzyl)adenosine-5'-N-methyluronamide. AB-MECA [152918-26-8]



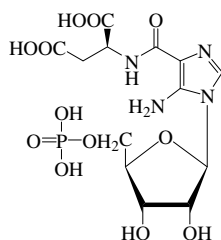
C₁₈H₂₁N₇O₄ 399.408

Adenosine A₃ selective receptor agonist. Mp 135° (dec.). Relat. to 1-[6-[[[(4-Amino-3-iodophenyl)methyl]amino]-9H-purin-9-yl]-1-deoxy-N-methyl- β -D-ribofuranuronamide.

Gallo-Rodriguez, C. *et al.*, *J. Med. Chem.*, 1994, **37**, 636-646 (*synth, pharmacol*)

N-(5-Amino-1- β -D-ribofuranosylimidazole-4-carbonyl)-L-aspartic acid 5'-phosphate A-446

N-[[[5-Amino-1-(5-O-phosphono- β -D-ribofuranosyl)-1H-imidazol-4-yl]carbonyl]aspartic acid, 9CI. N-[[[5-Amino-1- β -D-ribofuranosylimidazol-4-yl]carbonyl]-5'-(dihydrogen phosphate)-L-aspartic acid, 8CI [3031-95-6]



Absolute Configuration

C₁₃H₁₉N₄O₁₂P 454.286

Nucleotide accumulated in mutants of *E. coli* and *Salmonella typhimurium*.

Important purine precursor.

λ_{\max} 269 (ε 11 850), 244 nm (9 580) (H₂O). Undergoes the enzyme-catalysed inter-conversion SAICAR \rightleftharpoons AICAR + Fumarate. In the presence of the Bratton-Marshall reagents and on cooling produces a purple chromophore with λ_{\max} 550 nm.

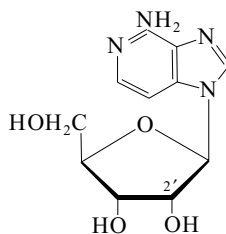
Di-Ba salt: $[\alpha]_D^{21}$ -26.1 (c, 1.5 in 0.1N HCl). Bratton, A.C. *et al.*, *J. Biol. Chem.*, 1939, **128**, 537

Lukens, L.N. *et al.*, *J. Biol. Chem.*, 1959, **234**, 1806

Burrows, I.E. *et al.*, *J.C.S. (C)*, 1968, 40 (*synth*)

Brox, L.W. *et al.*, *Can. J. Biochem.*, 1973, **51**, 1072

4-Amino-1-ribofuranosyl-1H-imidazo[4,5-c]pyridine, 9CI, 8CI A-447



C₁₁H₁₄N₄O₄ 266.256

β -D-form

3-Deazaadenosine

[6736-58-9]

Mp 229-231°. $[\alpha]_D^{27}$ -48.3 (c, 1.03 in H₂O). λ_{\max} 267-80 (ε 9 500), 262 (10 300) (pH 1); 265 nm (10 800) (pH 11).

2'-Deoxy: 3-Deaza-2'-deoxyadenosine

[78582-15-7]

C₁₁H₁₄N₄O₃ 250.257

Mp 206° dec. (215°). $[\alpha]_D^{20}$ -25.5 (c, 1 in DMF). pK_a 6.8 (25°, H₂O).

5'-Deoxy: 3-Deaza-5'-deoxyadenosine

[98858-09-4]

C₁₁H₁₄N₄O₃ 250.257

Cryst. +1H₂O. Mp 140°. $[\alpha]_D^{20}$ -31.9 (c, 0.5 in DMF).

[78582-17-9]

Rousseau, R.J. *et al.*, *Biochemistry*, 1966, **5**, 756 (*synth*)

Mizuno, Y. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 2011 (β -D-form, *synth*)

May, J.A. *et al.*, *Chem. Comm.*, 1973, 64 (*synth*)

Kitano, S. *et al.*, *Biochem. Biophys. Res. Commun.*, 1975, **64**, 996 (*pmr*)

Singh, P. *et al.*, *J.A.C.S.*, 1976, **98**, 825 (*cryst struct*)

Krenitsky, T.A. *et al.*, *J. Med. Chem.*, 1986, **29**, 1386 (*derivs*)

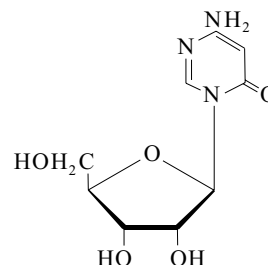
Seela, F. *et al.*, *Helv. Chim. Acta*, 1990, **73**, 1602; 1992, **75**, 1639 (*synth, pmr, cmr, 3-deaza-2'-dexoxyadenosine*)

Reddy, A.M. *et al.*, *J. Het. Chem.*, 1990, **27**, 1297 (*ms*)

Seratimouski, P. *et al.*, *Synthesis*, 1990, 757 (*synth, uv, pmr, ms, 3-deaza-2'-dexoxyadenosine*)

6-Amino-3-ribofuranosyl-4(3H)-pyrimidinone, 9CI, 8CI A-448

4-Amino-1-ribofuranosyl-6-pyrimidone



C₉H₁₃N₃O₅ 243.219

β -D-form [18645-81-3]

Inhibits bacteriostatic effect of Showdomycin, S-35 in *Escherichia coli*.

Cryst. (H₂O). Mp 237-239° dec. $[\alpha]_D^{26}$ -27.6 (c, 1.0 in DMF). λ_{\max} 257 (ε 7 300) (H₂O, pH 1), 257 (6 100) (pH 4), 257 nm (6 300) (pH 14).

2',3',5'-Tribenzoyl:

C₃₀H₂₅N₃O₈ 555.543

Mp 137-138°.

2',3',5'-Tribenzoyl, 4N-Ac:

C₃₂H₂₇N₃O₉ 597.58

Mp 143-147°. $[\alpha]_D^{25}$ -20.3 (c, 0.5 in CHCl₃).

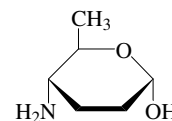
Prystaš, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 1813 (β -D-form, *synth*)

Winkley, M.W. *et al.*, *J.O.C.*, 1969, **34**, 431 (*synth, pmr*)

Doskocil, J. *et al.*, *Nucleic Acids Res.*, 1974, **1**, 491; *CA*, **82**, 165304h (*activity*)

4-Amino-2,3,4,6-tetradeoxy-erythro-hexose A-449

Tolyposamine



α -D-Pyranose-form

C₆H₁₃NO₂ 131.174

D-form

N,N-Di-Me: 2,3,4,6-Tetradeoxy-4-(dimethylamino)-D-erythro-hexose, 8CI.

Forosamine. Isomycamine

[18423-27-3]

C₈H₁₇NO₂ 159.228

Constit. of Foromacidin A, F-24 and its derivs.

Mp 60° (75°). Bp₂ 94-96°. $[\alpha]_D^{25}$ +86.1 (c, 0.9 in MeOH).

N,N,N-Tri-Me: [18423-34-2]

C₉H₂₀NO₂⁺ 174.262

Mp 180-182° (as iodide).

α -D-Pyranose-form

Me glycoside, N-Me: Methyl 2,3,4,6-tetradeoxy-4-(methylamino)- α -D-erythro-hexopyranoside

[79774-56-4]

C₈H₁₇NO₂ 159.228

Cryst. (MeOH/Et₂O/petrol). Mp 161°.

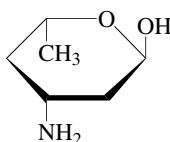
Me glycoside, N,N-di-Me: Methyl 2,3,4,6-tetradeoxy-(4-dimethylamino)- α -D-erythro-hexopyranoside. Methyl α -D-forosaminide
[28369-13-3]
C₉H₁₉NO₂ 173.255
Volatile liq.

 α -L-Pyranose-form

N-(Trifluoroacetyl):
C₈H₁₂F₃NO₃ 227.183
Mp 112-113°. [α]_D²⁵ +28.9 (c, 1.5 in CHCl₃). [α]_D²⁵ +10 (c, 1.3 in H₂O).
Stevens, C.L. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 225 (synth, rev)
Dyong, I. *et al.*, *Angew. Chem., Int. Ed.*, 1976, **15**, 302 (Forosamine, synth)
Baer, H.H. *et al.*, *Carbohydr. Res.*, 1979, **77**, C12-C15; 1981, **94**, 43-55 (α -D-Me pyr derivs, α -L-pyr N-trifluoroacetyl)
Malik, A. *et al.*, *J.C.S. Perkin 1*, 1983, 2103-2109 (Forosamine, synth)
Ono, M. *et al.*, *Heterocycles*, 1999, **51**, 1503-1508 (synth, Forosamine)

3-Amino-2,3,4,6-tetradeoxy-threo-hexose A-450

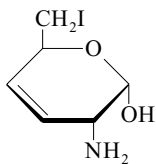
3-Aminotetrahydro-6-methyl-2H-pyran-2-ol, 9CI. 4-Deoxydaunosamine



C₆H₁₃NO₂ 131.174
Sugar component of, 4'-Deoxy.

 α -L-Pyranose-form

N-(Trifluoroacetyl): [73174-68-2]
C₈H₁₂F₃NO₃ 227.183
Mp 166°. [α]_D²⁵ -85 → -47 (20h) (c, 0.18 in CHCl₃).
Me glycoside, N-(trifluoroacetyl): [73113-99-2]
C₉H₁₄F₃NO₃ 241.21
Long needles. Mp 123-123.5°. [α]_D²⁵ -128.8 (c, 0.7 in CHCl₃).
Baer, H.H. *et al.*, *Carbohydr. Res.*, 1979, **77**, C12-C15

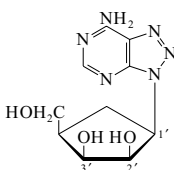
2-Amino-2,3,4,6-tetradeoxy-6-iodo-erythro-hex-3-enose A-451

C₆H₁₀INO₂ 255.055

 α -D-Pyranose-form

Benzyl glycoside, N-benzoyloxycarbonyl: Benzyl 2-benzoyloxycarbonylamino-2,3,4,6-tetradeoxy-6-iodo- α -D-erythro-hex-3-enopyranoside
[94795-48-9]
C₂₁H₂₂INO₄ 479.314

Multifunctional carbohydrate synthon.
Cryst. (EtOH). Mp 139-140° (129-130°). [α]_D²³ +22 (c, 0.8 in CHCl₃). [α]_D²² -151 (c, 1 in CHCl₃).
Garegg, P.J. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 189 (synth, cmr)
Pakulski, Z. *et al.*, *Carbohydr. Res.*, 1990, **205**, 410 (α -D-benzoyloxycarbonyl, pmr, cmr)

3-(7-Amino-3H-1,2,3-triazolo[4,5-d]pyrimidin-3-yl)-5-(hydroxymethyl)-1,2-cyclopentenediol, 9CI A-452

C₁₀H₁₄N₆O₃ 266.259

Nucleoside-type numbering shown. Carbocyclic nucleoside showing antineoplastic activity.

(1'RS,2'RS,3'SR,4'RS)-form

all-cis-form
[72346-01-1]
Powder (H₂O). Mp 244-246° dec.

(1'RS,2'SR,3'RS,4'RS)-form [58342-69-1]

Cryst. (H₂O). Mp 278° dec.

(1'RS,2'SR,3'SR,4'RS)-form

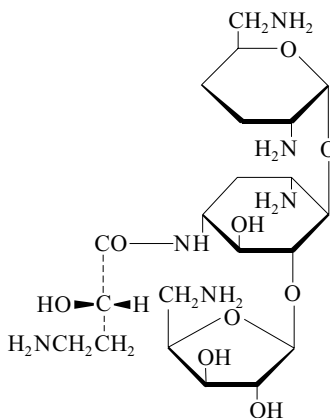
Carbocyclic 8-azaadenosine
[91382-85-3]
Powder (H₂O). Mp 254-256° dec.

[69979-50-6, 78738-55-3]

Bennett, L.L. *et al.*, *Ann. N.Y. Acad. Sci.*, 1975, **255**, 342; *CA*, **84**, 84274n (pharmacol)
Vince, R. *et al.*, *J.O.C.*, 1980, **45**, 531 (synth, ir, pmr)
Vince, R. *et al.*, *J. Med. Chem.*, 1984, **27**, 1358 (synth, ir, pmr, ms)

5''-Amino-3',4,5''-trideoxybutirosin A A-453

[56182-07-1]

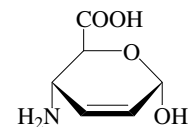


C₂₁H₄₂N₆O₉ 522.598

Aminoglycoside antibiotic. Semisynthetic.
Powder. Mp 175° (dec.). [α]_D²¹ +12.8

(c, 1.09 in H₂O). Log P -6.51 (uncertain value) (calc).

Woo, P.W.K. *et al.*, *J. Antibiot.*, 1975, **28**, 522 (synth, props)
Saeki, H. *et al.*, *J. Antibiot.*, 1975, **28**, 530 (synth, pmr)

4-Amino-2,3,4-trideoxy-erythro-hex-2-enuronic acid A-454

α -Pyranose-form

C₆H₉NO₄ 159.141

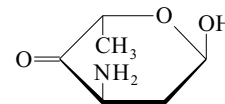
D-form

Constit. of the nucleoside antibiotic Blasticidin S.

 α -D-Pyranose-form

Me glycoside: Methyl 4-amino-2,3,4-trideoxy- α -D-erythro-hex-2-enopyranosiduronic acid, 8CI
[28153-97-1]
C₇H₁₁NO₄ 173.168
Pale yellow cryst. + 1/2 H₂O (Me₂CO aq.). Mp 270° dec. [α]_D²³ +30.5 (c, 0.3 in H₂O). Sl. hygroscopic.

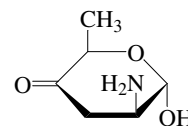
Fox, J.J. *et al.*, *Tet. Lett.*, 1966, 897 (struct)
Watanabe, K.A. *et al.*, *Tetrahedron*, 1970, **26**, 3883 (α -D-pyr Me gly)

3-Amino-2,3,6-trideoxy-erythro-hexopyranos-4-ulose A-455

C₆H₁₁NO₃ 145.158

 α -L-form

Me glycoside, N-(trifluoroacetyl): [67758-47-8]
C₉H₁₂F₃NO₄ 255.193
Cryst. Mp 116-117°. [α]_D²⁴ -227 (c, 0.53 in CCl₄).
Sztaricskai, F. *et al.*, *Carbohydr. Res.*, 1978, **65**, 193 (α -L-Me gly deriv, ir, ms)

2-Amino-2,3,6-trideoxy-threo-hexopyranos-4-ulose A-456

α -D-form

C₆H₁₁NO₃ 145.158

 α -D-form

Me glycoside, N-Ac: [24905-56-4]
C₉H₁₅NO₄ 201.222
Cryst. (EtOAc/hexane). Mp 125-126°. [α]_D³² +148 (c, 0.5 in CHCl₃).

Me glycoside, N-Ac, oxime: [24905-57-5]
C₉H₁₆N₂O₄ 216.236
Needles (EtOAc). Mp 155-159°. [α]_D²⁸
+67 (c, 1.0 in CHCl₃).

 α -L-form

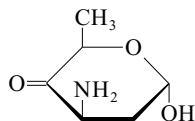
Me glycoside, N-Ac: [64880-56-4]
Cryst. (Et₂O). Mp 114-116°. [α]_D²⁰ -122
(c, 1.44 in CHCl₃).

Kitahara, K. *et al.*, *Agric. Biol. Chem.*, 1969,
33, 748 (α -D-Me gly deriv, ir)

Florent, J.C. *et al.*, *Carbohydr. Res.*, 1977, 56,
301 (α -L-Me gly deriv, ir, pmr)

3-Amino-2,3,6-trideoxy-threo-hexopyranose-4-ulose

A-457



C₆H₁₁NO₃ 145.158

D-form

Me glycoside, N-benzoyloxycarbonyl:
[83532-11-0]

C₁₅H₁₉NO₅ 293.319
Cryst. (Et₂O/hexane). Mp 73-75°. [α]_D²⁵
+88.5 (CHCl₃).

Me glycoside, N-phthalimide: [95968-27-7]
C₁₅H₁₅NO₅ 289.287
Cryst. (MeOH). Mp 133-135°. [α]_D²⁵
+96.4 (CHCl₃).

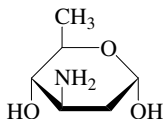
Me glycoside, N-(trifluoroacetyl): [56354-07-5]
C₉H₁₂F₃NO₄ 255.193
Syrup.

Penco, S. *et al.*, *Process Biochem.*, 1980, 15, 12;
C.A. 93, 239831d (α -D-Me gly N-trifluoroacetyl)

Kondo, Y. *et al.*, *Carbohydr. Res.*, 1984, 135,
167 (α -D-Me gly N-benzoyloxycarbonyl, α -D-Me gly N-phthalimide, ir, pmr)

3-Amino-2,3,6-trideoxy-arabino-hexose
Acosamine

A-458



C₆H₁₃NO₃ 147.174

D-form [23089-59-0]

Isol. from Sporaviridin, S-71.
Cryst. (2-propanol/Et₂O) (as hydrochloride).
Mp 168-170° dec. (hydrochloride). CAS
no. refers to hydrochloride.

N-Ac: 3-Acetamido-2,3,6-trideoxy-D-arabino-hexopyranose
[23089-58-9]

C₈H₁₅NO₄ 189.211
Cryst. (2-propanol/Et₂O). Mp 199-201°
dec. [α]_D +30.4 \rightarrow +18.3 (c, 0.8 in H₂O).

 α -D-Pyranose-form

Me glycoside: Methyl 3-amino-2,3,6-trideoxy- α -D-arabino-hexopyranoside
C₇H₁₅NO₃ 161.2
Cryst. (Et₂O/MeOH). Mp 128.5-129.5°.
[α]_D²⁵ +142.8 (MeOH).

Me glycoside, N-Ac: Methyl 3-acetamido-2,3,6-trideoxy- α -D-arabino-hexopyranoside
[17016-62-5]
C₉H₁₇NO₄ 203.238
Cryst. (MeOH/Et₂O/petrol). Mp 158°.
[α]_D +137 (c, 1.55 in MeOH).

 β -D-Pyranose-form

Me glycoside, N-Ac: Methyl 3-acetamido-2,3,6-trideoxy- β -D-arabino-hexopyranoside
[23089-57-8]
C₉H₁₇NO₄ 203.238
Cryst. (EtOH/petrol). Mp 224-226°.
[α]_D -57.6 (c, 0.95 in H₂O).

L-form [41094-24-0]

Component of Actinoidin and Sporaviridin, S-71.

Powder (as hydrochloride). [α]_D²¹ -18.3
(c, 0.43 in H₂O). CAS no. refers to
hydrochloride.

N-Ac: 3-Acetamido-2,3,6-trideoxy-L-arabino-hexose
C₈H₁₅NO₄ 189.211
Syrup.

4-Me: 3-Amino-2,3,6-trideoxy-4-O-methyl-L-arabino-hexose, 9CI. Actinosamine
[41094-25-1]
C₇H₁₅NO₃ 161.2

Isol. from Actinoidin.

4-Me, N-Ac: 3-Acetamido-2,3,6-trideoxy-4-O-methyl-L-arabino-hexose
C₉H₁₇NO₄ 203.238
Cryst. (MeOH/Et₂O). [α]_D²⁰ -49 (c, 0.3 in MeOH).

 α -L-Pyranose-form

Me glycoside: Methyl 3-amino-2,3,6-trideoxy- α -L-arabino-hexopyranoside
[54623-23-3]
C₇H₁₅NO₃ 161.2
Cryst. (MeOH/Et₂O). Mp 132-133°.
[α]_D²⁶ -145.1 (c, 0.61 in MeOH).

Me glycoside; hydrochloride: [54623-24-4]
Cryst. (EtOH/Et₂O). Mp 196-198° dec.
[α]_D²⁵ -115.5 (c, 0.5 in MeOH).

Me glycoside, N-Ac: Methyl 3-acetamido-2,3,6-trideoxy- α -L-arabino-hexopyranoside. Methyl N-acetylactosaminide
[40879-86-5]
Cryst. (EtOH/Et₂O). Mp 159-160°. [α]_D²⁵
-148 (c, 0.4 in MeOH).

Me glycoside, N,O-di-Ac: Methyl 3-acetamido-4-O-acetyl-2,3,6-trideoxy- α -L-arabino-hexopyranoside
[40879-83-2]
C₁₁H₁₉NO₅ 245.275
Mp 159°. [α]_D²⁰ -191 (c, 0.54 in MeOH).

Me glycoside, N-benzoyl: Methyl 3-benzamido-2,3,6-trideoxy- α -L-arabino-hexopyranoside
[54656-60-9]
C₁₄H₁₉NO₄ 265.308
Cryst. (MeOH/Et₂O). Mp 204-206°.
[α]_D²⁵ -92 (c, 0.52 in MeOH).

Me glycoside, 4-Me, N-Ac: Methyl 3-acetamido-2,3,6-trideoxy-4-O-methyl- α -L-arabino-hexopyranoside. Methyl N-acetylactosaminide
[40879-81-0]
C₁₀H₁₉NO₄ 217.264
Cryst. Mp 188-190°. [α]_D²¹ -150 (c, 0.5 in MeOH).

Richardson, A.C. *et al.*, *Carbohydr. Res.*, 1967,
4, 422 (α -D-Me pyr N-Ac)

Baer, H.H. *et al.*, *Can. J. Chem.*, 1969, 47, 89
(D-pyr-form, synth, D-pyr-N-Ac, β -D-Me pyr N-Ac)

Lomakina, N.N. *et al.*, *Khim. Prir. Soedin.*, 1973, 9, 101; *Chem. Nat. Compd. (Engl. Transl.)*, 1973, 9, 90 (struct, Acosamine, Actinosamine)

Gupta, S.K. *et al.*, *Carbohydr. Res.*, 1974, 37,
381 (α -L-Me pyr, α -L-Me pyr N-Ac, α -L-Me pyr N-benzoyl)

Lee, W.W. *et al.*, *J. Med. Chem.*, 1975, 18, 768
(L-form, struct, α -L-Me pyr, α -L-Me pyr N-Ac, α -L-Me pyr N-benzoyl, α -L-Me pyr N-Ac Me)

Harada, K.-L. *et al.*, *Carbohydr. Res.*, 1979, 75,
C17 (α -D-pyr, isol, α -D-Me-pyr N-Ac)

Pelyvás, I. *et al.*, *Carbohydr. Res.*, 1980, 84, C5
(synth)

Wovkulich, P.M. *et al.*, *J.A.C.S.*, 1981, 103,
3956 (L-form, synth, bibl)

Stewart, A.O. *et al.*, *Carbohydr. Res.*, 1984, 135,
167 (synth)

Suami, T. *et al.*, *J. Carbohydr. Chem.*, 1984, 3,
429-441 (synth)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1985,
136, 419 (α -L-Me pyr N-Ac synth)

Pelyvás, I. *et al.*, *Carbohydr. Res.*, 1986, 146,
193 (L-form, synth)

Hauser, F.M. *et al.*, *Chem. Rev.*, 1986, 86, 35
(rev)

Ha, D.C. *et al.*, *Tet. Lett.*, 1987, 28, 4489
(α -L-Me pyr N-benzoyl, synth)

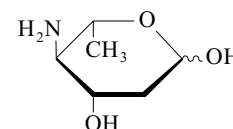
Menzel, A. *et al.*, *Synthesis*, 1999, 1691-1702
(α -L-Me pyr, α -L-Me pyr di-Ac)

Renneberg, B. *et al.*, *Carbohydr. Res.*, 2000, 329,
861-872 (synth)

Ginesta, X. *et al.*, *Org. Lett.*, 2004, 2003, 5-3001
(synth)

4-Amino-2,4,6-trideoxy-arabino-hexose

A-459



C₆H₁₃NO₃ 147.174

L-form

3-Me: 4-Amino-2,4,6-trideoxy-3-O-methyl-arabino-hexose. Holantosamine. 4-Amino-4-deoxyoleandrose
[68024-70-4]
C₇H₁₅NO₃ 161.2

Constit. of Holarosine A, Holantosines C and D (see Holantogenin and Anhydroholantogenin), isol. from the leaves of *Holarrhena antidysenterica*.

 α -L-Pyranose-form

Me glycoside, 3-Me, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-3-O-methyl- α -L-arabino-hexopyranoside
[33778-39-1]
C₁₀H₁₉NO₄ 217.264
Mp 212°. [α]_D²⁰ +41 (c, 1.0 in CHCl₃).

β -L-Pyranose-form

Me glycoside, 3-Me, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-3-O-methyl- β -L-arabino-hexopyranoside
[33778-40-4]
Mp 159-161°. [α]_D²⁰ -107 (c, 1.0 in CHCl₃).

 β -DL-Pyranose-form

Me glycoside, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-DL-arabino-hexopyranoside. Methyl DL-desmethylholantosaminide
[103773-71-3]
C₉H₁₇NO₄ 203.238
Solid. Mp 175-178°.

Me glycoside, 3-tosyl, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-3-O-tosyl- β -DL-arabino-hexopyranoside
[103703-26-0]
C₁₆H₂₃NO₆S 357.427
Cryst. (CH₂Cl₂/petrol). Anomeric config. not certain. It is not stated in the paper and is difficult to interpret from the drawing of the crystal struct. determination.

Khuong-Huu, Q. *et al.*, *Bull. Soc. Chim. Fr.*, 1971, 864 (isol)

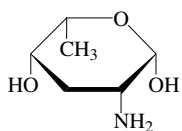
Goutarel, R. *et al.*, *Carbohydr. Res.*, 1972, **24**, 297 (isol, pmr)

Fronza, G. *et al.*, *Carbohydr. Res.*, 1985, **136**, 115 (synth)

Welch, J.T. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 421-427 (*Me DL-gly N-Ac, Me DL-gly tosyl N-Ac, cryst struct*)

2-Amino-2,3,6-trideoxy-lyxo-hexose

A-460

 β -L-Pyranose-formC₆H₁₃NO₃ 147.174 **β -L-Pyranose-form**

Me glycoside, N-Ac: Methyl 2-acetamido-2,3,6-trideoxy- β -L-lyxo-hexopyranoside
C₉H₁₇NO₄ 203.238
Cryst. (Me₂CO/petrol). Mp 130-132° (prior softening) (107-100°). [α]_D +96 (c, 1 in CHCl₃). [α]_D²⁷ +31 (c, 0.78 in CHCl₃). The two preparations with different phys. props. had identical pmr spectra.

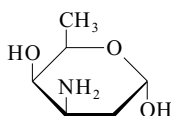
Me glycoside, N,4-di-Ac: Methyl 2-acetamido-4-O-acetyl-2,3,6-trideoxy- β -L-lyxo-hexopyranoside
C₁₁H₁₉NO₅ 245.275
Syrup. No phys. props. reported.

Gallagher, T.F. *et al.*, *Carbohydr. Res.*, 1983, **116**, 227 (synth, β -L-Me pyr N-Ac)

Abuaan, M.A. *et al.*, *Carbohydr. Res.*, 1984, **132**, 51 (synth, deriv)

3-Amino-2,3,6-trideoxy-lyxo-hexose

A-461

Daunosamine α -D-Pyranose-formC₆H₁₃NO₃ 147.174**D-form**

Hydrolysis prod. of Daunomycin.

N-Ac: 3-Acetamido-2,3,6-trideoxy-D-lyxo-hexose

[23089-62-5]

C₈H₁₅NO₄ 189.211

Cryst. (EtOAc). Mp 145-146°. [α]_D²³ +101 → +94.2 (c, 0.5 in H₂O).

N-Benzoyl: 3-Benzamido-2,3,6-trideoxy-D-lyxo-hexose

C₁₃H₁₇NO₄ 251.282Mp 151°. [α]_D +110.5 (EtOH). **α -D-Pyranose-form**

Me glycoside, 3,4-di-Ac: Methyl 3-acetamido-4-O-acetyl-2,3,6-trideoxy- α -D-lyxo-hexopyranoside

[6605-26-1]

C₁₁H₁₉NO₅ 245.275

Cryst. (EtOAc/petrol). Mp 189-190°. [α]_D +186 (CHCl₃).

L-form [26548-47-0]

A component of Adriamycin, A-58, Daunomycin, Carminomycin I and Carminomycin II.

Hydrochloride: [19196-51-1]

Mp 168° dec. (156-158°). [α]_D²⁰ -54.5 (H₂O). [α]_D²¹ -63.2 (c, 1.0 in H₂O).

N-Benzoyl: 3-Benzamido-2,3,6-trideoxy-L-lyxo-hexose

[17016-65-8]

C₁₃H₁₇NO₄ 251.282

Cryst. (Me₂CO). Mp 154-156°. [α]_D -107.5 (EtOH).

 α -L-Pyranose-form*N-Ac:*

[57918-59-9, 129172-05-0]

C₈H₁₅NO₄ 189.211

[α]_D²⁰ -73.4 (c, 1 in H₂O). Opt. rotn. data refers to 1:1.6 mixt. of α : β anomers.

Me glycoside: Methyl 3-amino-2,3,6-trideoxy- α -L-lyxo-hexopyranoside

[32385-07-2]

C₇H₁₅NO₃ 161.2

Cryst. (Et₂O). Mp 114-115° (109-110°). [α]_D²⁰ -197.4 (c, 1.0 in MeOH). [α]_D -210 (CHCl₃).

Me glycoside, hydrochloride: Mp 194-197° (188-189°). [α]_D²¹ -135.8 (c, 1.0 in MeOH).

Me glycoside, 3,4-di-Ac: Methyl 3-acetamido-4-O-acetyl-2,3,6-trideoxy- α -L-lyxo-hexopyranoside

[18981-63-0]

C₁₁H₁₉NO₅ 245.275

Mp 187-188° Mp 176-178°. [α]_D -204 (CHCl₃). [α]_D -130 (CHCl₃).

Me glycoside, N-benzoyl: Methyl 3-benzamido-2,3,6-trideoxy- α -L-lyxo-hexopyranoside

C₁₄H₁₉NO₄ 265.308

Mp 160-162° (155-156°). [α]_D -167 (c, 0.4 in MeOH). [α]_D²¹ -189.4 (c, 1.0 in CHCl₃).

Me glycoside, 3,4-dibenzoyl: Methyl 3-benzamido-4-O-benzoyl-2,3,6-trideoxy- α -L-lyxo-hexopyranoside

C₂₁H₂₃NO₅ 369.416

Mp 143-144°. [α]_D²¹ -222.8 (c, 1.0 in CHCl₃).

DL-form

Hydrochloride: Mp 148-150°.

Arcamone, F. *et al.*, *J.A.C.S.*, 1964, **86**, 5335 (struct, L-N-benzoyl, α -L-Me pyr di-Ac)

Richardson, A.C. *et al.*, *Chem. Comm.*, 1965, 627 (D-N-benzoyl, α -D-Me pyr di-Ac)

Marsh, J.P. *et al.*, *Chem. Comm.*, 1967, 973 (L-form, α -L-Me pyr, α -L-Me pyr di-Ac)

Baer, H.H. *et al.*, *Can. J. Chem.*, 1969, **47**, 89 (D-N-Ac, α -D-Me pyr di-Ac)

Vigevani, A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 321 (ms, α -L-Me pyr N-benzoyl)

Medgyes, G. *et al.*, *Carbohydr. Res.*, 1981, **92**, 225 (synth)

Fronza, G. *et al.*, *J.C.S. Perkin 1*, 1982, 885 (cmr)

Grethe, G. *et al.*, *J.O.C.*, 1983, **48**, 5309; 5315 (L-form, α -L-Me pyr)

Danishesky, S.J. *et al.*, *J.A.C.S.*, 1985, **107**, 1246 (total synth, DL-form)

Pauls, H.W. *et al.*, *Carbohydr. Res.*, 1986, **150**, 111 (synth)

Hauser, F.M. *et al.*, *Chem. Rev.*, 1986, **86**, 35 (rev)

Gurjar, M.K. *et al.*, *Tet. Lett.*, 1987, **28**, 1327 (synth, L-form)

Kitta, Y. *et al.*, *Tet. Lett.*, 1987, **28**, 1431 (synth, L-N-benzoyl)

Sammes, P.G. *et al.*, *J.C.S. Perkin 1*, 1988, 111 (L-form, α -L-Me pyr N-benzoyl, α -L-Me pyr dibenzoyl, α -L-Me pyr)

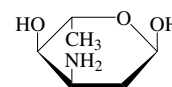
Renneberg, B. *et al.*, *Carbohydr. Res.*, 2000, **329**, 861-872 (synth)

Effenberger, F. *et al.*, *Tetrahedron*, 2000, **11**, 1085-1095 (L-form, N-Ac, pmr, synth)

Ginesta, X. *et al.*, *Org. Lett.*, 2003, **5**, 3001-3004 (synth)

3-Amino-2,3,6-trideoxy-ribo-hexose

A-462

Ristosamine α -L-Pyranose-formC₆H₁₃NO₃ 147.174**L-form** [51869-30-8]

[51869-31-9]

Component of Actaplanin, Ristomycin A and other antibiotics.

Mp 118-119° (as picrate).

N-Benzoyl: 3-Benzamido-2,3,6-trideoxy-L-ribo-hexose

[51869-37-5]

C₁₃H₁₇NO₄ 251.282

Cryst. (H₂O). Mp 131-133°. [α]_D²³ -14 → -11 (c, 0.7 in EtOH).

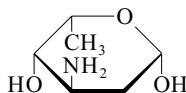
α -L-form

Me glycoside, N-(trichloroacetyl): Methyl 3-trichloroacetamido-2,3,6-trideoxy- α -L-ribo-hexopyranoside
[83803-07-0]
 $C_9H_{14}Cl_3NO_4$ 306.572
Light yellow solid. Mp 94-97°.

[51869-32-0]

Umezawa, S. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1974, **30**, 111 (rev)
Bognar, R. *et al.*, *J.O.C.*, 1974, **39**, 2971 (*L*-form, struct, *L*-N-benzoyl)
Sztaricskai, F. *et al.*, *Tet. Lett.*, 1975, 1111 (*L*-N-benzoyl)
Suami, T. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 429-441 (synth)
Pauls, W. *et al.*, *Carbohydr. Res.*, 1986, **150**, 111 (synth)
Hauser, F.M. *et al.*, *J.O.C.*, 1986, **51**, 50 (synth, α -L-Me pyr N-trichloroacetyl)
Renneberg, B. *et al.*, *Carbohydr. Res.*, 2000, **329**, 861-872 (synth)
Ginesta, X. *et al.*, *Org. Lett.*, 2003, **5**, 3001-3004 (synth)

3-Amino-2,3,6-trideoxy-xylo- A-463
hexose
3-Epidaunosamine

 $C_6H_{13}NO_3$ 147.174 **α -L-Pyranose-form**

N-Ac: 3-Acetamido-2,3,6-trideoxy-L-xylo-hexopyranose
[94926-08-6]
 $C_8H_{15}NO_4$ 189.211
Cryst. Mp 120-122°. $[\alpha]_D^{21}$ -12.4 (c, 0.86 in MeOH) (equilib.).

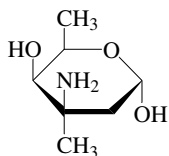
 β -L-Pyranose-form

Me glycoside, N,N-di-Me: Methyl 2,3,6-trideoxy-3-dimethylamino- β -L-xylo-hexopyranoside
[85373-11-1]
 $C_9H_{19}NO_3$ 189.254
Pale yellow oil. $[\alpha]_D^{25}$ +48.1 (c, 1.0 in MeOH).

[100206-45-9, 100206-46-0]

Iyengar, B.S. *et al.*, *Carbohydr. Res.*, 1986, **157**, 95
Hauser, F.M. *et al.*, *Chem. Rev.*, 1986, **86**, 35 (rev)
Herczegh, P. *et al.*, *Tet. Lett.*, 1990, **31**, 1195 (*Ac*, synth, pmr)
Renneberg, B. *et al.*, *Carbohydr. Res.*, 2000, **329**, 861-872 (synth)

3-Amino-2,3,6-trideoxy-3-C- A-464
methyl-lyxo-hexose, 9CI

 α -D-Pyranose-form $C_7H_{15}NO_3$ 161.2 **α -D-Pyranose-form**

Me glycoside, N-Ac: Methyl 3-acetamido-2,3,6-trideoxy-3-C-methyl- α -D-lyxo-hexopyranoside
[85687-28-1]
 $C_{10}H_{19}NO_4$ 217.264
Cryst. (Et₂O/CHCl₃/petrol). Mp 132-133.5°. $[\alpha]_D$ +115 (c, 0.5 in CHCl₃).

 α -L-form Vancosamine

[36480-36-1]
Aminosugar from Vancomycin.

 α -L-Pyranose-form

Me glycoside: Methyl 3-amino-2,3,6-trideoxy-3-C-methyl- α -L-lyxo-hexopyranoside. Methyl α -vancosaminide
[37091-12-6]
 $C_8H_{17}NO_3$ 175.227
 $[\alpha]_D^{15}$ -118 (c, 0.09 in MeOH).

Me glycoside, N,O-dibenzoyl: Methyl 3-benzamido-4-O-benzoyl-2,3,6-trideoxy-3-C-methyl- α -L-lyxo-hexopyranoside
[37091-13-7]
 $C_{22}H_{25}NO_5$ 383.443
Needles (Et₂O/petrol). Mp 168-169°. $[\alpha]_D^{22}$ -191 (c, 0.11 in MeOH).

Et glycoside, N-benzoyl: Ethyl 3-benzamido-2,3,6-trideoxy-3-C-methyl- α -L-lyxo-hexopyranoside
[37091-17-1]
 $C_{16}H_{23}NO_4$ 293.362
 $[\alpha]_D^{15}$ -137 (c, 0.1 in MeOH).

Et glycoside, N,O-dibenzoyl: Ethyl 3-benzamido-4-O-benzoyl-2,3,6-trideoxy-3-C-methyl- α -L-lyxo-hexopyranoside
[37091-15-9]
 $C_{23}H_{27}NO_5$ 397.47
Needles (Et₂O/petrol). Mp 131-133°. $[\alpha]_D^{25}$ -179 (c, 0.27 in MeOH).

 β -L-Pyranose-form

Me glycoside: Methyl 3-amino-2,3,6-trideoxy-3-C-methyl- β -L-lyxo-hexopyranoside. Methyl β -L-vancosaminide
[172722-46-2]
 $C_8H_{17}NO_3$ 175.227
Viscous gum. $[\alpha]_D^{20}$ +26 (c, 0.7 in CHCl₃).

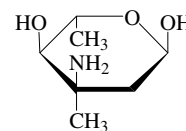
Me glycoside, N,O-dibenzoyl: Methyl 3-benzamido-4-O-benzoyl-2,3,6-trideoxy-3-C-methyl- β -L-lyxo-hexopyranoside
[37091-14-8]
 $C_{22}H_{25}NO_5$ 383.443
Gum. $[\alpha]_D^{22}$ -64 (c, 0.14 in MeOH).

Et glycoside, N,O-dibenzoyl: Ethyl 3-benzamido-4-O-benzoyl-2,3,6-trideoxy-3-C-methyl- β -L-lyxo-hexopyranoside
[37091-16-0]
 $C_{23}H_{27}NO_5$ 397.47
Needles (Et₂O/petrol). Mp 97-99°. $[\alpha]_D^{25}$ -82 (c, 0.24 in MeOH).

Lukacs, G. *et al.*, *Bull. Soc. Chim. Fr.*, 1972, 3995 (cmr)
Smith, R.M. *et al.*, *Chem. Comm.*, 1972, 361 (isol, dibenzoyl derivs)
Weringa, W.D. *et al.*, *J.C.S. Perkin 1*, 1972, 443 (struct, pmr)
Johnson, A.W. *et al.*, *J.C.S. Perkin 1*, 1972, 2153 (isol, struct, α -L-Me pyr, α -L-Et pyr N-benzoyl, dibenzoyl derivs)
Ahmad, H.I. *et al.*, *Carbohydr. Res.*, 1981, **93**, 288 (synth, derivs)
Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1982, **110**, 207 (α -D-Me pyr N-Ac)

Greven, R. *et al.*, *Carbohydr. Res.*, 1995, **275**, 83-93 (β -L-Me pyr, synth)
Smith, G.R. *et al.*, *Carbohydr. Res.*, 2000, **323**, 208-212 (α -L-Me pyr, synth, pmr, cmr)

3-Amino-2,3,6-trideoxy-3-C- A-465
methyl-ribo-hexose, 9CI
Avidinosamine

 α -L-Pyranose-form $C_7H_{15}NO_3$ 161.2 **α -L-form**

Component of Avidinorubicin.

 α -L-Pyranose-form

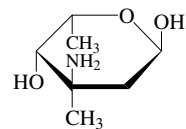
Me glycoside: Methyl 3-amino-2,3,6-trideoxy-3-C-methyl- α -L-ribo-hexopyranoside
[98501-52-1]
 $C_8H_{17}NO_3$ 175.227
Cryst. (Et₂O/pentane). Mp 99-101°. $[\alpha]_D^{25}$ -181 (c, 0.97 in CHCl₃).

Me glycoside, N-Ac: $C_{10}H_{19}NO_4$ 217.264
Cryst. (EtOAc/hexane). Mp 133-135°. $[\alpha]_D$ -26 (c, 1.7 in CHCl₃).

[83158-18-3, 83212-40-2]

Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1983, 2277-2280 (synth)
Giuliano, R.M. *et al.*, *Carbohydr. Res.*, 1986, **158**, 249-252 (synth, pmr)
Aoki, M. *et al.*, *J. Antibiot.*, 1991, **44**, 635-645 (isol, ir, cmr, pmr, ms)
Greven, R. *et al.*, *J.O.C.*, 1993, **58**, 3742-3747 (synth, ir, pmr, cmr)

3-Amino-2,3,6-trideoxy-3-C- A-466
methyl-xylo-hexose, 9CI

 α -L-Pyranose-form $C_7H_{15}NO_3$ 161.2 **α -L-Pyranose-form** [74966-73-7]

Obt. by methanolysis of Antibiotic A 35512 with 1.5M HCl.
N,4-Dibenzoyl: 3-Benzamido-4-O-benzoyl-2,3,6-trideoxy-3-C-methyl- α -L-xylo-hexopyranoside
 $C_{21}H_{23}NO_5$ 369.416
Cryst. (petrol/EtOAc). Mp 184-186°. $[\alpha]_D^{25}$ -165.2 (c, 1.0 in MeOH).

 α -L-Pyranose-form

Me glycoside: Methyl 3-amino-2,3,6-trideoxy-3-C-methyl- α -L-xylo-hexopyranoside, 9CI
[74966-74-8]
 $C_8H_{17}NO_3$ 175.227
Mp 123-125°. $[\alpha]_D^{25}$ -52.4 (c, 1.0 in MeOH).

Me glycoside, N-benzoyl: Methyl 3-benzamido-2,3,6-trideoxy-3-C-methyl- α -L-xylo-hexopyranoside
[74966-76-0]

C₁₅H₂₁NO₄ 279.335

Cryst. (Et₂O/petrol). Mp 112-113°. [α]_D²⁵ -150 (c, 2 in MeOH).

Me glycoside, N,4-dibenzoyl: Methyl 3-benzamido-4-O-benzoyl-2,3,6-trideoxy-3-C-methyl- α -L-xylo-hexopyranoside
[75044-07-4]

C₂₂H₂₅NO₅ 383.443

Cryst. (petrol/Et₂O). Mp 178-179.5°. [α]_D²⁵ -191 (c, 1.0 in MeOH).

β -L-Pyranose-form

Me glycoside, N,4-dibenzoyl: Methyl 3-benzamido-4-O-benzoyl-2,3,6-trideoxy-3-C-methyl- β -L-xylo-hexopyranoside
[75044-08-5]

C₂₂H₂₅NO₅ 383.443

Cryst. (Et₂O/petrol). Mp 171-174°. [α]_D²⁵ -91.5 (c, 1 in MeOH).

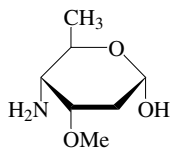
Debono, M. *et al.*, *J. Antibiot.*, 1980, **33**, 1407 (isol)

Debono, M. *et al.*, *J.O.C.*, 1980, **45**, 4685 (isol, struct, pmr, cd, derivs)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1982, **105**, C1 (synth)

4-Amino-2,4,6-trideoxy-3-O-methyl-ribo-hexose A-467

Holosamine



α -D-Pyranose-form

C₇H₁₅NO₃ 161.2

β -form

Constit. of the steroidal cardiac glycoside Holantosine B. The 4-methylamino deriv. is a constit. of the steroidal cardiac glycosides Holacurtin and Mitiphylline.

α -D-Pyranose-form

Me glycoside, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-3-O-methyl- α -D-ribo-hexopyranoside, 8CI
[25941-00-8]

C₁₀H₁₉NO₄ 217.264

Cryst. (Et₂O). Mp 155-156°. [α]_D²⁰ +205 (c, 1.0 in CHCl₃).

Me glycoside, N-Me, N-Ac: [25878-55-1]

C₁₁H₂₁NO₄ 231.291

Cryst. (Et₂O). Mp 80-82°. [α]_D²⁰ +273 (c, 1.0 in CHCl₃).

β -D-Pyranose-form

Me glycoside, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-3-O-methyl- β -D-ribo-hexopyranoside
[28708-14-7]

C₁₀H₁₉NO₄ 217.264

Cryst. (Me₂CO/hexane). Mp 159-163°. [α]_D²⁰ +35 (c, 1.0 in CHCl₃).

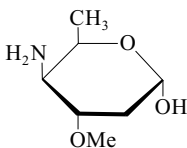
Janot, M.M. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1968, **266**, 388; **267**, 1050 (β -D-pyr N-Me, struct, pmr)

Hildesheim, J. *et al.*, *Tet. Lett.*, 1969, 2849 (α -D-pyr Me gly N-Ac N-Me)

Janot, M.M. *et al.*, *Tetrahedron*, 1970, **26**, 1695 (isol, α -D-pyr Me gly N-Ac, β -D-pyr Me gly N-Ac)

4-Amino-2,4,6-trideoxy-3-O-methyl-xylo-hexose, 9CI A-468

Holacosamine



α -D-Pyranose-form

C₇H₁₅NO₃ 161.2

β -form [40738-42-9]

Constit. of the steroidal glycoside Holarosine B.

α -D-Pyranose-form

Me glycoside: Methyl 4-amino-2,4,6-trideoxy-3-O-methyl- α -D-xylo-hexopyranoside, 9CI
[40031-79-6]

C₈H₁₇NO₃ 175.227

[α]_D²⁰ +130 (c, 2.0 in CHCl₃).

Me glycoside, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-3-O-methyl- α -D-xylo-hexopyranoside
[40031-75-2]

C₁₀H₁₉NO₄ 217.264

Cryst. Mp 94°. [α]_D²⁰ +103 (c, 1.0 in CHCl₃).

β -D-Pyranose-form

Me glycoside, N-Ac: Methyl 4-acetamido-2,4,6-trideoxy-3-O-methyl- β -D-xylo-hexopyranoside, 9CI
[40031-76-3]

C₁₀H₁₉NO₄ 217.264

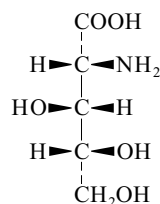
Cryst. (Et₂O). Mp 119°. [α]_D²⁰ -57 (c, 1.0 in CHCl₃).

Goutarel, R. *et al.*, *Carbohydr. Res.*, 1972, **24**, 297

Georges, M. *et al.*, *Can. J. Chem.*, 1984, **62**, 1539 (synth)

2-Amino-3,4,5-trihydroxypentanoic acid A-469

2-Amino-2-deoxypentonic acid



(2R,3R,4R)-form

C₅H₁₁NO₅ 165.146

(2R,3R,4R)-form

2-Amino-2-deoxy-D-xyloonic acid

[41325-39-7]

Mp 160° dec. [α]_D²⁵ -3.4 (c, 1.9 in H₂O).

4,5-O-Isopropylidene: [41325-32-0]

C₈H₁₅NO₅ 205.21

Mp 201-202° dec.

(2S,3S,4S)-form *2-Amino-2-deoxy-L-xyloonic acid, 9CI, 8CI. Polyoxamic acid*
[19396-04-4]

Constituent of Polyoxin A, P-81, Polyoxin B, P-82, Polyoxin D, P-84, Polyoxin F, P-86, Polyoxin H, P-88, Polyoxin J, P-89, Polyoxin K, P-90, Polyoxin L, P-91 and Polyoxin N, P-93.

Cryst. +1H₂O (EtOH aq.).

Mp 171-173° dec. [α]_D²³ +2.8 (c, 1.0 in H₂O).

5-Carbamate: 2-Amino-5-O-carbamoyl-2-deoxy-L-xyloonic acid. 5-O-Carbamoyl-polyoxamic acid
[19396-05-5]

C₆H₁₂N₂O₆ 208.171

N-Terminal fragment of the polyoxin antibiotics.
Mp 210° dec Mp 226-232° dec.

5-Carbamate, 3,4-benzyl, N-benzylloxycarbonyl:
Syrup. [α]_D²⁵ +32 (c, 0.94 in CHCl₃).

(2S,3S,4R)-form *2-Amino-2-deoxy-D-arabinonic acid*
Foam. [α]_D +5 (c, 0.2 in H₂O).

(2R,3S,4R)-form *2-Amino-2-deoxy-D-ribonic acid*
Foam. [α]₃₆₅ -2.7 (c, 1.2 in H₂O).

(2R,3R,4S)-form *2-Amino-2-deoxy-L-arabinonic acid*
Foam. [α]_D -4.8 (c, 0.1 in H₂O).

Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (2S3S4S-forms, isol, struct)

Kuzuhara, H. *et al.*, *Agric. Biol. Chem.*, 1973, **37**, 949 (2S3S4S-form, synth)

Ohdan, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1973, **46**, 981 (2R3R4R-form, synth)

Kuzuhara, H. *et al.*, *Tet. Lett.*, 1973, 5051 (2S3S4S carbamate)

Funayama, S. *et al.*, *Biochemistry*, 1977, **16**, 312; 3121 (isol, biosynth)

Uramoto, M. *et al.*, *Nucleic Acids Res., Spec. Publ.*, 1978, **5**, 327 (isol)

Garner, P. *et al.*, *J.O.C.*, 1988, **53**, 2979 (2S3S4S carbamate)

Savage, I. *et al.*, *Chem. Comm.*, 1989, 717 (2S3S4S-form, synth)

Banik, B.K. *et al.*, *J.O.C.*, 1993, **58**, 307 (2R3R4R-form, synth)

Rassu, G. *et al.*, *J.C.S. Perkin 1*, 1994, 2431 (2S3S4R-form, 2R3S4R-form, 2R3R4S-form, synth)

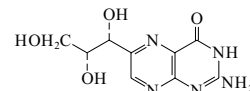
Trost, B.M. *et al.*, *J.A.C.S.*, 1996, **118**, 6520 (synth)

Tarrade, A. *et al.*, *J.O.C.*, 2003, **68**, 9521-9524 (2R3R4R-form, synth)

Raghavan, S. *et al.*, *Tet. Lett.*, 2003, **44**, 6713-6715 (2S3S4S-form, synth, bibl)

2-Amino-6-(1,2,3-trihydroxypropyl)-4(1H)-pteridinone, 9CI A-470

[670-65-5]



(1'R,2'R)-form

C₉H₁₁N₅O₄ 253.217

(1'R,2'R)-form

D-threo-form. **D-Monapterin**. *Umanopterine* [10162-32-0]
Isol. from *Tetrahymena pyriformis* and from the urine of cancer patients. $[\alpha]_D^{25}$ -92 (c, 0.3 in 0.1M HCl).

5,6R,7,8-Tetrahydro: 5,6,7,8-Tetrahydro-D-monapterin

$C_9H_{15}N_5O_4$ 257.249

Isol. from *Tetrahymena pyriformis*.

(1'S,2'S)-form

L-threo-form. **L-Monapterin**

[2277-42-1]

Constit. of human blood and urine. Yellow cryst. $[\alpha]_D^{25}$ +97 (c, 0.3 in 0.1M HCl).

5,6R,7,8-Tetrahydro: 5,6,7,8-Tetrahydro-L-monapterin

$C_9H_{15}N_5O_4$ 257.249

Isol. from *Escherichia coli*. Needles (CHCl₃) (as hexa-Ac).

Mp 139.5-141.5° (hexa-Ac).

(1'S,2'R)-form *D*-erythro-form. **Neopterin**

[2009-64-5]

Found in human blood and urine. First isol. from the pupae of bees. Precursor in biosynth. of Biopterin. $[\alpha]_D^{25}$ +45 (c, 0.3 in 0.1M HCl).

3'-O-β-D-Glucopyranoside: Solfapterin.

Neopterin 3-O-β-D-glucoside

[114312-02-6]

$C_{15}H_{21}N_5O_9$ 415.359

Isol. from *Sulfolobus solfataricus*.

(1'R,2'S)-form *L*-erythro-form. **Bufochrome**

[2277-43-2]

Found in human blood and urine. Also isol. from toad skins. Growth factor for the protozoan *Crithidia fasciculata*. $[\alpha]_D^{25}$ -44 (c, 0.3 in 0.1M HCl). λ_{max} 275 (ε 14600); 348 (ε 6180) (H₂O). λ_{max} 255 (ε 24000); 365 (ε 7050) (0.1M NaOH). λ_{max} 248 (ε 11600); 321 (ε 8020) (0.1M HCl).

5,6R,7,8-Tetrahydro: 5,6,7,8-Tetrahydro-L-monapterin

$C_9H_{15}N_5O_4$ 257.249

[39923-31-4, 87174-05-8]

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 480C (nmr)

Rembold, H. et al., *Chem. Ber.*, 1963, **96**, 1406 (struct, synth)

Andrews, K.J.M. et al., *Chem. Comm.*, 1968, 120
v. Viscontini, M. et al., *Helv. Chim. Acta*, 1968, **51**, 1495 (synth, pmr)

Fukushima, T. et al., *J. Biol. Chem.*, 1972, **247**, 4549 (isol)

Schircks, B. et al., *Helv. Chim. Acta*, 1976, **59**, 248 (cmr)

Sugimoto, T. et al., *Bull. Chem. Soc. Jpn.*, 1980, **53**, 2344 (synth)

Fukushima, T. et al., *Methods Enzymol.*, 1980, **66**, 508 (rev, isol)

Sun, J.H. et al., *Diss. Abstr. Int.*, **B**, 1983, **43**, 3990 (synth)

Zeitler, H.J. et al., *Methods Enzymol.*, 1986, **122**, 273 (rev, detn)

Huber, C. et al., *Dtsch. Med. Wochenschr.*, 1987, **112**, 107 (rev)

Lin, X. et al., *J. Bacteriol.*, 1988, **170**, 1396 (*Solfapterin*)

Klein, R. et al., *Biochimie*, 1991, **73**, 1281 (*D-Monapterin*)

Ogiwara, S. et al., *Biol. Chem. Hoppe-Seyler*, 1992, **373**, 1061 (isol)

Ogiwara, S. et al., *Tet. Lett.*, 1992, **33**, 1341 (*Umanopterine*)

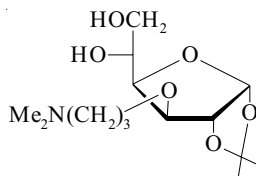
Sugimoto, T. et al., *Helv. Chim. Acta*, 2001, **84**, 918-927 (*Tetrahydro-D-monapterin*)

Ikemoto, K. et al., *Biol. Chem.*, 2002, **383**, 325-330 (*Tetrahydro-L-monapterin*)

Amiprilose, INN

A-471

3-O-[3-(Dimethylamino)propyl]-1,2-O-(1-methylethylidene)-α-D-glucofuranose. Therafectin. SM 1213 [56824-20-5]



$C_{14}H_{27}NO_6$ 305.37

Immunomodulator. Antiviral and anti-inflammatory agent. Exhibits antispasmodic activity. Also used against other autoimmune diseases such as arthritis, eczema and systemic lupus erythematosus. Viscous oil. $[\alpha]_D$ -12 (neat). n_D^{25} 1.4687. Log P -1.31 (calc). Low toxicity and no serious side effects, but requires large therapeutic dosage.

Hydrochloride: Amiprilose hydrochloride, USAN

[60414-06-4]

Cryst. (MeOH). Mp 181-183°.

U.K. Pat., 1974, 1 497 409, (*Strategic Medical Research Corp*); CA, **89**, 117809 (synth, pharmacol)

Garrett, E.R. et al., *J. Pharm. Sci.*, 1982, **71**, 387; 1983, **72**, 1045 (pharmacol, metab)

Linhardt, R.J. et al., *J. Pharm. Sci.*, 1990, **79**, 158 (pmr, cmr, abs config)

Young, M.R. et al., *Prostaglandins*, 1990, **40**, 35 (pharmacol)

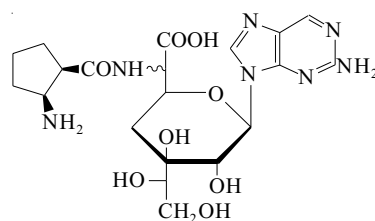
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1336

Vanlemmens, P. et al., *Carbohydr. Res.*, 1996, **289**, 171-178 (bibl)

Amipurimycin

A-472

[61991-08-0]



$C_{20}H_{29}N_7O_8$ 495.491

Nucleoside antibiotic. Isol. from *Streptomyces novoguineensis*. Active against some phytopathogenic fungi. Prisms (EtOH aq.). Sol. H₂O; fairly sol. DMSO, Py, AcOH, MeOH; poorly sol. butanol, hexane.

Mp 217° dec. $[\alpha]_D$ -3.2 (c, 0.62 in H₂O).

λ_{max} 222 (ε 31400); 244 (sh) (ε 5200);

313 (ε 3860) (0.1M HCl) (Derep). λ_{max} 243 (ε 5350); 305 (ε 6730) (0.1M NaOH) (Derep). λ_{max} 218 (ε 21200); 243

(ε 5740); 305 (ε 6440) (pH 7 phosphate buffer) (Derep). λ_{max} 216 (ε 21000); 243 (ε 5200); 303 (ε 6500) (H₂O) (Berdy). λ_{max} 217 (E1%/1cm 420); 243 (E1%/1cm 118); 305 (E1%/1cm 126) (pH 7 buffer) (Berdy). λ_{max} 217 (E1%/1cm 425); 243 (E1%/1cm 105); 305 (E1%/1cm 129) (NaOH) (Berdy). λ_{max} 222 (E1%/1cm 634); 312 (E1%/1cm 77) (HCl) (Berdy).

► LD₅₀ (mus, orl) 10 - 20 mg/kg, LD₅₀ (mus, ivn) 0 - 4 mg/kg.

Iwasa, T. et al., *J. Antibiot.*, 1977, **30**, 1 (isol, props)

Harada, S. et al., *J. Antibiot.*, 1977, **30**, 11 (isol, props)

Goto, T. et al., *Tet. Lett.*, 1982, **23**, 1271 (struct)

Hara, K. et al., *Carbohydr. Res.*, 1987, **159**, 65 (partial synth)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Amphotericin B, 9CI, 8CI, INN, USAN

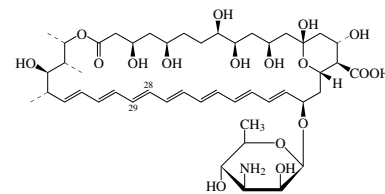
A-473

Amphotericin, BAN. Abeicet. Amfostet.

Ampho-Moronal. Amphozone. Anfostat.

Fungizone. Many other names

[1397-89-3]



$C_{47}H_{73}NO_{17}$ 924.09

Polyene antibiotic. Prod. by *Streptomyces nodosus*. Antifungal agent. Used in the treatment of candidiasis. Prolongs survival time of scrapie-infected rodents. Approved for clinical use in the Netherlands and Belgium (1999). Deep yellow prisms (DMF). Sol. DMSO, Me₂CO, DMF; fairly sol. MeOH-HCl, butanol aq., AcOH, Py, MeOH; poorly sol. EtOH, H₂O, butanol, hexane. Mp 170° dec. $[\alpha]_D^{24}$ +333 (DMF). Log P -5.89 (uncertain value) (calc). Contains unusual D-rhamnose residue. λ_{max} 225 (ε 22400); 345 (ε 37900); 363 (ε 80800); 382 (ε 134000); 405 (ε 150000) (MeOH).

► Adverse systemic effects reported when used therapeutically incl. gastrointestinal disturbances, cardiotoxic and nephrotoxic effects. LD₅₀ (mus, ipr) approx. 28 mg/kg. LD₅₀ (mus, ivn) 1.2 mg/kg. Exp. (male) reprod. effects. BU2625000

Meglumine salt (1:1): Amphoglucamine [58722-78-4]

Me ester: [36148-89-7]

Yellow amorph. solid. $[\alpha]_D^{20}$ +392 (c, 0.33 in DMF).

N,N,N-Tri-Me, Me ester, methyl sulfate:

Methamphocin

[73280-71-4]

$C_{52}H_{85}NO_{21}S$ 1092.304

Water-sol. deriv. of Amphotericin B.

13-Me ether: Amphotericin X

[136135-57-4]

$C_{48}H_{75}NO_{17}$ 938.117

Prod. by *Streptomyces nodosus*. Antifungal agent. Yellow powder. Sol. DMSO; poorly sol. H₂O, hexane. λ_{\max} 356; 382; 406 (MeOH).

28,29-Dihydro: Amphotericin A, 9CI

[1405-32-9]

C₄₇H₇₅NO₁₇ 926.106

From *Streptomyces nodosus*. Antifungal agent. Sol. DMSO, bases, MeOH-CaCl₂, DMF, AcOH, Py; fairly sol. MeOH, butanol aq., acids; poorly sol. butanol, hexane. $[\alpha]_D^{24} +163$ (Py). Log P -5.44 (uncertain value) (calc). λ_{\max} 232 (€ 27600); 280 (€ 25500); 291 (€ 50700); 304 (€ 76100); 318 (€ 69700) (MeOH).

► LD₅₀ (mus, ipr) 450 mg/kg. BU2614700 [35375-29-2, 69234-88-4]

Vandeputte, J. et al., *Antibiot. Annu.*, 1955, 587 (isol)

Mechlinski, W. et al., *Tet. Lett.*, 1970, 3873

(struct, cryst struct)

Borowski, E. et al., *Tet. Lett.*, 1970, 3909

(struct, pmr, ms)

Ganis, P. et al., *J.A.C.S.*, 1971, **93**, 4560 (cryst struct)

Pandey, R.C. et al., *J. Antibiot.*, 1976, **29**, 1035;

1977, **30**, 158 (ir, uv, nmr, synth, cmr)

Asher, I.M. et al., *Anal. Profiles Drug Subst.*, 1977, **6**, 1 (rev)

Holz, R.W. et al., *Antibiotics (N.Y.)*, 1979, **5**, 313 (rev)

Belg. Pat., 1979, 877 661, (Politechnika Gdanska); *CA*, **93**, 13076z (synth, pharmacol, methamphocin)

Falkowski, L. et al., *J. Antibiot.*, 1979, **32**, 1080 (synth, methamphocin)

Brown, J.M. et al., *Tetrahedron*, 1981, **37**, 1421 (pmr)

Sowinski, P. et al., *J. Antibiot.*, 1985, **38**, 169; 175 (Amphotericin A)

Aszalos, A. et al., *J. Antibiot.*, 1985, **38**, 1699 (props)

Nicolaou, K.C. et al., *J.A.C.S.*, 1987, **109**, 2205; 2208; 2821; 1988, **110**, 4660; 4672; 4685; 4696 (synth)

Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 8285 (synonyms)

Palaniswamy, V.A. et al., *Planta Med.*, 1990, **56**, 560 (Amphotericin X)

Warnock, D.W. et al., *J. Antimicrob. Chemother., Suppl. B*, 1991, **28**, 27 (rev)

Sowinski, P. et al., *Magn. Reson. Chem.*, 1992, **30**, 275 (pmr)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 315

Brittain, H.G. et al., *Chirality*, 1994, **6**, 665 (cd)

Nicolaou, K.C. et al., *Classics in Total Synthesis, Targets, Strategies, Methods*, VCH, 1996, 421 (bibl, synth)

Sowinski, P. et al., *J. Antibiot.*, 1996, **49**, 1232 (Amphotericin A, pmr, cmr, abs config)

Adjou, K.T. et al., *Trends Microbiol.*, 1997, **5**, 27-31 (pharmacol, rev)

Coukell, A.J. et al., *Drugs*, 1998, **55**, 585-612; **56**, 365-383 (rev)

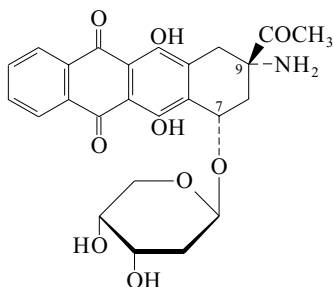
McNamara, C.M. et al., *J.C.S. Perkin 1*, 1998, 83-87 (biosynth)

Goldsmith, D.R. et al., *Drugs*, 2004, **64**, 1905-1911 (rev)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AOC500; AOC750

Amrubicin, INN

9-Amino-4-demethoxy-9-deoxy-7-O-(2-deoxy- β -D-erythro-pentopyranosyl)daunomycinone. SM 5887 [110267-81-7]



C₂₅H₂₅NO₉ 483.474

Antineoplastic antibiotic. In Phase I or II clin. trials (Japan, 1994). Mp 172-174°.

$[\alpha]_D^{20} +119$ (c, 0.02 in CHCl₃). Log P -1.73 (uncertain value) (calc).

Hydrochloride: [110311-30-3]

Mp 145-151°.

► LD₅₀ (mus, ivn) 42 mg/kg. QI9297160

[123930-64-3]

Ishizumi, K. et al., *J.O.C.*, 1987, **52**, 4477

(synth, ir, pmr)

U.S. Pat., 1987, 4 673 668, (Sumitomo); *CA*, **108**, 22206x (synth, activity)

Oke, Y. et al., *Cancer Res.*, 1989, **49**, 4098 (pharmacol)

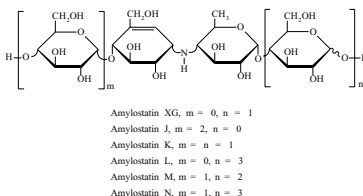
Horikoshi, N. et al., *Invest. New Drugs*, 1989, **7**, 213 (pharmacol)

Noguchi, T. et al., *Jpn. J. Cancer Res.*, 1998, **89**, 1055-1060; 1061-1066; 1067-1073; 1229-1238; 1999, **90**, 685-690 (pharmacol)

Amylostatin

A-475

[79305-08-1]



Aminoglycoside antibiotic complex.

Structs. of several components not determined. The most important antibiotic is Amylostatin J; see Acarbose, A-3. Isol. from *Streptomyces diastaticus* ssp. *amylostaticus*. Amylase inhibitors.

Amylostatin XG [68128-53-0]

C₁₉H₃₃NO₁₃ 483.469

Powder.

Amylostatin K [82642-64-6]

C₂₅H₄₃NO₁₈ 645.611

Powder. Sol. H₂O; poorly sol. MeOH, hexane. No def. Mp.

Amylostatin L [82642-66-8]

C₃₁H₅₃NO₂₃ 807.753

Powder. Sol. H₂O; poorly sol. MeOH, hexane. No def. Mp.

Amylostatin M [82642-67-9]

C₃₁H₅₃NO₂₃ 807.753

Powder. Sol. H₂O; poorly sol. MeOH, hexane. No def. Mp.

Amylostatin N [82642-69-1]

C₃₇H₆₃NO₂₈ 969.895

Powder. Sol. H₂O; poorly sol. MeOH, hexane. No def. Mp.

Amylostatin B [75139-32-1]

$[\alpha]_D +146$. Struct. not determined.

Amylostatin C [75139-33-2]

$[\alpha]_D +142$. Struct. not determined.

Amylostatin D [75139-34-3]

$[\alpha]_D +158$. Struct. not determined.

Amylostatin E [75139-35-4]

$[\alpha]_D +136$. Struct. not determined.

Amylostatin F

$[\alpha]_D +139$. Struct. not determined.

[83682-81-9]

Netherlands Pat., 1978, 77 14 142; *CA*, **90**, 23602 (isol)

Japan. Pat., 1980, 80 71 494; 1981, 81 68 693; 692, 1982, 82 18 692; *CA*, **93**, 184294; **95**, 167127; **97**, 90404 (isol)

Trusheit, E. et al., *Angew. Chem., Int. Ed.*, 1981, **20**, 744-761 (rev)

Fukuhara, K. et al., *Agric. Biol. Chem.*, 1982, **46**, 1941-1945; 2021-2030 (isol, struct, pmr, cmr)

Sakairi, N. et al., *Tet. Lett.*, 1982, **23**, 5327-5330 (synth, pmr)

Junge, B. et al., *Carbohydr. Res.*, 1984, **128**, 235-268 (synth)

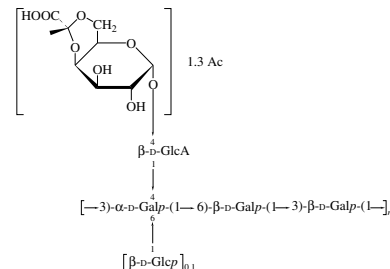
Ogawa, S. et al., *Carbohydr. Res.*, 1985, **140**, 325-331 (Amylostatin XG, synth)

Amylovoran

A-476

Amylovorin

[64475-88-3]



Capsular exopolysaccharide prod. by *Erwinia amylovora*, the cause of apple/pear blight disease.

Nimtz, M. et al., *Carbohydr. Res.*, 1996, **287**, 59-76 (isol)

Jumel, K. et al., *Int. J. Biol. Macromol.*, 1997, **20**, 251-258 (struct)

Busson, R. et al., *J. Carbohydr. Chem.*, 2001, **20**, 109-120 (nmr, struct)

Anemeran

A-477

Glycan complex. Isol. from the rhizomes of *Anemarrhena asphodeloides*. Hypoglycaemic.

Anemeran A [98112-28-8]

$[\alpha]_D +23.5$ (c, 0.45 in H₂O).

Anemeran B [98112-29-9]

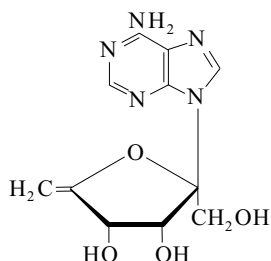
$[\alpha]_D -30.2$ (c, 0.53 in H₂O).

Anemeran C [98112-30-2]
[α]_D +100 (c, 0.28 in H₂O).

Anemeran D [98112-31-3]
[α]_D +36.4 (c, 0.24 in H₂O).

Takahashi, M. *et al.*, *Planta Med.*, 1985, **51**,
100-102 (*isol. pharmacol*)

Angustmycin A **A-478**
9-(6-Deoxy- β -D-erythro-hex-5-en-2-
ulofuranosyl)-9H-purin-6-amine, 9CI. De-
cayinine
[2004-04-8]



C₁₁H₁₃N₅O₄ 279.255

Nucleoside antibiotic. Prod. by *Streptomyces hygroscopicus*. Shows antibacterial and antitumour activity.
Mp 183.5-185° (156-159° dec.). [α]_D²³ +46.4 (c, 0.46 in H₂O). λ_{\max} 259 (ε 15 500) (H₂O), 259 nm (15 500) (pH 11). λ_{\max} (no shifts reported) (Derep). λ_{\max} 261 (ε 15500) (MeOH/NaOH) (Derep). λ_{\max} 259 (ε 15300) (MeOH) (Derep).

▶ AU6256000

1',3',4'-Tri-Ac: Mp 189-190°.

1',3',4'-O-Orthoformyl: Mp 254-257° dec.

6N-Ac, 1',3',4'-tri-Ac: Mp 65°.

6,6N-Di-Ac, 1',3',4'-tri-Ac: Mp 152-153°.

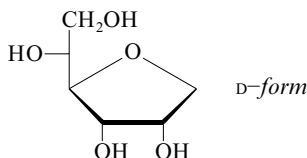
Hoeksema, H. *et al.*, *Tet. Lett.*, 1964, 1787

McCarthy, J.R. *et al.*, *J.A.C.S.*, 1968, **90**, 4993
(*synth*)

Nichol, C.A. *et al.*, *Handb. Exp. Pharmacol.*,
1975, **38**, 434; *CA*, **83**, 188083v (*pharmacol*,
rev)

Prisbe, E.J. *et al.*, *J.O.C.*, 1976, **41**, 1836 (*synth*)

1,4-Anhydroallitol **A-479**



C₆H₁₂O₅ 164.158

Capable of enantiomerism although allitol
is a *meso*-compd.

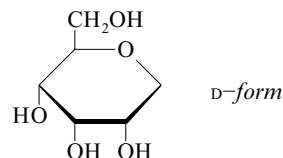
(±)-*form* [10334-28-8]
Cryst. (EtOH). Mp 80-83°.

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl-1,4-anhy-
dro-DL-allitol
C₁₄H₂₀O₉ 332.307
Cryst. (EtOH aq.). Mp 62-64°.

6-Tosyl, 2,3,5-tri-Ac: 2,3,5-Tri-O-acetyl-
1,4-anhydro-6-O-tosyl-DL-allitol
C₁₉H₂₄O₁₀S 444.459
Cryst. (EtOH). Mp 73-75°.

Ballard, J.M. *et al.*, *Carbohydr. Res.*, 1973, **30**,
83; 91

1,5-Anhydroallitol **A-480**



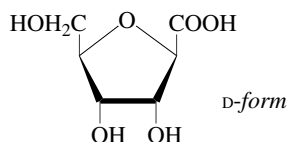
C₆H₁₂O₅ 164.158

D-form [13035-39-7]
Cryst. (EtOH). Mp 153-154°. [α]_D¹⁸
+35.5 (c, 1.3 in H₂O).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1,5-anhy-
dro-D-allitol
[53368-35-7]
C₁₄H₂₀O₉ 332.307
Cryst. (EtOH). Mp 128-130°. [α]_D²²
+20.8 (c, 1.7 in CHCl₃).

Haga, M. *et al.*, *Carbohydr. Res.*, 1974, **34**, 214
(*D-form, synth, D-tetra-Ac*)

2,5-Anhydroallonic acid **A-481**



C₆H₁₀O₆ 178.141

D-form

Me ester: Methyl 2,5-anhydro-D-allonate
[121725-16-4]
C₇H₁₂O₆ 192.168
[α]_D¹⁹ +18.1 (c, 1.6 in CHCl₃).

Nitrile: 2,5-Anhydro-D-allonitrile. Ribofur-
anosyl cyanide
[26882-26-8]
C₆H₉NO₄ 159.141
Characterised as derivs. below.

Tribenzoyl: 2,5-Anhydro-3,4,5-tri-O-ben-
zoyl-D-allonic acid
[23316-68-9]
C₂₇H₂₂O₉ 490.465
Cryst. (MeOH aq.). [α]_D²² +39.7 (c, 0.67
in CHCl₃).

Tribenzoyl, Me ester: [61407-88-3]
C₂₈H₂₄O₉ 504.492
Cryst. (MeOH aq.). [α]_D¹⁹ +18.1 (c, 1.6 in
CHCl₃).

5-Benzoyl, nitrile: 2,5-Anhydro-6-O-ben-
zoyl-D-allonitrile
[30002-87-0]
C₁₃H₁₃NO₅ 263.249
Cryst. (C₆H₆/hexane). Mp 117-118°.

Tribenzoyl, nitrile: 2,5-Anhydro-3,4,6-tri-
O-benzoyl-D-allonitrile, 9CI, 8CI
[23316-67-8]
C₂₇H₂₁NO₇ 471.465

Reagent used in synth. of C-nucleosides.
Mp 82-83° (77-78°). [α]_D²³ +24.2 (c, 1.0 in
CHCl₃).

2,3-O-Isopropylidene, nitrile: 2,5-Anhydro-
3,4-O-isopropylidene-D-allonitrile
[60084-16-4]
C₉H₁₃NO₄ 199.206
Cryst. (EtOAc/petrol). Mp 63-65°. [α]_D²⁵
-35 (c, 0.7 in CHCl₃).

2,3-O-Isopropylidene, 5-benzoyl, nitrile:
2,5-Anhydro-6-O-benzoyl-3,4-O-isopro-
pylidene-D-allonitrile, 9CI, 8CI
[29868-36-8]
C₁₆H₁₇NO₅ 303.314
Cryst. (Et₂O/hexane). Mp 60-61°.

3,4,6-Tribenzoyl: 2,5-Anhydro-3,4,6-tri-O-
benzoyl-D-allonic acid
[82267-01-4]
C₂₇H₂₈O₆ 448.515
Syrup.

L-form [135267-95-7]
[α]_D²⁵ -0.24 (c, 4.51 in H₂O).

DL-form

2,3-O-Isopropylidene, 5-(4-nitrobenzoyl),
nitrile: 2,5-Anhydro-3,4-O-isopropyl-
idene-6-O-(4-nitrobenzoyl)-DL-allononi-
trile
[55610-60-1]
C₁₆H₁₆N₂O₇ 348.312
Needles (CHCl₃/hexane). Mp 118-120°.

[42889-99-6]

Albrecht, H.P. *et al.*, *J.O.C.*, 1973, **38**, 1836 (β -
D-isopropylidene benzoyl, β -D-benzoyl, β -D-
tribenzoyl nitriles)

Just, G. *et al.*, *Can. J. Chem.*, 1975, **53**, 131 (*DL*-
isopropylidene, 4-nitrobenzoyl nitrile)

Arakawa, K. *et al.*, *Chem. Lett.*, 1976, 1119
(*synth*)

Fuertes, M. *et al.*, *J.O.C.*, 1976, **41**, 4074 (β -D-
isopropylidene nitrile)

Hanomichi, N. *et al.*, *Chem. Pharm. Bull.*, 1978,
26, 898 (*synth, ir, uv, pmr*)

El Khadem, H.S. *et al.*, *Carbohydr. Res.*, 1983,
115, 131 (*synth, nitrile*)

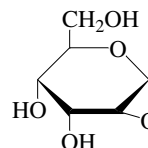
Rosowsky, A. *et al.*, *Carbohydr. Res.*, 1988, **176**,
47 (*D-tribenzoyl*)

Cunningham, D. *et al.*, *Carbohydr. Res.*, 1988,
177, 1 (*cryst struct*)

Hultin, P.G. *et al.*, *J.O.C.*, 1991, **56**, 5375 (*synth*,
ir, pmr, cmr)

Popsavin, M. *et al.*, *Carbohydr. Res.*, 1994, **260**,
145 (*synth, pmr, cmr, bibl, nitrile tribenzoyl*)

1,2-Anhydroallose **A-482**



C₆H₁₀O₅ 162.142

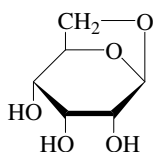
α -D-Pyranose-form

Tribenzoyl: 1,2-Anhydro-3,4,6-tri-O-benzyl-
 α -D-allopyranose
[176757-58-7]
C₂₇H₂₈O₅ 432.515
Syrup.

Du, Y. *et al.*, *Carbohydr. Res.*, 1996, **282**, 315-
323 (α -D-pyr-tribenzoyl)

1,6-Anhydroallose

A-483



β-D-Pyranose-form

C₆H₁₀O₅ 162.142

β-D-Pyranose-form

1,6-Anhydro-β-D-allopyranose. *D-Allosan* [14059-68-8] Minor prod. from the pyrolysis of Cellulose, C-48. Prisms (EtOH). Mp 178.5-180°. [α]_D²⁰ -75.8 (c, 0.6 in H₂O).

Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro-β-D-allopyranose [14661-09-7] C₁₂H₁₆O₈ 288.254 Cryst. (Et₂O/CHCl₃/petrol). Mp 88-89°. [α]_D²⁰ -70.8 (c, 1 in CHCl₃).

2,3,4-Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl-β-D-allopyranose [57632-03-8] C₂₇H₂₂O₈ 474.466 Cryst. (Et₂O/petrol). Mp 140-141°. [α]_D -37.5 (c, 1 in CHCl₃).

2,4-Ditosyl: 1,6-Anhydro-2,4-di-O-tosyl-β-D-allopyranose [20183-75-9] C₂₀H₂₂O₉S₂ 470.52 Cryst. (CHCl₃/Et₂O). Mp 88-100° Mp 143-144° (dimorph.). [α]_D -32 (c, 1.0 in CHCl₃).

2,4-ditosyl, 3-Ac: 3-O-Acetyl-1,6-anhydro-2,4-di-O-tosyl-β-D-allopyranose [20183-78-2] C₂₂H₂₄O₁₀S₂ 512.558 Cryst. (CHCl₃/Et₂O). Mp 184-187°. [α]_D -47 (c, 1.0 in CHCl₃).

Tritosyl: 1,6-Anhydro-2,3,4-tri-O-tosyl-β-D-allopyranose C₂₇H₂₈O₁₁S₃ 624.71 Cryst. (Me₂CO aq.). Mp 157-158°. [α]_D²⁰ -35 (c, 0.9 in H₂O).

2,3-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene-β-D-allopyranose [41092-32-4] C₉H₁₄O₅ 202.207 Cryst. (petrol). Subl. 88.5°. [α]_D²⁰ -19.8 (c, 1 in CHCl₃).

3,4-Isopropylidene: 1,6-Anhydro-3,4-O-isopropylidene-β-D-allopyranose [41092-28-8] C₉H₁₄O₅ 202.207 Cryst. (Et₂O/petrol). Mp 104°. [α]_D²⁰ -88.1 (c, 1 in CHCl₃).

3,4-Isopropylidene, 2-Ac: 2-O-Acetyl-1,6-anhydro-3,4-O-isopropylidene-β-D-allopyranose [41092-29-9] C₁₁H₁₆O₆ 244.244 Cryst. (heptane). Mp 123°. [α]_D²⁰ -122.4 (c, 1 in CHCl₃).

2,3,4-Tri-Me: 1,6-Anhydro-2,3,4-tri-O-methyl-β-D-allopyranose [57632-04-9] C₉H₁₆O₅ 204.222

Cryst. (Et₂O/petrol). Mp 81-82°. [α]_D -82.5 (c, 1 in CHCl₃).

4-Benzyl: 1,6-Anhydro-4-O-benzyl-β-D-allopyranose [20183-84-0] C₁₃H₁₆O₅ 252.266 Cryst. (C₆H₆). Mp 113°. [α]_D -79 (c, 0.8 in CHCl₃).

4-Benzyl, 2-tosyl: 1,6-Anhydro-4-O-benzyl-2-O-tosyl-β-D-allopyranose [20183-83-9] C₂₀H₂₂O₇S 406.456 Cryst. Mp 136-138°. [α]_D -51 (c, 1.3 in CHCl₃).

4-Benzyl, 2-tosyl, 3-Ac: 3-O-Acetyl-1,6-anhydro-4-O-benzyl-2-O-tosyl-β-D-allopyranose [20204-81-3] C₂₂H₂₄O₈S 448.493 Cryst. (CHCl₃/petrol). Mp 95°. [α]_D -25 (c, 0.8 in CHCl₃).

β-D-Furanose-form

Cryst. Mp 110-111°. [α]_D²² -2.5 (c, 1.0 in H₂O).

2-Ac: 2-O-Acetyl-1,6-anhydro-β-D-allofuranose [114103-34-3] C₈H₁₂O₆ 204.179 Syrup. [α]_D²⁰ -34 (c, 1.2 in H₂O). May have contd. some 3-Ac isomer.

Tri-Ac: 2,3,5-Tri-O-acetyl-1,6-anhydro-β-D-allofuranose [38184-09-7] C₁₂H₁₆O₈ 288.254 Syrup. [α]_D²⁰ -54 (c, 1 in CHCl₃).

3,5-Dibenzyl: 1,6-Anhydro-3,5-di-O-benzyl-β-D-allofuranose [51516-29-1] C₂₀H₂₂O₅ 342.391 Cryst. or syrup. Mp 60-62°. [α]_D +17 (CHCl₃).

2,3-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene-β-D-allofuranose [38184-07-5] C₉H₁₄O₅ 202.207 Cryst. (diisopropylether/heptane). Mp 147°. [α]_D²⁰ +14.4 (c, 1 in CHCl₃).

Pratt, J.W. et al., *J.A.C.S.*, 1955, **77**, 1906-1908 (β-D-pyr, β-D-pyr tri-Ac, β-D-pyr tritosyl) Černý, M. et al., *Coll. Czech. Chem. Comm.*, 1968, **33**, 1143-1156 (β-D-pyr 2,4-ditosyl, β-D-pyr 3-Ac 2,4-ditosyl, β-D-pyr tri-Ac, β-D-pyr benzyl tosyl, β-D-pyr benzyl, β-D-pyr acetyl benzyl tosyl)

Heyns, K. et al., *Chem. Ber.*, 1972, **105**, 2228-2232 (β-D-fur-form, β-D-fur tri-Ac, β-D-fur isopropylidene)

Heyns, K. et al., *Chem. Ber.*, 1973, **106**, 611-622 (β-D-pyr 3,4-isopropylidene, β-D-pyr 2,3-isopropylidene, β-D-pyr Ac 3,4-isopropylidene)

Brimacombe, J.S. et al., *Carbohydr. Res.*, 1975, **40**, 387-390 (β-D-pyr-form, β-D-pyr tri-Ac, β-D-pyr tribenzoyl, β-D-pyr tri-Me)

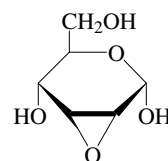
Angyal, S.J. et al., *Aust. J. Chem.*, 1978, **31**, 1151 (β-D-fur)

Köll, P. et al., *J. Carbohydr. Chem.*, 1987, **6**, 281-293 (β-D-fur, β-D-fur Ac, β-D-fur dibenzyl) Matsumoto, K. et al., *Heterocycles*, 1991, **32**, 2225-2240 (β-D-pyr, β-D-pyr tri-Ac)

Van Rijsbergen, R. et al., *J. Carbohydr. Chem.*, 1992, **11**, 463-470 (occur)

2,3-Anhydroallose

A-484



α-D-Pyranose-form

C₆H₁₀O₅ 162.142

α-D-Pyranose-form [61176-67-8]

Cryst. (Et₂O/petrol). Mp 88-90°. [α]_D +27 (c, 1.0 in H₂O, equilib.).

Me glycoside: Methyl 2,3-anhydro-α-D-allopyranoside [3257-61-2] C₇H₁₂O₅ 176.169 Cryst. (Me₂CO). Mp 105-107° (103°). [α]_D +153 (MeOH).

Me glycoside, 4,6-di-Ac: Methyl 4,6-di-O-acetyl-2,3-anhydro-α-D-allopyranoside [7226-45-1] C₁₁H₁₆O₇ 260.243 Bp_{0.3} 155°. [α]_D²⁰ +160 (c, 1.0 in CHCl₃).

Me glycoside, 4,6-dimesyl: Methyl 2,3-anhydro-4,6-di-O-mesyl-α-D-allopyranoside [26922-78-1] C₉H₁₆O₉S₂ 332.352 Cryst. (MeOH/Me₂CO). Mp 138°. [α]_D²³ +139.5 (c, 1.7 in CHCl₃).

Me glycoside, 4,6-O-ethylidene: Methyl 2,3-anhydro-4,6-O-ethylidene-α-D-allopyranoside, 9CI, 8CI [6958-77-6] C₉H₁₄O₅ 202.207 Mp 128°. [α]_D +100 (CHCl₃).

Me glycoside, 4,6-O-propylidene: Methyl 2,3-anhydro-4,6-O-propylidene-α-D-allopyranoside C₁₀H₁₆O₅ 216.233 Mp 131-132°. [α]_D +120.9 (CHCl₃).

Me glycoside, 4,6-O-benzylidene: See Methyl 2,3-anhydro-4,6-O-benzylidene-allopyranoside, M-151

Me glycoside, 4-Me: Methyl 2,3-anhydro-4-O-methyl-α-D-allopyranoside C₈H₁₄O₅ 190.196 Solid. [α]_D +197 (c, 1 in CHCl₃).

Me glycoside, 6-Me: Methyl 2,3-anhydro-6-O-methyl-α-D-allopyranoside C₈H₁₄O₅ 190.196 Syrup giving needles on standing. Mp 76-77.5°. [α]_D²⁰ +185 (c, 1 in CHCl₃).

Me glycoside, di-Me: Methyl 2,3-anhydro-4,6-di-O-methyl-α-D-allopyranoside [7226-40-6] C₉H₁₆O₅ 204.222 Mp 63°. [α]_D +189 (CHCl₃).

Me glycoside, 6-benzyl: Methyl 2,3-anhydro-6-O-benzyl-α-D-allopyranoside C₁₄H₁₈O₅ 266.293 Syrup. Bp_{0.2} 190°. [α]_D +91 (c, 1.0 in CHCl₃).

Me glycoside, 6-trityl: Methyl 2,3-anhydro-6-O-trityl-α-D-allopyranoside C₂₆H₂₆O₅ 418.488 Cryst. (EtOH/Me₂CO). Mp 184°. [α]_D²⁰ +96.5 (c, 0.4 in CHCl₃).

Me glycoside, 6-trityl, 4-benzyl: Methyl 2,3-anhydro-4-O-benzyl-6-O-trityl- α -D-allopyranoside
 $C_{33}H_{32}O_5$ 508.613
 Cryst. (MeOH/Me₂CO). Mp 162°. $[\alpha]_D^{18}$ +91.5 (c, 1.0 in CHCl₃).

Benzyl glycoside: Benzyl 2,3-anhydro- α -D-allopyranoside
 [61134-18-7]
 $C_{13}H_{16}O_5$ 252.266
 Cryst. (Et₂O/petrol). Mp 106-108°. $[\alpha]_D$ +123 (c, 1.0 in EtOH).

Benzyl glycoside, 4,6-O-benzylidene: Benzyl 2,3-anhydro-4,6-O-benzylidene- α -D-allopyranoside
 [35905-39-6]
 $C_{20}H_{20}O_5$ 340.375
 Cryst. (EtOH). Mp 182-183°. $[\alpha]_D$ +124 (c, 3.0 in CHCl₃).

β -D-Pyranose-form

Me glycoside: Methyl 2,3-anhydro- β -D-allopyranoside
 $C_7H_{12}O_5$ 176.169
 Cryst. (EtOAc/Et₂O/petrol). Mp 60-62°. $[\alpha]_D^{17}$ -6.1 (c, 1.31 in EtOAc).

Me glycoside, 4,6-O-benzylidene: See Methyl 2,3-anhydro-4,6-O-benzylidene-neallopyranoside, M-151

Me glycoside, 4,6-di-Me: Methyl 2,3-anhydro-4,6-di-O-methyl- β -D-allopyranoside
 $C_9H_{16}O_5$ 204.222
 Mp 51°. $[\alpha]_D$ +35.3 (CHCl₃).

Me glycoside, 6-benzyl: Methyl 2,3-anhydro-6-O-benzyl- β -D-allopyranoside
 [63815-21-4]
 $C_{14}H_{18}O_5$ 266.293
 Syrup. Bp_{0.05} 180°.

α -D-Furanose-form

6-Deoxy, Me glycoside, 5-benzyl: Methyl 2,3-anhydro-5-O-benzyl-6-deoxy- α -D-allofuranoside, 9CI
 [76235-02-4]
 $C_{14}H_{18}O_4$ 250.294
 Syrup. $[\alpha]_D$ -35.5 (c, 1.0 in CHCl₃).

β -D-Furanose-form

Tri-Ac: 1,5,6-Tri-O-acetyl-2,3-anhydro- β -D-allofuranose
 [61196-18-7]
 $C_{12}H_{16}O_8$ 288.254
 Cryst. (EtOAc/petrol). Mp 120-121°. $[\alpha]_D$ -62 (c, 0.5 in CHCl₃).

Me glycoside, 5,6-dibenzoyl: Methyl 2,3-anhydro-5,6-di-O-benzoyl- β -D-allofuranoside
 $C_{21}H_{20}O_7$ 384.385
 Syrup. $[\alpha]_D^{20}$ -96.2 (c, 3.1 in EtOH).

Me glycoside, 5,6-ditosyl: Methyl 2,3-anhydro-5,6-di-O-tosyl- β -D-allofuranoside
 $C_{21}H_{24}O_9S_2$ 484.547
 Cryst. (EtOH). Mp 115.5-116°. $[\alpha]_D^{20}$ -26.3 (c, 3.9 in CHCl₃).

Me glycoside, 6-benzoyl, 5-tosyl: Methyl 2,3-anhydro-6-O-benzoyl-5-O-tosyl- β -D-allofuranoside
 $C_{21}H_{22}O_8S$ 434.466
 Cryst. Mp 111°. $[\alpha]_D^{20}$ -45 (c, 2.9 in CHCl₃).

Ohle, H. *et al.*, *Ber.*, 1938, **71**, 2316 (β -D-Me fur dibenzoyl, β -D-Me fur ditosyl, β -D-Me fur benzoyl tosyl)

Robertson, G.J. *et al.*, *J.C.S.*, 1938, 472 (α -D-Me pyr)

Peat, S. *et al.*, *J.C.S.*, 1938, 1088 (β -D-Me pyr)
 Dimitrijević, S. *et al.*, *Carbohydr. Res.*, 1969, **11**, 531 (α -D-Me pyr, α -D-Me pyr di-Ac, α -D-Me pyr dimesyl, α -D-Me pyr trityl, α -D-Me pyr benzyl trityl)

Williams, N.R. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1970, **25**, 109 (rev. derivs)

Buchanan, J.G. *et al.*, *J.C.S. Perkin I*, 1976, 1449 (α -D-pyr, α -D-benzyl pyr, α -D-benzyl pyr benzylidene)

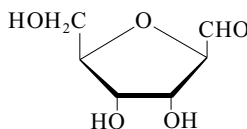
Achmatowicz, O. *et al.*, *Carbohydr. Res.*, 1977, **55**, 165 (α -D-Me pyr benzyl, β -D-Me pyr benzyl)

Brimacombe, J.S. *et al.*, *J.C.S. Perkin I*, 1980, 1800 (α -D-Me fur benzyl deoxy)

Umemura, E. *et al.*, *Carbohydr. Res.*, 1992, **224**, 141 (α -D-Me pyr 4-Me, 6-Me)

2,5-Anhydroallose, 9CI

A-485


 $C_6H_{10}O_5$ 162.142

 In equilib. with 1 \rightarrow 6 hemiacetal.

D-form

3,4,6-Tri-Ac, oxime:

$C_{12}H_{17}NO_8$ 303.268
 $[\alpha]_D^{25}$ +21.7 (c, 1.0 in CHCl₃).

3,4,6-Tribenzoyl: 2,5-Anhydro-3,4,6-tri-O-benzoyl-D-allose
 [39037-99-5]

$C_{27}H_{22}O_8$ 474.466
 Syrup. $[\alpha]_D^{23}$ +44.7 (c, 0.33 in CHCl₃).

3,4,6-Tribenzoyl, oxime: [50720-88-2]

$C_{27}H_{23}NO_8$ 489.481
 $[\alpha]_D^{23}$ +12.9 (c, 0.2 in MeOH).

3,4-O-Isopropylidene, 6-benzoyl: 2,5-Anhydro-6-O-benzoyl-3,4-O-isopropylidene-D-allose
 [39037-13-3]

$C_{16}H_{18}O_6$ 306.315
 Oil. $[\alpha]_D^{25}$ +11.9 (c, 0.5 in CHCl₃).

3,4-O-Isopropylidene, 6-benzoyl, oxime:

$C_{16}H_{19}NO_6$ 321.329
 Mp 120-125°. $[\alpha]_D^{23}$ -4.5 (c, 0.3 in CHCl₃).

3,4,6-Tribenzyl: 2,5-Anhydro-3,4,6-tri-O-benzyl-D-allose
 [37699-02-8]

$C_{27}H_{28}O_5$ 432.515
 Oil. $[\alpha]_D^{23}$ +62.5 (c, 0.28 in CHCl₃).

DL-form

3,4-O-Isopropylidene: 2,5-Anhydro-3,4-O-isopropylidene-DL-allose
 [55610-47-4]

$C_9H_{14}O_5$ 202.207
 Cryst. Mp 185-186°.

3,4-O-Isopropylidene, thiosemicarbazone:
 Mp 156°.

3,4-O-Isopropylidene, semicarbazone:
 Cubes (Me₂CO/Et₂O). Mp 136-137°.

3,4-O-Isopropylidene, 6-Ac, semicarbazone:
 Cryst. (MeOH/petrol). Mp 146-148°.

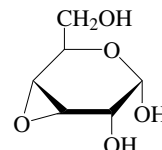
Ogawa, T. *et al.*, *Agric. Biol. Chem.*, 1971, **35**, 1825 (*D*-tribenzyl)

Albrecht, H.P. *et al.*, *J.O.C.*, 1973, **38**, 1836; 1975, **40**, 2143 (*D*-tribenzoyl, *D*-tribenzyl, tri-Ac oxime, tribenzoyl oxime)

Just, G. *et al.*, *Can. J. Chem.*, 1975, **53**, 131 (*DL*-derivs)

3,4-Anhydroallose

A-486


 α -D-Pyranose-form

 $C_6H_{10}O_5$ 162.142

α -DL-Pyranose-form

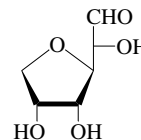
Me glycoside: Methyl 3,4-anhydro- α -DL-allopyranoside
 [39598-70-4]
 $C_7H_{12}O_5$ 176.169
 Mp 103-104°.

Banaszek, A. *et al.*, *Bull. Acad. Pol. Sci., Ser. Sci. Chim.*, 1972, **20**, 935 (synth)

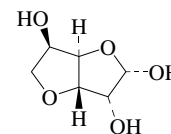
Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1990, **203**, 195 (cryst struct)

3,6-Anhydroallose

A-487



D-form


 α -D-Furanose-form

 $C_6H_{10}O_5$ 162.142

D-form

[35880-33-2]
 Syrup. $[\alpha]_D^{25}$ -33.2 (c, 3.8 in H₂O). Pmr shows presence of 3.6% free aldehyde, 50% dimeric forms and 46% hydrated forms.

4,5-O-Isopropylidene, di-Me acetal: 3,6-Anhydro-4,5-O-isopropylidene-D-allose dimethylacetal

[35880-35-4]
 $C_{11}H_{20}O_6$ 248.275
 Syrup. Bp_{0.05} 110°. $[\alpha]_D^{25}$ -18.1 (c, 1.2 in CHCl₃). Error in CAS name.

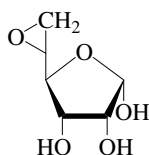
α -D-Furanose-form

1,2-O-Isopropylidene, 5-mesyl: 3,6-Anhydro-1,2-O-isopropylidene-5-O-mesyl- α -D-allofuranose
 [159043-20-6]

$C_{10}H_{16}O_7S$ 280.298
 Cryst. (EtOH). Mp 98-99°. $[\alpha]_D^{20}$ +12.1 (c, 1 in CH₂Cl₂).

Randall, M.H. *et al.*, *J.C.S. Perkin I*, 1972, 346-351 (*D*-form, *D*-form isopropylidene di-Me acetal)

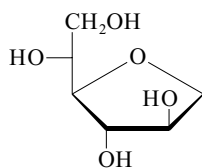
Meyer zu Reckendorf, W. *et al.*, *Annalen*, 1994, 337-346 (α -D-fur-isopropylidene mesyl)

5,6-Anhydroallose**A-488**C₆H₁₀O₅ 162.142**α-D-Furanose-form**

1,2-O-Isopropylidene: 5,6-Anhydro-1,2-O-isopropylidene-α-D-allofuranose
[72380-41-7]
C₉H₁₄O₅ 202.207
Cryst. (C₆H₆/cyclohexane). Mp 68-69°. [α]_D²⁵ +57.4 (c, 1.0 in CHCl₃).

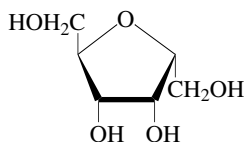
3-Benzyl, 1,2-O-isopropylidene: 5,6-Anhydro-3-O-benzyl-1,2-O-isopropylidene-α-D-allofuranose
[83103-60-0]
C₁₆H₂₀O₅ 292.331
Syrup. Bp_{0.5} 140-150° (lit. gives a pressure range). [α]_D²⁵ +106.3 (c, 2 in CHCl₃).

Uryu, T. et al., *J. Polym. Sci., Part A: Polym. Chem.*, 1982, **20**, 2181-2194 (*α-D-fur isopropylidene, α-D-fur benzyl isopropylidene*)

1,4-Anhydroaltritol**A-489**C₆H₁₂O₅ 164.158**D-form**

Mp 106.5-107.5°. [α]_D +13.9 (c, 3.7 in H₂O).

Barker, R. et al., *J.O.C.*, 1964, **29**, 869 (*synth*)

2,5-Anhydroaltritol**A-490***2,5-Anhydrotalitol*C₆H₁₂O₅ 164.158**D-form** [76945-35-2]

Oil, crystallising on standing. Mp 111-112°. Bp_{0.005} 110-115°. [α]_D²⁴ +45.9 (c, 2.02 in H₂O).

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2,5-anhydro-D-altritol
C₁₄H₂₀O₉ 332.307
Bp_{0.3} 160-165°.

1,6-Dibenzoyl: 2,5-Anhydro-1,6-di-O-benzoyl-D-altritol
C₂₀H₂₀O₇ 372.374
Mp 100-101°. [α]_D²³ +46.5 (c, 1.45 in MeOH).

3,4-Isopropylidene: 2,5-Anhydro-3,4-O-isopropylidene-D-altritol
[42889-94-1]

C₉H₁₆O₅ 204.222

Oil. [α]_D²⁰ +4.35 (c, 1.8 in CH₂Cl₂).

3,4-Isopropylidene, di-Ac: 1,6-Di-O-acetyl-2,5-anhydro-3,4-O-isopropylidene-D-altritol
[64023-48-9]

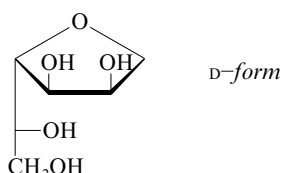
C₁₃H₂₀O₇ 288.297

Oil. [α]_D²⁰ -3 (c, 2 in CH₂Cl₂).

Defaye, J. et al., *Bull. Soc. Chim. Fr.*, 1964, 999 (*synth*)

Otero, D.A. et al., *Carbohydr. Res.*, 1984, **128**, 79 (*synth*)

El Sayed Ahmed, F.M. et al., *Carbohydr. Res.*, 1986, **155**, 19 (*3,4-isopropylidene, 3,4-isopropylidene di-Ac*)

3,6-Anhydroaltritol**A-491***1,4-Anhydrotalitol*C₆H₁₂O₅ 164.158

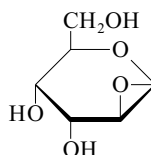
3,6-Anhydroaltritol is the preferred IU-PAC name.

D-form

Syrup. [α]_D -57.8 (c, 2.2 in H₂O).

Diisopropylidene: 3,6-Anhydro-1,2,4,5-di-O-isopropylidene-D-altritol. 1,4-Anhydro-2,3:5,6-di-O-isopropylidene-D-talitol
C₁₂H₂₀O₅ 244.287
Mp 45°. [α]_D²⁵ -19.4 (c, 2.9 in toluene).

Barker, R. et al., *J.O.C.*, 1964, **29**, 869 (*synth, D-form*)

1,2-Anhydroaltrose**A-492**C₆H₁₀O₅ 162.142**β-D-Pyranose-form**

4,6-O-Benzylidene, 3-(tert-butylidimethylsilyl): 1,2-Anhydro-4,6-O-benzylidene-3-O-tert-butylidimethylsilyl-β-D-altropyranose
[121654-02-2]

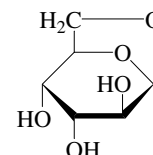
C₁₉H₂₈O₅Si 364.513

[α]_D²⁵ +29 (c, 0.94 in CHCl₃).

3,4,6-Tribenzyl: 1,2-Anhydro-3,4,6-tri-O-benzyl-β-D-altropyranose
C₂₇H₂₈O₅ 432.515
Mp 83-84°. [α]_D²³ -23.6 (c, 1.0 in CHCl₃).

Wu, E. et al., *Carbohydr. Res.*, 1993, **250**, 327 (*tribenzyl*)

Cavicchioli, M. et al., *Chem. Comm.*, 1995, 901 (*pmr*)

1,6-Anhydroaltrose**A-493***Altrosan*

β-D-Pyranose-form

C₆H₁₀O₅ 162.142

β-D-Pyranose-form [10339-41-0] Minor prod. from the pyrolysis of cellulose. Powder (2-propanol). Mp 134-135° (129-130°). [α]_D²⁵ -219 (c, 1 in H₂O).

3-Benzyl: 1,6-Anhydro-3-O-benzyl-β-D-altropyranose
[116730-96-2]

C₁₃H₁₆O₅ 252.266

Syrup. [α]_D -123 (c, 0.8 in CHCl₃).

3-Benzyl, di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-O-benzyl-β-D-altropyranose
[116730-97-3]

C₁₇H₂₀O₇ 336.341

Syrup. [α]_D -152 (c, 1 in CHCl₃).

4-Benzyl: 1,6-Anhydro-4-O-benzyl-β-D-altropyranose
[116836-99-8]

C₁₃H₁₆O₅ 252.266

Mp 123-126°. [α]_D -137 (c, 0.5 in CHCl₃).

4-Benzyl, 2,3-di-Ac: 2,3-Di-O-acetyl-1,6-anhydro-4-O-benzyl-β-D-altropyranose
[116730-98-4]

C₁₇H₂₀O₇ 336.341

Syrup. [α]_D -129 (c, 0.9 in CHCl₃).

Tribenzyl: 1,6-Anhydro-2,3,4-tri-O-benzyl-β-D-altropyranose
[81126-98-9]

C₂₇H₂₈O₅ 432.515

Mp 98-99°. [α]_D²⁵ -63.9 (CHCl₃).

2-Benzyl: 1,6-Anhydro-2-O-benzyl-β-D-altropyranose
[118895-82-2]

C₁₃H₁₆O₅ 252.266

[α]_D²³ -130 (c, 0.03 in CHCl₃).

β-D-Furanose-form [38184-08-6]

Mp 110-111°. [α]_D²² -2.5 (c, 1.0 in H₂O).

2,3-Dibenzyl: 1,6-Anhydro-2,3-di-O-benzyl-β-D-altropyranose
[118895-80-0]

C₂₀H₂₂O₅ 342.391

Syrup. [α]_D²³ -78.9 (c, 0.13 in CHCl₃).

β-L-Furanose-form [33818-24-5]

Cryst. (AcOH). Mp 143-145°. [α]_D²⁰ +19 (c, 1 in H₂O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,6-anhydro-β-L-altrofurranose
[33818-26-7]

C₁₂H₁₆O₈ 288.254

Syrup. [α]_D²⁰ +83.7 (c, 0.95 in CHCl₃).

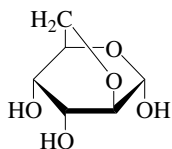
Heyns, K. et al., *Chem. Ber.*, 1971, **104**, 2063 (*synth, β-L-fur*)

Angyal, S.J. et al., *Aust. J. Chem.*, 1978, **31**, 1151 (*synth, β-L-fur*)

Norrestam, R. et al., *Acta Cryst. C*, 1981, **37**, 1265 (*cryst struct*)

Uryu, T. et al., *J. Polym. Sci., Polym. Chem. Ed.*, 1982, **20**, 343 (*tribenzyl*)

Köll, P. *et al.*, *Carbohydr. Res.*, 1988, **174**, 1,9; 179, 1; 9 (pmr, cmr, *cryst struct*, β -L-fur, β -D-fur)
 Carmen Cruzado, M. *et al.*, *Carbohydr. Res.*, 1988, **175**, 193 (3-benzyl, 4-benzyl)
 Hori, H. *et al.*, *J.O.C.*, 1989, **54**, 1346-1353 (2-benzyl, 2,3-dibenzyl, tribenzyl)
 Matsumoto, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1991, **64**, 2309 (*synth*, *ir*, pmr, cmr, β -D-pyr)
 Van Rijsbergen, R. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 463-470 (*occur*)

2,6-Anhydroaltrose**A-494** α -D-Pyranose-form $C_6H_{10}O_5$ 162.142**D-form**

Di-Me acetal: 2,6-Anhydro-D-altrose dimethylacetal, 9CI
 [80564-43-8]
 $C_8H_{16}O_6$ 208.211
 Cryst. (2-propanol). Mp 127-128°. $[\alpha]_D^{20}$ -50.1 (c, 0.9 in MeOH).

 α -D-Pyranose-form

Me glycoside: Methyl 2,6-anhydro- α -D-altropyranoside
 [29411-58-3]
 $C_7H_{12}O_5$ 176.169
 Prisms (EtOAc). Mp 97-98°. $[\alpha]_D^{20}$ +44.6 (c, 2 in H_2O).

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2,6-anhydro- α -D-altropyranoside
 [76825-33-7]
 $C_{11}H_{16}O_7$ 260.243
 Prisms ($CHCl_3$ /pentane). Mp 100-101°. $[\alpha]_D^{20}$ +32.5 (c, 2 in $CHCl_3$).

Me glycoside, 3,4-O-isopropylidene: Methyl 2,6-anhydro-3,4-O-isopropylidene- α -D-altropyranoside
 [76831-94-2]
 $C_{10}H_{16}O_5$ 216.233
 Cryst. (Et_2O /petrol). Mp 132°. $[\alpha]_D^{20}$ +33.1 (c, 1.2 in $CHCl_3$).

 β -D-Pyranose-form

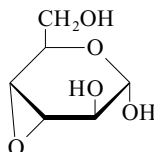
Me glycoside: Methyl 2,6-anhydro- β -D-altropyranoside
 [71109-96-1]
 $C_7H_{12}O_5$ 176.169
 Syrup. $[\alpha]_D^{20}$ -67.6 (c, 1 in MeOH).

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2,6-anhydro- β -D-altropyranoside
 [71109-95-0]
 $C_{11}H_{16}O_7$ 260.243
 Syrup. $[\alpha]_D^{20}$ -56 (c, 1 in CH_2Cl_2).

Me glycoside, 3,4-O-isopropylidene: Methyl 2,6-anhydro-3,4-O-isopropylidene- β -D-altropyranoside
 [71154-76-2]
 $C_{10}H_{16}O_5$ 216.233
 Solid. Mp 77-79°. $[\alpha]_D^{20}$ -51 (c, 1 in $CHCl_3$).

Rosenfeld, D.A. *et al.*, *J.A.C.S.*, 1948, **70**, 2201-2206 (α -D-Me pyr, α -D-Me pyr di-Ac)

Köll, P. *et al.*, *Chem. Ber.*, 1979, **112**, 2296-2304 (β -D-Me pyr, β -D-Me pyr di-Ac, β -D-Me pyr isopropylidene)
 Köll, P. *et al.*, *Chem. Ber.*, 1980, **113**, 3919-3926 (α -D-Me pyr isopropylidene)
 Köll, P. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 441-449 (*D*-di-Me acetal)

3,4-Anhydroaltrose**A-495** $C_6H_{10}O_5$ 162.142 **α -D-Pyranose-form**

Me glycoside: Methyl 3,4-anhydro- α -D-altropyranoside
 [24558-64-3]
 $C_7H_{12}O_5$ 176.169
 $[\alpha]_D^{23}$ +97.3 (c, 3.61 in H_2O).

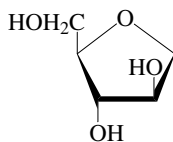
Me glycoside, 6-trityl: Methyl 3,4-anhydro-6-O-trityl- α -D-altropyranoside
 [24558-68-7]
 $C_{26}H_{26}O_5$ 418.488
 Cryst. (Et_2O /petrol). Mp 104°.

Benzyl glycoside, 6-trityl, 2-mesyl: Benzyl 3,4-anhydro-2-O-mesyl-6-O-trityl- α -D-altropyranoside
 [140702-38-1]
 $C_{33}H_{32}O_7S$ 572.678
 Cryst. (Et_2O /Me $_2$ CO). Mp 83-84°. $[\alpha]_D^{22}$ +38 (c, 0.5 in $CHCl_3$).

Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1992, **225**, 1 (*synth*, pmr, *cryst struct*, *deriv*)

1,4-Anhydroarabinitol, 9CI**A-496**

[41936-38-3]



D-form

 $C_5H_{10}O_4$ 134.132**D-form** [3999-31-3]

Hygroscopic *cryst*. (2-propanol/EtOAc). Mp 53°. $[\alpha]_D^{29}$ +23.7 (c, 1.5 in H_2O).

Tribenzoyl: 1,4-Anhydro-2,3,5-tri-O-benzoyl-D-arabinitol
 $C_{26}H_{22}O_7$ 446.456
 Syrup. $[\alpha]_D^{25}$ -77.4 (c, 2.14 in CH_2Cl_2).

There is considerable confusion concerning the opt. rotn. of this compd., its enantiomer, and the enantiomers of the tris-4-nitrobenzoyl analogue. Two of the papers appear to contain typographical errors.

Tris-4-nitrobenzoyl: Mp 80-81°. $[\alpha]_D^{28}$ -86.2 (c, 1 in $CHCl_3$) (see note above).

L-form [106707-70-4]

Tribenzoyl: 1,4-Anhydro-2,3,5-tri-O-benzoyl-L-arabinitol
 [55018-48-9]

 $C_{26}H_{22}O_7$ 446.456

Oil. $[\alpha]_D^{20}$ +77.5 (c, 0.64 in CH_2Cl_2) (see note above).

Tris-4-nitrobenzoyl:

Cryst. (Me $_2$ CO aq.). Mp 80-82°. $[\alpha]_D^{20}$ +85.1 (c, 0.5 in $CHCl_3$) (see note above).

Barker, R. *et al.*, *J.O.C.*, 1961, **26**, 4605-4609 (*L-form tris-4-nitrobenzoyl*)

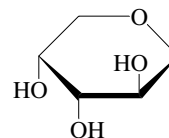
Bhattacharya, A.K. *et al.*, *J.O.C.*, 1963, **28**, 428-435 (*D-form tribenzoyl*, *L-form tribenzoyl*)

Hudson, B.G. *et al.*, *J.O.C.*, 1967, **32**, 3650-3658 (*D-form*, *synth*)

Que, L. *et al.*, *Biochemistry*, 1974, **13**, 146-153 (cmr)

Ferrier, R.J. *et al.*, *Carbohydr. Res.*, 1974, **38**, 125-131 (*L-form tribenzoyl*)

Bennek, J.A. *et al.*, *J.O.C.*, 1987, **52**, 892-897 (*D-form*, *synth*, cmr)

1,5-Anhydroarabinitol**A-497***1,5-Anhydroxyxitol*

D-form

 $C_5H_{10}O_4$ 134.132**D-form** [32742-34-0]

Cryst. (EtOH/EtOAc). Mp 96-97°. $[\alpha]_D^{20}$ -98.7 (c, 1 in H_2O).

Tri-Ac: 2,3,4-Tri-O-acetyl-D-arabinitol
 [62445-02-7]

 $C_{11}H_{16}O_7$ 260.243

Cryst. (EtOH). Mp 58°. $[\alpha]_D^{20}$ -74.2 (c, 1.018 in $CHCl_3$).

Tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-benzoyl-D-arabinitol
 [4145-05-5]

 $C_{26}H_{22}O_7$ 446.456

Cryst. (EtOH). Mp 120-121°. $[\alpha]_D^{20}$ -220 ($CHCl_3$).

2,3,4-Triphosphate: [151380-04-0] $C_5H_{13}O_{13}P_3$ 374.071

Cryst. + $\frac{1}{2}$ EtOH (MeOH/EtOH) (as pentakis(cyclohexylammonium) salt). Mp 184-194° (pentakis(cyclohexylammonium) salt). $[\alpha]_D^{23}$ -11 (c, 1 in H_2O).

L-form

Cryst. (EtOH). Mp 94-95°. $[\alpha]_D^{25}$ +99.2 (c, 1.01 in H_2O).

Fletcher, H.G. *et al.*, *J.A.C.S.*, 1947, **69**, 1672 (*synth*)

Pitzner, L.J. *et al.*, *Spectrochim. Acta A*, 1975, **31**, 911 (*ir*, Raman)

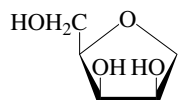
Kondo, Y. *et al.*, *Carbohydr. Res.*, 1984, **128**, 175; **134**, 167 (*derivs*)

Bertucci, C. *et al.*, *Carbohydr. Res.*, 1986, **149**, 299 (*L-form*)

Regeling, H. *et al.*, *Carbohydr. Res.*, 1993, **244**, 187 (*triphosphate*)

Jeffery, A. *et al.*, *Tet. Lett.*, 1995, **36**, 3627 (*synth*)

Elveback, L.E. *et al.*, *Carbohydr. Res.*, 1998, **313**, 181-187 (*derivs*)

2,5-Anhydroarabinitol, 9CI**A-498***1,4-Anhydrolyxitol**D-form* $C_5H_{10}O_4$ 134.132

The name 2,5-Anhydroarabinitol is preferred over 1,4-Anhydrolyxitol acc. to IUPAC special rules for carbohydrates.

D-form [51607-78-4]

Syrup. Bp_{0.24} 125-135° (bath). $[\alpha]_D^{23}$ -1.4 (c, 0.9 in H₂O).

Tribenzoyl: 2,5-Anhydro-1,3,4-tri-O-benzoyl-D-arabinitol. 1,4-Anhydro-2,3,5-tri-O-benzoyl-D-lyxitol

 $C_{26}H_{22}O_7$ 446.456

Cryst. (EtOAc/pentane). Mp 117-118°. $[\alpha]_D^{20}$ -36.1 (c, 1.73 in CHCl₃).

Tritosyl: 2,5-Anhydro-1,3,4-tri-O-tosyl-D-arabinitol. 1,4-Anhydro-2,3,5-tri-O-tosyl-D-lyxitol

 $C_{26}H_{28}O_{10}S_3$ 596.699

Cryst. (EtOH). Mp 128-129°. $[\alpha]_D^{23}$ +27.4 (c, 6.4 in CHCl₃).

3,4-Isopropylidene: 2,5-Anhydro-3,4-O-isopropylidene-D-arabinitol. 1,4-Anhydro-2,3-O-isopropylidene-D-lyxitol

 $C_8H_{14}O_4$ 174.196

Needles (C₆H₆/petrol). Mp 75-76°. $[\alpha]_D^{23}$ -40.5 (c, 5.4 in H₂O).

L-form [106248-68-4]

Bp_{0.09} 115-125° (bath). $[\alpha]_D^{28}$ +0.2 (c, 5.9 in H₂O). n_D^{25} 1.4901.

Tritosyl: 2,5-Anhydro-1,3,4-tri-O-tosyl-L-arabinitol. 1,4-Anhydro-2,3,5-tri-O-tosyl-L-lyxitol

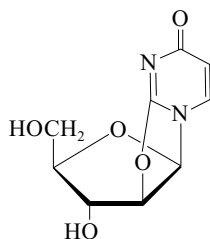
 $C_{26}H_{28}O_{10}S_3$ 596.699

Cryst. (EtOH). Mp 128°. $[\alpha]_D^{23}$ -27.4 (c, 0.59 in CHCl₃).

Cifonelli, M. *et al.*, *J.A.C.S.*, 1955, **77**, 121-125 (*D-form, L-form, synth, tritosyl derivs, 3,4-isopropylidene*)

Battacharya, A.K. *et al.*, *J.O.C.*, 1963, **28**, 428-435 (*D-form, synth, tribenzoyl*)

Que, L. *et al.*, *Biochemistry*, 1974, **13**, 246-253 (*cmr*)

2,2'-Anhydro-1-arabinofuranosyluracil, 8CI**A-499** $C_9H_{10}N_2O_5$ 226.188**β-D-form***2'-O²-Cyclouridine*

[3736-77-4]

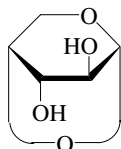
Mp 240-245°. $[\alpha]_D^{27}$ -20 (c, 0.4 in H₂O). λ_{max} 270 sh, 249, 223 nm (H₂O).

5'-Ac: [25383-78-2] $C_{11}H_{12}N_2O_6$ 268.226

Mp 169-170°. λ_{max} 249 (ε 7 700), 225 nm (8 400) (MeOH).

3',5'-Di-Ac: [28309-53-7] $C_{13}H_{14}N_2O_7$ 310.263

Mp 178-179°.

5'-Benzoyl: [34308-07-1] $C_{16}H_{14}N_2O_6$ 330.296Mp 201-203°. $[\alpha]_D^{25}$ +23.5 (MeOH).*3',5'-Dibenzoyl: [31616-01-0]* $C_{23}H_{18}N_2O_7$ 434.404Mp 312°. $[\alpha]_D^{25}$ -38 (c, 0.5 in DMF).*5'-Trityl: [3249-94-3]*Mp 219-221°. $[\alpha]_D^{23}$ -18 (c, 0.4 in MeOH).*Aldrich Library of 13C and 1H FT NMR**Spectra*, 1992, **3**, 373A (*nmr*)Codington, J.F. *et al.*, *J.O.C.*, 1964, **29**, 558Fox, J.J. *et al.*, *Tet. Lett.*, 1965, 643 (*synth*)Jones, A.J. *et al.*, *J. Phys. Chem.*, 1970, **74**, 2684 (*cmr*)Verheyden, J.P.H. *et al.*, *J.O.C.*, 1970, **35**, 2868 (*synth*)Holy, A. *et al.*, *Tet. Lett.*, 1971, 185 (*synth*)Suck, D. *et al.*, *Acta Cryst. B*, 1973, **29**, 1323 (*cryst struct*)Miah, A. *et al.*, *J.C.S. Perkin 1*, 1998, 3277-3283 (*synth, pmr, cmr*)**1,4-Anhydroarabinopyranose****A-500***1,5-Anhydroarabinofuranose**D-form* $C_5H_8O_4$ 132.116**D-form**

2,3-Di-Me: 1,4-Anhydro-2,3-di-O-methyl-α-D-arabinopyranose. 1,5-Anhydro-2,3-di-O-methyl-β-D-arabinofuranose

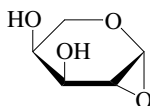
 $C_7H_{12}O_4$ 160.169

$[\alpha]_D^{19}$ +128.5 (c, 3.5 in CHCl₃).

L-form

Obt. by vacuum pyrolysis of plant cell wall biomass, e.g. corn bran.

Cryst. (EtOH). Mp 76-78°.

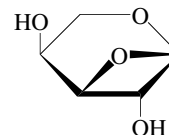
Kops, J. *et al.*, *J.O.C.*, 1965, **30**, 3951Essig, M.G. *et al.*, *Carbohydr. Res.*, 1988, **181**, 189 (*manuf*)**1,2-Anhydroarabinose, 9CI****A-501** $C_5H_8O_4$ 132.116**β-L-Pyranose-form**

3,4-Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl-β-L-arabinopyranose

[132884-64-1]

 $C_{19}H_{20}O_4$ 312.365 $[\alpha]_D$ -8.3 (c, 1.4 in CHCl₃).

Yang, G. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 909-921 (*3,4-dibenzyl, synth, pmr*)

1,3-Anhydroarabinose, 9CI**A-502** $C_5H_8O_4$ 132.116**α-L-Pyranose-form**

Dibenzyl: 1,3-Anhydro-2,4-di-O-benzyl-α-L-arabinopyranose, 9CI

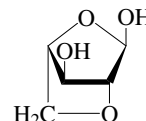
[172792-00-6]

 $C_{19}H_{20}O_4$ 312.365

Syrup, crystallising on standing.

Mp 31°. $[\alpha]_D$ +25 (c, 1 in CHCl₃).

Du, Y. *et al.*, *Carbohydr. Res.*, 1995, **275**, 259-273 (*dibenzyl, synth, pmr*)

2,5-Anhydroarabinose**A-503***α-L-Furanose-form* $C_5H_8O_4$ 132.116**L-form**Syrup. $[\alpha]_D^{25}$ +12 (c, 0.5 in H₂O).*Benzylphenylhydrazone:*

Needles (EtOH aq.). Mp 129-130°.

Di-Me acetal: 2,5-Anhydro-L-arabinose di-methylacetal

 $C_7H_{14}O_5$ 178.185

Liq. $[\alpha]_D^{25}$ +30.5 (c, 1.2 in MeOH). n_D^{25} 1.4694.

α-L-Furanose-form

Me glycoside: Methyl 2,5-anhydro-α-L-arabinofuranoside

[25243-01-0]

 $C_6H_{10}O_4$ 146.143Liq. Bp_{0.135} 65-75°. $[\alpha]_D^{27}$ -167 (H₂O).

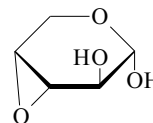
Hydrolyses at room temp. Also described as a mixture of α- and β-anomers (1976).

Et glycoside: Ethyl 2,5-anhydro-α-L-arabinofuranoside

Liq. Bp_{0.001} 85-100°. $[\alpha]_D^{25}$ -81.7 (c, 1.0 in 0.1 M NaOH).

Cifonelli, M. *et al.*, *J.A.C.S.*, 1955, **77**, 121-125 (*L-form, α-L-Me fur, α-L-Et fur*)

Angibaud, P. *et al.*, *Carbohydr. Res.*, 1976, **49**, 209-223 (*α-L-Me fur, β-L-Me fur*)

3,4-Anhydroarabinose**A-504** $C_5H_8O_4$ 132.116

α -D-Pyranose-form

Me glycoside: Methyl 3,4-anhydro- α -D-arabinopyranoside
[14200-49-8]
 $C_6H_{10}O_4$ 146.143
Cryst. (EtOAc/petrol). Mp 94-96°. $[\alpha]_D$ +66 (c, 0.8 in H_2O).
Me glycoside, 2-Ac: Methyl 2-O-acetyl-3,4-anhydro- α -D-arabinopyranoside
[14200-52-3]
 $C_8H_{12}O_5$ 188.18
Cryst. (petrol). Mp 107-108°. $[\alpha]_D$ +52.1 (c, 0.24 in $CHCl_3$).

 α -L-Pyranose-form

Me glycoside: Methyl 3,4-anhydro- α -L-arabinopyranoside
[137600-21-6]
 $C_6H_{10}O_4$ 146.143
Prisms (C_6H_6 /hexane). Mp 64-68°.

 β -L-Pyranose-form

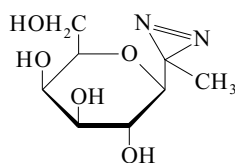
Me glycoside: Methyl 3,4-anhydro- β -L-arabinopyranoside
[14200-53-4]
 $C_6H_{10}O_4$ 146.143
Cryst. (EtOAc/petrol). Mp 32-33°. $[\alpha]_D$ +133 (c, 0.45 in H_2O).
Me glycoside, 2-Ac: Methyl 2-O-acetyl-3,4-anhydro- β -L-arabinopyranoside
[14200-55-6]
 $C_8H_{12}O_5$ 188.18
Cryst. (EtOAc/petrol). Mp 49-51°. $[\alpha]_D$ +170 (c, 0.48 in $CHCl_3$).

Buchanan, J.G. *et al.*, *J.C.S. (C)*, 1966, 1926 (synth)

Buchanan, J.G. *et al.*, *Methods Carbohydr. Chem.*, 1972, 6, 135 (synth)

Tsuda, Y. *et al.*, *Chem. Pharm. Bull.*, 1991, 39, 1983 (synth, pmr, cmr)

3,7-Anhydro-2-azi-1,2-dideoxy-D-glycero-L-manno-octitol A-505
[94885-17-3]

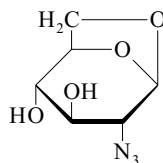


$C_8H_{14}N_2O_5$ 218.209
Photoaffinity label for galactosidase. Solid (EtOH). Mp 135° dec. $[\alpha]_D^{25}$ +9.6 (c, 0.3 in MeOH).

4,5,6,8-Tetra-Ac: Mp 124°. $[\alpha]_D^{25}$ +5 (c, 0.3 in MeOH).

Kurz, G. *et al.*, *Carbohydr. Res.*, 1985, 136, 125
Kuhn, C. *et al.*, *Carbohydr. Res.*, 1987, 160, C6 (synth)

1,6-Anhydro-2-azido-2-deoxy-glucose A-506



$C_6H_9N_3O_4$ 187.155

 β -D-Pyranose-form [67546-20-7]

Cryst. (EtOAc). Mp 115-117°. $[\alpha]_D$ -33 (c, 1.0 in EtOH).

3-Benzyl: 1,6-Anhydro-2-azido-3-O-benzyl-2-deoxy- β -D-glucopyranose
[55682-57-0]
 $C_{13}H_{17}N_3O_4$ 279.295
Mp 48-49.5°. $[\alpha]_D^{23}$ -6.3 (c, 0.2 in $CHCl_3$).

4-Benzyl: [55682-47-8]
 $C_{13}H_{17}N_3O_4$ 279.295
Cryst. (toluene). Mp 97-98°. $[\alpha]_D^{20}$ -6 (c, 1.1 in $CHCl_3$).

3,4-Dibenzyl: 1,6-Anhydro-2-azido-3,4-di-O-benzyl-2-deoxy- β -D-glucopyranose
[67227-89-8]
 $C_{20}H_{21}N_3O_4$ 367.404
 $[\alpha]_D^{23}$ +37.8.

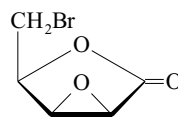
Paulsen, H. *et al.*, *Chem. Ber.*, 1978, 111, 2345-2347 (β -D-pyr. synth, pmr, 4-benzyl)

Hori, H. *et al.*, *J.O.C.*, 1989, 54, 1346 (benzyl, pmr)

Tailler, D. *et al.*, *J.C.S. Perkin 1*, 1992, 3163 (synth, pmr)

Kubasch, N. *et al.*, *Eur. J. Org. Chem.*, 2002, 2710-2726 (β -D-pyr, 4-benzyl)

2,3-Anhydro-5-bromo-5-deoxy-1,4-lyxonolactone A-507



$C_5H_5BrO_3$ 192.997

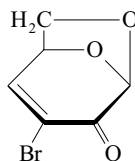
D-form [129870-06-0]

Cryst. (EtOAc/pentane). Mp 77-78°. $[\alpha]_D^{20}$ -116.5 (c, 1.8 in $CHCl_3$).

Bols, M. *et al.*, *Acta Chem. Scand.*, 1990, 44, 252 (synth, cmr)

1,6-Anhydro-3-bromo-3,4-dideoxy-glycero-hex-3-enopyranos-2-ulose A-508

3-Bromo-6,8-dioxabicyclo[3.2.1]oct-2-en-4-one. 3-Bromolevogluconone



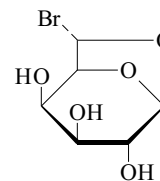
$C_6H_5BrO_3$ 205.008

D-form [78910-42-6]

Cryst. (Et₂O/hexane). Mp 47-48°.

Ward, D.D. *et al.*, *Carbohydr. Res.*, 1981, 93, 284 (synth, ms)

1,6-Anhydro-6-bromogalactose A-509



$C_6H_9BrO_5$ 241.038

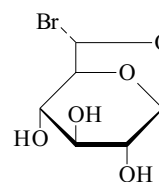
 β -D-Pyranose-(6S)-form

Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl-6S-bromo- β -D-galactopyranose
[91876-34-5]

$C_{27}H_{21}BrO_8$ 553.362
Cryst. (Et₂O/petrol). Mp 119-122°. $[\alpha]_D^{22}$ -49.9 (c, 0.8 in $CHCl_3$).

Ohrui, H. *et al.*, *Agric. Biol. Chem.*, 1984, 48, 1049 (tribenzoyl)

1,6-Anhydro-6-bromoglucose A-510



$C_6H_9BrO_5$ 241.038

 β -D-Pyranose-(6S)-form

Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro-6S-bromo- β -D-glucopyranose
[74774-10-0]

$C_{12}H_{15}BrO_8$ 367.15
Cryst. (Et₂O/petrol). Mp 94-96.5°. $[\alpha]_D$ -151 ($CHCl_3$).

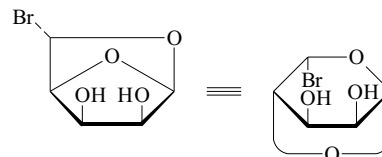
Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl-6S-bromo- β -D-glucopyranose
[74774-22-4]

$C_{27}H_{21}BrO_8$ 553.362
Cryst. Mp 188-193°. $[\alpha]_D$ -101 ($CHCl_3$).

Ferrier, R.J. *et al.*, *Aust. J. Chem.*, 1980, 33, 1025 (tri-Ac, tribenzoyl)

1,5-Anhydro-5-bromolixofuranose A-511

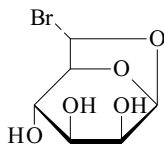
1,4-Anhydro-5-bromolixopyranose



$C_5H_7BrO_4$ 211.012

D-(5S)-form

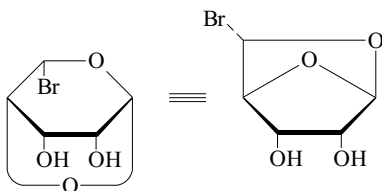
Isopropylidene: 1,5-Anhydro-5S-bromo-2,3-O-isopropylidene-β-D-lyxofuranose. 1,4-Anhydro-5-bromo-2,3-O-isopropylidene-α-D-lyxopyranose
[110808-40-7]
C₈H₁₁BrO₄ 251.076
Mp 94°. [α]_D²⁰ -87.3 (c, 0.01 in CHCl₃).
Ohrui, H. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 81
(*synth*, *pmr*)

1,6-Anhydro-6-bromomannose A-512C₆H₉BrO₅ 241.038**β-D-Pyranose-(6S)-form**

Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl-6S-bromo-β-D-mannopyranose
[110567-02-7]
C₂₇H₂₁BrO₈ 553.362
Cryst. (Et₂O/hexane). Mp 173°. [α]_D²¹ -190 (c, 0.6 in CHCl₃).
Hori, H. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 585
(*tribenzoyl*, *pmr*)

1,5-Anhydro-5-bromoribofuranose A-513

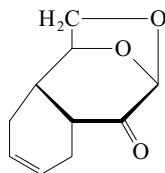
1,4-Anhydro-5-bromoribopyranose

C₅H₇BrO₄ 211.012**D-(5S)-form**

Isopropylidene: 1,5-Anhydro-5S-bromo-2,3-O-isopropylidene-β-D-ribofuranose. 1,4-Anhydro-5S-bromo-2,3-O-isopropylidene-α-D-ribopyranose
[93206-31-6]
C₈H₁₁BrO₄ 251.076
Mp 137°. [α]_D²⁰ -52 (c, 1.0 in CHCl₃).
Ohrui, H. *et al.*, *Agric. Biol. Chem.*, 1984, **48**, 1825
(*isopropylidene*, *pmr*)

1,6-Anhydro-3,4-(2-butene-1,4-diyl)-3,4-dideoxy-β-D-ribo-hexopyranos-2-ulose A-514

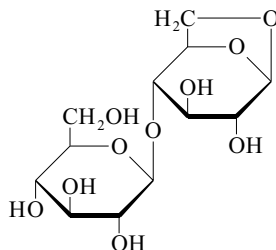
1,2,5a,6,9a-Hexahydro-1,4-epoxy-3-benzoxepin-5(4H)-one, 9CI

C₁₀H₁₂O₃ 180.203**(5aR,9aS)-form****D-allo-form**

[79849-65-3] Carbohydrate-derived synthon.
Needles (hexane). Mp 62-63°. [α]_D -55.2 (c, 1.0 in CHCl₃).
Ward, D.D. *et al.*, *Carbohydr. Res.*, 1981, **95**, 155
(*synth*, *pmr*, *cmr*, *ms*)
Isobe, M. *et al.*, *Heterocycles*, 1987, **25**, 521
(*synth*, *cmr*)

1,6-Anhydrocellobiose A-515

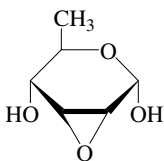
1,6-Anhydro-4-O-β-D-glucopyranosyl-β-D-glucopyranose. β-D-Glucopyranosyl-(1 → 4)-1,6-anhydro-β-D-glucopyranose. Cello-biosan
[35405-71-1]



C₁₂H₂₀O₁₀ 324.284
Hygroscopic solid. Mp 98-102°. [α]_D²⁵ -74 (c, 2.1 in H₂O).

Hexa-Ac: [38631-27-5]
C₂₄H₃₂O₁₆ 576.507
Cryst. (EtOH). Mp 142-143°. [α]_D²⁰ -54.2 (c, 1.25 in CHCl₃).

Montgomery, E.M. *et al.*, *J.A.C.S.*, 1943, **65**, 1848
(*synth*)
Wollage, P.C. *et al.*, *J. Polym. Sci., Part A*, 1971, **9**, 2877
(*synth*)
Tejima, S. *et al.*, *Chem. Pharm. Bull.*, 1972, **20**, 2036
(*hexa-Ac*)

2,3-Anhydro-6-deoxyallose A-516C₆H₁₀O₄ 146.143**α-D-Pyranose-form****α-D-Pyranose-form**

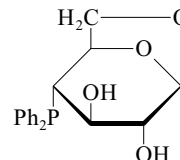
Me glycoside: Methyl 2,3-anhydro-6-deoxy-α-D-allopyranoside
[55533-58-9]
C₇H₁₂O₄ 160.169
Needles. Mp 99-100°. [α]_D²⁴ +165 (c, 1 in CHCl₃).
Me glycoside, 4-Me: Methyl 2,3-anhydro-6-deoxy-4-O-methyl-α-D-allopyranoside
[58178-83-9]
C₈H₁₄O₄ 174.196
Mp 80-80.5°. [α]_D²⁰ +210 (c, 1 in CHCl₃).

α-L-Pyranose-form

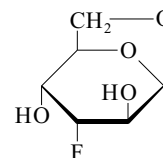
Me glycoside: Methyl 2,3-anhydro-6-deoxy-α-L-allopyranoside
[55053-26-4]
C₇H₁₂O₄ 160.169

Syrup. [α]_D -182 (c, 1.0 in CHCl₃).

Umemura, E. *et al.*, *Carbohydr. Res.*, 1992, **224**, 141
(*α-D-Me pyr*)
Cossy, J. *et al.*, *Carbohydr. Res.*, 1994, **259**, 141
(*α-L-Me pyr*)

1,6-Anhydro-4-deoxy-4-(di-phenylphosphino)glucopyranose, 13CI A-517C₁₈H₁₉O₄P 330.319**β-D-form**

2-(4-Methylbenzenesulfonyl), P-oxide:
[136632-36-5]
C₂₅H₂₅O₇PS 500.508
Needles (CHCl₃ or CHCl₃/Et₂O). Mp 165-168°. [α]_D²⁵ -41 (c, 0.1 in CHCl₃).
Li, C. *et al.*, *Carbohydr. Res.*, 1991, **216**, 149-170
(*synth*, *uv*, *ir*, *ms*)

1,6-Anhydro-3-deoxy-3-fluor-oaltrose A-518C₆H₉FO₄ 164.133**D-Pyranose-form [38711-36-3]**

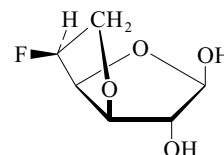
Cryst. (Me₂CO/Et₂O). Mp 132-134°. [α]_D -194 (c, 0.18 in H₂O).

4-Benzyl: 1,6-Anhydro-4-O-benzyl-3-deoxy-3-fluoro-D-altropyranose
[23094-76-0]
C₁₃H₁₅FO₄ 254.257
Cryst. Mp 102-103°. [α]_D -95 (c, 0.39 in CHCl₃).

Pacak, J. *et al.*, *Chem. Comm.*, 1969, 77 (*deriv*)
Pacak, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1972, **37**, 2589 (*deriv*, *pmr*, *F-19 nmr*)

3,6-Anhydro-5-deoxy-5-fluor-oidofuranose A-519

[103357-84-2]

C₆H₉FO₄ 164.133

α -L-form

1,2-Isopropylidene: 3,6-Anhydro-5-deoxy-5-fluoro-1,2-O-isopropylidene- α -L-ido-furanose

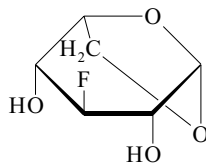
$C_9H_{13}FO_4$ 204.198

Needles. Mp 96.5-97.5°. $[\alpha]_D^{22} +15.4$ (c, 1.97 in $CHCl_3$).

Hall, L.D. et al., *Can. J. Chem.*, 1970, **48**, 451 (isopropylidene, pmr, cmr)

1,6-Anhydro-3-deoxy-3-fluoroidose

A-520



$C_6H_9FO_4$ 164.133

L-Pyranose-form [39809-12-6]

Cryst. Mp 106-109°. $[\alpha]_D^{26} +106$ (Me_2CO).

Di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-deoxy-3-fluoro-L-idopyranose [39809-13-7]

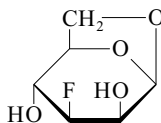
$C_{10}H_{13}FO_6$ 248.207

Cryst. (Et_2O /petrol). Mp 83-84°. $[\alpha]_D +80.5$ ($CHCl_3$).

Foster, A.B. et al., *Carbohydr. Res.*, 1972, **25**, 217 (synth, pmr, F-19 nmr)

1,6-Anhydro-3-deoxy-3-fluoromannose

A-521



$C_6H_9FO_4$ 164.133

D-Pyranose-form [88142-85-2]

Cryst. ($MeOH$). Mp 158-160° (sinters at 110-134°). $[\alpha]_D -118$ (c, 0.69 in H_2O).

Di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-deoxy-3-fluoro-D-mannopyranose [88142-86-3]

$C_{10}H_{13}FO_6$ 248.207

Syrup. Bp_{0.15} 185° (bath). $[\alpha]_D -106$ (c, 0.66 in $CHCl_3$).

Dibenzoyl: 1,6-Anhydro-2,4-di-O-benzoyl-3-deoxy-3-fluoro-D-mannopyranose [88142-87-4]

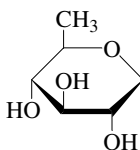
$C_{20}H_{17}FO_6$ 372.349

Cryst. ($EtOH/H_2O$). Mp 141-142°. $[\alpha]_D -186$ (c, 0.5 in $CHCl_3$).

Cerny, M. et al., *Coll. Czech. Chem. Comm.*, 1983, **48**, 2693 (D-form, di-Ac, dibenzoyl)

1,5-Anhydro-6-deoxyglucitol

A-522



$C_6H_{12}O_4$ 148.158

D-form

3,4-Dibenzyl: 1,5-Anhydro-3,4-dibenzyl-6-deoxy-D-glucitol [135186-18-4]

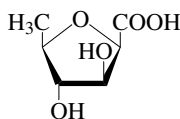
$C_{20}H_{24}O_4$ 328.407

Oil.

Broxterman, H.J.G. et al., *J. Carbohydr. Chem.*, 1991, **10**, 215-237 (2,3-dibenzyl)

2,5-Anhydro-6-deoxygluconic acid

A-523



D-form

$C_6H_{10}O_5$ 162.142

D-form

Me ester:

$C_7H_{12}O_5$ 176.169

Cryst. Mp 81-82°. $[\alpha]_D^{25} +10.5$ (c, 1.00 in $MeCN$).

3-Benzyl, Me ester: Methyl 2,5-anhydro-3-O-benzyl-6-deoxy-D-gluconate

$C_{14}H_{18}O_5$ 266.293

Oil. $[\alpha]_D^{25} -27.7$ (c, 0.9 in $CHCl_3$).

L-form

Me ester: [143813-45-0]

Mp 84-85° (81-82°). $[\alpha]_D^{20} -12.5$ (c, 1.0 in $MeCN$).

4-Benzyl, Me ester: Methyl 2,5-anhydro-4-O-benzyl-6-deoxy-L-gluconate

[145372-80-1]

$C_{14}H_{18}O_5$ 266.293

$[\alpha]_D -50.1$ (c, 1.1 in $CHCl_3$).

Choi, S.S. et al., *Chem. Comm.*, 1992, 1605

(L-form, 4-benzyl)

Mantell, S.J. et al., *Tet. Lett.*, 1992, **33**, 4503

(L-form, Me ester, synth, cmr, cryst struct)

Frank, H. et al., *Tetrahedron*, 1995, **51**, 5397

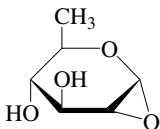
(L-form, synth, pmr, cmr)

Long, D.D. et al., *J.C.S. Perkin 1*, 2002, 1982-

1998 (D-form, Me ester, 3-benzyl, synth, ir, pmr, cmr)

1,2-Anhydro-6-deoxyglucose

A-524

 α -D-Pyranose-form

$C_6H_{10}O_4$ 146.143

 α -D-Pyranose-form

Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl-6-deoxy- α -D-glucopyranose

[143771-51-1]

$C_{20}H_{22}O_4$ 326.391

Cryst. (Et_2O /petrol). Mp 51-52°. $[\alpha]_D^{20} +5.8$ (c, 6.0 in $CHCl_3$). Unstable at r.t.

 α -L-Pyranose-form

Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl-6-deoxy- α -L-glucopyranose

[154779-60-9]

$C_{20}H_{22}O_4$ 326.391

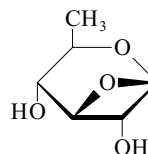
Cryst. (petrol/ $EtOAc$). Mp 53-54°. $[\alpha]_D^{20} -9.4$ (c, 0.2 in $CHCl_3$).

Yang, G. et al., *J. Carbohydr. Chem.*, 1992, **11**, 595-608 (α -D-pyr dibenzyl, synth, conformn)

Wu, E. et al., *Carbohydr. Res.*, 1993, **250**, 327 (synth, pmr)

1,3-Anhydro-6-deoxyglucose

A-525



$C_6H_{10}O_4$ 146.143

 β -D-Pyranose-form

Dibenzyl: 1,3-Anhydro-2,4-di-O-benzyl- β -D-glucopyranose

[141942-25-8]

$C_{20}H_{22}O_4$ 326.391

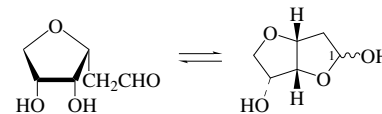
Syrup. $[\alpha]_D^{20} +35.5$ (c, 1 in $CHCl_3$).

Wu, X. et al., *Carbohydr. Res.*, 1992, **229**, 75 (synth, pmr)

3,6-Anhydro-2-deoxyglucose

A-526

Isoglucal



$C_6H_{10}O_4$ 146.143

Exists in soln. as a mixt. of furanose anomers. Incorrect struct. originally assigned (1926).

D-form

Oil. $[\alpha]_D^{20} +37.5$.

2,4-Dinitrophenylhydrazone:

Cryst. ($EtOH/C_6H_6$). Mp 157-159°

(122-124°). $[\alpha]_D +10$ (c, 0.35 in Py).

4,5-Isopropylidene: 3,6-Anhydro-2-deoxy-4,5-O-isopropylidene-D-glucose

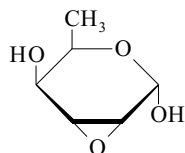
$C_9H_{14}O_4$ 186.207

Oil. Mp 125-126° (2,4-dinitrophenylhydrazone). $[\alpha]_D -40$ (c, 0.5 in $CHCl_3$) (2,4-dinitrophenylhydrazone).

Serrano, J.A. et al., *J. Carbohydr. Chem.*, 1993, **12**, 237-246 (D-form, synth, pmr, cmr, bibl, 4,5-isopropylidene)

2,3-Anhydro-6-deoxygulose

A-527

C₆H₁₀O₄ 146.143**α-D-Pyranose-form**

Me glycoside: Methyl 2,3-anhydro-6-deoxy-α-D-gulopyranoside, 9CI, 8CI [24558-66-5]

C₇H₁₂O₄ 160.169

Syrup. Bp_{0.5} 80° (block). [α]_D +17.1 (c, 4.4 in D₂O).

Me glycoside, 4-Ac: Methyl 4-O-acetyl-2,3-anhydro-6-deoxy-α-D-gulopyranoside [6893-97-6]
C₉H₁₄O₅ 202.207
Mp 83.5-84.5°. [α]_D²² +20 (c, 1.0 in CHCl₃).

β-D-Pyranose-form

Me glycoside: Methyl 2,3-anhydro-6-deoxy-β-D-gulopyranoside, 9CI [53437-41-5]

C₇H₁₂O₄ 160.169

Needles (petrol). Mp 93°. [α]_D -101 (c, 0.6 in H₂O).

Me glycoside, 4-Ac: Methyl 4-O-acetyl-2,3-anhydro-6-deoxy-β-D-gulopyranoside [53437-42-6]

C₉H₁₄O₅ 202.207

Syrup. [α]_D -133 (c, 0.6 in CHCl₃).

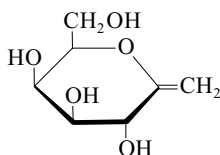
Buchanan, J.G. *et al.*, *J.C.S. (B)*, 1969, 377

(*synth, pmr, Me α-D-Pyr*)

Al Janabi, S.A.S. *et al.*, *Carbohydr. Res.*, 1974, **35**, 151 (*Me β-D-Pyr*)

2,6-Anhydro-1-deoxy-galacto-hept-1-enitol, 9CI

A-528

C₇H₁₂O₅ 176.169**D-form** [62771-96-4]

Addn. of water catalysed by β-galactosidase to give 1-deoxy-D-galacto-heptulose.

Cryst. Mp 174°. [α]_D²⁵ +166 (c, 1 in H₂O).

Tetra-Ac: [62771-95-3]

C₁₅H₂₀O₉ 344.318

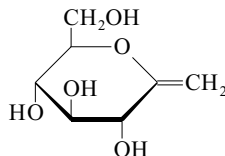
Cryst. Mp 65°. [α]_D²⁵ +69 (c, 1.0 in CHCl₃).

Brockhaus, M. *et al.*, *Carbohydr. Res.*, 1977, **53**, 21 (*synth, ir, pmr*)

Fritz, H. *et al.*, *Carbohydr. Res.*, 1983, **113**, 71 (*synth*)

2,6-Anhydro-1-deoxy-gluco-hept-1-enitol

A-529

C₇H₁₂O₅ 176.169**D-form** [74310-30-8]

Oil. Stored as stock soln. in dry MeOH at -20°.

Tetra-Ac: 3,4,5,7-Tetra-O-acetyl-2,6-anhydro-1-deoxy-D-gluco-hept-1-enitol [74310-44-4]

C₁₅H₂₀O₉ 344.318

Cryst. (Et₂O). Mp 74°. [α]_D²² +54 (c, 1.0 in CHCl₃).

3,4,5,7-Tetra-Me: 2,6-Anhydro-1-deoxy-3,4,5,7-tetra-O-methyl-D-gluco-hept-1-enitol

[131474-23-2]

C₁₁H₂₀O₅ 232.276

[α]_D +67 (c, 1.0 in CH₂Cl₂).

3,4,5,7-Tetrabenzyl: 2,6-Anhydro-3,4,5,7-tetra-O-benzyl-1-deoxy-D-gluco-hept-1-enitol

[97321-70-5]

C₃₅H₃₆O₅ 536.666

Mp 68-69°. [α]_D +60 (c, 1 in CH₂Cl₂).

Tetrakis(tert-butyltrimethylsilyl): [169059-40-9]

C₃₁H₆₈O₅Si₄ 633.217

Oil. [α]_D²⁵ +38.3 (c, 7.83 in CHCl₃).

Hehre, E.J. *et al.*, *Biochemistry*, 1980, **19**, 3557 (*synth, tetra-Ac, pmr*)

Rajanbabu, T.V. *et al.*, *J.O.C.*, 1986, **51**, 5458 (*synth, pmr, cmr*)

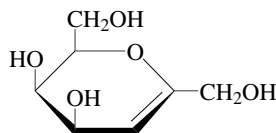
Ali, M.H. *et al.*, *Carbohydr. Res.*, 1991, **216**, 517 (*Tetrabenzyl: Tetramethyl, pmr*)

Fang, J.-M. *et al.*, *J.C.S. Perkin 1*, 1995, 967 (*Tetrakisbutyltrimethylsilyl, pmr, cmr*)

2,6-Anhydro-3-deoxy-lyxo-hept-2-enitol

A-530

2,6-Anhydro-5-deoxy-arabino-hept-5-enitol, 9CI

C₇H₁₂O₅ 176.169

The *arabino*- name has precedence acc. to the special IUPAC rules for carbohydrates. The compd. is D- according to both names but the direction of numbering is different. It is shown here as a 2-ene sugar.

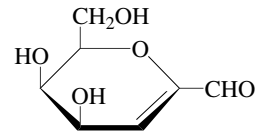
D-form

Cryst. (EtOH). Mp 112.8°. [α]_D²² +2 (c, 1.0 in H₂O).

Dettinger, H.M. *et al.*, *Carbohydr. Res.*, 1979, **74**, 301-307 (*synth*)

2,6-Anhydro-3-deoxy-lyxo-hept-2-enose, 9CI

A-531

C₇H₁₀O₅ 174.153**D-form** [71420-05-8]

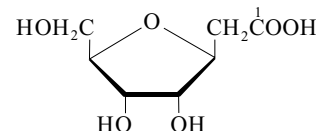
Mp 146° (dec.). [α]_D²² -169 (c, 1.0 in CHCl₃).

Dettinger, H.M. *et al.*, *Carbohydr. Res.*, 1979, **74**, 301-307 (*synth*)

3,6-Anhydro-2-deoxy-*allo*-heptonic acid

A-532

Ribofuranosylacetic acid

C₇H₁₂O₆ 192.168**D-form**

*4,5-Isopropylidene, Me ester: Methyl 3,6-anhydro-2-deoxy-4,5-O-isopropylidene-D-*allo*-heptonate*

[55036-19-6]

C₁₁H₁₈O₆ 246.26

[α]_D²⁰ +5.4 (c, 1.0 in CHCl₃).

*4,5-Isopropylidene, Et ester: Ethyl 3,6-anhydro-2-deoxy-4,5-O-isopropylidene-D-*allo*-heptonate*

[55797-78-9]

C₁₂H₂₀O₆ 260.286

[α]_D²⁵ -9.3 (c, 6.4 in MeOH).

*4,5-Isopropylidene, 6-benzoyl, Et ester: Ethyl 3,6-anhydro-7-O-benzoyl-2-deoxy-4,5-O-isopropylidene-D-*allo*-heptonate*

[55797-80-3]

C₁₉H₂₄O₇ 364.394

[α]_D²⁵ -5.1 (c, 2.2 in CHCl₃).

4,5-Isopropylidene, 6-(4-nitrobenzoyl), Et ester: [55797-79-0]

Mp 58-59°.

*Tribenzyl, Me ester: Methyl 3,6-anhydro-4,5,7-tri-O-benzyl-2-deoxy-D-*allo*-heptonate*

[56703-51-6]

C₂₉H₃₂O₆ 476.568

[α]_D²³ -13.1 (c, 1.0 in CHCl₃).

*Tribenzyl, Et ester: Ethyl 3,6-anhydro-4,5,7-tri-O-benzyl-2-deoxy-D-*allo*-heptonate*

[50907-78-3]

C₃₀H₃₄O₆ 490.595

[α]_D²⁴ +22.2 (c, 3.5 in CHCl₃).

*6-Trityl, 4,5-isopropylidene, Me ester: Methyl 2-deoxy-4,5-O-isopropylidene-7-O-trityl-D-*allo*-heptonate*

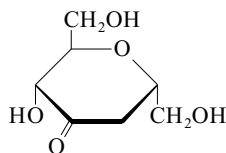
C₃₀H₃₂O₆ 488.579

Cryst. (Et₂O). Mp 121-122°. [α]_D²⁰ +5.6 (c, 1.0 in CHCl₃).

Hanessian, S. *et al.*, *Carbohydr. Res.*, 1974, **38**, C12 (*β-D-Et ester derivs*)

Buchanan, J.G. *et al.*, *Carbohydr. Res.*, 1974, **38**, C22 (α -*D*-Et ester tribenzyl)
 Ohri, H. *et al.*, *J.A.C.S.*, 1975, **97**, 4602 (β -*D*-Me ester isopropylidene, β -*D*-Me ester tribenzyl)
 Cousineau, T.J. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1976, **3**, 185 (β -*D*-Me ester isopropylidene trityl)

2,6-Anhydro-3-deoxy-arabino-4-heptulose A-533

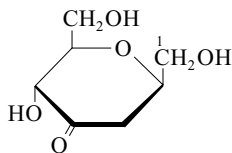


$C_7H_{12}O_5$ 176.169

D-form

7-Trityl, 5-Ac: 5-O-Acetyl-2,6-anhydro-3-deoxy-7-O-trityl-*D*-arabino-4-heptulose [54594-51-3]
 $C_{28}H_{28}O_6$ 460.526
 Mp 175-177°. $[\alpha]_D^{23} +293.4$ (c, 1.9 in $CHCl_3$).
 7-Trityl, 1,5-di-Ac: 1,5-Di-O-acetyl-2,6-anhydro-3-deoxy-7-O-trityl-*D*-arabino-4-heptulose [66149-63-1]
 $C_{30}H_{30}O_7$ 502.563
 Mp 171-173°. $[\alpha]_D^{23} +168.2$ (c, 1.5 in $CHCl_3$).
 1-Deoxy, 5,7-O-benzylidene: 2,6-Anhydro-5,7-O-benzylidene-1,3-dideoxy-*D*-arabino-4-heptulose [66149-65-3]
 $C_{14}H_{16}O_4$ 248.278
 Mp 243-244° (as dinitrophenylhydrazone). $[\alpha]_D^{23} -58$ (c, 0.34 in $CHCl_3$) (dinitrophenylhydrazone). CAS no. refers to dinitrophenylhydrazone.
 Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1977, **55**, 3978; 4002

2,6-Anhydro-3-deoxy-ribo-4-heptulose A-534



$C_7H_{12}O_5$ 176.169

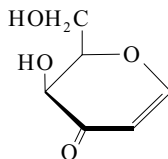
D-form

7-Trityl, 5-Ac: 5-O-Acetyl-2,6-anhydro-3-deoxy-7-O-trityl-*D*-ribo-4-heptulose [54230-64-7]
 $C_{28}H_{28}O_6$ 460.526
 Cryst. (EtOH). Mp 171-173°. $[\alpha]_D^{23} +168.2$ (c, 1.5 in $CHCl_3$).
 1-Deoxy, 5,7-O-benzylidene: 2,6-Anhydro-5,7-O-benzylidene-1,3-dideoxy-*D*-ribo-4-heptulose [66322-04-1]
 $C_{14}H_{16}O_4$ 248.278
 Mp 256-257° (sealed tube) (as dinitro-

phenylhydrazone). $[\alpha]_D^{23} -128$ (c, 0.2 in $CHCl_3$) (dinitrophenylhydrazone). CAS no. refers to dinitrophenylhydrazone.
 Walker, D.L. *et al.*, *Chem. Comm.*, 1974, 319 (trityl Ac)
 Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1977, **55**, 3978; 4002 (trityl Ac, deoxy benzylidene derivs)

1,5-Anhydro-2-deoxy-threo-hex-1-ene-3-ulose A-535

1,2-Dideoxy-threo-hex-1-enopyranos-3-ulose

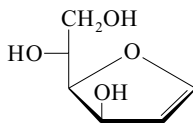


$C_6H_8O_4$ 144.127

D-form [105660-75-1]

Mp 106-107°. $[\alpha]_D^{20} +54$ (c, 0.9 in H_2O).
 Di-Ac: 4,6-Di-O-acetyl-1,5-anhydro-2-deoxy-*D*-threo-hex-1-en-3-ulose [105581-69-9]
 $C_{10}H_{12}O_6$ 228.201
 Oil. $[\alpha]_D^{20} +22.7$ (c, 0.5 in $CHCl_3$).
 4,6-O-Benzylidene: 1,5-Anhydro-2-deoxy-4,6-O-(phenylmethylene)-*D*-threo-hex-1-en-3-ulose, 9CI [50621-69-7]
 $C_{13}H_{12}O_4$ 232.235
 Needles (2-propanol). Mp 165-166°. $[\alpha]_D +186$ ($CHCl_3$).
 Collins, P.M. *et al.*, *J.C.S. (C)*, 1966, 1131 (*D*-benzylidene)
 Beynon, P.J. *et al.*, *J.C.S. (C)*, 1966, 1131-1136 (*D*-benzylidene)
 Czernecki, S. *et al.*, *J.O.C.*, 1986, **51**, 5472-5475 (*D*-form, synth, ir, pmr)
 Hayashi, M. *et al.*, *Eur. J. Org. Chem.*, 1999, 1869-1871 (*D*-form, synth, ir, pmr, cmr)

1,4-Anhydro-2-deoxy-arabino-hex-1-enitol A-536



$C_6H_{10}O_4$ 146.143

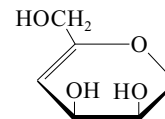
D-form [68144-11-6]

5,6-Isopropylidene: 1,4-Anhydro-2-deoxy-5,6-O-isopropylidene-*D*-arabino-hex-1-enitol
 $C_9H_{14}O_4$ 186.207
 $[\alpha]_D^{23} -100$ (c, 1.0 in $CHCl_3$).
 3-Me, 5,6-isopropylidene: 1,4-Anhydro-2-deoxy-5,6-O-isopropylidene-3-O-methyl-*D*-arabino-hex-1-enitol [68144-16-1]
 $C_{10}H_{16}O_4$ 200.234
 $[\alpha]_D^{20} -70$ ($CDCl_3$).
 Eitelman, S.J. *et al.*, *J.C.S. Perkin I*, 1978, 595 (synth, ir, pmr)
 Ireland, R.E. *et al.*, *J.O.C.*, 1980, **45**, 48 (synth, ir, pmr)

Fuerstner, A. *et al.*, *Carbohydr. Res.*, 1988, **7**, 773 (synth)

1,5-Anhydro-4-deoxy-erythro-hex-4-enitol A-537

2,6-Anhydro-3-deoxy-erythro-hex-2-enitol. Fructal



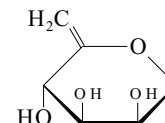
$C_6H_{10}O_4$ 146.143

Numbering according to the IUPAC name is in the opposite direction to the expected carbohydrate.

L-form

Tribenzoyl: 1,5-Anhydro-2,3,6-tri-O-benzoyl-4-deoxy-*L*-erythro-hex-4-enitol [15080-09-8]
 $C_{27}H_{22}O_7$ 458.467
 Cryst. (EtOH). Mp 74-76°. $[\alpha]_D^{20} +163$ (c, 1.09 in $CHCl_3$).
 Ness, R.K. *et al.*, *J.O.C.*, 1968, **33**, 181

1,5-Anhydro-6-deoxy-lyxo-hex-5-enitol A-538



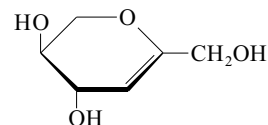
$C_6H_{10}O_4$ 146.143

D-form

Mp 136-138°. $[\alpha]_D^{22} -181$ (c, 0.5 in H_2O).
 Tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-benzoyl-6-deoxy-*D*-lyxo-hex-5-enitol [18524-09-9]
 $C_{27}H_{22}O_7$ 458.467
 Cryst. (EtOH). Mp 119-120°. $[\alpha]_D^{24} -242$ (c, 1.4 in $CHCl_3$).
 Ishizu, A. *et al.*, *Carbohydr. Res.*, 1967, **5**, 329 (synth)

2,6-Anhydro-3-deoxy-threo-hex-2-enitol A-539

Sorbal. endo-Sorbal



$C_6H_{10}O_4$ 146.143

L-form [143697-35-2]

Cryst. (Me_2CO). Mp 93-95°. $[\alpha]_D +153$ (MeOH).
 Tri-Ac: [161388-39-2]
 $C_{12}H_{16}O_7$ 272.254
 Syrup. $[\alpha]_D^{20} +191.7$.
 1,5-Di-Me: 2,6-Anhydro-3-deoxy-1,5-di-O-methyl-*L*-threo-hex-2-enitol [161388-43-8]

C₈H₁₄O₄ 174.196

Syrup.

1,5-Di-Me, Ac: 4-O-Acetyl-2,6-anhydro-1,5-di-O-methyl-L-threo-hex-2-enitol
[161388-44-9]

C₁₀H₁₆O₅ 216.233Syrup. [α]_D +186.6.

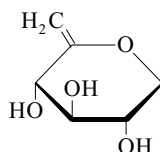
1,5-Dibenzyl: 2,6-Anhydro-1,5-di-O-benzyl-3-deoxy-L-threo-hex-2-enitol
[143697-39-6]

C₂₀H₂₂O₄ 326.391[α]_D +79.

Barili, P.L. *et al.*, *Carbohydr. Res.*, 1991, **212**, C5
Barili, P.L. *et al.*, *Gazz. Chim. Ital.*, 1994, **124**, 57

1,5-Anhydro-6-deoxy-xylo-hex-5-enitol

A-540

C₆H₁₀O₄ 146.143**D-form**

Tri-Ac: 2,3,4-Tri-O-acetyl-1,5-anhydro-6-deoxy-D-xylo-hex-5-enitol. 2,6-Anhydro-1-deoxy-L-xylo-hex-1-enitol triacetate, 8CI. 3,4,5-Tri-O-acetyl-1,2-dideoxy-L-sorb-1-enopyranose
[4049-50-7]

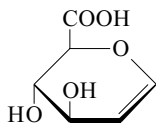
C₁₂H₁₆O₇ 272.254

Needles (Et₂O/hexane). Mp 80-82°.
[α]_D^{26.5} -9.5 (c, 1.1 in CHCl₃).

Tokuyama, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1965, **38**, 1344 (*synth*)
Japan. Pat., 1967, 67 18 622; *CA*, **68**, 59845

2,6-Anhydro-5-deoxy-lyxo-hex-5-enonic acid

A-541

C₆H₈O₅ 160.126**D-form**

Di-Ac, Me ester: Methyl 3,4-di-O-acetyl-2,6-anhydro-5-deoxy-D-lyxo-hex-5-enolate
[57690-62-7]

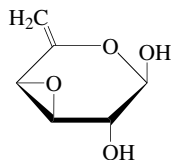
C₁₁H₁₄O₇ 258.227

Mp 87-90°.

Fehlhaber, H.-W. *et al.*, *Annalen*, 1987, 637
(*synth*, *pmr*)

3,4-Anhydro-6-deoxy-arabino-hex-5-enose

A-542



α-L-Pyranose-form

C₆H₈O₄ 144.127**α-L-Pyranose-form**

Me glycoside: Methyl 3,4-anhydro-6-deoxy-α-L-arabino-hex-5-enopyranoside
[54917-96-3]

C₇H₁₀O₄ 158.154Mp 90-91°. [α]_D²⁵ -180 (c, 1 in CHCl₃).**β-L-Pyranose-form**

Me glycoside: Methyl 3,4-anhydro-6-deoxy-β-L-arabino-hex-5-enopyranoside
[58635-67-9]

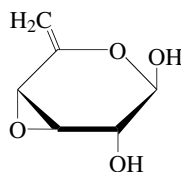
C₇H₁₀O₄ 158.154

Syrup. Bp_{0.01} 75°. [α]_D²⁵ +28.2 (c, 1 in CHCl₃).

Brockhaus, M. *et al.*, *Annalen*, 1974, 1675;
1976, 89 (*synth*, *pmr*)

3,4-Anhydro-6-deoxy-ribo-hex-5-enose

A-543

C₆H₈O₄ 144.127**β-D-Pyranose-form**

Me glycoside: Methyl 3,4-anhydro-6-deoxy-ribo-hex-5-enopyranoside
[55003-46-8]

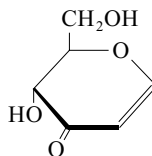
C₇H₁₀O₄ 158.154Mp 63-65°. [α]_D²⁵ -112 (c, 1 in CHCl₃).

Brockhaus, M. *et al.*, *Annalen*, 1974, 1675-1683
(*synth*, *pmr*)

1,5-Anhydro-2-deoxy-erythro-hex-1-en-3-ulose, 9CI

A-544

1,2-Dideoxy-erythro-hex-1-enopyranos-3-ulose, 8CI

C₆H₈O₄ 144.127**D-form** [14125-64-5]

Cryst. (EtOAc). Mp 87-88°. [α]_D²⁰ +258
(c, 0.6 in H₂O).

4,6-Di-Ac: 4,6-Di-O-acetyl-1,5-anhydro-2-deoxy-D-erythro-hex-1-en-3-ulose
C₁₀H₁₂O₆ 228.201

[α]_D +255 (c, 1.0 in CHCl₃).

4,6-O-Isopropylidene: 1,2-Dideoxy-4,6-O-isopropylidene-D-erythro-hex-1-enopyranos-3-ulose

C₉H₁₂O₄ 184.191

Cryst. (Et₂O). Mp 104-105°. [α]_D²³ +206.6 (c, 5.0 in CHCl₃).

4,6-O-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-2-deoxy-D-erythro-hex-1-en-3-ulose. 4,6-O-Benzylidene-1,2-dideoxy-D-erythro-hex-1-enopyranos-3-ulose
[23346-01-2]

C₁₃H₁₂O₄ 232.235

Cryst. (2-propanol). Mp 128-129°. [α]_D +189 (CHCl₃).

[23346-01-2, 113421-25-3]

Heyns, K. *et al.*, *Chem. Ber.*, 1966, **99**, 3718
(*synth*)

Collins, P.M. *et al.*, *Carbohydr. Res.*, 1969, **11**, 125 (*benzylidene*)

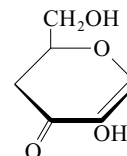
Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1973, **51**, 3950 (*isopropylidene*)

Czernecki, S. *et al.*, *J.O.C.*, 1986, **51**, 5472

(*di-Ac*)
Hayashi, M. *et al.*, *Synthesis*, 1999, 1869-1871
(*D-form*, *synth*, *ir*, *pmr*, *cmr*)

1,5-Anhydro-4-deoxy-glycero-hex-1-en-3-ulose

A-545

C₆H₈O₄ 144.127

Unisolated enol.

D-form

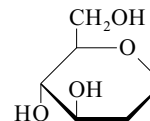
Pyrolysis prod. of cellulose (1.1%).

Yellowish cryst. (EtOAc/hexane). Mp 98.5-99° (91-96°). [α]_D²⁵ +155 (c, 1.1 in H₂O). Difficult to crystallise.

Shafizadeh, F. *et al.*, *Carbohydr. Res.*, 1978, **67**, 433; 1981, **90**, 319 (*synth*, *uv*, *ms*, *cryst struct*)

1,5-Anhydro-2-deoxy-arabino-hexitol

A-546

2,6-Anhydro-5-deoxy-lyxo-hexitolC₆H₁₂O₄ 148.158**D-form**

Cryst. (EtOAc). Mp 86-88°. [α]_D²⁵ +16.2
(c, 2.24 in H₂O).

Foster, A.B. *et al.*, *Acta Chem. Scand.*, 1958, **12**, 1819 (*synth*)

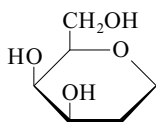
Bertucci, C. *et al.*, *Carbohydr. Res.*, 1986, **149**, 299 (*synth*, *cd*)

1,5-Anhydro-2-deoxy-lyxo-hexitol

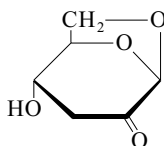
A-547

Paulsen, H. *et al.*, *Chem. Ber.*, 1976, **109**, 3891
(*Me gly, synth, ir, pmr*)

2,6-Anhydro-5-deoxy-arabino-hexitol

C₆H₁₂O₄ 148.158**D-form**Cryst. (EtOAc). Mp 128-129°. [α]_D²⁵ +43.4 (c, 1.35 in CHCl₃).Lemieux, R.U. *et al.*, *Carbohydr. Res.*, 1970, **13**, 139 (*synth*)Bertucci, C. *et al.*, *Carbohydr. Res.*, 1986, **149**, 299 (*synth, cd*)**1,6-Anhydro-3-deoxy-erythro-hexopyranos-2-ulose, 9CI**

A-548

C₆H₈O₄ 144.127**β-D-form** [58238-45-2][α]_D -143 (H₂O). [α]_D -255 (-217) (CHCl₃).

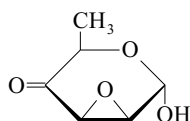
4-Me: 1,6-Anhydro-3-deoxy-4-O-methyl-β-D-erythro-hexopyranos-2-ulose, 9CI [71021-05-1]

C₇H₁₀O₄ 158.154Syrup. [α]_D -214 (CHCl₃). [α]_D -130 (H₂O).

4-Deoxy: 1,6-Anhydro-3,4-dideoxy-β-D-glycero-hexopyranos-2-ulose, 6,8-Dioxabicyclo[3.2.1]octan-4-one

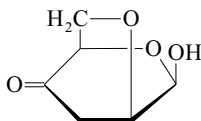
C₆H₈O₃ 128.127Bp₁₆ 104°. [α]_D²⁵ -246 (c, 0.4 in CHCl₃).4-Deoxy, 2,4-dinitrophenylhydrazone: Mp 205-206°. [α]_D²⁰ -58.4 (c, 5.14 in CHCl₃).Pecka, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1192 (4-deoxy, *pmr*)Rennecke, R.-W. *et al.*, *Chem. Ber.*, 1975, **108**, 3652 (β-D-form, *synth*)Shafizadeh, F. *et al.*, *Carbohydr. Res.*, 1977, **58**, 79; 1979, **71**, 169 (β-D-Me)**2,3-Anhydro-6-deoxy-lyxo-hexopyranos-4-ulose**

A-549

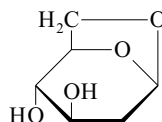
C₆H₈O₄ 144.127**α-D-form***Me glycoside: Methyl 2,3-anhydro-6-deoxy-α-D-lyxo-hexopyranosid-4-ulose* [55533-65-8]C₇H₁₀O₄ 158.154Mp 41-42°. [α]_D²⁰ +245 (c, 1.05 in CHCl₃).**2,6-Anhydro-3-deoxy-threo-hexopyranos-4-ulose**

A-550

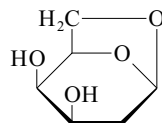
3-Hydroxy-2,6-dioxabicyclo[3.2.2]nonan-8-one

C₆H₈O₄ 144.127**β-D-form***Me glycoside: [71110-02-6]*C₇H₁₀O₄ 158.154Cryst. Mp 60°. [α]_D²⁰ -49 (c, 0.1 in CH₂Cl₂).Koll, P. *et al.*, *Chem. Ber.*, 1979, **112**, 2305 (β-D-Me gly, *pmr*)**1,6-Anhydro-2-deoxy-arabino-hexose**

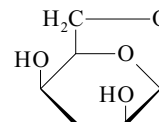
A-551

C₆H₁₀O₄ 146.143**β-D-Pyranose-form** [26423-93-8]Cryst. (EtOAc). Mp 159-160°. [α]_D²⁵ -127 (c, 1.0 in Me₂CO).Seib, P.A. *et al.*, *J.C.S. (C)*, 1969, 2552 (*synth, pmr*)**1,6-Anhydro-2-deoxy-lyxo-hexose**

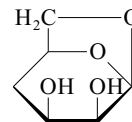
A-552

C₆H₁₀O₄ 146.143**β-D-Pyranose-form** [26423-95-0]Needles (EtOAc/petrol). Mp 181-182°. [α]_D²⁴ -78 (c, 1.45 in Me₂CO).*Isopropylidene: 1,6-Anhydro-2-deoxy-3,4-O-isopropylidene-β-D-lyxo-hexopyranose* [57701-02-7]C₉H₁₄O₄ 186.207Cryst. Mp 38°. [α]_D²² -98.3 (c, 0.9 in CHCl₃).Seib, P.A. *et al.*, *J.C.S. (C)*, 1969, 2552 (*synth*)
Barton, D.H.R. *et al.*, *J.C.S. Perkin 1*, 1975, 1574 (*synth, pmr, isopropylidene*)Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 3707 (*synth, pmr, isopropylidene*)**1,6-Anhydro-3-deoxy-lyxo-hexose**

A-553

C₆H₁₀O₄ 146.143**β-D-Pyranose-form** [29514-11-2]*Di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-deoxy-β-D-lyxo-hexopyranose* [151864-45-8]C₁₀H₁₄O₆ 230.217Mp 112-113°. [α]_D²³ -67.5 (c, 0.16 in CHCl₃). Obt. only in low yield.Matsumoto, K. *et al.*, *Carbohydr. Res.*, 1993, **246**, 345 (*synth, ir, pmr, cmr*)**1,6-Anhydro-4-deoxy-lyxo-hexose**

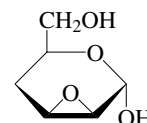
A-554

C₆H₁₀O₄ 146.143**β-D-Pyranose-form** [24707-51-5]Cryst. (EtOH/hexane). Mp 65° Mp 85-100° subl Mp 91-100° Mp 128-140° Mp 156°. [α]_D²⁵ -89.3 (c, 0.68 in H₂O).*Di-Ac: 2,3-Di-O-acetyl-1,6-anhydro-4-deoxy-β-D-lyxo-hexopyranose* [24707-53-7]C₁₀H₁₄O₆ 230.217Mp 68-69°. [α]_D²⁶ -83.1 (c, 0.59 in CHCl₃).*Dibenzoyl: 1,6-Anhydro-2,3-di-O-benzoyl-4-deoxy-β-D-lyxo-hexopyranose* [24707-54-8]C₂₀H₁₈O₆ 354.359Needles (Me₂CO/Et₂O/petrol). Mp 136-138°. [α]_D²⁰ -16 (c, 0.88 in CHCl₃).

2,3-Isopropylidene: 1,6-Anhydro-4-deoxy-2,3-O-isopropylidene-β-D-lyxo-hexopyranose [20789-63-3]

C₉H₁₄O₄ 186.207Mp 127-128°. [α]_D²⁰ +20.2 (c, 1 in CHCl₃).Cerny, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 1750; 1972, **37**, 2632 (*synth*)Klausener, A. *et al.*, *Tetrahedron*, 1989, **45**, 4989 (*isopropylidene, synth, pmr, cmr*)Matsumoto, K. *et al.*, *Carbohydr. Res.*, 1993, **246**, 345 (*synth, ir, pmr, cmr*)**2,3-Anhydro-4-deoxy-lyxo-hexose**

A-555



α-D-form

C₆H₁₀O₄ 146.143

α -D-Pyranose-form

Me glycoside: Methyl 2,3-anhydro-4-deoxy- α -D-lyxo-hexopyranoside
[95628-54-9]
 $C_7H_{12}O_4$ 160.169
Cryst. Mp 68-70°. $[\alpha]_D^{25} +50.64$ (c, 1.02 in $CHCl_3$).

 β -D-form

Me glycoside: Methyl 2,3-anhydro-4-deoxy- β -D-lyxo-hexopyranoside
 $C_7H_{12}O_4$ 160.169
Mp 55-56°. $[\alpha]_D^{25} -48.19$ (c, 1.06 in $CHCl_3$).

 α -DL-form

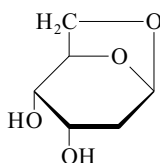
Me glycoside: Methyl 2,3-anhydro-4-deoxy- α -DL-lyxo-hexopyranoside
[35942-31-5]
 $C_7H_{12}O_4$ 160.169
Cryst.

Banaszek, A. *et al.*, *Bull. Pol. Acad. Sci., Chem.*, 1984, **32**, 99 (α -D-Me pyr, β -D-Me pyr)
Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1985, **144**, 13 (*cryst struct*)

1,6-Anhydro-2-deoxy-ribo-hexose

A-556

[26423-94-9]



$C_6H_{10}O_4$ 146.143
Cryst. (EtOAc). Mp 98-99°. $[\alpha]_D^{25} -165$ (c, 0.8 in Me_2CO).

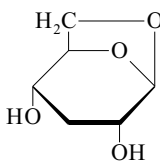
 β -D-Pyranose-form

Isopropylidene: 1,6-Anhydro-2-deoxy-3,4-O-isopropylidene- β -D-ribo-hexopyranose
[57852-43-4]
 $C_9H_{14}O_4$ 186.207
Oil. Bp₄ 83°. $[\alpha]_D^{22} -123$ (c, 5 in $CHCl_3$).

Seib, P.A. *et al.*, *J.C.S. (C)*, 1969, 2552 (*synth*)
Barton, D.H.R. *et al.*, *J.C.S. Perkin 1*, 1975, 1574 (*synth, pmr, isopropylidene*)

1,6-Anhydro-3-deoxy-ribo-hexose

A-557



$C_6H_{10}O_4$ 146.143

 β -D-Pyranose-form [29514-08-7]

Hygroscopic cryst. or syrup. $[\alpha]_D^{20} -76$ (c, 0.9 in EtOH).

Di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-deoxy- β -D-ribo-hexopyranose
[29514-16-7]
 $C_{10}H_{14}O_6$ 230.217
Cryst. (EtOH). Mp 114-116°. $[\alpha]_D^{20} -74$ (c, 0.7 in $CHCl_3$).

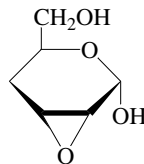
Pratt, J.W. *et al.*, *J.A.C.S.*, 1957, **79**, 2597 (*synth, di-Ac*)

Trnka, T. *et al.*, *Coll. Czech. Chem. Comm.*, 1972, **37**, 3632 (*synth*)

Merlis, N.M. *et al.*, *Izv. Akad. Nauk, Ser. Khim.*, 1975, 139; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1975, 128 (*synth*)

2,3-Anhydro-4-deoxy-ribo-hexose

A-558

 α -D-form

$C_6H_{10}O_4$ 146.143

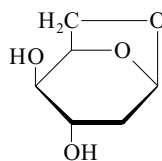
 α -DL-Pyranose-form

Me glycoside: Methyl 2,3-anhydro-4-deoxy- α -DL-ribo-hexopyranoside
[35942-32-6]
 $C_7H_{12}O_4$ 160.169
Cryst. (Et₂O/ Me_2CO).

Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1985, **144**, 13 (*cryst struct*)

1,6-Anhydro-2-deoxy-xylo-hexose

A-559



$C_6H_{10}O_4$ 146.143

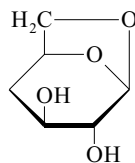
 β -D-Pyranose-form [29514-06-5]

Needles. Mp 65-80°. Subl. 0.01 60-80. $[\alpha]_D^{22} -21.4 \rightarrow -16.9$ (16h). Hygroscopic, liquefies rapidly in air. No explanation is given for the observed mutarotation, which would not be expected.

Golab, T. *et al.*, *Helv. Chim. Acta*, 1961, **44**, 616 (*synth*)

1,6-Anhydro-4-deoxy-xylo-hexose

A-560



$C_6H_{10}O_4$ 146.143

 β -D-form [29514-14-5]

Mp 156°. $[\alpha]_D -37$ (c, 0.7 in H₂O).

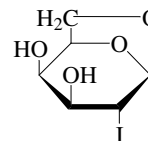
2-Tosyl: 1,6-Anhydro-4-deoxy-2-O-tosyl- β -D-xylo-hexopyranose
[23643-30-3]
 $C_{13}H_{16}O_6S$ 300.332
Cryst. (EtOH aq. or $CHCl_3$ /Et₂O/petrol). Mp 92-93°. $[\alpha]_D -40$ (c, 1.2 in $CHCl_3$).

2-Tosyl, 3-Ac: 3-O-Acetyl-1,6-anhydro-4-deoxy-2-O-tosyl- β -D-xylo-hexopyranose
 $C_{15}H_{18}O_7S$ 342.369
Mp 108-110°. $[\alpha]_D -14$ (c, 1.8 in $CHCl_3$).

Cerny, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1962, **27**, 94; 1972, **37**, 3632 (*synth*)
Trnka, T. *et al.*, *Carbohydr. Res.*, 1994, **259**, 131 (*2-tosyl*)

1,6-Anhydro-2-deoxy-2-iodo-galactose

A-561



$C_6H_9IO_4$ 272.039

 β -D-Pyranose-form [161254-77-9]

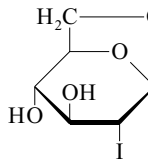
Cryst. (EtOH). Mp 87-88°. $[\alpha]_D +68$ (c, 1 in MeOH).

Leteux, C. *et al.*, *J.C.S. Perkin 1*, 1994, 2647-2655 (*synth, pmr*)

Hawley, J. *et al.*, *Eur. J. Org. Chem.*, 2002, 1925-1936 (*synth*)

1,6-Anhydro-2-deoxy-2-iodo-glucose

A-562



$C_6H_9IO_4$ 272.039

 β -D-Pyranose-form [139437-39-1]

Cryst. (EtOH/hexane). Mp 95°. $[\alpha]_D^{20} +10$ (c, 1 in MeOH).

Di-Ac: 3,4-Di-O-acetyl-1,6-anhydro-2-deoxy-2-iodo- β -D-glucopyranose
 $C_{10}H_{13}IO_6$ 356.114
Mp 95°. $[\alpha]_D^{25} +38$ (c, 1.0 in $CHCl_3$).

Dibenzoyl: 1,6-Anhydro-3,4-di-O-benzoyl-2-deoxy-2-iodo- β -D-glucopyranose
 $C_{20}H_{17}IO_6$ 480.255
Mp 49°. $[\alpha]_D^{25} -20$ (c, 1.0 in $CHCl_3$).

Dibenzyl: 1,6-Anhydro-3,6-di-O-benzyl-2-deoxy-2-iodo- β -D-glucopyranose
 $C_{20}H_{21}IO_4$ 452.288
 $[\alpha]_D^{25} +51$ (c, 1.0 in $CHCl_3$).

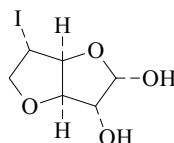
Mercyal, H.B. *et al.*, *J. Chem. Res., Miniprint*, 1990, 1953 (*derivs, pmr*)

Tailler, D. *et al.*, *J.C.S. Perkin 1*, 1992, 3162 (*synth*)

Hawley, J. *et al.*, *Eur. J. Org. Chem.*, 2002, 1925-1936 (*synth*)

3,6-Anhydro-5-deoxy-5-iodidofuranose

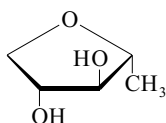
A-563

C₆H₉IO₄ 272.039**β-L-form**

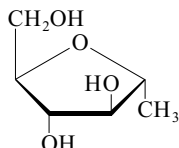
1,2-O-Isopropylidene: [35810-91-4]

C₉H₁₃IO₄ 312.104Cryst. Mp 67-68°. [α]_D²⁰ +64.8 (c, 0.97 in CHCl₃).Dax, K. *et al.*, *Annalen*, 1981, 1768 (isopropylidene, pmr)**2,5-Anhydro-1-deoxylyxitol**

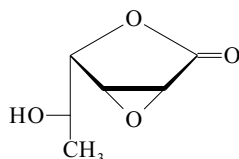
A-564

C₅H₁₀O₃ 118.132**D-form**Syrup. [α]_D²⁰ +2.27 (c, 3.53 in MeOH).Dills, W.L. *et al.*, *Carbohydr. Res.*, 1982, **99**, 23 (synth, pmr)**2,5-Anhydro-1-deoxymannitol**

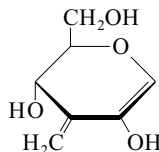
A-565

C₆H₁₂O₄ 148.158**D-form**Cryst. Mp 72-73°. [α]_D²⁰ +45 (c, 1.2 in MeOH).Dills, W.L. *et al.*, *Carbohydr. Res.*, 1982, **99**, 23**2,3-Anhydro-6-deoxy-1,4-mannonolactone**

A-566

C₆H₈O₄ 144.127**L-form [139578-41-9]**Syrup. [α]_D²⁰ +56 (c, 1 in H₂O).Bols, M. *et al.*, *Carbohydr. Res.*, 1991, **222**, 141 (synth, pmr, cmr)Lundt, I. *et al.*, *Synthesis*, 1992, 669 (synth, cmr)**1,5-Anhydro-3-deoxy-3-methylene-erythro-hex-1-enitol**

A-567

C₇H₁₀O₄ 158.154

Unisolated enol.

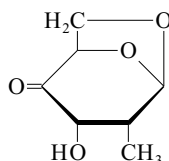
D-form

Tribenzoyl: 1,5-Anhydro-2,4,6-tri-O-benzoyl-3-deoxy-3-methylene-D-erythro-hex-1-enitol

[122409-63-6]

C₂₈H₂₂O₇ 470.478Syrup. [α]_D²¹ +213 (c, 0.4 in CHCl₃).Lichtenhaler, F.W. *et al.*, *Annalen*, 1989, 1163 (synth, pmr, tribenzoyl)**1,6-Anhydro-2-deoxy-2-C-methyl-ribo-hexopyranos-4-ulose**

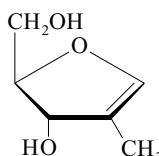
A-568

C₇H₁₀O₄ 158.154**D-form**

3-Benzyl: [97321-50-1]

C₁₄H₁₆O₄ 248.278Cryst. (Et₂O/pentane). Mp 67-67.5°.[α]_D²⁰ -56 (c, 1.3 in CHCl₃).Sviridov, A.F. *et al.*, *Carbohydr. Res.*, 1985, **136**, 101 (3-benzyl, pmr)**1,4-Anhydro-2-deoxy-2-C-methyl-erythro-pent-1-enitol**

A-569

C₆H₁₀O₃ 130.143**D-form**

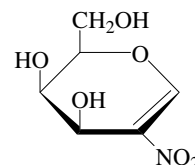
5-(Methoxymethyl): 1,4-Anhydro-2-deoxy-5-O-(methoxymethyl)-2-C-methyl-D-erythro-pent-1-enitol

[73657-45-1]

C₈H₁₄O₄ 174.196Oil. Bp_{0.005} 60-70°. [α]_D²³ +206.1 (c, 1.11 in CHCl₃).Ireland, R.E. *et al.*, *J.A.C.S.*, 1983, **105**, 1988 (synth, pmr)**1,5-Anhydro-2-deoxy-2-nitro-lyxo-hex-1-enitol**

A-570

2,6-Anhydro-5-deoxy-5-nitro-arabino-hex-5-enitol. 2-Nitrogallactal

C₆H₉NO₆ 191.14

The 5-enitol name strictly has precedence acc. to the IUPAC special nomenclature rules for carbohydrates.

D-form

Tri-Ac: 3,4,6-Tri-O-acetyl-1,5-anhydro-2-deoxy-2-nitro-D-lyxo-hex-1-enitol. 1,3,4-Tri-O-acetyl-2,6-anhydro-5-deoxy-5-nitro-D-arabino-hex-5-enitol, 9CI

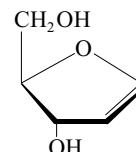
[19128-75-7]

C₁₂H₁₅NO₉ 317.252Hard glass. [α]_D²³ +68 (c, 3 in CHCl₃).

Tribenzyl: 1,5-Anhydro-3,4,6-tri-O-benzyl-2-deoxy-2-nitro-D-lyxo-hex-1-enitol. 2,6-Anhydro-1,3,4-tri-O-benzyl-5-deoxy-5-nitro-D-arabino-hex-5-enitol

C₂₇H₂₇NO₆ 461.513Glycosyl donor for synth. of glycopeptides and nucleosides. [α]_D²⁰ -10.2 (c, 1 in CHCl₃).Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**, 413-415 (D-tri-Ac)Holzapfel, C.W. *et al.*, *Synth. Commun.*, 1988, **18**, 97-114 (D-tri-Ac)Das, J. *et al.*, *Eur. J. Org. Chem.*, 1998, 1609-1613; 1999, 1167-1171; 2000, 3047-3050 (D-tribenzyl, synth, use)**1,4-Anhydro-2-deoxy-erythro-pent-1-enitol**

A-571

C₅H₈O₃ 116.116**D-form**

Dibenzoyl: [55734-51-5]

C₁₉H₁₆O₅ 324.332Cryst. (Et₂O/pentane). Mp 88-89°. [α]_D²⁰ +294 (c, 0.5 in CH₂Cl₂).

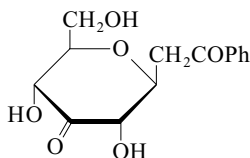
5-Methoxymethyl: 1,4-Anhydro-2-deoxy-5-O-methoxymethyl-D-erythro-pent-1-enitol

[72050-15-8]

C₇H₁₂O₄ 160.169[α]_D²⁴ +259 (c, 0.9 in CHCl₃).Ness, R.K. *et al.*, *J.O.C.*, 1963, **28**, 435 (dibenzoyl, synth)Ireland, R.E. *et al.*, *J.O.C.*, 1980, **45**, 48 (5-methoxymethyl, synth, pmr)

3,7-Anhydro-2-deoxy-1-C-phenyl-*allo*-octos-5-ulose

A-572

 β -D-Pyranose-form $C_{14}H_{16}O_6$ 280.277**D-form**

Tribenzoyl: 3,7-Anhydro-4,6,8-tri-O-benzoyl-2-deoxy-1-C-phenyl-*D*-*allo*-octos-5-ulose

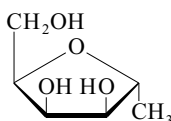
[122409-64-7]

 $C_{35}H_{28}O_9$ 592.601Cryst. Mp 194-194.5°. $[\alpha]_D^{20} +67$ (c, 0.9 in $CHCl_3$).

Lichtenthaler, F.W. *et al.*, *Annalen*, 1989, 1163 (synth, pmr)

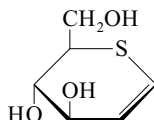
2,5-Anhydro-1-deoxytalitol

A-573

 $C_6H_{12}O_4$ 148.158**D-form**Cryst. Mp 74-76°. $[\alpha]_D^{20} +28.35$ (c, 0.57 in MeOH).Dills, W.L. *et al.*, *Carbohydr. Res.*, 1982, 99, 23**1,5-Anhydro-2-deoxy-5-thio-*arabino*-hex-1-enitol**

A-574

5-Thioglucal

 $C_6H_{10}O_3S$ 162.209**D-form**Cryst. (methyl formate). Mp 83-86°. $[\alpha]_D^{22} +17.3$ (c, 1 in MeOH).

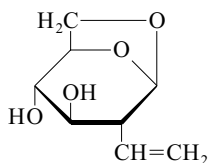
Tri-Ac: 3,4,6-Tri-O-acetyl-1,5-anhydro-2-deoxy-5-thio-*D*-*arabino*-hex-1-enitol

 $C_{12}H_{16}O_6S$ 288.321Cryst. (hexane). Mp 43-44°. $[\alpha]_D^{22} -47.1$ (c, 1 in $CHCl_3$).

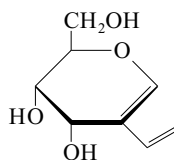
Korytnyk, W. *et al.*, *Carbohydr. Res.*, 1983, 113, 166 (synth, cmr)

1,6-Anhydro-2-deoxy-2-C-vinylglucose

A-575

 $C_8H_{12}O_4$ 172.18**1,5-Anhydro-2-deoxy-2-C-vinyl-*ribo*-hex-1-enitol**

A-576

 $C_8H_{12}O_4$ 172.18 **α -D-Pyranose-form**

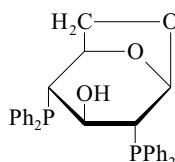
4,6-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-2-deoxy-2-C-vinyl-*D*-*ribo*-hex-1-enitol

 $C_{15}H_{16}O_4$ 260.289Cryst. Mp 123-125°. $[\alpha]_D +148.1$ (c, 1.02 in $CHCl_3$).

López, J.C. *et al.*, *Tetrahedron*, 1993, 49, 7701 (synth, cmr, pmr)

1,6-Anhydro-2,4-dideoxy-2,4-bis(diphenylphosphinyl)glucose, 9CI

A-577

 $C_{30}H_{28}O_3P_2$ 498.497 **β -D-Pyranose-form**

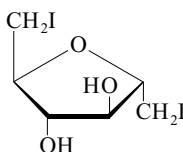
P,P'-Dioxide: [136632-41-2]

 $C_{30}H_{28}O_5P_2$ 530.496Needles. Mp 236° dec. $[\alpha]_D^{25} +27$ (c, 1 in $CHCl_3$).

Li, C. *et al.*, *Carbohydr. Res.*, 1991, 216, 149 (dioxide, ir, ms, uv)

2,5-Anhydro-1,6-dideoxy-1,6-diiodomannitol

A-578

 $C_6H_{10}I_2O_3$ 383.952**D-form**

Di-Ac: 3,4-Di-O-acetyl-2,5-anhydro-1,6-dideoxy-1,6-diiodo-*D*-mannitol

[165131-02-2]

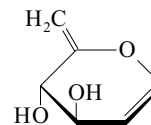
 $C_{10}H_{14}I_2O_5$ 468.027

Cryst. (EtOH). Mp 54-55°.

Shalaby, M.A. *et al.*, *Carbohydr. Res.*, 1995, 269, 191 (synth, pmr, cmr, cryst struct)

1,5-Anhydro-2,6-dideoxy-*threo*-hexa-1,5-dienitol

A-579

 $C_6H_8O_3$ 128.127**D-form** [28282-45-3]Syrup. $[\alpha]_D^{21} -153$ ($CHCl_3$).

Di-Ac: 3,4-Di-O-acetyl-1,5-anhydro-2,6-dideoxy-*D*-*threo*-hexa-1,5-dienitol

[28414-00-8]

 $C_{10}H_{12}O_5$ 212.202Cryst. Mp 40°. Bp_{0.02} 56-57°. $[\alpha]_D^{25} -198$ (c, 0.58 in $CHCl_3$).

Dibenzoyl: 1,5-Anhydro-3,4-di-O-benzoyl-2,6-dideoxy-*D*-*threo*-hexa-1,5-dienitol

[58871-02-6]

 $C_{20}H_{16}O_5$ 336.343Needles (2-propanol). Mp 75-76°. $[\alpha]_D^{21} -290$ (c, 2.7 in $CHCl_3$).

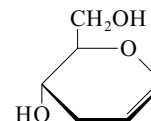
Kiss, J. *et al.*, *Carbohydr. Res.*, 1969, 11, 579 (synth, ir, pmr)

Blackburne, I.D. *et al.*, *Aust. J. Chem.*, 1976, 29, 381 (synth, pmr, dibenzoyl)

Descotes, G. *et al.*, *Carbohydr. Res.*, 1978, 62, 61 (synth, pmr, cmr, di-Ac)

1,5-Anhydro-2,3-dideoxy-erythro-hex-1-enitol

A-580

 $C_6H_{10}O_3$ 130.143**D-form**

4,6-Di-Ac: 4,6-Di-O-acetyl-1,5-anhydro-2,3-dideoxy-*D*-erythro-hex-1-enitol

[52945-57-0]

 $C_{10}H_{14}O_5$ 214.218Oil. Bp₅ 105-140° (bath). $[\alpha]_D^{23} +116$ (c, 4.05 in $CHCl_3$).

4,6-O-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-2,3-dideoxy-*D*-erythro-hex-1-enitol

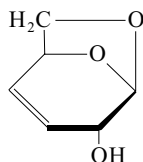
 $C_{13}H_{14}O_3$ 218.252Mp 113-114°. $[\alpha]_D^{23} +66$ (c, 1.07 in $CHCl_3$).

Fraser-Reid, B. *et al.*, *Methods Carbohydr. Chem.*, 1980, 8, 219

Okabe, M. *et al.*, *Tet. Lett.*, 1989, 30, 2203 (synth, di-Ac)

1,6-Anhydro-3,4-dideoxy-erythro-hex-3-enopyranose, 9CI

A-581



D-form

C₆H₈O₃ 128.127**β-D-form** [58394-28-8]Mp 53-54°. [α]_D²³ -236 (c, 1.0 in CHCl₃).

Tosyl: 1,6-Anhydro-3,4-dideoxy-2-O-tosyl-β-D-erythro-hex-3-enopyranose [53716-80-6]

C₁₃H₁₄O₅S 282.317Cryst. (MeOH). Mp 85-86°. [α]_D -161 (c, 0.8 in CHCl₃).**β-DL-form**

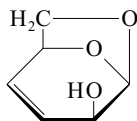
Ac: 2-O-Acetyl-1,6-anhydro-3,4-dideoxy-β-DL-erythro-hex-3-enopyranose

C₈H₁₀O₄ 170.165Bp_{0.5} 93-95°.

2-Me: 1,6-Anhydro-3,4-dideoxy-2-O-methyl-β-DL-erythro-hex-3-enopyranose

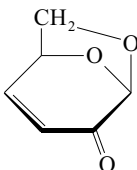
C₇H₁₀O₃ 142.154Bp_{0.1} 53-55°.Singh, U.P. *et al.*, *Can. J. Chem.*, 1971, **49**, 1179Pecka, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1192 (2-tosyl)Köll, P. *et al.*, *Chem. Ber.*, 1976, **109**, 337**1,6-Anhydro-3,4-dideoxy-threo-hex-3-enopyranose**

A-582

C₆H₈O₃ 128.127**β-D-form** [50705-28-7]Cryst. (Et₂O/petrol). Mp 67-69°. [α]_D²⁵ -34 (c, 1 in CHCl₃).Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1979, **68**, 231 (synth)**1,6-Anhydro-3,4-dideoxy-glycero-hex-3-enopyranos-2-ulose**

A-583

6,8-Dioxabicyclo[3.2.1]oct-2-en-4-one, 9CI. Levoglucosenone

C₆H₆O₃ 126.112**D-form** [37112-31-5]

Pyrolytic prod. from cellulose, in low yield. Important chiral synthon. The most important carbohydrate used in conjugate additions.

Syrup. [α]_D²⁰ -518 (c, 1.0 in CHCl₃).2,4-Dinitrophenylhydrazones: Mp 214-215°. [α]_D²⁶ -122 (CHCl₃).Semicarbazone: Mp 223-226° dec. [α]_D²⁶ -241 (c, 3.99 in Py/AcOH).**L-form**Syrup. [α]_D +518 (c, 1.2 in CHCl₃).Halpern, Y. *et al.*, *J.O.C.*, 1973, **38**, 204-209

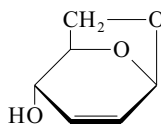
(isol. struct. ir, uv, pmr, cmr, ms)

Shafidazeh, F. *et al.*, *Carbohydr. Res.*, 1976, **46**, 149-154; 149-154; 1977, **58**, 79-86 (synth)Koel, P. *et al.*, *Chem. Ber.*, 1976, **109**, 337-344 (synth)Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1979, **68**, 231-238 (synth)Bhate, P. *et al.*, *Carbohydr. Res.*, 1983, **122**, 189-199 (synth)Mori, M. *et al.*, *Carbohydr. Res.*, 1984, **129**, 73-86 (synth, purifn)Gelas-Mialhe, Y. *et al.*, *Carbohydr. Res.*, 1990, **199**, 243 (synth)Matsumoto, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1991, **64**, 2309 (bibl)Witczak, Z.J. *et al.*, *Front. Biomed. Biotechnol.*, 1994, **2**, 3-16 (rev)Witczak, Z.J. *et al.*, *Levoglucosane and Levoglucosans, Chemistry and Applications*, ATL Press Inc., 1994, (book)Kawai, T. *et al.*, *Aust. J. Chem.*, 1995, **48**, 115 (use)Witczak, Z. *et al.*, *Synlett*, 1996, 108-110

(L-form, !synth, pmr, cmr)

Becker, B. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 253-284 (bibl, use)Kadota, K. *et al.*, *Adv. Synth. Catal.*, 2001, **343**, 618-623 (D-form, L-form, synth, ir, pmr)**1,6-Anhydro-2,3-dideoxy-erythro-hex-2-enose**

A-584

C₆H₈O₃ 128.127**β-D-Pyranose-form** [58394-31-3]Cryst. Mp 61-62°. [α]_D +318 (c, 1.0 in CHCl₃). Formerly descr. as a dark amber oil.

Ac: 4-O-Acetyl-1,6-anhydro-2,3-dideoxy-β-D-erythro-hex-2-enopyranose

C₈H₁₀O₄ 170.165Syrup. [α]_D +190 (c, 1 in CHCl₃).

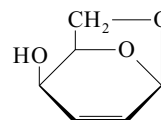
Benzoyl: 1,6-Anhydro-4-O-benzoyl-2,3-dideoxy-β-D-erythro-hex-2-enopyranose [71021-15-3]

C₁₃H₁₂O₄ 232.235Cryst. (EtOH). Mp 88-89°. [α]_D +150.

Benzyl: 1,6-Anhydro-4-O-benzyl-2,3-dideoxy-β-D-erythro-hex-2-enopyranose [40838-18-4]

C₁₃H₁₄O₃ 218.252Leaflets (Et₂O/hexane). Mp 56-57°. [α]_D +155 (c, 0.5 in CHCl₃).Pecka, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1973, **38**, 132 (benzyl)Mereyala, H.B. *et al.*, *Carbohydr. Res.*, 1992, **225**, 151 (synth, pmr, derivs)Rao, B.V. *et al.*, *Bull. Soc. Chim. Fr.*, 1993, **130**, 428 (benzoyl)Haeckel, R. *et al.*, *Synlett*, 1996, 21-23 (synth)Witczak, Z.J. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 143-148 (synth)**1,6-Anhydro-2,3-dideoxy-threo-hex-2-enose**

A-585

C₆H₈O₃ 128.127**β-D-Pyranose-form** [58394-32-4]Cryst. (Et₂O). Mp 61.5-64°. [α]_D²⁰ -165.4 (c, 1 in CHCl₃).

Ac: 4-O-Acetyl-1,6-anhydro-2,3-dideoxy-β-D-threo-hex-2-enopyranose [33648-08-7]

C₈H₁₀O₄ 170.165Syrup. Bp_{0.2} 60-64°. [α]_D -13.5 (c, 1 in CHCl₃).

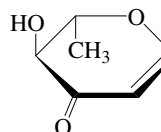
Benzoyl: 1,6-Anhydro-4-O-benzoyl-2,3-dideoxy-β-D-threo-hex-2-enopyranose [141054-98-0]

C₁₃H₁₂O₄ 232.235Syrup. [α]_D -8.2 (c, 1 in CHCl₃).

Benzyl: 1,6-Anhydro-4-O-benzyl-2,3-dideoxy-β-D-threo-hex-2-enopyranose

C₁₃H₁₄O₃ 218.252Syrup. [α]_D -9.5 (c, 1 in CHCl₃).Achmatowicz, O. *et al.*, *Tetrahedron*, 1971, **27**, 1973 (Ac, synth, ir, pmr)Koell, P. *et al.*, *Chem. Ber.*, 1976, **109**, 337 (synth, pmr)Mereyala, H.B. *et al.*, *Carbohydr. Res.*, 1992, **225**, 151 (derivs, synth, pmr, bibl)**1,5-Anhydro-2,6-dideoxy-erythro-hex-1-en-3-ulose**

A-586

C₆H₈O₃ 128.127**L-form** [68673-58-5]Cryst. (Et₂O or by subl.). Mp 92-93° (86°). [α]_D²⁰ -244.6 (c, 1 in MeOH).

Ac: 4-O-Acetyl-1,5-anhydro-2,6-dideoxy-L-erythro-hex-1-en-3-ulose [68673-59-6]

C₈H₁₀O₄ 170.165Cryst. (Et₂O). Mp 62°. [α]_D²⁰ -272 (c, 0.95 in CH₂Cl₂).

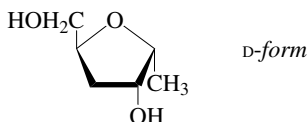
Benzoyl: 1,5-Anhydro-4-O-benzoyl-2,6-dideoxy-L-erythro-hex-1-en-3-ulose [113829-50-8]

C₁₃H₁₂O₄ 232.235Syrup. [α]_D²⁰ -266.1 (c, 1.1 in CH₂Cl₂).Paulsen, H. *et al.*, *Chem. Ber.*, 1978, **111**, 3484-3496 (L-form, synth, pmr)Pelyvas, I. *et al.*, *Carbohydr. Res.*, 1979, **76**, 257-260 (L-form, synth, pmr)Czernecki, S. *et al.*, *J.O.C.*, 1986, **51**, 5472-5475 (L-form, synth, ir)Köpper, S. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 57-85 (L-benzoyl)Hayashi, M. *et al.*, *Synthesis*, 1999, 1869-1871 (L-form, synth, ir, pmr, cmr)Langner, M. *et al.*, *Eur. J. Org. Chem.*, 2003, 1494-1499 (L-form, synth)

2,5-Anhydro-1,4-dideoxy-arabino-hexitol, 9CI

A-587

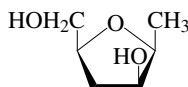
2,5-Anhydro-3,6-dideoxy-lyxo-hexitol

 $C_6H_{12}O_3$ 132.159**D-form** [171234-39-2]Oil. $[\alpha]_D^{20}$ -41.5 (c, 0.065 in $CHCl_3$).**L-form**

3-Benzoyl: 2,5-Anhydro-3-O-benzoyl-1,4-dideoxy-L-arabino-hexitol. 2,5-Anhydro-4-O-benzoyl-3,6-dideoxy-L-lyxo-hexitol [163955-95-1]

 $C_{13}H_{16}O_4$ 236.267Syrup. $[\alpha]_D^{20}$ +20.7 (c, 1.15 in $CHCl_3$).Popsavin, V. *et al.*, *Carbohydr. Res.*, 1995, **269**, 343 (L-form, 3-benzoyl)Angle, S.R. *et al.*, *J.A.C.S.*, 2002, **124**, 3608-3613 (D-form, synth, pmr, cmr)**2,5-Anhydro-1,4-dideoxy-xylo-hexitol**

A-588

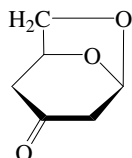
 $C_6H_{12}O_3$ 132.159**D-form** [82109-99-7]Mp 66-67°. $[\alpha]_D^{20}$ +45.3 (c, 0.88 in $CHCl_3$).

[75499-86-4]

Angle, S.R. *et al.*, *J.A.C.S.*, 2002, **124**, 3608-3613 (D-form, synth, pmr, cmr)**1,6-Anhydro-2,4-dideoxy-glycero-hexopyranos-3-ulose**

A-589

6,8-Dioxabicyclo[3.2.1]octan-3-one, 9CI

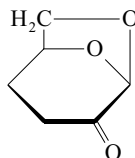
 $C_6H_8O_3$ 128.127**β-D-form** [30923-34-3]Oil. Bp₃ 90°. $[\alpha]_D^{20}$ -103 (c, 0.7 in $CHCl_3$).

[153667-43-7]

Cerný, M. *et al.*, *Carbohydr. Res.*, 1970, **15**, 379-389 (synth)Pecka, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1192-1209 (synth, pmr, ir, uv, cd)Delorme, D. *et al.*, *J. Med. Chem.*, 1996, **39**, 3951-3970 (synth, pmr)Belyk, K.M. *et al.*, *J.O.C.*, 2000, **65**, 2588-2590 (synth, pmr, cmr)**1,6-Anhydro-3,4-dideoxy-glycero-hexopyranos-2-ulose**

A-590

6,8-Dioxabicyclo[3.2.1]octan-4-one [53716-82-8]

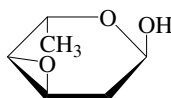
 $C_6H_8O_3$ 128.127**β-D-form**

Oil.

2,4-Dinitrophenylhydrazones: [64721-30-8]

Mp 205-206°. $[\alpha]_D^{26}$ -58.4 (c, 5.1 in $CHCl_3$).Shafizadeh, F. *et al.*, *Carbohydr. Res.*, 1977, **58**, 79 (synth)**3,4-Anhydro-2,6-dideoxy-ribo-hexose**

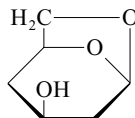
A-591

 $C_6H_{10}O_3$ 130.143**α-L-Pyranose-form**

Benzyl glycoside: Benzyl 3,4-anhydro-2,6-dideoxy-α-L-ribo-hexopyranoside [127783-09-9]

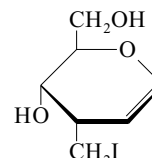
 $C_{13}H_{16}O_3$ 220.268Syrup. $[\alpha]_D^{20}$ -128 (c, 0.28 in $CHCl_3$).Ramilarison, C. *et al.*, *J. Carbohydr. Chem.*, 1989, **8**, 723-734 (α-L-benzyl pyr)**1,6-Anhydro-2,4-dideoxy-threo-hexose**

A-592

 $C_6H_{10}O_3$ 130.143**β-D-Pyranose-form** [14241-58-8]Cryst. Mp 37-50°. $[\alpha]_D$ -81 (c, 0.7 in H_2O). Solvent for recryst. not found.Pecka, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1192 (synth)Kelly, A.G. *et al.*, *Carbohydr. Res.*, 1979, **77**, 231-233 (synth, pmr)**1,5-Anhydro-2,3-dideoxy-3-(iodomethyl)-ribo-hex-1-enitol, 9CI**

A-593

1,2,3-Trideoxy-3-C-iodomethyl-ribo-hex-1-enopyranose, 8CI

 $C_7H_{11}IO_3$ 270.067**D-form**

4,6-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-2,3-dideoxy-3-(iodomethyl)-D-ribo-hex-1-enitol. 4,6-O-Benzylidene-1,2,3-trideoxy-3-C-iodomethyl-D-ribo-hex-1-enopyranose, 8CI

[26623-24-5]

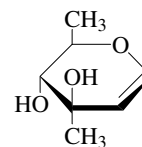
 $C_{14}H_{15}IO_3$ 358.175Cryst. (MeOH). Mp 130-132°. $[\alpha]_D^{23}$ +129 (c, 2.8 in MeOH).

[58207-05-9]

Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1969, **47**, 4095; 1972, **50**, 2919 (synth, pmr)**1,5-Anhydro-2,6-dideoxy-3-C-methyl-arabino-hex-1-enitol**

A-594

Olivomycal



D-form

 $C_7H_{12}O_3$ 144.17**D-form** [78086-62-1]Mp 109-111°. $[\alpha]_D^{20}$ +51.2 (c, 0.8 in THF).

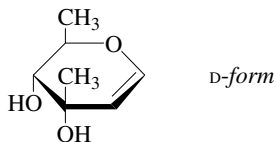
4-Ac: 4-O-Acetyl-1,5-anhydro-2,6-dideoxy-3-C-methyl-D-arabino-hex-1-enitol [78086-64-3]

 $C_9H_{14}O_4$ 186.207Syrup. $[\alpha]_D^{20}$ +68.5 (c, 0.13 in Et_2O).**L-form** [70717-87-2]Mp 104-106°. $[\alpha]_D^{20}$ -61.9 (c, 0.5 in THF).

4-Ac: 4-O-Acetyl-1,5-anhydro-2,6-dideoxy-3-C-methyl-L-arabino-hex-1-enitol [70717-92-9]

 $C_9H_{14}O_4$ 186.207Oil. $[\alpha]_D^{20}$ -59.6 (c, 1.4 in Et_2O).Thiem, J. *et al.*, *Chem. Ber.*, 1979, **112**, 818-822; 1981, **114**, 1442-1454 (L-form, D-form, synth, pmr)Jung, G. *et al.*, *Chem. Ber.*, 1981, **114**, 740-745 (L-form, synth)Kauffmann, T. *et al.*, *Carbohydr. Res.*, 1990, **207**, 33-38 (L-form, synth, pmr)Langner, M. *et al.*, *Eur. J. Org. Chem.*, 2003, 1494-1497 (L-form, synth)

1,5-Anhydro-2,6-dideoxy-3-C-methyl-ribo-hex-1-enitol A-595
2,6-Anhydro-1,5-dideoxy-4-C-methyl-ribo-hex-5-enitol. *Mycaral*



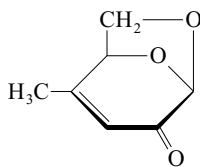
$C_7H_{12}O_3$ 144.17

Acc. to strict IUPAC nomenclature, the 1,5-anhydro name refers to the D-enantiomer and the 2,6-anhydro name to the L-enantiomer.

D-form [78086-63-2]
Mp 71-73°. $[\alpha]_D^{20} +73.8$ (c, 0.6 in THF).
4-Ac: 4-O-Acetyl-1,5-anhydro-2,6-dideoxy-3-C-methyl-D-ribo-hex-1-enitol [78086-65-4]
 $C_9H_{14}O_4$ 186.207
Syrup. $[\alpha]_D^{20} +56.5$ (c, 1.0 in Et₂O).

L-form [70774-09-3]
Mp 69-71°. $[\alpha]_D^{20} -97.8$ (c, 1.1 in THF).
Thiem, J. *et al.*, *Chem. Ber.*, 1979, **112**, 818-822; 1981, **114**, 1442-1454 (D-form, L-form, synth, pmr)
Jung, G. *et al.*, *Chem. Ber.*, 1981, **114**, 740-745 (L-form, synth)

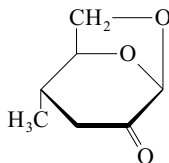
1,6-Anhydro-3,4-dideoxy-4-C-methyl-glycero-hex-3-enopyranos-2-ulose A-596
2-Methyl-6,8-dioxabicyclo[3.2.1]oct-2-en-4-one



$C_7H_8O_3$ 140.138

β-D-form [151982-14-8]
Pale yellow oil. $[\alpha]_D^{26} -467$ (c, 1.95 in CHCl₃).
Okano, K. *et al.*, *Chem. Pharm. Bull.*, 1993, **41**, 861 (synth, pmr, cmr)

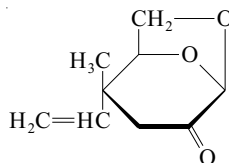
1,6-Anhydro-3,4-dideoxy-4-C-methyl-erythro-hexopyranos-2-ulose A-597



$C_7H_{10}O_3$ 142.154

β-D-form [63000-65-7]
Oil. Bp₅ 63°. $[\alpha]_D^{23} -299.4$ (c, 0.35 in Et₂O).
2,4-Dinitrophenylhydrazones: [64429-83-0]
Mp 215-216°. $[\alpha]_D^{26} -150$ (c, 3.5 in CHCl₃).
Shafizadeh, F. *et al.*, *Carbohydr. Res.*, 1977, **58**, 79 (synth)
Mori, M. *et al.*, *Carbohydr. Res.*, 1984, **129**, 73 (synth, pmr, ms)

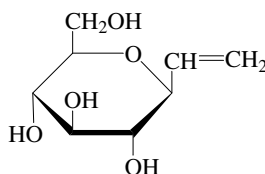
1,6-Anhydro-3,4-dideoxy-4-C-methyl-4-C-vinyl-glycero-hexopyranos-2-ulose A-598



$C_9H_{12}O_3$ 168.192

β-D-form [151982-15-9]
Oil. $[\alpha]_D^{24} -314.9$ (c, 0.43 in CHCl₃).
Okano, K. *et al.*, *Chem. Pharm. Bull.*, 1993, **41**, 861 (ir, pmr, cmr)

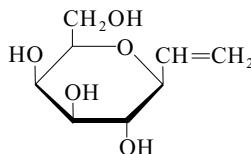
3,7-Anhydro-1,2-dideoxy-D-glycero-D-gulo-oct-1-enitol, 9CI A-599
β-D-Glucopyranosylethene. 2,6-Anhydro-7,8-dideoxy-L-glycero-L-gulo-oct-7-enitol [15450-27-2]



$C_8H_{14}O_5$ 190.196
Syrup. $[\alpha]_D^{20} +30$ (c, 1, MeOH).

Tetra-Ac: [51450-26-1]
 $C_{16}H_{22}O_9$ 358.344
Cryst. (petrol). Mp 102.5-103°. $[\alpha]_D^{26} +14$ (c, 1 in CHCl₃).
Shulman, M.L. *et al.*, *Carbohydr. Res.*, 1974, **33**, 229-235 (synth, tetra-Ac)
Brewer, C.F. *et al.*, *Annalen*, 1984, 1078-1087 (synth, pmr)

3,7-Anhydro-1,2-dideoxy-D-glycero-L-manno-1-octenitol A-600
2,6-Anhydro-7,8-dideoxy-L-glycero-L-galacto-7-octenitol. β-D-Galactopyranosylethene



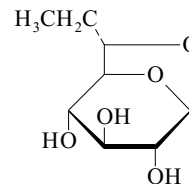
$C_8H_{14}O_5$ 190.196

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-β-D-galactopyranosylethene [59042-17-0]
 $C_{16}H_{22}O_9$ 358.344
Solid (Et₂O/petrol). Mp 85-86°. $[\alpha]_D^{20} +31$ (c, 1.0 in CHCl₃).

5,6,8-Tribenzyl: 3,4,6-Tri-O-benzyl-β-D-galactopyranosylethene [77737-59-8]
 $C_{29}H_{32}O_5$ 460.569
Syrup. $[\alpha]_D +6.9$ (CHCl₃).

Shiyan, S.D. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1976, 197-199; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1976, 188-190 (tetra-Ac)
Hanessian, S. *et al.*, *Carbohydr. Res.*, 1981, **88**, C14-C19 (5,6,8-tribenzyl)

1,6-Anhydro-7,8-dideoxy-L-glycero-β-D-gluc-octopyranose A-601

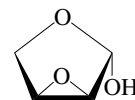


$C_8H_{14}O_5$ 190.196

Tribenzyl: 1,6-Anhydro-2,3,4-tri-O-benzyl-7,8-dideoxy-L-glycero-β-D-gluc-octopyranose [98853-88-4]
 $C_{29}H_{32}O_5$ 460.569
 $[\alpha]_D^{28} -26.5$ (c, 0.9 in CHCl₃).

Posner, G.H. *et al.*, *Tet. Lett.*, 1985, **26**, 1823 (β-D-tribenzyl, cmr)

2,3-Anhydroerythrofuranose A-602
3,6-Dioxabicyclo[3.1.0]hexan-2-ol. 3,4-Epoxy-2-hydroxytetrahydrofuran. 3,4-Epoxytetrahydro-2-furanol



α-L-form

$C_4H_6O_3$ 102.09

Numbering and stereochemical descriptors change according to whether named as a sugar, dioxabicyclohexane or epoxyfuran.

α-L-form

Me glycoside: Methyl 2,3-anhydro-α-L-erythrofuranoside. 2-Methoxy-3,6-dioxabicyclo[3.1.0]hexane, 9CI [148810-13-3]
 $C_5H_8O_3$ 116.116
Bp₂₅ 105° (bath). $[\alpha]_D -55$ (c, 3.0 in CHCl₃).

β-L-form

Me glycoside: Methyl 2,3-anhydro-β-L-erythrofuranoside [148810-12-2]
 $C_5H_8O_3$ 116.116
 $[\alpha]_D +167$ (c, 1.9 in CHCl₃).

α -DL-form

Me glycoside: Methyl 2,3-anhydro- α -DL-erythrofuranoside
[82342-68-5]
 $C_5H_8O_3$ 116.116
Bp₂₅ 90°. n_D^{20} 1.4365.

 β -DL-form

Me glycoside: Methyl 2,3-anhydro- β -DL-erythrofuranoside
[82398-63-8]
 $C_5H_8O_3$ 116.116
Bp₂₅ 64°. n_D^{20} 1.4455.

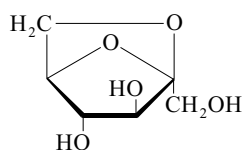
Gagnieu, C.H. *et al.*, *J.C.S. Perkin I*, 1982, 1009
(*synth*, *DL-forms*)

Jarý, J. *et al.*, *Carbohydr. Res.*, 1993, **242**, 291
(*synth*, *pmr*, *ms*, *cmr*, *L-forms*)

2,6-Anhydrofructofuranose, 9CI

A-603

2,5-Anhydrofructopyranose

 $C_6H_{10}O_5$ 162.142

β -D-form [38982-46-6] Thermolysis prod. of sucrose.
Cryst. (Me₂CO). Mp 118-119°. $[\alpha]_D$ -107 (c, 1 in H₂O).

Tri-Ac: 1,3,4-Tri-O-acetyl-2,6-anhydro- β -D-fructofuranose
[67831-76-9]

 $C_{12}H_{16}O_8$ 288.254

Syrup. Bp_{0.05} 110-120°. $[\alpha]_D^{25}$ -70 (c, 1.3 in CHCl₃). $[\alpha]_D$ -108 (CHCl₃).

Goldschmidt, H.R. *et al.*, *Can. J. Chem.*, 1960, **38**, 2178 (*synth*, *tri-Ac*)

Dreissig, W. *et al.*, *Acta Cryst. B*, 1973, **29**, 1409
(*cryst struct*)

Köll, P. *et al.*, *Chem. Ber.*, 1978, **111**, 2909
(*synth*, *tri-Ac*, *pmr*)

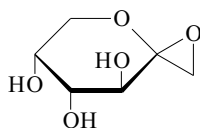
Poncini, L. *et al.*, *Carbohydr. Res.*, 1980, **87**, 209
(*synth*, *cmr*)

Taba, K.M. *et al.*, *Synthesis*, 1983, 1036 (*synth*, *cmr*)

Goursaud, F. *et al.*, *Tetrahedron*, 2002, **58**, 3629-3637 (*synth*)

1,2-Anhydrofructose

A-604

 $C_6H_{10}O_5$ 162.142 **β -D-Pyranose-form**

Tribenzyl: 1,2-Anhydro-3,4,5-tri-O-benzyl- β -D-fructopyranose
[154779-29-0]

 $C_{27}H_{28}O_5$ 432.515

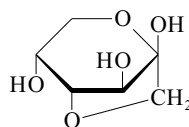
Mp 79°. $[\alpha]_D$ -35.8 (c, 1.39 in CHCl₃).

[154779-30-3]

Campbell, M.M. *et al.*, *Carbohydr. Res.*, 1994, **251**, 243 (*pmr*, *cmr*)

1,4-Anhydrofructose

A-605

 $C_6H_{10}O_5$ 162.142

A23.

 β -D-Pyranose-form

Me glycoside: Methyl 1,4-anhydro- β -D-fructopyranoside
[119645-63-5]

 $C_7H_{12}O_5$ 176.169

Mp 141-143°. $[\alpha]_D^{23}$ +34.3 (c, 0.46 in H₂O).

Me glycoside, di-Ac: Methyl 3,5-di-O-acetyl-1,4-anhydro- β -D-fructopyranoside
[119645-64-6]

 $C_{11}H_{16}O_7$ 260.243

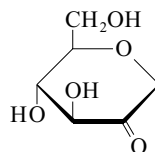
Cryst. Mp 123-124°. $[\alpha]_D^{22}$ +38.5
(c, 0.135 in CHCl₃).

Sinclair, H.B. *et al.*, *Carbohydr. Res.*, 1988, **181**, 115

1,5-Anhydrofructose, 9CI

A-606

1,5-Anhydro-arabino-hex-2-ulose

 $C_6H_{10}O_5$ 162.142

In aq. soln. the oxo form ill. is in equilib. with the 2-enol form, the 2,3-enediol form and the 3,3-diol covalent hydrate, which is the predominating species. In nonaqueous solvs. exists as a mixt. of two dimers. Acetylation gives spiro-dimers.

D-form [75414-43-6]

Prod. by the action of α -1,4-glucan lyase on α -glucans such as starch. Exists in rat liver, fungi and algae. Precursor of 2-Hydroxy-2-(hydroxymethyl)-2H-pyran-3(6H)-one in *Morchella vulgaris* (morel) and of Echinospurin in *Peziza echinospora*. Antioxidant.

Amorph. solid.

Mp 107-112°. $[\alpha]_D^{20}$ -32.9 (c, 0.86 in H₂O).

Oxime: [75414-31-2] $C_6H_{11}NO_5$ 177.157

Mp 178-180°. $[\alpha]_D^{21}$ -43 (c, 0.3 in H₂O).

Tri-Ac: 3,4,6-Tri-O-acetyl-1,5-anhydro-D-arabino-hex-2-ulose

 $C_{12}H_{16}O_8$ 288.254

Mp 93-94° (86-88°). $[\alpha]_D$ -7.2 (c, 1.5 in CHCl₃).

Tri-Ac, oxime: [88851-59-6]

[75414-20-9]

 $C_{12}H_{17}NO_8$ 303.268

Mp 89-90°. $[\alpha]_D^{21}$ -52.9 (c, 0.3 in CHCl₃).

Tribenzyl: 1,5-Anhydro-3,4,6-tri-O-benzyl-D-fructose
[75414-32-3]

$C_{27}H_{28}O_8$ 474.466
Mp 126-127°. $[\alpha]_D^{20}$ -24 (c, 0.8 in CHCl₃).

Tribenzyl, oxime: [82569-81-1]

[75414-21-0]

 $C_{27}H_{23}NO_8$ 489.481

Mp 176-177°. $[\alpha]_D^{21}$ -39 (c, 0.4 in CHCl₃).

4,6-Benzylidene, 3-(tert-butyltrimethylsilyl): 1,5-Anhydro-4,6-O-benzylidene-3-O-(tert-butyltrimethylsilyl)-D-fructose
[89872-98-0]

 $C_{19}H_{28}O_5Si$ 364.513

Syrup + 1H₂O. $[\alpha]_D^{20}$ -49.9 (c, 2.7 in CHCl₃).

Lichtenthaler, F.W. *et al.*, *Tet. Lett.*, 1980, **21**, 1429-1432 (*synth*, *tri-Ac*, *tribenzyl*)

Tulshian, D.B. *et al.*, *J.O.C.*, 1984, **49**, 2347-2355 (*benzylidene butyldimethylsilyl*)

Deffieux, G. *et al.*, *Phytochemistry*, 1987, **26**, 1391-1393 (*biosynth*, *isol*, *oxime*, *cryst struct*)

Baute, M.A. *et al.*, *Phytochemistry*, 1991, **30**, 1419-1423 (*biosynth*)

Yu, S. *et al.*, *Carbohydr. Res.*, 1998, **305**, 73-82
(*anal*, *bibl*)

Kopper, S. *et al.*, *Chem. Eur. J.*, 1998, **4**, 2442-2455 (*synth*)

Andersen, S.M. *et al.*, *J. Carbohydr. Chem.*, 1998, **17**, 1027-1035 (*acetyl dimers*, *cryst struct*)

Andersen, S.M. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 717-723; 2002, **21**, 569-578 (*synth*, *struct*, *tri-Ac*, *props*)

Andersen, S.M. *et al.*, *Carbohydr. Res.*, 2002, **337**, 873-890 (*rev*)

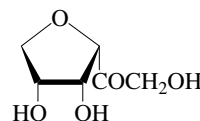
Yamaji, K. *et al.*, *Planta Med.*, 2002, **68**, 16-19 (*activity*)

Lichtenthaler, F.W. *et al.*, *Eur. J. Org. Chem.*, 2003, 3094-3104 (*tribenzyl*)

Yu, S. *et al.*, *Food Chem. Toxicol.*, 2004, **42**, 1677-1686 (*anal*, *metab*, *toxicol*)

3,6-Anhydrofructose

A-607

 $C_6H_{10}O_5$ 162.142**D-form** [151427-83-7]

Amorph. solid. $[\alpha]_D^{20}$ -49 (c, 1.1 in H₂O).

Tri-Ac: 1,4,5-Tri-O-acetyl-3,6-anhydro-D-fructose

[161325-49-1]

 $C_{12}H_{16}O_8$ 288.254

Syrup. $[\alpha]_D^{20}$ +2 (c, 1 in CHCl₃). Wrongly named in lit. as 1,2,5-tri-Ac.

4,5-O-Isopropylidene: 3,6-Anhydro-4,5-O-isopropylidene-D-fructose

[103367-08-4]

 $C_9H_{14}O_5$ 202.207

Solid. Mp 71°. $[\alpha]_D^{20}$ -142 (c, 0.8 in CHCl₃).

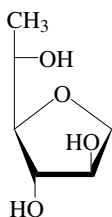
Köll, P. *et al.*, *Annalen*, 1986, 1568-1577 (*D-form isopropylidene*)

Defaye, J. *et al.*, *Tetrahedron: Asymmetry*, 1994, **5**, 2241-2250 (*D-form*, *D-form tri-Ac*)

1,4-Anhydrofucitol

A-608

3,6-Anhydro-1-deoxygalactitol, 9CI. 1,4-Anhydro-6-deoxygalactitol

 $C_6H_{12}O_4$ 148.158

Care needed with numbering (cf. 1-Deoxygalactitol, D-123).

L-form

1,4-Anhydro-L-fucitol. 3,6-Anhydro-1-deoxy-D-galactitol, 9CI. 1,4-Anhydro-6-deoxy-L-galactitol [93697-45-1]

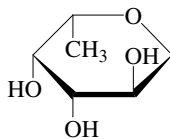
No phys. props. reported.

Gerwig, G.J. *et al.*, *Carbohydr. Res.*, 1984, **129**, 149-157 (*formn, glc*)Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1988, **176**, 145-148 (*formn, glc*)Wang, N. *et al.*, *Carbohydr. Res.*, 1995, **274**, 59-70 (*synth, derivs*)**1,5-Anhydrofucitol**

A-609

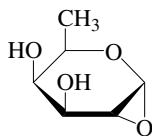
1,5-Anhydro-6-deoxygalactitol. 2,6-Anhydro-1-deoxygalactitol

[120442-64-0]

 $C_6H_{12}O_4$ 148.158**L-form** [117604-76-9]Mp 119-121°. $[\alpha]_D$ -61.2 (c, 0.5 in MeOH). This is the D-enantiomer if named as 2,6-anhydro-1-deoxy-D-galactitol.Carpintero, M. *et al.*, *Eur. J. Org. Chem.*, 2001, 4127-4135 (*synth, pmr, cmr*)**1,2-Anhydrofucose**

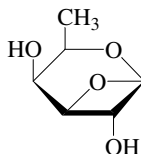
A-610

1,2-Anhydro-6-deoxygalactose, 9CI

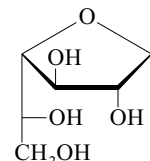
 $C_6H_{10}O_4$ 146.143 **α -D-Pyranose-form**3,4-Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl- α -D-fucopyranose. 1,2-Anhydro-3,4-di-O-benzyl-6-deoxy- α -D-galactopyranose [132884-63-0]
 $C_{20}H_{22}O_4$ 326.391
Cryst. Mp 77-79°. $[\alpha]_D$ +82.5 (c, 1.4 in $CHCl_3$).Du, Y. *et al.*, *Carbohydr. Res.*, 1995, **275**, 413-420 (3,4-dibenzyl, *synth, pmr*)**1,3-Anhydrofucose**

A-611

1,3-Anhydro-6-deoxygalactose

 $C_6H_{10}O_4$ 146.143 **β -D-Pyranose-form**Dibenzyl: 1,3-Anhydro-2,4-di-O-benzyl- β -D-fucopyranose [141942-18-9]
 $C_{20}H_{22}O_4$ 326.391
 $[\alpha]_D$ +6.2 (c, 2.2 in $CHCl_3$).Yang, C. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 379-395 (β -D-pyr dibenzyl)**1,4-Anhydrogalactitol**

A-612



D-form

 $C_6H_{12}O_5$ 164.158

Capable of enantiomerism although galactitol is a meso-compd.

D-form [32742-35-1]Plates (EtOAc or dioxan). Mp 95-96°. $[\alpha]_D^{20}$ -35.2 (c, 1.6 in EtOH). $[\alpha]_D^{25}$ -18 (c, 2 in H_2O).

Tetrabenzoyl: 2,3,5,6-Tetra-O-benzoyl-D-galactitol

 $C_{34}H_{28}O_9$ 580.59
Mp 99-101°. $[\alpha]_D^{20}$ +41.7 (c, 1.03 in $CHCl_3$).**L-form** 3,6-Anhydro-D-galactitol, 9CI[51196-40-8]
Syrup. $[\alpha]_D^{20}$ +34.5 (c, 1.9 in EtOH).

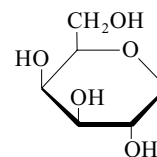
Tetrabenzoyl: 2,3,5,6-Tetra-O-benzoyl-L-galactitol

 $C_{34}H_{28}O_9$ 580.59
Mp 99-100°. $[\alpha]_D^{20}$ -42.9 (c, 1.24 in $CHCl_3$).**DL-form**

Cryst. (dioxan). Mp 58-62°.

Ness, R.K. *et al.*, *J.A.C.S.*, 1951, **73**, 3742 (*synth, D-form*)Barker, R. *et al.*, *J.O.C.*, 1964, **29**, 869 (*synth, D-form*)Lundt, I. *et al.*, *Tetrahedron*, 1994, **50**, 13285 (*cmr*)Kurszewska, M. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1261-1268 (DL-form, *synth, pmr, cmr*)**1,5-Anhydrogalactitol**

A-613

 $C_6H_{12}O_5$ 164.158**D-form** [3971-48-0]Prisms (EtOH aq.). Mp 114-115°. $[\alpha]_D$ +76.6 (c, 1.08 in H_2O).

2,6-Di-Ac: 2,6-Di-O-acetyl-1,5-anhydro-D-galactitol

 $C_{10}H_{16}O_7$ 248.232
Solid. Mp 108-110°. $[\alpha]_D$ +30 (c, 1.0 in $CHCl_3$).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1,5-anhydro-D-galactitol

[13121-62-5]
 $C_{14}H_{20}O_9$ 332.307
Prisms (Et₂O/petrol). Mp 75-77° Mp 105-106° (double Mp). $[\alpha]_D^{17}$ +49 (c, 1 in $CHCl_3$).

6-Tosyl, tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-benzoyl-6-O-tosyl-D-galactitol

 $C_{34}H_{30}O_{10}S$ 630.671
Mp 188-189°. $[\alpha]_D^{22}$ +166.3 (c, 1.6 in $CHCl_3$).

3,6-Ditosyl: 1,5-Anhydro-3,6-di-O-tosyl-D-galactitol

 $C_{20}H_{24}O_9S_2$ 472.536
Foam. $[\alpha]_D^{26}$ +42 (c, 2.8 in $CHCl_3$).

3,6-Ditosyl, dibenzoyl: 1,5-Anhydro-2,4-di-O-benzoyl-3,6-di-O-tosyl-D-galactitol

 $C_{34}H_{32}O_{11}S_2$ 680.752
Cryst. ($CHCl_3$ /EtOH). Mp 194-195°. $[\alpha]_D^{21}$ +134 (c, 1 in $CHCl_3$).

2,3,6-Tritosyl: 1,5-Anhydro-2,3,6-tri-O-tosyl-D-galactitol

 $C_{27}H_{30}O_{11}S_3$ 626.725
Cryst. (C_6H_6). Mp 170-171°. $[\alpha]_D^{24}$ +28.5 (c, 1.9 in $CHCl_3$).

2,3,6-Tritosyl, benzoyl: 1,5-Anhydro-4-O-benzoyl-2,3,6-tri-O-tosyl-D-galactitol

 $C_{34}H_{34}O_{12}S_3$ 730.833
Cryst. (CH_2Cl_2 /EtOH). Mp 166-167°. $[\alpha]_D^{24}$ +83.1 (c, 4.4 in $CHCl_3$).

Tetratosyl: 1,5-Anhydro-2,3,4,6-tetra-O-tosyl-D-galactitol

 $C_{34}H_{36}O_{13}S_4$ 780.915
Syrup. $[\alpha]_D^{25}$ +35 (c, 2.3 in $CHCl_3$).

3,4-O-Isopropylidene: 1,5-Anhydro-3,4-O-isopropylidene-D-galactitol

[143697-37-4]
 $C_9H_{16}O_5$ 204.222
Solid. Mp 99-100°. $[\alpha]_D$ +65 (c, 1.0 in $CHCl_3$).

3,4-O-Isopropylidene, 2,6-di-Ac: 2,6-Di-O-acetyl-1,5-anhydro-3,4-O-isopropylidene-D-galactitol

[143916-22-7]
 $C_{13}H_{20}O_7$ 288.297
Solid. Mp 100-102°. $[\alpha]_D$ +63 (c, 1.0 in $CHCl_3$).

4,6-O-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-D-galactitol
 $C_{13}H_{16}O_5$ 252.266
 Cryst. (EtOH). Mp 183-185°. $[\alpha]_D^{25} +61.2$ (c, 0.9 in $CHCl_3$).

4,6-O-Benzylidene, 2-benzoyl: 1,5-Anhydro-2-O-benzoyl-4,6-O-benzylidene-D-galactitol
 $C_{20}H_{20}O_6$ 356.374
 Cryst. (EtOH). Mp 184-186°. $[\alpha]_D^{26} +31.5$ (c, 0.6 in $CHCl_3$).

4,6-O-Benzylidene, 3-benzoyl: 1,5-Anhydro-3-O-benzoyl-4,6-O-benzylidene-D-galactitol
 $C_{20}H_{20}O_6$ 356.374
 Cryst. (EtOH). Mp 195-197°. $[\alpha]_D^{25} +184$ (c, 1.5 in Py).

4,6-O-Benzylidene, 2,3-dibenzoyl: 1,5-Anhydro-2,3-di-O-benzoyl-4,6-O-benzylidene-D-galactitol
 $C_{27}H_{24}O_7$ 460.482
 Fine needles (EtOH). Mp 182-185°. $[\alpha]_D^{28} +160$ (c, 0.9 in $CHCl_3$).

4,6-O-Benzylidene, 3-tosyl: 1,5-Anhydro-4,6-O-benzylidene-3-O-tosyl-D-galactitol
 $C_{20}H_{22}O_7S$ 406.456
 Syrup. $[\alpha]_D^{22} +32.1$ (c, 2.6 in $CHCl_3$).

4,6-O-Benzylidene, 2,3-ditosyl: 1,5-Anhydro-4,6-O-benzylidene-2,3-di-O-tosyl-D-galactitol
 $C_{27}H_{28}O_8S_2$ 560.645
 Syrup. $[\alpha]_D^{25} +78.9$ (c, 0.9 in $CHCl_3$).

4,6-O-Benzylidene, 2-benzoyl, 3-tosyl: 1,5-Anhydro-2-O-benzoyl-4,6-O-benzylidene-3-O-tosyl-D-galactitol
 $C_{27}H_{26}O_8S$ 510.564
 Cryst. ($CHCl_3$ /EtOH). Mp 186° dec. $[\alpha]_D^{24} +194$ (c, 0.7 in Py).

4,6-O-Benzylidene, 3-benzoyl, 2-tosyl: 1,5-Anhydro-3-O-benzoyl-4,6-O-benzylidene-2-O-tosyl-D-galactitol
 $C_{27}H_{26}O_8S$ 510.564
 Cryst. ($CHCl_3$ /EtOH). Mp 131-132°. $[\alpha]_D^{20} +176$ (c, 0.8 in $CHCl_3$).

Fletcher, H.G. et al., *J.A.C.S.*, 1948, **70**, 310 (synth)

Kocienski, P. et al., *Carbohydr. Res.*, 1982, **110**, 330 (D-tetra-Ac)

Kondo, Y. et al., *Carbohydr. Res.*, 1983, **114**, 335; **121**, 324 (tosyl, benzoyl derivs)

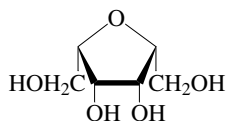
Kondo, Y. et al., *Carbohydr. Res.*, 1989, **193**, 279 (benzylidene derivs)

Elvebak, L.E. et al., *Carbohydr. Res.*, 1995, **269**, 1 (synth, ms, derivs)

Cassel, S. et al., *Eur. J. Org. Chem.*, 2001, 875-896 (synth, pmr, cmr, di-Ac, isopropylidene)

2,5-Anhydrogalactitol**A-614**

[74743-81-0]

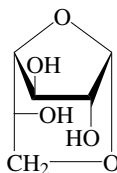
 $C_6H_{12}O_5$ 164.158

meso-. Incorr. referred to as 2,5-Anhydroallitol at one place in the paper.
 Syrup.

Van Delft, F.L. et al., *J. Carbohydr. Chem.*, 1999, **18**, 165-190; 191-207 (synth, pmr, cmr)

1,6-Anhydrogalactofuranose

1,6-Anhydro-galacto-hexofuranose

A-615 $C_6H_{10}O_5$ 162.142

α -D-form [33818-21-2] Usually prepd. by pyrol. of D-galactose, also obt. by pyrol. of Lactose, L-13, 6-O- α -D-Galactopyranosyl-D-glucose, G-145 and Raffinose, R-1.

Cryst. (EtOH). Mp 183-184°. $[\alpha]_D^{25} +56$ (c, 1.0 in H_2O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,6-anhydro- α -D-galactofuranose

[5349-08-6]
 $C_{12}H_{16}O_8$ 288.254
 Cryst. (EtOH). Mp 79-80°. $[\alpha]_D^{20} +144.9$ (c, 1.0 in $CHCl_3$).

Trimesyl: 1,6-Anhydro-2,3,5-tri-O-mesyl- α -D-galactofuranose

$C_9H_{16}O_{11}S_3$ 396.417
 Cryst. (Me_2CO aq.). Mp 168-169°. $[\alpha]_D +67.8$ ($CHCl_3$).

2-Tosyl: 1,6-Anhydro-2-O-tosyl- α -D-galactofuranose

[71109-81-4]
 $C_{13}H_{16}O_7S$ 316.331
 Mp 122-123°. $[\alpha]_D^{20} +56.1$ (c, 0.6 in Me_2CO).

3-Tosyl: 1,6-Anhydro-3-O-tosyl- α -D-galactofuranose

[71109-80-3]
 $C_{13}H_{16}O_7S$ 316.331
 Cryst. (2-propanol). Mp 138-139°. $[\alpha]_D^{20} +37.9$ (c, 0.7 in Me_2CO).

5-Tosyl: 1,6-Anhydro-5-O-tosyl- α -D-galactofuranose

[71109-82-5]
 $C_{13}H_{16}O_7S$ 316.331
 Mp 119-121°. $[\alpha]_D^{20} +48.1$ (c, 0.5 in Me_2CO).

2,3-Ditosyl: 1,6-Anhydro-2,3-di-O-tosyl- α -D-galactofuranose

[71109-79-0]
 $C_{20}H_{22}O_9S_2$ 470.52
 Syrup. $[\alpha]_D^{20} +37.6$ (c, 1.0 in $CHCl_3$).

2,5-Ditosyl: 1,6-Anhydro-2,5-di-O-tosyl- α -D-galactofuranose

[71109-77-8]
 $C_{20}H_{22}O_9S_2$ 470.52
 Mp 82-84°. $[\alpha]_D^{20} +24.6$ (c, 0.4 in $CHCl_3$).

3,5-Ditosyl: 1,6-Anhydro-3,5-di-O-tosyl- α -D-galactofuranose

[71109-78-9]
 $C_{20}H_{22}O_9S_2$ 470.52
 Mp 155-156°. $[\alpha]_D^{20} +19.4$ (c, 0.6 in $CHCl_3$).

Tritosyl: 1,6-Anhydro-2,3,5-tri-O-tosyl- α -D-galactofuranose

[71109-76-7]
 $C_{27}H_{28}O_{11}S_3$ 624.71
 Cryst. ($CHCl_3$ /Et₂O/petrol). Mp 143-144°. $[\alpha]_D^{20} +36.2$ (c, 2.0 in $CHCl_3$).

Tri-Me: 1,6-Anhydro-2,3,5-tri-O-methyl- α -D-galactofuranose

$C_9H_{16}O_5$ 204.222
 Syrup. Bp_{0.5} 72-83°. $[\alpha]_D +73.6$ (MeOH).

Tribenzoyl: 1,6-Anhydro-2,3,5-tri-O-benzoyl- α -D-galactofuranose

[259826-50-1]
 $C_{27}H_{22}O_8$ 474.466
 Cryst. (EtOH). Mp 142°. $[\alpha]_D^{25} +134.5$ (c, 0.9 in $CHCl_3$). Wrongly descr. in the paper as β -.

Alexander, B.H. et al., *J.A.C.S.*, 1951, **73**, 4658 (synth, α -D-tri-Ac, α -D-tri-Me)

Dimler, R.J. et al., *Adv. Carbohydr. Chem.*, 1952, **7**, 37 (rev)

Richtmyer, N.K. et al., *Arch. Biochem. Biophys.*, 1958, **78**, 376 (synth, α -D-trimesyl, α -D-tritosyl)

Köll, P. et al., *Chem. Ber.*, 1973, **106**, 3559 (synth)

Černý, M. et al., *Adv. Carbohydr. Chem. Biochem.*, 1977, **34**, 23 (rev)

Köll, P. et al., *Chem. Ber.*, 1979, **112**, 2068 (α -D-tosyl derivs)

Kopf, J. et al., *J. Carbohydr. Chem.*, 1986, **5**, 99-113 (α -D-fur tri-Ac, cryst struct)

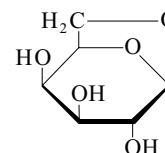
Köll, P. et al., *Carbohydr. Res.*, 1988, **174**, 9 (cryst struct)

Köll, P. et al., *Carbohydr. Res.*, 1988, **179**, 1 (pmr, cmr)

Sarkar, S.K. et al., *J. Carbohydr. Chem.*, 1999, **18**, 1121-1130 (synth, tribenzoyl)

1,6-Anhydrogalactopyranose**A-616**

Galactosan

 $C_6H_{10}O_5$ 162.142 β -D-form [644-76-8]

Plates (EtOH). Mp 226° (222-233°). $[\alpha]_D -22$ (H_2O).

2,3-Di-Ac: 2,3-Di-O-acetyl-1,6-anhydro- β -D-galactopyranose

[14213-39-9]
 $C_{10}H_{14}O_7$ 246.216
 Cryst. (2-propanol/petrol). Mp 113-115°. $[\alpha]_D -0.8$ ($CHCl_3$).

2,4-Di-Ac: 2,4-Di-O-acetyl-1,6-anhydro- β -D-galactopyranose

[56933-12-1]
 $C_{10}H_{14}O_7$ 246.216
 Syrup. $[\alpha]_D -8.5$ ($CHCl_3$).

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro- β -D-galactopyranose

[4132-24-5]
 $C_{12}H_{16}O_8$ 288.254
 Cryst. (petrol). Mp 73-74°. $[\alpha]_D^{20} -6.2$ (c, 1 in $CHCl_3$).

2-Benzoyl: 1,6-Anhydro-2-O-benzoyl- β -D-galactopyranose

$C_{13}H_{14}O_6$ 266.25
 Cryst. (EtOH). Mp 164-165°. $[\alpha]_D +47.2$ ($CHCl_3$).

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-galactopyranose

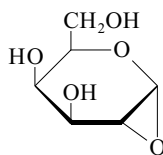
$C_{27}H_{22}O_8$ 474.466
 Mp 89-90°. $[\alpha]_D^{20} +84.8$ (c, 1 in $CHCl_3$).

- 2-Mesyl: 1,6-Anhydro-2-O-mesyl- β -D-galactopyranose
[52526-54-2]
C₇H₁₂O₇S 240.234
Cryst. (EtOH). Mp 145°. [α]_D -11 (MeOH).
- 2-Phenylcarbamoyl: [37086-02-5]
Cryst. (H₂O). Mp 162-163°. [α]_D +24.7 (MeOH).
- 2-Tosyl: 1,6-Anhydro-2-O-tosyl- β -D-galactopyranose
[30923-30-9]
C₁₃H₁₆O₇S 316.331
Cryst. (AcOH). Mp 114-115°. [α]_D -20.7 (CHCl₃).
- 2,4-Ditosyl: 1,6-Anhydro-2,4-di-O-tosyl- β -D-galactopyranose
[30923-31-0]
C₂₀H₂₂O₉S₂ 470.52
Mp 115-117°. [α]_D -49 (CHCl₃).
- 2,3,4-Tritosyl: 1,6-Anhydro-2,3,4-tri-O-tosyl- β -D-galactopyranose
C₂₇H₂₈O₁₁S₃ 624.71
Mp 103-104°. [α]_D -51.1 (c, 1.3 in CHCl₃).
- 3,4-O-Isopropylidene: 1,6-Anhydro-3,4-O-isopropylidene- β -D-galactopyranose
[52579-97-2]
C₉H₁₄O₅ 202.207
Cryst. (C₆H₆). Mp 151-152°. [α]_D -73.3 (CHCl₃).
- 3,4-O-Isopropylidene, 2-Ac: 2-O-Acetyl-1,6-anhydro-3,4-O-isopropylidene- β -D-galactopyranose
[20787-28-4]
C₁₁H₁₆O₆ 244.244
Mp 136-137°. [α]_D -51.4 (c, 0.9 in CHCl₃).
- 3,4-O-Isopropylidene, 2-benzoyl: 1,6-Anhydro-2-O-benzoyl-3,4-O-isopropylidene- β -D-galactopyranose
C₁₆H₁₈O₆ 306.315
Mp 119-120°. [α]_D +6.3 (c, 0.8 in CHCl₃).
- 3,4-O-Isopropylidene, 2-tosyl: 1,6-Anhydro-3,4-O-isopropylidene-2-O-tosyl- β -D-galactopyranose
C₁₆H₂₀O₇S 356.396
Mp 118-119°. [α]_D -63.7 (c, 0.9 in CHCl₃).
- exo-3,4-O-Benzylidene: 1,6-Anhydro-exo-3,4-O-benzylidene- β -D-galactopyranose
[71021-25-5]
C₁₃H₁₄O₅ 250.251
Cryst. (EtOH aq.). Mp 119-121°. [α]_D -28.5 (c, 0.6 in CHCl₃).
- endo-3,4-O-Benzylidene: 1,6-Anhydro-endo-3,4-O-benzylidene- β -D-galactopyranose
[71020-27-4]
C₁₃H₁₄O₅ 250.251
Cryst. (EtOH). Mp 186-189°. [α]_D +8 (c, 1.6 in CHCl₃).
- 2-Me: 1,6-Anhydro-2-O-methyl- β -D-galactopyranose
[35405-75-5]
C₇H₁₂O₅ 176.169
Mp 115-116°. [α]_D -35 (H₂O).
- 4-Me: 1,6-Anhydro-4-O-methyl- β -D-galactopyranose
C₇H₁₂O₅ 176.169
Syrup. [α]_D -28 (CHCl₃).

- 2,4-Di-Me: 1,6-Anhydro-2,4-di-O-methyl- β -D-galactopyranose
C₈H₁₄O₅ 190.196
Syrup. [α]_D -46 (CHCl₃).
- 3,4-Di-Me: 1,6-Anhydro-3,4-di-O-methyl- β -D-galactopyranose
C₈H₁₄O₅ 190.196
Cryst. (EtOAc/petrol). Mp 81°. [α]_D -41.1 (H₂O).
- 2-Benzyl: 1,6-Anhydro-2-O-benzyl- β -D-galactopyranose
[55287-63-3]
C₁₃H₁₆O₅ 252.266
Cryst. (Et₂O/CH₂Cl₂ or EtOAc/petrol). Mp 104-105°. [α]_D -76.2 (CHCl₃). [α]_D -37 (c, 1 in CHCl₃).
- 2-Benzyl, 3,4-O-isopropylidene: 1,6-Anhydro-2-O-benzyl-3,4-O-isopropylidene- β -D-galactopyranose
C₁₆H₂₀O₅ 292.331
Mp 83-85°. [α]_D -78.2 (c, 1 in CHCl₃).
- 3-Benzyl, di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-O-benzyl- β -D-galactopyranose
C₁₇H₂₀O₇ 336.341
Syrup. [α]_D -71 (c, 0.5 in CHCl₃).
- 4-Benzyl: 1,6-Anhydro-4-O-benzyl- β -D-galactopyranose
[116836-98-7]
C₁₃H₁₆O₅ 252.266
Syrup. [α]_D -22 (c, 0.5 in CHCl₃).
- Hann, R.M. *et al.*, *J.A.C.S.*, 1941, **63**, 1484; 1942, **64**, 2435 (synth, isopropylidene derivs, benzoyl derivs)
- Micheel, F. *et al.*, *Chem. Ber.*, 1955, **88**, 2020 (synth)
- Köll, P. *et al.*, *Chem. Ber.*, 1973, **106**, 3559 (synth)
- Durette, P.L. *et al.*, *Chem. Ber.*, 1974, **107**, 937 (tri-Ac)
- Paulsen, H. *et al.*, *Carbohydr. Res.*, 1976, **49**, 27 (cmr)
- Gent, P.A. *et al.*, *J.C.S. Perkin 1*, 1976, 1395 (isopropylidene benzyl, benzyl)
- Černý, M. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1977, **34**, 23 (rev, derivs)
- Buděšínský, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 1949 (pmr, conformn)
- Ceccarelli, C. *et al.*, *Acta Cryst. B*, 1980, **36**, 861 (cryst struct)
- Subero, C. *et al.*, *Carbohydr. Res.*, 1980, **86**, 27 (benzylidene derivs)
- Cano, F.H. *et al.*, *Carbohydr. Res.*, 1984, **127**, 338 (cryst struct, 3,4-isopropylidene)
- Kloosterman, M. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1985, **104**, 117 (synth, tri-Ac)
- Carmen Cruzado, M. *et al.*, *Carbohydr. Res.*, 1988, **175**, 193 (4-benzyl, 3-benzyl-di-Ac)

1,2-Anhydrogalactose

A-617

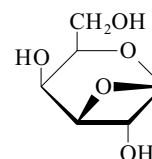
C₆H₁₀O₅ 162.142 **α -D-Pyranose-form**

- Tri-Ac: 3,4,6-Tri-O-acetyl-1,2-anhydro- α -D-galactopyranose
[166329-00-6]
C₁₂H₁₆O₈ 288.254
No phys. props. reported.

- Tris(4-bromobenzoyl):
Cryst. (CH₂Cl₂/petrol). Mp 95°. [α]_D -7.3 (c, 3 in CHCl₃).
- Tribenzyl: 1,2-Anhydro-3,4,6-tri-O-benzyl- α -D-galactopyranose
C₂₇H₂₈O₅ 432.515
Cryst. (Et₂O/petrol). Mp 39°. [α]_D -16.9 (c, 0.62 in CHCl₃).
- Tris(tert-butyltrimethylsilyl): 1,2-Anhydro-3,4,6-tris-O-(tert-butyltrimethylsilyl)- α -D-galactopyranose
[121654-01-1]
C₂₄H₅₂O₃Si₃ 504.928
[α]_D +25 (c, 1.01 in CHCl₃).
- Kong, F. *et al.*, *Carbohydr. Res.*, 1987, **162**, 217 (tribenzyl, tris-p-bromobenzoyl)
- Halcomb, R.L. *et al.*, *J.A.C.S.*, 1989, **111**, 6661 (tris-tert-butyltrimethylsilyl, pmr)
- Cavicchioli, M. *et al.*, *Chem. Comm.*, 1995, 901 (tri-Ac, pmr)

1,3-Anhydrogalactose

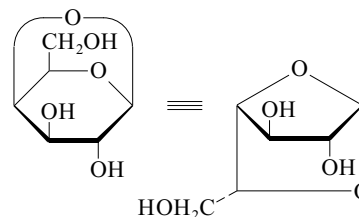
A-618

C₆H₁₀O₅ 162.142 **β -D-Pyranose-form**

- Tribenzyl: 1,3-Anhydro-2,4,6-tri-O-benzyl- β -D-galactopyranose
[129165-09-9]
C₂₇H₂₈O₅ 432.515
[α]_D -2.7 (c, 1.3 in CHCl₃).
- Kong, F. *et al.*, *Carbohydr. Res.*, 1990, **198**, 141 (synth, pmr, cmr, tribenzyl)

1,4-Anhydrogalactose

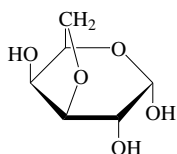
A-619

C₆H₁₀O₅ 162.142**D-form**

- 2,3-Dibenzoyl, 6-Ac: 6-O-Acetyl-1,4-anhydro-2,3-di-O-benzoyl- β -D-galactopyranose
C₂₂H₂₀O₈ 412.395
Cryst. (EtOH). Mp 124.5-126°. [α]_D +214 (c, 1 in CHCl₃).
- Tribenzoyl: 1,4-Anhydro-2,3,6-tri-O-benzoyl- β -D-galactopyranose
C₂₇H₂₂O₈ 474.466
Long needles (EtOAc/hexane). Mp 141-143° (137-138°). [α]_D +177.5 (c, 0.4 in CHCl₃).
- Tri-Me: 1,4-Anhydro-2,3,6-tri-O-methyl- β -D-galactopyranose
C₉H₁₆O₅ 204.222

Mp 36-37°. Bp_{0.18} 71-72°. [α]_D²⁸ +86.3 (c, 2.1 in CHCl₃).

Jorgen, K. *et al.*, *J.O.C.*, 1965, **30**, 3951 (*tri-Me*)
Thiem, J. *et al.*, *Carbohydr. Res.*, 1993, **249**, 197
(*tribenzoyl*, 2,3-*dibenzoyl*-6-*Ac*)

3,6-Anhydrogalactose**A-620** α -D-Pyranose-formC₆H₁₀O₅ 162.142**D-form** [14122-18-0]

Present in carrageenans.

Syrup. [α]_D +38.9 \rightarrow +28.5 (H₂O). **α -D-Pyranose-form**

1,2-O-Isopropylidene: 3,6-Anhydro-1,2-O-isopropylidene- α -D-galactopyranose
C₉H₁₄O₅ 202.207
Mp 92°. [α]_D¹⁴ +26.9 (H₂O).

Me glycoside: Methyl 3,6-anhydro- α -D-galactopyranoside
[5540-31-8]
C₇H₁₂O₅ 176.169

Cryst. (C₆H₆). Mp 141-142°. [α]_D +82.4 (H₂O).

Me glycoside, 4-*Ac*: Methyl 4-O-acetyl-3,6-anhydro- α -D-galactopyranoside
C₉H₁₄O₆ 218.206
Cryst. (Et₂O). Mp 109-110°. [α]_D +66 (c, 1.2 in CHCl₃).

Me glycoside, 2-*benzyl*: Methyl 3,6-anhydro-2-O-benzyl- α -D-galactopyranoside
C₁₄H₁₈O₅ 266.293
Cryst. (H₂O). [α]_D +66 (c, 1.2 in CHCl₃).

 β -D-Pyranose-form

Me glycoside: Methyl 3,6-anhydro- β -D-galactopyranoside
C₇H₁₂O₅ 176.169
Cryst. (EtOAc). Mp 119°. [α]_D -115 (H₂O).

Me glycoside, 2-*benzyl*: Methyl 3,6-anhydro-2-O-benzyl- β -D-galactopyranoside
[20688-93-1]
C₁₄H₁₈O₅ 266.293
Cryst. (Et₂O/petrol). Mp 70-71°. [α]_D -16 (c, 0.9 in CHCl₃).

L-form [28251-55-0]

Constit. of Agarobiose, A-60 obt. by partial acid hydrol. of agar.

Di-Et dithioacetal:C₁₀H₂₀O₄S₂ 268.398

Obt. efficiently (86% yield) by mercaptolysis of agar. Silky needles (EtOAc/Et₂O/petrol). Mp 109.7°. [α]_D²⁵ +10.6.

 α -L-Pyranose-form

1,2-O-Isopropylidene: 3,6-Anhydro-1,2-O-isopropylidene- α -L-galactopyranose
C₉H₁₄O₅ 202.207
Cryst. (Et₂O/hexane). Mp 91-92°. [α]_D²⁰ -26.8 (c, 1.17 in H₂O).

Ohle, H. *et al.*, *Ber.*, 1933, **66**, 525 (*D-form*, *synth*, α -D-*Me pyr*)

Haworth, W.N. *et al.*, *J.C.S.*, 1940, 620 (α -D-*Me pyr*, β -D-*Me pyr*)

Lewis, B.A. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 172 (α -D-*Me pyr*, β -D-*Me pyr*)

Hirase, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1968, **41**, 626 (α -D-*pyr* isopropylidene, α -L-*pyr* isopropylidene)

Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1968, 1642 (β -D-*Me pyr*, β -D-*Me pyr* benzyl)

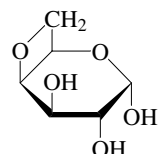
Campbell, J.W. *et al.*, *J.C.S. Perkin 2*, 1972, 1721 (α -D-*Me pyr*, *cryst struct*)

Izumi, K. *et al.*, *Carbohydr. Res.*, 1973, **27**, 278 (*pmr*)

Matsuhiro, B. *et al.*, *Carbohydr. Res.*, 1983, **118**, 276 (*anal*)

Parra, E. *et al.*, *Carbohydr. Res.*, 1990, **208**, 83 (α -D-*Me pyr* *Ac*, α -D-*Me pyr* benzyl)

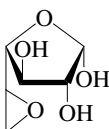
Hama, Y. *et al.*, *Carbohydr. Res.*, 1999, **318**, 154-156 (*L-form*, *di-Et mercaptal*)

4,6-Anhydrogalactose**A-621** α -D-formC₆H₁₀O₅ 162.142 **α -D-Pyranose-form**

Me glycoside, 2,3-*di-Me*: Methyl 4,6-anhydro-2,3-di-O-methyl- α -D-galactopyranose
[62847-84-1]
C₉H₁₆O₅ 204.222

Syrup. Bp_{0.1} 95° (bath). [α]_D +244 (c, 1.7 in CHCl₃).

Hall, C.R. *et al.*, *Carbohydr. Res.*, 1977, **53**, 254 (*synth*)

5,6-Anhydrogalactose**A-622** α -D-Furanose-formC₆H₁₀O₅ 162.142**D-Furanose-form**

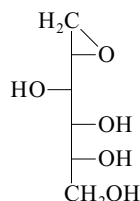
Tri-Ac: 1,2,3-Tri-O-acetyl-5,6-anhydro-D-galactofuranose

[121363-71-1, 121363-72-2]

C₁₂H₁₆O₈ 288.254

Syrup. Obt. as anomeric mixt., α/β ratio 2:3.

Lafont, D. *et al.*, *Synthesis*, 1989, 191-194 (*D-fur tri-Ac*)

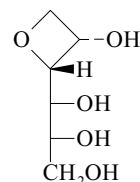
1,2-Anhydroglucitol**A-623***D-form*C₆H₁₂O₅ 164.158**D-form**

3,4:5,6-Diisopropylidene: 1,2-Anhydro-3,4:5,6-di-O-isopropylidene-D-glucitol
[105454-10-2]

C₁₂H₂₀O₅ 244.287Bp_{0.5} 65°. [α]_D²⁰ -16 (c, 1 in CHCl₃).

[77519-81-4]

Regeling, H. *et al.*, *Carbohydr. Res.*, 1989, **190**, 313 (*synth*, *pmr*)

1,3-Anhydroglucitol**A-624**C₆H₁₂O₅ 164.158**D-form**

Cryst. (EtOH/Et₂O). Mp 98-99° (86-86.5°). [α]_D²⁰ -1 (c, 6.0 in H₂O). [α]_D²¹ -47.9 (c, 1.5 in H₂O).

2,4-Benzylidene, di-*Ac*: 5,6-Di-O-acetyl-1,3-anhydro-2,4-O-benzylidene-D-glucitol

C₁₇H₂₀O₇ 336.341

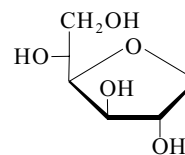
Cryst. (EtOH aq.). Mp 83-84°. [α]_D²¹ +12.2 (c, 1.25 in dioxan).

Haslam, E. *et al.*, *Carbohydr. Res.*, 1966, **2**, 301
Sinclair, H.B. *et al.*, *Carbohydr. Res.*, 1983, **113**, 321 (*synth*)

1,4-Anhydroglucitol, 9CI, 8CI**A-625**

1,4-Anhydrosorbitol. Arlitan. Sorbitan
[27299-12-3]

[12441-09-7]

C₆H₁₂O₅ 164.158**D-form**

Cryst. (2-propanol). Mp 115-116°. [α]_D²⁷ -21.9 (c, 2.5 in H₂O).

6-O-Dodecanoyl: Sorbitan monolaurate, BAN, USAN. Sorbitan laurate, INN. Sorbester P12. Span 20. E493

[1338-39-2]

C₁₈H₃₄O₆ 346.463

Nonionic surface active agent. Used as a 0.1% soln. in toluene for extraction-photometric detn. of SO₄²⁻ (λ_{\max} 600 nm, ϵ 15000, toluene). Sorbitan esters used as emulsifying agents in pharmaceutical and cosmetic preparations. Used in foods, e.g. as emulsifier.

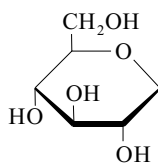
► Eye irritant. LD₅₀ (rat, orl) 33600 mg/kg. WG2920000

6-O-Hexadecanoyl: Sorbitan monopalmitate, BAN, USAN. Sorbitan palmitate, INN. Sorbester P16. Span 40. E495

- [26266-57-9]
C₂₂H₄₂O₆ 402.57
Nonionic surface active agent. Food emulsifier and stabiliser.
- ▶ WG2932900
6-O-Octadecanoyl: *Sorbitan monostearate*, *BAN*, *USAN*. **Sorbitan stearate**, *INN*. *Sorbester P18*. *Span 60*. *FEMA 3028*. *E491* [1338-41-6]
C₂₄H₄₆O₆ 430.624
Nonionic surface active agent. Used in foods.
- ▶ Skin irritant. LD₅₀ (rat, orl) 31000 mg/kg. WG2933500
6-O-(9-Octadecenoyl): *Sorbitan monooleate*, *BAN*, *USAN*. **Sorbitan oleate**, *INN*. *Sorbester P17*. *Span 80*. *NSC 406239*. *E494* [1338-43-8]
C₂₄H₄₄O₆ 428.608
Nonionic surface active agent. Emulsifier and clarification agent in foods.
- ▶ Skin irritant. WG2932400
3,5,6-Trioctadecanoyl: **Sorbitan tristearate**, *BAN*, *USAN*. *Sorbester P38*. *Span 65*. *E492* [26658-19-5]
C₆₀H₁₁₄O₈ 963.556
Nonionic surface active agent.
- 3,5,6-Tris(9-octadecenoyl): **Sorbitan trioleate**, *BAN*, *USAN*. *Sorbester P37*. *Span 85* [5960-06-5]
[26266-58-0]
C₆₀H₁₀₈O₈ 957.508
Nonionic surface active agent. Food emulsifier.
- 5,6-O-Isopropylidene: 1,4-Anhydro-5,6-O-isopropylidene-D-glucitol
[55730-73-9]
C₉H₁₆O₅ 204.222
Mp 68-70°. [α]_D²⁰ -6 (c, 1 in CHCl₃).
- 5,6-O-Isopropylidene, 2-mesyl: 1,4-Anhydro-5,6-O-isopropylidene-2-O-mesyl-D-glucitol
[55730-74-0]
C₁₀H₁₈O₇S 282.314
Mp 112°.
- 5,6-O-Isopropylidene, 2,3-dimesyl: 1,4-Anhydro-5,6-O-isopropylidene-2,3-di-O-mesyl-D-glucitol
[55730-75-1]
C₁₁H₂₀O₉S₂ 360.406
Mp 163-163.5°.
- Tetra-Me*: 1,4-Anhydro-2,3,5,6-tetra-O-methyl-D-glucitol
C₁₀H₂₀O₅ 220.265
Bp₁₄ 170-174°. [α]_D²² -43 (c, 4.84 in EtOH).
- Mixt. of partial esters, mono- and dianhydrides with oleic acid*: **Sorbitan sesquioleate**, *BAN*, *USAN*. *Arlacel C* [8007-43-0]
[37318-79-9] Non-ionic surfactant. Oily viscous liq.
- ▶ Potent allergen.
9-Octadecenoyl (2:3): *Crill 43*. *Sorgen 30*. *Nikkol SO-15*
Emulsifier in foods etc.

- Mixt. of mono- and diesters of oleic acid*.
[36521-89-8, 51938-44-4, 54392-26-6]
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1055A (nmr)
Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, **3**, 727B (ir)
Goldsmith, H.A. *et al.*, *Chem. Ind. (London)*, 1943, **52**, 326-328 (sorbitan sesquioleate)
Soltzberg, S. *et al.*, *J.A.C.S.*, 1946, **68**, 919 (D-form, synth, D-tetra-Me)
Sherman, P. *et al.*, *J. Colloid Sci.*, 1953, **8**, 35-37 (sorbitan sesquioleate)
Que, L. *et al.*, *Biochemistry*, 1974, **13**, 146 (cmr)
Hanessian, S. *et al.*, *Tet. Lett.*, 1974, 3983 (D-isopropylidene mesyl, D-isopropylidene dimesyl)
Kirk-Othmer Encycl. Chem. Technol., 3rd edn., Wiley, 1978, **22**, 332 (esters, use)
Sato, S. *et al.*, *Anal. Lett.*, 1981, **14**, 531 (use)
Sato, S. *et al.*, *Anal. Chim. Acta*, 1982, **142**, 319 (use)
Larni, E. *et al.*, *Contact Dermatitis*, 1988, **19**, 368-371 (sorbitan sesquioleate)
Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, SKV100; SKU700
Duclos, A. *et al.*, *Synthesis*, 1994, 1087 (D-isopropylidene)
Fenaroli's Handbook of Flavor Ingredients, 3rd edn., (ed. Burdock, G.A.), CRC Press, 1995, **2**, 729 (monooleate)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2620; 2621-2624 (monooleate, monostearate, use, props)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2620-2624 (esters)
Martindale, The Extra Pharmacopoeia, 32nd edn., Pharmaceutical Press, 1999, 1328
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SKV000; SKV100; SKV150

1,5-Anhydroglucitol, 9CI, 8CI A-626 1,5-Anhydrosorbitol. Polygalitol. Aceritol



- C₆H₁₂O₅ 164.158
All possible 31 isomers of Me/Ac/benzoylated 1,5-anhydro-D-glucitol were prepd. by Elvebak *et al.*

- D-form** [154-58-5]
Occurs in *Polygala tenuifolia*, *Polygala vulgaris*, *Polygala amara*, *Polygala senega* and in human cerebrospinal fluid.
Mp 142-143°. [α]_D²⁰ +42.3 (c, 0.84 in H₂O).
- 2,3,4-Tri-Ac: [38982-72-8]
C₁₂H₁₈O₈ 290.269
Mp 111-113°. [α]_D +49.9 (c, 3.0 in CHCl₃).
- Tetra-Ac**:
C₁₄H₂₀O₉ 332.307
Mp 74-75°. [α]_D²⁰ +42.7 (c, 1.4 in CHCl₃).

- 2-O-(3,4,5-Trihydroxybenzoyl): 1,5-Anhydro-2-O-galloyl-D-glucitol. **Ginnalin C** [82145-59-3]
C₁₃H₁₆O₉ 316.264
Constit. of *Acer ginnala*. Antibacterial agent. Cryst. Sol. Me₂CO, DMSO.
Mp 251-252°. [α]_D²⁰ +64.8 (c, 2.7 in DMSO). λ_{max} 218 (27200); 277 (10000) (MeOH). λ_{max} 218 (ε 27200); 277 (ε 10000) (MeOH) (Berdy).
- 6-O-(3,4,5-Trihydroxybenzoyl): 1,5-Anhydro-6-O-galloyl-D-glucitol. **Ginnalin B** [82151-97-1]
C₁₃H₁₆O₉ 316.264
Constit. of *Acer ginnala*. Antibacterial agent. Cryst. Sol. Me₂CO, DMSO.
Mp 133-134°. [α]_D¹⁹ +14.8 (c, 2.5 in Me₂CO). λ_{max} 217 (ε 23000); 277 (ε 8800) (MeOH). λ_{max} 217 (ε 23000); 277 (ε 8800) (MeOH) (Berdy). λ_{max} 278; 320 (MeOH-NaOH) (Berdy).
- 2,6-Bis(3,4,5-trihydroxybenzoyl): **Aceritannin**. **Ginnalin A**. **Acertannin** [76746-56-0]
C₂₀H₂₀O₁₃ 468.37
Isol. from *Acer ginnala*, *Acer spicatum*, *Acer saccharinum*, *Acer tartaricum* and *Eleutherine americana*. Needles (H₂O or MeOH aq.). Poorly sol. hexane.
Mp 164-166° dec. [α]_D²⁷ +17.5 (Me₂CO). Struct. revised in 1980.
- 2,6-Bis(3,4,5-trihydroxybenzoyl), octa-Ac: Cryst. (MeOH). Mp 154°. [α]_D²⁰ +32.4 (c, 1.8 in Me₂CO).
- 6-O-(3,4,5-Trihydroxybenzoyl), 2-O-(dihydroxy-3,4,5-trihydroxybenzoyloxybenzoyl): 1,5-Anhydro-2-O-digalloyl-6-O-galloyl-D-glucitol. **Acergallotannin 2B** [84297-50-7]
C₂₇H₃₄O₁₇ 630.555
A gallotannin from the leaf of *Acer ginnala*, *Acer saccharinum* and *Acer tartaricum*. Amorph. powder (as octamethyl deriv.). [α]_D²⁰ +28 (c, 0.1 in Me₂CO) (octa-Me deriv.). Struct. of digalloyl (galloyl-galloyl) residue not fully detd.
- 2-O-(3,4,5-Trihydroxybenzoyl), 6-O-(dihydroxy-3,4,5-trihydroxybenzoyloxybenzoyl): 1,5-Anhydro-2-O-digalloyl-6-O-digalloyl-D-glucitol. **Acergallotannin 2A** [84297-51-8]
C₂₇H₃₄O₁₇ 620.476
Isol. from the leaf of *Acer ginnala*, *Acer saccharinum* and *Acer tartaricum*. Amorph. powder (octamethyl deriv.). [α]_D²⁰ +31 (c, 0.1 in Me₂CO) (octa-Me deriv.). Struct. of digalloyl (galloyl-galloyl) residue not fully detd.
- 2-O-(3,4,5-Trihydroxybenzoyl), 6-O-(galloyl-galloyl-galloyl): 1,5-Anhydro-2-O-galloyl-6-O-trigalloyl-D-glucitol. **Acergallotannin 3A** [130195-17-4]
C₃₄H₂₈O₂₁ 772.583
Gallotannin constit. from the leaf of *Acer ginnala*. Amorph. powder (as decamethyl deriv.). [α]_D²⁰ +12 (c, 0.1 in Me₂CO) (deca-Me). Struct. of trigalloyl residue not fully defined.

2,6-Bis(galloylgalloyl): 1,5-Anhydro-2,6-bis-O-digalloyl-D-glucitol. **Acergallotannin 3B**

$C_{34}H_{28}O_{21}$ 772.583

Isol. from the leaf of *Acer ginnala*. Amorph. powder (decamethyl deriv.). $[\alpha]_D^{20} +7$ (c, 0.4 in Me_2CO) (decamethyl deriv.). Full struct. of digalloyl residues not defined.

6-O-(3,4,5-Trihydroxybenzoyl), 2-O-(galloylgalloylgalloyl): 1,5-Anhydro-2-O-trigalloyl-6-O-galloyl-D-glucitol. **Acergallotannin 3C**

[130271-90-8]

$C_{34}H_{28}O_{21}$ 772.583

Gallotannin constit. from the leaf of *Acer ginnala*. Amorph. powder (decamethyl deriv.). $[\alpha]_D^{20} +8$ (c, 0.4 in Me_2CO) (decamethyl deriv.). Struct. of trigalloyl residue not fully defined.

6-O-(3,4,5-Trimethoxycinnamoyl):

Tenuifolide D

[139726-38-8]

$C_{18}H_{24}O_9$ 384.382

Constit. of the roots of *Polygala tenuifolia*. Amorph. powder. $[\alpha]_D^{24} +24.6$ (c, 1.66 in MeOH).

6-Mesyl, tri-Ac: 2,3,4-Tri-O-acetyl-1,5-anhydro-6-O-mesyl-D-glucitol

$C_{13}H_{20}O_{10}S$ 368.361

Cryst. (EtOH). Mp 131-133°. $[\alpha]_D^{20} +41.5$ (c, 1 in $CHCl_3$).

6-Tosyl: 1,5-Anhydro-6-O-tosyl-D-glucitol

$C_{13}H_{18}O_7S$ 318.347

Syrup. $[\alpha]_D^{20} +52$ (c, 1.6 in $CHCl_3$).

6-Tosyl, tri-Ac: 2,3,4-Tri-O-acetyl-1,5-anhydro-6-O-tosyl-D-glucitol

$C_{19}H_{24}O_{10}S$ 444.459

Mp 144-145°. $[\alpha]_D^{20} +63$ (c, 1.2 in $CHCl_3$).

6-Trityl: 1,6-Anhydro-6-O-trityl-D-glucitol

$C_{25}H_{26}O_5$ 406.477

Cryst. (Et₂O/hexane). Mp 168-170°. $[\alpha]_D^{20} +20$ (c, 1.5 in $CHCl_3$).

6-Trityl, tri-Ac: 2,3,4-Tri-O-acetyl-1,5-anhydro-6-O-trityl-D-glucitol

$C_{31}H_{32}O_8$ 532.589

Cryst. (EtOH). Mp 93-95°. $[\alpha]_D^{20} +83$ (c, 1.3 in $CHCl_3$).

Powers, J.L. et al., *J. Am. Pharm. Assoc.*, 1940, **29**, 209 (*Acertannin*)

Fletcher, H.G. Jr. et al., *J.A.C.S.*, 1947, **69**, 706 (*synth*)

Wiggins, L.F. et al., *Adv. Carbohydr. Chem.*, 1950, **5**, 191 (*rev*)

Mackie, D.M. et al., *Carbohydr. Res.*, 1972, **24**, 67 (*synth*)

Pitkanen, E. et al., *Clin. Chim. Acta*, 1973, **48**, 159 (*occur*)

Que, L. Jr. et al., *Biochemistry*, 1974, **13**, 146 (*cmr*)

Kondo, Y. et al., *Carbohydr. Res.*, 1980, **82**, 398 (*benzoyl, mesyl derivs*)

Bock, K. et al., *Phytochemistry*, 1980, **19**, 2033 (*Aceritannin*)

Kocienski, P. et al., *Carbohydr. Res.*, 1982, **110**, 330 (*synth*)

Song, C. et al., *Huaxue Xuebao*, 1982, **40**, 1142-1147; *C.A.*, **98**, 86267a (*Ginnalins*)

Haddock, E.A. et al., *J.C.S. Perkin 1*, 1982, 2515 (*Aceritannin, Acergallotannins*)

Boeyens, J.C.A. et al., *Phytochemistry*, 1983, **22**, 1959-1960 (*conform, cryst struct*)

Witczak, Z.J. et al., *Carbohydr. Res.*, 1986, **150**, 121 (*6-mesyl, 6-tosyl, 6-trityl derivs*)

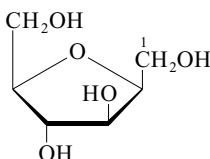
Hatano, T. et al., *Chem. Pharm. Bull.*, 1990, **38**, 1902 (*Acergallotannins*)

Ikeya, Y. et al., *Chem. Pharm. Bull.*, 1991, **39**, 2600 (*Tenuifolide D*)

Elvebak, L.E. et al., *Carbohydr. Res.*, 1995, **274**, 85-97 (*derivs*)

2,5-Anhydroglucitol, 9CI

A-627



D-form

$C_6H_{12}O_5$ 164.158

Sol. H_2O .

D-form [27826-73-9]

Prod. by *Fusarium solani* NRRL 18883.

Phytotoxin. Cryst. or syrup. Mp 56°.

$[\alpha]_D^{20} +23$ (c, 2 in H_2O) (+19.5). An earlier claimed synth. (1961) is incorrect.

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2,5-anhydro-D-glucitol

[65729-86-4]

$C_{14}H_{20}O_9$ 332.307

Syrup. Bp_{0.8} 171-173°. $[\alpha]_D^{20}$ 0 (c, 1 in $CHCl_3$).

1,6-Dibenzoyl: 2,5-Anhydro-1,6-di-O-benzoyl-D-glucitol

[22144-41-8]

$C_{20}H_{20}O_7$ 372.374

Cryst. (C_6H_6). Mp 139-140°. $[\alpha]_D^{20} +0.75$ (c, 2.7 in Py).

1,3-Isopropylidene, 4,6-dibenzoyl: 2,5-Anhydro-4,6-di-O-benzoyl-1,3-O-isopropylidene-D-glucitol

[75499-82-0]

$C_{23}H_{24}O_7$ 412.438

Mp 127-129°.

3,4-Di-Me, di-Ac: 1,6-Di-O-acetyl-2,5-anhydro-3,4-di-O-methyl-D-glucitol

[92714-48-2]

$C_{12}H_{20}O_7$ 276.286

$[\alpha]_D^{20} +40.1$ (c, 2.05 in $CHCl_3$).

1,3,4-Tri-Me, Ac: 6-O-Acetyl-2,5-anhydro-1,3,4-tri-O-methyl-D-glucitol

[92762-35-1]

$C_{11}H_{20}O_6$ 248.275

Characterised spectroscopically.

3,4,6-Tri-Me, Ac: 1-O-Acetyl-2,5-anhydro-3,4,6-tri-O-methyl-D-glucitol

[92762-34-0]

$C_{11}H_{20}O_6$ 248.275

$[\alpha]_D^{23} +31$ (c, 0.80 in $CHCl_3$).

Tetra-Me: 2,5-Anhydro-1,3,4,6-tetra-O-methyl-D-glucitol

[81847-59-8]

$C_{10}H_{20}O_5$ 220.265

$[\alpha]_D^{23} +64$ (c, 0.44 in $CHCl_3$).

3,4,6-Tribenzyl: 2,5-Anhydro-3,4,6-tri-O-benzyl-D-glucitol

[102208-54-8]

$C_{27}H_{30}O_5$ 434.531

$[\alpha]_D^{20} -26.4$ (c, 1 in $CHCl_3$).

Brigl, P. et al., *Ber.*, 1934, **67**, 1582 (*dibenzoyl*)

Koerner, T.A.W. et al., *Carbohydr. Res.*, 1977, **59**, 403 (*D-form, synth, derivs*)

Kuszmarn, J. et al., *Carbohydr. Res.*, 1983, **123**, 209 (*synth, tetra-Ac, dibenzoyl*)

Rolf, D. et al., *Carbohydr. Res.*, 1984, **131**, 17 (*derivs*)

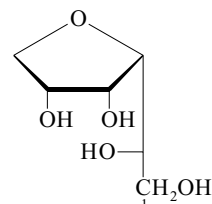
Van Delft, F.L. et al., *J. Carbohydr. Chem.*, 1999, **18**, 165-190 (*3,4,6-tribenzyl*)

Dayan, F.E. et al., *Z. Naturforsch., C*, 2002, **57**, 645-653 (*isol, activity*)

3,6-Anhydroglucitol

A-628

1,4-Anhydrogulitol



D-form

$C_6H_{12}O_5$ 164.158

According to IUPAC special carbohydrate rules, 3,6-anhydroglucitol is preferred over 1,4-anhydrogulitol.

D-form

3,6-Anhydro-D-glucitol. 1,4-Anhydro-L-gulitol

[53648-56-9]

Cryst. (EtOH/EtOAc). Mp 113°. $[\alpha]_D^{20} -7.3$ (c, 1.7 in H_2O).

4,5-Isopropylidene: 3,6-Anhydro-4,5-O-isopropylidene-D-glucitol. 1,4-Anhydro-2,3-O-isopropylidene-L-gulitol

[53626-11-2]

$C_9H_{16}O_5$ 204.222

Cryst. (EtOAc/petrol). Mp 92°. $[\alpha]_D^{20} -43$ (c, 1.22 in Me_2CO).

1,2:4,5-Diisopropylidene: 3,6-Anhydro-1,2:4,5-di-O-isopropylidene-D-glucitol. 1,4-Anhydro-2,3:5,6-di-O-isopropylidene-L-gulitol

$C_{12}H_{20}O_5$ 244.287

Cryst. (petrol). Mp 80-81°. $[\alpha]_D^{20} -30$ (c, 0.5 in toluene).

L-form 3,6-Anhydro-L-glucitol. 1,4-Anhydro-D-gulitol

[96243-58-2]

Mp 110-111°. $[\alpha]_D -8$ (c, 1 in MeOH). $[\alpha]_D +9$ (c, 8.6 in H_2O).

1,2-Isopropylidene: 3,6-Anhydro-1,2-O-isopropylidene-L-glucitol. 1,4-Anhydro-5,6-O-isopropylidene-D-gulitol

[162808-75-5]

$C_9H_{16}O_5$ 204.222

Mp 65-66°. $[\alpha]_D -38.3$ (c, 1 in $CHCl_3$).

1,2-Isopropylidene, di-Ac: 4,5-Di-O-acetyl-3,6-anhydro-1,2-O-isopropylidene-L-glucitol. 2,3-Di-O-acetyl-1,4-anhydro-5,6-O-isopropylidene-D-gulitol

[162808-76-6]

$C_{13}H_{20}O_7$ 288.297

$[\alpha]_D +21.7$ (c, 1 in $CHCl_3$).

1,2:4,5-Diisopropylidene: 3,6-Anhydro-1,2:4,5-di-O-isopropylidene-L-glucitol. 1,4-Anhydro-2,3:5,6-di-O-isopropylidene-D-gulitol

[162808-74-4]

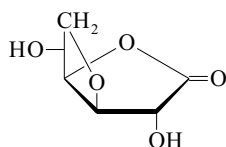
$C_{12}H_{20}O_5$ 244.287

Mp 83-83.5° (79-81°). $[\alpha]_D +55$ (c, 1 in $CHCl_3$). $[\alpha]_D +30.4$ (c, 3.34 in toluene).

Barker, R. et al., *J.O.C.*, 1964, **29**, 869 (*D-form, synth*)

Zecchi, V. *et al.*, *Bull. Soc. Chim. Fr.*, 1974, 1389 (*D*-form, derivs, synth, pmr, ms)
 Defaye, J. *et al.*, *Carbohydr. Res.*, 1990, **205**, 191 (*D*-form, synth)
 Bennis, K. *et al.*, *Carbohydr. Res.*, 1994, **264**, 33 (*D*-form, derivs, synth)
 Van Delft, F.L. *et al.*, *J. Carbohydr. Chem.*, 1999, **18**, 191-207 (synth, pmr, cmr)

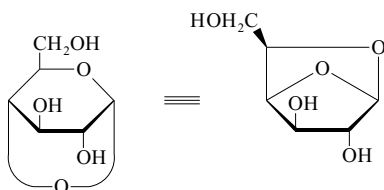
3,6-Anhydro-1,4-gluconolactone A-629



$C_6H_8O_5$ 160.126
D-form [90021-48-0]
 Cryst. (EtOAc). Mp 114-116°. $[\alpha]_D^{20} +82$ (c, 6.4 in H_2O).
 Defaye, J. *et al.*, *Carbohydr. Res.*, 1990, **205**, 191

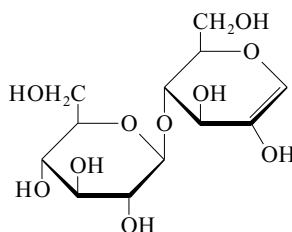
1,4-Anhydroglucopyranose, 8CI A-630

1,5-Anhydroglucofuranose



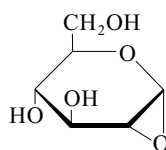
$C_6H_{10}O_5$ 162.142
 α -D-form [24516-44-7]
 Cryst. (MeOH/Me₂CO). Mp 85°. $[\alpha]_D^{20} +6.8$ (c, 1.2 in H_2O).
 Tribenzoyl: 1,4-Anhydro-2,3,6-tri-O-benzoyl- α -D-glucopyranose. 1,5-Anhydro-2,3,6-tri-O-benzoyl- β -D-glucopyranose
 $C_{27}H_{22}O_8$ 474.466
 Mp 136-138°. $[\alpha]_D +117$.
 Tribenzoyl: 1,4-Anhydro-2,3,6-tri-O-benzoyl- α -D-glucopyranose. 1,5-Anhydro-2,3,6-tri-O-benzoyl- β -D-glucopyranose
 $C_{27}H_{28}O_5$ 432.515
 Syrup. $[\alpha]_D^{18} -10.9$ ($CHCl_3$).
 Micheel, F. *et al.*, *Annalen*, 1969, **722**, 228 (synth)
 Micheel, F. *et al.*, *Tet. Lett.*, 1969, 1459 (synth, tribenzoyl)
 Bullock, C. *et al.*, *Carbohydr. Res.*, 1990, **197**, 131 (tribenzoyl)
 Sato, T. *et al.*, *Carbohydr. Res.*, 1990, **199**, 31 (synth, tribenzoyl)

1,5-Anhydro-4-O- β -D-glucopyranosyl-D-arabino-hex-1-enitol 2-Hydroxycellobial A-631



$C_{12}H_{20}O_{10}$ 324.284
 Unisolated enol.
 Hepta-Ac: 2,3,6-Tri-O-acetyl-1,5-anhydro-4-O-(2,3,4,6-tetra-O-acetyl- β -D-glucopyranosyl)-D-arabino-hex-1-enitol [35526-17-1]
 $C_{26}H_{34}O_{17}$ 618.544
 Cryst. (EtOH aq.). Mp 131-132°. $[\alpha]_D^{24} -23.2$ (c, 2.2 in $CHCl_3$).
 Maurer, K. *et al.*, *Ber.*, 1930, **63**, 25 (synth)
 Rao, D.R. *et al.*, *Carbohydr. Res.*, 1972, **22**, 345 (synth)

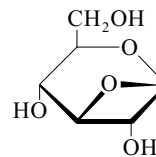
1,2-Anhydroglucose, 8CI A-632



$C_6H_{10}O_5$ 162.142
D-Pyranose-form
 Pictet's anhydride [17673-28-8]
 Mp 108-109°. $[\alpha]_D +32.3$ (H_2O).
 Tri-Ac: 3,4,6-Tri-O-acetyl-1,2-anhydro- α -D-glucopyranose. Brigl's anhydride [3867-86-5]
 $C_{12}H_{16}O_8$ 288.254
 Mp 58-59°. Bp_{0.001} 85°. $[\alpha]_D^{20} +106.5$ (c, 1.0 in C_6H_6).
 Tribenzoyl: 1,2-Anhydro-3,4,6-tri-O-benzoyl- α -D-glucopyranose [74372-90-0]
 $C_{27}H_{28}O_5$ 432.515
 Cryst. (C_6H_6 /hexane). Mp 77-78°. $[\alpha]_D^{25} +31.1$ (c, 0.5 in $CHCl_3$).
 Tris-(tert-butyltrimethylsilyl): 1,2-Anhydro-3,4,6-tri-O-(tert-butyltrimethylsilyl)- α -D-glucopyranose
 $C_{24}H_{52}O_5Si_3$ 504.928
 $[\alpha]_D^{25} +23.6$ (c, 0.87 in $CHCl_3$).
 Pictet, A. *et al.*, *Helv. Chim. Acta*, 1920, **3**, 645 (synth)
 Brigl, P. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1922, **122**, 245 (tri-Ac)
 Prey, V. *et al.*, *Monatsh. Chem.*, 1960, **91**, 358 (synth)
 Lemieux, R.U. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 400 (tri-Ac)
 Kato, K. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 657 (synth)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1975, **43**, 9 (tri-Ac, pmr)
 Yamaguchi, H. *et al.*, *Carbohydr. Res.*, 1980, **81**, 192 (tribenzoyl, pmr)

Eby, R. *et al.*, *Carbohydr. Res.*, 1982, **102**, 1 (tribenzoyl, pmr, cmr, conformn)
 Halcomb, R.L. *et al.*, *J.A.C.S.*, 1989, **111**, 6661 (tribenzoyl, tris-(butyldimethylsilyl), pmr)
 Wu, E. *et al.*, *Carbohydr. Res.*, 1993, **250**, 327 (synth, pmr)
 Cavicchioli, M. *et al.*, *Chem. Comm.*, 1995, 901 (tri-Ac, pmr)

1,3-Anhydroglucose A-633



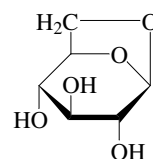
$C_6H_{10}O_5$ 162.142
 β -D-Pyranose-form
 Tribenzoyl: 1,3-Anhydro-2,4,6-tri-O-benzoyl- β -D-glucopyranose [76543-11-8]
 $C_{27}H_{28}O_5$ 432.515
 Syrup. $[\alpha]_D^{25} +59.2$ (c, 0.95 in $CHCl_3$).
 Stable at 100° and to silica gel chromatog. Storage in ethanol at 0° resulted in the formation of ethyl glucoside.

Tris-p-methylbenzyl: $[\alpha]_D^{25} +56.1$ (c, 1.2 in $CHCl_3$).

Tris-p-bromobenzyl:
 Cryst. (EtOAc/hexane). Mp 76-77°. $[\alpha]_D^{25} +64.7$ (c, 1.4 in $CHCl_3$).

Ito, H. *et al.*, *Carbohydr. Res.*, 1980, **86**, 193 (synth, pmr, cmr)
 Ito, H. *et al.*, *Macromolecules*, 1981, **14**, 246 (polymer)
 Good, F. *et al.*, *Carbohydr. Res.*, 1984, **125**, 165 (synth, pmr, cmr)

1,6-Anhydroglucose A-634



β -D-Pyranose-form

$C_6H_{10}O_5$ 162.142
 β -D-Pyranose-form
 Levoglucosan. β -Glucosan [498-07-7]
 Mp 184° (179-180°). $[\alpha]_D -66.3$ (H_2O).
 2,3-Di-Ac: 2,3-Di-O-acetyl-1,6-anhydro- β -D-glucopyranose
 $C_{10}H_{14}O_7$ 246.216
 Syrup. $[\alpha]_D^{20} -44.5$ (c, 1.2 in $CHCl_3$).
 Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro- β -D-glucopyranose [13242-55-2]
 $C_{12}H_{16}O_8$ 288.254
 Mp 109-110°. $[\alpha]_D^{25} -50.8$ ($CHCl_3$).
 Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl- β -D-glucopyranose [23567-05-7]
 $C_{27}H_{22}O_8$ 474.466
 Mp 202-203°. $[\alpha]_D^{20} -36.4$ ($CHCl_3$).

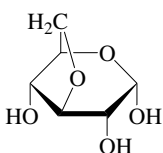
- 2,4-Ditosyl:** 1,6-Anhydro-2,4-di-O-tosyl- β -D-glucopyranose
[20204-80-2]
 $C_{20}H_{22}O_6S_2$ 470.52
Cryst. Mp 116-118°. $[\alpha]_D^{25}$ -43 (c, 1 in $CHCl_3$).
- 3-Me, 2,4-dibenzoyl:** 1,6-Anhydro-2,4-di-O-benzoyl-3-O-methyl- β -D-glucopyranose
 $C_{21}H_{20}O_7$ 384.385
Mp 134-136°. $[\alpha]_D^{25}$ -36 ($CHCl_3$).
- 2,3-Di-Me:** 1,6-Anhydro-2,3-di-O-methyl- β -D-glucopyranose
[22348-24-9]
 $C_8H_{14}O_5$ 190.196
Cryst. Mp 43-45°. $[\alpha]_D^{23}$ -87 (c, 0.9 in $CHCl_3$).
- 3,4-Di-Me:** 1,6-Anhydro-3,4-di-O-methyl- β -D-glucopyranose
[34213-06-4]
 $C_8H_{14}O_5$ 190.196
Cryst. (Et₂O/hexane). Mp 41-43°. $[\alpha]_D^{28}$ -49.7 (c, 2.1 in Me₂CO).
- Tri-Me:** 1,6-Anhydro-2,3,4-tri-O-methyl- β -D-glucopyranose
 $C_9H_{16}O_5$ 204.222
Mp 57.5-58.5°. $[\alpha]_D^{25}$ -63.7 (c, 2.0 in H₂O).
- 2-Benzyl:** 1,6-Anhydro-2-O-benzyl- β -D-glucopyranose
 $C_{13}H_{16}O_5$ 252.266
Mp 70-73°. $[\alpha]_D$ -67 (c, 0.4 in EtOH).
- 4-Benzyl:** 1,6-Anhydro-4-O-benzyl- β -D-glucopyranose
 $C_{13}H_{16}O_5$ 252.266
Mp 50-52°. $[\alpha]_D$ -41 (c, 0.7 in EtOH).
- 2,3-Dibenzyl:** 1,6-Anhydro-2,3-di-O-benzyl- β -D-glucopyranose
 $C_{20}H_{22}O_5$ 342.391
Syrup. $[\alpha]_D^{20}$ -54 (c, 1.6 in $CHCl_3$).
- 2,3-Dibenzyl, 4-Ac:** 4-O-Acetyl-1,6-anhydro-2,3-di-O-benzyl- β -D-glucopyranose
 $C_{22}H_{24}O_6$ 384.428
Syrup. $[\alpha]_D^{20}$ -36 (c, 1.2 in $CHCl_3$).
- Tribenzyl:** 1,6-Anhydro-2,3,4-tri-O-benzyl- β -D-glucopyranose
 $C_{27}H_{28}O_5$ 432.515
Mp 89-90°. $[\alpha]_D^{25}$ -30.8 (c, 2.7 in $CHCl_3$).

- β -D-Furanose-form** 1,6-Anhydroglucofuranose. 1,6-Anhydro-gluco-hexofuranose [7425-74-3] Pyrolysis prod. from cellulose.
Sl. hygroscopic needles (butanol or EtOH). Mp 110.5-111.5°. $[\alpha]_D^{25}$ +43.3 (c, 2 in H₂O).
- Tri-Ac:** 2,3,5-Tri-O-acetyl-1,6-anhydro- β -D-glucofuranose
 $C_{12}H_{16}O_8$ 288.254
Plates. Mp 82.5-83.5°. $[\alpha]_D^{25}$ -15.3 (c, 2 in $CHCl_3$).
- Tritosyl:** 1,6-Anhydro-2,3,5-tri-O-tosyl- β -D-glucofuranose
 $C_{27}H_{28}O_{11}S_3$ 624.71
Needles. Mp 127-128°.
- Tri-Me:** 1,6-Anhydro-2,3,5-tri-O-methyl- β -D-glucofuranose
 $C_9H_{16}O_5$ 204.222
Needles. Mp 51-52°. $[\alpha]_D^{25}$ +18.9 (c, 2.4 in Me₂CO).
- Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 313C; 1059C (nmr)
Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, 3, 650C (ir)

- Dimler, R.J. et al., J.A.C.S., 1946, **68**, 1377 (synth, derivs, β -fur)
Černý, M. et al., Coll. Czech. Chem. Comm., 1961, **26**, 2542; 1968, **33**, 1143 (β -pyr ditosyl)
Ruckel, E.R. et al., J.O.C., 1966, **31**, 2233 (synth, β -pyr tribenzyl)
Park, Y.J. et al., Acta Cryst. B, 1971, **27**, 220 (β -D-pyr, cryst struct)
Wollwage, P.C. et al., J.C.S.(C), 1971, 3143 (di-Me derivs)
Paulsen, H. et al., Carbohydr. Res., 1976, **49**, 27 (cmr, β -pyr)
Černý, M. et al., Adv. Carbohydr. Chem. Biochem., 1977, **34**, 23 (rev)
Ward, D.D. et al., Carbohydr. Res., 1982, **108**, 71 (acyl derivs, bibl)
Kloosterman, M. et al., Rec. Trav. Chim. (J. R. Neth. Chem. Soc.), 1985, **104**, 116 (synth, β -pyr)
Rao, M.V. et al., Carbohydr. Res., 1987, **162**, 141 (β -pyr tri-Ac)
Köll, P. et al., Carbohydr. Res., 1988, **174**, 9 (cryst struct, β -fur)
Carmen Cruzado, M. et al., Carbohydr. Res., 1988, **175**, 193 (β -pyr benzyl)
Köll, P. et al., Carbohydr. Res., 1988, **179**, 1 (pmr, cmr, β -fur)
Paulsen, H. et al., Carbohydr. Res., 1989, **186**, 189 (dibenzyl)
Straathof, A.J.J. et al., Carbohydr. Res., 1989, **194**, 296 (conformn)
Kania, O. et al., J. Carbohydr. Chem., 1990, **9**, 159-165 (2,3-di-Ac)
Metzger, J.O. et al., Org. Mass Spectrom., 1992, **27**, 508 (ms, β -fur)

3,6-Anhydroglucose, 9CI

A-635

 α -D-Pyranose-form $C_6H_{10}O_5$ 162.142

- D-form** [7625-23-2]
Mp 119°. $[\alpha]_D^{20}$ +55.4 (H₂O).
Phenylosazone: Mp 198-200° (187-188°).
 $[\alpha]_D^{17}$ -150 (MeOH).
4-Bromophenylhydrazon:
Yellow cryst. (Py/Et₂O). Mp 184°. $[\alpha]_D^{16}$ -18.89 \rightarrow -10.86 (Py).

 α -D-Pyranose-form

- Me glycoside:** Methyl 3,6-anhydro- α -D-glucopyranoside
[13407-60-8]
 $C_7H_{12}O_5$ 176.169
Cryst. (EtOAc). Mp 108° Mp 116-118°. $[\alpha]_D$ +56 (c, 1.0 in H₂O).

 β -D-Pyranose-form

- Me glycoside:** Methyl 3,6-anhydro- β -D-glucopyranoside
[3056-46-0]
 $C_7H_{12}O_5$ 176.169
Hygroscopic cryst. Mp ca. 50° (sealed tube). Bp_{0.02} 160-170° (bath). $[\alpha]_D$ -138 (H₂O).

 α -D-Furanose-form

- 1,2-O-Isopropylidene:** 3,6-Anhydro-1,2-O-isopropylidene- α -D-glucofuranose
 $C_9H_{14}O_5$ 202.207

Cryst. (toluene). Mp 56-57°. $[\alpha]_D^{20}$ +29.3 (c, 3.2 in H₂O).

- Me glycoside:** Methyl 3,6-anhydro- α -D-glucofuranoside
[17184-28-0]
 $C_7H_{12}O_5$ 176.169
Cryst. (EtOH/Et₂O/petrol). Mp 70°. $[\alpha]_D$ +164 (c, 0.9 in H₂O).

- Me glycoside, dibenzoyl:** Methyl 3,6-anhydro-2,5-di-O-benzoyl- α -D-glucofuranoside
 $C_{21}H_{20}O_7$ 384.385
Cryst. (EtOH). Mp 83-88°. $[\alpha]_D$ +108 (c, 1.3 in $CHCl_3$).

 β -D-Furanose-form

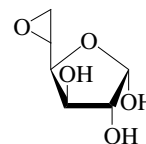
- Me glycoside:** Methyl 3,6-anhydro- β -D-glucofuranoside
 $C_7H_{12}O_5$ 176.169
Cryst. (EtOH/Et₂O/petrol). Mp 98°. $[\alpha]_D$ -54 (H₂O).

- Me glycoside, dibenzoyl:** Methyl 3,6-anhydro-2,5-di-O-benzoyl- β -D-glucofuranoside
 $C_{21}H_{20}O_7$ 384.385
Cryst. (EtOH). Mp 97-99°. $[\alpha]_D$ +4 (c, 3.0 in $CHCl_3$).

- Ohle, H. et al., Ber., 1928, **61**, 1211 (D-form, synth, α -D-fur isopropylidene)
Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, 4th edn., J.A. Barth, 1935, 518
Haworth, W.N. et al., J.C.S., 1941, 88 (D-form, synth, α -D-Me pyr, β -D-Me pyr, α -D-Me fur, β -D-Me fur)
Lewis, B.A. et al., Methods Carbohydr. Chem., 1963, **2**, 180 (D-form, synth, derivs)
Bukhari, M.A. et al., Carbohydr. Res., 1967, **4**, 105 (α -D-Me fur dibenzoyl, β -D-Me fur dibenzoyl)
Lindberg, B. et al., Acta Chem. Scand., 1973, **27**, 373 (α -D-Me pyr, cryst struct)
Angyal, S.J. et al., Carbohydr. Res., 1980, **81**, 35 (pmr)
Kopf, J. et al., Carbohydr. Res., 1984, **135**, 29 (cryst struct, α -D-Me fur, β -D-Me fur)

5,6-Anhydroglucose

A-636

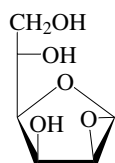
 $C_6H_{10}O_5$ 162.142 α -D-Furanose-form

- 1,2-O-Isopropylidene:** 5,6-Anhydro-1,2-O-isopropylidene- α -D-glucofuranose
[15354-69-5]
 $C_9H_{14}O_5$ 202.207
Cryst. solid. Mp 133.5°. $[\alpha]_D$ -26.5 (c, 4.0 in H₂O).

- Wiggins, L.F. et al., Methods Carbohydr. Chem., 1963, **2**, 188 (α -D-fur isopropylidene)
Mereyala, H.B. et al., J. Carbohydr. Chem., 2000, **19**, 1211-1222 (α -D-fur isopropylidene, pmr)

1,2-Anhydrogulose

A-637



L-form

C₆H₁₀O₅ 162.142 α -L-Furanose:3,5,6-Tribenzyl: 1,2-Anhydro-3,5,6-tri-O-benzyl- α -L-gulofuranose [180336-19-0]C₂₇H₂₈O₅ 432.515

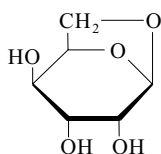
Syrup.

Ding, X. *et al.*, *Carbohydr. Res.*, 1996, **286**, 161-166 (α -L-fur tribenzyl)

1,6-Anhydrogulose, 9CI, 8CI

A-638

Gulosan

 β -D-Pyranose-formC₆H₁₀O₅ 162.142 β -D-Pyranose-form [14274-90-9]Mp 154-155°. [α]_D²⁰ +50.4 (c, 2.8 in H₂O).Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro- β -D-gulopyranose

[14661-13-3]

C₁₂H₁₆O₈ 288.254Mp 114-115°. [α]_D²⁰ +22.1 (c, 1.5 in CHCl₃).Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl- β -D-gulopyranose [33297-50-6]C₂₇H₂₂O₈ 474.466Mp 158-159°. [α]_D²⁰ +214 (c, 2.0 in CHCl₃).Tritosyl: 1,6-Anhydro-2,3,4-tri-O-tosyl- β -D-gulopyranoseC₂₇H₂₈O₁₁S₃ 624.71Mp 141-143°. [α]_D²⁰ +36.8 (c, 1.3 in CHCl₃).2,3-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene- β -D-gulopyranoseC₉H₁₄O₅ 202.207Mp 93°. [α]_D²⁰ +49.8 (c, 1.0 in CHCl₃).2-Benzyl: 1,6-Anhydro-2-O-benzyl- β -D-gulopyranoseC₁₃H₁₆O₅ 252.266Syrup. [α]_D +31 (c, 0.4 in CHCl₃).2-Benzyl, 3,4-di-Ac: 3,4-Di-O-acetyl-1,6-anhydro-2-O-benzyl- β -D-gulopyranoseC₁₇H₂₀O₇ 336.341Syrup. [α]_D +20 (c, 0.4 in CHCl₃).3-Benzyl: 1,6-Anhydro-3-O-benzyl- β -D-gulopyranoseC₁₃H₁₆O₅ 252.266Mp 137-137.5°. [α]_D +56 (c, 0.6 in CHCl₃).3-Benzyl, di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-O-benzyl- β -D-gulopyranoseC₁₇H₂₀O₇ 336.341Mp 73-75°. [α]_D +67 (c, 0.6 in CHCl₃).Tribenzyl: 1,6-Anhydro-2,3,4-tri-O-benzyl- β -D-gulopyranoseC₂₇H₂₈O₅ 432.515Syrup. [α]_D -13 (c, 1 in CHCl₃). α -D-Furanose-form3,5-Anhydro: 1,6:3,5-Dianhydro- α -D-gulofuranose

[71154-73-9]

C₆H₈O₄ 144.127Mp 89-90°. [α]_D²⁰ -12.7 (c, 0.4 in H₂O). α -L-Furanose-form [31880-39-4]Mp 225-230°. [α]_D²⁰ -38.1 (c, 1.0 in H₂O).Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro- α -L-gulofuranose

[31880-40-7]

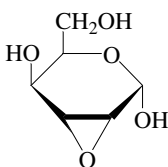
C₁₂H₁₆O₈ 288.254Mp 102.5°. [α]_D²⁰ -7.9 (c, 1.0 in CHCl₃).2,3-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene- α -L-gulofuranose

[31880-38-3]

C₉H₁₄O₅ 202.207Syrup. [α]_D²⁰ -18.4 (c, 1.0 in CHCl₃). V. moisture-sensitive.Stewart, L.C. *et al.*, *J.A.C.S.*, 1955, **77**, 1021 (synth)Heyns, K. *et al.*, *Annalen*, 1968, **718**, 224 (pmr)Heyns, K. *et al.*, *Chem. Ber.*, 1971, **104**, 830 (synth, pmr)Prystas, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, **36**, 1487 (synth)Paulsen, H. *et al.*, *Carbohydr. Res.*, 1976, **49**, 27 (cmr)Köll, P. *et al.*, *Chem. Ber.*, 1979, **112**, 2068 (synth, cryst struct, dianhydride)Carmen Cruzado, M. *et al.*, *Carbohydr. Res.*, 1987, **70**, 249; 1988, **175**, 193 (benzyl derivs)

2,3-Anhydrogulose

A-639

 α -D-formC₆H₁₀O₅ 162.142 α -D-Pyranose-formMe glycoside, 4,6-O-benzylidene: Methyl 2,3-anhydro-4,6-O-benzylidene- α -D-gulopyranoside, 8CI

[3257-59-8]

C₁₄H₁₆O₅ 264.277Mp 178-179°. [α]_D -7.4 (CHCl₃).

Me glycoside, 4,6-di-Ac: [23345-59-7]

C₁₁H₁₆O₇ 260.243Syrup. [α]_D +31 (c, 1.0 in CHCl₃).

Me glycoside, 4-Ac, 6-benzyl:

C₁₆H₂₀O₆ 308.33Mp 77-78°. [α]_D -0.8 (CHCl₃).Me glycoside, 4-Ac, 6-trityl: Mp 104-105°. [α]_D -28 (CHCl₃).Me glycoside, 6-tosyl: Methyl 2,3-anhydro-6-O-tosyl- α -D-gulopyranosideMp 60-62°. [α]_D +24.7 (CHCl₃).Me glycoside, 4,6-ditosyl: Mp 150-151°. [α]_D +24 (CHCl₃).Me glycoside, 6-benzyl: Methyl 2,3-anhydro-6-O-benzyl- α -D-gulopyranosideC₁₄H₁₈O₅ 266.293Syrup. [α]_D +38.1 (CHCl₃).Me glycoside, 6-trityl: Methyl 2,3-anhydro-6-O-trityl- α -D-gulopyranoside

[5592-12-1]

Mp 174-175°. [α]_D +21.8 (CHCl₃).Me glycoside, 4,6-anhydro: Methyl 2,3:4,6-dianhydro- α -D-gulopyranoside, 9CI

[70941-23-0]

C₇H₁₀O₄ 158.154Cryst. (Et₂O). Mp 58-59°. β -D-Pyranose-formMe glycoside, 4,6-O-benzylidene: Methyl 2,3-anhydro-4,6-O-benzylidene- β -D-gulopyranoside

[52885-37-7]

C₁₄H₁₆O₅ 264.277Mp 147°. [α]_D -119 (CHCl₃).Benzyl glycoside, 4,6-O-benzylidene: Benzyl 2,3-anhydro-4,6-O-benzylidene- β -D-gulopyranoside, 8CI

[26531-97-5]

C₂₀H₂₀O₅ 340.375

Needles (2-propanol). Mp 151-152°

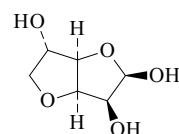
subl. [α]_D²¹ -124 (c, 0.6 in CHCl₃).

1,6-Anhydro, 4-tosyl:

Syrup. [α]_D +26 (CHCl₃).Sorkin, E. *et al.*, *Helv. Chim. Acta*, 1945, **28**, 1 (Me gly, 4,6-benzylidene)Chittenden, G.J.F. *et al.*, *Carbohydr. Res.*, 1969, **11**, 379 (benzyl glycoside)Buchanan, J.G. *et al.*, *J.C.S. (B)*, 1969, 377 (pmr)Ferrier, R.J. *et al.*, *J.C.S. (C)*, 1969, 575 (Me gly, 4,6-benzylidene di-Ac)Williams, N.R. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1970, **25**, 109 (rev)Sinclair, H.B. *et al.*, *J.O.C.*, 1979, **44**, 3361 (synth, pmr, α -Me gly)Szeja, W. *et al.*, *Carbohydr. Res.*, 1988, **183**, 135 (synth, α -Me gly, 4,6-benzylidene)

3,6-Anhydrogulose

A-640

 α -L-Furanose-formC₆H₁₀O₅ 162.142 α -L-Furanose-formCryst. (MeOH). Mp 102-105°. [α]_D²⁰ +63 (c, 1.3 in MeOH). α -L-Furanose-form [87638-90-2]Tri-Ac: 1,2,5-Tri-O-acetyl-3,6-anhydro- α -L-gulofuranose

[87596-17-6]

C₁₂H₁₆O₈ 288.254Syrup. [α]_D²⁰ +71.3 (c, 0.7 in CHCl₃).Me glycoside: Methyl 3,6-anhydro- α -L-gulofuranosideC₇H₁₂O₅ 176.169Syrup. [α]_D²⁰ -72.8 (c, 0.6 in CHCl₃).

Me glycoside, di-Ac: Methyl 2,5-di-O-acetyl-3,6-anhydro- α -L-gulofuranoside [87638-94-6]
 $C_{11}H_{16}O_7$ 260.243
 Syrup. $[\alpha]_D^{20}$ +8.8 (c, 1.8 in $CHCl_3$).

 β -L-Furanose-form [87678-93-1]

Tri-Ac: 1,2,5-Tri-O-acetyl-3,6-anhydro- β -L-gulofuranose [87596-16-5]
 $C_{12}H_{16}O_8$ 288.254
 Mp 77-79°. $[\alpha]_D^{20}$ +173 (c, 1.1 in $CHCl_3$).

Me glycoside, di-Ac: Methyl 2,5-di-O-acetyl-3,6-anhydro- β -L-gulofuranoside [87638-92-4]
 $C_{11}H_{16}O_7$ 260.243
 Mp 53-55°. $[\alpha]_D^{20}$ +201.8 (c, 1.8 in $CHCl_3$).

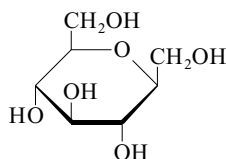
Köll, P. et al., *Annalen*, 1983, 1310; 1332 (*synth, pmr, cmr*)

Kopf, J. et al., *Carbohydr. Res.*, 1987, **168**, 115 (*cryst struct, β -L-Me fur*)

2,6-Anhydro-D-glycero-D-gulo-heptitol

A-641

[13964-83-5]



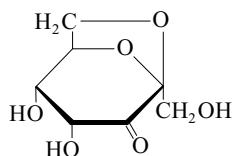
$C_7H_{14}O_6$ 194.184
 Plates. Mp 203-205°. Opt. inactive (*meso*-).

Penta-Ac: [13964-14-2]
 $C_{17}H_{24}O_{11}$ 404.37
 Cryst. Mp 91-92° (89°).

Rosenthal, A. et al., *Carbohydr. Res.*, 1967, **3**, 112 (*synth*)
 Rozynov, B.V. et al., *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1976, 1157; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1976, **25**, 1126 (*ms, penta-Ac*)

2,7-Anhydro-ribo-hepto-2,3-diulo-2,6-pyranose, 9CI

A-642



$C_7H_{10}O_6$ 190.152

 β -D-form [43139-62-4]

$[\alpha]_D^{20}$ -122.4 (c, 1 in H_2O).

4,5-O-exo-Benzylidene, 1-trityl: 2,7-Anhydro-4,5-O-exo-benzylidene-1-O-trityl- β -D-ribo-hepto-2,3-diulo-2,6-pyranose [77852-72-3]
 Mp 91-97°. $[\alpha]_D^{20}$ -48.6 (c, 1.1 in $CHCl_3$).

4,5-O-Isopropylidene: 2,7-Anhydro-4,5-O-isopropylidene- β -D-ribo-hepto-2,3-diulo-2,6-pyranose [43139-51-1]
 $C_{10}H_{14}O_6$ 230.217

Mp 145-146°. $[\alpha]_D^{20}$ -154.2 (c, 1 in $CHCl_3$).

4,5-O-Isopropylidene, 1-Ac: 1-O-Acetyl-2,7-anhydro-4,5-O-isopropylidene- β -D-ribo-hepto-2,3-diulo-2,6-pyranose [43139-52-2]

$C_{12}H_{16}O_7$ 272.254
 $[\alpha]_D^{20}$ -117.4 (c, 1.1 in $CHCl_3$).

4,5-O-Isopropylidene, 1-tosyl: 2,7-Anhydro-4,5-O-isopropylidene-1-O-tosyl- β -D-ribo-hepto-2,3-diulo-2,6-pyranose [43139-53-3]

Mp 126-127°. $[\alpha]_D^{20}$ -96.2 (c, 1 in $CHCl_3$).

4,5-O-Isopropylidene, 1-trityl: 2,7-Anhydro-4,5-O-isopropylidene-1-O-trityl- β -D-ribo-hepto-2,3-diulo-2,6-pyranose [43139-50-0]

Mp 155-156°. $[\alpha]_D^{20}$ -68 (c, 1 in $CHCl_3$).

4,5-O-Isopropylidene, 1-deoxy: 2,7-Anhydro-1-deoxy-4,5-O-isopropylidene- β -D-ribo-hepto-2,3-diulo-2,6-pyranose [77852-74-5]

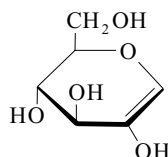
$C_{10}H_{14}O_5$ 214.218
 Mp 142-147°. $[\alpha]_D^{20}$ -173.6 (c, 0.55 in $CHCl_3$).

Heyns, K. et al., *Chem. Ber.*, 1973, **106**, 1668; 1975, **108**, 3619; 1981, **114**, 891

1,5-Anhydro-arabino-hex-1-enitol, 9CI

A-643

1-Deoxy-arabino-hex-1-enopyranose, 8CI. 2-Hydroxyglucal



$C_6H_{10}O_5$ 162.142

Unisolated enol form of 1,5-Anhydro-fructose, A-606.

D-form [26242-04-6]

2,3,4,6-Tetra-Ac: Tetra-O-acetyl-2-hydroxy-D-glucal [3366-47-0]
 $C_{14}H_{18}O_9$ 330.291
 Mp 65-66° (61-62°). $[\alpha]_D^{25}$ -32 ($CHCl_3$).

2,3,4,6-Tetrabenzoyl: Tetra-O-benzoyl-2-hydroxy-D-glucal [14125-75-8]
 $C_{34}H_{26}O_9$ 578.574

Readily accessible from D-glucose. Mp 123°. $[\alpha]_D$ -77 (c, 2.0 in $CHCl_3$).

Maurer, K. et al., *Ber.*, 1927, **60**, 1316; 1933, **66**, 995 (*D-tetra-Ac, D-tetrabenzoyl*)

Blair, M.G. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 411 (*synth*)

Lemieux, R.U. et al., *J.O.C.*, 1965, **30**, 1092 (*D-tetra-Ac, isom*)

Ferrier, R.J. et al., *J.C.S. (C)*, 1966, 2339 (*D-tetra-Ac, D-tetrabenzoyl*)

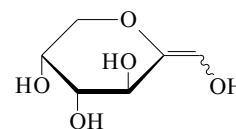
Vangehr, K. et al., *Carbohydr. Res.*, 1979, **70**, 1 (*cryst struct, D-tetra-Ac*)

Varela, O. et al., *Carbohydr. Res.*, 1987, **167**, 187 (*synth*)

2,6-Anhydro-arabino-hex-1-enitol

A-644

1,5-Anhydro-lyxo-hex-5-enitol



$C_6H_{10}O_5$ 162.142

Unisolated enol.

D-form

Tetrabenzoyl: 2,6-Anhydro-1,3,4,5-tetra-O-benzoyl-D-arabino-hex-1-enitol. 1,5-Anhydro-1,3,4,5-tetra-O-benzoyl-D-lyxo-hex-5-enitol

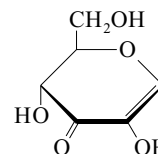
$C_{34}H_{26}O_9$ 578.574

Foam. $[\alpha]_D^{20}$ -39.7 (c, 0.9 in $CHCl_3$).

Lichtenthaler, F.W. et al., *Modern Synthetic Methods*, 1992, **6**, 273

1,5-Anhydro-erythro-hex-1-en-3-ulose

A-645



$C_6H_8O_5$ 160.126

Unisolated enol.

D-Pyranose-form

Tribenzoyl: 1,5-Anhydro-2,4,6-tri-O-benzoyl-D-erythro-hex-1-en-3-ulose [72076-13-2]

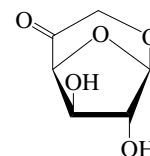
$C_{27}H_{20}O_8$ 472.45

Cryst. (EtOAc). Mp 162-163°. $[\alpha]_D^{20}$ +229 (c, 0.6 in $CHCl_3$).

Lichtenthaler, F.W. et al., *Annalen*, 1989, 1163 (*synth, pmr, cmr*)

1,6-Anhydro-xylo-hexofuranos-5-ulose

A-646

 β -D-form

$C_6H_8O_5$ 160.126

Erroneously called 4-ulose in the 1996 ref.

 β -D-form

Dibenzyl: 1,6-Anhydro-2,3-di-O-benzyl- β -D-xylo-hexofuranos-5-ulose [81936-96-1]

$C_{20}H_{20}O_5$ 340.375

Syrup. $[\alpha]_D$ +13.4 (c, 0.19 in $CHCl_3$).

3-Benzyl, 2-Ac: 2-O-Acetyl-1,6-anhydro-3-O-benzyl- β -D-xylo-hexofuranos-5-ulose [81936-95-0]

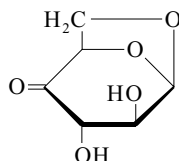
$C_{15}H_{16}O_6$ 292.288

Cryst. (Et₂O). Mp 55°. $[\alpha]_D^{20}$ -2.5 (c, 1.7 in $CHCl_3$).

3-Benzyl, 2-tosyl: 1,6-Anhydro-3-O-benzyl-2-O-tosyl- β -D-xylo-hexofuranos-5-ulose [1936-97-2]
 $C_{20}H_{20}O_7S$ 404.44
 Cryst. (Et₂O/pentane). Mp 56°. $[\alpha]_D^{20}$ -31.8 (c, 0.8 in CHCl₃).

Köll, P. *et al.*, *Annalen*, 1982, 613 (synth, pmr)
 Caron, S. *et al.*, *Carbohydr. Res.*, 1996, **281**, 179 (synth, ir, pmr, cmr)

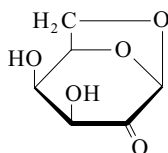
1,6-Anhydro-arabino-hexopyranos-4-ulose A-647



$C_6H_8O_5$ 160.126

β -D-form [17073-97-1]
 Mp 177-178°. $[\alpha]_D^{20}$ -125 (c, 0.4 in H₂O).
 Horton, D. *et al.*, *Carbohydr. Res.*, 1966, **2**, 260
 Heyns, K. *et al.*, *Chem. Ber.*, 1967, **108**, 3645; 3652; 1981, **114**, 891
 Pecka, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1192

1,6-Anhydro-lyxo-hexopyranos-2-ulose A-648

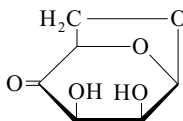


$C_6H_8O_5$ 160.126

β -D-form [17073-98-2]
 Syrup. $[\alpha]_D^{20}$ -46 (c, 0.5 in H₂O).
 3,4-O-Isopropylidene: 1,6-Anhydro-3,4-O-isopropylidene- β -D-lyxo-hexopyranos-2-ulose [17073-94-8]
 $C_9H_{12}O_5$ 200.191
 Cryst. (CCl₄/petrol). Mp 96-97° (92-93°). $[\alpha]_D^{20}$ -110 (c, 0.5 in CHCl₃).
 3,4-O-Isopropylidene, oxime: [20784-58-1]
 $C_9H_{13}NO_5$ 215.205
 Cryst. (CHCl₃/petrol). Mp 139-140°. $[\alpha]_D^{20}$ -29 (c, 1.0 in CHCl₃).
 3,4-O-exo-Benzylidene: 1,6-Anhydro-3,4-O-exo-benzylidene- β -D-lyxo-hexopyranos-2-ulose [77852-54-1]
 $C_{13}H_{12}O_5$ 248.235
 Mp 65-76°. $[\alpha]_D^{20}$ -51.6 (c, 0.5 in CHCl₃).
 3,4-Anhydro: 1,6:3,4-Dianhydro- β -D-lyxo-hexopyranos-2-ulose, 9CI [58238-41-8]
 $C_6H_6O_4$ 142.111
 Cryst. (EtOAc). Mp 110-112° (hydrate). $[\alpha]_D^{20}$ -41 (c, 1.0 in CHCl₃).
 Horton, D. *et al.*, *Carbohydr. Res.*, 1967, **5**, 149 (β -D-isopropylidene)
 Heyns, K. *et al.*, *Chem. Ber.*, 1967, **100**, 2317 (β -D-form, synth, β -D-isopropylidene)

Chatterjee, A.K. *et al.*, *Carbohydr. Res.*, 1968, **7**, 173 (β -D-isopropylidene oxime)
 Heyns, K. *et al.*, *Chem. Ber.*, 1975, **108**, 3645 (β -D-anhydro)
 Heyns, K. *et al.*, *Chem. Ber.*, 1981, **114**, 891 (β -D-benzylidene)

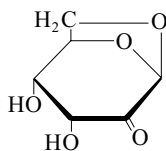
1,6-Anhydro-lyxo-hexopyranos-4-ulose A-649



$C_6H_8O_5$ 160.126

β -D-form [17073-99-3]
 $[\alpha]_D^{20}$ -104 (c, 0.5 in H₂O).
 2,3-O-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene- β -D-lyxo-hexopyranos-4-ulose, 8CI [14440-50-7]
 $C_9H_{12}O_5$ 200.191
 Mp 82-83°. $[\alpha]_D^{20}$ -76 (c, 1 in CHCl₃).
 2,3-Benzylidene (S-): 1,6-Anhydro-2,3-O-benzylidene- β -D-lyxo-hexopyranos-4-ulose [136758-02-6]
 $C_{13}H_{12}O_5$ 248.235
 Cryst. (CH₂Cl₂/hexane). Mp 233° dec.
 Cryst. contd. a mixture of anhydrous compd. and monohydrate.
 2,3-Anhydro: 1,6:2,3-Dianhydro- β -D-lyxo-hexopyranos-4-ulose, 9CI [58238-38-3]
 $C_6H_6O_4$ 142.111
 Mp 63° Mp 102° (hydrate). $[\alpha]_D^{20}$ -70.8 (c, 1 in H₂O) (hydrate).
 3-Deoxy: 1,6-Anhydro-3-deoxy- β -D-threo-hexopyranos-4-ulose
 $C_6H_8O_4$ 144.127
 $[\alpha]_D^{20}$ -48.5 (c, 1 in CHCl₃).
 2,3-Dideoxy: See 1,6-Anhydro-ribo-hexopyranos-4-ulose, A-651
 Horton, D. *et al.*, *Carbohydr. Res.*, 1966, **2**, 251 (β -D-isopropylidene)
 Heyns, K. *et al.*, *Chem. Ber.*, 1967, **100**, 2317 (β -D-form, synth, β -D-isopropylidene)
 Heyns, K. *et al.*, *Chem. Ber.*, 1975, **108**, 3645; 3652 (β -D-anhydro, β -D-deoxy)
 Broxterman, H.J.G. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 287-307 (2,3-benzylidene)

1,6-Anhydro-ribo-hexopyranos-2-ulose A-650



$C_6H_8O_5$ 160.126

β -D-form
 Isol. as a dimer.
 Dimer:
 $C_{12}H_{16}O_{10}$ 320.252
 Mp 155-178°. $[\alpha]_D^{20}$ +101.3 (c, 1 in DMSO).

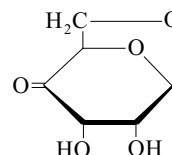
3,4-O-endo-Benzylidene: 1,6-Anhydro-3,4-O-endo-benzylidene- β -D-ribo-hexopyranos-2-ulose [77852-60-9]
 $C_{13}H_{12}O_5$ 248.235
 Mp 129-133°. $[\alpha]_D^{20}$ -102.6 (c, 1 in CHCl₃).

3,4-O-exo-Benzylidene: 1,6-Anhydro-3,4-O-exo-benzylidene- β -D-ribo-hexopyranos-2-ulose [77852-61-0]
 $C_{13}H_{12}O_5$ 248.235
 Mp 108-112°. $[\alpha]_D^{20}$ -83.2 (c, 1 in CHCl₃).

3,4-O-Isopropylidene: 1,6-Anhydro-3,4-O-isopropylidene- β -D-ribo-hexopyranos-2-ulose [41092-27-7]
 $C_9H_{12}O_5$ 200.191
 $[\alpha]_D^{20}$ -173.2 (c, 1 in CHCl₃).

3,4-Anhydro: 1,6:3,4-Dianhydro- β -D-ribo-hexopyranos-2-ulose, 9CI [58238-40-7]
 $C_6H_6O_4$ 142.111
 Mp 79°. $[\alpha]_D^{20}$ -147.4 (c, 1.0 in CHCl₃).
 Heyns, K. *et al.*, *Chem. Ber.*, 1973, **106**, 611; 1975, **108**, 3645; 1981, **114**, 891

1,6-Anhydro-ribo-hexopyranos-4-ulose A-651



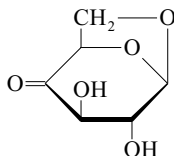
$C_6H_8O_5$ 160.126

β -D-form [17073-91-5]
 $[\alpha]_D^{20}$ -18 (c, 0.5 in H₂O).
 2,3-O-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene- β -D-ribo-hexopyranos-4-ulose [41092-34-6]
 $C_9H_{12}O_5$ 200.191
 $[\alpha]_D^{20}$ -8 (c, 1 in H₂O).
 2,3-O-exo-Benzylidene: 1,6-Anhydro-2,3-O-benzylidene- β -D-ribo-hexopyranos-4-ulose
 $C_{13}H_{12}O_5$ 248.235
 Mp 78-82°. $[\alpha]_D^{20}$ 0 (c, 0.5 in H₂O).
 2,3-Anhydro: 1,6:2,3-Dianhydro- β -D-ribo-hexopyranos-4-ulose, 9CI [58238-39-4]
 $C_6H_6O_4$ 142.111
 Mp 65-66°. $[\alpha]_D^{20}$ -4.5 (c, 1.0 in dioxan).
 3-Deoxy: 1,6-Anhydro-3-deoxy- β -D-erythro-hexopyranos-4-ulose
 $C_6H_8O_4$ 144.127
 Cryst. (CHCl₃/petrol). Mp 69-71°. $[\alpha]_D^{20}$ -247 (c, 1 in CHCl₃).
 2,3-Dideoxy: 1,6-Anhydro-2,3-dideoxy- β -D-glycero-hexopyranos-4-ulose
 $C_6H_8O_3$ 128.127
 Bp₁₆ 89°. $[\alpha]_D^{25}$ -83 (c, 1 in CHCl₃).
 Heyns, K. *et al.*, *Chem. Ber.*, 1967, **100**, 2317; 1975, **106**, 611; **108**, 3645; 3652; 1981, **114**, 891 (β -D-form, β -D-benzylidene, β -D-isopropylidene, β -D-anhydro, β -D-deoxy)

Pecka, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 1192 (β -D-dideoxy)

1,6-Anhydro-xylo-hexopyranos-4-ulose

A-652



$C_6H_8O_5$ 160.126

β -D-form

Dibenzyl: 1,6-Anhydro-2,3-di-O-benzyl- β -xylo-hexopyranos-4-ulose [138709-45-2]

$C_{20}H_{20}O_5$ 340.375

Cryst. (EtOAc/hexane). Mp 69-70°.

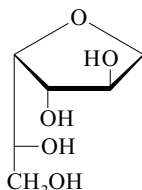
Caron, S. *et al.*, *J.O.C.*, 1995, **60**, 2780 (*synth*, *dibenzyl*, *ir*, *pmr*, *ms*)

Caron, S. *et al.*, *Carbohydr. Res.*, 1996, **281**, 179 (*synth*, *dibenzyl*)

1,4-Anhydroiditol

A-653

3,6-Anhydroiditol



$C_6H_{12}O_5$ 164.158

A23.

D-form

[161168-88-3]
Cryst. (2-propanol). Mp 96.5-98°. [α]_D²⁰ +18.2 (c, 1.9 in H₂O).

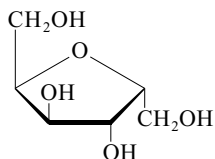
[22554-77-4]

Barker, R. *et al.*, *J.O.C.*, 1964, **29**, 869 (*synth*)

Lundt, I. *et al.*, *Tetrahedron*, 1994, **50**, 13285 (*synth*, *cmr*)

2,5-Anhydroiditol

A-654



D-form

$C_6H_{12}O_5$ 164.158

Shows twofold rotational symmetry.

D-form

[51607-79-5]
Cryst. (EtOH/Et₂O). Mp 115-115.5°. [α]_D²⁴ -12.9 (c, 2.77 in H₂O).

1,6-Dibenzoyl: 2,5-Anhydro-1,6-di-O-benzoyl-D-iditol [91383-05-0]

$C_{20}H_{20}O_7$ 372.374

Cryst. (Et₂O/pentane). Mp 120-122° (after exhaustive drying). [α]_D²⁴ +48.2 (c, 2.97 in MeOH).

3-O-Benzoyl:

$C_{13}H_{18}O_5$ 254.282

Oil. [α]_D²⁰ -25.2 (c, 0.52 in EtOH).

L-form [28218-55-5]

Prisms (EtOH/Et₂O). Mp 117-118°. [α]_D +9 (+6.5) (H₂O).

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2,5-anhydro-L-iditol

$C_{14}H_{20}O_9$ 332.307

Syrup. [α]_D²⁰ -16.8 (c, 3.5 in CHCl₃).

1-Tosyl: 2,5-Anhydro-1-O-tosyl-L-iditol.

2,5-Anhydro-6-O-tosyl-D-iditol

[32445-71-9]

$C_{13}H_{18}O_7S$ 318.347

Cryst. Mp 143-144°. [α]_D²⁴ +3.7 (c, 1 in Py).

1,6-Ditosyl: 2,5-Anhydro-1,6-di-O-tosyl-L-iditol

[32445-72-0]

$C_{20}H_{24}O_9S_2$ 472.536

Cryst. (EtOH aq.). Mp 151°. [α]_D²⁵ -9 (c, 1 in Py).

1,3,4,6-Diisopropylidene: 2,5-Anhydro-

1,3,4,6-di-O-isopropylidene-L-iditol

[80599-64-0]

$C_{12}H_{20}O_5$ 244.287

Cryst. (hexane). Mp 130-131°. [α]_D +20.3 (c, 0.4 in CHCl₃).

1,3:4,6-Dibenzylidene: 2,5-Anhydro-

1,3:4,6-di-O-benzylidene-L-iditol

$C_{20}H_{20}O_5$ 340.375

Cryst. (MeOH/CHCl₃). Mp 147-148°. [α]_D²⁰ +32.3 (c, 2.0 in CHCl₃).

Vargha, L. *et al.*, *Ber.*, 1935, **68**, 1377 (*L-tosyl*)

Vargha, L. *et al.*, *J.A.C.S.*, 1948, **70**, 261 (*L-form*)

Vargha, L. *et al.*, *Chem. Ber.*, 1960, **93**, 1608 (*dibenzylidene*)

Defaye, J. *et al.*, *Carbohydr. Res.*, 1971, **17**, 57 (*L-tosyl*)

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1981, **35**, 441 (*tetra-Ac*, *synth*, *pmr*)

Otero, D.A. *et al.*, *Carbohydr. Res.*, 1984, **128**, 79 (*D-form*)

Köll, P. *et al.*, *Carbohydr. Res.*, 1986, **147**, 169 (*cryst struct*)

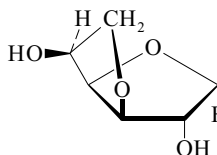
Rafka, R.J. *et al.*, *Carbohydr. Res.*, 1994, **260**, 155 (*synth*)

Bichard, C.J.F. *et al.*, *J.C.S. Perkin 1*, 1996, 2151 (*synth*, *pmr*, *cmr*)

Cassel, S. *et al.*, *Eur. J. Org. Chem.*, 2001, 875-896 (*L-form*, *synth*, *pmr*, *diisopropylidene*)

3,6-Anhydroidofuranosyl fluoride

A-655



$C_6H_9FO_4$ 164.133

β -L-form

5-Benzoyl, 2-Ac: 2-O-Acetyl-3,6-anhydro-5-O-benzoyl- β -L-idofuranosyl fluoride

[29332-81-8]

$C_{15}H_{15}FO_6$ 310.278

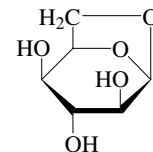
Syrup.

Hall, L.D. *et al.*, *Can. J. Chem.*, 1970, **48**, 2439 (*benzoyl Ac*, *pmr*, *F-19 nmr*)

1,6-Anhydroidose

A-656

Idosan

 β -D-Pyranose-form

$C_6H_{10}O_5$ 162.142

β -D-Pyranose-form

[10339-42-1]

Mp 124-126°.

3,4-Di-Ac: 3,4-Di-O-acetyl-1,6-anhydro- β -D-idopyranose

[58699-77-7]

$C_{10}H_{14}O_7$ 246.216

Cryst. (Et₂O). Mp 79-83°. [α]_D²⁰ -48.9 (c, 1.075 in CHCl₃).

Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro- β -D-idopyranose

[14661-14-4]

$C_{12}H_{16}O_8$ 288.254

Mp 70-70.5° (66-67°). [α]_D²⁰ -75.7 (c, 1 in CHCl₃).

2-Benzyl, di-Ac: 3,4-Di-O-acetyl-1,6-anhydro-2-O-benzyl- β -D-idopyranose

[116731-07-8]

$C_{17}H_{20}O_7$ 336.341

Syrup. [α]_D -20 (c, 0.5 in CHCl₃).

3-Benzyl: 1,6-Anhydro-3-O-benzyl- β -D-idopyranose

[116731-03-4]

$C_{13}H_{16}O_5$ 252.266

Mp 157-158°. [α]_D -36 (c, 0.5 in CHCl₃).

3-Benzyl, di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-O-benzyl- β -D-idopyranose

[116731-05-6]

$C_{17}H_{20}O_7$ 336.341

Syrup. [α]_D -35 (c, 1.2 in CHCl₃).

4-Benzyl, di-Ac: 2,3-Di-O-acetyl-1,6-anhydro-4-O-benzyl- β -D-idopyranose

[116731-06-7]

$C_{17}H_{20}O_7$ 336.341

Syrup. [α]_D -67 (c, 0.4 in CHCl₃).

Tribenzyl: 1,6-Anhydro-2,3,4-tri-O-benzyl- β -D-idopyranose

[110567-00-5]

$C_{27}H_{28}O_5$ 432.515

Syrup. [α]_D²⁵ -30 (c, 0.5 in CHCl₃).

L-Pyranose-form

[60619-47-8]

3-Me: 1,6-Anhydro-3-O-methyl-L-idopyranose

$C_7H_{12}O_5$ 176.169

Plates (Me₂CO/Et₂O). Mp 110-111°.

[α]_D¹⁸ +108 (c, 0.84 in Me₂CO).

2,3,4-Tri-Me: 1,6-Anhydro-2,3,4-tri-O-methyl- β -L-idopyranose

$C_9H_{16}O_5$ 204.222

Prisms (Et₂O/pentane). Mp 39-40°. [α]_D¹⁴ +88 (c, 1.0 in CHCl₃).

α -L-Furanose-form

[81969-64-4]

Needles (AcOH). Mp 111°. [α]_D²⁰ +13.5 (c, 1.4 in H₂O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,6-anhydro- α -L-idofuranose

[81937-00-0]

$C_{12}H_{16}O_8$ 288.254
Cryst. (EtOH). Mp 107.5–108°. $[\alpha]_D^{20}$
+20.8 (c, 1.2 in $CHCl_3$).

2-Tosyl, 5-Ac: 5-O-Acetyl-1,6-anhydro-2-O-tosyl- α -L-idofuranose
[81937-04-4]

$C_{15}H_{18}O_8S$ 358.368
Cryst. (EtOAc/petrol). Mp 158–159°. $[\alpha]_D^{20}$ -72.5 (c, 1 in $CHCl_3$).

3-Benzyl, 2-tosyl: 1,6-Anhydro-3-O-benzyl-2-O-tosyl- α -L-idofuranose
[81937-02-2]

$C_{20}H_{22}O_7S$ 406.456
Cryst. (AcOH/EtOAc). Mp 109.5–111°. $[\alpha]_D$ -48.2 (c, 1.1 in $CHCl_3$).

2,3-Dibenzyl: 1,6-Anhydro-2,3-di-O-benzyl- α -L-idofuranose
[81937-01-1]

$C_{20}H_{22}O_5$ 342.391
Syrup. $[\alpha]_D^{20}$ +23.7 (c, 1.1 in $CHCl_3$).

Shorygina, N.N. et al., Dokl. Akad. Nauk SSSR, Ser. Khim., 1961, **140**, 617; CA, **56**, 7411d (D-form, synth)

Baggett, N. et al., J.O.C., 1963, **28**, 1041; 1845 (L-form derivs, synth)

Paulsen, H. et al., Chem. Ber., 1976, **109**, 597 (synth, pmr, di-Ac, tri-Ac)

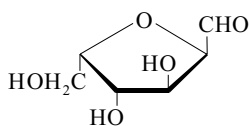
Köll, P. et al., Annalen, 1982, 613 (synth, pmr, α -L-fur derivs)

Carmen Cruzado, M. et al., Carbohydr. Res., 1987, **170**, 249; 1988, **175**, 193 (benzyl derivs)

Köll, P. et al., Carbohydr. Res., 1988, **174**, 9; **179**, 1 (cryst struct, pmr, cmr, α -L-fur)

2,5-Anhydroidose

A-657



$C_6H_{10}O_5$ 162.142

L-form

Isol. from baker's yeast (*Saccharomyces cerevisiae*).

Amorph. $[\alpha]_D^{25}$ +11 (c, 1.6 in H_2O).

Di-Me acetal, 6-tosyl: 2,5-Anhydro-6-O-tosyl-L-idose dimethyl acetal

$C_{15}H_{22}O_8S$ 362.4
Syrup. $[\alpha]_D^{24}$ +4.3 (c, 1.0 in $CHCl_3$).

3,6-Ditosyl, di-Me dithioacetal: 2,5-Anhydro-3,6-di-O-tosyl-L-idose dimethyl dithioacetal

$C_{22}H_{28}O_8S_4$ 548.722
Cryst. Mp 133–135° dec. $[\alpha]_D^{25}$ +28 (c, 0.8 in $CHCl_3$).

3-Benzyl, 6-tosyl, di-Me dithioacetal: 2,5-Anhydro-3-O-benzyl-6-O-tosyl-L-idose dithioacetal
[32445-68-4]

$C_{22}H_{28}O_6S_3$ 484.658
 $[\alpha]_D^{32}$ +20 (c, 1.1 in $CHCl_3$).

Dekker, C.A. et al., Arch. Biochem. Biophys., 1958, **78**, 348 (synth)

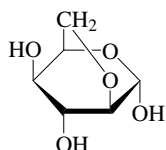
Defaye, J. et al., C. R. Hebd. Seances Acad. Sci., 1959, **249**, 192

Defaye, J. et al., Carbohydr. Res., 1971, **17**, 57 (tosyl di-Me dithioacetal)

Ogawa, T. et al., Agric. Biol. Chem., 1972, **36**, 1449 (synth, pmr)

2,6-Anhydroidose

A-658

 α -D-Pyranose-form

$C_6H_{10}O_5$ 162.142

D-Pyranose-form

3,4-Di-Ac: 3,4-Di-O-acetyl-2,6-anhydro-D-idopyranose

$C_{10}H_{14}O_7$ 246.216
Mp 79–83°. $[\alpha]_D^{20}$ -48.9 (c, 1.075 in $CHCl_3$). Anomeric config. not detd. Crystallised from a mixt. of anomers.

Tri-Ac: 1,3,4-Tri-O-acetyl-2,6-anhydro-D-idopyranose

$C_{12}H_{16}O_8$ 288.254
Syrup. $[\alpha]_D^{20}$ -68.8 (c, 0.88 in $CHCl_3$). Comprises 30% α - and 70% β -anomer.

α -D-Pyranose-form

Me glycoside: Methyl 2,6-anhydro- α -D-idopyranoside

$C_7H_{12}O_5$ 176.169
Syrup. $[\alpha]_D^{20}$ +74.7 (c, 1.1 in MeOH).

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2,6-anhydro- α -D-idopyranoside

[71110-12-8]
 $C_{11}H_{16}O_7$ 260.243
Syrup. $[\alpha]_D^{20}$ +37.1 (c, 0.7 in $CHCl_3$).

β -D-Pyranose-form

Me glycoside: Methyl 2,6-anhydro- β -D-idopyranoside

[71110-10-6]
 $C_7H_{12}O_5$ 176.169
Syrup. $[\alpha]_D^{20}$ -17 (c, 1.6 in MeOH).

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2,6-anhydro- β -D-idopyranoside

[71110-13-9]
 $C_{11}H_{16}O_7$ 260.243
Cryst. (Et₂O/hexane). Mp 44–45°. $[\alpha]_D^{20}$ -18.6 (c, 1.9 in $CHCl_3$).

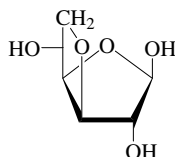
[58699-71-1, 58699-72-2, 58699-73-3, 58699-74-4]

Paulsen, H. et al., Chem. Ber., 1976, **109**, 597 (synth, pmr)

Köll, P. et al., Chem. Ber., 1979, **112**, 2305 (glycosides, synth, pmr)

3,6-Anhydroidose

A-659

 α -L-Furanose-form

$C_6H_{10}O_5$ 162.142

L-Furanose-form

Mp 102–105°. $[\alpha]_D^{20}$ +25.4 (c, 3.5 in $CHCl_3$). Mixt. of anomers.

Tri-Ac: 1,2,5-Tri-O-acetyl-3,6-anhydro-L-idofuranose

$C_{12}H_{16}O_8$ 288.254

Syrup. $[\alpha]_D^{20}$ +112.6 (c, 0.9 in $CHCl_3$). 85:15 Mixt. of α - and β -anomers.

α -L-Furanose-form

Me glycoside: Methyl 3,6-anhydro- α -L-idofuranoside

[87638-83-3]
 $C_7H_{12}O_5$ 176.169
Mp 75–76°. $[\alpha]_D^{20}$ -73.6 (c, 1.6 in $CHCl_3$).

Me glycoside, di-Ac: Methyl 2,5-di-O-acetyl-3,6-anhydro- α -L-idofuranoside

[87638-86-6]
 $C_{11}H_{16}O_7$ 260.243
Syrup. $[\alpha]_D^{20}$ +34.4 (c, 2.5 in $CHCl_3$).

β -L-Furanose-form

1,2-Isopropylidene: 3,6-Anhydro-1,2-O-isopropylidene- β -L-idofuranose

[3257-63-4]
 $C_9H_{14}O_5$ 202.207
Cryst. (C_6H_6). Mp 105–107°. $[\alpha]_D^{18}$ +28.2 (c, 0.90 in H_2O).

Me glycoside: Methyl 3,6-anhydro- β -L-idofuranoside

[87638-82-2]
 $C_7H_{12}O_5$ 176.169
Mp 107–108°. $[\alpha]_D^{20}$ +173.5 (c, 1 in $CHCl_3$).

Me glycoside, di-Ac: Methyl 2,5-di-O-acetyl-3,6-anhydro- β -L-idofuranoside

[87638-84-4]
 $C_{11}H_{16}O_7$ 260.243
Cryst. (Et₂O). Mp 56–57°. $[\alpha]_D^{20}$ +236 (c, 1 in $CHCl_3$).

[71110-18-4, 71110-19-5]

Buchanan, J.G. et al., J.C.S., 1965, 201 (isopropylidene, synth)

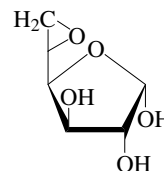
Köll, P. et al., Chem. Ber., 1979, **112**, 2305 (tri-Ac, synth, pmr, cmr)

Köll, P. et al., Annalen, 1983, 1310 (synth, pmr, cmr)

Kopf, J. et al., Carbohydr. Res., 1984, **135**, 29 (cryst struct, α -L-Me fur)

5,6-Anhydroidose

A-660



$C_6H_{10}O_5$ 162.142

β -L-Furanose-form

1,2-O-Isopropylidene: 5,6-Anhydro-1,2-O-isopropylidene- β -L-idofuranose

[4118-60-9]
 $C_9H_{14}O_5$ 202.207
Cryst. Mp 73–75°. $[\alpha]_D^{12}$ -25.2 (c, 2.3 in $CHCl_3$).

1,2-O-Isopropylidene, 3-mesyl: 5,6-Anhydro-1,2-O-isopropylidene-3-O-mesyl- β -L-idofuranose

[19286-05-6]
 $C_{10}H_{16}O_7S$ 280.298
Cryst. (EtOH). Mp 96–98°. $[\alpha]_D$ -7.4 (c, 1 in $CHCl_3$). $[\alpha]_D$ -16 (c, 1 in CH_2Cl_2).

1,2-O-Isopropylidene, 3-tosyl: 5,6-Anhydro-1,2-O-isopropylidene-3-O-tosyl- β -L-idofuranose
[34885-60-4]
 $C_{16}H_{20}O_7S$ 356.396
Oil. $[\alpha]_D^{25} +81$ (c, 0.1 in $CHCl_3$).

3-Benzyl, 1,2-O-isopropylidene: 5,6-Anhydro-3-O-benzyl-1,2-O-isopropylidene- β -L-idofuranose, 8CI
[23302-40-1]
 $C_{16}H_{20}O_5$ 292.331
Syrup. Bp_{0.03} 137-139°. $[\alpha]_D^{20} -78.7$ (c, 6.4 in $CHCl_3$).

Meyer, A.S. *et al.*, *Helv. Chim. Acta*, 1946, **29**, 152-162 (β -L-isopropylidene, β -L-isopropylidene benzyl)

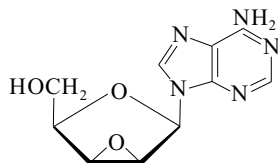
Kovář, J.S. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 549 (β -L-isopropylidene mesyl)

Miljković, M. *et al.*, *J.O.C.*, 1972, **37**, 2536 (β -L-isopropylidene tosyl)

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 286 (β -L-isopropylidene benzyl)

Hughes, N.A. *et al.*, *Carbohydr. Res.*, 1977, **57**, 317 (β -L-isopropylidene mesyl)

9-(2,3-Anhydrolyxofuranosyl)adenine A-661



$C_{10}H_{11}N_5O_3$ 249.229

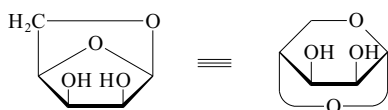
β -D-form [40110-98-3]
Mp 208-210° dec. $[\alpha]_D^{25} -17.5$ (c, 0.2 in H_2O).

Robbins, M.J. *et al.*, *J.O.C.*, 1974, **39**, 1564

Mengel, R. *et al.*, *Angew. Chem., Int. Ed.*, 1978, **17**, 679

1,4-Anhydrolyxopyranose A-662

1,5-Anhydrolyxofuranose



$C_5H_8O_4$ 132.116

D-form [51246-93-6]
Mp 101-103° (sealed tube). $[\alpha]_D^{20} -113.4$ (c, 0.5 in H_2O).

Isopropylidene: 1,5-Anhydro-2,3-O-isopropylidene- β -D-lyxofuranose. 1,4-Anhydro-2,3-O-isopropylidene- α -D-lyxopyranose
[20689-06-9]
 $C_8H_{12}O_4$ 172.18

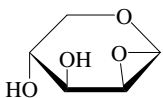
Cryst. (hexane). Mp 69°. $[\alpha]_D^{21} -102$ (c, 0.5 in Me_2CO).

Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1968, 2701 (β -D-isopropylidene, pmr)

Köll, P. *et al.*, *Chem. Ber.*, 1973, **106**, 3565 (β -D-form)

Ohrui, H. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 81 (β -D-isopropylidene, pmr)

1,2-Anhydrolyxose A-663



β -D-Pyranose-form

$C_5H_8O_4$ 132.116

β -D-Pyranose-form

3,4-Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl- β -D-lyxopyranose
[149625-92-3]

$C_{19}H_{20}O_4$ 312.365

No phys. props. reported.

β -D-Furanose-form

3-Benzyl, 5-Ac: 5-O-Acetyl-1,2-anhydro-3-O-benzyl- β -D-lyxofuranose
[213313-51-0]

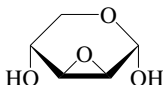
$C_{14}H_{16}O_5$ 264.277

$[\alpha]_D -8.6$ (c, 2.4 in $CHCl_3$).

Yang, G. *et al.*, *Carbohydr. Lett.*, 1994, **1**, 137-141 (3,4-dibenzyl)

Ning, J. *et al.*, *Carbohydr. Res.*, 2001, **330**, 165-175 (β -D-fur 3-benzyl 5-Ac)

2,3-Anhydrolyxose A-664



α -D-Pyranose-form

$C_5H_8O_4$ 132.116

α -D-Pyranose-form

Me glycoside: Methyl 2,3-anhydro- α -D-lyxopyranoside
[14621-31-9]

$C_6H_{10}O_4$ 146.143

Cryst. (EtOAc/petrol). Mp 62°. $[\alpha]_D +111$ (c, 0.9 in H_2O).

α -D-Furanose-form

5-Benzoyl: 2,3-Anhydro-5-O-benzoyl- α -D-lyxofuranose
[636558-64-0]

$C_{12}H_{12}O_5$ 236.224

Solid.

Me glycoside: Methyl 2,3-anhydro- α -D-lyxofuranoside, 9CI, 8CI
[26532-10-5]

$C_6H_{10}O_4$ 146.143

Cryst. (C_6H_6). Mp 80-82°. $[\alpha]_D^{26} +67$ (c, 2.0 in H_2O). $[\alpha]_D +57$ (H_2O).

Me glycoside, 5-Ac: Methyl 5-O-acetyl-2,3-anhydro- α -D-lyxofuranoside
[13051-96-2]

$C_8H_{12}O_5$ 188.18

Needles (EtOH). Mp 73-75°. $[\alpha]_D +64$ (c, 1.8 in $CHCl_3$).

Me glycoside, 5-benzoyl: Methyl 2,3-anhydro-5-O-benzoyl- α -D-lyxofuranoside
[26532-11-6]

$C_{13}H_{14}O_5$ 250.251

Cryst. (EtOH). Mp 88-90°. $[\alpha]_D^{25} +42.6$ (c, 2.3 in $CHCl_3$).

Me glycoside, 5-p-nitrobenzoyl: [17230-06-7]
Cryst. (EtOH). Mp 126.5-127.5°. $[\alpha]_D^{24} +33$ ($CHCl_3$).

Me glycoside, 5-tosyl: Methyl 2,3-anhydro-5-O-tosyl- α -D-lyxofuranoside
[66108-03-0]

$C_{13}H_{16}O_6S$ 300.332

Mp 80-81°. $[\alpha]_D +24.5$ ($CHCl_3$).

Me glycoside, 5-Me: Methyl 2,3-anhydro-5-O-methyl- α -D-lyxofuranoside
 $C_7H_{12}O_4$ 160.169

Mp 43°. $[\alpha]_D^{18} +60$ (c, 4.5 in MeOH).

Me glycoside, 5-benzyl: Methyl 2,3-anhydro-5-O-benzyl- α -D-lyxofuranoside, 8CI
[14645-49-9]

$C_{13}H_{16}O_4$ 236.267

Syrup. $[\alpha]_D +23.4$ (c, 1.0 in $CHCl_3$).

Me glycoside, 5-trityl: Methyl 2,3-anhydro-5-O-trityl- α -D-lyxofuranoside
[142890-37-7]

$C_{25}H_{24}O_4$ 388.462

Cryst. (EtOH). Mp 98-100°. $[\alpha]_D^{20} +3.2$ (c, 1 in $CHCl_3$).

Et glycoside: Ethyl 2,3-anhydro- α -D-lyxofuranoside
 $C_7H_{12}O_4$ 160.169

Mp 58-59°. $[\alpha]_D^{29} +40.3$ (c, 2.1 in H_2O).

Et glycoside, 5-Ac: Ethyl 5-O-acetyl-2,3-anhydro- α -D-lyxofuranoside
 $C_9H_{14}O_5$ 202.207

Bp_{0.0001} 75-85° (bath). $[\alpha]_D^{28} +44$ (c, 6.2 in $CHCl_3$).

Et glycoside, 5-tetrahydropyranyl: Bp_{0.0005} 110-120° (bath). $[\alpha]_D^{29} +21$ (c, 4.2 in $CHCl_3$).

β -D-Furanose-form

Me glycoside: Methyl 2,3-anhydro- β -D-lyxofuranoside, 9CI
[43168-73-6]

$C_6H_{10}O_4$ 146.143

Hygroscopic cryst. (Et_2O). Mp 74-75°. $[\alpha]_D^{25} -102$ (c, 2.0 in H_2O).

Me glycoside, 5-Ac: Methyl 5-O-acetyl-2,3-anhydro- β -D-lyxofuranoside
[13051-97-3]

$C_8H_{12}O_5$ 188.18

$[\alpha]_D -80$ (c, 1.0 in $CHCl_3$).

Me glycoside, 5-p-nitrobenzoyl: [17230-03-4]
Cryst. (hexane). Mp 89-91°.

Me glycoside, 5-tosyl: Methyl 2,3-anhydro-5-O-tosyl- β -D-lyxofuranoside
 $C_{13}H_{16}O_6S$ 300.332

Mp 76-77°. $[\alpha]_D -89$ ($CHCl_3$).

Me glycoside, 5-benzyl: Methyl 2,3-anhydro-5-O-benzyl- β -D-lyxofuranoside, 8CI
[29024-87-1]

$C_{13}H_{16}O_4$ 236.267

Oil. Bp_{0.03} 135-140°. $[\alpha]_D^{23} -67$ (c, 2.0 in EtOH).

Me glycoside, 5-Me: Methyl 2,3-anhydro-5-O-methyl- β -D-lyxofuranoside
 $C_7H_{12}O_4$ 160.169

Mp 14-15°. $[\alpha]_D -88$ (H_2O).

Me glycoside, 5-trityl: Methyl 2,3-anhydro-5-O-trityl- β -D-lyxofuranoside
[17229-98-0]

$C_{25}H_{24}O_4$ 388.462

Cryst. (EtOH). Mp 156-157°. $[\alpha]_D^{24} -76$ ($CHCl_3$).

Et glycoside: Ethyl 2,3-anhydro- β -D-lyxofuranoside
 $C_7H_{12}O_4$ 160.169

Bp_{0.06} 100-101° (bath). [α]_D³² -77 (c, 3.0 in H₂O).

Et glycoside, 5-Ac: Ethyl 5-O-acetyl-2,3-anhydro-β-D-lyxofuranoside
C₉H₁₄O₅ 202.207

Bp_{0.0003} 94-100° (bath). [α]_D²⁷ -67 (c, 3.5 in CHCl₃).

Et glycoside, 5-tetrahydropyranyl: Bp_{0.0005} 110-120° (bath). [α]_D³⁰ -79 (c, 3.4 in CHCl₃).

Percival, E.E. *et al.*, *J.C.S.*, 1953, 564 (*α-D-Me fur, α-D-Me Me fur*)

Baker, B.R. *et al.*, *J.A.C.S.*, 1955, 77, 7 (*α-D-Me fur, β-D-Me fur*)

Iwashige, T. *et al.*, *Chem. Pharm. Bull.*, 1963, 11, 1569 (*α-D-Et fur, α-D-Et fur Ac, α-D-Et fur tetrahydropyranyl, β-D-Et fur, β-D-Et fur derivs*)

Buchanan, J.G. *et al.*, *J.C.S.(C)*, 1966, 1926 (*α-D-Me pyr*)

Ryan, K.J. *et al.*, *J.O.C.*, 1968, 33, 3727 (*β-D-Me fur trityl, β-D-Me fur p-nitrobenzoyl, α-D-Me fur p-nitrobenzoyl*)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, 47, 4413 (*α-D-Me fur, α-D-Me fur benzoyl*)

Williams, N.R. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1970, 25, 109 (*α-D-Me fur Ac, α-D-Me fur benzyl, α-D-Me fur tosyl, β-D-Me fur benzyl, rev*)

Buchanan, J.G. *et al.*, *Methods Carbohydr. Chem.*, 1972, 6, 135 (*α-D-Me pyr*)

Unger, F.M. *et al.*, *Carbohydr. Res.*, 1978, 67, 257 (*α-D-Me fur, pmr*)

Kim, K.S. *et al.*, *Carbohydr. Res.*, 1979, 72, 25 (*cmr*)

Martin, M.G. *et al.*, *Carbohydr. Res.*, 1983, 123, 332 (*synth, α-D-Me fur*)

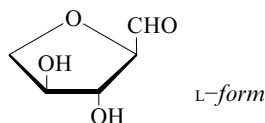
Thomé, M.A. *et al.*, *J. Carbohydr. Chem.*, 1991, 10, 923-926 (*Me α-D-fur, Me β-D-fur, synth*)

Benéfice-Malouet, S. *et al.*, *Carbohydr. Res.*, 1992, 229, 293 (*α-D-Me pyr 5-trityl*)

Callam, C.S. *et al.*, *J.A.C.S.*, 2003, 125, 13112-13119 (*α-D-fur 5-benzoyl, synth, pmr, cmr*)

2,5-Anhydrolyxose

A-665



C₅H₈O₄ 132.116

D-form

3,4-Ditosyl, di-Me acetal: 2,5-Anhydro-3,4-di-O-tosyl-D-lyxose dimethyl acetal
Mp 139-140°. [α]_D³¹ +63.5 (CHCl₃).

L-form

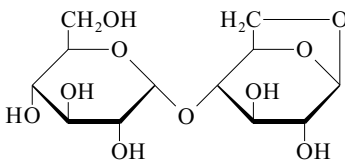
3,4-Ditosyl, di-Me acetal: 2,5-Anhydro-3,4-di-O-tosyl-L-lyxose dimethyl acetal
Mp 139-140°. [α]_D³¹ -58.5 (c, 1.3 in CHCl₃).

Defaye, J. *et al.*, *Carbohydr. Res.*, 1971, 20, 305

1,6-Anhydromaltose

A-666

1,6-Anhydro-4-O-(α-D-glucopyranosyl)-β-D-glucopyranose. Maltosan
[6983-27-3]



C₁₂H₂₀O₁₀ 324.284

Struct. revised in 1952. Cryst. (EtOH aq.). Mp 132-137°. [α]_D²⁰ +75.1 (c, 1.1 in H₂O).

Hexa-Ac: [28868-67-9]

C₂₄H₃₂O₁₆ 576.507

Cryst. (MeOH). Mp 181-182°. [α]_D²⁰ +47 (c, 2 in CHCl₃).

Karrer, P. *et al.*, *Helv. Chim. Acta*, 1932, 15, 739 (*hexa-Ac*)

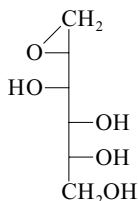
Asp, L. *et al.*, *Acta Chem. Scand.*, 1952, 6, 941 (*hexa-Ac*)

Durette, P.L. *et al.*, *J.C.S. Perkin 1*, 1974, 97 (*pmr, conformm*)

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, 42, 75 (*synth, pmr, cmr*)

1,2-Anhydromannitol

A-667



C₆H₁₂O₅ 164.158

D-form

Needles. Mp 102-104°. [α]_D²⁵ -16 (c, 2.5 in H₂O).

6-Mesyl: 1,2-Anhydro-6-O-mesyl-D-mannitol

[34213-30-4]

C₇H₁₄O₇S 242.249

Prisms (EtOAc). Mp 80-81°. [α]_D³² +67.5 (c, 1 in H₂O). Unstable in solid form and in aq. soln.

3,4:5,6-Diisopropylidene: 1,2-Anhydro-3,4:5,6-di-O-isopropylidene-D-mannitol
[85325-93-5]

C₁₂H₂₀O₅ 244.287

Oil. Bp_{0.5} 70°. [α]_D²⁰ +9.1 (c, 1 in CHCl₃). *n*_D²¹ 1.4504.

Jarman, M. *et al.*, *Carbohydr. Res.*, 1969, 9, 139 (*D-form, synth*)

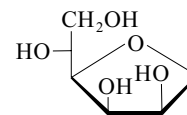
Tisdale, M.J. *et al.*, *Carbohydr. Res.*, 1971, 19, 117 (*D-mesyl*)

Regeling, H. *et al.*, *Carbohydr. Res.*, 1989, 190, 313 (*synth, pmr*)

1,4-Anhydromannitol

A-668

Mannitan



C₆H₁₂O₅ 164.158

D-form

Plates (EtOH aq.) or cryst. (MeOH). Mp 145-147°. [α]_D²⁰ -26.2 (H₂O).

2,6-Dibenzoyl: 1,4-Anhydro-2,6-di-O-benzoyl-D-mannitol

C₂₀H₂₀O₇ 372.374

Cryst. (EtOAc). Mp 147-148°. [α]_D³¹ -3 (c, 1 in CHCl₃).

5,6-Dibenzoyl: 1,4-Anhydro-5,6-di-O-benzoyl-D-mannitol

C₂₀H₂₀O₇ 372.374

Cryst. (C₆H₆/Et₂O/petrol). Mp 74-75°. [α]_D³⁰ -13 (c, 1 in CHCl₃).

3,5-Dimesyl, 6-tosyl: 1,4-Anhydro-3,5-di-O-mesyl-6-O-tosyl-D-mannitol

[53691-34-2]

C₁₅H₂₂O₁₁S₃ 474.53

Syrup. [α]_D²⁰ -9.

2,3-O-Isopropylidene: 1,4-Anhydro-2,3-O-isopropylidene-D-mannitol

C₉H₁₆O₅ 204.222

Mp 83-84°. [α]_D -59.1 (-57.5) (H₂O).

2,3-O-Isopropylidene, 6-tosyl: 1,4-Anhydro-2,3-O-isopropylidene-6-O-tosyl-D-mannitol

C₁₆H₂₂O₇S 358.412

Cryst. (MeOH). Mp 133-134°. [α]_D²⁰ -25.

5,6-O-Isopropylidene: 1,4-Anhydro-5,6-O-isopropylidene-D-mannitol

C₉H₁₆O₅ 204.222

Cryst. (Et₂O/petrol). Mp 46-47°. [α]_D²⁸ -20 (c, 1 in CHCl₃).

2,3-O-Benzylidene (R-): 1,4-Anhydro-2,3-O-(R)-benzylidene-D-mannitol

C₁₃H₁₆O₅ 252.266

Mp 94-95°. [α]_D²⁵ -88 (H₂O).

2,3-O-Benzylidene (S-): 1,4-Anhydro-2,3-O-(S)-benzylidene-D-mannitol

C₁₃H₁₆O₅ 252.266

Cryst. (EtOAc). Mp 111-112°. [α]_D³⁰ -40 (c, 0.7 in H₂O).

5,6-O-Benzylidene (R-): 1,4-Anhydro-5,6-O-(R)-benzylidene-D-mannitol

C₁₃H₁₆O₅ 252.266

Mp 62°. [α]_D²⁹ -28 (c, 1 in CHCl₃).

5,6-O-Benzylidene (S-): 1,4-Anhydro-5,6-O-(S)-benzylidene-D-mannitol

C₁₃H₁₆O₅ 252.266

Cryst. (CHCl₃/petrol). Mp 110-111°. [α]_D²⁹ +26 (c, 1 in CHCl₃).

2,3-O-Benzylidene (R), dibenzoyl: 1,4-Anhydro-5,6-di-O-benzoyl-2,3-O-(R)-benzylidene-D-mannitol

C₂₇H₂₄O₇ 460.482

Cryst. (EtOAc/petrol). Mp 96-97°. [α]_D -26 (c, 1 in CHCl₃).

2,3-O-Benzylidene (R), 6-tosyl: 1,4-Anhydro-2,3-O-(R)-benzylidene-6-O-tosyl-D-mannitol

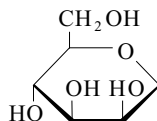
C₂₀H₂₂O₇S 406.456

- Cryst. (CHCl₃/petrol). Mp 121°. [α]_D²⁷ -24 (c, 1 in CHCl₃).
- 2,3-O-Benzylidene (S), 6-tosyl: 1,4-Anhydro-2,3-O-(S)-benzylidene-6-O-tosyl-D-mannitol
C₂₀H₂₂O₇S 406.456
Mp 115°. [α]_D²⁸ 0 (c, 1 in CHCl₃).
- 3,5-O-Benzylidene (R-): 1,4-Anhydro-3,5-O-(R)-benzylidene-D-mannitol
C₁₃H₁₆O₅ 252.266
Cryst. (EtOAc/petrol). Mp 96-97°. [α]_D²⁸ +32 (c, 1 in CHCl₃).
- 3,5-O-Benzylidene (S-): 1,4-Anhydro-3,5-O-(S)-benzylidene-D-mannitol
C₁₃H₁₆O₅ 252.266
Mp 143°. [α]_D²⁸ +32 (c, 0.3 in H₂O).
- 3,5-O-Benzylidene (S-), dibenzoyl: 1,4-Anhydro-2,6-di-O-benzoyl-3,5-O-(S)-benzylidene-D-mannitol
C₂₇H₂₄O₇ 460.482
Mp 163-164°. [α]_D³¹ +40 (c, 1 in CHCl₃).
- 3,5-O-Benzylidene (R-), ditosyl: 1,4-Anhydro-3,5-O-(R)-benzylidene-2,6-di-O-tosyl-D-mannitol
C₂₇H₂₈O₆S₂ 560.645
Cryst. (CHCl₃/petrol). Mp 120-121°. [α]_D³² +40 (c, 1 in CHCl₃).
- 3,5-O-Benzylidene (S-), ditosyl: 1,4-Anhydro-3,5-O-(S)-benzylidene-2,6-di-O-tosyl-D-mannitol
C₂₇H₂₈O₆S₂ 560.645
Mp 144-145°. [α]_D³¹ +55 (c, 1 in CHCl₃).
- 3,5-O-Benzylidene (R-), dibenzoyl: 1,4-Anhydro-2,6-di-O-benzoyl-3,5-O-(R)-benzylidene-D-mannitol
C₂₇H₂₄O₇ 460.482
Cryst. (EtOAc/petrol). Mp 101-102°. [α]_D²⁸ -40 (c, 1 in CHCl₃).
- 2,6-Di-Me, 3,5-O-benzylidene (S): 1,4-Anhydro-3,5-O-(S)-benzylidene-2,6-di-O-methyl-D-mannitol
C₁₅H₂₀O₅ 280.32
Cryst. (Et₂O/hexane). [α]_D³¹ +93 (c, 1 in CHCl₃).
- 5,6-Di-Me, 2,3-O-benzylidene (R): 1,4-Anhydro-2,3-O-(R)-benzylidene-5,6-di-O-methyl-D-mannitol
C₁₅H₂₀O₅ 280.32
Mp 65-66°. [α]_D²⁹ -63 (c, 1 in CHCl₃).
- 5,6-Di-Me, 2,3-O-benzylidene (S): 1,4-Anhydro-2,3-O-(S)-benzylidene-5,6-di-O-methyl-D-mannitol
C₁₅H₂₀O₅ 280.32
Cryst. (petrol). Mp 35-36°. [α]_D³² -32 (c, 1 in CHCl₃).
- Valentin, F. et al., *Coll. Czech. Chem. Comm.*, 1936, **8**, 35 (D-form, synth)
- Hockett, R.C. et al., *J.A.C.S.*, 1946, **68**, 930 (struct)
- Wiggins, L.F. et al., *Adv. Carbohydr. Chem.*, 1950, **5**, 191 (rev, derivs)
- Foster, A.B. et al., *J.C.S.*, 1951, 680 (D-form, synth)
- Doane, W.M. et al., *J.O.C.*, 1967, **32**, 1080 (D-form, synth)
- Que, L. et al., *Biochemistry*, 1974, **13**, 146 (cmr)
- Kuszmann, J. et al., *Carbohydr. Res.*, 1974, **35**, 97 (D-isopropylidene tosyl, D-dimesyl tosyl)
- Baggett, N. et al., *Carbohydr. Res.*, 1983, **116**, 49 (D-dibenzoyl, D-isopropylidene, D-benzylidene, D-benzylidene derivs, D-di-Me benzylidene)

- Sinclair, H.B. et al., *Carbohydr. Res.*, 1984, **127**, 146 (D-form, synth)
- Defaye, J. et al., *Carbohydr. Res.*, 1990, **205**, 191 (synth)
- Shalaby, M.A. et al., *Acta Cryst. C*, 1995, **51**, 1921 (cryst struct, deriv)

1,5-Anhydromannitol, 9CI, 8CI

Styracitol



C₆H₁₂O₅ 164.158

All possible 31 isomers of Me/Ac/benzoylated 1,5-anhydro-D-mannitol were prepd. by Elvebak et al.

D-form [492-93-3]

Occurs in fruit of *Styrax obassia*.

Mp 157°. [α]_D²³ -49.4 (c, 1.6 in H₂O). Bitter-sweet taste.

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1,5-anhydro-D-mannitol

[13121-61-4]

C₁₄H₂₀O₉ 332.307

Mp 66-67°. [α]_D¹⁷ -41 (c, 1 in CHCl₃).

Tetrabenzoyl: 1,5-Anhydro-2,3,4,6-tetra-O-benzoyl-D-mannitol

[14218-12-3]

C₃₄H₂₈O₉ 580.59

Mp 145-146°. [α]_D²² -145 (c, 2 in CHCl₃).

6-Tosyl, 2,3,4-tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-benzoyl-6-O-tosyl-D-mannitol

[119718-15-9]

C₃₄H₃₀O₁₀S 630.671

Cryst. (EtOH). Mp 162° (158-159°).

[α]_D -166 (c, 1.0 in CHCl₃).

Tetra-Me: 1,5-Anhydro-2,3,4,6-tetra-O-methyl-D-mannitol

C₁₀H₂₀O₅ 220.265

Syrup. Bp_{1.5} 110° (bath). [α]_D -40.2 (EtOH).

2,3:4,6-Di-O-isopropylidene: 1,5-Anhydro-2,3:4,5-di-O-isopropylidene-D-mannitol

C₁₂H₂₀O₅ 244.287

Needles (petrol). Mp 96-97°. [α]_D¹⁷ -115.24 (EtOH).

Asahina, Y. et al., *Ber.*, 1931, **64**, 1803 (D-form, isol, D-diisopropylidene, D-tetra-Me)

Freudenberg, K. et al., *J.A.C.S.*, 1940, **62**, 558 (D-tetra-Me)

Fletcher, H.G. et al., *J.A.C.S.*, 1952, **74**, 3175 (synth)

Soltzberg, S. et al., *Adv. Carbohydr. Chem. Biochem.*, 1970, **25**, 229 (rev)

Jacobsen, S. et al., *Acta Chem. Scand.*, 1973, **27**, 3111 (D-tetrabenzoyl)

Que, L. Jr. et al., *Biochemistry*, 1974, **13**, 146 (cmr)

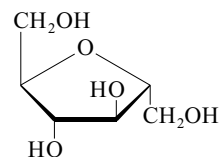
Kocienski, P. et al., *Carbohydr. Res.*, 1982, **110**, 330-332 (D-tetra-Ac)

Sinclair, H.B. et al., *Carbohydr. Res.*, 1988, **181**, 115 (6-tosyl 2,3,4-tribenzoyl)

Elvebak, L.E. et al., *Carbohydr. Res.*, 1995, **274**, 71-83 (derivs)

2,5-Anhydromannitol, 9CI

A-670



C₆H₁₂O₅ 164.158

D-form [41107-82-8] Used in studying the tautomeric and anomeric specificity of a number of glycolytic enzymes acting on β -D-fructofuranose and its phosphates. Prisms (EtOH). Mp 103-104°. [α]_D²⁰ +58.2 (c, 1.37 in H₂O).

3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl-2,5-anhydro-D-mannitol

[84446-97-9]

C₁₂H₁₈O₈ 290.269

Syrup. [α]_D +32 (c, 1.0 in CHCl₃).

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2,5-anhydro-D-mannitol

[65729-88-6]

C₁₄H₂₀O₉ 332.307

Oil. [α]_D +26 (c, 1.0 in CHCl₃).

1,6-Dibenzoyl: 2,5-Anhydro-1,6-di-O-benzoyl-D-mannitol

C₂₀H₂₀O₇ 372.374

Cryst. (CH₂Cl₂/pentane). Mp 102-104°. [α]_D²³ +31.4 (c, 1.5 in MeOH).

1-Tosyl: 2,5-Anhydro-1-O-tosyl-D-mannitol

[84447-04-1]

C₁₃H₁₈O₇S 318.347

Cryst. (H₂O). Mp 107-109°. [α]_D +36 (c, 1.0 in H₂O).

1-Tosyl, 3,4,6-tri-Ac: 3,4,6-Tri-O-acetyl-2,5-anhydro-1-O-tosyl-D-mannitol

[84447-07-4]

C₁₉H₂₄O₁₀S 444.459

Syrup. [α]_D +40 (c, 1.0 in CHCl₃).

1,6-Ditosyl, 3,4-di-Ac: 3,4-Di-O-acetyl-2,5-anhydro-1,6-di-O-tosyl-D-mannitol

[84447-06-3]

C₂₄H₂₈O₁₁S₂ 556.611

Cryst. (EtOH). Mp 142-143°. [α]_D +40 (c, 1.0 in CHCl₃).

1,6-Dimesyl: 2,5-Anhydro-1,6-di-O-mesyl-D-mannitol

[84447-01-8]

C₈H₁₆O₉S₂ 320.341

Cryst. (EtOH). Mp 104-106°. [α]_D +40 (c, 0.5 in H₂O).

3,4-Dimesyl, 1,6-dibenzoyl: 2,5-Anhydro-1,6-di-O-benzoyl-3,4-di-O-mesyl-D-mannitol

C₂₂H₂₄O₁₁S₂ 528.557

Cryst. (MeOH/Et₂O). Mp 100-101°. [α]_D²³ +305 (CHCl₃).

1-Me, 3,4,6-tri-Ac: 3,4,6-Tri-O-acetyl-2,5-anhydro-1-O-methyl-D-mannitol

[84446-98-0]

C₁₃H₂₀O₈ 304.296

Syrup. [α]_D +39 (c, 1.1 in CHCl₃).

Tetra-Me: 2,5-Anhydro-1,3,4,6-tetra-O-methyl-D-mannitol

C₁₀H₂₀O₅ 220.265

Volatile liq. [α]_D²³ +32.6 (c, 0.76 in CHCl₃).

1-Trityl, 3,4,6-tri-Ac: 3,4,6-Tri-O-acetyl-2,5-anhydro-1-O-trityl-D-mannitol [84446-96-8]
 $C_{31}H_{32}O_8$ 532.589
 Cryst. (MeOH). Mp 96-97°. $[\alpha]_D +34$ (c, 1.0 in $CHCl_3$).

1,6-Ditrityl, 3,4-ditosyl: 2,5-Anhydro-3,4-di-O-tosyl-1,6-di-O-trityl-D-mannitol [84446-95-7]
 $C_{58}H_{52}O_9S_2$ 957.175
 Cryst. ($CHCl_3$ /MeOH). Mp 183°. $[\alpha]_D +39$ (c, 1.0 in $CHCl_3$).

1-Phosphate: [52011-52-6]
 $C_6H_{13}O_8P$ 244.138
 Syrup.

1,6-Diphosphate: [79736-62-2]
 $C_6H_{14}O_{11}P_2$ 324.117
 Needles (as tris(cyclohexylammonium) salt). Mp 192-196° (tris(cyclohexylammonium) salt). CAS no. refers to salt.

Bera, B.C. *et al.*, *J.C.S.*, 1956, 4531 (*synth*)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1973, **30**, 367 (*synth*)

Koerner, T.A.W. *et al.*, *J. Biol. Chem.*, 1974, **249**, 5749 (*synth*)

Horton, D. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 68 (*synth*)

Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, **35**, 2169 (*Ac derivs*)

Watkins, S.F. *et al.*, *Carbohydr. Res.*, 1983, **119**, 49 (*cryst struct*)

Rao, V.S. *et al.*, *Can. J. Chem.*, 1984, **62**, 886 (*cmr, pmr*)

Otero, D.A. *et al.*, *Carbohydr. Res.*, 1984, **128**, 79 (*synth*)

Rolf, D. *et al.*, *Carbohydr. Res.*, 1984, **131**, 17 (*tetra-Me*)

Stevens, H.C. *et al.*, *FEBS Lett.*, 1984, **165**, 247 (*phosphate*)

Bennek, J.A. *et al.*, *J.O.C.*, 1987, **52**, 892 (*synth, cmr*)

Whitfield, D.M. *et al.*, *Anal. Biochem.*, 1991, **194**, 259 (*hplc*)

Voll, R.J. *et al.*, *Carbohydr. Res.*, 1993, **241**, 55 (*cryst struct, 1-tosyl*)

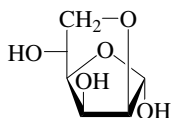
Shalaby, M.A. *et al.*, *Acta Cryst. C*, 1995, **51**, 1921 (*1,4-ditosyl-3,5-di-Ac, cryst struct*)

Cassel, S. *et al.*, *Eur. J. Org. Chem.*, 2001, 875-896 (*synth, pmr, cmr, tetra-Ac*)

Laufersweiler, M.J. *et al.*, *J.O.C.*, 2001, **66**, 6440-6452 (*synth, tetra-Ac, pmr*)

2,6-Anhydromannofuranose

A-671

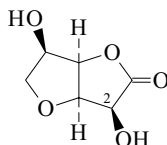

 $C_6H_{10}O_5$ 162.142

α -D-form

Me glycoside: Methyl 2,6-anhydro- α -D-mannofuranoside [80564-40-5]
 $C_7H_{12}O_5$ 176.169
 Cryst. (diisopropyl ether). $[\alpha]_D^{20} +118.8$ (c, 0.9 in MeOH). First known 2,6-anhydrofuranose.

Köhl, P. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 189-200 (*Me gly, synth, cryst struct, bibl*)

3,6-Anhydro-1,4-mannonolactone


 $C_6H_8O_5$ 160.126

β -form

[121351-12-0]
 Cryst. (EtOH/EtOAc). Mp 113°. $[\alpha]_D^{20} +125$ (c, 2.8 in H_2O).

2-Tosyl: 3,6-Anhydro-2-O-tosyl-D-mannono-1,4-lactone [166830-22-4]
 $C_{13}H_{14}O_7S$ 314.315
 Mp 120-121°. $[\alpha]_D^{20} +112.8$ (c, 1.0 in Me_2CO).

Di-Me: 3,6-Anhydro-2,5-di-O-methyl-D-mannono-1,4-lactone

 $C_8H_{12}O_5$ 188.18

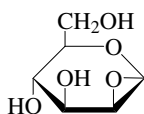
Cryst. (EtOH). Mp 118°. $[\alpha]_D^{20} +219$ (c, 0.85 in H_2O).

Defaye, J. *et al.*, *Carbohydr. Res.*, 1990, **205**, 191 (*synth*)

Frank, H. *et al.*, *Tetrahedron*, 1995, **51**, 5397 (*synth, pmr*)

1,2-Anhydromannose

A-673

 β -D-Pyranose-form
 $C_6H_{10}O_5$ 162.142

β -D-Pyranose-form

3,4,6-Tribenzyl: 1,2-Anhydro-3,4,6-tri-O-benzyl- β -D-mannopyranose

 $C_{27}H_{28}O_5$ 432.515

Cryst. (C_6H_6 /hexane). Mp 89-90°. $[\alpha]_D^{25} +4.5$ (c, 1 in $CHCl_3$).

β -D-Furanose-form

3,6-Dibenzyl, 5-Ac: 5-O-Acetyl-1,2-anhydro-3,6-di-O-benzyl- β -D-mannofuranose

 $C_{22}H_{24}O_6$ 384.428

Syrup. $[\alpha]_D +23.7$ (c, 2.9 in $CHCl_3$).

3-O-Benzyl, 5,6-dibenzoyl: 1,2-Anhydro-5,6-di-O-benzoyl-3-O-benzyl- β -D-mannofuranose

 $C_{27}H_{24}O_7$ 460.482

Syrup. $[\alpha]_D +23.7$ (c, 2.9 in $CHCl_3$).

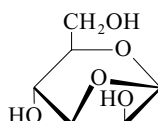
Sondheimer, S.J. *et al.*, *Carbohydr. Res.*, 1979, **74**, 327 (β -D-pyr tribenzyl)

Eby, R. *et al.*, *Carbohydr. Res.*, 1982, **102**, 1 (*pmr*)

Ning, J. *et al.*, *Carbohydr. Res.*, 2001, **330**, 165-175 (β -D-fur derivs)

1,3-Anhydromannose

A-674


 $C_6H_{10}O_5$ 162.142

A-672 β -D-Pyranose-form

2,4,6-Tribenzyl: 1,3-Anhydro-2,4,6-tri-O-benzyl- β -D-mannopyranose

 $C_{27}H_{28}O_5$ 432.515

Syrup. $[\alpha]_D^{23} +53$ (c, 1.8 in $CHCl_3$).

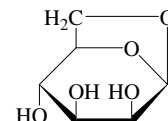
2,4,6-Tris(4-bromobenzyl): [75962-03-7]
 Mp 91-92°. $[\alpha]_D^{25} +31.7$ (c, 1.0 in $CHCl_3$).

Varma, A.J. *et al.*, *J.O.C.*, 1981, **46**, 766 (*synth, pmr, cmr*)

Kong, F. *et al.*, *Carbohydr. Res.*, 1983, **112**, 141 (*synth*)

1,6-Anhydromannose Mannosan

A-675

 β -D-Pyranose-form

β -D-Pyranose-form

Levomannosan

[14168-65-1] Vacuum pyrolysis prod. of Mannose, M-114. Occurs in *Phytelephas macrocarpa*.
 Mp 211°. $[\alpha]_D -128$ (H_2O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,6-anhydro- β -D-mannopyranose

 $C_{12}H_{16}O_8$ 288.254

Mp 90-91° (84-86°). $[\alpha]_D^{22} -119$ (c, 2.0 in $CHCl_3$).

2,3,4-Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl- β -D-mannopyranose

 $C_{27}H_{22}O_8$ 474.466

Prisms (EtOH). Mp 111-112°. $[\alpha]_D^{20} -185.2$ (c, 1.3 in $CHCl_3$).

2-Tosyl: 1,6-Anhydro-2-O-tosyl- β -D-mannopyranose

 $C_{13}H_{16}O_7S$ 316.331

Cryst. (Me_2CO/Et_2O). Mp 146-147°.

$[\alpha]_D^{19} -74$ (c, 0.5 in Me_2CO).

2,3-O-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene- β -D-mannopyranose

 $C_9H_{14}O_5$ 202.207

Cryst. (2-propanol). Mp 161-162°. $[\alpha]_D^{19} -57$ (c, 1.2 in H_2O).

2,3-O-Isopropylidene, 4-Ac: 4-O-Acetyl-1,6-anhydro-2,3-O-isopropylidene- β -D-mannopyranose

 $C_{11}H_{16}O_6$ 244.244

Plates (MeOH). Mp 101-102°. $[\alpha]_D^{20} -72.2$ (c, 1.6 in $CHCl_3$).

2,3-O-Benzylidene: 1,6-Anhydro-2,3-O-benzylidene- β -D-mannopyranose

 $C_{13}H_{14}O_5$ 250.251

Cryst. (EtOAc). Mp 188-189°. $[\alpha]_D -78.8$ (c, 1 in $CHCl_3$).

2,3-O-Benzylidene, 4-Me: 1,6-Anhydro-2,3-O-benzylidene-4-O-methyl- β -D-mannopyranose

 $C_{14}H_{16}O_5$ 264.277

Cryst. (hexane). Mp 92-93°. [α]_D -92 (c, 1 in EtOH).

Tri-Me: 1,6-Anhydro-2,3,4-tri-O-methyl- β -D-mannopyranose
C₉H₁₆O₅ 204.222
Mp 52°. [α]_D -65.5 (H₂O).

2-Allyl: 2-O-Allyl-1,6-anhydro- β -D-mannopyranose
[119005-81-1]
C₉H₁₄O₅ 202.207
Syrup.

2-Benzyl: 1,6-Anhydro-2-O-benzyl- β -D-mannopyranose
[116730-88-2]
C₁₃H₁₆O₅ 252.266
Syrup. [α]_D -60 (c, 0.6 in CHCl₃).

2-Benzyl, 3,4-di-Ac: 3,4-Di-O-acetyl-1,6-anhydro-2-O-benzyl- β -D-mannopyranose
[116730-89-3]
C₁₇H₂₀O₇ 336.341
Syrup. [α]_D -42 (c, 0.8 in CHCl₃).

3-Benzyl: 1,6-Anhydro-3-O-benzyl- β -D-mannopyranose
[116429-52-8]
C₁₃H₁₆O₅ 252.266
Syrup. [α]_D -21 (c, 0.4 in CHCl₃).

3-Benzyl, 2,4-di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-O-benzyl- β -D-mannopyranose
[116730-90-6]
C₁₇H₂₀O₇ 336.341
Syrup. [α]_D -31 (c, 0.4 in CHCl₃).

3,4-Dibenzyl: 1,6-Anhydro-3,4-di-O-benzyl- β -D-mannopyranose
C₂₀H₂₂O₅ 342.391
Cryst. (Et₂O). Mp 54-56°. [α]_D²³ -58.5 (c, 0.8 in CHCl₃).

β -D-Furanose-form [31880-33-8]

Vacuum pyrolysis prod. of Mannose, M-114.
Cryst. (2-propanol). Mp 192-193°. [α]_D 0 (c, 1.0 in H₂O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,6-anhydro- β -D-mannofuranose
C₁₂H₁₆O₈ 288.254
Syrup. [α]_D²⁰ -86.8 (c, 1.0 in CHCl₃).

Tritosyl: 1,6-Anhydro-2,3,5-tri-O-tosyl- β -D-mannofuranose
C₂₇H₂₈O₁₁S₃ 624.71
Needles (EtOH). Mp 112-113°. [α]_D²⁰ -22.5 (c, 1.0 in CHCl₃).

2,3-O-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene- β -D-mannofuranose
C₉H₁₄O₅ 202.207
Cryst. (Et₂O/petrol). Mp 93-94°. [α]_D²⁰ +14.5 (c, 1.0 in CHCl₃).

Knauf, A.E. *et al.*, *J.A.C.S.*, 1941, **63**, 1447 (β -D-pyr, β -D-pyr isopropylidene, β -D-pyr tri-Ac, β -D-pyr tribenzoyl, β -D-pyr isopropylidene Ac)

Aspinall, G.O. *et al.*, *J.C.S.*, 1957, 2271 (β -D-pyr isopropylidene, β -D-pyr tosyl)

Bhattacharjee, S.S. *et al.*, *Can. J. Chem.*, 1969, **47**, 1207 (β -D-pyr benzylidene)

Heyns, K. *et al.*, *Chem. Ber.*, 1971, **104**, 830 (β -D-fur, β -D-fur isopropylidene, β -D-fur tritosyl, β -D-fur tri-Ac, pmr)

Lechat, J. *et al.*, *Acta Cryst. B*, 1972, **28**, 3410 (β -D-fur, *cryst struct*)

Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1976, **29**, 1231 (pmr)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1976, **49**, 27 (*conformn, cmr*)

Furneaux, R.H. *et al.*, *Carbohydr. Res.*, 1979, **74**, 354 (β -D-pyr)

Paulsen, H. *et al.*, *Annalen*, 1983, 1047 (β -D-pyr 3,4-dibenzyl)

Georges, M. *et al.*, *Carbohydr. Res.*, 1984, **127**, 162 (β -D-pyr, β -D-pyr isopropylidene, *synth*)

Köll, P. *et al.*, *Carbohydr. Res.*, 1988, **174**, 9; **179**, 1 (pmr, *cmr*, *cryst struct*, β -D-fur)

Carmen Cruzado, M. *et al.*, *Carbohydr. Res.*, 1988, **175**, 193-199 (β -D-pyr benzyl, β -D-pyr benzyl di-Ac)

Dasgupta, F. *et al.*, *Synthesis*, 1988, 626 (2-allyl, *synth*)

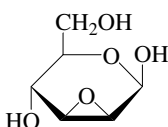
Hori, H. *et al.*, *J.O.C.*, 1989, **54**, 1346 (β -D-pyr 3,4-dibenzyl, *synth*, pmr)

Maluszynska, H. *et al.*, *Carbohydr. Res.*, 1992, **100**, 17 (*cryst struct*)

Manna, S. *et al.*, *Carbohydr. Res.*, 1993, **243**, 11 (*synth*, pmr, β -D-pyr tri-Ac, β -D-pyr 2,3-isopropylidene, β -D-fur 2,3-isopropylidene, β -D-fur tri-Ac)

2,3-Anhydromannose

A-676

 β -D-formC₆H₁₀O₅ 162.142

α -D-Pyranose-form

Me glycoside: Methyl 2,3-anhydro- α -D-mannopyranoside, 8CI

[23262-47-7]

C₇H₁₂O₅ 176.169Mp 82-83°. [α]_D +108 (CHCl₃).

Me glycoside, 4,6-ditosyl: Methyl 2,3-anhydro-4,6-di-O-tosyl- α -D-mannopyranoside

C₂₁H₂₄O₉S₂ 484.547Mp 160-161°. [α]_D +71.5 (CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 2,3-anhydro-4,6-O-benzylidene- α -D-mannopyranoside

[3150-16-1]

C₁₄H₁₆O₅ 264.277Mp 144-146°. [α]_D¹⁵ +107 (c, 1.6 in CHCl₃).

Me glycoside, 4,6-O-ethylidene: Methyl 2,3-anhydro-4,6-O-ethylidene- α -D-mannopyranoside

C₉H₁₄O₅ 202.207Mp 100°. [α]_D +108 (CHCl₃).

Me glycoside, 6-trityl: Methyl 2,3-anhydro-6-O-trityl- α -D-mannopyranoside

[24621-13-4]

C₂₆H₂₆O₅ 418.488Mp 160-161°. [α]_D +15.6 (CHCl₃).

Me glycoside, 6-trityl, 4-Ac: Methyl 4-O-acetyl-2,3-anhydro-6-O-trityl- α -D-mannopyranoside

C₂₈H₂₈O₆ 460.526Mp 140-141°. [α]_D +50.4 (CHCl₃).

Me glycoside, 6-trityl, 4-benzyl: Methyl 2,3-anhydro-4-O-benzyl-6-O-trityl- α -D-mannopyranoside

C₃₃H₃₂O₅ 508.613Cryst. (MeOH). Mp 127°. [α]_D²⁰ +46.9 (c, 0.7 in CHCl₃).

Benzyl glycoside: Benzyl 2,3-anhydro- α -D-mannopyranoside

C₁₃H₁₆O₅ 252.266

Cryst. (Et₂O/petrol). Mp 71-72°. [α]_D +89 (c, 1.0 in EtOH).

Benzyl glycoside, 4,6-O-benzylidene: Benzyl 2,3-anhydro-4,6-O-benzylidene- α -D-mannopyranoside

C₂₀H₂₀O₅ 340.375

Cryst. (EtOH). Mp 128-129° (118°).

[α]_D²⁰ +45.4 (c, 2.0 in CHCl₃). [α]_D²⁰ +97 (c, 1.0 in CHCl₃).

Ph glycoside, 4,6-O-benzylidene: Phenyl 2,3-anhydro-4,6-O-benzylidene- α -D-mannopyranoside, 8CI

[22893-84-1]

C₁₉H₁₈O₅ 326.348Mp 182-184°. [α]_D +200 (CHCl₃).

β -D-Pyranose-form

Cryst. (Me₂CO). Mp 95-96°. [α]_D 0 (c, 1.0 in H₂O).

Me glycoside: Methyl 2,3-anhydro- β -D-mannopyranoside

C₇H₁₂O₅ 176.169[α]_D -40 (EtOAc).

Me glycoside, 4,6-O-benzylidene: See Methyl 4,6-O-benzylidenemannopyranoside, M-169

Me glycoside, 4,6-di-Me: Methyl 2,3-anhydro-4,6-di-O-methyl- β -D-mannopyranoside

C₉H₁₆O₅ 204.222Mp 69°. [α]_D +24 (H₂O). [α]_D +40 (EtOAc).

Benzyl glycoside: Benzyl 2,3-anhydro- β -D-mannopyranoside

C₁₃H₁₆O₅ 252.266Cryst. (Et₂O/petrol). Mp 128-129°. [α]_D -24 (c, 1.0 in EtOH).

Haworth, W.N. *et al.*, *J.C.S.*, 1934, 154 (β -D-Me pyr)

Buchanan, J.G. *et al.*, *J.C.S.*, 1962, 4770 (α -D-Me pyr)

Buchanan, J.G. *et al.*, *J.C.S. (B)*, 1969, 377 (pmr, *conformn*)

Williams, N.R. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1970, **25**, 109 (*Me gly derivs, rev*)

Pilotti, A.-M. *et al.*, *Acta Cryst. B*, 1972, **28**, 2821 (*cryst struct*)

Buchanan, J.G. *et al.*, *J.C.S. Perkin I*, 1974, 388 (β -D-form, β -D-benzyl pyr)

Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1975, **108**, 3397 (α -D-benzyl pyr benzylidene)

Kim, K.S. *et al.*, *Carbohydr. Res.*, 1979, **72**, 25 (*cmr*)

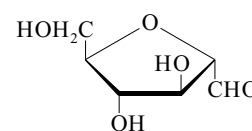
Curthy, V.S. *et al.*, *Synth. Commun.*, 1993, **23**, 285 (α -D-Me pyr benzylidene)

2,5-Anhydromannose, 9CI

A-677

Chitose. Deaminochitosamine

[495-75-0]

C₆H₁₀O₅ 162.142

D-form

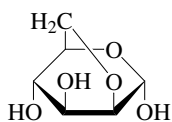
Syrup. [α]_D²⁰ +70.8. Normally obt. as a mixt. with its covalent hydrate, [α]_D +33.

Benzylphenylhydrazone: [α]_D¹⁷ +61.2.

Diphenylhydrazone: Mp 144°. [α]_D²⁰ +30.

Oxime:
 $C_6H_{11}NO_5$ 177.157
 $[\alpha]_D^{25} +9.9$ (c, 1 in MeOH).
 Nagaoka, T. *et al.*, *CA*, 1950, **45**, 9096 (*synth*)
 Inoue, Y. *et al.*, *Nippon Nogei Kagaku Kaishi*,
 1952, **26**, 45; *CA*, **48**, 2002 (*synth*)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1973, **30**, 367
 (*synth*)
 Horton, D. *et al.*, *Methods Carbohydr. Chem.*,
 1976, **7**, 68 (*synth*)
 Claustre, S. *et al.*, *Carbohydr. Res.*, 1999, **315**,
 339-344 (*synth*, *pmr*, *cmr*)

2,6-Anhydromannose A-678



α -D-Pyranose-form

$C_6H_{10}O_5$ 162.142

D-form [17368-19-3]
 Amorph. solid. $[\alpha]_D^{23} -66.6 \rightarrow -53.8$
 (c, 0.5 in H_2O).

Di-Me acetal: 2,6-Anhydro-D-mannose di-
 methylacetal
 [17236-45-2]
 $C_8H_{16}O_6$ 208.211
 Amorph. solid. $[\alpha]_D^{25} -45.3$ (c, 0.5 in
 H_2O).

α -D-Pyranose-form

Me glycoside: Methyl 2,6-anhydro- α -D-
 mannopyranoside
 [76825-31-5]
 $C_7H_{12}O_5$ 176.169
 Cryst. (Et_2O). Mp 77-78°. $[\alpha]_D^{20} +25.8$
 (c, 0.9 in $CHCl_3$).

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-
 acetyl-2,6-anhydro- α -D-mannopyrano-
 side
 [76825-32-6]
 $C_{11}H_{16}O_7$ 260.243
 Cryst. (Et_2O). Mp 90-92°. $[\alpha]_D^{20} -2.7$
 (c, 0.9 in $CDCl_3$).

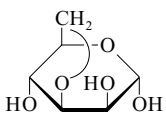
β -D-Pyranose-form

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-
 acetyl-2,6-anhydro- β -D-mannopyrano-
 side
 [71110-14-0]
 $C_{11}H_{16}O_7$ 260.243
 Cryst. (Et_2O /hexane). Mp 80°. $[\alpha]_D^{20} -$
 67.2 (c, 1.7 in $CHCl_3$).

Me glycoside, 4-Me, 3-Ac: Methyl 3-O-
 acetyl-2,6-anhydro-4-O-methyl- β -D-
 mannopyranoside
 [71110-16-2]
 $C_{10}H_{16}O_6$ 232.233
 Cryst. (Et_2O /pentane). Mp 52°. $[\alpha]_D^{20} -$
 87.1 (c, 1.2 in CH_2Cl_2).

Michael, F. *et al.*, *Chem. Ber.*, 1967, **100**, 2401-
 2409 (*D-form*, *D-form di-Me-acetal*)
 Köll, P. *et al.*, *Chem. Ber.*, 1979, **112**, 2305-2313
 (β -D-Me pyr di-Ac)
 Köll, P. *et al.*, *Chem. Ber.*, 1980, **113**, 3919-3926
 (α -D-Me pyr, α -D-Me pyr di-Ac)

3,6-Anhydromannose



α -D-Pyranose-form

$C_6H_{10}O_5$ 162.142

α -D-Pyranose-form

Me glycoside: Methyl 3,6-anhydro- α -D-
 mannopyranoside
 [15814-56-9]
 $C_7H_{12}O_5$ 176.169
 Cryst. (Me_2CO /EtOAc). Mp 131°. $[\alpha]_D^{15} +97$
 (c, 1.4 in H_2O).

β -D-Pyranose-form

Me glycoside: Methyl 3,6-anhydro- β -D-
 mannopyranoside
 [151907-81-2]
 $C_7H_{12}O_5$ 176.169
 Cryst. (EtOAc). Mp 103°. $[\alpha]_D^{18} -96$
 (c, 0.3 in H_2O).

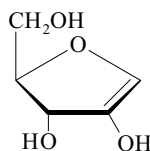
α -D-Furanose-form

Tri-Ac: 1,2,5-Tri-O-acetyl-3,6-anhydro- α -
 D-mannofuranose
 [87596-14-3]
 $C_{12}H_{16}O_8$ 288.254
 Syrup. $[\alpha]_D^{20} +236.2$ (c, 1.6 in $CHCl_3$).
Me glycoside: Methyl 3,6-anhydro- α -D-
 mannofuranoside
 [87638-89-9]
 $C_7H_{12}O_5$ 176.169
 Cryst. (EtOAc). Mp 86°. $[\alpha]_D^{20} +161$
 (c, 2.5 in $CHCl_3$).

β -D-Furanose-form

Tri-Ac: 1,2,5-Tri-O-acetyl-3,6-anhydro- β -
 D-mannofuranoside
 [87596-15-4]
 $C_{12}H_{16}O_8$ 288.254
 Syrup. $[\alpha]_D^{20} +110.3$ (c, 0.9 in $CHCl_3$).
 Foster, A.B. *et al.*, *J.C.S.*, 1954, 3367; 1957,
 2833 (*synth*)
 Köll, P. *et al.*, *Annalen*, 1983, 1310 (*furanose*
derivs, *synth*, *pmr*, *cmr*)
 Kopf, J. *et al.*, *Carbohydr. Res.*, 1984, **135**, 29
 (*cryst struct*, α -D-Me fur, β -D-Me fur)

1,4-Anhydro-erythro-pent-1-enitol



D-form

$C_5H_8O_4$ 132.116

Unisolated enol.

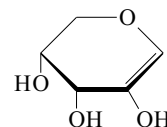
D-form

Tribenzoyl:
 $C_{26}H_{20}O_7$ 444.44
 Cryst. (Et_2O). Mp 124-124.5°. $[\alpha]_D^{27} +14.2$
 (c, 1.5 in $CHCl_3$).
 Prystaš, M. *et al.*, *Coll. Czech. Chem. Comm.*,
 1968, **33**, 210 (*tribenzoyl*)
 Rao, D.R. *et al.*, *Carbohydr. Res.*, 1972, **22**, 345
 (*tribenzoyl*)

A-679

1,5-Anhydro-erythro-pent-1-enitol, 9CI

A-681



$C_5H_8O_4$ 132.116

Unisolated enol.

D-form

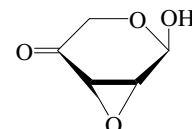
Tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-ben-
 zoyl-D-erythro-pent-1-enitol, 9CI
 [26277-30-5]
 $C_{26}H_{20}O_7$ 444.44
 Cryst. (Et_2O). Mp 124-124.5°. $[\alpha]_D^{27} +14.2$
 (c, 1.5 in $CHCl_3$).

Rao, D.R. *et al.*, *Carbohydr. Res.*, 1972, **22**, 345
 (*synth*)

Hughes, N.A. *et al.*, *Carbohydr. Res.*, 1972, **25**,
 242 (*synth*)

2,3-Anhydro-erythro-pentos-4-ulose A-682

2,3-Anhydro-erythro-pentopyranos-4-ulose



β -D-form

$C_5H_6O_4$ 130.1

β -D-form

Me glycoside: Methyl 2,3-anhydro- β -D-
 erythro-pentopyranosid-4-ulose, 9CI
 [55533-72-7]
 $C_6H_8O_4$ 144.127
 Mp 45-46°. $[\alpha]_D -107.4$ (c, 0.3 in
 MeOH). $[\alpha]_D^{20} -245$ (c, 1.0 in $CHCl_3$).

Benzyl glycoside: Benzyl 2,3-anhydro- β -D-
 erythro-pentopyranosid-4-ulose
 [104292-70-8]
 $C_{12}H_{12}O_4$ 220.224
 Mp 53-55°.

β -L-form

Me glycoside: Methyl 2,3-anhydro- β -L-
 erythro-pentopyranosid-4-ulose
 [56153-79-8]
 $C_6H_8O_4$ 144.127
 Needles by subl. Mp 45-46°. $[\alpha]_D +107.5$
 (c, 0.3 in MeOH).

Benzyl glycoside: Benzyl 2,3-anhydro- β -L-
 erythro-pentopyranosid-4-ulose
 [79974-79-1]
 $C_{12}H_{12}O_4$ 220.224
 Cryst. (hexane/EtOAc). Mp 53.5-55.5°.
 $[\alpha]_D^{23} +160$ (c, 1.0 in $CDCl_3$).

Paulsen, H. *et al.*, *Tet. Lett.*, 1974, 4377
 (β -D-Me pyr)

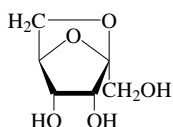
Cooper, D.J. *et al.*, *J.C.S. Perkin I*, 1975, 785
 (β -L-Me pyr)

Sundin, A. *et al.*, *J.O.C.*, 1986, **51**, 3927
 (β -D-benzyl pyr, β -L-benzyl pyr)

Cossy, J. *et al.*, *Carbohydr. Res.*, 1994, **259**, 141
 (β -D-Me pyr, β -L-Me pyr)

2,6-Anhydrosucrose

A-683

 β -D-Furanose-form $C_6H_{10}O_5$ 162.142 **β -D-Furanose-form**

1-Trityl, 3,4-isopropylidene: 2,6-Anhydro-3,4-O-isopropylidene-1-O-trityl- β -D-psicofuranose
[77852-63-2]

 $C_{28}H_{28}O_5$ 444.526Cryst. (Et₂O/hexane). Mp 108-110°.[α]_D²⁰ -98.6 (c, 0.55 in CHCl₃).

1-Trityl, 3,4-O-benzylidene: 2,6-Anhydro-3,4-O-benzylidene-1-O-trityl- β -D-psicofuranose
[77852-73-4]

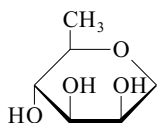
 $C_{32}H_{28}O_5$ 492.57Cryst. Mp 140-143°. [α]_D²⁰ -47.7 (c, 0.4 in CHCl₃).

Heyns, K. et al., *Chem. Ber.*, 1981, **114**, 891-908
(benzylidene trityl, isopropylidene trityl)

1,5-Anhydrorhamnitrol

A-684

1,5-Anhydro-6-deoxymannitol. 2,6-Anhydro-1-deoxymannitol



D-form

 $C_6H_{12}O_4$ 148.158**D-form**

Tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-benzoyl-D-rhamnitrol
[14218-07-6]

 $C_{27}H_{24}O_7$ 460.482Needles (diisopropyl ether). Mp 142-143°. [α]_D²⁰ -280.6 (c, 1.1 in CHCl₃).

L-form 2,6-Anhydro-1-deoxy-L-mannitol, 9CI
[117604-78-1]

Large prisms (MeOH). Mp 123-124°. [α]_D +83.8 (c, 0.97 in CHCl₃).

Tri-Ac: 2,3,4-Tri-O-acetyl-1,5-anhydro-L-rhamnitrol
[190316-99-5]

 $C_{12}H_{18}O_7$ 274.27Cryst. (EtOH/pentane). Mp 61-62°. [α]_D +48.1 (c, 1.26 in CHCl₃).

Tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-benzoyl-L-rhamnitrol
[190316-32-6]

Prisms (MeOH). Mp 169-170°. [α]_D +279 (c, 0.98 in CHCl₃).

Ness, R.K. et al., *J.A.C.S.*, 1950, **72**, 4547-4549
(L-form, synth)

Lichtenthaler, F.W. et al., *Annalen*, 1995, 2081-2088 (D-tribenzoyl, synth, pmr, cmr)

Elvebak, L.E. et al., *Carbohydr. Res.*, 1997, **299**, 151-158 (derivs)

1,2-Anhydrorhamnose

1,2-Anhydro-6-deoxymannose

A-685

 α -D-form

Me glycoside: Methyl 2,3-anhydro- α -D-rhamnopyranoside. Methyl 2,3-anhydro-6-deoxy- α -D-mannopyranoside
 $C_7H_{12}O_4$ 160.169

Hygroscopic liq. Bp_{0.5} 100° (bath). [α]_D +102.7 (c, 2.2 in D₂O).

Me glycoside, Ac: Methyl 4-O-acetyl-2,3-anhydro- α -D-rhamnopyranoside. Methyl 4-O-acetyl-2,3-anhydro-6-deoxy- α -D-mannopyranoside
 $C_9H_{14}O_5$ 202.207

Cryst. (petrol). Mp 63.5-65.5°. [α]_D +128.5 (CHCl₃).

Jarý, J. et al., *Coll. Czech. Chem. Comm.*, 1964, **29**, 930 (Me gly Ac)

Buchanan, J.G. et al., *J.C.S. (B)*, 1969, 377 (Me gly, synth, pmr)

 $C_6H_{10}O_4$ 146.143 **β -D-Pyranose-form**

Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl- β -D-rhamnopyranoside
[148431-62-3]

 $C_{20}H_{22}O_4$ 326.391

Cryst. Mp 101°. [α]_D²³ -5.6 (c, 0.72 in CHCl₃).

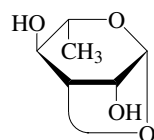
Wang, X. et al., *Carbohydr. Res.*, 1991, **218**, 15 (ms)

Chen, Q. et al., *Carbohydr. Res.*, 1993, **240**, 107 (synth)

1,3-Anhydrorhamnose

1,3-Anhydro-6-deoxymannose

A-686

 β -L-Pyranose-form $C_6H_{10}O_4$ 146.143 **β -D-Pyranose-form**

Dibenzyl: 1,3-Anhydro-2,4-di-O-benzyl- β -D-rhamnopyranose. 1,3-Anhydro-2,4-di-O-benzyl-6-deoxy- β -D-mannopyranose
[112612-49-4]

 $C_{20}H_{22}O_4$ 326.391

Syrup. [α]_D¹⁶ +64.3 (c, 0.7 in CHCl₃).

 β -L-Pyranose-form

Dibenzyl: 1,3-Anhydro-2,4-di-O-benzyl- β -L-rhamnopyranose. 1,3-Anhydro-2,4-di-O-benzyl-6-deoxy- β -L-mannopyranose
[111373-98-9]

 $C_{20}H_{22}O_4$ 326.391[α]_D²⁰ -62.7 (c, 0.44 in CHCl₃).

Wu, E. et al., *Carbohydr. Res.*, 1987, **161**, 235 (synth, pmr, cmr, dibenzyl)

Fang, Y. et al., *J. Carbohydr. Chem.*, 1987, **6**, 169-179 (β -D-pyr dibenzyl)

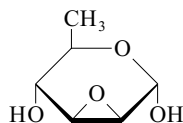
Wang, X. et al., *Carbohydr. Res.*, 1991, **218**, 15 (ms)

Xiong, S.Q. et al., *Youji Huaxue*, 1994, **14**, 280; *CA*, **121**, 205804d (synth)

2,3-Anhydrorhamnose

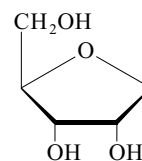
2,3-Anhydro-6-deoxymannose

A-687

 $C_6H_{10}O_4$ 146.143**1,4-Anhydroribitol**

2,5-Anhydroribitol

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D-form

 $C_5H_{10}O_4$ 134.132**D-form**

1,4-Anhydro-D-ribitol. 2,5-Anhydro-L-ribitol
[51607-76-2]

Mp 102-103° (98-99°). [α]_D +66.5 (c, 0.1 in H₂O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,4-anhydro-D-ribitol
[106707-71-5]

 $C_{11}H_{16}O_7$ 260.243

[α]_D +69 (c, 1 in CHCl₃).

5-Trityl: 1,4-Anhydro-5-O-trityl-D-ribitol
[140694-90-2]

 $C_{24}H_{24}O_4$ 376.451Mp 139°. [α]_D +21.8 (c, 1 in CHCl₃).

5-Trityl, di-Ac: 2,3-Di-O-acetyl-1,4-anhydro-5-O-trityl-D-ribitol
[162808-73-3]

 $C_{28}H_{28}O_6$ 460.526

Mp 149-150°. [α]_D +40.2 (c, 1 in CHCl₃).

2,3-Isopropylidene, 5-trityl: 1,4-Anhydro-2,3-O-isopropylidene-5-O-trityl-D-ribitol
[162635-55-4]

 $C_{27}H_{28}O_4$ 416.516

Cryst. (EtOAc). Mp 131-133°. [α]_D +28 (c, 1 in CHCl₃).

L-form

2,5-Anhydro-D-ribitol, 9CI. 1,4-Anhydro-L-ribitol
Cryst. Mp 98-99°. [α]_D²¹ -67.

Kuhn, R. et al., *Chem. Ber.*, 1948, **81**, 553 (synth)

Barker, R. et al., *J.O.C.*, 1961, **26**, 4605 (synth)

Defaye, J. et al., *Bull. Soc. Chim. Fr.*, 1964, 2686 (synth, D-form)

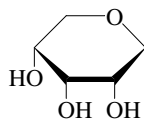
Bennek, J.A. et al., *J.O.C.*, 1987, **52**, 892 (synth, cmr)

Bennis, K. et al., *Carbohydr. Res.*, 1994, **264**, 33 (synth, pmr, cmr, tri-Ac, 5-trityl derivs)

Duclos, A. *et al.*, *Synthesis*, 1994, 1087 (*synth, cmr*)
 Rozanas, C.R. *et al.*, *Carbohydr. Res.*, 1995, **274**, 99-110 (*tri-Ac*)

1,5-Anhydroribitol**A-689**

[41028-66-4]

C₅H₁₀O₄ 134.132

meso-compd. Isol. from *Artemisia selen-gensis*. Cryst. (Et₂O).
 Mp 128-129°.

Tri-Ac: 2,3,4-Tri-O-acetyl-1,5-anhydrobi-tol
 [14227-82-8]
 C₁₁H₁₆O₇ 260.243
 Cryst. (EtOH). Mp 133°.

Tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-ben-zoylribitol
 [14218-06-5]
 C₂₆H₂₂O₇ 446.456
 Cryst. (Et₂O). Mp 156-157°.

Jenloz, R. *et al.*, *J.A.C.S.*, 1948, **70**, 4052-4054 (*synth*)

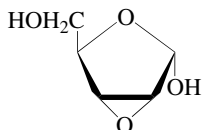
Tejima, S. *et al.*, *Chem. Pharm. Bull.*, 1964, **12**, 528-532 (*tri-Ac, synth*)

Dokurno, P. *et al.*, *Z. Kristallogr.*, 1995, 676-683 (*cryst struct*)

Cavallaro, C.L. *et al.*, *J.O.C.*, 1996, **61**, 3863-3864 (*tri-Ac, synth, pmr*)

Hu, J.-F. *et al.*, *J. Asian Nat. Prod. Res.*, 1999, **1**, 169-176 (*isol*)

El Hilali, C.M. *et al.*, *Carbohydr. Res.*, 2000, **329**, 189-194 (*many derivs*)

2,3-Anhydroribofuranose**A-690** α -D-formC₅H₈O₄ 132.116 **α -D-form**

Me glycoside: Methyl 2,3-anhydro- α -D-ribofuranoside, 9CI
 [4860-82-6]
 C₆H₁₀O₄ 146.143
 [α]_D +13 (H₂O). [α]_D²⁰ +21.6 (c, 2.3 in H₂O).

Me glycoside, 5-Ac: Methyl 5-O-acetyl-2,3-anhydro- α -D-ribofuranoside
 [23259-87-2]
 C₈H₁₂O₅ 188.18
 [α]_D -2.1 (CHCl₃).

Me glycoside, 5-p-nitrobenzoyl: [64623-08-1]
 Mp 134-136°. [α]_D -26 (CHCl₃).

Me glycoside, 5-tosyl: Methyl 2,3-anhydro-5-O-tosyl- α -D-ribofuranoside
 [66108-06-3]
 C₁₃H₁₆O₆S 300.332
 Mp 93-95°. [α]_D +7 (CHCl₃).

Me glycoside, 5-benzyl: Methyl 2,3-anhydro-5-O-benzyl- α -D-ribofuranoside, 8CI
 [20187-72-8]
 C₁₃H₁₆O₄ 236.267
 [α]_D -18.1 (EtOH).

Me glycoside, 5-trityl: Methyl 2,3-anhydro-5-O-trityl- α -D-ribofuranoside
 [40147-69-1]
 C₂₅H₂₄O₄ 388.462
 Mp 131-131.5°. [α]_D +11 (c, 1.0 in CHCl₃).

Et glycoside: Ethyl 2,3-anhydro- α -D-ribofuranoside
 C₇H₁₂O₄ 160.169
 Syrup. Bp_{0.0005} 100-105° (bath). [α]_D³⁰ +13.1 (CHCl₃).

Et glycoside, 5-Ac: Ethyl 5-O-acetyl-2,3-anhydro- α -D-ribofuranoside
 C₉H₁₄O₅ 202.207
 Bp_{0.0001} 85-90° (bath). [α]_D²⁷ -18.4 (CHCl₃).

5-Deoxy, *Me glycoside*: Methyl 2,3-anhydro-5-deoxy- α -D-ribofuranoside, 9CI
 [52630-69-0]
 C₆H₁₀O₃ 130.143
 Mp 21-23°. [α]_D +26 (MeOH).

 β -D-form

Me glycoside: Methyl 2,3-anhydro- β -D-ribofuranoside, 9CI
 [4891-18-3]
 C₆H₁₀O₄ 146.143
 [α]_D -109 (H₂O).

Me glycoside, 5-Ac: Methyl 5-O-acetyl-2,3-anhydro- β -D-ribofuranoside
 [15354-74-2]
 C₈H₁₂O₅ 188.18
 [α]_D -112 (CHCl₃).

Me glycoside, 5-benzoyl: Methyl 2,3-anhydro-5-O-benzoyl- β -D-ribofuranoside
 [56570-78-6]
 C₁₃H₁₄O₅ 250.251
 Cryst. (petrol). Mp 58°. [α]_D²⁷ -112 (c, 1.1 in CHCl₃).

Me glycoside, 5-p-nitrobenzoyl: [64623-01-4]
 Mp 98-99°. [α]_D -95 (CHCl₃).

Me glycoside, 5-tosyl: Methyl 2,3-anhydro-5-O-tosyl- β -D-ribofuranoside
 [74128-49-7]
 C₁₃H₁₆O₆S 300.332
 Cryst. (heptane). Mp 66.5-67°. [α]_D -80 (CHCl₃).

Me glycoside, 5-benzyl: Methyl 2,3-anhydro-5-O-benzyl- β -D-ribofuranoside, 8CI
 [20535-09-5]
 C₁₃H₁₆O₄ 236.267
 [α]_D -90.8 (CHCl₃).

Me glycoside, 5-trityl: Methyl 2,3-anhydro-5-O-trityl- β -D-ribofuranoside
 [37713-11-4]
 C₂₅H₂₄O₄ 388.462
 Mp 131-133° (127°). [α]_D -62.2 (c, 1.0 in CHCl₃).

Et glycoside: Ethyl 2,3-anhydro- β -D-ribofuranoside
 C₇H₁₂O₄ 160.169
 Bp_{0.0005} 73-80° (bath). [α]_D^{29.5} -89.5 (c, 3 in H₂O).

Et glycoside, 5-Ac: Ethyl 5-O-acetyl-2,3-anhydro- β -D-ribofuranoside
 C₉H₁₄O₅ 202.207
 Bp_{0.0001} 45-55° (bath). [α]_D²⁷ -108 (c, 3.0 in CHCl₃).

5-Deoxy, *Me glycoside*: Methyl 2,3-anhydro-5-deoxy- β -D-ribofuranoside, 9CI
 [55073-68-2]
 C₆H₁₀O₃ 130.143
 Mp 2-3°. [α]_D -153 (MeOH).

Anderson, C.D. *et al.*, *J.A.C.S.*, 1958, **80**, 5247 (*synth, glycosides*)

Kuzuhara, H. *et al.*, *Agric. Biol. Chem.*, 1963, **27**, 689; 1964, **28**, 184

Iwashige, T. *et al.*, *Chem. Pharm. Bull.*, 1963, **11**, 1569 (α -D-Et fur, β -D-Et fur)

Goodman, L. *et al.*, *J.A.C.S.*, 1964, **86**, 4167 (β -D-Me fur tosyl)

Williams, N.R. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1970, **25**, 109 (*rev. glycoside derivs*)

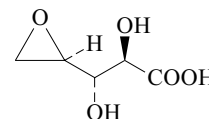
Jenkins, S.R. *et al.*, *Carbohydr. Res.*, 1973, **26**, 71 (α -D-Me fur trityl, β -D-Me fur trityl)

Hollenberg, D.H. *et al.*, *Carbohydr. Res.*, 1975, **42**, 241 (β -D-Me fur benzoyl)

Unger, F.M. *et al.*, *Carbohydr. Res.*, 1978, **67**, 257 (α -D-Me fur)

Kim, K.S. *et al.*, *Carbohydr. Res.*, 1979, **72**, 25 (*cmr, glycosides*)

Anderson, C.D. *et al.*, *Carbohydr. Res.*, 1994, **251**, 243 (α -Me gly)

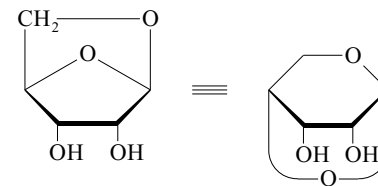
4,5-Anhydroribonic acid**A-691**C₅H₈O₅ 148.115**D-form**

2,3-Isopropylidene, *Me ester*: Methyl 4,5-anhydro-2,3-O-isopropylidene-D-ribonate
 [85994-62-3]
 C₉H₁₄O₅ 202.207
 Oil. Bp₁₂ 120-124°. [α]_D²³ -11.7 (c, 5.8 in CDCl₃).

Hoffmann, R.W. *et al.*, *Chem. Ber.*, 1983, **116**, 1631 (*synth, pmr, cmr*)

1,4-Anhydroribopyranose**A-692**

1,5-Anhydroribofuranose

C₅H₈O₄ 132.116 **β -D-form**

1,5-Anhydro- β -D-ribofuranose. 1,4-Anhydro- α -D-ribofuranose
 [51246-92-5]

Cryst. (dioxan/diisopropyl ether). Mp 109-110°. [α]_D²⁰ -78.8 (c, 0.83 in H₂O).

Di-Ac: 2,3-Di-O-acetyl-1,5-anhydro- β -D-ribofuranose. 2,3-Di-O-acetyl-1,4-anhydro- α -D-ribofuranose
 [51246-96-9]
 C₉H₁₂O₆ 216.19

Cryst. (EtOH). Mp 71-72.5°. $[\alpha]_D^{20}$ -107.2 (c, 1 in CHCl₃).

Dibenzoyl: 1,5-Anhydro-2,3-di-O-benzoyl-β-D-ribofuranose. 1,4-Anhydro-2,3-di-O-benzoyl-α-D-ribofuranose
[111269-83-1]
C₁₉H₁₆O₆ 340.332
Cryst. (EtOH). Mp 204-205°. $[\alpha]_D^{25}$ +110 (c, 1 in CHCl₃).

Isopropylidene: 1,5-Anhydro-2,3-O-isopropylidene-β-D-ribofuranose. 1,4-Anhydro-2,3-O-isopropylidene-α-D-ribofuranose
[51246-99-2]
C₈H₁₂O₄ 172.18
Cryst. Mp 64-66°. $[\alpha]_D^{20}$ -72.1 (c, 1.1 in CHCl₃).

Benzylidene (R-): 1,5-Anhydro-2,3-O-R-benzylidene-β-D-ribofuranose. 1,4-Anhydro-2,3-O-R-benzylidene-α-D-ribofuranose
[39809-40-0]
C₁₂H₁₂O₄ 220.224
Mp 106-107°. $[\alpha]_D^{23}$ -55.7 (c, 0.7 in CHCl₃). $[\alpha]_D^{20}$ -45.4 (c, 0.71 in CHCl₃).

Benzylidene (S-): 1,5-Anhydro-2,3-O-S-benzylidene-β-D-ribofuranose. 1,4-Anhydro-2,3-O-S-benzylidene-α-D-ribofuranose
[39809-41-1]
C₁₂H₁₂O₄ 220.224
Mp 150-158°. $[\alpha]_D^{20}$ -54.9 (c, 0.47 in CHCl₃).

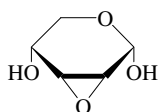
Dibenzyl: 1,5-Anhydro-2,3-di-O-benzyl-β-D-ribofuranose. 1,4-Anhydro-2,3-di-O-benzyl-α-D-ribofuranose
[87411-97-0]
C₁₉H₂₀O₄ 312.365
Cryst. (EtOH). Mp 65-66.5°. $[\alpha]_D^{25}$ -35.9 (c, 1 in CHCl₃).

Di-Me: 1,5-Anhydro-2,3-di-O-methyl-β-D-ribofuranose. 1,4-Anhydro-2,3-di-O-methyl-α-D-ribofuranose
[87582-97-6]
C₇H₁₂O₄ 160.169
Syrup. $[\alpha]_D^{25}$ -76 (c, 1 in CHCl₃).

Vis. E. et al., *J.A.C.S.*, 1957, **79**, 1182 (*synth, benzylidene, isopropylidene, dibenzoyl*)
Grindley, T.B. et al., *Carbohydr. Res.*, 1972, **25**, 187-195 (*benzylidene, struct*)
Köll, P. et al., *Chem. Ber.*, 1973, **106**, 3565 (*synth*)
Heyns, K. et al., *Chem. Ber.*, 1981, **114**, 891 (*synth, pmr, cmr*)
Uryu, T. et al., *J.A.C.S.*, 1983, **105**, 6865-6871 (*synth, di-Me ether, dibenzyl, pmr, cmr*)
Beigelman, L.N. et al., *Carbohydr. Res.*, 1990, **203**, 324 (*dibenzoyl*)
Fleetwood, A. et al., *Carbohydr. Res.*, 1999, **317**, 204-209 (*isopropylidene*)

2,3-Anhydroribopyranose

A-693



α-D-Pyranose-form

C₅H₈O₄ 132.116

D-Pyranose-form

[61176-66-7]

Syrup. $[\alpha]_D$ -5 (c, 1.18 in H₂O).

α-D-Pyranose-form

Me glycoside: Methyl 2,3-anhydro-α-D-ribofuranoside, 9CI
[3945-21-9]
C₆H₁₀O₄ 146.143
Mp 83°. $[\alpha]_D^{20}$ +143 (c, 2.0 in MeOH).

Me glycoside, 4-tosyl: Methyl 2,3-anhydro-4-O-tosyl-α-D-ribofuranoside
[58394-21-1]
C₁₃H₁₆O₆S 300.332
Cryst. (CHCl₃/petrol). Mp 84.5-86°. $[\alpha]_D^{20}$ +148 (c, 2.0 in CHCl₃).

Me glycoside, 4-Me: Methyl 2,3-anhydro-4-O-methyl-α-D-ribofuranoside
[50447-02-4]
C₇H₁₂O₄ 160.169
Cryst. (diisopropyl ether). Mp 37-38°. $[\alpha]_D^{25}$ +128 (c, 2.5 in CHCl₃).

Benzyl glycoside: Benzyl 2,3-anhydro-α-D-ribofuranoside
[61134-24-5]
C₁₂H₁₄O₄ 222.24
Cryst. (petrol). Mp 94-96°. $[\alpha]_D$ +202 (c, 1.0 in EtOAc).

Benzyl glycoside, 4-triflyl: Benzyl 2,3-anhydro-4-O-triflyl-α-D-ribofuranoside
[71204-44-9]
C₁₃H₁₃F₃O₆S 354.303
Cryst. (EtOH). Mp 66°. $[\alpha]_D^{20}$ +133 (c, 1.0 in CHCl₃).

Allyl glycoside: Allyl 2,3-anhydro-β-D-ribofuranoside
C₈H₁₂O₄ 172.18
Cryst. (CH₂Cl₂/Et₂O). Mp 59-61°. $[\alpha]_D^{25}$ -51 (c, 1.2 in CHCl₃).

β-D-Pyranose-form

Me glycoside: Methyl 2,3-anhydro-β-D-ribofuranoside, 9CI, 8CI
[3150-13-8]
C₆H₁₀O₄ 146.143
Cryst. (Et₂O/petrol). Mp 46°. $[\alpha]_D^{22}$ -35.8 (c, 0.6 in CHCl₃).

Me glycoside, 4-Ac: Methyl 4-O-acetyl-2,3-anhydro-β-D-ribofuranoside
[63847-12-1]
C₈H₁₂O₅ 188.18
Mp 73°. $[\alpha]_D$ +22.4 (CHCl₃).

Me glycoside, 4-benzoyl: Methyl 2,3-anhydro-4-O-benzoyl-β-D-ribofuranoside
[40147-22-6]
C₁₃H₁₄O₅ 250.251
Mp 106°. $[\alpha]_D$ +25.4 (CHCl₃).

Me glycoside, 4-tosyl: Methyl 2,3-anhydro-4-O-tosyl-β-D-ribofuranoside
[74128-58-8]
C₁₃H₁₆O₆S 300.332
Mp 89°. $[\alpha]_D$ -25.5 (CHCl₃).

Me glycoside, 4-Me: Methyl 2,3-anhydro-4-O-methyl-β-D-ribofuranoside, 9CI
[5985-63-7]
C₇H₁₂O₄ 160.169
Mp 75-77°. $[\alpha]_D$ -7 (H₂O).

Me glycoside, 4-benzyl: Methyl 2,3-anhydro-4-O-benzyl-β-D-ribofuranoside, 8CI
[5985-62-6]
C₁₃H₁₆O₄ 236.267
Mp 42-43°. $[\alpha]_D$ +9.1 (EtOH).

Benzyl glycoside: Benzyl 2,3-anhydro-β-D-ribofuranoside
C₁₂H₁₄O₄ 222.24
Cryst. (diisopropyl ether). Mp 76-77°.

$[\alpha]_D^{20}$ -67 (c, 0.8 in CHCl₃).

Benzyl glycoside, 4-Me: Benzyl 2,3-anhydro-4-O-methyl-β-D-ribofuranoside
C₁₃H₁₆O₄ 236.267
Cryst. (petrol). Mp 98-100°. $[\alpha]_D^{20}$ -19 (c, 1.0 in CHCl₃).

α-D-Furanose-form

Me glycoside: Methyl 2,3-anhydro-α-D-ribofuranoside
C₆H₁₀O₄ 146.143
Oil. $[\alpha]_D^{23}$ +21.6 (c, 2.3 in H₂O) (+13.1).

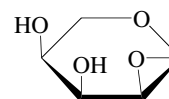
β-L-Pyranose-form

Benzyl glycoside: Benzyl 2,3-anhydro-β-L-ribofuranoside
C₁₂H₁₄O₄ 222.24
Cryst. (diisopropyl ether). Mp 73-74°. $[\alpha]_D$ +148 (c, 0.2 in CH₂Cl₂).

Kent, P.W. et al., *J.C.S.*, 1949, 1232 (*β-D-Me pyr*)
Allerton, R. et al., *J.C.S.*, 1951, 1480 (*β-D-Me pyr, β-D-Me pyr derivs*)
Garegg, P.J. et al., *Acta Chem. Scand.*, 1960, **14**, 957 (*β-D-benzyl pyr, β-D-benzyl pyr Me*)
Williams, N.R. et al., *Adv. Carbohydr. Chem. Biochem.*, 1970, **25**, 109
Chalk, R.C. et al., *Carbohydr. Res.*, 1973, **28**, 313 (*Me α-D-pyr 4-Me*)
Paulsen, H. et al., *Chem. Ber.*, 1976, **109**, 90 (*α-D-Me pyr, α-D-Me pyr tosyl*)
Buchanan, J.G. et al., *J.C.S. Perkin 1*, 1976, 1449 (*D-form, α-D-benzyl pyr*)
Kimmich, R. et al., *Annalen*, 1981, 1100 (*α-D-benzyl pyr triflyl*)
Takeo, K. et al., *Carbohydr. Res.*, 1990, **201**, 261 (*α-D-allyl pyr*)
Lugemura, F.N. et al., *J. Carbohydr. Chem.*, 1997, **16**, 1433-1443 (*β-L-pyr benzyl gly*)
Callam, C.S. et al., *Carbohydr. Res.*, 2001, **330**, 267-270 (*Me α-D-fur*)

1,2-Anhydroribose

A-694

C₅H₈O₄ 132.116

α-L-Pyranose-form

3,4-Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl-α-L-ribofuranose
[178681-42-0]
C₁₉H₂₀O₄ 312.365
No phys. props. reported.

α-D-Furanose-form

3-Benzyl, 5-Ac: 5-O-Acetyl-1,2-anhydro-3-O-benzyl-α-D-ribofuranose
C₁₄H₁₆O₅ 264.277
 $[\alpha]_D$ +36.1 (c, 1.1 in CHCl₃).

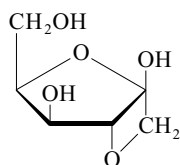
3,5-Dibenzyl: 1,2-Anhydro-3,5-di-O-benzyl-α-D-ribofuranose
[191543-69-8]
C₁₉H₂₀O₄ 312.365
Syrup. $[\alpha]_D$ +58 (c, 0.25 in CHCl₃).

Yang, G. et al., *Carbohydr. Lett.*, 1994, **1**, 137-141 (*α-D-pyr deriv*)

Ning, J. et al., *Carbohydr. Res.*, 1997, **300**, 355-360; 2001, **330**, 165-175 (*α-D-fur derivs*)

1,3-Anhydrosorbose

A-695

C₆H₁₀O₅ 162.142**β-D-Furanose-form**

Me glycoside: Methyl 1,3-anhydro-β-D-sorbofuranoside

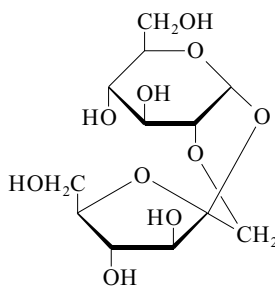
[121686-29-1]

C₇H₁₂O₅ 176.169Syrup. [α]_D²⁶ -33 (c, 1.03 in MeOH).

Martin, O.R. *et al.*, *Carbohydr. Res.*, 1989, **185**, 77 (synth, pmr, cmr)

1',2'-Anhydrosucrose

A-696

C₁₂H₂₀O₁₀ 324.284**Hexa-Ac:**C₂₄H₃₂O₁₆ 576.507

Cryst. (Et₂O). Mp 141°. [α]_D +79 (CHCl₃).

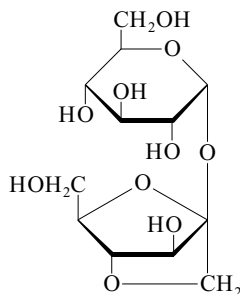
3,6-Anhydro: 1',2:3,6-DianhydrosucroseC₁₂H₁₈O₉ 306.269Syrup. [α]_D +16 (c, 1 in MeOH).

Chiu, A.K.B. *et al.*, *Carbohydr. Res.*, 1982, **100**, 247

1',4'-Anhydrosucrose

A-697

1,4-Anhydro-β-D-fructofuranosyl α-D-glucopyranoside
[88238-30-6]

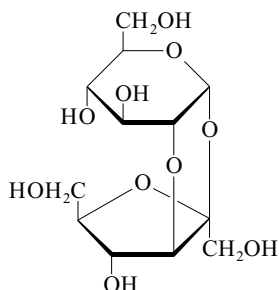
C₁₂H₂₀O₁₀ 324.284

Cryst. + 1H₂O (2-propanol aq.). Mp 168°. [α]_D +123 (c, 1.2 in MeOH).

Guthrie, R.D. *et al.*, *Carbohydr. Res.*, 1983, **121**, 109 (synth, pmr, cmr)

2,3'-Anhydrosucrose

[131158-06-0]

C₁₂H₂₀O₁₀ 324.284Mp 201-203°. [α]_D +72 (H₂O).**Hexa-Ac: [131158-07-1]**C₂₄H₃₂O₁₆ 576.507Syrup. [α]_D +43 (CHCl₃).

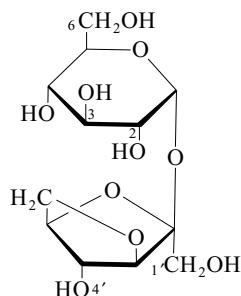
Čapek, K. *et al.*, *Carbohydr. Res.*, 1990, **205**, 161 (synth, pmr, cmr, derivs)

Novotny, J. *et al.*, *Z. Kristallogr.*, 1991, **197**, 189 (cryst struct)

3',6'-Anhydrosucrose

A-699

3,6-Anhydro-β-D-fructofuranosyl α-D-glucopyranoside, 8CI
[35997-21-8]

C₁₂H₂₀O₁₀ 324.284

Cryst. (MeOH). Mp 146°. [α]_D²⁰ +104 (c, 1.2 in MeOH).

1',4'-Anhydro: 1',4':3',6'-DianhydrosucroseC₁₂H₁₈O₉ 306.269

Cryst. (EtOH). Mp 184-185°.

3,6-Anhydro, tetra-Ac: 1',2,4,4'-Tetra-O-acetyl-3,6:3',6'-dianhydrosucrose

[35903-06-1]

C₂₀H₂₆O₁₃ 474.418Cryst. (Et₂O/petrol). Mp 69-72°. [α]_D +32.5 (CHCl₃).**1',4':3,6-Dianhydro: 1',4':3,6:3',6'-Trianhydrosucrose**

[28171-51-9]

C₁₂H₁₆O₈ 288.254Mp 163-164.5°. [α]_D +117 (CHCl₃).Probable struct. (see Chiu *et al.*)**1',4':3,6-Dianhydro, di-Ac:**C₁₆H₂₀O₁₀ 372.328

Cryst. (EtOH). Mp 181.5-182.5°. [α]_D +128.6 (c, 1 in CHCl₃). Revised physical constants (Chiu *et al.*)

2,1':3,6-Dianhydro: 2,1':3,6:3',6'-TrianhydrosucroseC₁₂H₁₆O₈ 288.254Cryst. (EtOH). Mp 189°. [α]_D +54

(MeOH). Probable struct. Revised constants: a compd. formerly assigned this struct. was probably the 1',4':3,6:3',6'-anhydride (see Chiu *et al.*)

2,1':3,6-Dianhydro, di-Ac:C₁₆H₂₀O₁₀ 372.328

Cryst. (EtOH). Mp 297-299° dec. [α]_D +68 (CHCl₃). Revised physical constants.

2,1':3,6-Dianhydro, ditosyl:C₂₆H₂₈O₁₂S₂ 596.632

Mp 164.5-166°.

2,1':3,6-Dianhydro, di-Me:C₁₄H₂₀O₈ 316.307

Mp 179-181°. [α]_D +140 (c, 1.9 in CHCl₃).

Issacs, N.W. *et al.*, *Chem. Comm.*, 1970, 360

(1,4':3,6-dianhydro, cryst struct)

Bolton, C.H. *et al.*, *Carbohydr. Res.*, 1972, **21**, 133 (3,6-anhydro tetra-Ac, pmr)

Buchanan, J.G. *et al.*, *Carbohydr. Res.*, 1972, **21**, 283; 293 (synth)

Khan, R. *et al.*, *Carbohydr. Res.*, 1972, **22**, 441

(1',4':3,6-dianhydro di-Ac)

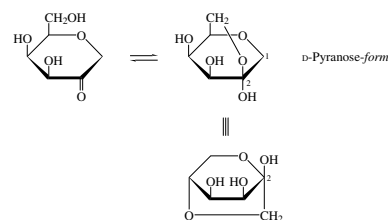
Khan, R. *et al.*, *Adv. Carbohydr. Chem.*, 1976, **33**, 235 (rev, derivs)

Chiu, A.K.B. *et al.*, *Carbohydr. Res.*, 1982, **100**, 247 (synth, struct, bibl, dianhydrides, trianhydrides)

Guthrie, R.D. *et al.*, *Carbohydr. Res.*, 1988, **176**, 306 (synth)

1,5-Anhydrotagatose, 9CI

A-700

C₆H₁₀O₅ 162.142

Complex tautomerism, pmr could not be interpreted. It showed no carbonyl absorption.

D-form [172342-19-7]

V. hygroscopic semisolid. [α]_D -6.8 (c, 1.1 in MeOH).

Oxime (Z-?) [172342-18-6]C₆H₁₁NO₅ 177.157

Mp 176-179°. [α]_D -9.2 (c, 0.5 in MeOH).

3,4-Isopropylidene: 1,5-Anhydro-3,4-O-isopropylidene-D-tagatose, 9CI

[172291-66-6]

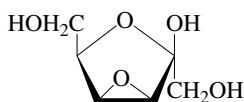
C₉H₁₄O₅ 202.207

Mp 119-122°. [α]_D +17.4 (c, 0.9 in CHCl₃). Crystallises as the bicyclic tautomer; obt. as a mixt. of monocyclic and bicyclic tautomers as first prep.

Barili, P.L. *et al.*, *Carbohydr. Res.*, 1995, **274**, 197-208

3,4-Anhydrotagatose

A-701

 β -D-form $C_6H_{10}O_5$ 162.142 α -D-Furanose-form

Me glycoside: Methyl 3,4-anhydro- α -D-tagatofuranoside, 9CI

[79184-49-9]

 $C_7H_{12}O_5$ 176.169[α]_D²⁵ +49.6 (c, 1.0 in MeOH).

Me glycoside, 1,6-di-Ac: Methyl 1,6-di-O-acetyl-3,4-anhydro- α -D-tagatofuranoside

[79184-48-8]

 $C_{11}H_{16}O_7$ 260.243Oil. [α]_D +47.8 (c, 1.0 in $CHCl_3$).

Me glycoside, 1,6-ditosyl: Methyl 3,4-anhydro-1,6-di-O-tosyl- α -D-tagatofuranoside

[79184-52-4]

 $C_{21}H_{24}O_9S_2$ 484.547Syrup. [α]_D²⁵ +10.8 (c, 1.0 in $CHCl_3$). β -D-Furanose-form

Me glycoside: Methyl 3,4-anhydro- β -D-tagatofuranoside, 9CI

[76227-29-7]

 $C_7H_{12}O_5$ 176.169[α]_D -28.2 (c, 1.0 in MeOH).

Me glycoside, 1,6-di-Ac: Methyl 1,6-di-O-acetyl-3,4-anhydro- β -D-tagatofuranoside

[79184-46-6]

 $C_{11}H_{16}O_7$ 260.243Oil. [α]_D -34.2 (c, 1.0 in $CHCl_3$).

Me glycoside, 1,6-ditosyl: Methyl 3,4-anhydro-1,6-di-O-tosyl- β -D-tagatofuranoside

[79184-47-7]

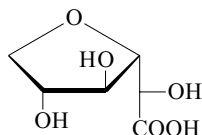
 $C_{21}H_{24}O_9S_2$ 484.547Mp 110.5-111°. [α]_D²⁵ -13.8 (c, 1.0 in $CHCl_3$).

Guthrie, R.D. *et al.*, *Chem. Comm.*, 1980, 784 (synth)

Guthrie, R.D. *et al.*, *J.C.S. Perkin 1*, 1981, 2328 (synth, pmr, cmr)

3,6-Anhydrotalonic acid

A-702

 $C_6H_{10}O_6$ 178.141 D -form

2-Tosyl, Me ester: Methyl 3,6-anhydro-2-O-tosyl-D-talonate

[166830-21-3]

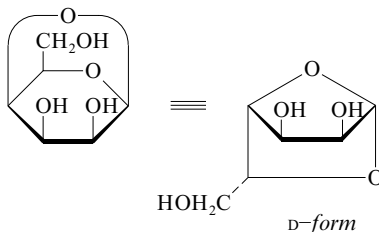
 $C_{14}H_{18}O_8S$ 346.357Syrup. [α]_D +14.2 (c, 1.0 in Me_2CO).

Frank, H. *et al.*, *Tetrahedron*, 1995, **51**, 5397 (synth, pmr)

1,4-Anhydrotalopyranose

A-703

1,5-Anhydrotalofuranose, 9CI

 D -form $C_6H_{10}O_5$ 162.142 D -form[α]_D²⁰ -30 (c, 1 in H_2O).

Tri-Ac: 2,3,6-Tri-O-acetyl-1,5-anhydro- α -D-talofuranose. 2,3,6-Tri-O-acetyl-1,4-anhydro- β -D-talopyranose

[50679-51-1]

 $C_{12}H_{16}O_8$ 288.254Cryst. Mp 70-72°. [α]_D²⁰ +71 (c, 1.0 in $CHCl_3$).

2,3-Isopropylidene: 1,5-Anhydro-2,3-O-isopropylidene- α -D-talofuranose. 1,4-Anhydro-2,3-O-isopropylidene- β -D-talopyranose

[50831-92-0]

 $C_9H_{14}O_5$ 202.207Cryst. by subl. Mp 75°. [α]_D²⁰ +33.9 (c, 1 in $CHCl_3$).

2,3-Isopropylidene, 6-tosyl: 1,5-Anhydro-2,3-O-isopropylidene-6-O-tosyl- α -D-talofuranose. 1,4-Anhydro-2,3-O-isopropylidene-6-O-tosyl- β -D-talopyranose

[50930-34-2]

 $C_{16}H_{20}O_7S$ 356.396Cryst. (Et_2O). Mp 91°. [α]_D +17.4 (c, 1 in $CHCl_3$). L -form

2,3-Isopropylidene: 1,5-Anhydro-2,3-O-isopropylidene-L-talofuranose. 1,4-Anhydro-2,3-O-isopropylidene-L-talopyranose

[123155-62-4]

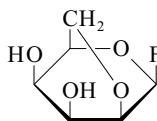
 $C_9H_{14}O_5$ 202.207Cryst. Mp 67-70°. [α]_D²⁰ -39.9 (c, 1 in $CHCl_3$).

Durette, P.L. *et al.*, *Chem. Ber.*, 1973, **106**, 2333 (synth)

Auberson, Y. *et al.*, *Helv. Chim. Acta*, 1989, **72**, 278 (*L*-form, isopropylidene, synth, ir, pmr, cmr)

2,6-Anhydrotalopyranosyl fluoride

A-704

 $C_6H_9FO_4$ 164.133 β -D-form

3,4-Cyclic sulfite: [108224-16-4]

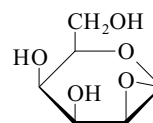
 $C_6H_7FO_5S$ 210.183

Needles (Et_2O). Mp 195-195.6°. [α]_D -35.6 (c, 1.07 in $CHCl_3$).

Baillargeon, D.J. *et al.*, *Carbohydr. Res.*, 1986, **154**, 275 (synth, pmr, F-19 nmr, ir, cryst struct)

1,2-Anhydrotalose

A-705

 $C_6H_{10}O_5$ 162.142 β -D-Pyranose-form

3,4-Dibenzyl, 6-Ac: 6-O-Acetyl-1,2-anhydro-3,4-di-O-benzyl- β -D-talopyranose

 $C_{22}H_{24}O_6$ 384.428[α]_D +14.3 (c, 2.5 in $CHCl_3$).

Tribenzyl: 1,2-Anhydro-3,4,6-tri-O-benzyl- β -D-talopyranose

 $C_{27}H_{28}O_5$ 432.515Cryst. (petrol/ $EtOAc$). Mp 83-84° (77°).[α]_D²³ -23.6 (c, 0.1 in $CHCl_3$).

Liu, J. *et al.*, *Carbohydr. Res.*, 1993, **240**, 295 (synth, pmr, cmr)

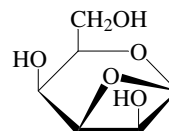
Li, G. *et al.*, *Carbohydr. Res.*, 1993, **247**, 63 (cryst struct, tribenzyl)

Wu, E. *et al.*, *Carbohydr. Res.*, 1993, **250**, 327 (synth, pmr)

Ning, J. *et al.*, *Carbohydr. Res.*, 2001, **330**, 165-167 (3,4-dibenzyl 6-Ac)

1,3-Anhydrotalose

A-706

 $C_6H_{10}O_5$ 162.142 β -D-Pyranose-form

Tribenzyl: 1,3-Anhydro-2,4,6-tri-O-benzyl- β -D-talopyranose

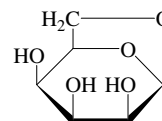
[162191-50-6]

 $C_{27}H_{28}O_5$ 432.515Syrup. [α]_D²⁰ -7.1 (c, 0.45 in $CHCl_3$).

Gan, Z. *et al.*, *Carbohydr. Lett.*, 1994, **1**, 27-30 (β -D-pyr tribenzyl)

1,6-Anhydrotalose

A-707

 β -D-Pyranose-form $C_6H_{10}O_5$ 162.142 β -D-Pyranose-form [14059-73-5]

Granules (2-propanol). Mp 206-208° (197-199°) Mp 185-186°. [α]_D -83 (c, 1.0 in H_2O).

Tribenzoyl: 1,6-Anhydro-2,3,4-tri-O-benzoyl- β -D-talopyranose

[110566-99-9]

 $C_{27}H_{22}O_8$ 474.466

Cryst. (Et_2O /hexane). Mp 178°. [α]_D²¹ -58 (c, 0.1 in $CHCl_3$).

3,4-Isopropylidene: 1,6-Anhydro-3,4-O-isopropylidene- β -D-talopyranose

[17073-95-9]

 $C_9H_{14}O_5$ 202.207

Cryst. (C₆H₆). Mp 117-118°. [α]_D²⁰ -115 (c, 1 in CHCl₃).

2,4-Dibenzyl: 1,6-Anhydro-2,4-di-O-benzyl- β -D-talopyranose
[114283-79-3]
C₂₀H₂₂O₅ 342.391
Syrup. [α]_D -19 (c, 0.6 in CHCl₃).

2,4-Dibenzyl, Ac: 3-O-Acetyl-1,6-anhydro-2,4-di-O-benzyl- β -D-talopyranose
[114283-80-6]
C₂₂H₂₄O₆ 384.428
Syrup. [α]_D -26 (c, 0.5 in CHCl₃).

Tribenzyl: 1,6-Anhydro-2,3,4-tri-O-benzyl- β -D-talopyranose
[116429-43-7]
C₂₇H₂₈O₅ 432.515
Syrup. [α]_D²⁵ -18 (c, 0.36 in CHCl₃).

Tri-Ac: 2,3,4-Tri-O-acetyl-1,6-anhydro- β -D-talopyranose
[14661-16-6]
C₁₂H₁₆O₈ 288.254
Cryst. (Et₂O). Mp 117-118°. [α]_D -73 (c, 0.5 in CHCl₃).

2,3-Isopropylidene: 1,2-Anhydro-2,3-O-isopropylidene- β -D-talopyranose
[14278-75-2]
C₉H₁₄O₅ 202.207
Prisms (CHCl₃/petrol). Mp 104-105°. [α]_D²⁰ -34 (c, 1.5 in CHCl₃).

α -D-Furanose-form [50679-50-0]
Cryst. (AcOH). Mp 113-114° (107°). [α]_D²⁰ +18.1 (c, 1 in H₂O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,6-anhydro- α -D-talofuranose
[50831-91-9]
C₁₂H₁₆O₈ 288.254
Mp 120-121°. [α]_D²⁰ +92.2 (c, 1 in CHCl₃).

α -L-Furanose-form [120288-33-7]

5-Benzoyl: 1,6-Anhydro-5-O-benzoyl- α -L-talofuranose
[120288-31-5]
C₁₃H₁₄O₆ 266.25
Cryst. (toluene). Mp 136°. [α]_D²⁰ +7 (c, 0.6 in CHCl₃).

2,3-Isopropylidene: 1,6-Anhydro-2,3-O-isopropylidene- α -L-talofuranose
C₉H₁₄O₅ 202.207
Cryst. (2-propanol). Mp 114°. [α]_D²⁰ -14.6 (c, 1.5 in CHCl₃).

2,3-Isopropylidene, 5-benzoyl: 1,6-Anhydro-5-O-benzoyl-2,3-O-isopropylidene- α -L-talofuranose
[120288-32-6]
C₁₆H₁₈O₆ 306.315
Cryst. (Et₂O). Mp 105-106°. [α]_D²⁰ -9.8 (c, 1.1 in CHCl₃).

[22224-56-2]

Horton, D. et al., *Carbohydr. Res.*, 1967, **5**, 149-160 (β -D-pyr-form, β -D-pyr tri-Ac, isopropylidene derivs)

Heyns, K. et al., *Chem. Ber.*, 1967, **100**, 2317 (β -D-pyr isopropylidene)

Angyal, S.J. et al., *Aust. J. Chem.*, 1968, **21**, 2747; 1978, **31**, 1151 (synth, α -D-fur)

Černý, M. et al., *Coll. Czech. Chem. Comm.*, 1968, **33**, 1143 (synth, bibl, β -D-pyr)

Durette, P.L. et al., *Chem. Ber.*, 1973, **106**, 2333 (synth, D-fur, α -D-fur derivs)

Panagiotopoulos, N.C. et al., *Acta Cryst. B*, 1974, **30**, 1402 (β -D-pyr isopropylidene, cryst struct)

Ohri, N. et al., *Can. J. Chem.*, 1987, **65**, 1145 (β -D-pyr tribenzoyl)

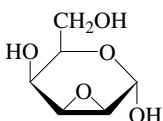
Carmen Cruzado, M. et al., *Carbohydr. Res.*, 1987, **170**, 249; 1988, **175**, 193 (β -D-pyr 2,4-dibenzyl)

Köll, P. et al., *Carbohydr. Res.*, 1988, **174**, 9; **179**, 1 (pmr, cmr, cryst struct, α -D-fur)

Köll, P. et al., *J. Carbohydr. Chem.*, 1988, **7**, 757 (α -L-fur derivs)

2,3-Anhydrotalose

A-708



α -D-Pyranose-form

C₆H₁₀O₅ 162.142

α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 2,3-anhydro-4,6-O-benzylidene- α -D-talopyranoside
[32976-15-1]
C₁₄H₁₆O₅ 264.277
Mp 242°. [α]_D -40.1 (CHCl₃).

β -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 2,3-anhydro-4,6-O-benzylidene- β -D-talopyranoside
[15384-57-3]
C₁₄H₁₆O₅ 264.277
Mp 247-248°. [α]_D²⁰ -150 (Py) (lit. gives a temp. range).

Kovář, J. et al., *Coll. Czech. Chem. Comm.*, 1967, **32**, 854 (β -D-Me pyr benzylidene)

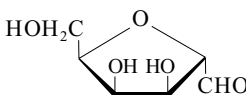
Zobáčová, A. et al., *Coll. Czech. Chem. Comm.*, 1971, **36**, 1860 (α -D-Me pyr benzylidene)

Abdel-Malik, M.M. et al., *Carbohydr. Res.*, 1987, **159**, 11 (pmr, cmr)

Szeja, W. et al., *Carbohydr. Res.*, 1988, **183**, 135 (synth, α -D-Me pyr benzylidene)

2,5-Anhydrotalose

A-709



D-form

C₆H₁₀O₅ 162.142

D-form

Glass. [α]_D²⁵ +33.9 \rightarrow +27 (c, 0.44 in H₂O).

L-form

Di-Me acetal, tribenzoyl: 2,5-Anhydro-3,4,6-tri-O-benzoyl-L-talose dimethyl acetal
[39706-30-4]
C₂₉H₂₈O₉ 520.535
Syrup. [α]_D²⁴ -16 (c, 2.65 in CHCl₃).

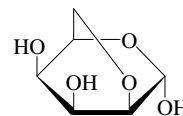
Di-Me acetal, tri-O-benzyl: 2,5-Anhydro-3,4,6-tri-O-benzyl-L-talose dimethyl acetal
[39706-31-5]
C₂₉H₃₄O₆ 478.584
Syrup. [α]_D²⁴ -8 (c, 1.15 in CHCl₃).

Defaye, J. et al., *Bull. Soc. Chim. Fr.*, 1964, 999

Ogawa, T. et al., *Agric. Biol. Chem.*, 1972, **36**, 1655 (synth, pmr)

2,6-Anhydrotalose

A-710



α -D-Pyranose-form

C₆H₁₀O₅ 162.142

D-form

Bis(di-Et dithioacetal), S,S,S',S'-tetraoxide: 2,6-Anhydro-1,1-bis(ethanesulfonyl)-1-deoxy-D-talitol
Needles (EtOH). Mp 180-185° (193-195°). [α]_D +14 (c, 5.0 in H₂O). Mp appears variable.

α -D-Pyranose-form

Me glycoside: Methyl 2,6-anhydro- α -D-talopyranoside
[71109-85-8]
C₇H₁₂O₅ 176.169
Syrup. [α]_D²⁰ +49.3 (c, 0.7 in MeOH).

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2,6-anhydro- α -D-talopyranoside
[71109-86-9]
C₁₁H₁₆O₇ 260.243
Syrup. [α]_D²⁰ +11 (c, 1.5 in CHCl₃).

Me glycoside, 3,4-O-isopropylidene: Methyl 2,6-anhydro-3,4-O-isopropylidene- α -D-talopyranoside
[71154-74-0]

[65143-56-8]

C₁₀H₁₆O₅ 216.233

Cryst. (petrol). Mp 85-87°. [α]_D +52.5 (c, 0.73 in CHCl₃).

β -D-Pyranose-form

Me glycoside: Methyl 2,6-anhydro- β -D-talopyranoside
[65143-57-9]
C₇H₁₂O₅ 176.169
Solid. Mp 123-124°. [α]_D²⁰ -61.2 (c, 1 in H₂O).

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2,6-anhydro- β -D-talopyranoside
[65143-58-0]
C₁₁H₁₆O₇ 260.243
Cryst. (Et₂O/petrol). Mp 90°. [α]_D²⁰ -60 (c, 1 in CHCl₃).

Me glycoside, 3,4-O-isopropylidene: Methyl 2,6-anhydro-3,4-O-isopropylidene- β -D-talopyranoside
[71154-75-1]
C₁₀H₁₆O₅ 216.233
Cryst. (petrol). Mp 77-79°. [α]_D -70.1 (c, 0.8 in CHCl₃).

Me glycoside, 3,4-di-Me: Methyl 2,6-anhydro-3,4-di-O-methyl- β -D-talopyranoside
[71109-87-0]
C₉H₁₆O₅ 204.222
Syrup. [α]_D²⁰ -64 (c, 1.4 in CHCl₃).

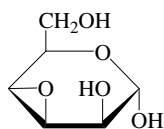
Hughes, N.A. et al., *J. C.S. (C)*, 1969, 2263-2266 (α -D-Me pyr isopropylidene, β -D-Me pyr isopropylidene)

Köll, P. et al., *Chem. Ber.*, 1977, **110**, 3297-3303 (β -D-Me pyr, β -D-Me pyr di-Ac)

Köll, P. *et al.*, *Chem. Ber.*, 1979, **112**, 2296-2304 (α -D-Me pyr, α -D-Me pyr di-Ac, β -D-Me pyr di-Me)
 Norris, P. *et al.*, *Carbohydr. Res.*, 1999, **322**, 147-150 (dithioacetal, bibl, pmr, cmr, cryst struct)

3,4-Anhydrotalose

A-711

 α -D-Pyranose-form $C_6H_{10}O_5$ 162.142 **α -DL-Pyranose-form**

Me glycoside, di-Ac: Methyl 2,6-di-O-acetyl-3,4-anhydro- α -DL-talopyranoside [39598-75-9]

 $C_{11}H_{16}O_7$ 260.243

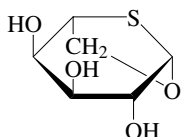
Cryst. (Et₂O/Me₂CO). Mp 55°. Cryst. struct. detn. was on the 6,6-d₂ deriv.

Banaszek, A. *et al.*, *Bull. Acad. Pol. Sci., Ser. Sci. Chim.*, 1972, **20**, 925; 935 (synth)

Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1988, **173**, 145 (cryst struct, deriv)

1,6-Anhydro-5-thioaltrose

A-712

 $C_6H_{10}O_4S$ 178.209 **β -L-form** [612051-33-9]

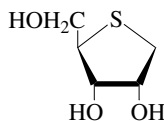
Mp 138-143°. [α]_D²⁴ +95 (c, 0.25 in MeOH).

Uenishi, J. *et al.*, *Tetrahedron*, 2003, **59**, 7011-7022 (β -L-form, synth, pmr, cmr)

1,4-Anhydro-4-thioribitol

A-713

1,4-Dideoxy-1,4-epithioribitol, 9CI

 $C_5H_{10}O_3S$ 150.198**D-form** [190315-43-6]

Oil. [α]_D²⁰ +67.4 (c, 0.25 in H₂O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,4-anhydro-4-thioribitol [190315-42-5]

 $C_{11}H_{16}O_6S$ 276.31

Oil. [α]_D²⁰ +64.2 (c, 0.75 in CHCl₃).

Tribenzyl: 1,4-Anhydro-2,3,4-tri-O-benzyl-4-thioribitol [291758-10-6]

 $C_{26}H_{28}O_3S$ 420.571

Oil.

L-form

Yellow oil. [α]_D²⁰ -73.2 (c, 0.25 in H₂O).

Altenbach, H.-J. *et al.*, *Tetrahedron: Asymmetry*, 1996, **7**, 3087-3090 (L-form, synth, pmr, cmr)

Altenbach, H.-J. *et al.*, *Tetrahedron*, 1997, **53**, 6019-6026 (D-form, synth, tri-Ac, pmr, cmr)

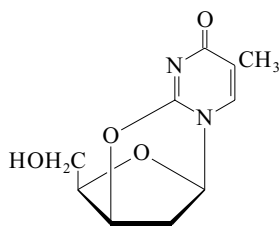
Naka, T. *et al.*, *J.A.C.S.*, 2000, **122**, 7233-7243 (D-form, synth, pmr, cmr)

Minakawa, N. *et al.*, *Tetrahedron*, 2003, **59**, 1699-1702 (D-form, !synth)

2,3'-Anhydrothymidine

A-714

2,3-Dihydro-3-(hydroxymethyl)-8-methyl-2,5-methano-5H,9H-pyrimido[2,1-b][1,5,3]dioxazepin-9-one, 9CI. O²,3'-Cyclthymidine [15981-92-7]

 $C_{10}H_{12}N_2O_4$ 224.216

Intermed. in synth. of Zidovudine, Z-4. Needles (EtOH aq.). Mp 230°.

Michelson, A.M. *et al.*, *J.C.S.*, 1955, 816-823 (synth, uv)

Rao, T.S. *et al.*, *Chem. Comm.*, 1989, 997-998 (synth, use)

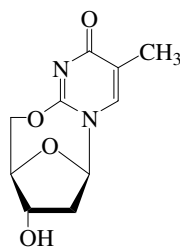
Larsen, E. *et al.*, *Synthesis*, 1995, 1121-1125 (synth)

Balogopala, M.I. *et al.*, *Nucleosides Nucleotides*, 1996, **15**, 899-906 (synth)

2,5'-Anhydrothymidine

A-715

7,8,9,10-Tetrahydro-8-hydroxy-3-methyl-6,9-epoxy-2H,6H-pyrimido[2,1-b][1,3]oxazocin-2-one, 9CI. O²,5'-Cyclthymidine [15425-09-9]

 $C_{10}H_{12}N_2O_4$ 224.216

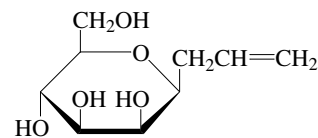
Long needles.

Jurczyk, S.C. *et al.*, *Helv. Chim. Acta*, 1998, **81**, 793-811 (synth, pmr, cmr)

4,8-Anhydro-1,2,3-trideoxy-D-glycero-D-galacto-non-1-enitol, 9CI

A-716

3- β -D-Mannopyranosyl-1-propene. 2,6-Anhydro-7,8,9-trideoxy-L-glycero-D-manno-non-8-enitol [122920-07-4]

 $C_9H_{16}O_5$ 204.222

Prepd. as anomeric mixt. with α -isomer.

Tetra-Ac: [98920-49-1]

 $C_{17}H_{24}O_9$ 372.371

Cryst. (Et₂O/petrol). Mp 100-101°. [α]_D²⁰ -26 (c, 0.2 in CHCl₃).

6,7,9-Tribenzyl: [192929-33-2]

 $C_{30}H_{34}O_5$ 474.596

Oil. [α]_D²⁰ -10.9 (c, 0.75 in CHCl₃).

Broxterman, H.J.G. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1990, **109**, 583-590 (synth, cmr)

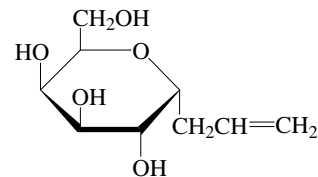
Cipolla, L. *et al.*, *J.O.C.*, 1997, **62**, 6678-6681 (tribenzyl)

Praly, J.-P. *et al.*, *Eur. J. Org. Chem.*, 2000, 2831-2838 (tetra-Ac)

4,8-Anhydro-1,2,3-trideoxy-D-glycero-L-glucos-non-1-enitol

A-717

2,6-Anhydro-7,8,9-trideoxy-D-glycero-L-galacto-non-8-enitol, 9CI. 3- α -D-Galactopyranosyl-1-propene [133697-14-0]

 $C_9H_{16}O_5$ 204.222

The 8-enitol name strictly has precedence acc. to the IUPAC special nomenclature rules for carbohydrates. Cryst. (Me₂CO). Mp 134°. [α]_D +104 (c, 1.5 in CHCl₃).

Tetra-Ac: [98920-44-6]

 $C_{17}H_{24}O_9$ 372.371

Syrup. [α]_D²³ +84 (c, 0.9 in CHCl₃).

1,3,4-Tribenzyl: [271246-08-3]

 $C_{30}H_{34}O_5$ 474.596

Oil. [α]_D +63.5 (c, 1 in CHCl₃).

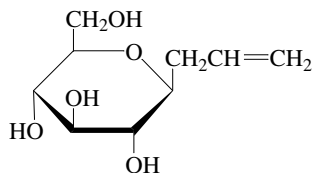
Cabaret, D. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 55-63 (synth, cmr)

Ponten, F. *et al.*, *J.O.C.*, 1996, **61**, 7463-7466 (tetra-Ac)

Cipolla, L. *et al.*, *Tetrahedron: Asymmetry*, 2000, **11**, 295-303 (tribenzyl)

4,8-Anhydro-1,2,3-trideoxy-D-glycero-D-gulo-non-1-enitol, 9CI

2,6-Anhydro-7,8,9-trideoxy-L-glycero-L-gulo-non-8-enitol. 3-β-D-Glucopyranosyl-1-propene



C₉H₁₆O₅ 204.222
Needles. [α]_D²⁰ -6 (c, 1 in MeOH).

Tetra-Ac: [53263-18-6]

C₁₇H₂₄O₉ 372.371

Cryst. (Et₂O/petrol). Mp 77-78°. [α]_D²⁰ -8 (c, 1 in CHCl₃).

Tetrabenzoyl: [98920-47-9]

C₃₇H₃₂O₉ 620.654

Foam. [α]_D²⁵ +34 (c, 0.7 in CH₂Cl₂).

Tetrabenzyl: [81972-19-2]

C₃₇H₄₀O₅ 564.72

Needles (petrol). Mp 89-90.5°. [α]_D²⁸ +18 (c, 1.2 in CHCl₃).

Shulman, M.L. *et al.*, *Carbohydr. Res.*, 1974, **33**, 229-235 (*synth*, *tetra-Ac*)

Araki, Y. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 565-585 (*tetrabenzyl*)

Horton, D. *et al.*, *Carbohydr. Res.*, 1988, **184**, 221-229; 1989, **191**, 223-229 (*tetra-Ac*, *tetrabenzoyl*)

Best, W.M. *et al.*, *Aust. J. Chem.*, 1997, **50**, 463-472 (*tetra-Ac*, *tetrabenzyl*)

Cipolla, L. *et al.*, *J.O.C.*, 1997, **62**, 6678-6681 (*6,7,9-tribenzyl*)

Fairweather, J.K. *et al.*, *Tetrahedron*, 1999, **55**, 3695-3706 (*synth*, *pmr*, *cmr*)

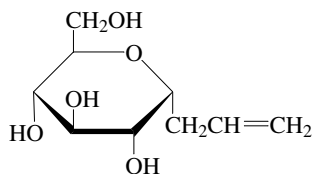
Praly, J.-P. *et al.*, *Eur. J. Org. Chem.*, 2000, 2831-2838 (*tetra-Ac*)

Xie, J. *et al.*, *Eur. J. Org. Chem.*, 2002, 3411-3418 (*5,6,7-tribenzyl*)

4,8-Anhydro-1,2,3-trideoxy-D-glycero-D-ido-non-1-enitol

2,6-Anhydro-7,8,9-trideoxy-D-glycero-L-gulo-non-8-enitol, 9CI. 3-α-D-Glucopyranosyl-1-propene

[106756-74-5]



C₉H₁₆O₅ 204.222

The 8-enitol name strictly has precedence acc. to the IUPAC special nomenclature rules for carbohydrates. Cryst. (EtOH or 2-propanol). Mp 153-156° (150-151°). [α]_D²⁰ +94 (c, 0.7 in H₂O).

Tetra-Ac: [82659-53-8]

C₁₇H₂₄O₉ 372.371

Needles (CHCl₃/hexane). Mp 108°. [α]_D²⁵ +72 (c, 1 in CHCl₃).

Tetrabenzoyl: [98854-01-4]

C₃₇H₃₂O₉ 620.654

Solid (EtOH). Mp 121-122°. [α]_D²⁵ +66 (c, 0.65 in CH₂Cl₂).

Tetrabenzyl: [82659-52-7]

C₃₇H₄₀O₅ 564.72

Mp 64-64.5°. [α]_D²⁸ +38.9 (c, 1.1 in CHCl₃).

Araki, Y. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 565-585 (*tetrabenzyl*)

Bennek, J.A. *et al.*, *J.O.C.*, 1987, **52**, 892-897 (*synth*, *cmr*)

Horton, D. *et al.*, *Carbohydr. Res.*, 1988, **184**, 221-229; 1989, **191**, 223-229 (*synth*, *tetra-Ac*, *tetrabenzoyl*)

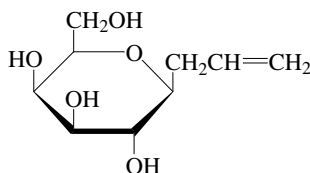
Bombard, S. *et al.*, *Carbohydr. Res.*, 1995, **275**, 433-440 (*tetrabenzyl*)

Xie, J. *et al.*, *Eur. J. Org. Chem.*, 2002, 3411-3418 (*5,6,7-tribenzyl*)

4,8-Anhydro-1,2,3-trideoxy-D-glycero-L-manno-non-1-enitol

2,6-Anhydro-7,8,9-trideoxy-L-glycero-L-galacto-non-8-enitol, 9CI. 3-β-D-Galactopyranosyl-1-propene

[129706-77-0]



C₉H₁₆O₅ 204.222

The 8-enitol name strictly has precedence acc. to the IUPAC special nomenclature rules for carbohydrates. Cryst. (EtOAc). Mp 120-122°. [α]_D²⁰ +1.9 (c, 1.08 in H₂O).

Tetra-Ac: [98920-48-0]

C₁₇H₂₄O₉ 372.371

Needles (Et₂O/petrol). Mp 49-52°. [α]_D²³ +6.6 (c, 0.4 in CHCl₃).

1,3,4-Tribenzyl: [77737-63-4]

C₃₀H₃₄O₅ 474.596

Syrup. [α]_D +42.3 (CHCl₃).

Hanessian, S. *et al.*, *Pure Appl. Chem.*, 1981, **53**, 129-148 (*tribenzyl*)

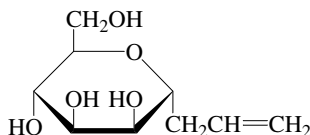
BeMiller, J.N. *et al.*, *Carbohydr. Res.*, 1990, **200**, 111-126 (*synth*)

Praly, J.-P. *et al.*, *Eur. J. Org. Chem.*, 2000, 2831-2838 (*tetra-Ac*)

4,8-Anhydro-1,2,3-trideoxy-D-glycero-D-talo-non-1-enitol

2,6-Anhydro-7,8,9-trideoxy-D-glycero-D-manno-non-8-enitol, 9CI. 3-(α-D-Mannopyranosyl)-1-propene

[122920-03-0]



C₉H₁₆O₅ 204.222

The 8-enitol name strictly has precedence acc. to the IUPAC special nomenclature rules for carbohydrates. Oil. [α]_D¹⁷ +24.3 (c, 2.65 in MeOH).

Tetra-Ac: [98920-46-8]

C₁₇H₂₄O₉ 372.371

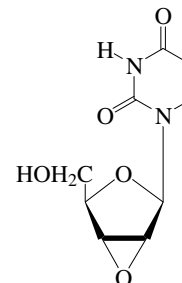
Oil. [α]_D¹⁷ +6.83 (c, 1.2 in CH₂Cl₂).

Nicolaou, K.C. *et al.*, *J.A.C.S.*, 1989, **111**, 6682-6690 (*synth*, *tetra-Ac*, *ir*, *pmr*)

Howard, S. *et al.*, *Biochemistry*, 1998, **37**, 3858-3864 (*tetra-Ac*)

2',3'-Anhydrouridine, 9CI

A-722



C₉H₁₀N₂O₅ 226.188

Isomerises to on heating.

N-Me: [85993-11-9]

C₁₀H₁₂N₂O₅ 240.215

Cryst. (EtOH). Mp 156-158°. [α]_D²⁰ +12.1 (c, 0.6 in MeOH).

5',N-Di-Me: [86012-70-6]

C₁₁H₁₄N₂O₅ 254.242

Oil. [α]_D²⁰ +8.6 (c, 0.5 in MeOH).

Márton-Merész, M. *et al.*, *Tetrahedron*, 1983, **39**, 275-284 (*N-Me*, *synth*, *cryst struct*, *pmr*)

Miah, A. *et al.*, *Chem. Comm.*, 1997, 407-408 (*synth*, *cmr*)

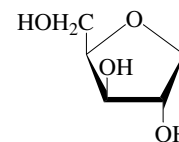
Miah, A. *et al.*, *J.C.S. Perkin 1*, 1998, 3277-3283 (*synth*)

1,4-Anhydroxylitol

A-723

2,5-Anhydroxylitol

[491-19-0]



D-form

C₅H₁₀O₄ 134.132

The L-enantiomer is strictly 2,5-anhydro-D-xylitol under IUPAC rules. This changes the numbering. The numbering given here is for 1,4-anhydroxylitol.

D-form [53448-53-6]

Hygroscopic syrup. Bp_{0.2} 160-170°. [α]_D²⁰ -11.2 (c, 0.9 in H₂O).

Tri-Ac: 2,3,5-Tri-O-acetyl-1,4-anhydro-D-xylitol

[151378-67-5]

C₁₁H₁₆O₇ 260.243

Bp_{0.04} 90-98°. [α]_D²⁰ +31.5 (c, 0.92 in CH₂Cl₂). n_D²⁰ 1.4537.

Tribenzoyl: 1,4-Anhydro-2,3,5-tri-O-benzoyl-D-xylitol

[172489-90-6]

$C_{26}H_{22}O_7$ 446.456
 $[\alpha]_D^{25} +72$ (c, 4.5 in $CHCl_3$).

L-form

3-Tosyl, 2-benzoyl: 1,4-Anhydro-2-O-benzoyl-3-O-tosyl-L-xylitol, 2,5-Anhydro-4-O-benzoyl-3-O-tosyl-D-xylitol
 [125346-65-8]

$C_{19}H_{20}O_7S$ 392.429

Cryst. (diisopropyl ether). Mp 108-109°.

2,3-Ditosyl: 2,5-Anhydro-3,4-di-O-tosyl-D-xylitol, 1,4-Anhydro-2,3-di-O-tosyl-L-xylitol
 [16237-39-1]

$C_{19}H_{22}O_8S_2$ 442.51

Solid. Mp 112-113°. $[\alpha]_D^{28} +33.8$ (c, 1.2 in $CHCl_3$). Wrongly named in CAS.

3,4-Ditosyl, 5-benzoyl: 2,5-Anhydro-1-O-benzoyl-3,4-di-O-tosyl-D-xylitol, 1,4-Anhydro-5-O-benzoyl-2,3-di-O-tosyl-L-xylitol
 [16237-41-5]

$C_{26}H_{26}O_9S_2$ 546.618

Solid. Mp 141-142°. $[\alpha]_D^{28} +66$ (c, 1.2 in $CHCl_3$). Wrongly named in CAS.

3,5-Ditosyl, 2-benzoyl: 1,4-Anhydro-2-O-benzoyl-3,5-di-O-tosyl-L-xylitol, 2,5-Anhydro-4-O-benzoyl-1,3-di-O-tosyl-D-xylitol
 [125346-66-9]

$C_{26}H_{26}O_9S_2$ 546.618

Cryst. (MeOH). Mp 65°. $[\alpha]_D -51.1$ (c, 1.29 in $CHCl_3$).

Tritosyl: 1,4-Anhydro-2,3,5-tri-O-tosyl-L-xylitol
 [17593-18-9]

$C_{26}H_{28}O_{10}S_3$ 596.699

Mp 118-120°. $[\alpha]_D^{25} +38.5$ (c, 1.2 in $CHCl_3$).

DL-form [120442-63-9]

Extremely hygroscopic cryst. (3-methyl-1-butanol/ Et_2O). Mp 37-38°. Bp_{0.01} 145-165° (bath). Cryst. with difficulty, rapidly reverts to a syrup in moist air.

Tribenzoyl: 1,4-Anhydro-2,3,5-tri-O-benzoyl-DL-xylitol

$C_{26}H_{22}O_7$ 446.456

Cryst. (EtOH). Mp 79-80°.

5-Tosyl: 1,4-Anhydro-5-O-tosyl-DL-xylitol, 2,5-Anhydro-1-O-tosyl-DL-xylitol
 [125411-55-4]

$C_{12}H_{16}O_6S$ 288.321

Cryst. (hexane/ CH_2Cl_2). Mp 98°.

2,5-Ditosyl: 1,4-Anhydro-2,5-di-O-tosyl-DL-xylitol, 2,5-Anhydro-1,4-di-O-tosyl-DL-xylitol
 [119170-60-4]

$C_{19}H_{22}O_8S_2$ 442.51

Cryst. (C_6H_6 /hexane). Mp 107-108°.

3,5-Ditosyl: 1,4-Anhydro-3,5-di-O-tosyl-DL-xylitol, 2,5-Anhydro-1,3-di-O-tosyl-DL-xylitol
 [119170-59-1]

$C_{19}H_{22}O_8S_2$ 442.51

Cryst. (C_6H_6). Mp 144°.

Tritosyl: 1,4-Anhydro-2,3,5-tri-O-tosyl-DL-xylitol, 2,5-Anhydro-1,3,4-tri-O-tosyl-DL-xylitol
 [119170-67-1]

$C_{26}H_{28}O_{10}S_3$ 596.699

Cryst. (EtOH). Mp 109° (106°).

2,5-Ditosyl, 3-benzoyl: 1,4-Anhydro-3-O-benzoyl-2,5-di-O-tosyl-DL-xylitol, 2,5-Anhydro-3-O-benzoyl-1,4-di-O-tosyl-DL-xylitol
 [125346-67-0]

$C_{26}H_{26}O_9S_2$ 546.618

Cryst. + MeOH (MeOH). Mp 92°.

3,5-Ditosyl, 2-benzoyl: 1,4-Anhydro-2-O-benzoyl-3,5-di-O-tosyl-DL-xylitol, 2,5-Anhydro-4-O-benzoyl-1,3-di-O-tosyl-DL-xylitol
 [125411-56-5]

$C_{26}H_{26}O_9S_2$ 546.618

Cryst. + 1MeOH (MeOH). Mp 96°.

Carson, J.F. *et al.*, *J.A.C.S.*, 1945, **67**, 1808-1810 (synth, tribenzoyl)

Hedgley, E.J. *et al.*, *J.A.C.S.*, 1964, **86**, 1576-1582 (D-form, synth, tri-Ac)

Cleophax, J. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1967, **265**, 257-259; *CA*, **67**, 116767t (L-form tritosyl, L-form ditosyl, L-form benzoyl ditosyl)

Que, L. *et al.*, *Biochemistry*, 1974, **52**, 892-897 (cmr)

Miljkovic, D. *et al.*, *J. Carbohydr. Chem.*, 1989, **8**, 457-467 (tosyl derivs)

Plavec, J. *et al.*, *J.A.C.S.*, 1993, **115**, 9734-9746 (D-form, synth, pmr, conformn)

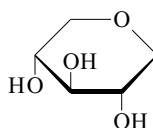
Wang, N. *et al.*, *Carbohydr. Res.*, 1995, **274**, 45-58 (D-form, synth, tribenzoyl, tri-Ac)

Jeffery, A. *et al.*, *Tet. Lett.*, 1995, **36**, 3627-3630 (D-form tri-Ac)

1,5-Anhydroxylitol

A-724

[39102-78-8]



$C_5H_{10}O_4$ 134.132

A meso compd. Prisms (EtOH). Sol. H_2O ; insol. EtOAc, petrol. Mp 116-117°.

Tri-Ac: 2,3,4-Tri-O-acetyl-1,5-anhydroxylitol
 [19200-32-9]

$C_{11}H_{16}O_7$ 260.243

Mp 122-123°.

Tribenzoyl: 1,5-Anhydro-2,3,4-tri-O-benzoylxylitol
 [15023-21-9]

$C_{26}H_{22}O_7$ 446.456

Cryst. (EtOH). Mp 146-147°.

2,3,4-Triphosphate:

$C_5H_{13}O_{13}P_3$ 374.071

Cryst. + $1H_2O$ (MeOH/2-propanol) (as pentakis(cyclohexylammonium) salt). Mp 187.5-190° (pentakis(cyclohexylammonium) salt).

Fletcher, H.G. *et al.*, *J.A.C.S.*, 1947, **69**, 921 (synth)

Soman, E. *et al.*, *Carbohydr. Res.*, 1972, **24**, 173 (synth)

Kondo, Y. *et al.*, *Carbohydr. Res.*, 1982, **103**, 154; 1983, **111**, 325 (derivs)

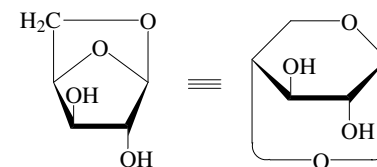
Regeling, H. *et al.*, *Carbohydr. Res.*, 1993, **244**, 187 (triphosphate)

Elvebak, L.E. *et al.*, *Carbohydr. Res.*, 1997, **299**, 143-149 (derivs)

1,5-Anhydroxylofuranose, 9CI

A-725

1,4-Anhydroxylopyranose



$C_5H_8O_4$ 132.116

1,5-Anhydro-β-D-xylofuranose is identical with 1,4-anhydro-α-D-xylopyranose.

D-form [51246-91-4]

Cryst. (2-propanol). Mp 95-97° (92-93°). $[\alpha]_D^{20} -12.7$ (c, 1 in EtOH). $[\alpha]_D^{20} -4.2$ (c, 1 in H_2O).

Di-Ac: 1,4-Anhydro-2,3-di-O-acetyl-α-D-xylopyranose, 1,5-Anhydro-2,3-di-O-acetyl-β-D-xylofuranose
 [51246-95-8]

$C_9H_{12}O_6$ 216.19

Yellow syrup. $[\alpha]_D^{25} +13.1$ (c, 1 in $CHCl_3$).

2,3-Dibenzoyl: 1,5-Anhydro-2,3-di-O-benzoyl-β-D-xylofuranose, 1,4-Anhydro-2,3-di-O-benzoyl-α-D-xylopyranose
 [40682-81-3]

$C_{19}H_{16}O_6$ 340.332

Cryst. (EtOH/ Et_2O). Mp 81° (57-60°). $[\alpha]_D^{25} +151$ (c, 0.5 in $CHCl_3$). $[\alpha]_D +128$ (c, 1 in $CHCl_3$).

2,3-Bis(4-methylbenzenesulfonyl):

$C_{19}H_{20}O_8S_2$ 440.494

Cryst. (EtOH). Mp 111-113°. $[\alpha]_D^{20} -23.1$ (c, 1 in $CHCl_3$).

3-Benzyl: 1,5-Anhydro-3-O-benzyl-β-D-xylofuranose, 9CI, 1,4-Anhydro-3-O-benzyl-α-D-xylopyranose
 [213963-76-9]

$C_{12}H_{14}O_4$ 222.24

Yellow syrup. $[\alpha]_D^{25} -7.64$ (c, 1 in $CHCl_3$).

3-Benzyl, 2-Ac: 2-O-Acetyl-1,5-anhydro-3-O-benzyl-β-D-xylofuranose, 9CI, 2-O-Acetyl-1,4-anhydro-3-O-benzyl-α-D-xylopyranose
 [213963-73-6]

$C_{14}H_{16}O_5$ 264.277

Yellow oil. $[\alpha]_D^{21} -43.9$ (c, 1 in $CHCl_3$).

3-Benzyl, 2-pivaloyl: 1,5-Anhydro-3-O-benzyl-2-O-pivaloyl-β-D-xylofuranose, 1,4-Anhydro-3-O-benzyl-2-O-pivaloyl-α-D-xylopyranose
 [213963-72-5]

$C_{17}H_{22}O_5$ 306.358

Oil. $[\alpha]_D^{25} -36.3$ (c, 1 in $CHCl_3$).

2,3-Dibenzyl: 1,5-Anhydro-2,3-di-O-benzyl-β-D-xylofuranose, 1,4-Anhydro-2,3-di-O-benzyl-α-D-xylopyranose
 [84433-33-0]

$C_{19}H_{20}O_4$ 312.365

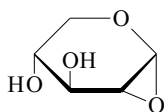
Syrup. $[\alpha]_D^{25} -13$ (c, 1 in $CHCl_3$).

Bochkov, A.F. *et al.*, *Zh. Obshch. Khim.*, 1972, **42**, 2766-2776; *J. Gen. Chem. USSR (Engl. Transl.)*, 1972, **42**, 2758-2766 (dibenzoyl)

Köll, P. *et al.*, *Chem. Ber.*, 1973, **106**, 3565-3570 (synth, pmr, di-Ac, ditosyl)

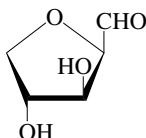
Uryu, T. *et al.*, *Macromolecules*, 1983, **16**, 320-326 (synth, di-Ac, dibenzyl)

Farkas, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1985, **50**, 1291-1299 (cd)
 Metzger, J.O. *et al.*, *Org. Mass Spectrom.*, 1992, **27**, 508-514 (ms)
 Hori, M. *et al.*, *Carbohydr. Res.*, 1998, **309**, 281-286 (3-benzyl derivs)

1,2-Anhydroxylose**A-726**C₅H₈O₄ 132.116 **α -D-Pyranose-form**

Dibenzyl: 1,2-Anhydro-3,4-di-O-benzyl- α -D-xylopyranose
 [149625-86-5]
 C₁₉H₂₀O₄ 312.365
 Cryst. Mp 43-44°. [α]_D -5.6 (c, 0.5 in CHCl₃).

Yang, G. *et al.*, *Carbohydr. Res.*, 1994, **258**, 49 (*dibenzyl*)

2,5-Anhydroxylose**A-727**C₅H₈O₄ 132.116**D-form**

Di-Me acetal, 3-tosyl: 2,5-Anhydro-3-O-tosyl-D-xylose dimethyl acetal
 Mp 76-78°. [α]_D²⁵ +53.7 (c, 1.9 in CHCl₃).

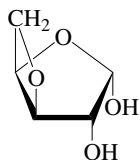
Di-Me acetal, 3,4-ditosyl: Mp 86-87°. [α]_D²⁵ +64.7.

Diisobutyl dithioacetal: 2,5-Anhydro-D-xylose diisobutyl dithioacetal
 [29325-30-2]
 C₁₃H₂₆O₃S₂ 294.479
 Cryst. (hexane/CHCl₃). Mp 93-94°. [α]_D²⁰ +6.22 (c, 0.74 in CHCl₃).

Defaye, J. *et al.*, *Tet. Lett.*, 1968, 313-317 (*dimethyl acetal tosyl derivs*)

Defaye, J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1970, **25**, 181 (rev)

Crotti, P. *et al.*, *Tetrahedron: Asymmetry*, 1997, **8**, 1611-1621 (*D-form diisobutyl dithioacetal*)

3,5-Anhydroxylose**A-728** α -D-Furanose-formC₅H₈O₄ 132.116 **α -D-Furanose-form**

1,2-Isopropylidene: 3,5-Anhydro-1,2-O-isopropylidene- α -D-xylofuranose
 [4118-63-2]
 C₈H₁₂O₄ 172.18
 Liq. [α]_D²⁵ +11.9 (c, 0.75 in CHCl₃).

 β -D-Furanose-form

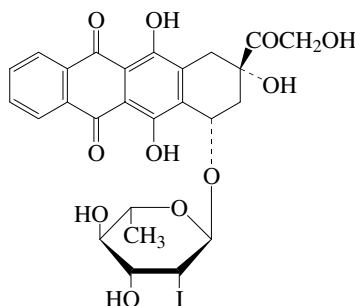
Me glycoside: Methyl 3,5-anhydro- β -D-xylofuranoside
 [37098-54-7]
 C₆H₁₀O₄ 146.143
 Cryst. (C₆H₆/petrol). Mp 63-64°. [α]_D²⁵ -143 (c, 0.7 in CHCl₃).

Buchanan, J.G. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 135 (β -D-Me fur)

Cooke, N.G. *et al.*, *Tetrahedron*, 1992, **48**, 9553 (*isopropylidene, synth, pmr, cmr*)

Annamycin**A-729**

7-[(2,6-Dideoxy-2-iodo- α -L-mannopyranosyl)oxy]-7,8,9,10-tetrahydro-6,9,11-trihydroxy-9-(hydroxyacetyl)-5,12-naphthace-nedione, 9CI
 [92689-49-1]



C₂₆H₂₅IO₁₁ 640.381
 Antineoplastic agent. Red solid (CH₂Cl₂/Me₂CO/hexane). Mp 173-175° dec.

[92761-46-1]

Horton, D. *et al.*, *Carbohydr. Res.*, 1984, **130**, C1-C3 (*synth, pharmacol*)

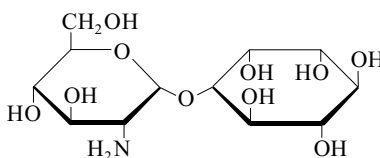
U.S. Pat., 1985, 4 537 882, (Ohio State University); CA, **104**, 6140h (*synth, pharmacol*)

Ling, Y.H. *et al.*, *Cancer Res.*, 1993, **53**, 1583-1589; 1994, **54**, 1479-1484 (*pharmacol*)

Zou, Y. *et al.*, *Clin. Cancer Res.*, 1995, **1**, 1369-1374 (*pharmacol*)

Antibiotic X 14847**A-730**

X 14847. 2-Amino-2-deoxy- α -D-glucopyranosyl-1-O-D-myo-inositol
 [75802-23-2]

C₁₂H₂₃NO₁₀ 341.314

Cyclitol antibiotic. Isol. from *Micromonospora echinospora*. Weakly active against gram-positive bacteria. Sol. H₂O; poorly sol. butanol, hexane.

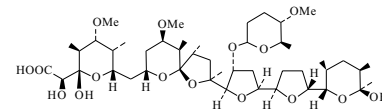
Hydrate: [α]_D +88.5 (c, 0.24 in H₂O).

Maehr, H. *et al.*, *J. Antibiot.*, 1980, **33**, 1431 (*isol*)

Maehr, H. *et al.*, *J.O.C.*, 1981, **46**, 378 (*struct*)

Antibiotic 6016**A-731**

[69421-39-2]

C₄₆H₇₈O₁₆ 887.113

Polyether-type antibiotic. Isol. from *Streptomyces albus*. Strongly ionophoric with Mg. Active against gram-positive bacteria, mycobacteria, fungi and yeast. Sol. MeOH, C₆H₆; poorly sol. H₂O. Related to Antibiotic K41.

► LD₅₀ (mus, ipr) 23 mg/kg, LD₅₀ (mus, orl) 63 mg/kg. CB9459900

Na salt: [69460-98-6]

Mp 195° (dec.). [α]_D²⁰ -42.5 (c, 1 in MeOH).

Otake, N. *et al.*, *Chem. Comm.*, 1978, 875 (*cryst struct*)

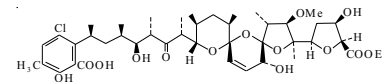
Haruo, S. *et al.*, *J. Antibiot.*, 1979, **32**, 244 (*cmr*)

Ogita, T. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 1537; 1543 (*cryst struct, props*)

Kusakabe, Y. *et al.*, *J. Antibiot.*, 1980, **33**, 1437 (*isol, ir, pmr, props*)

Antibiotic X 14766A**A-732**

X 14766A. 6-Chloronorboritomyacin A
 [75217-55-9]

C₄₃H₆₃ClO₁₄ 839.415

Polyether antibiotic. Isol. from *Streptomyces malachitofuscus* ssp. *downeyi*. Active against gram-positive bacteria and protozoa, shows growth-promoting activity. Acidic solid. Sol. MeOH, Et₂O; fairly sol. hexane; poorly sol. H₂O. pK_{a1} 4.03; pK_{a2} 12.82 (phenol, 50% EtOH aq.). λ_{\max} 210 (ε 30400); 307 (ε 3410) (EtOH) (Derep). λ_{\max} 210 (ε 30400); 307 (ε 3410) (EtOH) (Berdy).

► LD₅₀ (mus, ipr) 5.75 mg/kg, LD₅₀ (mus, orl) 350 mg/kg. CB9930000

Hydrate:

Cryst. (CH₂Cl₂/hexane). Mp 160°. [α]_D -11.3 (c, 1 in CHCl₃). [α]_D -15 (c, 1 in MeOH).

Na salt: [75283-06-6]

Cryst. Insol. H₂O. Mp 219°. [α]_D -4.7 (c, 1 in CHCl₃).

Eur. Pat., 1980, 9 636; CA, **93**, 219313

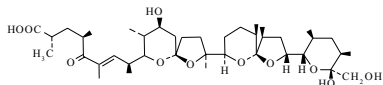
Liu, C. *et al.*, *J. Antibiot.*, 1981, **34**, 133 (*isol*)

Westley, J.W. *et al.*, *J. Antibiot.*, 1981, **34**, 139 (*nmr*)

Antibiotic X 14931A

A-733

19-De[(tetrahydro-5-methoxy-6-methyl-2H-pyran-2-yl)oxy]dianemycin, 9CI. CP 53607. X 14931A. Antibiotic CP 53607. Antibiotic 53607 [84680-56-8]



C₄₀H₆₆O₁₁ 722.955

Polyether antibiotic. Prod. by *Streptomyces halstedii* and *Streptomyces* sp. X14931. Active against gram-positive bacteria, fungi, protozoa and coccidia. Cryst. (4-Methyl-2-pentanone). Mp 84-91°. [α]_D²⁵ +50.4 (c, 1 in CHCl₃).

Na salt:

Cryst. Mp 199-204°. [α]_D +44 (c, 1 in CHCl₃).

Na salt, monohydrate:

Cryst. Mp 163-164°. [α]_D²⁵ +52.2 (c, 1 in CHCl₃).

Ag salt: [92218-72-9]

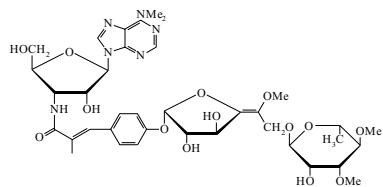
Cryst. + H₂O (CH₂Cl₂/hexane). Mp 152-155° dec. [α]_D²⁵ +66.2 (c, 1 in CHCl₃).

U.S. Pat., 1982, 4 361 649; CA, 98, 87623
Westley, J.W. et al., J. Antibiot., 1984, 37, 813 (isol, struct, nmr)

Antibiotic A 201A

A-734

A 201A
[37305-78-5]



C₃₇H₅₀N₆O₁₄ 802.834

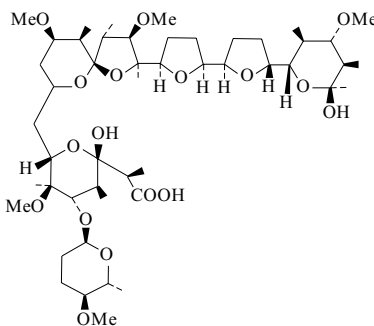
Nucleoside antibiotic. Isol. from *Streptomyces capreolus*. Active against gram-positive bacteria and acne. Sol. MeOH, acids, bases, THF, CHCl₃; poorly sol. H₂O, Et₂O, hexane. Mp 170-172°. [α]_D²⁵ -129.6 (c, 1 in MeOH). λ_{\max} 212 (€ 41600); 279 (€ 37700) (EtOH) (Derep). λ_{\max} 208 (E1%/1cm 535); 275 (E1%/1cm 490) (MeOH) (Berdy). λ_{\max} 268; 325 (EtOH-NaOH) (Berdy). λ_{\max} 212 (€ 41600); 279 (€ 37700) (EtOH) (Berdy).

► LD₅₀ (mus, ivn) 400 mg/kg. CB9376310
Kirst, H.A. et al., J. Antibiot., 1985, 38, 575 (isol, uv, ir, pmr, cmr, struct)
Isono, K. et al., J. Antibiot., 1988, 41, 1711 (rev)

Antibiotic A 204A

A-735

A 204A. Antibiotic A 204I
[43110-10-7]



C₄₉H₈₄O₁₇ 945.192

Polyether antibiotic. Isol. from *Streptomyces albus*. Ionophoric. Sol. Me₂CO, Et₂O; fairly sol. MeOH, EtOH, butanol; poorly sol. H₂O, hexane. Mp 96-98°. [α]_D²⁵ +68.1 (c, 2 in MeOH).

► LD₅₀ (mus, orl) 8 mg/kg. CB9376320

Jones, N.D. et al., J.A.C.S., 1973, 95, 3399

(struct, cryst struct)
Smith, A.G. et al., Acta Cryst. B, 1978, 34, 3436 (cryst struct)

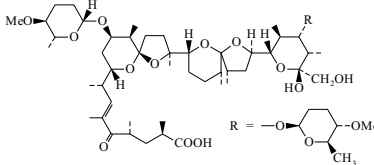
Seto, H. et al., J. Antibiot., 1979, 32, 239; 1980, 33, 979 (struct, cmr)

Pangborn, W. et al., Acta Cryst. C, 1987, 43, 890 (cryst struct)

Antibiotic A 130B

A-736

A 130B
[73492-07-6]



C₅₄H₉₀O₁₆ 995.295

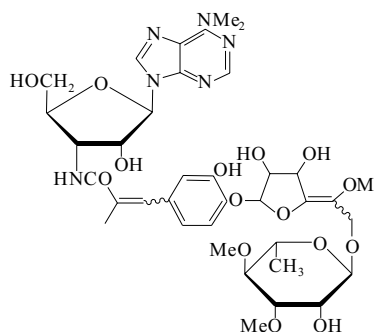
Polyether antibiotic. Isol. from *Streptomyces hygroscopicus*. Antibacterial agent. Cryst. powder. Related to Lenoremycin. λ_{\max} 235 (MeOH) (Berdy).

Tsuji, N. et al., J. Antibiot., 1980, 33, 94 (isol, struct, ir, pmr, cmr)

Antibiotic A 201C

A-737

A 201C
[74918-37-9]



C₃₇H₅₀N₆O₁₅ 818.833

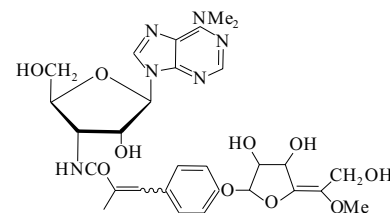
Nucleoside antibiotic. Isol. from *Streptomyces capreolus*. Active against gram-positive bacteria. Cryst. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane, CCl₄, Et₂O. Mp 135-137°. [α]_D²⁵ -114 (c, 1 in MeOH). pK_a 11.4 (66% DMF aq.). λ_{\max} 268 (€ 44600); 325 (€ 14200) (EtOH/NaOH) (Derep). λ_{\max} 217 (€ 41500); 279 (€ 33200) (EtOH) (Derep). λ_{\max} 217 (€ 41500); 279 (€ 32200) (EtOH) (Berdy). λ_{\max} 268 (€ 44600); 325 (€ 40300) (EtOH/NaOH) (Berdy).

U.S. Pat., 1980, 4 205 164; CA, 93, 184267s

Antibiotic A 201D

A-738

A 201D
[75076-80-1]



C₂₉H₃₆N₆O₁₀ 628.638

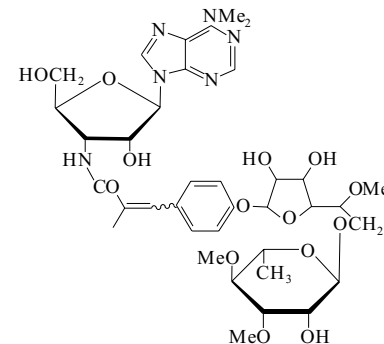
Nucleoside antibiotic. Isol. from *Streptomyces capreolus* NRRL3817. Active against gram-positive bacteria. Cryst. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane, Et₂O. Mp 128-130°. λ_{\max} 212 (€ 37300); 277 (€ 37000) (EtOH) (Derep). λ_{\max} 213 (€ 40300); 279 (€ 39700) (EtOH) (Berdy). λ_{\max} 213; 279 (95%EtOH).

U.S. Pat., 1980, 4 205 164; CA, 93, 184267

Antibiotic A 201E

A-739

A 201E
[74918-38-0]



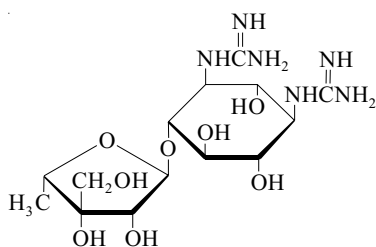
C₃₇H₅₂N₆O₁₄ 804.85

Nucleoside antibiotic. Isol. from *Streptomyces capreolus* NRRL3817. Active against gram-positive bacteria. Sol. MeOH, CHCl₃; poorly sol. H₂O. λ_{\max} 212 (€ 41600); 279 (€ 37700) (EtOH) (Derep). λ_{\max} 215 (€ 27800); 278 (€ 37400) (EtOH) (Berdy).

U.S. Pat., 1980, 4 205 164; CA, 93, 184267

Antibiotic AC4437

A-740

AC4437
[99890-21-8] $C_{14}H_{28}N_6O_8$ 408.411

Streptomycin-type antibiotic. Prod. by *Streptomyces* sp. AC4437. Active against gram-positive and -negative bacteria. Powder + $1\frac{1}{2}$ H₂O. Sol. H₂O; fairly sol. MeOH; poorly sol. EtOAc, Me₂CO. Mp 168-172°. $[\alpha]_D^{23}$ -32.4 (c, 1 in H₂O).

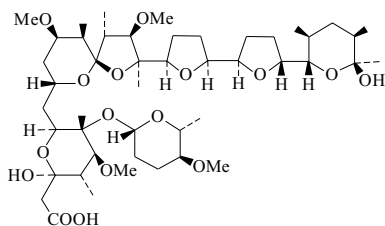
► WK2199000

Japan. Pat., 1985, 85 112 799; CA, **104**, 49833 (isol)

Awata, M. et al., J. Antibiot., 1986, **39**, 724 (isol, struct, pmr, props)

Antibiotic BL 580

A-741

BL 580
[76363-43-4]

Polyether antibiotic complex. Struct. of BL 580δ shown. Prod. by *Streptomyces hygroscopicus*. Shows antimalarial and anticoccidial activity. Active against *Streptococcus* sp. Mp 105-107°. $[\alpha]_D^{20}$ +7 (c, 0.09 in MeOH).

Antibiotic BL 580α

BL 580α

[53414-80-5]

Cryst. $[\alpha]_D^{25}$ +15.55 (c, 1.08 in MeOH).**Antibiotic BL 580β**

BL 580β

[53414-72-5]

Amorph. $[\alpha]_D^{25}$ +1.06 (c, 0.942 in CHCl₃).**Antibiotic BL 580δ**

2-Deethylseptamycin, 9CI

[66389-75-1]

 $C_{47}H_{80}O_{16}$ 901.139 $[\alpha]_D^{25}$ +21.1 (c, 0.9 in MeOH).

Na salt:

Cryst. Mp 157-161°. $[\alpha]_D^{25}$ +6.1 (c, 1.153 in MeOH).**Antibiotic BL 580ζ** BL 580ζCryst. Mp 105-107°. $[\alpha]_D^{20}$ +7 (c, 0.9 in MeOH).

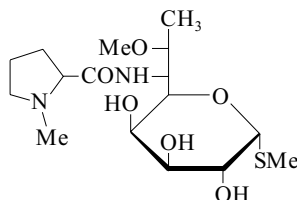
Na salt: [69522-23-2]

Cryst. Mp 162°. $[\alpha]_D^{20}$ -3 (c, 0.94 in MeOH).U.S. Pat., 1974, 3 812 249; CA, **81**, 150297Ger. Pat., 1978, 2 728 596; CA, **88**, 188131 (isol)Ger. Pat., 1979, 2 824 860; CA, **90**, 136236x (isol)U.S. Pat., 1979, 4 132 779; CA, **90**, 136239a (isol)U.S. Pat., 1979, 4 161 520; CA, **91**, 163066u (props)**Antibiotic BU 2545**

A-742

BU 2545

[75007-09-9]

 $C_{16}H_{30}N_2O_6S$ 378.489

Glycoside antibiotic (lincomycin type).

Isol. from *Streptomyces* sp. H2305.

Active against anaerobic and gram-positive bacteria. Powder. Sol. MeOH, CH₂Cl₂, acids; poorly sol. bases, H₂O, hexane. $[\alpha]_D^{24}$ +140 (c, 0.5 in CHCl₃). pK_a 8.1 (H₂O).

► RH6312000

Oxalate:

Cryst. Mp 201-202°.

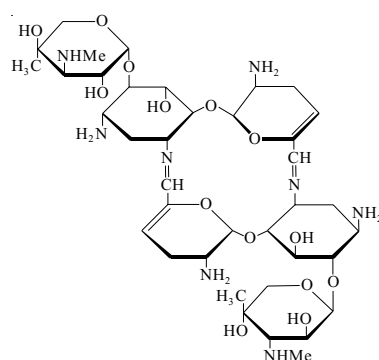
Hanada, S. et al., J. Antibiot., 1980, **33**, 751

(isol)

Toda, S. et al., J. Antibiot., 1981, **34**, 596 (struct)**Antibiotic 66-40C**

A-743

[60870-21-5]

 $C_{38}H_{64}N_8O_{14}$ 856.969Dimeric aminoglycoside antibiotic. Isol. from *Micromonospora inyoensis*. Lacks potent antibacterial activity. Amorph.solid. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.Mp 185-205° dec. $[\alpha]_D^{20}$ +112.5 (H₂O). λ_{max} 248 (ε 22000) (MeOH) (Berdy). λ_{max} 281 (MeOH-HCl) (Berdy).

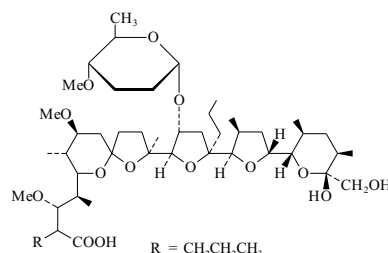
Davies, D.H. et al., J.C.S. Perkin 1, 1977, 1407;

J. Med. Chem., 1978, **21**, 189 (isol, uv, ir, pmr, cmr, ms)**Antibiotic CP 47433**

A-744

CP 47433

[74758-62-6]

 $C_{47}H_{82}O_{14}$ 871.156

Polyether antibiotic. Isol. from *Actinomyces macra* ATCC31286. Active against gram-positive bacteria. Shows anticoccidial activity. Cryst. Sol. MeOH, CHCl₃; poorly sol. H₂O. Mp 89-99°. $[\alpha]_D^{20}$ +16 (c, 1 in MeOH). Obt. as a 15:1 mixt. with CP 47434.

Na salt: [74806-73-8]

Mp 226-232°. $[\alpha]_D^{20}$ -0.2 (c, 1 in MeOH).Japan. Pat., 1979, 79 12 302; CA, **90**, 184897

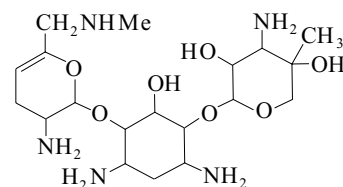
(isol)

Tone, J. et al., CA, 1980, **93**, 130480n (struct)**Antibiotic D 53**

A-745

D 53

[75217-40-2]

 $C_{19}H_{37}N_5O_7$ 447.531

Aminoglycoside antibiotic. Isol. from

Micromonospora sagamiensis

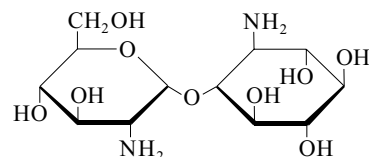
NRRL11290. Active against gram-

positive and -negative bacteria. Basic powder. Sol. H₂O.Japan. Pat., 1980, 80 69 594; CA, **93**, 219314**Antibiotic FU 10**

A-746

FU 10

[72614-87-0]

 $C_{12}H_{24}N_2O_9$ 340.33Aminocyclitol antibiotic. Prod. by *Micro-**monospora olivoasterospora*. Weakly

active against gram-positive and

-negative bacteria. Powder. Sol. H₂O.Mp 167-169°. $[\alpha]_D^{20}$ +89 (c, 0.46 in H₂O).

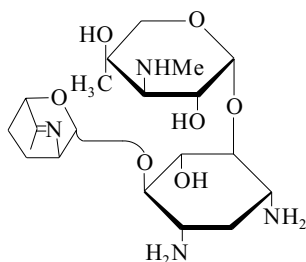
Intermediate in the biosynthesis of Fortimicin A, F-26.

Japan. Pat., 1979, 79 128 547; CA, **92**, 92701 (isol, struct, nmr)

Odakura, Y. *et al.*, *J. Antibiot.*, 1984, **37**, 1670
(*isol.*, *biosynth*)

Antibiotic II
[66277-08-5]

A-747



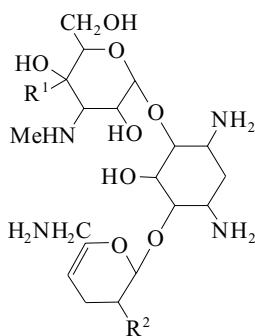
$C_{20}H_{36}N_4O_7$ 444.527

Aminoglycoside antibiotic. *Isol.* from *Micromonospora purpurea*. Active against gram-positive and -negative bacteria and mycobacteria. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. Me_2CO , hexane. $[\alpha]_D^{20} +144$ (H_2O).
► LD_{50} (mus, ivn) 80 mg/kg.

Berdy, J. *et al.*, *J. Antibiot.*, 1977, **30**, 945 (*isol*)
Berdy, J. *et al.*, *CA*, 1981, **95**, 78387 (*isol*)

Antibiotic I-SKA₁
I-SKA₁
[76045-27-7]

A-748



$R^1 = Me$, $R^2 = OH$

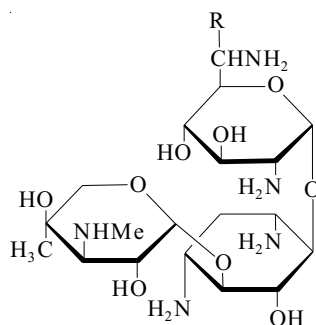
$C_{20}H_{38}N_4O_9$ 478.542

Aminocyclitol antibiotic. Prod. by *Micromonospora inyoensis* (NRRL3292; ATCC31454) in the presence of Kanamycin A. Active against gram-positive and -negative bacteria. Powder +1.5 H_2O . Sol. H_2O . Mp 127-129°. $[\alpha]_D^{25} +151.5$ (c, 1 in H_2O).

Japan. Pat., 1980, 55 115 896; *CA*, **94**, 63774 (*isol*)

Antibiotic JI 20A
JI 20A
[51846-97-0]

A-749



$R = H$

$C_{19}H_{39}N_5O_9$ 481.545

Aminoglycoside antibiotic. *Isol.* from *Micromonospora purpurea*. Active against gram-positive and gram-negative bacteria. Sol. H_2O ; poorly sol. EtOH, hexane. $[\alpha]_D^{20} +149.8$ (H_2O).
Related to the Gentamicins.

► LD_{50} (mus, ivn) 115 mg/kg. WK2281000
U.S. Pat., 1972, 3 903 072; *CA*, **86**, 15207x (*isol*)
Kugelman, M. *et al.*, *J.C.S. Perkin I*, 1976, 1126 (*synth*)
Berdy, J. *et al.*, *J. Antibiot.*, 1977, **30**, 945 (*isol*)
Lee, B.K. *et al.*, *Antimicrob. Agents Chemother.*, 1979, **16**, 589 (*biosynth*)

Antibiotic JI 20B
JI 20B
[51846-98-1]

A-750

As Antibiotic JI 20A, A-749 with
 $R = CH_3$

$C_{20}H_{41}N_5O_9$ 495.572

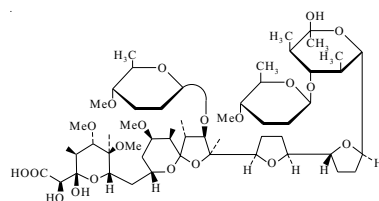
Aminoglycoside antibiotic. *Isol.* from *Micromonospora purpurea* and *Streptomyces flavovirens*. Antimicrobial. Active against gram-positive and -negative bacteria. Sol. H_2O ; poorly sol. EtOH, hexane. $[\alpha]_D^{20} +150$ (c, 1 in H_2O).

► LD_{50} (mus, ivn) 115 mg/kg. WK2291000
U.S. Pat., 1972, 261 753; *CA*, **81**, 36489c (*isol*)
Berdy, J. *et al.*, *J. Antibiot.*, 1977, **30**, 945 (*isol*)
Ivanatskaya, L.P. *et al.*, *Antibiotiki (Moscow)*, 1982, **27**, 724 (*isol*)

Antibiotic K 41B

A-751

15-O-Demethyl-15-O-tetrahydro-5-methoxy-6-methyl-2H-pyran-2-yl antibiotic K41, 9CI. K 41B
[72017-85-7]



$C_{54}H_{92}O_{20}$ 1061.309

Polyether antibiotic. *Isol.* from *Streptomyces hygroscopicus*. Active against gram-positive bacteria. Sol. MeOH, Et_2O ; fairly sol. hexane; poorly sol. H_2O .

Na salt: [72059-65-5]

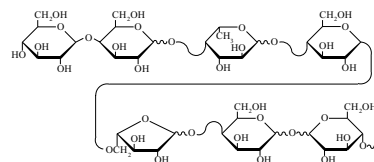
Mp 185-186° dec. $[\alpha]_D^{26} +4.3$ (MeOH).

Tsuji, N. *et al.*, *J. Antibiot.*, 1979, **32**, 169 (*cmr, struct*)

Antibiotic K 52B

A-752

K 52B
[65424-53-5]



X = Unknown diaminohehexose

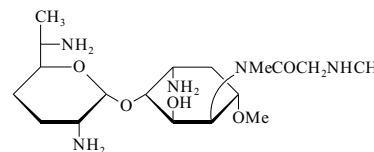
Oligosaccharide antibiotic. Prod. by *Streptoverticillium roseoverticillatum* subsp. *albosporum*. Active against gram-positive and -negative bacteria. Activity is reversed by addn. of amino acids. Powder. Sol. H_2O ; fairly sol. MeOH; poorly sol. EtOH, hexane. Mp 190° dec. Strain also prod. Antibiotic K 52A of unknown struct.

Shibata, M. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 1587; 1977, **41**, 1407; 1980, **44**, 1863 (*isol*)
Kido, Y. *et al.*, *Agric. Biol. Chem.*, 1980, **44**, 2073; 1981, **45**, 635; 641 (*struct*)

Antibiotic KA 6606IV

A-753

KA 6606IV. Spararicin D. 4-N-Formylglycylspararicin B
[68743-81-7]



$C_{18}H_{35}N_5O_6$ 417.504

Aminoglycoside antibiotic. *Isol.* from *Saccharopolyspora hirsuta*. Active against gram-positive and -negative bacteria. Basic solid. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. EtOAc, hexane. $[\alpha]_D^{27} +101$ (c, 1.0 in H_2O).

► LD_{50} (mus, ivn) 200 - 600 mg/kg. NM7522550

Carbonate (2:1):

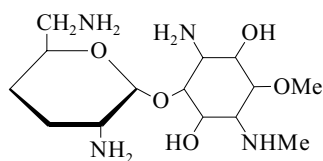
Solid + 1 H_2O . $[\alpha]_D^{23} +125$ (c, 1 in H_2O).

Tri-N-Ac: $[\alpha]_D^{23} +108$ (c, 0.5 in H_2O).

Ger. Pat., 1978, 2 813 021; *CA*, **90**, 53128n (*isol*)
Deushi, T. *et al.*, *J. Antibiot.*, 1981, **34**, 811

Antibiotic KA 7038IV

A-754

KA 7038IV. Sannamycin D
[73491-60-8]C₁₄H₃₀N₄O₅ 334.415

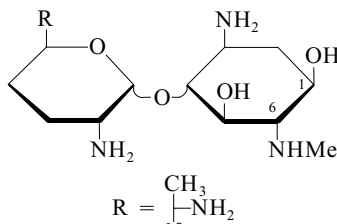
Aminoglycoside antibiotic. Prod. by *Streptomyces* sp. 7038. Active against gram-positive bacteria and weakly active against gram-negative bacteria. Powder. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, hexane. Mp 78-82°. [α]_D²⁵ +115 (c, 0.1 in H₂O). This strain also produces Istamycin A, I-81, Istamycin X₀, I-84, Sannamycin C, S-9, Sannamycin E, S-10 and Sannamycin K, S-11.

► LD₅₀ (mus, ivn) 300 - 700 mg/kg.
CB9411000

Ger. Pat., 1980, 2 928 373; CA, 92, 196387

Antibiotic KA 6606IX

A-755

KA 6606IX. Spararicin IX
[81768-57-2]C₁₄H₃₀N₄O₄ 318.415

Aminoglycoside antibiotic. Isol. from *Saccharopolyspora hirsuta*. Weakly active against gram-positive and -negative bacteria. Powder (as carbonate salt). Sol. H₂O, MeOH; poorly sol. EtOAc, CHCl₃, hexane. [α]_D²⁵ +86 (c, 1 in H₂O).

1-Me: Antibiotic KA 6606VII. KA 6606VII. Spararicin VII
[81800-11-5]

C₁₅H₃₂N₄O₄ 332.442

Isol. from *Saccharopolyspora hirsuta*. Weakly active against gram-positive and -negative bacteria and fungi. Powder. Sol. H₂O, MeOH; poorly sol. EtOAc, hexane, CHCl₃. [α]_D²¹ +78 (c, 0.4 in H₂O).

1-Epimer: Antibiotic KA 6606X. KA 6606X. Spararicin X
[81768-58-3]

C₁₄H₃₀N₄O₄ 318.415

From *Saccharopolyspora hirsuta*. Weakly active against gram-positive and -negative bacteria. Powder + 1H₂O. Sol. H₂O, MeOH; poorly sol. EtOAc, hexane, CHCl₃. [α]_D²⁵ +35 (c, 0.3 in H₂O).

1-Epimer, 1-Me: Antibiotic KA 6606V. KA 6606V
[75829-53-7]

C₁₅H₃₂N₄O₄ 332.442

Isol. from *Saccharopolyspora hirsuta*. Aminocyclitol antibiotic. Active against gram-positive and negative bacteria. Powder. Sol. H₂O. [α]_D²⁵ +103 (c, 1 in H₂O).

1-Epimer, 1-Me, 4',5'-dehydro: Antibiotic KA 6606XIII. KA 6606XIII. Spararicin XIII
[81749-23-7]

C₁₅H₃₀N₄O₄ 330.426

Isol. from *Saccharopolyspora hirsuta*. Weakly active against gram-positive and -negative bacteria. Powder (as carbonate salt). Poorly sol. hexane. [α]_D²⁵ +138 (c, 1 in H₂O).

6-Epimer, 1-Me: Antibiotic KA 6606VIII. KA 6606VIII. Spararicin VIII
[81768-56-1]

C₁₅H₃₂N₄O₄ 332.442

Isol. from *Saccharopolyspora hirsuta*. Weakly active against gram-positive and -negative bacteria. Powder. Sol. H₂O, MeOH; poorly sol. EtOAc, hexane, CHCl₃. [α]_D²¹ +88 (c, 0.2 in H₂O).

Japan. Pat., 1980, 80 111 497; CA, 94, 14023

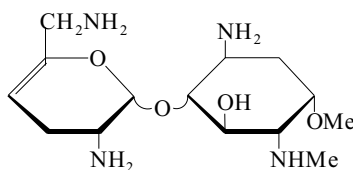
(KA 6606V)

Eur. Pat., 1982, 44 477; CA, 96, 216048 (isol)

Japan. Pat., 1982, 82 99 582; CA, 97, 216625 (KA 6606VII)

Antibiotic KA 6606XV

A-756

KA 6606XV. Spararicin XV
[81749-22-6]C₁₄H₂₈N₄O₄ 316.4

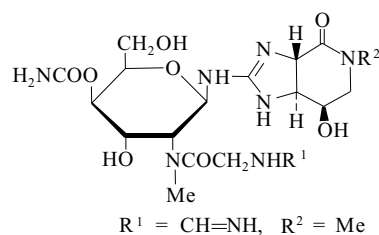
Isol. from *Saccharopolyspora hirsuta*. Weakly active against gram-positive and -negative bacteria. Powder (as carbonate salt). Poorly sol. hexane. [α]_D²⁴ +126 (c, 1 in H₂O).

Ger. Pat., 1982, 44 477; CA, 96, 216048 (isol)

Antibiotic LL-AB 664

A-757

Neoenactin A₁. LL-AB 664. BD 12. O 837A. Antibiotic BD 12. Antibiotic O 837A
[29266-98-6]

C₁₈H₃₀N₈O₈ 486.484

Nucleoside antibiotic. Member of Streptothricin group. Isol. from a strain of *Streptomyces candidus* NRRL3083, *Streptovorticillium olivoreticuli*, *Streptomyces luteocolor* MCRL0357 and *Streptomyces* sp. 0837. Shows antibiotic props. Active against gram-positive and

-negative bacteria and fungi. Sol. H₂O; poorly sol. butanol, hexane. [α]_D²⁵ -59 (c, 2.004 in H₂O). Indefinite Mp. *S. olivoreticuli* also prod. Neoenactins B and C, which are Bleomycins. Not related to Neoenactin A (see Neoenactin) isol. by Nishio, M. et al.

► LD₅₀ (mus, ivn) 75 mg/kg. OJ7407000

Hydrochloride (1:2): Mp 210° Mp 200.5-201.5°. [α]_D²² -62.2 (c, 1 in H₂O). [α]_D²⁵ -75 (C, 1.0 in H₂O).

De(iminomethyl): See Antibiotic LL-AB664β in *The Combined Chemical Dictionary*.

Picrate: Mp 160-165.5° dec.

[71950-48-6]

Sax, K.J. et al., *Antimicrob. Agents Chemother.*, (Interscience conference)(pub 1968), 1967, 442-448; CA, 70, 2413f (isol, props, activity)

Ito, Y. et al., *J. Antibiot.*, 1968, 21, 283-289; 307-313 (isol)

Borders, D.B. et al., *Tetrahedron*, 1970, 26, 3123-3133 (struct)

U.S. Pat., 1970, 3 495 003; CA, 72, 109822 (isol)

Otani, T. et al., *Jpn. J. Antibiot.*, 1979, 32, 720-728 (isol, struct)

Kawakami, Y. et al., *J. Antibiot.*, 1981, 34, 921-922 (isol, struct, pmr, cmr)

Antibiotic LL-AC 541

A-758

Citromycin†. Neoenactin A₂. Antibiotic E 749C. BY 81. E 749C. LL-AC 541.

Antibiotic 1483A. Antibiotic BY 81

[29266-97-5]
As Antibiotic LL-AB 664, A-757 with

R¹ = CH=NH, R² = H

C₁₇H₂₈N₈O₈ 472.457

Nucleoside antibiotic. Isol. from *Streptomyces hygroscopicus* and *Streptovorticillium olivoreticuli*. Active against gram-positive and -negative bacteria. Anthelmintic. Mp 210-240°. Acid hydrol. → *inter alia* Glycine and Streptolidine. Not the same as Citromycin from *Citromyces* sp. (see Citromycetin).

Hydrochloride (1:2): Mp 200-215°. [α]_D -58 (c, 1.09 in H₂O).

Ito, Y. et al., *J. Antibiot.*, 1968, 21, 289 (isol)

Borders, D.B. et al., *Tetrahedron*, 1970, 26, 3123 (struct)

U.S. Pat., 1970, 3 495 003; CA, 72, 109882 (isol)

Taniyama, H. et al., *J. Antibiot.*, 1971, 24, 1708

Kondo, H. et al., *J. Antibiot.*, 1979, 32, 13

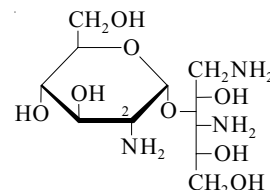
(Neoenactins)

Kawakami, Y. et al., *J. Antibiot.*, 1979, 32, 720; 1981, 34, 921 (isol, struct, pmr, cmr)

Antibiotic LL-AM 31α

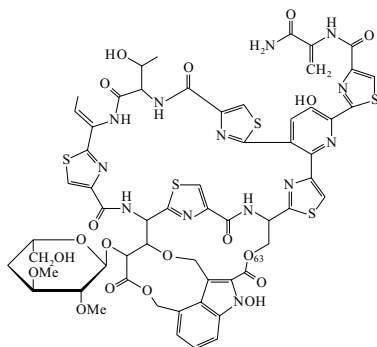
A-759

1,4-Diamino-3-O-(2-amino-2-deoxy-α-D-glucopyranosyl)-1,4-dideoxy-D-glucitol, 9CI. LL-AM 31α. AM31α. Antibiotic AM31α
[61371-31-1]



Antibiotic S 54832A
S 54832A

A-767



Cyclic depsipeptide antibiotics. Struct. shown is S 54832A-I. Isol. from *Microspora globosa*. Active against gram-positive bacteria, mycoplasmas and *Neisseriae* sp.

Antibiotic S 54832A-I

49-O-(4-Deoxy-2,3-di-O-methyl- α -L-arabino-hexopyranosyl)-48,70-epoxy-58-hydroxy-63-oxanosieptide, 9CI. S 54832A-I [73666-05-4]

C₅₉H₅₅N₁₃O₁₉S₅ 1410.489
Yellow powder. Mp 310° dec. [α]_D²⁰ +118.7 (c, 1.140 in Py). pK_{a1} 7.65; pK_{a2} 10.7 (84% 2-methoxyethanol).

Dihydro: **Antibiotic S 54832A-IV**. 49-O-(4-Deoxy-2,3-di-O-methyl- α -L-arabino-hexopyranosyl)-63-dethia-48,70-epoxy-dihydro-58-hydroxy-63-oxanosieptide, 9CI. S 54832A-IV [73666-08-7]

C₅₉H₅₇N₁₃O₁₉S₅ 1412.505
Pale-yellow powder. Mp 310° dec. [α]_D²⁰ +153.2 (c, 0.752 in Py).

Antibiotic S 54832A-II S 54832A-II
[73666-06-5]

Pale-yellow powder. Mp 310° dec.
Struct. unknown.

Antibiotic S 54832A-III S 54832A-III
[73666-07-6]

Pale-yellow powder. Mp 310° dec.
Struct. unknown.

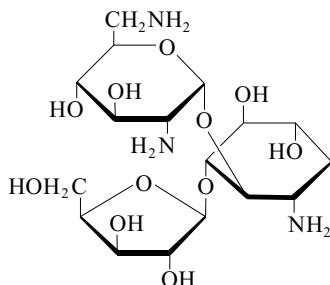
[94588-48-4, 94588-49-5]

Ger. Pat., 1979, 2 921 148; CA, **93**, 6124 (isol, props, nmr)
U.S. Pat., 1984, 4 478 831; CA, **102**, 77266 (isol)

Antibiotic S-11-A

A-768

S-11-A. 1-Deamino-1-hydroxyxylostasin [75303-50-3]

C₁₇H₃₃N₃O₁₁ 455.461

Aminocyclitol antibiotic. Isol. from *Bacillus circulans* mutant. Active against gram-negative and -positive bacteria.
Sol. H₂O.

Sulfate (1:1.5):

Cryst. + 4H₂O. Mp 140-170° dec. [α]_D^{24.5} +38.2 (c, 1 in H₂O).

N-Ac:

Powder. Mp 160°. [α]_D²⁶ +5.8 (c, 1 in H₂O).

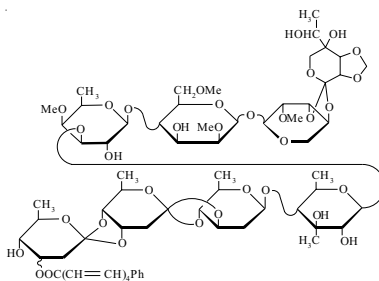
Fujiwara, T. et al., *J. Antibiot.*, 1980, **33**, 836
Japan. Pat., 1981, 81 68 699; CA, **95**, 185552

Antibiotic SE 73-74D

A-769

SE 73-74D

[74440-75-8]

C₆₉H₉₈O₃₃ 1455.513

Oligosaccharide/polyene antibiotic. Isol. from *Actinoplanes* sp. Active against gram-positive and -negative bacteria and mycoplasmas. Animal growth promoter. Light-yellow amorph. solid. Sol. MeOH, MeCN, CHCl₃, DMSO, DMF; fairly sol. Et₂O; poorly sol. H₂O, hexane. Mp 164-172° dec. λ_{\max} 277 (E1%/1cm 60); 365 (E1%/1cm 406) (MeOH) (Berdy).

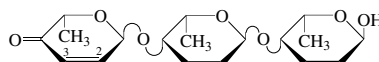
Ger. Pat., 1980, 2 848 793; CA, **93**, 184263 (isol, uv, ir, pmr, cmr)

Antibiotic SEN 366D₁

A-770

SEN 366D₁

[105344-95-4]

C₁₈H₂₈O₇ 356.415

Prod. by *Streptomyces* sp. SEN366-BP577. Platelet aggregation inhibitor.

2,3-Dihydro: **Antibiotic SEN 366D₂**. SEN 366D₂

[105344-96-5]

C₁₈H₃₀O₇ 358.431

Prod. by *Streptomyces* sp. SEN366-BP577. Platelet aggregation inhibitor.

2,3-Dihydro, 2-hydroxy: **Antibiotic SEN 366P**. SEN 366P

C₁₈H₃₀O₈ 374.43

Prod. by *Streptomyces* sp. SEN366-BP577. Platelet aggregation inhibitor.
Powder. Sol. H₂O, CHCl₃, MeOH; poorly sol. hexane. λ_{\max} 200 (MeOH).

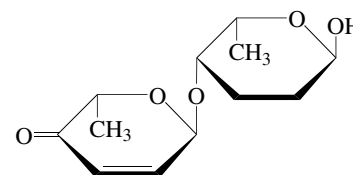
Fr. Pat., 1986, 2 571 964; CA, **106**, 100840z

Antibiotic SEN 366F

A-771

SEN 366F

[105344-94-3]

C₁₂H₁₈O₅ 242.271

Prod. by *Streptomyces* sp. SEN366-BP577. Platelet aggregation inhibitor.
Powder. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane. λ_{\max} 200 (MeOH).

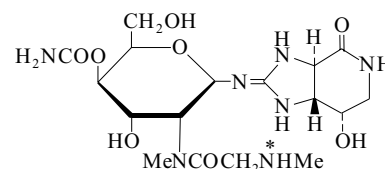
Fr. Pat., 1986, 2 571 964; CA, **106**, 100840z

Antibiotic SF 701

A-772

Antibiotic 6241-B. SF 701. A 269A. LL-BL 136. Antibiotic A 269A. Antibiotic LL-BL 136

[38621-52-2]

C₁₇H₂₉N₇O₈ 459.458

Streptothricin-type antibiotic. Isol. from *Streptomyces griseochromogenes* and *Streptomyces* sp. No. 6241. Possesses weak antimicrobial activity and shows herbicidal props. Powder.
Mp 192-194° dec. [α]_D²⁵ -65.7 (c, 1 in H₂O). Similar to Antibiotic LL-AB 664, A-757.

► CB9753800

Hydrochloride (1:2): Mp 210-213° dec. [α]_D²⁴ -68 (H₂O).

Carbonate (1:1.5): Mp 225° dec. [α]_D²⁶ -115 (c, 0.2 in H₂O). Data is for A 269A.

N-Me: **Antibiotic 6241 A**

[97816-59-6]

C₁₈H₃₁N₇O₈ 473.485

From *Streptomyces* No. 6241. Similar biol. activity as SF 701. Powder. Sol. H₂O, MeOH; fairly sol. EtOH; poorly sol. Me₂CO, hexane, EtOAc. Mp 179-181° dec. [α]_D²⁵ -82 (c, 0.1 in H₂O).

Tsuruoka, T. et al., *J. Antibiot., Ser. A*, 1968, **21**, 237 (isol)

Borders, D.B. et al., *Antimicrob. Agents Chemother.*, 1972, **1**, 403 (LL-BL 136)

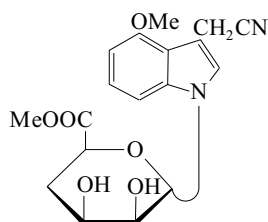
Kida, T. et al., *Agric. Biol. Chem.*, 1985, **49**, 1839 (isol, props)

Kido, Y. et al., *J. Antibiot.*, 1987, **40**, 1698 (A 269A)

Antibiotic SF 2140

SF 2140

[91284-30-9]

 $C_{18}H_{20}N_2O_6$ 360.366

Nucleoside antibiotic. Prod. by *Actinomadura albolutea*. Antiviral agent. Shows weak broad spectrum of anti-bacterial activity. Cryst. ($CHCl_3$ /MeOH). Sol. MeOH, EtOAc, EtOH, Me_2CO , $CHCl_3$; fairly sol. C_6H_6 ; poorly sol. H_2O , hexane. Mp 174-176°. $[\alpha]_D^{20} +59$ (c, 1.0 in MeOH). Similar to Neosidomycin, N-27. λ_{max} 222 (ε 34600); 258 (sh) (ε 7630); 265 (ε 8210); 284 (ε 6260); 294 (ε 6910) (MeOH) (Derep).

► LD₅₀ (mus, ipr) 2000-4000 mg/kg.
MQ3160000

Di-Ac:

Cryst. Mp 114°.

[83652-17-9, 93207-27-3]

Japan. Pat., 1982, 82 85 397; CA, 97, 214253 (isol)

Ito, T. et al., J. Antibiot., 1984, 37, 931 (isol, cryst struct)

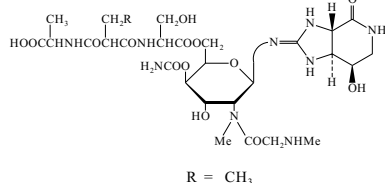
Tohyama, H. et al., J. Antibiot., 1984, 37, 1145 (isol)

Buchanan, J.G. et al., J.C.S. Perkin 1, 1994, 1417 (synth)

Antibiotic SF 2111A

SF 2111A

[107724-22-1]

 $C_{28}H_{45}N_9O_{14}$ 731.715

Nucleoside antibiotic. Isol. from *Streptomyces* sp. Active against phytopathogenic fungi, and weakly against gram-positive and -negative bacteria. Similar to Streptothricins.

Hydrochloride:

Amorph. powder + $1H_2O$. Mp 189-193° dec. $[\alpha]_D^{23} -55.5$ (c, 1 in H_2O).

[80701-12-8]

Japan. Pat., 1981, 81 118 094; CA, 96, 99410 (isol, props)

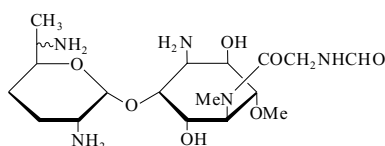
Japan. Pat., 1982, 82 158 797; CA, 98, 124166 (isol, props)

A-773

Antibiotic SF 2052B

SF 2052B. Dactimicin B

[79172-06-8]

 $C_{18}H_{35}N_5O_7$ 433.504

Aminocyclitol antibiotic. Prod. by

Dactylosporangium mutsuzakiense.

Weakly active against gram-positive and -negative bacteria. Basic powder.

Sol. H_2O ; poorly sol. hexane.

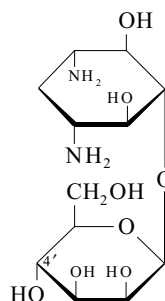
Mp 128° dec.

Japan. Pat., 1981, 81 40 697; CA, 95, 167125

Antibiotic SS 56A, 9CI

A-776

SS 56A. 2-Deoxy-5-O-β-D-mannopyranosylstreptamine
[39471-53-9]

 $C_{12}H_{24}N_2O_8$ 324.33

Aminoglycoside antibiotic. Isol. from

Streptomyces eurocidicus. Antifungal

antibiotic. Active against gram-positive and gram-negative bacteria. Cryst. Sol.

 H_2O .Mp 252-254° dec. $[\alpha]_D^{25} -30$ (c, 0.62 in H_2O).

4'-Epimer: Antibiotic SS-56B, 9CI. SS 56B
[39471-54-0]

 $C_{12}H_{24}N_2O_8$ 324.33From *Streptomyces eurocidicus*. Shows

similar activity to SS-56A. Cryst.

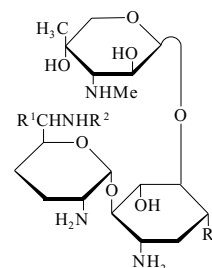
Mp 229-231° dec. $[\alpha]_D^{25} -11.5$ (c, 0.93 in H_2O).

Inouye, S. et al., J. Antibiot., 1973, 26, 374 (isol, struct)

A-774

Antibiotic SU

A-777

SU-1, $R^1 = Me$, $R^2 = H$, $R^3 = OH$ SU-2, $R^1 = R^2 = H$, $R^3 = OH$ SU-3, $R^1 = H$, $R^2 = CH_3$, $R^3 = OH$ SU-4, $R^1 = R^2 = R^3 = H$ (probable structure)

Aminocyclitol antibiotic complex. Prod. by *Micromonospora sagamiensis* idio-trophic mutant. Shows potent broad spectrum antibacterial activity. Consists of a mixt. of 4 components.

Antibiotic SU1

SU1

[72854-56-9]

 $C_{20}H_{40}N_4O_8$ 464.558Powder. Sol. H_2O ; poorly sol. butanol, $CHCl_3$.**Antibiotic SU2**

SU2

[66065-96-1]

 $C_{19}H_{38}N_4O_8$ 450.531

Shows broad spectrum antibacterial activity against gentamicin resistant strains. Powder. Sol. H_2O , MeOH; fairly sol. EtOH, Me_2CO ; poorly sol. EtOH, hexane. Mp 102-112°. $[\alpha]_D +172$ (c, 0.3 in H_2O). Major component of complex.

Antibiotic SU3

SU3. SUM3. 1-Deamino-1-hydroxysaga-micin
[72614-86-9]

 $C_{20}H_{40}N_4O_8$ 464.558

Also prepd. from Antibiotic XK 62-2. Shows broad spectrum antibacterial activity. Powder. Sol. H_2O , MeOH; fairly sol. EtOH, Me_2CO ; poorly sol. butanol, $CHCl_3$.

Antibiotic SU4

SU4. SUM4

[72854-57-0]

 $C_{19}H_{38}N_4O_7$ 434.532

Shows broad spectrum antibiotic activity. Powder. Sol. H_2O ; poorly sol. butanol, $CHCl_3$. Mol. formula given does not agree with probable struct.

[71751-76-3]

Japan. Pat., 1978, 79 135 704; 79 135 705; CA, 92, 109109; 109110

Japan. Pat., 1979, 79 59 202; 79 117 47; CA, 91, 191354; 92, 92700

Kase, H. et al., J. Antibiot., 1982, 35, 385 (isol) Shirahata, K. et al., J. Antibiot., 1982, 35, 520 (struct)

Kase, H. et al., CA, 1984, 100, 99492 (rev)

β-D-Pyranose-form

1-O-(3-Methylbutanoyl): [467242-31-5]

C₁₆H₂₈O₁₁ 396.391

Constit. of green coffee beans (*Coffea arabica*).

1-O-(3-Methyl-2-butenoyl): [467242-32-6]

C₁₆H₂₆O₁₁ 394.375

Constit. of green coffee beans (*Coffea arabica*).

1-O-Benzoyl, 5'-O-(3,4-dihydroxycinnamoyl) (E-): **Psydroside**

[166990-09-6]

C₂₇H₃₀O₁₄ 578.526

Constit. of the leaves of *Psyrax livida*. [α]_D²⁵ -45 (c, 0.5 in MeOH).

Me glycoside: Methyl β-D-apiofuranosyl-(1→6)-β-D-glucopyranoside

C₁₂H₂₂O₁₀ 326.3

Constit. of cumin (*Cuminum cyminum*). Syrup. [α]_D²¹ -81 (c, 0.4 in MeOH).

Nahrstedt, A. et al., *Phytochemistry*, 1995, **39**, 375 (*Psydroside*)

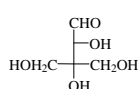
Weckerle, B. et al., *Phytochemistry*, 2002, **60**, 409-414 (*coffee constituents*)

Takayanagi, T. et al., *Phytochemistry*, 2003, **63**, 479-484 (*Me glycoside, isol*)

Apiose, 9CI, 8CI

A-785

2,3,4-Trihydroxy-3-(hydroxymethyl)butanal. 3-C-(Hydroxymethyl)-glycero-tetrose. Tetrahydroxyisovaleraldehyde



D-form



β-D-erythro-Tetrofuranose-form

C₅H₁₀O₅ 150.131

Care needed with naming and numbering of derivs. C-3 is not a chiral centre in the acyclic sugar. In L-Apio-α-D-furanose for example, L- defines the config. at C-2 (L-apiose), while D- defines the config. at C-3 (D-furanosyl stereoisomeric form of L-apiose).

D-form

(R)-form

[639-97-4]

First found in parsley as the glycoside Apiin, also present in celery, *Dalbergia lanceolaria*, *Posidonia australis*, *Hevea brasiliensis*, *Taraxacum kok-saghyz*, *Zostera marina*, *Lemna* spp., and *Platycodon grandiflorum*. Syrup. [α]_D +7.6 (c, 0.7 in H₂O).

Benzylphenylhydrazones:

Cryst. (CHCl₃). Mp 138-139°. [α]_D²⁰ -94 (c, 4.6 in Py). [α]_D -29 (c, 1.1 in MeOH).

2,3-O-Isopropylidene: 2,3-O-Isopropylidene-D-apiose

C₈H₁₄O₅ 190.196

Syrup. [α]_D -35 (c, 0.87 in MeOH).

α-D-erythro-Tetrofuranose-form D-Apio-α-D-furanose, 9CI. 3-C-Hydroxymethyl-α-D-erythro-tetrofuranose [30738-01-3]

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-D-apio-α-D-furanose. 1,2-O-Isopropylidene-α-D-erythro-tetrofuranose [25018-74-0]

C₈H₁₄O₅ 190.196

Needles (Et₂O/hexane). Mp 118-120°. [α]_D²⁹ +54.5 (c, 0.8 in EtOH).

1,2-O-Isopropylidene, di-Ac: 1',3-Di-O-acetyl-1,2-O-isopropylidene-D-apio-α-D-furanoside. 1',3-Di-O-acetyl-1,2-O-isopropylidene-α-D-erythro-tetrofuranose [33962-41-3]

C₁₂H₁₈O₇ 274.27

Needles (hexane). Mp 110-111°. [α]_D +64 (c, 1.4 in CHCl₃).

1,2,1',3-Di-O-isopropylidene: 1,2,1',3-Di-O-isopropylidene-D-apio-α-D-furanoside. 1,2,1',3-Di-O-isopropylidene-α-D-erythro-tetrofuranose [25904-06-7]

C₁₁H₁₈O₅ 230.26

Cryst. (Et₂O/hexane). Mp 46-49° Mp 52-54°. [α]_D +62.4 (c, 1.0 in CHCl₃). [α]_D²⁸ +76.5 (c, 3.0 in EtOH).

Me glycoside, 1',2,3-tri-Me: Methyl 1',2,3-tri-O-methyl-D-apio-α-D-furanoside. Methyl 3-C-(methoxymethyl)-2,3-di-O-methyl-α-D-erythro-tetrofuranoside

C₉H₁₈O₅ 206.238

[α]_D²⁶ +116 (CHCl₃).

β-D-erythro-Tetrofuranose-form D-Apio-β-D-furanose, 9CI. 3-C-Hydroxymethyl-β-D-erythro-tetrofuranose

[36465-64-2]

Syrup.

2,3-O-Isopropylidene: 2,3-O-Isopropylidene-D-apio-β-D-furanose. 3-C-Hydroxymethyl-2,3-O-isopropylidene-β-D-erythro-tetrofuranose [70147-50-1]

C₈H₁₄O₅ 190.196

Cryst. (Et₂O/hexane). Mp 72°. [α]_D -40 (c, 1.5 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene, 3'-tosyl: Methyl 2,3-O-isopropylidene-1'-tosyl-D-apio-β-D-furanoside [32445-78-6]

C₁₆H₂₂O₇S 358.412

Cryst. (Et₂O/hexane). Mp 90-91°. [α]_D²⁸ -82.1 (c, 4.0 in CHCl₃).

Me glycoside, 3'-Me, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene-3'-methyl-D-apio-β-D-furanoside. 2,3-O-Isopropylidene-3-C-(methoxymethyl)-3-O-methyl-β-D-erythro-tetrofuranose [4098-02-6]

C₁₀H₁₈O₅ 218.249

Bp₂ 70°. [α]_D²⁵ -106 (c, 2.4 in CHCl₃).

Me glycoside, 1',2,3-tri-Me: Methyl 1',2,3-tri-O-methyl-D-apio-β-D-furanoside. Methyl 3-C-(methoxymethyl)-2,3-di-O-methyl-β-D-erythro-tetrofuranoside

C₉H₁₈O₅ 206.238

Syrup. [α]_D -79 (CHCl₃).

β-L-threo-Tetrofuranose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-L-apio-β-L-furanose. 1,2-O-Isopropylidene-3-C-hydroxymethyl-β-L-threo-tetrofuranose [14048-35-2]

C₈H₁₄O₅ 190.196

Needles (CH₂Cl₂/hexane). Mp 124-125°. [α]_D²⁹ +46 (c, 1.0 in EtOH).

1,2-O-Isopropylidene, di-Ac: 1',3-Di-O-acetyl-1,2-O-isopropylidene-D-apio-β-L-furanose. 1',3-Di-O-acetyl-1,2-O-isopropylidene-β-L-threo-tetrofuranose [14048-36-3]

C₁₂H₁₈O₇ 274.27

Cubes (cyclohexane). Mp 88-89.5°. [α]_D²⁹ +75 (c, 1.4 in CHCl₃).

1,2-O-Isopropylidene, 1'-tosyl: 1,2-O-Isopropylidene-1'-O-tosyl-β-L-threo-tetrofuranose

C₁₅H₂₀O₇S 344.385

Cryst. (Et₂O). Mp 137-138°. [α]_D +43.2 (c, 4.4 in CHCl₃).

1,2,1',3-Di-O-isopropylidene: 1,2,1',3-Di-O-isopropylidene-D-apio-β-L-furanose. 1,2,1',3-Di-O-isopropylidene-3-C-(hydroxymethyl)-β-L-threo-tetrofuranose [14854-36-5]

[34724-16-8]

C₁₁H₁₈O₅ 230.26

Needles (H₂O/NH₃). Mp 80-82°. [α]_D²⁹ +59 (c, 1.0 in EtOH).

1',3-Di-Me, 1,2-O-isopropylidene: 1,2-O-Isopropylidene-1',3'-di-O-methyl-D-apio-β-L-furanose. 1,2-O-Isopropylidene-1',3'-di-O-methyl-β-L-threo-tetrofuranose [32445-76-4]

C₁₀H₁₈O₅ 218.249

Oil. Bp_{0.1} 60°.

1',3-Dibenzyl, 1,2-O-isopropylidene: 1',3-Di-O-benzyl-1,2-O-isopropylidene-L-apio-β-L-furanose. 1',3-Di-O-benzyl-1,2-O-isopropylidene-β-L-threo-tetrofuranose [34339-65-6]

C₂₂H₂₆O₅ 370.444

Mp 38-39°. [α]_D²² +54.5 (c, 1.2 in CHCl₃).

L-form [6477-44-7]

Syrup. [α]_D²⁰ -5 (c, 8.0 in H₂O).

Benzylphenylhydrazones:

Cryst. Mp 136-137°. [α]_D²⁰ +94 (c, 1.0 in Py).

α-L-erythro-Tetrofuranose-form L-Apio-α-L-furanose, 9CI. 3-C-Hydroxymethyl-α-L-erythro-tetrofuranose

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-L-apio-α-L-furanose [22403-90-3]

C₈H₁₄O₅ 190.196

Cryst. (EtOAc/hexane). Mp 116-118°. [α]_D²⁰ -43.8 (c, 1.5 in EtOH).

1',3-Dibenzyl, 1,2-O-isopropylidene: 1',3-Di-O-benzyl-1,2-O-isopropylidene-L-apio-α-L-furanose. 1',3-Di-O-benzyl-1,2-O-isopropylidene-α-L-erythro-tetrofuranose

C₂₂H₂₆O₅ 370.444

Cryst. (Et₂O/petrol). Mp 60-61°. [α]_D¹⁹ -58 (c, 1.5 in CHCl₃).

DL-form [42927-70-8]

Syrup.

[6477-44-7, 30912-14-2, 41546-43-4, 41546-44-5, 41546-46-7, 41546-47-8, 41546-49-0, 94943-41-6]

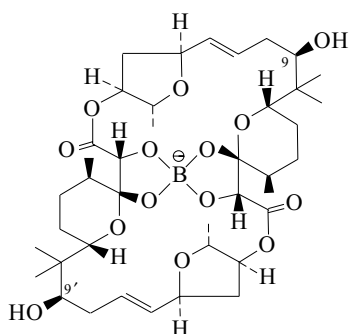
Bell, D.J. et al., *J.C.S.*, 1954, 3702 (*isol*)

Weygand, F. *et al.*, *Chem. Ber.*, 1959, **92**, 535 (*L-form*)
 Schaffer, R. *et al.*, *J.A.C.S.*, 1959, **81**, 5452 (*L-form*)
 Bell, D.J. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 260 (*isol*)
 Williams, D.T. *et al.*, *Can. J. Chem.*, 1964, **42**, 69 (*D-form*, *isol*, *synth*, *D-isopropylidene*)
 Carey, F.A. *et al.*, *Carbohydr. Res.*, 1966, **2**, 205 (α -*L-fur* derivs)
 Ball, D.H. *et al.*, *Carbohydr. Res.*, 1969, **10**, 121; 1971, **17**, 165; 1975, **45**, 91 (α -*D-Me gly tri-Me*, β -*D-Me gly tri-Me*, β -*D-Me gly derivs*, 1,2;3,3'-*diisopropylidene*)
 Ezekiel, A.D. *et al.*, *Tet. Lett.*, 1969, 1635 (α -*D-isopropylidene*, α -*D-isopropylidene di-Ac*)
 Overend, W.G. *et al.*, *Carbohydr. Res.*, 1970, **15**, 185 (*L-form*)
 Tronchet, J.M.J. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1466 (1,2-*O-isopropylidene*)
 Ezekiel, A.D. *et al.*, *J.C.S. (C)*, 1971, 2907 (β -*L-dibenzyl isopropylidene*)
 Kinoshita, T. *et al.*, *Carbohydr. Res.*, 1973, **28**, 175 (β -*L-threo-isopropylidene*, β -*L-threo diisopropylidene*)
 Tronchet, J.M.T. *et al.*, *Carbohydr. Res.*, 1974, **33**, 237 (β -*L-threo isopropylidene*)
 Watson, R.R. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1975, **31**, 135 (*rev*)
 Vyas, D.M. *et al.*, *Can. J. Chem.*, 1975, **53**, 2748 (*cmr*)
 Ho, P.-T. *et al.*, *Can. J. Chem.*, 1979, **57**, 381 (*D-form*, *L-form*, *synth*, β -*D-isopropylidene*)
 Koos, M. *et al.*, *Carbohydr. Res.*, 1986, **146**, 335 (*synth*)
 Snyder, J.R. *et al.*, *Carbohydr. Res.*, 1987, **166**, 85 (*DL-form*)

Aplasmomycin

A-786

Aplasmomycin A
 [61230-25-9]



$C_{40}H_{60}BO_{14}$ 775.717

Isol. from *Streptomyces griseus*. Active against gram-positive bacteria and shows insecticidal and acaricidal props. Sol. MeOH, Et₂O; fairly sol. hexane; poorly sol. H₂O. Belongs to small group of boron-containing antibiotics. Closely related to Boromycin.

► LD₅₀ (mus, ipr) 125 mg/kg. CD8835000

Na salt:

Needles (MeOH aq.). Mp 283-285° dec. [α]_D²² +225 (c, 1.24 in CHCl₃).

9-Ac: **Aplasmomycin B**

[68193-20-4]

$C_{42}H_{62}BO_{15}$ 817.754

From *Streptomyces griseus*. Active against gram-positive bacteria. Sol. MeOH, EtOAc; poorly sol. H₂O. [α]_D +188 (MeOH) (as Na salt).

9,9'-Di-Ac: **Aplasmomycin C**

[68193-21-5]

$C_{44}H_{64}BO_{16}$ 859.791

From *Streptomyces griseus*. Weakly active against gram-positive bacteria. Sol. MeOH, EtOAc; poorly sol. H₂O. [α]_D +134 (MeOH) (as Na salt).

Okami, Y. *et al.*, *J. Antibiot.*, 1976, **29**, 1019

(*isol*, *ir*, *uv*, *ms*, *pmr*, *cmr*, *struct*)

Nakamura, H. *et al.*, *J. Antibiot.*, 1977, **30**, 714

(*struct*)

Sato, K. *et al.*, *J. Antibiot.*, 1978, **31**, 632 (*deriv*)

Chen, T.S.S. *et al.*, *J. Antibiot.*, 1980, **33**, 1316

(*biosynth*, *pmr*, *cmr*)

Floss, H.G. *et al.*, *Antibiotics (N.Y.)*, 1981, **4**, 193

(*biosynth*, *rev*)

Corey, E.J. *et al.*, *J.A.C.S.*, 1982, **104**, 6816;

6818 (*synth*)

White, J.D. *et al.*, *Tet. Lett.*, 1984, **25**, 3671

(*synth*)

Lee, J.J. *et al.*, *Diss. Abstr. Int.*, B, 1985, **45**, 3233

(*biosynth*)

White, J.D. *et al.*, *J.A.C.S.*, 1986, **108**, 8105

(*synth*)

Matsuda, F. *et al.*, *Tetrahedron*, 1990, **46**, 3469

(*synth*)

Stout, T.J. *et al.*, *Tetrahedron*, 1991, **47**, 3511

(*cryst struct*, *bibl*)

Norcross, R.D. *et al.*, *Chem. Rev.*, 1995, **95**, 2041

(*rev*, *synth*)

Apramycin, BAN, INN,

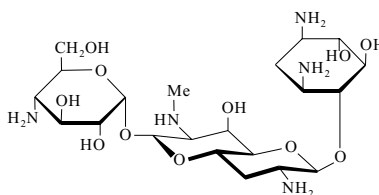
A-787

USAN

Nebramycin II. Ambylan. Apralan. Mag-

nimix. EL 857/820. Lilly 47657

[37321-09-8]



$C_{21}H_{41}N_5O_{11}$ 539.582

Isol. from *Streptomyces tenebrarius* and *Saccharomyces porispora hiltus*. Veterinary drug shows antibiotic activity against gram-positive and -negative organisms. Cryst. + 1H₂O (EtOH aq.). Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. Mp 245-247°. [α]_D²⁵ -164 (c, 1 in H₂O). Log P -8.11 (uncertain value) (calc).

► LD₅₀ (mus, ivn) 280 mg/kg; LD₅₀ (mus, ivn) 385 mg/kg. WK1970000

[41194-16-5]

O'Connor, S. *et al.*, *J.O.C.*, 1976, **41**, 2087 (*isol*, *ir*, *ms*, *pmr*, *cryst struct*)

Koch, K.F. *et al.*, *J.O.C.*, 1978, **43**, 1430 (*cmr*, *N-15 nmr*, *ms*)

Japan. Pat., 1980, 80 102 397; *CA*, **93**, 236935

(*manuf*)

Tatsuta, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1984, **57**, 529 (*synth*, *pmr*)

Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, AQP885

Szilagyi, L. *et al.*, *Magn. Reson. Chem.*, 1992, **30**, 107 (*pmr*, *cmr*)

Eneva, G.I. *et al.*, *Magn. Reson. Chem.*, 1992, **30**, 841 (*pmr*, *cmr*)

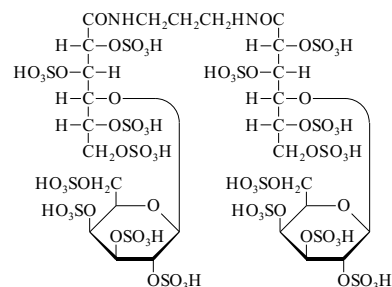
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 118

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AQP885

Aprosulate

A-788

N,N'-1,3-Propanediylbis[4-O-(2,3,4,6-tetra-O-sulfo- β -D-galactopyranosyl)-D-glucosamine], 9CI



$C_{27}H_{50}N_2O_{70}S_{16}$ 2035.719

Hexadeca-Na salt: Aprosulatate sodium,

INN. LW 10082

[123072-45-7] Anticoagulant and antithrombotic agent.

Raake, W. *et al.*, *Thromb. Res.*, 1989, **56**, 719

(*synth*, *pharmacol*)

Ofoosu, F.A. *et al.*, *Eur. J. Biochem.*, 1992, **203**, 121

(*pharmacol*)

Raake, W. *et al.*, *Semin. Thromb. Hemostasis*, Suppl. 1, 1993, **19**, 183 (*pharmacol*)

Sugidachi, A. *et al.*, *Thromb. Res.*, 1993, **69**, 71

(*pharmacol*)

Papoulis, U.E. *et al.*, *Thromb. Res.*, 1993, **72**, 99

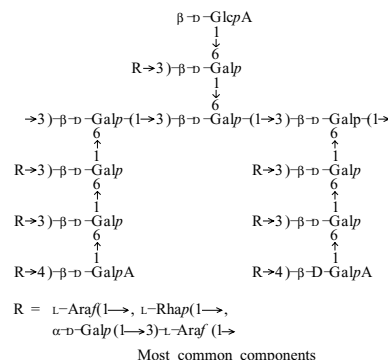
(*clin trial*)

Raake, W. *et al.*, *Semin. Thromb. Hemostasis*, 1994, **20**, 176 (*sar*)

Arabic acid, 9CI, 8CI

A-789

[32609-14-6]



A highly branched polysaccharide composed of L-Arabinose, D-Galactose, L-Rhamnose and D-Gluconic acid in an approximate 3:3:1:1 ratio. Salt-free polysaccharide formed by precipitation from an acidified soln. of gum arabic.

Mixed salts: Gum arabic. Australian gum. Acacia gum. Wattle gum. E414. FEMA 2001

[9000-01-5]

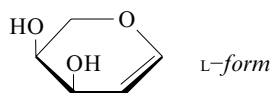
The dried gummy exudate from the stems and branches of *Acacia senegal* and other *A.* species. Used as protective colloid to prevent settling of ppts. in some photometric and turbidimetric detns.

Yellowish-amber lumps. Dissolves slowly in H₂O.

► CE5945000

Me ester: $[\alpha]_D^{19}$ -47 (c, 1.0 in CHCl_3).
Per-Ac: $[\alpha]_D$ -21 (c, 0.94 in CHCl_3).
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 202A (ir)
 Smith, F. *et al.*, *J.C.S.*, 1939, 1724; 1940, 1035
 Welcher, F.J. *et al.*, *Organic Analytical Reagents*, Van Nostrand, NY, 1948, 4, 303 (use)
 Aspinall, G.O. *et al.*, *J.C.S.*, 1963, 1696
 Aspinall, G.O. *et al.*, *The Carbohydrates*, (Pigman, W. *et al.*, Ed.), Academic Press, 1970, 2B, 523
 Churms, S.C. *et al.*, *Carbohydr. Res.*, 1983, 123, 267 (struct)
 Defaye, J. *et al.*, *Carbohydr. Res.*, 1986, 150, 221 (cmr, struct, bibl)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1-5 (Gum arabic)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AQQ500

Arabinal **A-790**
1,5-Anhydro-2-deoxy-erythro-pent-1-enitol, Ribal



$\text{C}_5\text{H}_8\text{O}_3$ 116.116

D-form

1,5-Anhydro-2-deoxy-D-erythro-pent-1-enitol, 9CI

[496-61-7]
 Mp 81°. $[\alpha]_D$ +196 (H_2O).

3,4-Di-Ac: 3,4-Di-O-acetyl-D-arabinal
 [3945-17-3]
 $\text{C}_9\text{H}_{12}\text{O}_5$ 200.191
 Mp 99-100°. $[\alpha]_D^{20}$ +263 (CHCl_3).

3,4-Dibenzoyl: 3,4-Di-O-benzoyl-D-arabinal
 [25874-16-2]
 $\text{C}_{19}\text{H}_{16}\text{O}_5$ 324.332
 Cryst. (Et_2O /pentane). Mp 47-48°. $[\alpha]_D^{23}$ +260 (c, 2.6 in CHCl_3).

L-form *1,5-Anhydro-4-deoxy-D-erythro-pent-4-enitol, 9CI*

[152202-52-3]
 Cryst. (C_6H_6). Mp 78-81°. $[\alpha]_D$ -196 (H_2O).

3,4-Di-Ac: 3,4-Di-O-acetyl-L-arabinal
 [3945-18-4]
 $\text{C}_9\text{H}_{12}\text{O}_5$ 200.191
 Bp_{0.01} 110-140°. $[\alpha]_D$ -267 (CHCl_3).

Gehrke, M. *et al.*, *Ber.*, 1927, 60, 918-922 (D-form, L-form)

Gakhokidze, A.M. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1945, 15, 539-549 (synth)

Deriaz, R.E. *et al.*, *J.C.S.*, 1949, 1879-1883 (L-form, synth)

Humoller, F.L. *et al.*, *Methods Carbohydr. Chem.*, 1962, 1, 83-88 (L-form, synth)

Bock, K. *et al.*, *Acta Chem. Scand.*, 1969, 23, 2083-2094 (D-dibenzoyl)

Pollen, J.H.P. *et al.*, *Synthesis*, 1989, 758-759 (D-di-Ac, synth, pmr, cmr)

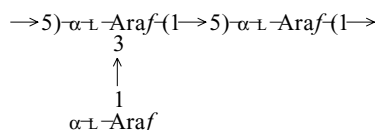
Cavallaro, C.L. *et al.*, *J.O.C.*, 1995, 60, 7055-7057 (D-di-Ac)

Shull, B.K. *et al.*, *J. Carbohydr. Chem.*, 1996, 15, 955-964 (L-di-Ac)

Capozzi, G. *et al.*, *Chem. Eur. J.*, 1999, 5, 1748-1754 (D-form, pmr, cmr)

Arabanan, 9CI, 8CI

Araban
 [11078-27-6]



Portion of idealised structure

$\text{C}_5\text{H}_8\text{O}_4$ 132.116

A polymer of linearly α -(1→5)-linked L-arabinofuranose units with single L-arabinofuranose α -(1→3)-linked to the main chain at intervals. Polymeric. Minimum formula given. Arabinans devoid of other sugars have been isolated from mustard seeds and maritime pine. Heteroarabinans have been found in sugar beet and apples.

$[\alpha]_D$ -157. $[\alpha]_D$ -114. $[\alpha]_D$ -129 (H_2O).

Ac: $[\alpha]_D^{20}$ -90 (Me_2CO).

[9060-75-7]

Hirst, E.L. *et al.*, *J.C.S.*, 1939, 452; 454; 1865
 Hirst, E.L. *et al.*, *Adv. Carbohydr. Chem.*, 1947, 2, 235 (rev)

Hirst, E.L. *et al.*, *Biochem. J.*, 1965, 95, 453 (isol)

Roudier, A.J. *et al.*, *Bull. Soc. Chim. Fr.*, 1965, 460

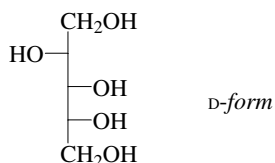
Jones, J.K.N. *et al.*, *Methods Carbohydr. Chem.*, 1965, 5, 74 (synth)

Aspinall, G.O. *et al.*, *The Carbohydrates*, (Pigman W. *et al.*, Ed.), Academic Press, 1970, 2B, 517

Radha, A. *et al.*, *Carbohydr. Res.*, 1997, 298, 105-115 (cryst struct, conformm)

Arabinitol, 9CI

Lyxitol, 9CI. Arabitol, 8CI
 [2152-56-9]



$\text{C}_5\text{H}_{12}\text{O}_5$ 152.147

D-form [488-82-4]

Found in lichens and fungi.
 Mp 103°. $[\alpha]_D^{20}$ +7.7 (borax).

1-Phosphate:

[220715-55-9]

$\text{C}_5\text{H}_{13}\text{O}_8\text{P}$ 232.127

Present in the repeating unit of the capsular polysaccharide of *Streptococcus pneumoniae* type 17F.

Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-D-arabinitol

[5401-55-8]

$\text{C}_{15}\text{H}_{22}\text{O}_{10}$ 362.333

Mp 74-75°. $[\alpha]_D^{20}$ +37.2 (CHCl_3).

1,5-Dibenzoyl: 1,5-Di-O-benzoyl-D-arabinitol

$\text{C}_{19}\text{H}_{20}\text{O}_7$ 360.363

Prisms (EtOH). Mp 131-132°. $[\alpha]_D^{20}$ +8.4 (c, 0.81 in Py).

A-791

1,3,2,4-Di-O-methylene: 1,3,2,4-Di-O-methylene-D-arabinitol

$\text{C}_7\text{H}_{12}\text{O}_5$ 176.169

Mp 124-125°. $[\alpha]_D^{20}$ +32.4.

2,3,4,5-Di-O-isopropylidene: 2,3,4,5-Di-O-isopropylidene-D-arabinitol

[19139-74-3]

$\text{C}_{11}\text{H}_{20}\text{O}_5$ 232.276

Bp₁₁ 129-130°. n_D^{20} 1.4515.

1,3-O-Benzylidene: 1,3-O-Benzylidene-D-arabinitol

[70831-50-4]

$\text{C}_{12}\text{H}_{16}\text{O}_5$ 240.255

Cryst. (EtOH). Mp 151-152°. $[\alpha]_D$ -7.6 (c, 2.0 in Py).

2,3-O-Benzylidene: 2,3-O-Benzylidene-D-arabinitol

$\text{C}_{12}\text{H}_{16}\text{O}_5$ 240.255

Cryst. (CHCl_3). Mp 81-83°. $[\alpha]_D^{20}$ +10.8 (c, 0.8 in EtOH).

2,3,4,5-Di-O-benzylidene: 2,3,4,5-Di-O-benzylidene-D-arabinitol

[20603-47-8]

$\text{C}_{19}\text{H}_{20}\text{O}_5$ 328.364

Prisms (Me_2CO /petrol). Mp 101-105°. $[\alpha]_D$ +2.5 (c, 2.63 in Py).

2,3,4,5-Di-O-benzylidene, 1-Ac: 1-O-Acetyl-2,3,4,5-di-O-benzylidene-D-arabinitol

[20769-98-6]

$\text{C}_{21}\text{H}_{22}\text{O}_6$ 370.401

Needles (EtOH aq.). Mp 49-51°. $[\alpha]_D$ -4.4 (c, 2.27 in CHCl_3).

1-Benzyl: 1-O-Benzyl-D-arabinitol

$\text{C}_{12}\text{H}_{18}\text{O}_5$ 242.271

Cryst. (EtOH). Mp 129-130°.

1-Benzyl, 2,3,4,5-di-O-isopropylidene: 1-O-Benzyl-2,3,4,5-di-O-isopropylidene-D-arabinitol

[19139-73-2]

$\text{C}_{18}\text{H}_{26}\text{O}_5$ 322.4

Bp₁₁ 185-188°. n_D^{20} 1.4989.

2,3,5-Tribenzyl: 2,3,5-Tri-O-benzyl-D-arabinitol

[14233-53-5]

$\text{C}_{26}\text{H}_{30}\text{O}_5$ 422.52

Cryst. (Et_2O /pentane). Mp 54-55°. $[\alpha]_D$ +1.3 (c, 4.1 in CHCl_3).

1-Trityl, 2,3,5-tribenzyl: 2,3,5-Tri-O-benzyl-1-O-trityl-D-arabinitol

[14233-55-7]

$\text{C}_{45}\text{H}_{44}\text{O}_5$ 664.84

Mp 103-104° Mp 150.5-152°. $[\alpha]_D$ -7.3 (c, 1.37 in Py).

5-O-(6-O-3,4-Dihydroxy-E-cinnamoyl-β-D-glucopyranoside):

$\text{C}_{20}\text{H}_{28}\text{O}_{13}$ 476.433

Constit. of the leaves of *Lonicera gracilipes* var. *glandulosa*. Amorph. powder. $[\alpha]_D^{30}$ -11.1 (c, 0.2 in MeOH).

L-form [7643-75-6]

Occurs in urine of pentosuric subjects.
 Mp 102°. $[\alpha]_D$ -5 (borax).

Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-L-arabinitol

[5346-78-1]

$\text{C}_{15}\text{H}_{22}\text{O}_{10}$ 362.333

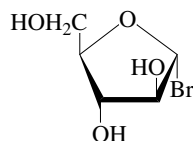
Mp 76°.

- 1,5-Ditosyl, 2,3,4-tribenzoyl: 2,3,4-Tri-O-benzoyl-1,5-di-O-tosyl-L-arabinitol**
[20703-97-3]
Mp 116-117°. $[\alpha]_D^{25}$ -22.6 (c, 3.2 in CHCl₃).
- 2,3:4,5-Di-O-isopropylidene: 2,3:4,5-Di-O-isopropylidene-L-arabinitol**
[84709-35-3]
C₁₁H₂₀O₅ 232.276
Syrup. Bp₂₀ 145-149°.
- 3,5-O-Benzylidene: 3,5-O-Benzylidene-L-arabinitol**
[53131-06-9]
C₁₂H₁₆O₅ 240.255
Mp 148-149°. $[\alpha]_D^{25}$ -11.1 (c, 1.0 in EtOH).
- 2,3,4-Tri-Me: 2,3,4-Tri-O-methyl-L-arabinitol**
[14550-95-9]
C₈H₁₈O₅ 194.227
Cryst. Mp 61-62°. $[\alpha]_D$ -2 (c, 0.56 in CH₂Cl₂).
- 2,3,4-Tri-Me, 1,5-ditosyl: 2,3,4-Tri-O-methyl-1,5-di-O-tosyl-L-arabinitol**
[362512-97-8]
C₂₂H₃₀O₉S₂ 502.606
Syrup. $[\alpha]_D$ -10 (c, 0.5 in CH₂Cl₂).
1,5-Dimesyl compd. also prepd.
- 2,3,4-Tribenzyl: 2,3,4-Tri-O-benzyl-L-arabinitol**
[138515-44-3]
C₂₆H₃₀O₅ 422.52
Cryst. (Et₂O). Mp 76-78°. $[\alpha]_D$ +18 (c, 1.3 in CHCl₃).
- 2,3,4-Tribenzyl, 1,5-ditosyl: 2,3,4-Tri-O-benzyl-1,5-ditosyl-L-arabinitol**
[158931-69-2]
C₄₀H₄₂O₉S₂ 730.898
Mp 98-100°.
- 1,5-Ditriyl: 1,5-Di-O-trityl-L-arabinitol**
[158931-67-0]
C₄₃H₄₀O₅ 636.786
Cryst. + 1EtOH (EtOH). Mp 68-70° (EtOH solvate). $[\alpha]_D$ +5.3 (c, 1.1 in CHCl₃).
- 1,5-Ditriyl, 2,3,4-tribenzoyl: 2,3,4-Tri-O-benzoyl-1,5-di-O-trityl-L-arabinitol**
[35179-21-6]
C₆₄H₅₂O₈ 949.11
Mp 172-173°. $[\alpha]_D$ -0.5 (c, 1.9 in CHCl₃).
- 1,5-Ditriyl, 2,3,4-tribenzyl: 2,3,4-Tri-O-benzyl-1,5-ditriyl-L-arabinitol**
[158931-68-1]
C₆₄H₅₈O₅ 907.159
Cryst. (Me₂CO/EtOH). Mp 142-145°. $[\alpha]_D$ +7.4 (c, 0.9 in CHCl₃).
- DL-form** [6018-27-5]
Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-DL-arabinitol
[85761-13-3]
C₁₅H₂₂O₁₀ 362.333
Cryst. (MeOH). Mp 93-96°.
- Aldrich Library of FT-IR Spectra, 1st edn.*, 1985, 1, 185C; 185D (ir)
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 288B; 288C (nmr)
Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, 3, 25A (ir)
Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 127 (L-form, derivs, rev)

- Haskins, W.T. et al., *J.A.C.S.*, 1943, **65**, 1663 (D-1,3-benzylidene, D-2,3-benzylidene, D-1,5-dibenzoyl)
Lindberg, B. et al., *Acta Chem. Scand.*, 1953, **7**, 591 (occur)
Nakagawa, T. et al., *Bull. Chem. Soc. Jpn.*, 1967, **40**, 2150 (D-diisopropylidene, D-diisopropylidene benzyl, D-benzyl)
Rabinsohn, Y. et al., *J.O.C.*, 1967, **32**, 3452 (D-tribenzyl, D-tribenzyl trityl)
Zinner, H. et al., *Carbohydr. Res.*, 1968, **7**, 38 (D-dibenzylidene, D-dibenzylidene Ac)
Angyal, S.J. et al., *Carbohydr. Res.*, 1972, **23**, 121 (pmr)
Harness, J. et al., *J.C.S. Perkin 1*, 1972, **7**, 38 (L-tribenzoyl ditosyl, L-tribenzoyl ditriyl)
Karrer, W. et al., *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 147 (occur)
Rabinsohn, Y. et al., *Methods Carbohydr. Chem.*, 1972, **6**, 326 (D-tribenzyl, D-tribenzyl trityl)
Gent, P.A. et al., *Carbohydr. Res.*, 1976, **49**, 325 (D-tribenzyl)
Angyal, S.J. et al., *Carbohydr. Res.*, 1980, **84**, 201 (cmr)
Minami, N. et al., *J.A.C.S.*, 1982, **104**, 1109 (total synth, D-penta-Ac)
Holland, D. et al., *J.C.S. Perkin 1*, 1983, 1553 (DL-penta-Ac)
Kopf, J. et al., *Carbohydr. Res.*, 1991, **218**, 9; 1992, **233**, 35 (cryst struct, penta-Ac)
McCaig, A.E. et al., *J. Carbohydr. Chem.*, 1994, **13**, 397-407 (L-1,5-ditriyl, 2,3,4-tribenzyl, 1,5-ditriyl-2,3,4-tribenzyl)
Matsuda, N. et al., *Chem. Pharm. Bull.*, 1995, **43**, 1049 (5-caffeoylglucoside)
Rozenberg, M. et al., *Carbohydr. Res.*, 2000, **328**, 307-319 (ir)
Garcia-Martin, M.G. et al., *Carbohydr. Res.*, 2001, **333**, 95-103 (L-form 2,3,4-tri-Me, 2,3,4-tri-Me ditosyl)
Jones, C. et al., *Carbohydr. Res.*, 2002, **337**, 2354 (D-form 1-phosphate)

Arabinofuranosyl bromide

A-793

C₅H₉BrO₄ 213.028 α -D-form

- Tribenzoyl: 2,3,5-Tri-O-benzoyl- α -D-arabinofuranosyl bromide**
[4348-68-9]
C₂₆H₂₁BrO₇ 525.352
Prisms (Et₂O/pentane). Mp 103-104°. $[\alpha]_D^{20}$ +85 (c, 1.2 in CH₂Cl₂).
- 3,5-Bis-4-nitrobenzoyl, 2-Ac:**
Cryst. (Et₂O/pentane/CH₂Cl₂). Mp 128-129°. $[\alpha]_D^{20}$ +105 (c, 0.4 in CH₂Cl₂).
- Tris-4-nitrobenzoyl:**
Cryst. (CH₂Cl₂/Et₂O). Mp 171-173° dec. $[\alpha]_D^{20}$ +46 (c, 2.0 in CH₂Cl₂).

 β -D-form

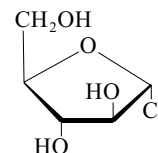
- Tribenzoyl: 2,3,5-Tri-O-benzoyl- β -D-arabinofuranosyl bromide**
[70051-90-0]
C₂₆H₂₁BrO₇ 525.352
Needles (Et₂O). Mp 130-132°. $[\alpha]_D^{20}$ -138 (c, 0.9 in CH₂Cl₂).

 α -L-form

- 3,5-Dibenzoyl: 3,5-Di-O-benzoyl- α -L-arabinofuranosyl bromide**
C₁₉H₁₇BrO₆ 421.244
Syrup. $[\alpha]_D$ -103 (CH₂Cl₂).
- 3,5-Dibenzoyl, 2-Ac: 2-O-Acetyl-3,5-di-O-benzoyl- α -L-arabinofuranosyl bromide**
C₂₁H₁₉BrO₇ 463.281
Syrup. $[\alpha]_D$ -112 (CH₂Cl₂).
- 2,3-Dibenzoyl, 5-p-nitrobenzoyl: [55018-40-1]**
Cryst. (EtOH). Mp 113°. $[\alpha]_D$ +17 (c, 1.0 in CH₂Cl₂).
- 2,3-Dibenzoyl, 5-tosyl: 2,3-Di-O-benzoyl-5-O-tosyl- α -L-arabinofuranosyl bromide**
[55018-41-2]
C₂₆H₂₃BrO₈S 575.433
Cryst. (Me₂CO/Et₂O). Mp 138°. $[\alpha]_D$ -65 (c, 2.0 in CH₂Cl₂).
- Ness, R.K. et al., *J.A.C.S.*, 1958, **80**, 2007 (α -D-tribenzoyl, β -D-tribenzoyl)
Gorin, P.A.J. et al., *Can. J. Chem.*, 1962, **40**, 275 (α -L-dibenzoyl, α -L-dibenzoyl Ac)
Fletcher, H.G. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 228 (α -D-tribenzoyl, β -D-tribenzoyl)
Glaudemans, C.P.J. et al., *J.O.C.*, 1964, **29**, 3286 (α -D-bisnitrobenzoyl Ac, α -D-trisnitrobenzoyl)
Ferrier, R.J. et al., *Carbohydr. Res.*, 1974, **38**, 125 (α -L-dibenzoyl nitrobenzoyl, α -L-dibenzoyl tosyl)
Bock, K. et al., *Acta Chem. Scand., Ser. B*, 1975, **29**, 185 (α -D-tribenzoyl, pmr)

Arabinofuranosyl chloride

A-794

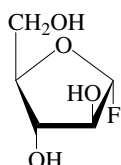
C₅H₉ClO₄ 168.576 α -D-form

- Tris(4-nitrobenzoyl):**
Cryst. (CH₂Cl₂/Et₂O). Mp 182-184°. $[\alpha]_D^{20}$ +0.5 (c, 1.4 in CH₂Cl₂).
- 2-Benzyl, 3,5-bis-4-nitrobenzoyl: 2-O-Benzyl-3,5-bis-O-(4-nitrobenzoyl)- α -D-arabinofuranosyl chloride**
Mp 113-115° (sinters at 55°). $[\alpha]_D^{20}$ +73.1 (c, 2.1 in CH₂Cl₂).
- 2,3-Dibenzyl, 5-(4-nitrobenzoyl): 2,3-Di-O-benzyl-5-O-(4-nitrobenzoyl)- α -D-arabinofuranosyl chloride**
Syrup. $[\alpha]_D^{20}$ +74.9 (c, 1.3 in CH₂Cl₂).
- Tribenzyl: 2,3,5-Tri-O-benzyl- α -D-arabinofuranosyl chloride**
[4060-34-8]
C₂₆H₂₇ClO₄ 438.95
Syrup. $[\alpha]_D^{20}$ +90.4 (c, 1.1 in CH₂Cl₂). $[\alpha]_D^{20}$ +79.8 (c, 1.3 in CHCl₃).
- 2-Nitro, 3,5-bis-4-nitrobenzoyl: 2-O-Nitro-3,5-bis-O-(4-nitrobenzoyl)- α -D-arabinofuranosyl chloride**
Mp 122-124°. $[\alpha]_D^{20}$ +68 (c, 1.0 in CH₂Cl₂).

β -D-form

2-Nitro, 3,5-bis(4-nitrobenzoyl): 2-O-Nitro-3,5-bis-O-(4-nitrobenzoyl)- β -D-arabinofuranosyl chloride
 $C_{19}H_{14}ClN_3O_{12}$ 511.785
 Cryst. (CH_2Cl_2/Et_2O). Mp 193-194°. $[\alpha]_D^{20}$ -88.5 (c, 0.6 in CH_2Cl_2).

Glaudemans, C.P.J. *et al.*, *J.O.C.*, 1963, **28**, 3004; 1971, **36**, 3598 (α -D-tribenzyl)
 Glaudemans, C.P.J. *et al.*, *J.A.C.S.*, 1964, **29**, 3286; 1965, **87**, 4636 (tris-4-nitrobenzoyl, tribenzyl)
 Glaudemans, C.P.J. *et al.*, *J.O.C.*, 1964, **29**, 3286 (α -D-bisnitrobenzoyl nitro, β -D-bisnitrobenzoyl nitro)
 Zissis, E. *et al.*, *Carbohydr. Res.*, 1976, **50**, 292 (tribenzyl)

Arabinofuranosyl fluoride**A-795** α -D-form $C_5H_9FO_4$ 152.122 **α -D-form**

Tribenzoyl: 2,3,5-Tri-O-benzoyl- α -D-arabinofuranosyl fluoride
 [3862-86-0]
 $C_{26}H_{21}FO_7$ 464.446
 Cryst. (Et_2O). Mp 129-130°. $[\alpha]_D^{20}$ -54 (c, 0.6 in $CHCl_3$).

2-Me, 3,5-dibenzoyl: 3,5-Di-O-benzoyl-2-O-methyl- α -D-arabinofuranosyl fluoride
 [38791-42-3]
 $C_{20}H_{19}FO_6$ 374.365
 Syrup. $[\alpha]_D^{21}$ +49.3 (c, 0.5 in $CHCl_3$).

 β -D-form

2-Me, 3,5-dibenzoyl: 3,5-Di-O-benzoyl-2-O-methyl- β -D-arabinofuranosyl fluoride
 [38791-43-4]
 $C_{20}H_{19}FO_6$ 374.365
 Cryst. (Et_2O /pentane). Mp 115-116°. $[\alpha]_D^{21}$ +13.2 (c, 1.0 in $CHCl_3$).

 α -L-form

Tribenzyl: 2,3,5-Tri-O-benzyl- α -L-arabinofuranosyl fluoride
 [86883-51-4]
 $C_{26}H_{27}FO_4$ 422.495
 Oil. $[\alpha]_D^{18}$ -22.3 (c, 1.5 in $CHCl_3$).

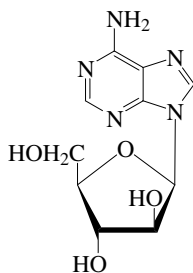
Bhattacharya, A.K. *et al.*, *J.O.C.*, 1963, **28**, 428 (tribenzoyl)

Jacobsen, S. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 1561 (α -Me dibenzoyl, β -Me dibenzoyl, pmr, F-19 nmr)

Mukaiyama, T. *et al.*, *Chem. Lett.*, 1983, 935 (tribenzyl, pmr)

9-Arabinofuranosyladenine, 8CI**A-796**

9-Arabinofuranosyl-9H-purin-6-amine, 9CI
 [2006-02-2]

 β -D-form $C_{10}H_{13}N_5O_4$ 267.244

α -D-form [3228-71-5] Sol. DMF, acids, bases, DMSO; fairly sol. H_2O , MeOH, butanol; poorly sol. Me_2CO , hexane. Mp 208°. $[\alpha]_D^{17}$ +69 (c, 1.1 in H_2O). λ_{max} 262 (H_2O) (Berdy). λ_{max} 257 (ϵ 12700) (HCl) (Berdy). λ_{max} 257 (ϵ 12700) (pH 1 buffer) (Berdy). λ_{max} 259 (ϵ 14000) (pH 13 buffer) (Berdy).

► LD₅₀ (mus, ipr) 4677 mg/kg.

 β -D-form**Vidarabine, BAN, INN, JAN, USAN.**

Spongoadenosine. Adena-A. Ara-A. Arase-na-A. Panavirin. Plosarabine forte. Vira-A. CI 673. NSC 404241. Araadenosine [5536-17-4]

Isol. from the marine gorgonian *Eunicella cavolini* and *Streptomyces* spp. Antiviral agent; shows significant activity against Herpes simplex and vaccinia viruses in cell cultures and in experimental animals. Nucleoside transporter substrate. Needles + $\frac{1}{2}$ H_2O (H_2O). Mp 257-257.5°. $[\alpha]_D^{40}$ +12 (c, 0.25 in H_2O). $[\alpha]_D^{27}$ -5 (c, 0.25 in H_2O). Log P -2.88 (calc). λ_{max} 260 (ϵ 12000) (H_2O) (Derep).

► Human systemic effects when used therapeutically. Adverse ocular effects following topical administration. Exp. reprod. and teratogenic effects (large doses). LD₅₀ (mus, orl) 7.8 mg/kg. Eye irritant. AU6200000

5'-Phosphate: **Vidarabine phosphate, USAN. CI 808**

[29984-33-6]
 $C_{10}H_{14}N_5O_7P$ 347.224

Antiviral agent. Also used as di-Na salt (Vidarabine sodium phosphate, USAN).

► AU6204000

5'-Triphosphate: [3714-60-1]

$C_{10}H_{16}N_5O_{13}P_3$ 507.184
 No phys. props. reported.

3'-Ac: [65286-65-9]

$C_{12}H_{15}N_5O_5$ 309.281

Isol. from *Eunicella cavolini*. Antiviral agent. Cryst. (MeOH). Sol. MeOH, butanol, H_2O ; poorly sol. $CHCl_3$, hexane. Mp 214-215°. λ_{max} 258 (ϵ 14000) (MeOH) (Berdy).

2',3'-Di-Ac: [65174-96-1]

$C_{14}H_{17}N_5O_6$ 351.318

Cryst. (Me_2CO). Mp 138-139°. $[\alpha]_D^{23}$ -4.1 (c, 1 in MeOH).

3',5'-Di-Ac: [64993-35-7]

$C_{14}H_{17}N_5O_6$ 351.318

Cryst. (Me_2CO). Mp 167.5-169°. $[\alpha]_D^{23}$ +9 (c, 1 in MeOH).

2',3',5'-Tri-Ac: [15830-52-1]

$C_{16}H_{19}N_5O_7$ 393.355

Cryst. (EtOH). Mp 128.5-129°. $[\alpha]_D^{22}$ -13 (c, 0.74 in $CHCl_3$). λ_{max} 259 (ϵ 14200) (EtOH).

5'-Benzoyl: [42782-57-0]

$C_{17}H_{17}N_5O_5$ 371.352

Cryst. (EtOH). Mp 220-222°.

N⁶-Me: [60209-41-8]

$C_{11}H_{15}N_5O_4$ 281.271

Cryst. (H_2O). Mp 201-202.5°. $[\alpha]_D^{25}$ +10 (c, 1.0 in MeOH). λ_{max} 266 (ϵ 13800) (pH 7). λ_{max} 263 (ϵ 15500) (pH 1). λ_{max} 266 (ϵ 14400) (pH 13).

N⁶,N⁶-Di-Me:

$C_{12}H_{17}N_5O_4$ 295.297

Cryst. (H_2O). Mp 210-211°. $[\alpha]_D^{19}$ -7 (c, 1.0 in MeOH). λ_{max} 275 (ϵ 15700) (pH 7). λ_{max} 268 (ϵ 16000) (pH 1). λ_{max} 276 (ϵ 15200) (pH 13).

N-Hydroxy: 9-(Arabinofuranosyl)-N-hydroxyadenine, 8CI. 9-Arabinofuranosyl-6-hydroxyaminopurine
 [24822-51-3]

Mp 206° dec. $[\alpha]_D^{25}$ +6 (c, 0.5 in H_2O). pK_a 3.7. λ_{max} 265 (ϵ 14700) (pH 1). λ_{max} 267 (ϵ 10400) (pH 6.7).

[24356-66-9, 71002-10-3]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 719B (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 221C (nmr)

Lee, W.W. *et al.*, *J.A.C.S.*, 1960, **82**, 2648

(β -D-form, synth)

Reist, E.J. *et al.*, *J.O.C.*, 1962, **27**, 3274; 1968, **33**, 1600 (β -D-form, synth, β -D-N-Me, β -D-N-di-Me, β -D-tri-Ac, β -D-bromo tri-Ac, β -D-NH₂)

York, J.L. *et al.*, *Can. J. Biochem.*, 1966, **44**, 19-26 (triphosphate)

Giner-Sorolla, A. *et al.*, *J. Het. Chem.*, 1969, **6**, 405 (N-hydroxy)

Follman, H. *et al.*, *Biochemistry*, 1971, **10**, 186-192 (synth, triphosphate)

Han, J. *et al.*, *Life Sci.*, 1971, **10**, 637 (phosphate)

Farmer, P.B. *et al.*, *Biochemistry*, 1972, **11**, 911 (biosynth)

Wenkert, B. *et al.*, *Biochem. Biophys. Res. Commun.*, 1973, **51**, 318 (cmr)

Farmer, P.B. *et al.*, *J. Biol. Chem.*, 1973, **248**, 1844 (biosynth)

Renis, H.E. *et al.*, *J. Med. Chem.*, 1973, **16**, 754 (β -D-benzoyl)

Chwang, A.K. *et al.*, *Acta Cryst. B*, 1974, **30**, 2273 (cryst struct)

Ranganathan, R. *et al.*, *Tet. Lett.*, 1975, 1185 (β -D-form, synth)

Remin, M. *et al.*, *Biochim. Biophys. Acta*, 1976, **435**, 405 (pmr, conformn)

Cass, C.E. *et al.*, *Antibiotics (N.Y.)*, 1979, **5**, 85 (rev)

Cline, S.J. *et al.*, *Biochim. Biophys. Acta*, 1979, **563**, 540 (α -D-form, cryst struct)

Baker, D.C. *et al.*, *J. Med. Chem.*, 1979, **22**, 273 (β -D-O-acyl derivs)

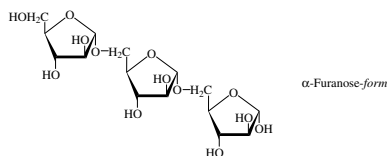
Buchanan, R.A. *et al.*, *Pharmacol. Ther.*, 1980, **8**, 143 (pharmacol, rev)

Cimino, G. *et al.*, *Experientia*, 1984, **40**, 339 (β -D-Ac, isol)

Hong, W.H. *et al.*, *Anal. Profiles Drug Subst.*, 1986, **15**, 647 (rev)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)
 Vijayalakshmi, D. *et al.*, *J. Biol. Chem.*, 1992, **267**, 16951-16956 (vidarabine)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 557; 558
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AEH100; AQQ900; AQQ905

α -D-Arabinofuranosyl-(1 \rightarrow 5)- α -D-arabinofuranosyl-(1 \rightarrow 5)-D-arabinose A-797

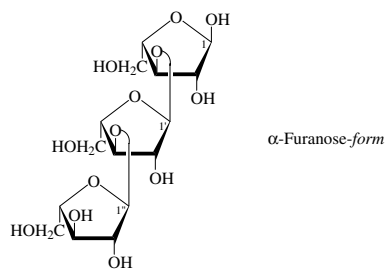


$C_{15}H_{26}O_{13}$ 414.363
 D-Arabetano-D-galactan polysaccharides have been isol. from cell walls of *Mycobacterium* sp; α -(1 \rightarrow 5)-D-arabinofuran oligomers exist as the terminals of the polysaccharide chains. The terminal chains in the bacteria are responsible for the serological activity.

α -Furanose-form

Benzyl glycoside, heptabenzoyl: [103702-83-6]
 $C_{71}H_{60}O_{20}$ 1233.243
 $[\alpha]_D^{25} +11.3$ (c, 0.29 in $CHCl_3$).
 Misaki, A. *et al.*, *J. Biochem. (Tokyo)*, 1974, **76**, 15
 Hatanaka, K. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 333

α -L-Arabinofuranosyl-(1 \rightarrow 3)- α -L-arabinofuranosyl-(1 \rightarrow 3)-L-arabinose, 9CI A-798

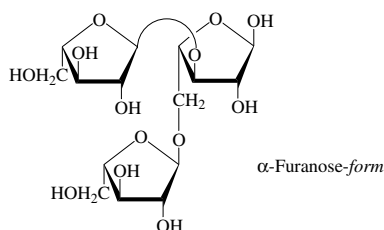


$C_{15}H_{26}O_{13}$ 414.363

α -Furanose-form

Me glycoside: [108200-13-1]
 $C_{16}H_{28}O_{13}$ 428.389
 Syrup. $[\alpha]_D -171$ (c, 1.2 in H_2O).
Me glycoside, 2'',3'',5''-tribenzoyl, 2,2',5,5'-tetra-Ac: [108200-12-0]
 $C_{45}H_{48}O_{20}$ 908.862
 Syrup. $[\alpha]_D -67$ (c, 0.8 in $CHCl_3$).
 Nepodod'ev, S.A. *et al.*, *Bioorg. Khim.*, 1986, **12**, 940; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1986, **12**, 492 (α -Me fur derivs, cmr)

α -L-Arabinofuranosyl-(1 \rightarrow 3)-[α -L-arabinofuranosyl-(1 \rightarrow 5)]-L-arabinose A-799

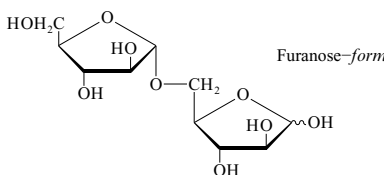


$C_{15}H_{26}O_{13}$ 414.363
 Constit. of the anti-complementary arabinogalactan (AG IIB-1), isol. from the roots of *Angelica acutiloba* (Dong Dang Gui).

α -Furanose-form [114226-47-0]

Syrup.
 Kiyohara, H. *et al.*, *Carbohydr. Res.*, 1987, **167**, 221 (isol, glc, ms, chromatog)

5-O- α -D-Arabinofuranosyl-D-arabinose A-800

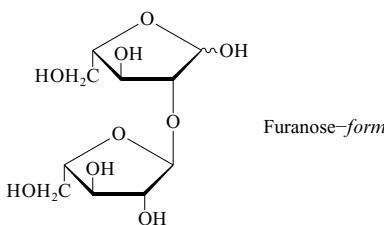


$C_{10}H_{18}O_9$ 282.247

α -Furanose-form [103773-70-2]

Benzyl glycoside, pentabenzoyl: *Benzyl 2,3-di-O-benzoyl-5-O-(2,3,5-tri-O-benzoyl-alpha-D-arabinofuranosyl)-alpha-D-arabinofuranoside*, 9CI
 [103702-78-9]
 $C_{52}H_{44}O_{14}$ 892.911
 Syrup. $[\alpha]_D^{25} +11$ (c, 0.84 in $CHCl_3$).
 Hatanaka, K. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 333-345

2-O- α -L-Arabinofuranosyl-L-arabinose A-801



$C_{10}H_{18}O_9$ 282.247
 $[\alpha]_D -8.5$ (c, 1.4 in H_2O).

α -Furanose-form

Me glycoside, penta-Ac: *Methyl 3,5-di-O-acetyl-2-O-(2,3,5-tri-O-acetyl-alpha-L-arabinofuranosyl)-alpha-L-arabinofuranoside*, 9CI
 [97321-44-3]
 $C_{21}H_{30}O_{14}$ 506.46
 Syrup. $[\alpha]_D -34$ (c, 0.9 in $CHCl_3$).

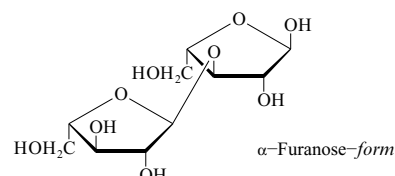
β -Pyranose-form

Benzyl glycoside: *Benzyl 2-O-alpha-L-arabinofuranosyl-beta-L-arabinopyranoside*, 8CI
 [20703-82-6]
 $C_{17}H_{24}O_9$ 372.371
 Cryst. (EtOAc). Mp 144-145°. $[\alpha]_D +91$ (c, 1.0 in H_2O).

Benzyl glycoside, 3,4-O-isopropylidene, tribenzoyl: *Benzyl 3,4-O-isopropylidene-2-O-(2,3,5-tri-O-benzoyl-alpha-L-arabinofuranosyl)-beta-L-arabinopyranoside*, 8CI
 [20703-81-5]
 $C_{41}H_{40}O_{12}$ 724.76
 Cryst. (Et₂O/petrol). Mp 95°. $[\alpha]_D^{21} +28$ (c, 0.5 in $CHCl_3$).

Chalk, R.C. *et al.*, *Can. J. Chem.*, 1968, **46**, 2311
 Backinowsky, L.V. *et al.*, *Carbohydr. Res.*, 1985, **138**, 41 (synth)

3-O- α -L-Arabinofuranosyl-L-arabinose, 9CI A-802



$C_{10}H_{18}O_9$ 282.247
 Isol. from partial acid hydrolysates of *Anogeissus schimperi*, *Opuntia fulgida* (Cholla) and *Virgilia oroboides* gums.
 $[\alpha]_D 0$ (H_2O). $[\alpha]_D -13.9$ (H_2O). $[\alpha]_D^{23} -4$ (c, 0.5 in H_2O).

α -Furanose-form

Me glycoside, penta-Ac: *Methyl 2,5-di-O-acetyl-3-O-(2,3,5-tri-O-acetyl-alpha-L-arabinofuranosyl)-alpha-L-arabinofuranoside*, 9CI
 [97321-46-5]
 $C_{21}H_{30}O_{14}$ 506.46
 Mp 83.5-85°. $[\alpha]_D^{22} -132$ (c, 1.2 in $CHCl_3$).

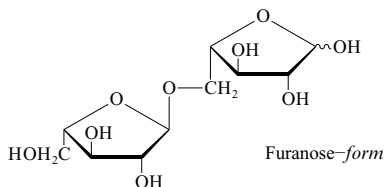
Me glycoside, 2,5-di-Ac, tri-O-benzoyl: *Methyl 2,5-di-O-acetyl-3-O-(2,3,5-tri-O-benzoyl-alpha-L-arabinofuranosyl)-alpha-L-arabinofuranoside*, 9CI
 $C_{36}H_{36}O_{14}$ 692.672
 Syrup. $[\alpha]_D^{20} -45$ (c, 1.6 in $CHCl_3$).

[97321-47-6]

Aspinall, G.O. *et al.*, *J.C.S.*, 1961, 3461
 Smith, F. *et al.*, *J.C.S.*, 1961, 4892 (isol)
 Parikh, V.M. *et al.*, *Can. J. Chem.*, 1966, **44**, 1531 (isol)
 Tanaka, M. *et al.*, *Biochim. Biophys. Acta*, 1981, **658**, 377
 McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol)
 Backinowsky, L.V. *et al.*, *Carbohydr. Res.*, 1985, **138**, 41 (synth, Me gly)
 Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*, 1988, **26**, 735 (Me gly, cmr)

5-O- α -L-Arabinofuranosyl-L-arabinose

A-803

 $C_{10}H_{18}O_9$ 282.247

Isol. from partial acid hydrolysates of *Virgilia oroboides* gum, from stem mucilage of *Opuntia ficus-indica* (Indian fig) and of sugar beet araban.

$[\alpha]_D^{18}$ -87 (c, 0.5 in H_2O). $[\alpha]_D$ -98.4 (H_2O).

Phenylosazone: Mp 184-186° (177°).

 α -Furanose-form

Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-5-O-(2,3,5-tri-O-acetyl- α -L-arabinofuranosyl)- α -L-arabinofuranoside, 9CI [76690-33-0]

$C_{21}H_{30}O_{14}$ 506.46

Syrup. $[\alpha]_D^{22}$ -86 (c, 1.0 in $CHCl_3$).

Me glycoside, pentabenzoyl: Methyl 2,3-di-O-benzoyl-5-O-(2,3,5-tri-O-benzoyl- α -L-arabinofuranosyl)- α -L-arabinofuranoside, 9CI [76690-34-1]

$C_{46}H_{40}O_{14}$ 816.814

Syrup. $[\alpha]_D^{22}$ -24 (c, 1.3 in $CHCl_3$).

4-Nitrophenyl glycoside:

Oil. $[\alpha]_D^{20}$ -163 (c, 1.2 in MeOH).

4-Nitrophenyl glycoside, 2,3,5-tribenzoyl: Plates. Mp 60-65°. $[\alpha]_D^{20}$ -62 (c, 1.2 in $CHCl_3$).

Andrews, P. et al., *Chem. Ind. (London)*, 1956, 658 (isol, sugarbeet)

Smith, F. et al., *J.C.S.*, 1961, 4892 (isol)

Arndt, D. et al., *Carbohydr. Res.*, 1976, **48**, 128 (derivs)

Tanaka, M. et al., *Biochim. Biophys. Acta*, 1981, **658**, 377

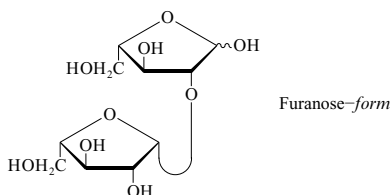
McGarvie, D. et al., *Carbohydr. Res.*, 1981, **94**, 57 (isol, synth)

Backinowsky, L.V. et al., *Carbohydr. Res.*, 1985, **138**, 41 (synth, Me gly)

2-O- β -L-Arabinofuranosyl-L-arabinose, 8CI

A-804

[20701-66-0]

 $C_{10}H_{18}O_9$ 282.247

Isol. from the hydrolysates of *Acacia nilotica* gum. Hemihydrate.

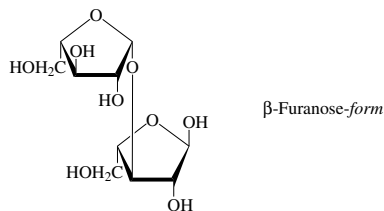
Mp 103°. $[\alpha]_D$ +148 (c, 1.0 in H_2O).

Chalk, R.C. et al., *Can. J. Chem.*, 1968, **46**, 2311 (isol)

3-O- β -L-Arabinofuranosyl-L-arabinose, 9CI

A-805

Arabinofuranobiose [52287-00-0]

 $C_{10}H_{18}O_9$ 282.247

Formed on partial acid hydrolysis of sugar beet araban and certain plant gums, e.g. *Acacia pycnantha* gum and *Rhizophora mangle* gum. $[\alpha]_D$ +94 (H_2O).

Phenylosazone: Mp 200°.

Andrews, P. et al., *Chem. Ind. (London)*, 1956, 658 (isol)

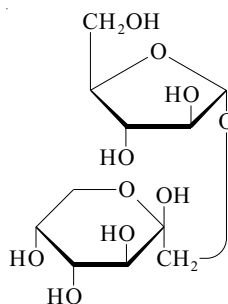
Aspinall, G.O. et al., *J.C.S.*, 1959, 1697 (isol)

Sarkar, M. et al., *Indian J. Chem.*, 1974, **11**, 1129

Sarkar, M. et al., *Indian J. Chem., Sect. B*, 1978, **16**, 369 (isol, pmr)

1-O- α -D-Arabinofuranosyl-D-fructose

A-806

 $C_{11}H_{20}O_{10}$ 312.273 **β -Pyranose-form**

2,3:4,5-Di-O-isopropylidene, tribenzyl: [88999-57-9]

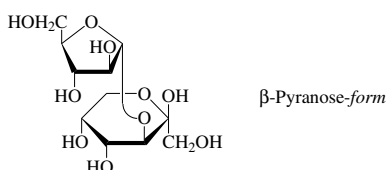
$C_{38}H_{46}O_{10}$ 662.775

$[\alpha]_D^{20}$ +13.3 (c, 1.3 in $CHCl_3$).

Dourtoglou, V. et al., *J. Carbohydr. Chem.*, 1983, **2**, 57

3-O- α -D-Arabinofuranosyl-D-fructose

A-807

 $C_{11}H_{20}O_{10}$ 312.273 **β -Pyranose-form**

1,2:4,5-Di-O-isopropylidene, tribenzyl: [88999-49-9]

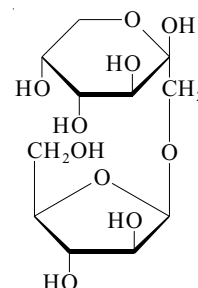
$C_{38}H_{46}O_{10}$ 662.775

$[\alpha]_D$ -91.6 (c, 1.7 in $CHCl_3$).

Dourtoglou, V. et al., *J. Carbohydr. Chem.*, 1983, **2**, 57

1-O- β -D-Arabinofuranosyl-D-fructose

A-808

 $C_{11}H_{20}O_{10}$ 312.273 **β -Pyranose-form**

2,3:4,5-Di-O-isopropylidene, tribenzyl: [88999-58-0]

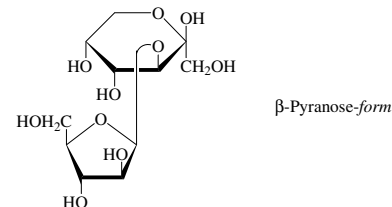
$C_{38}H_{46}O_{10}$ 662.775

Syrup. $[\alpha]_D^{20}$ -51.4 (c, 9.3 in $CHCl_3$).

Dourtoglou, V. et al., *J. Carbohydr. Chem.*, 1983, **2**, 57

3-O- β -D-Arabinofuranosyl-D-fructose

A-809

 $C_{11}H_{20}O_{10}$ 312.273 **β -Pyranose-form**

1,2:4,5-Di-O-isopropylidene, tribenzyl: [88999-50-2]

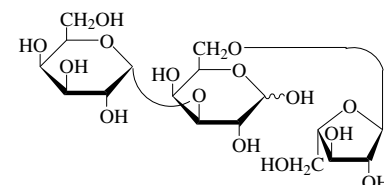
$C_{38}H_{46}O_{10}$ 662.775

Syrup. $[\alpha]_D$ -36 (c, 2.5 in $CHCl_3$).

Dourtoglou, V. et al., *J. Carbohydr. Chem.*, 1983, **2**, 57

 α -L-Arabinofuranosyl-(1 \rightarrow 6)- $[\beta$ -D-galactopyranosyl-(1 \rightarrow 3)]-D-galactose

A-810

 $C_{17}H_{30}O_{15}$ 474.415

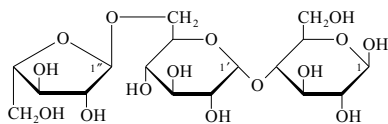
Principal oligosaccharide of sanqi (*Panax notoginseng*).

Me α -glycoside:

Solid. $[\alpha]_D^{25} +23$ (c, 1 in MeOH).

Yang, F. *et al.*, *Carbohydr. Res.*, 2002, **337**, 485-491 (*synth*, *pmr*, *cmr*, *ms*)

α -L-Arabinofuranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI A-811



$C_{17}H_{30}O_{15}$ 474.415

β -Pyranose-form

Me glycoside: [99322-25-5]

$C_{18}H_{32}O_{15}$ 488.442

Powder. $[\alpha]_D^{25} +4$ (c, 3.0 in H_2O).

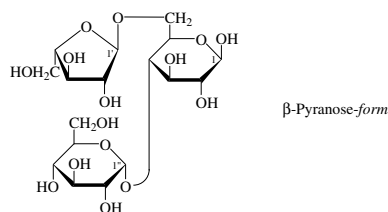
Me glycoside, 2'',3'',5''-tribenzoyl, 2,2',3,3',6-penta-Ac: [99322-24-4]

$C_{49}H_{54}O_{23}$ 1010.952

Powder. Mp 85-86°. $[\alpha]_D^{22} +20.1$ (c, 1.62 in $CHCl_3$).

Fujiwara, T. *et al.*, *Carbohydr. Res.*, 1985, **141**, 168 (β -Me pyr derivs, *cmr*)

α -L-Arabinofuranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI A-812



$C_{17}H_{30}O_{15}$ 474.415

Constit. of GIa, a polysaccharide isol. from bark of *Melia azadirachta* (Meliaceae). Exhibits a strong antitumour effect against sarcoma-180.

β -Pyranose-form

Me glycoside: [99322-23-3]

$C_{18}H_{32}O_{15}$ 488.442

Cryst. (EtOH). Mp 102-104°. $[\alpha]_D^{22} +5.1$ (c, 1.0 in H_2O).

Me glycoside, 2',3',5'-tribenzoyl,

2,2'',3,3'',6''-penta-Ac: [99322-22-2]

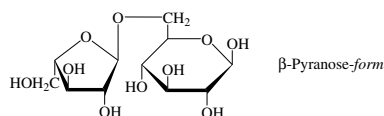
$C_{49}H_{54}O_{23}$ 1010.952

Cryst. (EtOH). Mp 86-87°. $[\alpha]_D^{22} +16.8$ (c, 1.0 in $CHCl_3$).

Fujiwara, T. *et al.*, *Carbohydr. Res.*, 1985, **141**, 168 (β -Me pyr derivs, *cmr*)

6-O- α -L-Arabinofuranosyl-D-glucose, 8CI A-813

[14297-98-4]



$C_{11}H_{20}O_{10}$ 312.273

Reducing disaccharide. Mp 153-155°. $[\alpha]_D -37$ (H_2O).

β -Pyranose-form [119364-31-7]

Hepta-Ac:

$C_{25}H_{34}O_{17}$ 606.533

Mp 108°. $[\alpha]_D -20$ ($CHCl_3$).

1,2,3,4-Tetra-Ac, tribenzoyl:

$C_{40}H_{40}O_{17}$ 792.746

Mp 163-165°. $[\alpha]_D -40$ ($CHCl_3$).

[21858-46-8]

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1962, **40**, 275

(*synth*)

Kochetkov, N.K. *et al.*, *CA*, 1967, **67**, 108856f

Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1976, **48**,

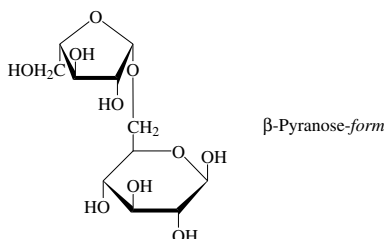
171 (*pmr*, *cmr*)

Voirin, S. *et al.*, *Carbohydr. Res.*, 1990, **207**, 39

(*synth*, *pmr*, *cmr*)

6-O- β -L-Arabinofuranosyl-D-glucose A-814

[60738-10-5]



$C_{11}H_{20}O_{10}$ 312.273

Reducing disaccharide. $[\alpha]_D +73$ (H_2O).

β -Pyranose-form

1,2,3,4-Tetra-Ac, 3',5'-dibenzoyl, 2'-O-nitro: Mp 152-153°. $[\alpha]_D +83$ ($CHCl_3$).

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1962, **40**, 275

(*synth*)

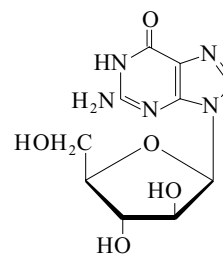
Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1976, **48**,

171 (*pmr*, *cmr*)

9-Arabinofuranosylguanine, 8CI A-815

2-Amino-9-arabinofuranosyl-1,9-dihydro-6H-purin-6-one, 9CI. Araguanosine. Guanine arabinoside

[7013-16-3]



$C_{10}H_{13}N_5O_5$ 283.243

Antineoplastic agent.

β -D-form [38819-10-2]

Mp 300°. $[\alpha]_D^{24} +28$ (c, 0.25 in H_2O).

λ_{max} 252 (ϵ 14 000) (H_2O), 256 (12 600) (pH 1), 265 nm (11 800) (pH 13).

MF8301000

Reist, E.J. *et al.*, *Biochemistry*, 1964, **3**, 15

(*synth*)

Guschlbauer, W. *et al.*, *Bull. Soc. Chim. Biol.*, 1969, **51**, 1511 (*ord*, *cd*, *uv*)

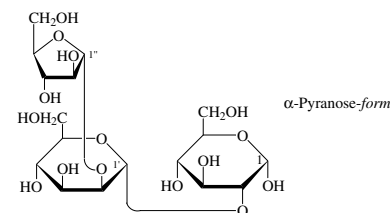
Ikehara, M. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1976, **3**, 149 (*synth*)

Kurtzberg, J. *et al.*, *Ann. N.Y. Acad. Sci.*, 1993, **685**, 225-236 (*rev. pharmacol*)

α -D-Arabinofuranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-glucose, 9CI A-816

Ristriose

[130983-49-2]



$C_{17}H_{30}O_{15}$ 474.415

Component of Ristomycin A. Amorph. $[\alpha]_D +46 \rightarrow +46.6$ (c, 1.0 in H_2O).

α -Pyranose-form

Allyl glycoside, 3,3',4',6'-tetrabenzyl,

2'',3'',5''-tribenzoyl: [126990-54-3]

$C_{69}H_{70}O_{18}$ 1187.301

Syrup. $[\alpha]_D +44.3$ (c, 0.4 in $CHCl_3$).

Allyl glycoside, 4,6-O-benzylidene(R),

3,3',4',6'-tetrabenzyl, 2'',3'',5''-

tribenzoyl: [126990-53-2]

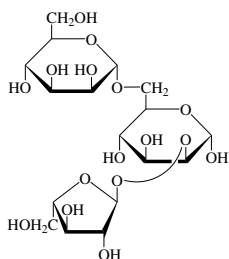
$C_{76}H_{74}O_{18}$ 1275.41

Syrup. $[\alpha]_D +24.8$ (c, 0.8 in $CHCl_3$).

Sztaricskai, F. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1975, **84**, 75 (*isol*)

Medakovic, D. *et al.*, *J. Carbohydr. Chem.*,

1990, **9**, 631 (*synth*, α -allyl pyr derivs, *pmr*, *cmr*)

α -L-Arabinofuranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose α -Pyranose-form

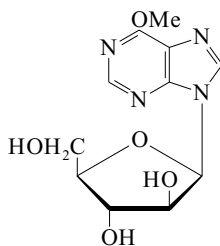
$C_{17}H_{30}O_{15}$ 474.415
Residue present in tomato oligosaccharides.

 α -form

Allyl glycoside:
Amorph. solid. $[\alpha]_D +8$ (c, 1 in H_2O).
Utile, J.P. et al., *Carbohydr. Res.*, 2000, **329**, 431-439 (occur, synth)

9- β -D-Arabinofuranosyl-6-methoxy-9H-purine, 9CI

6-Methoxypurine arabinoside. Ara-M
[91969-06-1]



$C_{11}H_{14}N_4O_5$ 282.255
Antiviral agent.

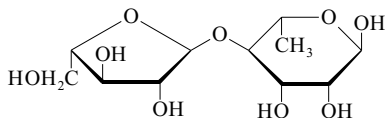
2',3'-Di-Ac: [137057-55-7]
 $C_{15}H_{18}N_4O_7$ 366.33
Mp 138-139°.

Tri-Ac: [121032-46-0]
 $C_{17}H_{20}N_4O_8$ 408.367
Viscous oil.

Eur. Pat., 1988, 294 114, (Wellcome); *CA*, **111**, 7760 (synth, pharmacol)
Averett, D.R. et al., *Antimicrob. Agents Chemother.*, 1991, **35**, 851; 1165 (synth, metab, pharmacol)
Jones, L.A. et al., *J. Med. Chem.*, 1992, **35**, 56 (derivs)

4-O- α -L-Arabinofuranosyl-L-rhamnose

4-O- α -L-Arabinofuranosyl-6-deoxy-L-mannose



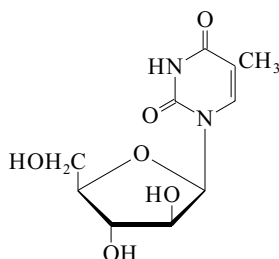
$C_{11}H_{20}O_9$ 296.274

 α -Pyranose-form

Me glycoside, 2,3-O-isopropylidene, tri-Ac: [76690-37-4]
 $C_{21}H_{32}O_{12}$ 476.477
Syrup. $[\alpha]_D -78$ (c, 1 in $CHCl_3$).
Me glycoside, 2,3-O-isopropylidene, tribenzoyl: [76690-38-5]
 $C_{36}H_{38}O_{12}$ 662.689
Cryst. (toluene/hexane). Mp 112-114°.
 $[\alpha]_D -20$ (c, 1.75 in $CHCl_3$).
Bakinovskii, L.V. et al., *Carbohydr. Res.*, 1985, **138**, 41

1-Arabinofuranosylthymine

1-Arabinofuranosyl-5-methyl-2,4-(1H,3H)-pyrimidinedione, 9CI. 1-(Arabinofuranosyl)-5-methyluracil
[605-23-2]



$C_{10}H_{14}N_2O_6$ 258.23 Log P -2.33 (calc).

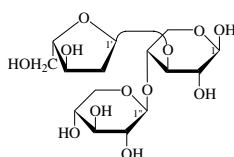
 β -D-form**Spongothymidine. Ara-T**

Isol. from Caribbean sponge, *Cryptotethia crypta*. Antiviral agent. HIV reverse transcriptase (HIV-rt) inhibitor.
Mp 194-195° Mp 242°. $[\alpha]_D^{28} +90$ (c, 0.8 in Py). Low acute toxicity. λ_{max} 267 (ε) (pH 12) (Derep). λ_{max} 267 (ε 9600) (pH 7.2) (Derep). λ_{max} 269 (ε 9250) (H_2O) (Berdy).

XP2100200

[2946-29-4]

Bergmann, W. et al., *J.O.C.*, 1955, **20**, 1501-1507 (isol, struct)
Fr. Pat., 1965, 1 396 003, (Upjohn); *CA*, **63**, 13392d (synth)
Tougaard, P. et al., *Acta Cryst. B*, 1973, **29**, 2227-2232 (cryst struct)
Mueller, W.E.G. et al., *FEBS-Symp.*, 1979, **57**, 327-341 (rev)
Ooka, T. et al., *Virology*, 1980, **104**, 219-223 (activity)
Soike, K.F. et al., *Antiviral Res.*, 1984, **4**, 245-257 (pharmacol)
Soike, K.F. et al., *Antiviral Res.*, 1984, **4**, 245-257 (activity)
Gosselin, G. et al., *Nucleosides Nucleotides*, 1984, **3**, 265-275 (synth)
Machida, H. et al., *Microbiol. Immunol.*, 1991, **35**, 963-973 (pharmacol)
Hirota, K. et al., *Synthesis*, 1993, 213-215 (synth, bibl, pmr, ms)

 α -L-Arabinofuranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, 9CI β -Pyranose-form

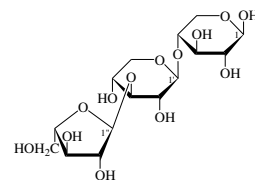
$C_{15}H_{26}O_{13}$ 414.363

 β -Pyranose-form

Me glycoside: [93130-19-9]
 $C_{16}H_{28}O_{13}$ 428.389
Cryst. (MeOH). Mp 206-209°. $[\alpha]_D -110$ (H_2O).
Me glycoside, 2',3',5'-tribenzoyl, 2,2'',3'',4''-tetra-Ac:
 $C_{45}H_{48}O_{20}$ 908.862
Cryst. (Me₂CO). Mp 89-92°.
Hirsch, J. et al., *Carbohydr. Res.*, 1984, **131**, 219 (synth, pmr, cmr)

 α -L-Arabinofuranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose

[66186-04-7]

 β -Pyranose-form

$C_{15}H_{26}O_{13}$ 414.363

Isol. from partial enzymic hydrol. of wheat-straw xylan, rye-flour, and cocksfoot (*Dactylis glomerata*) xylans and corn-cob xylan; constit. of spear grass (*Heteropogon contortus*) hemicellulose B. Arabinoxylans of low molecular weight are found as hemicelluloses of animal, plant and softwoods. Their backbone is slightly branched and some of the 1 \rightarrow 4 linked β -D-xylosyl residues bear an α -L-arabinofuranosyl group at C-3. Pentahydrate. $[\alpha]_D^{20} -72$ (c, 0.5 in H_2O). $[\alpha]_D -15$ (H_2O).

Pyranose-form

5''-(4-Hydroxy-E-cinnamoyl): [102254-69-3]

$C_{24}H_{32}O_{15}$ 560.508

Enzym. hydrol. product of bamboo shoot (*Phyllostachys edulis*) cell wall and of barley straw cell walls. Syrup.

 α -Pyranose-form

Benzyl glycoside, heptabenzyl: [99388-77-9]
 $C_{71}H_{74}O_{13}$ 1135.358
 $[\alpha]_D^{20} +14$ (c, 1.5 in $CHCl_3$).

 β -Pyranose-form

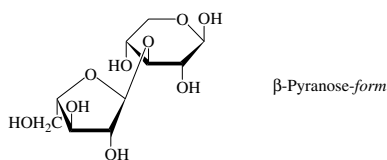
Me glycoside: Methyl α -L-arabinofuranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranoside
[93130-20-2]
 $C_{16}H_{28}O_{13}$ 428.389
Cryst. (MeOH/Me₂CO). Mp 146-147°.
 $[\alpha]_D^{22} -121$ (c, 1.0 in H_2O).

Me glycoside, 2'',3'',4''-tribenzoyl, 2,2',3,4'-tetra-Ac:
 $C_{45}H_{48}O_{20}$ 908.862
Amorph. $[\alpha]_D^{22} -48$ (c, 1.0 in $CHCl_3$).

Bishop, C.T. et al., *J.A.C.S.*, 1956, **78**, 2840 (isol)
Aspinall, G.O. et al., *J.C.S.*, 1960, 3881 (isol)
Kusakabe, I. et al., *Agric. Biol. Chem.*, 1983, **47**, 2713
Shambe, T. et al., *Carbohydr. Res.*, 1983, **113**, 125

Hirsch, J. *et al.*, *Carbohydr. Res.*, 1984, **131**, 219 (β -Me gly synth, cmr)
 Schraml, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1984, **49**, 1605 (pmr, cmr)
 Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1985, **58**, 1464 (enzymic synth, α -deriv synth)
 Mueller-Harvey, I. *et al.*, *Carbohydr. Res.*, 1986, **148**, 71 (coumaroyl, isol, pmr, cmr, ms)
 Ishii, T. *et al.*, *Carbohydr. Res.*, 1990, **206**, 297 (coumaroyl, isol, cmr, pmr)

3-O- α -L-Arabinofuranosyl-D-xylose, 9CI **A-823**
 [66186-03-6]



C₁₀H₁₈O₉ 282.247
 Isol. from the hydrolysate of corn-cob arabinoxylan.

β-Pyranose-form

Me glycoside: Methyl 3-O- α -L-arabinofuranosyl- β -D-xylopyranoside
 [93130-21-3]
 C₁₁H₂₀O₉ 296.274
 Sesquihydrate. $[\alpha]_D^{20}$ -113 (c, 1.2 in H₂O).

Me glycoside, pentabenzyl: Methyl 2,4-di-O-benzyl-3-O-(2,3,5-tri-O-benzyl- α -L-arabinofuranosyl)- β -D-xylopyranoside
 [99388-70-2]
 C₄₆H₅₀O₉ 746.896
 $[\alpha]_D^{20}$ -7 (c, 1.1 in CHCl₃).

2'-O-(4-Hydroxy-3-methoxycinnamoyl) (E-)
 C₂₀H₂₆O₁₂ 458.418
 Isol. from corn hulls. Powder. λ_{\max} 230; 279 (MeOH).

2'-Me ether, 5'-O-(4-hydroxy-3-methoxycinnamoyl) (E-)
 C₂₁H₂₈O₁₂ 472.445
 Isol. from corn hulls. Powder. λ_{\max} 228; 284 (MeOH).

2'-Me ether, 5'-O-(4-hydroxy-3-methoxycinnamoyl) (Z-)
 C₂₁H₂₈O₁₂ 472.445
 Isol. from corn hulls. Powder. λ_{\max} 215; 272 (MeOH).

Kusakabe, I. *et al.*, *Nippon Nogei Kagaku Kaishi*, 1977, **51**, 669; *CA*, **88**, 147669a (isol)
 Kusakabe, I. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 2713
 Sahrami, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1984, **49**, 1605 (nmr)
 Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1985, **58**, 1464 (Me gly)
 Hosny, M. *et al.*, *J. Nat. Prod.*, 1997, **60**, 219 (feruloyl derivs)

Arabinogalactan **A-824**
D-Galacto-L-arabinan. Larch gum. FEMA 3254
 [9036-66-2]

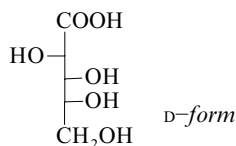
A complex polymer of arabinose and galactose in a 1:6 ratio. Also contains a small proportion of uronic acid units.
 Obt. by water extraction of larch trees,

e.g. *Larix occidentalis*. Emulsifier and stabiliser in food manuf. Commercialisation has been inhibited by high cost of extraction.

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 194-195
 Ponder, G.R. *et al.*, *J. Carbohydr. Chem.*, 1997, **16**, 181-193; 195-211 (struct, bibl)

Arabinonic acid

Arabonic acid



C₅H₁₀O₆ 166.13

D-form [488-30-2] Readily obt. by oxidn. of Arabinose, A-850. Mp 114-116°. $[\alpha]_D^{25}$ +18.6 \rightarrow +48.6 (H₂O).

► CE6000000

Ca salt: [22373-09-7]
 $[\alpha]_D^{20}$ -171 (ammonium molybdate soln.).

Et ester: Ethyl D-arabonate
 C₇H₁₄O₆ 194.184
 Mp 132-133°. $[\alpha]_D^{25}$ 0 (c, 2.0 in CHCl₃).

Butyl ester: Butyl D-arabonate
 C₉H₁₈O₆ 222.238
 Mp 104-105°. $[\alpha]_D^{25}$ -3 (c, 2.0 in CHCl₃).

2,3,4,5-Tetra-Ac, Et ester: Ethyl 2,3,4,5-tetra-O-acetyl-D-arabonate
 C₁₅H₂₂O₁₀ 362.333
 Mp 111°. $[\alpha]_D^{25}$ +34 (c, 2.0 in CHCl₃).

2,3,4,5-Tetra-Ac, butyl ester: Butyl 2,3,4,5-tetra-O-acetyl-D-arabonate
 C₁₇H₂₆O₁₀ 390.386
 Bp_{0.004} 111°. $[\alpha]_D^{25}$ +29.3 (c, 2.0 in CHCl₃).

2,3,4,5-Di-O-methylene, Me ester: Methyl 2,3,4,5-di-O-methylene-D-arabonate
 C₈H₁₂O₆ 204.179
 Bp₂ 150-160°. $[\alpha]_D$ +3.7 (c, 1.5 in CHCl₃).

2,4,3,5-Di-O-methylene, Me ester: Methyl 2,4,3,5-di-O-methylene-D-arabonate
 C₈H₁₂O₆ 204.179
 Mp 200-202°. $[\alpha]_D^{20}$ -33.8 (c, 1.58 in CHCl₃).

2,5,3,4-Di-O-methylene, Me ester: Methyl 2,5,3,4-di-O-methylene-D-arabonate
 C₈H₁₂O₆ 204.179
 Mp 100-103°. $[\alpha]_D$ -73.5 (c, 1.56 in CHCl₃).

Amide, 1N,2,3,5-tetrabenzyl: N,2,3,5-Tetra-O-benzyl-D-arabinonamide
 C₃₃H₃₅NO₅ 525.643
 Cryst. (EtOAc/pentane). Mp 95-96°. $[\alpha]_D^{20}$ +37.6 (c, 1.8 in CHCl₃).

Lactone: See 1,5-Arabinonolactone, A-827

L-form [608-53-7] Readily obt. by oxidn. of Arabinose, A-850. Mp 119°. $[\alpha]_D$ -9.5 \rightarrow -41.7 (H₂O).

Phenylhydrazide: Mp 215°.

Amide: L-Arabinonamide

C₅H₁₁NO₅ 165.146
 Mp 135-136°. $[\alpha]_D$ +37.2.

2,3,4,5-Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-L-arabinonic acid

[17430-73-8]

C₁₃H₁₈O₁₀ 334.279

Mp 135-136°. $[\alpha]_D$ +32.1 (CHCl₃).

Staněk, J. *et al.*, *The Monosaccharides*, Academic Press, 1963, 656 (rev)

Humphlett, W.J. *et al.*, *Carbohydr. Res.*, 1967, **4**, 157 (*D*-Et ester, *D*-Et ester tetra-Ac, *D*-butyl ester, *D*-butyl ester tetra-Ac)

Rabinsohn, Y. *et al.*, *J.O.C.*, 1967, **32**, 3452 (*D*-amide tetrabenzyl)

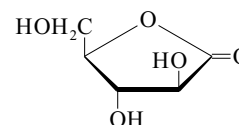
Zhadanov, Y.A. *et al.*, *Zh. Obshch. Khim.*, 1969, **39**, 1128; *CA*, **71**, 70861w

Handb. Biochem. Mol. Biol., (Fasman, G.D., Ed.), CRC Press, 1975, 155 (*L*-form, *L*-amide)

Burden, I.J. *et al.*, *J.C.S. Perkin 1*, 1975, 675 (*D*-Me ester dimethylene derivs)

Groszkiewicz, A. *et al.*, *Przem. Chem.*, 1975, **54**, 281; *CA*, **83**, 97762z (*Ca* salt, epimerisation)

1,4-Arabinonolactone **A-826**
arabino-1,4-Pentonolactone



C₅H₈O₅ 148.115

D-form [42417-44-7]
 Mp 96°. $[\alpha]_D$ +73.7 (H₂O).

2-Benzyl: 2-O-Benzyl-D-arabino-1,4-lactone

[34685-51-3]

C₁₂H₁₄O₅ 238.24

Cryst (H₂O). Mp 119-120°. $[\alpha]_{H_2O}^{25}$ -20.9 (c, 2.2 in EtOH).

2,3,5-Tribenzyl: 2,3,5-Tri-O-benzyl-D-arabino-1,4-lactone

[14233-64-8]

C₂₆H₂₆O₅ 418.488

Mp 67-68°. $[\alpha]_D^{25}$ +6.8 (c, 1.1 in CHCl₃).

Tris(methoxymethyl): [158419-42-2]

C₁₁H₂₀O₈ 280.274

Synthetically useful intermed. Syrup. $[\alpha]_D^{20}$ +21.1 (c, 1.4 in CHCl₃).

5-Phosphate:

C₅H₉O₈P 228.095

Syrup. $[\alpha]_D^{28}$ +28.6 (c, 3.2 in H₂O).

L-form

Mp 101°. $[\alpha]_D$ -73.9 (H₂O).

Böddener, K.H. *et al.*, *Ber.*, 1910, **43**, 1645 (*L*-form)

Jensen, F.W. *et al.*, *J.A.C.S.*, 1925, **47**, 3019 (*D*-form)

Gray, G.R. *et al.*, *Carbohydr. Res.*, 1971, **20**, 31 (*D*-form benzyl)

Pravdić, N. *et al.*, *Carbohydr. Res.*, 1974, **36**, 167 (*D*-form tribenzyl)

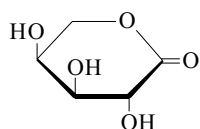
Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 111 (pmr, cmr, conformn)

Bols, M. *et al.*, *Carbohydr. Res.*, 1994, **253**, 195 (trismethoxymethyl)

Hardré, R. *et al.*, *Carbohydr. Res.*, 1999, **318**, 110-115 (*5*-phosphate)

1,5-Arabinonolactone

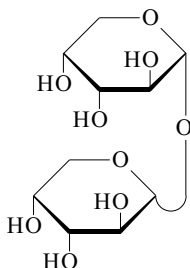
A-827

C₅H₈O₅ 148.115**L-form**Mp 118°. [α]_D -9.1 → -36.1 (H₂O).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-L-arabinono-1,5-lactone [40031-40-1]

C₈H₁₂O₅ 188.18Mp 95-97°. [α]_D²¹ -29.2 (c, 1.01 in CHCl₃).Staněk, J. *et al.*, *The Monosaccharides*, Academic Press, N.Y., 1963, 656 (rev)Stewart, A.J. *et al.*, *Tetrahedron: Asymmetry*, 2002, 13, 2667-2672 (3,4-isopropylidene)**α-D-Arabinopyranosyl α-D-arabinopyranoside**

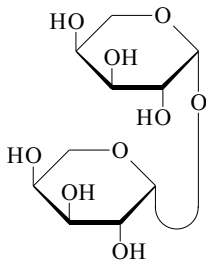
A-828

C₁₀H₁₈O₉ 282.247Acid reversion product of D-arabinose. Mp 112-113°. [α]_D -22 (H₂O).

Hexa-Ac: 2,3,4-Tri-O-acetyl-α-D-arabinopyranosyl 2,3,4-tri-O-acetyl-α-D-arabinopyranoside

C₂₂H₃₀O₁₅ 534.47Mp 116-117°. [α]_D +21 (CHCl₃).Rice, F.A.H. *et al.*, *J.A.C.S.*, 1956, 78, 6167 (synth)**β-L-Arabinopyranosyl β-L-arabinopyranoside**

A-829

C₁₀H₁₈O₉ 282.247Acid reversion product of L-arabinose. Mp 153.5°. [α]_D +18.9 (H₂O). Physical data given for a compd. whose struct. is only provisionally assigned as the ββ-isomer (Vogel).

Hexa-Ac: 2,3,4-Tri-O-acetyl-β-L-arabinopyranosyl 2,3,4-tri-O-acetyl-β-L-arabinopyranoside

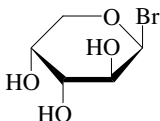
C₂₂H₃₀O₁₅ 534.47Cryst. (EtOH). Mp 232°. [α]_D +232 (c, 0.15 in CHCl₃).

Hexabenzyl: 2,3,4-Tri-O-benzyl-β-L-arabinopyranosyl 2,3,4-tri-O-benzyl-β-L-arabinopyranoside

[77875-55-9]

C₅₂H₅₄O₉ 822.993Mp 134-135°. [α]_D²² +142 (c, 1.15 in CHCl₃).Vogel, H. *et al.*, *Helv. Chim. Acta*, 1928, 11, 1210Jones, J.K.N. *et al.*, *J.C.S.*, 1958, 27 (synth)Pavia, A. *et al.*, *Can. J. Chem.*, 1981, 59, 482 (synth, cmr)**Arabinopyranosyl bromide**

A-830



β-D-form

C₅H₉BrO₄ 213.028**β-D-form**

Tri-Ac: 2,3,4-Tri-O-acetyl-β-D-arabinopyranosyl bromide. Acetobromoarabinose [3068-29-9]

C₁₁H₁₅BrO₇ 339.139Cryst. (Et₂O/pentane). Mp 137-139°. [α]_D²¹ -285 (c, 1.4 in CHCl₃).

Tribenzoyl: 2,3,4-Tri-O-benzoyl-β-D-arabinopyranosyl bromide

[40010-17-1]

C₂₆H₂₁BrO₇ 525.352Mp 147-148°. [α]_D -353 (c, 1.4 in CHCl₃).

2,3,4-Tris(4-nitrobenzoyl): [18039-23-1] Mp 150-151°.

β-L-form

Tri-Ac: 2,3,4-Tri-O-acetyl-β-L-arabinopyranosyl bromide

[14227-90-8]

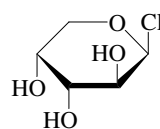
C₁₁H₁₅BrO₇ 339.139Mp 139°. [α]_D²⁰ +283.6 (CHCl₃).

Tribenzoyl: 2,3,4-Tri-O-benzoyl-β-L-arabinopyranosyl bromide

[14206-56-5]

C₂₆H₂₁BrO₇ 525.352Needles (MeOH). Mp 144-145°. [α]_D +201.8 (c, 1.8 in CHCl₃).Gehrke, M. *et al.*, *Ber.*, 1927, 60, 918 (tri-Ac)Fletcher, H.G. *et al.*, *J.A.C.S.*, 1950, 72, 4173; 1947, 69, 1145 (tribenzoyl)Capon, B. *et al.*, *J.C.S.*, 1964, 3242 (L-tri-Ac)Abelardo, P.M. *et al.*, *J.O.C.*, 1969, 34, 92Durette, P.L. *et al.*, *Carbohydr. Res.*, 1971, 18, 57 (D-tri-Ac, conformn, pmr)Corfield, P.W.R. *et al.*, *Carbohydr. Res.*, 1972, 23, 158 (cryst struct, D-tri-Ac)Duffy, M.J. *et al.*, *J.C.S. Perkin 2*, 1974, 1466 (L-tribenzoyl)Kantha, K.P.R. *et al.*, *J. Carbohydr. Chem.*, 1990, 9, 777-781 (tri-Ac, synth)**Arabinopyranosyl chloride**

A-831



β-D-form

C₅H₉ClO₄ 168.576**β-D-form**

Tri-Ac: 2,3,4-Tri-O-acetyl-β-D-arabinopyranosyl chloride

[32445-41-3]

C₁₁H₁₅ClO₇ 294.688Mp 151-152°. [α]_D²⁰ -244 (CHCl₃).**α-L-form**

Tri-Ac: 2,3,4-Tri-O-acetyl-α-L-arabinopyranosyl chloride

[69308-56-1]

C₁₁H₁₅ClO₇ 294.688Cryst. (Et₂O). Mp 150-153°.

2-(Trichloroacetyl), 3,4-di-Ac: [51295-74-0]

[α]_D +36 (c, 1.0 in CHCl₃).**β-L-form**

Tri-Ac: 2,3,4-Tri-O-acetyl-β-L-arabinopyranosyl chloride

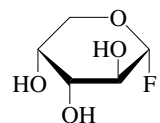
[14227-78-2]

C₁₁H₁₅ClO₇ 294.688Mp 146-147°. [α]_D²⁰ +244.4 (CHCl₃).

2-Trichloroacetyl, 3,4-di-Ac: [51295-75-1]

[α]_D +166 (c, 1.0 in CHCl₃).Brauns, D.H. *et al.*, *J.A.C.S.*, 1924, 46, 1484Hudson, C.S. *et al.*, *J.A.C.S.*, 1924, 46, 2591 (β-D-tri-Ac)Ohle, H. *et al.*, *Ber.*, 1929, 62, 833 (β-L-tri-Ac)Durette, P.L. *et al.*, *Carbohydr. Res.*, 1971, 18, 57 (β-D-tri-Ac, pmr, conformn)Collins, P.M. *et al.*, *Carbohydr. Res.*, 1973, 31, 1 (trichloro-Ac, synth, pmr)Szarek, W.A. *et al.*, *Tetrahedron*, 1978, 34, 1427 (α-L-tri-Ac)**Arabinopyranosyl fluoride**

A-832



α-D-form

C₅H₉FO₄ 152.122**α-D-form**

Tri-Ac: 2,3,4-Tri-O-acetyl-α-D-arabinopyranosyl fluoride

[10369-23-0]

C₁₁H₁₅FO₇ 278.234Cryst. Mp 51-53°. [α]_D²⁵ +20.2 (c, 1.4 in CHCl₃).

Tribenzoyl: 2,3,4-Tri-O-benzoyl-α-D-arabinopyranosyl fluoride

[4337-05-7]

C₂₆H₂₁FO₇ 464.446Cryst. (CH₂Cl₂/pentane). Mp 161-163°. [α]_D²⁴ -103 (c, 0.8 in CHCl₃).

2-Me, 3,4-dibenzoyl: 3,4-Di-O-benzoyl-2-O-methyl-α-D-arabinopyranosyl fluoride [38791-41-2]

C₂₀H₁₉FO₆ 374.365Syrup. [α]_D²¹ +20.7 (c, 0.4 in CHCl₃).

β -D-form

Tri-Ac: 2,3,4-Tri-O-acetyl- β -D-arabinopyranosyl fluoride
[483-93-2]
 $C_{11}H_{15}FO_7$ 278.234
Cryst. (Et₂O/pentane). Mp 116-117°. $[\alpha]_D^{25}$ -136 (c, 1.0 in CHCl₃).

2-Me, 3,4-Di-Ac: 3,4-Di-O-acetyl-2-O-methyl- β -D-arabinopyranosyl fluoride
[38791-44-5]
 $C_{10}H_{15}FO_6$ 250.223
Cryst. (Et₂O/pentane). Mp 77-79°. $[\alpha]_D^{22}$ -171 (c, 0.64 in CHCl₃).

Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-arabinopyranosyl fluoride
[2924-38-1]
 $C_{26}H_{21}FO_7$ 464.446
Cryst. Mp 155-157°.

2-Me, 3,4-dibenzoyl: 3,4-Di-O-benzoyl-2-O-methyl- β -D-arabinopyranosyl fluoride
[38791-40-1]
 $C_{20}H_{19}FO_6$ 374.365
Syrup. $[\alpha]_D^{25}$ -248 (c, 2.0 in CHCl₃).

 α -L-form

Tri-Ac: 2,3,4-Tri-O-acetyl- α -L-arabinopyranosyl fluoride
[78295-78-0]
 $C_{11}H_{15}FO_7$ 278.234
Cryst. Mp 50-51°. $[\alpha]_D^{20}$ -18 (c, 1.0 in CHCl₃).

 β -L-form

Tri-Ac: 2,3,4-Tri-O-acetyl- β -L-arabinopyranosyl fluoride
[14227-77-1]
 $C_{11}H_{15}FO_7$ 278.234
Needles. Mp 117-118°. $[\alpha]_D^{20}$ +138.1 (c, 1.0 in CHCl₃).

Brauns, D.H. *et al.*, *J.A.C.S.*, 1924, **46**, 1484 (β -L-tri-Ac)

Lundt, K. *et al.*, *Mikrochim. Acta*, 1966, 126 (triesters)

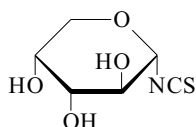
Hall, L.D. *et al.*, *Can. J. Chem.*, 1970, **48**, 1155 (pmr, F-19 nmr)

Jacobsen, S. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 1561 (α -D-Me dibenzoyl, β -D-Me derivs, pmr, F-19 nmr)

Miethchen, R. *et al.*, *Z. Chem.*, 1990, **30**, 56 (α -L-tri-Ac)

Arabinopyranosyl isothiocyanate

A-833



$C_6H_9NO_4S$ 191.207

 α -D-form

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -D-arabinopyranosyl isothiocyanate
[62414-75-9]
 $C_{12}H_{15}NO_7S$ 317.319

Reagent used for the hplc resoln. of amino acids. Syrup.

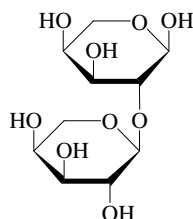
Kinoshita, T. *et al.*, *J. Chromatogr.*, 1981, **210**, 77 (use)

Ogura, H. *et al.*, *Heterocycles*, 1982, **17**, 87 (synth)

Miller, K.J. *et al.*, *J. Chromatogr.*, 1984, **307**, 335 (use)

2-O- α -L-Arabinopyranosyl-L-arabinose

A-834

 α -Pyranose-form

$C_{10}H_{18}O_9$ 282.247

 α -Pyranose-form

Me glycoside: Methyl 2-O- α -L-arabinopyranosyl- α -L-arabinopyranoside, 9CI
[89734-28-1]
 $C_{11}H_{20}O_9$ 296.274
Powder (MeOH/EtOAc). $[\alpha]_D^{20}$ -5.4 (c, 0.93 in H₂O).

 β -Pyranose-form

Me glycoside: Methyl 2-O- α -L-arabinopyranosyl- β -L-arabinopyranoside, 9CI
[89734-32-7]
 $C_{11}H_{20}O_9$ 296.274
Needles (EtOH). Mp 228-230°. $[\alpha]_D^{20}$ +122.1 (c, 0.61 in H₂O).

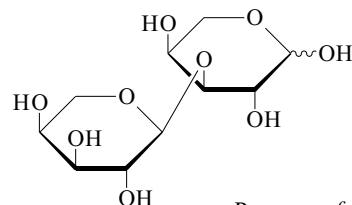
Mizutani, K. *et al.*, *Carbohydr. Res.*, 1984, **126**, 177 (synth, pmr)

Yamaguchi, H. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 2859 (hplc)

3-O- α -L-Arabinopyranosyl-L-arabinose, 9CI

A-835

[79435-28-2]



Pyranose-form

$C_{10}H_{18}O_9$ 282.247

Hydrolytic product of the mucilage from the stems of *Opuntia ficus-indica* (Indian fig). Syrup. $[\alpha]_D$ +76 (c, 0.63 in H₂O).

 α -Pyranose-form

Me glycoside: Methyl 3-O- α -L-arabinopyranosyl- α -L-arabinopyranoside, 9CI
[105261-00-5]
 $C_{11}H_{20}O_9$ 296.274
Mp 211°. $[\alpha]_D$ +34.4 (c, 3.9 in H₂O).

Me glycoside, penta-Ac: Methyl 2,4-di-O-acetyl-3-O-(2,3,4-tri-O-acetyl- α -L-arabinopyranosyl)- α -L-arabinopyranoside, 9CI
[105453-49-4]
 $C_{21}H_{30}O_{14}$ 506.46
Mp 70°. $[\alpha]_D$ +1.78 (c, 4.8 in CHCl₃).

 β -Pyranose-form

Me glycoside: Methyl 3-O- α -L-arabinopyranosyl- β -L-arabinopyranoside, 9CI
[105260-96-6]
 $C_{11}H_{20}O_9$ 296.274
Mp 194°. $[\alpha]_D$ +156 (c, 0.8 in H₂O).

Me glycoside, penta-Ac: [105260-90-0]
 $C_{21}H_{30}O_{14}$ 506.46
Mp 154°. $[\alpha]_D$ +89.3 (c, 2.0 in CHCl₃).

McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol, pmr)

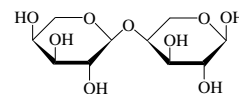
Kochetkov, N.K. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1986, 200 (Me gly, pmr, cmr)

Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*, 1988, **26**, 735 (cmr)

4-O- α -L-Arabinopyranosyl-L-arabinose, 9CI

A-836

[119690-34-5]

 α -Pyranose-form

$C_{10}H_{18}O_9$ 282.247

 α -Pyranose-form

Me glycoside: Methyl 4-O- α -L-arabinopyranosyl- α -L-arabinopyranoside
[105260-98-8]
 $C_{11}H_{20}O_9$ 296.274
Cryst. (EtOH). Mp 185°. $[\alpha]_D$ +37.8 (c, 5.2 in H₂O).

Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl- α -L-arabinopyranosyl)- α -L-arabinopyranoside
[105283-44-1]
 $C_{21}H_{30}O_{14}$ 506.46
Mp 176.5°. $[\alpha]_D$ +13.8 (c, 1.4 in CHCl₃).

 β -Pyranose-form

Me glycoside: Methyl 4-O- α -L-arabinopyranosyl- β -L-arabinopyranoside
[105260-94-4]
 $C_{11}H_{20}O_9$ 296.274
Cryst. (MeOH). Mp 290°. $[\alpha]_D$ +168 (c, 2.8 in H₂O).

Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl- α -L-arabinopyranosyl)- β -L-arabinopyranoside
[105260-88-6]
 $C_{21}H_{30}O_{14}$ 506.46
 $[\alpha]_D$ +78.5 (c, 1.0 in CHCl₃).

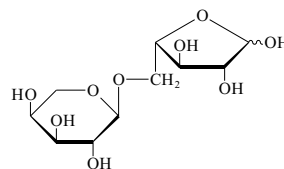
Kochetkov, N.K. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1986, 200 (Me gly, synth, pmr, cmr)

Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*, 1988, **26**, 735 (cmr)

5-O- α -L-Arabinopyranosyl-L-arabinose, 9CI

A-837

[78088-22-9]



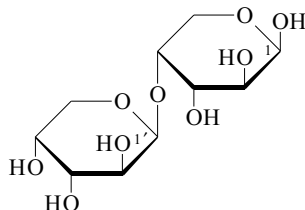
Furanose-form

$C_{10}H_{18}O_9$ 282.247

From the hydrolysates of *Virgilia oroboides* gum.
Mp 143°. $[\alpha]_D^{18}$ -18 (c, 1.7 in H₂O). $[\alpha]_D$ 0 (H₂O).

Smith, F. *et al.*, *J.C.S.*, 1961, 4892 (*isol*)
Balan, N.F. *et al.*, *Bioorg. Khim.*, 1980, **6**, 1657;
CA, **94**, 103719m
Tanaka, M. *et al.*, *Biochim. Biophys. Acta*, 1981,
658, 377

4-O-β-D-Arabinopyranosyl-D-arabinose A-838



C₁₀H₁₈O₉ 282.247

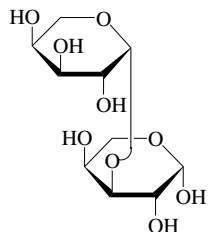
2,2',3-Tri-Ac, 1-O-(3,7,11-trimethyl-2,6,10-dodecatrienyl): [143838-79-3]
C₃₁H₄₈O₁₂ 612.713

Isol. from the coral *Simularia* sp. Enhances glucose transport in rat adipocytes. Oil.
 $[\alpha]_D$ -196 (c, 0.7 in CHCl₃).

Shindo, T. *et al.*, *Experientia*, 1992, **48**, 688
(*isol*, *pmr*, *cmr*, *ms*)

3-O-β-L-Arabinopyranosyl-L-arabinose, 9CI, 8CI A-839

Arabinopyranobiose
[20546-04-7]



β-Pyranose-form

C₁₀H₁₈O₉ 282.247

Isol. from partial acid hydrolysates of golden apple (*Spondias cytherea*), lemon, peach, cherry, *Acacia mearnsii*, *Acacia nilotica*, *Acacia karroo* and *Anogeissus schimperi* gums; also from hydrolysates of larch (*Larix laricina*) arabogalactans. Also major disaccharide product from the acid reversion of L-arabinose. $[\alpha]_D$ +210 (c, 1.0 in H₂O). $[\alpha]_D$ +164 (c, 1.0 in H₂O). $[\alpha]_D$ +193 (c, 3.8 in H₂O).

Phenylosazone: Mp 235° (221°).

α-Pyranose-form

Me glycoside: Methyl 3-O-β-L-arabinopyranosyl-α-L-arabinopyranoside, 9CI

[105260-99-9]

C₁₁H₂₀O₉ 296.274

$[\alpha]_D$ +140 (c, 2.6 in MeOH).

Me glycoside, penta-Ac: [105260-92-2]

C₂₁H₃₀O₁₄ 506.46

$[\alpha]_D$ +115 (c, 2.3 in CHCl₃).

β-Pyranose-form

Me glycoside, penta-Ac: [105260-89-7]

Mp 211°. $[\alpha]_D$ +148 (c, 0.3 in CHCl₃).

Jones, J.K.N. *et al.*, *J.C.S.*, 1953, 1672; 1958, 27
(*isol*, *synth*)

Andrews, P.A. *et al.*, *J.C.S.*, 1953, 4090

Aspinall, G.O. *et al.*, *J.C.S.*, 1955, 1106; 1965,
2685 (*isol*)

Smith, F. *et al.*, *Chemistry of Plant Gums and Mucilages*, Reinhold, New York, 1959,

Haq, S. *et al.*, *Can. J. Chem.*, 1961, **39**, 1563
(*isol*)

Chalk, R.C. *et al.*, *Can. J. Chem.*, 1968, **46**,
2311 (*isol*)

Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1968, **7**,
421 (*isol*)

Kubala, J. *et al.*, *Coll. Czech. Chem. Comm.*,
1977, **42**, 2809 (*isol*)

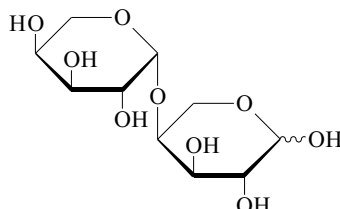
Kochetkov, N.K. *et al.*, *Izv. Akad. Nauk SSSR*,
Ser. Khim., 1986, 200 (*deriv*, *synth*, *pmr*, *cmr*)

Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*,
1988, **26**, 735 (*cmr*)

Verkerk, R. *et al.*, *Natural Toxicants in Food*,
(ed. Watson, R.), Sheffield Academic Press,
1998, 29-53 (*rev*)

4-O-β-L-Arabinopyranosyl-L-arabinose, 9CI A-840

[52492-16-7]



Pyranose-form

C₁₀H₁₈O₉ 282.247

A minor product in the acid reversion of L-arabinose. Syrup. $[\alpha]_D$ +193 (H₂O).

α-Pyranose-form

Me glycoside: Methyl 4-O-β-L-arabinopyranosyl-α-L-arabinopyranoside, 9CI

[105260-97-7]

C₁₁H₂₀O₉ 296.274

$[\alpha]_D$ +111 (c, 3.2 in MeOH).

Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl-β-L-arabinopyranosyl)-α-L-arabinopyranoside

[105260-91-1]

C₂₁H₃₀O₁₄ 506.46

$[\alpha]_D$ +147.5 (c, 3.9 in CHCl₃).

β-Pyranose-form

Me glycoside: Methyl 4-O-β-L-arabinopyranosyl-β-L-arabinopyranoside, 9CI

[105260-93-3]

C₁₁H₂₀O₉ 296.274

$[\alpha]_D$ +225 (c, 0.8 in MeOH).

Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl-β-L-arabinopyranosyl)-β-L-arabinopyranoside, 9CI

[105283-43-0]

C₂₁H₃₀O₁₄ 506.46

MeOH. Mp 193.5°. $[\alpha]_D$ +302.5 (c, 5.0 in CHCl₃).

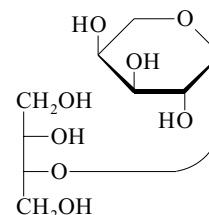
Jones, J.K.N. *et al.*, *J.C.S.*, 1958, 27

Kochetkov, N.K. *et al.*, *Izv. Akad. Nauk SSSR*,
Ser. Khim., 1986, 200 (*Me gly*, *synth*, *pmr*,
cmr)

Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*,
1988, **26**, 735 (*cmr*)

3-O-β-L-Arabinopyranosyl-D-erythritol A-841

2-O-β-L-Arabinopyranosyl-L-erythritol



C₉H₁₈O₈ 254.236

$[\alpha]_D$ +135 (H₂O).

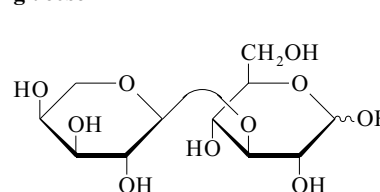
Hexabenzoyl:

C₅₁H₄₂O₁₄ 878.884

Mp 131-134°. $[\alpha]_D$ +114 (CHCl₃).

Charlson, J. *et al.*, *Can. J. Chem.*, 1957, **35**, 365
(*synth*)

3-O-α-L-Arabinopyranosyl-D-glucose A-842



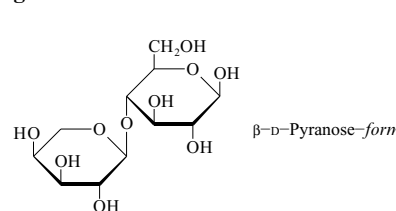
Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Synth. by the transferase action of *E. coli* β-galactosidase on *o*-nitrophenyl α-L-arabinoside and Glucose, G-514. Mp 176-178°. $[\alpha]_D$ +54.4 (H₂O).

Wallenfels, K. *et al.*, *Annalen*, 1960, **630**, 46

4-O-α-L-Arabinopyranosyl-D-glucose A-843



β-D-Pyranose-form

C₁₁H₂₀O₁₀ 312.273

β-D-Pyranose-form

Synth. by the transferase action of *E. coli* β-galactosidase on *o*-nitrophenyl α-L-arabinoside and Glucose, G-514. $[\alpha]_D$ +41.9 (H₂O).

2,3-Dibenzoyl, benzyl glycoside: *Homalosite A*. Benzyl 4-O-α-L-arabinopyranosyl-2,3-di-O-benzoyl-β-D-glucopyranoside

[149155-18-0]

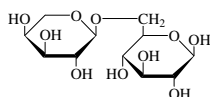
Constit. of *Homalium ceylanicum* (Flacourtiaceae). Powder.

Mp 181-183°. $[\alpha]_D$ -12.1 (c, 0.2 in MeOH).

λ_{\max} 209 (ϵ 10230); 216 (ϵ 9120); 229 (ϵ 11480) (MeOH).

Wallenfels, K. *et al.*, *Annalen*, 1960, **630**, 46
Ekabo, O. *et al.*, *J. Nat. Prod.*, 1993, **56**, 699
(Homaloside A, isol, uv, ir, pmr, cmr)

6-O- α -L-Arabinopyranosyl-D-glucose, 9CI, 8CI **A-844**
Vicianose
[14116-69-9]



α -D-Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273
Occurs in Gein.
Mp 210° dec. $[\alpha]_D^{20} +56.5 \rightarrow +39.7$ (H₂O).

β -Pyranose-form

Hepta-Ac: [14260-08-3]
 $C_{25}H_{34}O_{17}$ 606.533
Mp 158.5-160.5°. $[\alpha]_D +15$ (CHCl₃).

Benzyl glycoside: *Benzyl β -vicianoside*
[148031-67-8]
 $C_{18}H_{26}O_{10}$ 402.397

Constit. of the fruit of *Passiflora edulis* (passion fruit).

Helferich, B. *et al.*, *Annalen*, 1928, **465**, 166
(*synth*)

Kochetkov, N.K. *et al.*, *Zh. Obshch. Khim.*, 1967, **37**, 338; *CA*, **67**, 108856f (*synth*)

Psenak, M. *et al.*, *Planta Med.*, 1972, **22**, 93; *CA*, **77**, 149673u (*isol*)

Balan, N.F. *et al.*, *Bioorg. Khim.*, 1980, **5**, 1657; *CA*, **94**, 103719m (*hepta-Ac*)

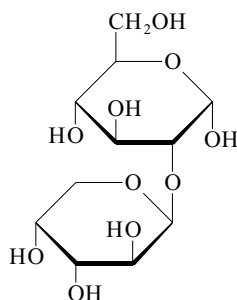
Bartlett, P.A. *et al.*, *J.A.C.S.*, 1980, **102**, 337
(*synth*)

Paterson, I. *et al.*, *Tetrahedron*, 1985, **41**, 3569
(*rev*)

Pearson, A.J. *et al.*, *Chem. Comm.*, 1988, 442
(*synth, bibl*)

Chassagne, D. *et al.*, *Phytochemistry*, 1996, **41**, 1497-1500 (*benzyl glycoside*)

2-O- β -D-Arabinopyranosyl-D-glucose **A-845**



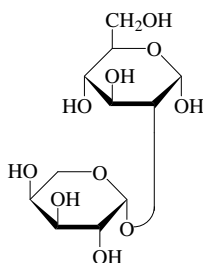
$C_{11}H_{20}O_{10}$ 312.273

α -Pyranose-form

Hepta-Ac: [61284-31-9]
 $C_{25}H_{34}O_{17}$ 606.533
Cryst. (CHCl₃/Et₂O). Mp 140-145°. $[\alpha]_D^{20} +58$ (c, 1 in CHCl₃).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 1731

2-O- β -L-Arabinopyranosyl-D-glucose, 9CI
[53735-85-6]



α -Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273
Reducing disaccharide. Cryst. (EtOH/H₂O). Mp 235-236° (210-220°). $[\alpha]_D +189 \rightarrow +224$ (24h) (c, 1.1 in H₂O). $[\alpha]_D +151$ (H₂O).

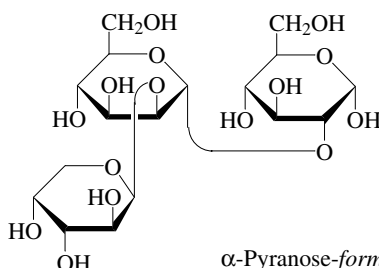
α -Pyranose-form

Hepta-Ac:
 $C_{25}H_{34}O_{17}$ 606.533
Cryst. (Et₂O). Mp 100-102°. $[\alpha]_D +203.6$ (c, 1 in CHCl₃).

Lehmann, J. *et al.*, *Annalen*, 1960, **630**, 56
(*synth*)

Dick, W.E. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319
(*synth, pmr*)

β -D-Arabinopyranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-glucose Ristriose **A-847**



α -Pyranose-form

$C_{17}H_{30}O_{15}$ 474.415
Formed by the acetolysis of Ristomycin A.

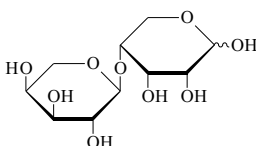
α -Pyranose-form

Deca-Ac: [68787-45-1]
 $C_{37}H_{50}O_{25}$ 894.787
Mp 84-87°.

Neszmelyi, A. *et al.*, *J. Antibiot.*, 1978, **31**, 974
(*cmr*)

Sztaricskai, F. *et al.*, *J.A.C.S.*, 1980, **102**, 7093
(*isol, pmr*)

4-O- α -L-Arabinopyranosyl-D-ribose **A-848**



Pyranose-form

$C_{10}H_{18}O_9$ 282.247

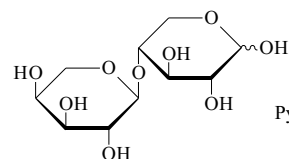
β -Pyranose-form

2,3-Anhydro, benzyl glycoside: *Benzyl 2,3-anhydro-4-O- α -L-arabinopyranosyl- β -D-ribopyranoside, 9CI, 8CI*
[16907-85-0]
 $C_{17}H_{22}O_8$ 354.356
Cryst. (MeOH or EtOAc). Mp 143-145°. $[\alpha]_D^{20} +18$ (c, 0.6 in H₂O). $[\alpha]_D -6$ (c, 1.1 in MeOH).

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1967, **45**, 1543 (*synth*)

De Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1978, **87**, 783 (*synth*)

4-O- α -L-Arabinopyranosyl-D-xylose, 8CI **A-849**
[16907-86-1]

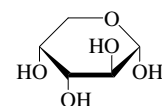


Pyranose-form

$C_{10}H_{18}O_9$ 282.247
Constit. of the polysaccharide produced by yeast *Trichosporon cutaneum* when grown on agar plates.
 $[\alpha]_D +9$ (0.8 in H₂O).

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1967, **45**, 1543

Arabinose **A-850**
Aloinose. Aloe sugar. Pectinose
[147-81-9]



α -D-Pyranose-form

$C_5H_{10}O_5$ 150.131

D-form [10323-20-3]

An aq. soln. at 31° contains 60% α -pyr, 35.5% β -pyr, 2.5% α -fur, 2% β -fur, and 0.03% aldehyde. Found in the polysaccharide of tubercle bacilli and as the constit. sugar of Homonataloin and Nataloin. Isol. from plants of the genus *Aloe*. Prod. comly. from glucose. Inexpensive starting material for chiral synthesis. Mp 159-160°. $[\alpha]_D -175 \rightarrow -105$ (H₂O). pK_a 12.34 (25°).

p-Bromophenylhydrazone: Mp 163°.

Di-Et dithioacetal: See Arabinose diethyl dithioacetal, A-852

Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-D-arabinose
[3891-58-5]
 $C_{13}H_{18}O_9$ 318.28

Cryst. (Me₂CO/Et₂O/petrol). Mp 113-115°. $[\alpha]_D^{20} +65$ (c, 4.1 in CHCl₃).

2,3,4,5-Di-O-isopropylidene: 2,3,4,5-Di-O-isopropylidene-D-arabinose
[13039-93-5]
 $C_{11}H_{18}O_5$ 230.26

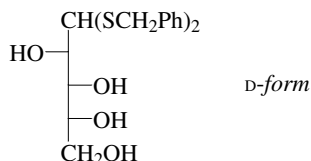
Bp_{0.04} 85-90°. $[\alpha]_D -16.1$ (CHCl₃).

- 2,3:4,5-Di-O-isopropylidene, diphenyl dithioacetal:
 $C_{23}H_{28}O_4S_2$ 432.604
 $[\alpha]_D^{25}$ -35.7 (c, 1.0 in $CHCl_3$).
- α -D-Pyranose-form** [608-45-7]
 Prod. industrially from plant gums. Inexpensive starting material for chiral synthesis.
- Tetra-Ac*: 1,2,3,4-Tetra-O-acetyl- α -D-arabinopyranose
 [19186-37-9]
 $C_{13}H_{18}O_9$ 318.28
 Mp 95-97°. $[\alpha]_D^{20}$ -43 (c, 1.1 in $CHCl_3$).
- 1,2,3-Tribenzoyl, 4-Ac: 4-O-Acetyl-1,2,3-tri-O-benzoyl- α -D-arabinopyranose
 [43225-71-4]
 $C_{28}H_{24}O_9$ 504.492
 Cryst. (MeOH). Mp 118-119°. $[\alpha]_D^{23}$ -51.3 (c, 1.2 in $CHCl_3$).
- Tetrabenzoyl*: 1,2,3,4-Tetra-O-benzoyl- α -D-arabinopyranose
 $C_{33}H_{26}O_9$ 566.563
 Mp 164-165°. $[\alpha]_D$ -114 ($CHCl_3$).
- Me glycoside*: See Methyl arabinopyranoside, M-153
- Benzyl glycoside*: See Benzyl arabinopyranoside, B-14
- β -D-Pyranose-form** [6748-95-4]
Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- β -D-arabinopyranose
 [25243-38-3]
 $C_{13}H_{18}O_9$ 318.28
 Cryst. (EtOH). Mp 98-100°. $[\alpha]_D^{20}$ -147.8 (c, 2.0 in $CHCl_3$).
- Tetrabenzoyl*: 1,2,3,4-Tetra-O-benzoyl- β -D-arabinopyranose
 [22434-99-7]
 $C_{33}H_{26}O_9$ 566.563
 Mp 160-161°. $[\alpha]_D$ -323 ($CHCl_3$).
- 3,4-O-Isopropylidene: See 3,4-O-Isopropylidene arabinose, I-61
- Me glycoside*: See Methyl arabinopyranoside, M-153
- Benzyl glycoside*: See Benzyl arabinopyranoside, B-14
- α -D-Furanose-form** [37388-49-1]
Tetra-Ac: 1,2,3,5-Tetra-O-acetyl- α -D-arabinofuranose
 [43225-70-3]
 $C_{13}H_{18}O_9$ 318.28
 $[\alpha]_D^{25}$ +51.9 (c, 1.6 in $CHCl_3$).
- 1,2,3-Tribenzoyl, 5-Ac: 5-O-Acetyl-1,2,3-tri-O-benzoyl- α -D-arabinofuranose
 [43179-71-1]
 $C_{28}H_{24}O_9$ 504.492
 Syrup. $[\alpha]_D^{21}$ +23.4 (c, 1.6 in $CHCl_3$).
- 2,3,5-Tribenzoyl, 1-(4-nitrobenzoyl):
 [31598-79-5]
 $C_{33}H_{31}NO_8$ 569.61
 Cryst. (Et₂O/hexane). Mp 92-94°. $[\alpha]_D^{20}$ +57 (c, 1.22 in CH_2Cl_2).
- Me glycoside*: See Methyl arabinofuranoside, M-152
- β -D-Furanose-form**
 1,2-O-Isopropylidene: See 1,2-O-Isopropylidene arabinose, I-60
- 2-Me, tribenzoyl: 1,3,5-Tri-O-benzoyl-2-O-methyl- β -D-arabinofuranose
 [38791-39-8]
 $C_{27}H_{24}O_8$ 476.482
 Mp 109-110°. $[\alpha]_D^{21}$ -19 (c, 1.4 in $CHCl_3$).
- 3,5-Di-Me, 1,2-O-benzylidene: 1,2-O-Benzylidene-3,5-di-O-methyl- β -D-arabinofuranose
 [26922-66-7]
 $C_{14}H_{18}O_5$ 266.293
 $[\alpha]_D$ +7 (EtOH).
- 2,3,5-Tribenzyl, 1-(4-nitrobenzoyl):
 [31598-80-8]
 Cryst. (Et₂O/hexane). Mp 76-77°. $[\alpha]_D^{20}$ -44 (c, 1.3 in CH_2Cl_2).
- Me glycoside*: See Methyl arabinofuranoside, M-152
- L-form FEMA 3255**
 [5328-37-0]
 [87-72-9] Widespread in plants. It occurs free in the heartwood of many coniferous trees, and combined with other sugars in gums, hemicelluloses, pectic substances, and also in mycobacteria. Usually prepared from mesquite gum. Flavouring agent.
 Mp 160°. $[\alpha]_D^{20}$ +190.6 \rightarrow +104.5 (c, 4 in H₂O). Sweetness = 0.37 \times sucrose.
- Phenylhydrazone*: Mp 153°.
- α -L-Pyranose-form** [7296-55-1]
Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- α -L-arabinopyranose
 [17080-99-8]
 $C_{13}H_{18}O_9$ 318.28
 Mp 96-97°. $[\alpha]_D$ +44.1 ($CHCl_3$).
- Tetrabenzoyl*: 1,2,3,4-Tetra-O-benzoyl- α -L-arabinopyranose
 $C_{33}H_{26}O_9$ 566.563
 Mp 164-165°. $[\alpha]_D$ +114 ($CHCl_3$).
- Me glycoside*: See Methyl arabinopyranoside, M-153
- Benzyl glycoside*: See Benzyl arabinopyranoside, B-14
- β -L-Pyranose-form** [7296-56-2]
Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- β -L-arabinopyranose
 [4258-00-8]
 $C_{13}H_{18}O_9$ 318.28
 Mp 86°. $[\alpha]_D$ +147.2 ($CHCl_3$).
- 1,2,3-Tribenzoyl: 1,2,3-Tri-O-benzoyl- β -L-arabinopyranose
 [56933-03-0]
 $C_{26}H_{22}O_8$ 462.455
 Syrup. $[\alpha]_D$ +211 ($CHCl_3$).
- 1,2,4-Tribenzoyl: 1,2,4-Tri-O-benzoyl- β -L-arabinopyranose
 [56933-02-9]
 $C_{26}H_{22}O_8$ 462.455
 Cryst. (Et₂O). Mp 231-233°. $[\alpha]_D$ +200 ($CHCl_3$).
- Tetrabenzoyl*: 1,2,3,4-Tetra-O-benzoyl- β -L-arabinopyranose
 [7473-44-1]
 $C_{33}H_{26}O_9$ 566.563
 Cryst. (EtOH). Mp 157-158°. $[\alpha]_D$ +298 ($CHCl_3$).
- 3,4-O-Isopropylidene: See 3,4-O-Isopropylidene arabinose, I-61
- Me glycoside*: See Methyl arabinopyranoside, M-153
- Benzyl glycoside*: See Benzyl arabinopyranoside, B-14
- α -L-Furanose-form**
 2,3,5-Tribenzyl: 2,3,5-Tri-O-benzyl- α -L-arabinofuranose
 [60933-69-9]
 $C_{26}H_{28}O_5$ 420.504
 Microcryst. powder. Mp 78-80°. $[\alpha]_D^{20}$ -4.5 (c, 3.5 in CH_2Cl_2).
- Me glycoside*: See Methyl arabinofuranoside, M-152
- β -L-Furanose-form**
 2,3,5-Tribenzyl: 2,3,5-Tri-O-benzyl- β -L-arabinofuranose
 [60733-68-8]
 $C_{26}H_{28}O_5$ 420.504
 Needles (EtOAc/petrol). Mp 88-89° (84-85°). $[\alpha]_D^{20}$ +6.5 (CH_2Cl_2) (+4.4). $[\alpha]_D^{20}$ +27.1 \rightarrow -11.6 (c, 2.0 in dioxan aq.).
- 1,2-O-Isopropylidene: See 1,2-O-Isopropylidene arabinose, I-60
- Me glycoside*: See Methyl arabinofuranoside, M-152
- DL-form** [20235-19-2]
 Mp 164°.
 [1768-95-2, 28697-53-2]
 Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 188D (ir)
 Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 293B (nmr)
 Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, 4th edn., J.A. Barth, 1935, 120 (rev)
 Wolfrom, M.L. et al., J.A.C.S., 1941, 63, 201 (2,3,4,5-tetra-Ac)
 Fletcher, H.G. et al., J.A.C.S., 1947, 69, 1145 (α -D-tetrabenzoyl, β -D-tetrabenzoyl, α -L-tetrabenzoyl, β -L-tetrabenzoyl)
 Barker, R. et al., J.O.C., 1961, 26, 4065 (α -L-fur derivs, β -L-fur derivs)
 Whistler, R.L. et al., Methods Carbohydr. Chem., 1962, 1, 71 (synth, D-form)
 MacDonald, D.L. et al., Methods Carbohydr. Chem., 1962, 1, 73 (synth, D-form)
 White, E.V. et al., Methods Carbohydr. Chem., 1962, 1, 76 (synth, L-form)
 Tejima, S. et al., J.O.C., 1963, 28, 2999 (α -L-fur 2,3,5-tribenzoyl)
 Fletcher, H.G. et al., Methods Carbohydr. Chem., 1963, 2, 234 (α -D-tetrabenzoyl, β -D-tetrabenzoyl)
 Staněk, J. et al., The Monosaccharides, Academic Press, 1963, (rev)
 Kuszmann, J. et al., C.A., 1964, 61, 5737g (α -D-pyr-tetra-Ac, β -D-pyr-tetra-Ac)
 Horton, D. et al., Carbohydr. Res., 1970, 13, 33 (diisopropylidene diphenyl dithioacetal)
 Durette, P.L. et al., J.O.C., 1971, 36, 2658 (α -D-tetra-Ac, α -D-tetrabenzoyl, β -D-tetrabenzoyl)
 Glaudemans, C.P.J. et al., J.O.C., 1971, 36, 3598 (α -D-fur tribenzyl nitrobenzoyl, β -D-fur tribenzyl nitrobenzoyl)
 Karrer, W. et al., Konstitution und Vorkommen der Organischen Pflanzenstoffe, 2nd edn., Birkhäuser Verlag, Basel, 1972, nos. 583; 584 (occur)
 Schaffer, R. et al., The Carbohydrates, 1972, 1A, 69 (occur)
 Horton, D. et al., Carbohydr. Res., 1973, 28, 201 (D-diisopropylidene, 2,3,4,5-tetra-Ac)

- Bock, K. *et al.*, *Carbohydr. Res.*, 1973, **29**, 331 (α -D-pyr Ac tribenzoyl, α -D-fur Ac tribenzoyl)
- Batey, J.F. *et al.*, *Carbohydr. Res.*, 1975, **43**, 43 (β -L-pyr-1,2,3-tribenzoyl, β -L-pyr-1,2,4-tribenzoyl, β -L-pyr-tetrazobenzoyl)
- Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1976, **48**, 171 (cmr)
- Bock, K. *et al.*, *Annu. Rep. NMR Spectrosc.*, (Webb, G.A., ed.), Acad. Press, London and New York, 1982, **13**, 38 (pmr, cmr)
- Tajmir-Riahi, H.A. *et al.*, *Carbohydr. Res.*, 1984, **127**, 1 (ir)
- Regeling, H. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1987, **106**, 461 (2,3:4,5-diisopropylidene)
- Finch, P. *et al.*, *Carbohydr. Res.*, 1991, **210**, 319 (β -L-fur 2,3,5-tribenzoyl)
- Benesi, A.J. *et al.*, *Carbohydr. Res.*, 1994, **258**, 27 (pmr, cmr)
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- Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 196

Arabinose dibenzyl dithioacetal A-851

Arabinose dibenzyl mercaptal.
5,5-Bis(benzylthio)-1,2,3,4-pentanetetrol†



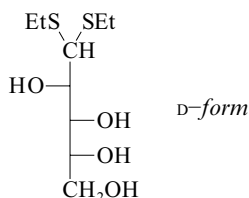
C₁₉H₂₄O₄S₂ 380.528

- D-form** [34685-26-2]
Needles (MeOH). Mp 149°. [α]_D²⁴ +18.6 (c, 3.88 in Py).
- 4,5-O-Isopropylidene: 4,5-O-Isopropylidene-D-arabinose dibenzyl dithioacetal** [126694-15-3]
C₂₂H₂₈O₄S₂ 420.593
Cryst. (petrol), Mp 100-105°. [α]_D²⁴ -56.5 (c, 1.7 in CHCl₃).
- L-form** [40733-11-7]
Cryst. (EtOH). Mp 144°. [α]_D -18.74 (c, 2.62 in Py).
- 4,5-O-Isopropylidene: 4,5-O-Isopropylidene-L-arabinose dibenzyl dithioacetal** [97776-79-9]
C₂₂H₂₈O₄S₂ 420.593
Solid (CHCl₃/hexane). [α]_D +50.22 (c, 1.80 in CHCl₃).
- Pacsu, E. *et al.*, *Ber.*, 1929, **62**, 3008-3012 (*L-form, synth*)
- Baker, S.B. *et al.*, *J.A.C.S.*, 1952, **74**, 827-828 (*D-form, synth, D-4,5-isopropylidene*)
- Zinner, H. *et al.*, *Chem. Ber.*, 1956, **89**, 800-813 (*D-form, synth*)
- MaloneyHuss, K.E. *et al.*, *Synth. Commun.*, 1985, **15**, 273-277 (*L-form, synth, L-4,5-isopropylidene*)

Arabinose diethyl dithioacetal, A-852

9Cl, 8Cl

Arabinose diethyl mercaptal



C₉H₂₀O₄S₂ 256.387

- D-form** [1941-50-0]
Needles, Mp 125-126°. [α]_D²³ 0 (c, 3.0 in Py). [α]_D⁴ -11 (c, 3.7 in MeOH).
- Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-D-arabinose diethyl dithioacetal** [5329-45-3]
C₁₇H₂₈O₈S₂ 424.535
Mp 80°. [α]_D²³ +30 (c, 4.2 in CHCl₃).
- 5-Benzoyl: 5-O-Benzoyl-D-arabinose diethyl dithioacetal**
C₁₆H₂₄O₅S₂ 360.495
Mp 119°. [α]_D²⁵ -52.8 (c, 1.0 in CHCl₃).
- 5-Tosyl, 2,3,4-tri-Ac: 2,3,4-Tri-O-acetyl-5-O-tosyl-D-arabinose diethyl dithioacetal**
C₂₂H₃₂O₉S₃ 536.687
Syrup. [α]_D +21 (c, 6.6 in CHCl₃).
- 2,3-Isopropylidene: 2,3-O-Isopropylidene-D-arabinose diethyl dithioacetal** [78010-00-1]
C₁₂H₂₄O₄S₂ 296.451
Oil. Bp_{0.001} 130-140° (bath). [α]_D¹⁹ +93.8 (c, 4.2 in MeOH). n_D^{20} 1.5172.
- 4,5-Isopropylidene: 4,5-O-Isopropylidene-D-arabinose diethyl dithioacetal**
C₁₂H₂₄O₄S₂ 296.451
Cryst. (CH₂Cl₂/petrol). Mp 75-75.5° (70-72°). [α]_D²⁴ -58.5 (c, 1.03 in CHCl₃) (-68.9°).
- 2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-isopropylidene-D-arabinose diethyl dithioacetal**
C₁₅H₂₈O₄S₂ 336.516
Syrup. Bp_{0.001} 95-105° (bath). [α]_D +86 (c, 3.5 in MeOH) (+82). n_D^{23} 1.4902.
- 3,5-Cyclohexylidene: 3,5-O-Cyclohexylidene-D-arabinose diethyl dithioacetal**
C₁₅H₂₈O₄S₂ 336.516
Syrup. [α]_D²⁵ -24 (c, 1.30 in CHCl₃).
- 4,5-Cyclohexylidene: 4,5-O-Cyclohexylidene-D-arabinose diethyl dithioacetal**
C₁₅H₂₈O₄S₂ 336.516
Cryst. (petrol). Mp 75°. [α]_D²⁴ -60 (c, 2.4 in CHCl₃).
- 2,3:4,5-Dibenzylidene: 2,3:4,5-Di-O-benzylidene-D-arabinose diethyl dithioacetal** [10504-14-0]
C₂₃H₂₈O₄S₂ 432.604
Cryst. (MeOH). Mp 103-105°. [α]_D²⁰ +12.4 (c, 1.9 in CHCl₃).
- 2,4:3,5-Dibenzylidene: 2,4:3,5-Di-O-benzylidene-D-arabinose diethyl dithioacetal**
C₂₃H₂₈O₄S₂ 432.604
Cryst. (CH₂Cl₂/petrol). Mp 173-174°. [α]_D²³ +78 (c, 1.4 in CHCl₃).

L-form

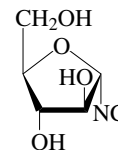
Mp 124-126°.

- Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-L-arabinose diethyl dithioacetal** [5115-88-8]
C₁₇H₂₈O₈S₂ 424.535
Prisms (MeOH). Mp 79-80°. [α]_D²⁷ -30.8 (CHCl₃).
- 5-Benzoyl: 5-O-Benzoyl-L-arabinose diethyl dithioacetal**
C₁₆H₂₄O₅S₂ 360.495
Mp 119°. [α]_D²² +49.5 (c, 2.0 in CHCl₃).
- 4,5-Isopropylidene: 4,5-O-Isopropylidene-L-arabinose diethyl dithioacetal**
C₁₂H₂₄O₄S₂ 296.451
Cryst. (Et₂O/hexane). Mp 76°. [α]_D²⁵ +70.2 (c, 1.0 in CHCl₃).
- 2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-isopropylidene-L-arabinose diethyl dithioacetal**
C₁₅H₂₈O₄S₂ 336.516
Oil. [α]_D -81 (c, 1.0 in MeOH).

DL-form

- 2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-isopropylidene-DL-arabinose diethyl dithioacetal**
C₁₅H₂₈O₄S₂ 336.516
Large prisms (pentane). Mp 43-45°.
- Wolfson, M.L. *et al.*, *J.A.C.S.*, 1930, **52**, 3619 (*L-tetra-Ac*)
- Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 132 (*L-form*)
- Zinner, H. *et al.*, *Chem. Ber.*, 1956, **89**, 800 (*D-form, D-tetra-Ac*)
- Zinner, H. *et al.*, *Chem. Ber.*, 1957, **90**, 2688 (*2,3-isopropylidene, 2,3:4,5-diisopropylidene*)
- Horton, D. *et al.*, *Carbohydr. Res.*, 1969, **10**, 279 (pmr)
- Horton, D. *et al.*, *Carbohydr. Res.*, 1984, **134**, 205 (*isopropylidene derivs*)
- Grindley, T.B. *et al.*, *Carbohydr. Res.*, 1985, **140**, 215 (*4,5-isopropylidene, 4,5-cyclohexylidene, 3,5-cyclohexylidene*)
- Grindley, T.B. *et al.*, *Carbohydr. Res.*, 1987, **159**, 171; 1991, **218**, 83 (*2,4:3,5-dibenzylidene*)
- Miljković, D. *et al.*, *Carbohydr. Res.*, 1989, **194**, 300 (*tri-Ac tosyl*)

Arabinosyl isocyanide A-853



C₆H₉NO₄ 159.141

α -D-Furanose-form

- Tri-Me: 2,3,5-Tri-O-methyl- α -D-arabinofuranosyl isocyanide** [71074-71-0]
[71074-72-1]
C₉H₁₅NO₄ 201.222
Syrup. [α]_D²⁰ +73 (c, 0.5 in CHCl₃). Contd. approx. 5% β -anomer.
- Tribenzyl: 2,3,5-Tri-O-benzyl- α -D-arabinofuranosyl isocyanide** [71074-69-6]
[71074-70-9]
C₂₇H₂₇NO₄ 429.515

$[\alpha]_D +49$ (c, 0.1 in CHCl_3). Contd. approx. 5% β -anomer.

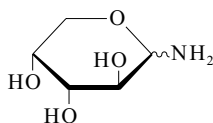
Boullanger, P. *et al.*, *Tetrahedron*, 1979, **35**, 163-167 (*tri-Me*, *tribenzyl*)

Witczak, Z.J. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 359-380 (*tri-Me*, *tribenzyl*, *rev. bibl*)

Arabinosylamine

Arabinosimine

A-854



α -Pyranose-form

$\text{C}_5\text{H}_{11}\text{NO}_4$ 149.146

D-form [55781-69-6]

Mp 122-124°. $[\alpha]_D^{25} -82.5$ (c, 2.0 in H_2O) (2 min).

N,N-Di-Ac: N,N-Diacetyl-D-arabinosylamine

$\text{C}_9\text{H}_{15}\text{NO}_6$ 233.221

Mp 187°. $[\alpha]_D -9.5$ (c, 10.0 in H_2O).

N-Ph: N-Phenyl-D-arabinosylamine

$\text{C}_{11}\text{H}_{15}\text{NO}_4$ 225.244

Mp 130°. $[\alpha]_D +27 \rightarrow -8$ (MeOH).

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl-D-arabinosylamine

$\text{C}_{11}\text{H}_{17}\text{NO}_7$ 275.258

Mp 137-138°. $[\alpha]_D -18$ (CHCl_3).

N,O,O,O-Tetra-Ac:

$\text{C}_{13}\text{H}_{19}\text{NO}_8$ 317.295

Mp 175°. $[\alpha]_D^{25} -87$ (c, 2.0 in CHCl_3).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-D-arabinopyranosylamine

$\text{C}_8\text{H}_{15}\text{NO}_4$ 189.211

Cryst. (as tosylate salt). Mp 123° (tosylate salt). $[\alpha]_D^{20} -44$ (c, 2 in DMSO, 5 min.).

L-form

Mp 124° dec. $[\alpha]_D^{20} +83$ (c, 10 in H_2O).

N-Ac: N-Acetyl-L-arabinosylamine

$\text{C}_7\text{H}_{13}\text{NO}_5$ 191.183

Mp 224°. $[\alpha]_D +69.1$ (H_2O).

N,N-Di-Ac: N,N-Diacetyl-L-arabinosylamine

Mp 191°. $[\alpha]_D +9.8$ (c, 2.0 in H_2O).

Tetra-Ac: N,2,3,4-Tetraacetyl-L-arabinosylamine

$\text{C}_{13}\text{H}_{19}\text{NO}_8$ 317.295

Mp 178°. $[\alpha]_D +89.6$ (CHCl_3).

N-Me: N-Methyl-L-arabinosylamine

$\text{C}_6\text{H}_{13}\text{NO}_4$ 163.173

Mp 118-120° (101°). $[\alpha]_D^{29} +43 \rightarrow +51$ (c, 3.9 in H_2O).

N-Ph: N-Phenyl-L-arabinosylamine

$\text{C}_{11}\text{H}_{15}\text{NO}_4$ 225.244

Mp 103-106° dec. $[\alpha]_D -37 \rightarrow +2.5$ (MeOH).

Isbell, H.S. *et al.*, *J.A.C.S.*, 1949, **71**, 1579 (*D-N,N-Di-Ac*, *L-N,N-di-Ac*)

Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1951, **46**, 132 (*L-form*, *synth*, *L-N-Ac*, *L-tetra-Ac*)

Ellis, G.P. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 95 (*rev. derivs*)

Mackenzie, G. *et al.*, *J.C.S. Perkin I*, 1977, 1094 (*D-3,4-isopropylidene*)

Linek, K. *et al.*, *Carbohydr. Res.*, 1993, **247**, 329 (*synth*, *D-form*)

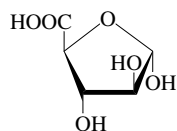
Arabinuronic acid

A-855

Araburonic acid. Arabopenturonic acid.

arabo-Pentonic acid

[30923-39-8]



α -D-Furanose-form

$\text{C}_5\text{H}_8\text{O}_6$ 164.115

D-form

Syrup. $[\alpha]_D +22$ (c, 2.6 in H_2O).

D-Furanose-form

D-Arabinofuranuronic acid

[134679-14-4]

Me glycoside, Me ester: Methyl (methyl-D-arabinofuranosid)uronate

$\text{C}_7\text{H}_{12}\text{O}_6$ 192.168

Syrup. $[\alpha]_D +19$ (c, 2.9 in EtOH).

Anomer not specified.

β -D-Furanose-form

1,2-Isopropylidene, Me ester: Methyl 1,2-O-isopropylidene-D-arabinofuranuronate

$\text{C}_9\text{H}_{14}\text{O}_6$ 218.206

Cryst. (Et_2O /pentane). Mp 133-134°.

$[\alpha]_D +67$ (c, 1 in EtOH).

β -L-Furanose-form L-Arabinofuranuronic acid

1,2-Isopropylidene, Me ester:

Solid. Mp 132-133°. $[\alpha]_D -45$ (c, 1 in MeOH). Sublimes.

[134616-27-6, 134616-31-2, 134616-33-4, 134679-10-0, 134679-18-8]

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1956, **34**, 693-700 (*D-form*, *D-Me fur* Me ester, *D-isopropylidene* Me ester)

Morgenlie, S. *et al.*, *Carbohydr. Res.*, 1977, **59**, 73-80 (*β -L-isopropylidene* Me ester)

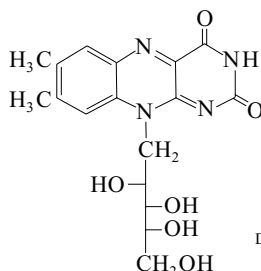
Wu, J. *et al.*, *Carbohydr. Res.*, 1991, **210**, 51-70 (*pmr*, *cmr*)

Araboflavin

A-856

1-Deoxy-1-(3,4-dihydro-7,8-dimethyl-2,4-dioxobenzo[g]pteridin-10(2H)-yl)arabinitol, 9CI. 7,8-Dimethyl-10-(arabino-2,3,4,5-tetrahydroxypentyl)isoalloxazine, 8CI

[482-11-1]



α -form

$\text{C}_{17}\text{H}_{20}\text{N}_4\text{O}_6$ 376.368

D-form [5978-87-0] Riboflavin antagonist.

Orange-yellow needles. Mp 298° (303°). $[\alpha]_D^{20} +78.6$ (c, 0.51 in 0.1N NaOH). Bitter taste.

2,3,4-Tri-Ac: Mp 209-210°.

2,3,4,5-Tetra-Ac: [5978-88-1]

Mp 260°.

L-form [33210-89-8]

Mp 296-299°. $[\alpha]_D -108$ (0.05N NaOH) (H_2O).

2,3,4,5-Tetra-Ac: Mp 260°.

DL-form

Mp 296°.

2,3,4,5-Tetra-Ac: Mp 274°.

Kuhn, R. *et al.*, *Ber.*, 1935, **68**, 1001; 1286

Sahashi, Y. *et al.*, *Proc. Imp. Acad. (Tokyo)*, 1945, **21**, 1; 44; *CA*, **49**, 305

Sahashi, K. *et al.*, *Rikagaku Kenkyusho Iho*, 1948, **24**, 72 (*synth*)

Japan. Pat., 1952, 52 3 236; *CA*, **48**, 2786g (*synth*)

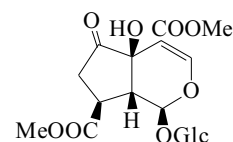
Penzer, G.R. *et al.*, *Methods Enzymol.*, 1971, **18**, 479

Harders, H. *et al.*, *Biochemistry*, 1974, **13**, 3360 (*cd*)

Aralidioside

A-857

[78693-92-2]



$\text{C}_{18}\text{H}_{24}\text{O}_{13}$ 448.38

Constit. of *Aralidium pinnatifidum*. Foam. $[\alpha]_D^{24} -211$ (c, 0.3 in MeOH).

Penta-Ac:

Cryst. Mp 188-190°. $[\alpha]_D^{25} -232$ (c, 0.5 in MeOH).

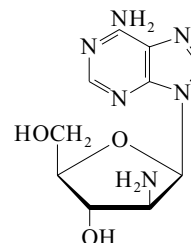
Jensen, S.R. *et al.*, *Phytochemistry*, 1980, **19**, 2685

Damtoft, S. *et al.*, *Phytochemistry*, 1981, **20**, 2436 (*cmr*)

Aramine

A-858

9-(2-Amino-2-deoxy- β -D-arabinofuranosyl)-9H-purin-6-amine, 9CI. (2-Amino-2-deoxy- β -D-arabinofuranosyl)adenine, 2'-Amino-araA [69427-80-1]



$\text{C}_{10}\text{H}_{14}\text{N}_6\text{O}_3$ 266.259

Antih herpes agent. Cryst. (EtOH). Mp 215-218° dec. $[\alpha]_D^{28} -5.8$ (c, 0.95 in H_2O).

Robins, M.J. *et al.*, *Tet. Lett.*, 1978, 3653 (*synth*, *uv*, *pmr*)

Ranganathan, R. *et al.*, *Tet. Lett.*, 1978, 4341 (*synth*)

Cermak-Morth, C.M. *et al.*, *Biochem.*

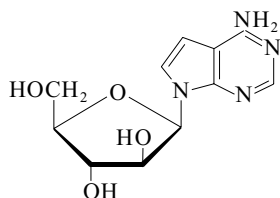
Pharmacol., 1979, **28**, 2105 (*pharmacol*)

Bobek, M. *et al.*, *Carbohydr. Res.*, 1979, **70**, 263 (*synth*)

Sato, A. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 821 (*synth*, *pmr*, *uv*)

Aratubercidin **A-859**

7-β-D-Arabinofuranosyl-7H-pyrrolo[2,3-d]pyrimidin-4-amine, 9CI. 4-Amino-7-(β-D-arabinofuranosyl)pyrrolo[2,3-d]pyrimidine. Ara Tb [64526-34-7]



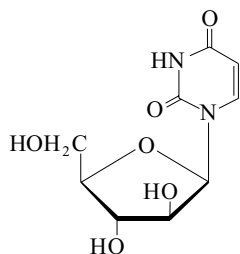
C₁₁H₁₄N₄O₄ 266.256
Shows antiviral props. Mp 125-126°. [α]_D²⁴ +6.9 (c, 0.5 in DMF).

► UY8820000

Robbins, M.J. *et al.*, *Can. J. Chem.*, 1977, **55**, 1260
Seela, F. *et al.*, *Angew. Chem., Int. Ed.*, 1981, **20**, 97

Arauridine **A-860**

1-β-D-Arabinofuranosyl-2,4-(1H,3H)-pyrimidinedione, 9CI. 1-β-D-Arabinofuranosyluracil. *Spongouridine*. Ara-U [3083-77-0]



C₉H₁₂N₂O₆ 244.204
Isol. from the Caribbean sponge *Cryptothia crypta* and the gorgonian *Eunicella cavolini*. Drug intermed. Cryst. (MeOH). Sol. H₂O. Mp 220-221° (226-228°). [α]_D +131.1 (c, 0.63 in H₂O).

► Exp. reprod. effects. YQ8818000

2',3'-Di-Ac: [21016-88-6]

C₁₃H₁₆N₂O₈ 328.278
Mp 168-169°.

3',5'-Di-Ac: [25383-79-3]

C₁₃H₁₆N₂O₈ 328.278
Cryst. (C₆H₆/hexane). Mp 78-79°. λ_{max} 258 (ε 10000) (MeOH).

2',3',5'-Tri-Ac: [14057-18-2]

C₁₅H₁₈N₂O₉ 370.315
Cryst. (EtOH). Mp 131-132°. [α]_D²⁰ +83.9 (c, 0.5 in MeOH). λ_{max} 259 (EtOH).

2'-Methylphosphonate, Na salt: λ_{max} 262 nm (ε 9 900) (H₂O).

5'-Phosphate:

C₉H₁₃N₂O₉P 324.183
[α]_D²⁰ +48.15 (H₂O, as Ba salt).

5'-Trityl:

C₂₈H₂₆N₂O₆ 486.523
Mp 113-114°.

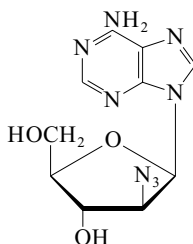
5'-Trityl, 2',3'-di-Ac:

C₃₂H₃₀N₂O₈ 570.598
Mp 153-154°.

Bergmann, W. *et al.*, *J.O.C.*, 1955, **20**, 1501 (isol, struct)
Brown, D.M. *et al.*, *J.C.S.*, 1956, 2388 (synth)
Privat de Garilhe, M. *et al.*, *Bull. Soc. Chim. Fr.*, 1968, 1485 (2',3'-di-Ac, phosphate, trityl, trityl di-Ac)
Verheyden, J.P.H. *et al.*, *J.O.C.*, 1970, **35**, 2868 (3',5'-di-Ac, 2'-methylphosphonate salt)
Sherfinski, J. *et al.*, *Acta Cryst. B*, 1974, 873 (cryst struct)
Zemlicka, J. *et al.*, *J.A.C.S.*, 1975, **97**, 4089 (pmr)
Hruska, F.E. *et al.*, *Can. J. Chem.*, 1982, **60**, 3026 (pmr, cmr)
Divakar, K.J. *et al.*, *J.C.S. Perkin I*, 1982, 1171 (tri-Ac, synth)
Cech, D. *et al.*, *J. Prakt. Chem.*, 1983, 325 (synth)
Cimino, G. *et al.*, *Experientia*, 1984, **40**, 339-340 (isol)
Alder, L. *et al.*, *Z. Chem.*, 1986, **26**, 136 (ms)

Arazide**A-861**

9-(2-Azido-2-deoxy-β-D-arabinofuranosyl)-9H-purin-6-amine, 9CI. 2'-Azido-2'-deoxy-β-D-arabinofuranosyladenine. 2'-Azido-araA [69370-82-7]



C₁₀H₁₂N₈O₃ 292.257
Antitherpes agent. Needles (EtOH). Mp 204-205°. [α]_D²⁸ -17 (c, 0.6 in H₂O).

Ranganathan, R. *et al.*, *Tet. Lett.*, 1978, 4341 (synth)

Cermak-Morth, C.M. *et al.*, *Biochem.*

Pharmacol., 1979, **28**, 2105 (pharmacol)

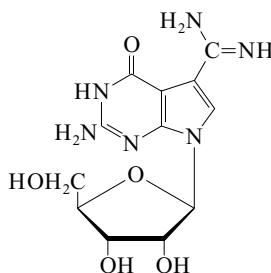
Bobek, M. *et al.*, *Carbohydr. Res.*, 1979, **70**, 263 (synth)

Sato, A. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 821 (synth, pmr)

Fukukawa, K. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 1582 (synth, pmr, ms)

Archaeosine**A-862**

2-Amino-4,7-dihydro-4-oxo-7-β-D-ribofuranosyl-1H-pyrrolo[2,3-d]pyrimidine-5-carboximidamide. 7-Formamidino-7-deazaguanosine [148608-52-0]

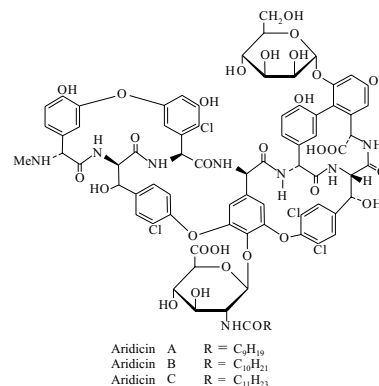


C₁₂H₁₆N₆O₅ 324.296
Constit. of archaeal transfer RNA.

Gregson, J.M. *et al.*, *J. Biol. Chem.*, 1993, **268**, 10076 (isol, synth)

Aridicin**A-863**

Ardacin, *BAN*, *INN*. SKF 100814 [117742-13-9]



Glycopeptide antibiotic complex. Isol. from *Kibdelosporangium aridum*. Active against gram-positive bacteria. Related to Vancomycin.

Aridicin A

Ardacin A

[95935-21-0]

C₈₁H₈₂Cl₄N₈O₃₀ 1789.385
Yellow-white powder. Sol. H₂O, DMF, MeOH, DMSO; poorly sol. EtOH, hexane. [α]_D²⁵ -66 (c, 0.3 in H₂O). λ_{max} 280 (ε 9640) (pH 2) (Derep). λ_{max} 301 (ε 12100) (MeOH aq./NaOH) (Derep). λ_{max} 280 (E1%/1cm 51) (H₂O-MeCN) (Berdy). λ_{max} 280 (H₂O-MeCN-HCl) (Berdy). λ_{max} 301 (E1%/1cm 75) (H₂O-MeCN-NaOH) (Berdy).

Aridicin B

Ardacin B

[95935-22-1]

C₈₂H₈₄Cl₄N₈O₃₀ 1803.412
Sol. H₂O, DMF, MeOH, DMSO; poorly sol. EtOH, hexane. [α]_D²⁵ -59 (c, 0.3 in H₂O). λ_{max} 280 (ε 9640) (pH 2) (Derep). λ_{max} 301 (ε 12100) (MeOH aq./NaOH) (Derep). λ_{max} 280 (E1%/1cm 55) (H₂O-MeCN) (Berdy). λ_{max} 280 (H₂O-MeCN-HCl) (Berdy). λ_{max} 301 (E1%/1cm 72.5) (H₂O-MeCN-NaOH) (Berdy).

Aridicin C

Ardacin C

[95935-23-2]

C₈₃H₈₆Cl₄N₈O₃₀ 1817.439
Sol. H₂O, DMF, DMSO, MeOH; poorly sol. EtOH, hexane. [α]_D²⁵ -51 (c, 0.3 in H₂O). λ_{max} 280 (ε 9640) (pH 2) (Derep). λ_{max} 301 (ε 12100) (MeOH aq./NaOH) (Derep). λ_{max} 280 (E1%/1cm 51) (H₂O-MeCN) (Berdy). λ_{max} 280 (H₂O-MeCN-HCl) (Berdy). λ_{max} 301 (E1%/1cm 75) (H₂O-MeCN-NaOH) (Berdy).

Grappel, S.F. *et al.*, *Antimicrob. Agents*

Chemother., 1985, **28**, 660 (activity)

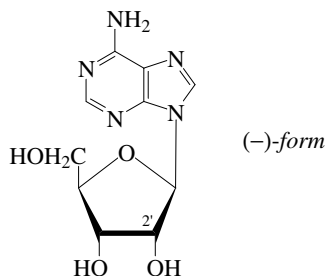
Shearer, M.C. *et al.*, *J. Antibiot.*, 1985, **38**, 555 (isol)

Sitrin, R.D. *et al.*, *J. Antibiot.*, 1985, **38**, 561; 1986, **39**, 68 (isol, ir, ms, struct)

Roberts, G.D. *et al.*, *J. Antibiot.*, 1985, **38**, 713 (*ms, struct*)
 Jeffs, P.W. *et al.*, *J.O.C.*, 1985, **50**, 1726 (*struct*)
 Chung, S.K. *et al.*, *J. Antibiot.*, 1986, **39**, 642; 653 (*struct, biosynth*)
 Jeffs, P.W. *et al.*, *J.A.C.S.*, 1986, **108**, 3063 (*struct, nmr, config*)
 Folena-Wasserman, G. *et al.*, *J. Chromatogr.*, 1987, **392**, 225 (*isol*)
 Chung, S.K. *et al.*, *J.O.C.*, 1987, **52**, 1606 (*derivs*)

Aristeromycin A-864

3-(6-Amino-9H-purin-9-yl)-5-(hydroxy-methyl)-1,2-cyclopentenediol, 9CI. 9-[2,3-Dihydroxy-4-(hydroxymethyl)cyclopentyl]adenine, 8CI
 [19186-33-5]



$C_{11}H_{15}N_5O_3$ 265.271

Nucleoside antibiotic. Sol. H_2O , Me_2CO , H_2O , DMF, DMSO, $MeOH-H_2O$, AcOH; poorly sol. MeOH, hexane. Log P -3.2 (calc). λ_{max} 260 (€ 15100) (H_2O at pH 2) (Derep). λ_{max} 262 (€ 15800) (H_2O) (Derep). λ_{max} 262 (€ 14490) (pH 12 buffer) (Berdy). λ_{max} 262 (E1%/1cm 555) (H_2O) (Berdy). λ_{max} 212 (€ 20060); 258 (€ 14500) (HCl) (Berdy).

► LD₅₀ (mus, ivn) 50 - 150 mg/kg.

(-)-form

Isol. from the culture broth of *Streptomyces citricolor* and *Actinoplanes* sp. Inhibits growth of *Pyricularia oryzae* and *Xanthomonas oryzae*. Tumour growth inhibitor, shows antiviral props. Mp 213-215° (238-242°) dec. $[\alpha]_D^{25}$ -52.5 (c, 1.0 in DMF). λ_{max} 260 (€ 14260) (pH 2). λ_{max} 262 (€ 14690) (pH 6). λ_{max} 262 (€ 14490) (pH 12).

Hydrobromide: [19186-34-6]

Mp 229° dec. (browns at 221.5°).

Penta-Ac:

Syrup. λ_{max} 272 (EtOH).

2'-Epimer: **Cyclaradine**. Sch 31172. *Antibiotic Sch 31172*
 [69979-46-0]

$C_{11}H_{15}N_5O_3$ 265.271

Antiviral agent. Active against herpes simplex virus. Powder. Mp 235-245° dec. $[\alpha]_D^{25}$ +50.9 (c, 1.0 in MeOH) (+48). $[\alpha]_D^{22}$ +48 (c, 1.5 in MeOH). Log P -3.2 (calc).

(±)-form [13190-75-5]

Solid (EtOH/EtOAc). Mp 255-256° (240-241°).

Hydrochloride: [24587-85-7]

Solid (HCl aq./EtOH/Et₂O). Mp 218-221° dec.

Tri-Me ether

Solid (EtOH). Mp 168-169°.

[62357-70-4, 69056-45-7, 69979-46-0, 72346-00-0, 78738-56-4, 78738-57-5, 86287-92-5, 86333-62-2, 91382-84-2, 99395-42-3, 121470-41-5, 127454-17-5, 129706-30-5]

Shealy, Y.F. *et al.*, *J.A.C.S.*, 1966, **88**, 3885

(*synth*)

Kishii, T. *et al.*, *Chem. Comm.*, 1967, 852 (*abs config*)

Kusaka, T. *et al.*, *J. Antibiot., Ser. A*, 1968, **21**, 255 (*isol*)

Hill, D.L. *et al.*, *Mol. Pharmacol.*, 1971, **7**, 375

Kishii, T. *et al.*, *Chem. Pharm. Bull.*, 1972, **20**, 940 (*struct, penta-Ac, pmr*)

Shealy, Y.F. *et al.*, *J. Pharm. Sci.*, 1973, **62**, 1252; *CA*, **79**, 92531f (*synth*)

Follmann, H. *et al.*, *Eur. J. Biochem.*, 1975, **58**, 31 (*conformn, cd*)

Holy, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1976, **41**, 2096 (*synth, ms, uv, pmr, cd*)

Daluge, S. *et al.*, *J. Med. Chem.*, 1977, **20**, 162 (*Cyclaradine*)

U.S. Pat., 1979, 4 138 562; *CA*, **90**, 168938u (*Cyclaradine*)

Saksena, A.K. *et al.*, *Tet. Lett.*, 1980, **21**, 133 (*synth*)

Japan. Pat., 1982, 82 94 288; *CA*, **97**, 90424 (*isol*)

Arita, M. *et al.*, *J.A.C.S.*, 1983, **105**, 4049 (*synth*)

Herdeewijn, P. *et al.*, *J. Med. Chem.*, 1985, **28**, 1385 (*synth, resoln*)

Parry, R.J. *et al.*, *J.A.C.S.*, 1985, **107**, 6402; 1989, **111**, 5819 (*biosynth*)

Ohno, M. *et al.*, *Nucleosides Nucleotides*, 1985, **4**, 21 (*synth*)

Madharan, G.V.B. *et al.*, *J.O.C.*, 1986, **51**, 1287 (*synth*)

Schwartz, J. *et al.*, *Antimicrob. Agents Chemother.*, 1987, **31**, 21 (*pharmacol*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)

Arai, Y. *et al.*, *J.C.S. Perkin 1*, 1988, 3133 (*synth, bibl*)

Tadano, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1989, **62**, 1355 (*Cyclaradine*)

Yoshikawa, M. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 545; 2555 (*synth, ir, uv, ms, pmr, cmr, Cyclaradine*)

Wolfe, M.S. *et al.*, *Tet. Lett.*, 1989, **30**, 1453 (*synth*)

Deardoff, D.R. *et al.*, *Tet. Lett.*, 1989, **30**, 6625 (*synth*)

Wolfe, M.S. *et al.*, *J.O.C.*, 1990, **55**, 4712 (*synth, bibl*)

Parry, R.J. *et al.*, *Environ. Sci. Res.*, 1992, **44**, 89 (*rev, biosynth*)

Borthwick, A.D. *et al.*, *Tetrahedron*, 1992, **48**, 571 (*rev, synth*)

Helmchen, G. *et al.*, *Annalen*, 1993, 1313 (*synth, bibl*)

Hanrahan, J. *et al.*, *J.C.S. Perkin 1*, 1994, 3533 (*biosynth*)

Yoshikawa, M. *et al.*, *Tetrahedron*, 1994, **50**, 9961-9974 (*Cyclaradine, synth, pmr*)

Hill, J.M. *et al.*, *J.A.C.S.*, 1995, **117**, 5391 (*biosynth*)

Csuk, R. *et al.*, *Tetrahedron*, 1995, **51**, 5789 (*synth*)

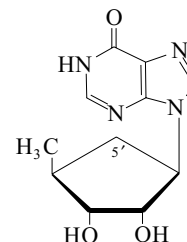
Burlina, F. *et al.*, *Bioorg. Med. Chem. Lett.*, 1997, **7**, 247 (*synth*)

Thibaudau, C. *et al.*, *J.O.C.*, 1998, **63**, 5447-5462 (*pmr, conformn*)

Aristeromycin M

A-865

9-(2,3-Dihydroxy-4-methylcyclopentyl)-1,9-dihydro-6H-purin-6-one, 9CI
 [98873-79-1]



$C_{11}H_{14}N_4O_3$ 250.257

Nucleoside antibiotic. Isol. from *Streptomyces citricolor*. Prisms (EtOH). Sol. H_2O .

Mp 260-261°. λ_{max} 251 (€ 11400) (pH 1) (Derep). λ_{max} 256 (€ 12900) (pH 12) (Derep). λ_{max} 250 (€ 11800) (pH 7) (Derep). λ_{max} 251 (€ 11400) (pH 1 buffer) (Berdy). λ_{max} 255 (€ 12900) (pH 11 buffer) (Berdy).

► LD₅₀ (mus, ipr) 400 mg/kg. UP0799900
 5'-Hydroxy: **Coaristeromycin**
 [16975-94-3]
 $C_{11}H_{14}N_4O_4$ 266.256

Prod. by *Streptomyces* sp. A6308. Phytotoxic. Cryst. (EtOH aq.). Sol. H_2O , MeOH. Mp 235° (synthetic). λ_{max} 256 (€ 12900) (pH 12) (Derep). λ_{max} 250 (€ 11800) (pH 7) (Derep). λ_{max} 251 (€ 11400) (pH 1) (Derep). λ_{max} 250 (H_2O) (Berdy).

Marumoto, R. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 2624 (*Coaristeromycin*)

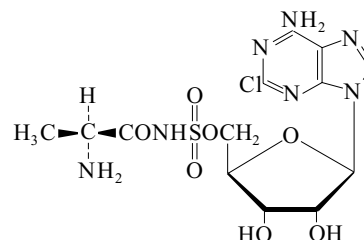
Miyashita, O. *et al.*, *J. Antibiot.*, 1985, **38**, 981 (*isol, pmr, synth*)

Isaac, B.G. *et al.*, *J. Antibiot.*, 1991, **44**, 729 (*Coaristeromycin*)

Ascamycin

A-866

2-Chloroadenosine 5'-(2-amino-1-oxopropyl)sulfamate, 9CI. RK 647A
 [91432-48-3]



$C_{13}H_{18}ClN_7O_7S$ 451.847

Nucleoside antibiotic. Isol. from *Streptomyces alboniger*. Antineoplastic agent. Active against *Xanthomonas citri*, *X. oryzae* and *Mycobacterium phlei*. Needles (EtOH aq.). Sol. H_2O ; fairly sol. MeOH; poorly sol. Me_2CO , hexane. Mp 270° dec. $[\alpha]_D^{20}$ +2.34 (c, 1 in H_2O). pK_a 8.9 (H_2O). λ_{max} 263 (€ 12300) (H_2O) (Derep). λ_{max} 260 (€ 12270) (H_2O) (Berdy). λ_{max} 263 (E1%/1cm 253) (HCl) (Berdy). λ_{max} 263 (E1%/1cm 257) (NaOH) (Berdy).

▶ LD₅₀ (mus, ipr) 3.2 mg/kg.

Dealanyl: See 2-Chloroadenosine, C-66

Isono, K. *et al.*, *J. Antibiot.*, 1984, **37**, 670; 1988, **41**, 1711 (isol, uv, ir, pmr, cmr, rev)

Isono, K. *et al.*, *Nucleic Acids Res., Symp. Ser.*, 1984, **15**, 65 (isol, ms)

Osada, H. *et al.*, *Antimicrob. Agents Chemother.*, 1985, **27**, 230 (activity)

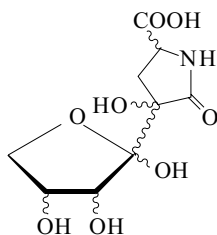
Osada, H. *et al.*, *J. Antibiot.*, 1986, **39**, 286 (props)

Ubukata, M. *et al.*, *Tet. Lett.*, 1986, **27**, 3907 (synth)

Ascorbalamic acid, 9CI

A-867

[41679-87-2]



C₉H₁₃NO₈ 263.204

Constit. of cabbage (*Brassica oleracea*).

[α]_D²⁶ +24 (c, 1.25 in H₂O). pK_a 1.

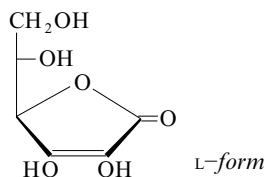
Couchman, R. *et al.*, *Phytochemistry*, 1973, **12**, 707 (isol)

Ascorbic acid, BAN, INN,

A-868

USAN

threo-Hex-2-enonic acid γ-lactone, 9CI, 8CI. threo-Hexulosono-1,4-lactone-2,3-enediol. Hexuronic acid. Lyxoascorbic acid. Xyloascorbic acid



C₆H₈O₆ 176.126 Log P -2.21 (calc).

D-form [10504-35-5]

Mp 190° dec. [α]_D¹⁸ -23 (c, 2 in H₂O).

[α]_D¹⁸ -48 (MeOH). Shows little antiscorbutic action.

L-form

Vitamin C. Vitamin C³. Ascorbicap. Cebione. Celaskon. Cenolate. Cevalin. Cevital. Citrovit. Roscorbic. Vitacimin. Vitascorbol. E300

[50-81-7] Prod. industrially on a large scale from glucose. Occurs widely in animals and plants. Good sources are citrus fruits and hip berries. Isol. from ox adrenal cortex, lemons and paprika. Used as a reducing agent, masking agent in photometric detn. of Ti, Nb. Antioxidant, nutrient, preservative. Valuable inexpensive starting material for chiral synthesis. Enzymic browning inhibitor. Vitamin (antiscorbutic); urinary acidifier.

Mp 190-192°. [α]_D²⁵ +24 (c, 1 in H₂O). [α]_D¹⁸ +49 (MeOH). pK_{a1} 4.04; pK_{a2}

11.34 (25°, 0.1M KNO₃). Component of numerous preparations.

▶ Human systemic effects when administered intravenously. Exp. reprod. and teratogenic effects (v. large doses). LD₅₀ (rat, orl) 11900 mg/kg. CI7650000

Na salt: **Sodium ascorbate, INN. E301**

[134-03-2]

[α]_D +24 (c, 3 in H₂O).

▶ CI7671000

Ca salt (2:1): **Calcium ascorbate. E302**

[5743-27-1]

[α]_D¹⁰ +91 (c, 0.3 in H₂O).

Fe(II) salt: **Ferrous ascorbate**

[24808-52-4]

Phenylhydrazone: Mp 216°.

2-Phosphate: **Ascorbic acid 2-phosphate**

[23313-12-4]

[82134-96-1]

C₆H₉O₉P 256.105

Cryst. (EtOH/EtOAc) (as

tris(cyclohexylammonium) salt). Mp 173-176° (tris(cyclohexylammonium) salt).

CAS no. refers to salt.

2-Sulfate: [37627-95-5]

[52174-99-9, 53910-28-4]

C₆H₈O₉S 256.19

Vitamin C substitute. No phys. props. reported. Comly. available as salts.

2-O-α-D-Glucopyranoside: **Ascorbic acid**

2-α-D-glucoside. AA-2G

[129499-78-1]

Isol. from baechu kimchi. Stable hydrophilic vitamin C deriv. Skin antioxidant used as a medical additive in commercial cosmetics. [α]_D²⁰ +189.6 (c, 5.0 in H₂O).

2-O-β-D-Glucopyranoside: **Ascorbic acid**

2-β-D-glucoside

C₁₂H₁₈O₁₁ 338.268

Constit. of the fruit of *Lycium barbarum* (box thorn). Amorph. cryst.

6-Hexadecanoyl: **Ascorbyl palmitate,**

USAN. E304

[137-66-6]

C₂₂H₃₈O₇ 414.538

Antioxidant. Pharmaceutical excipient. Mp 107-117°. [α]_D²⁰ +22.9 (c, 2 in MeOH).

▶ CI7671040

6-Octadecanoyl: **Ascorbyl stearate**

[10605-09-1]

[25395-66-8]

C₂₄H₄₂O₇ 442.592

Preservative for margarine.

6-(6,9,12-Octadecatrienoyl) (Z,Z,Z-):

Ascorbyl gamolenate, BAN, INN. SC 103

[109791-32-4]

C₂₄H₃₆O₇ 436.544

Used for the treatment of diabetic neuropathy. Pale yellow wax.

2,6-Dihexadecanoyl: [4218-81-9]

C₃₈H₆₈O₈ 652.95

Cryst. (EtOH/MeOH). Mp 114-115°.

5,6-O-Isopropylidene: 5,6-O-Isopropylidene-L-threo-hex-2-enono-1,4-lactone

[15042-01-0]

C₉H₁₂O₆ 216.19

Mp 220-222°. [α]_D²⁵ -25.2 (c, 1.0 in H₂O).

5,6-O-Cyclohexylidene: 5,6-O-Cyclohexylidene-L-threo-hex-2-enono-1,4-lactone

[6614-52-4]

C₁₂H₁₆O₆ 256.255

Mp 183-185°. [α]_D²⁵ +12.7 (c, 1.0 in Me₂CO). Props. acc. to Carlsen *et al* (1995), who state that it is obt. as a 1:1 mixt. of diastereoisomers.

5,6-O-Benzylidene: 5,6-O-Benzylidene-L-threo-hex-2-enono-1,4-lactone

[20664-60-2]

C₁₃H₁₂O₆ 264.234

Cryst. (C₆H₆). Mp 167-168°.

5,6-O-Benzylidene (deutero analogue):

Zilascorb 2H, INN. P1015

[122431-96-3]

C₁₃H₁₁DO₆ 265.24

Antineoplastic agent. Log P 0.91 (calc).

2,3-Di-Me: 2,3-Di-O-methyl-L-threo-hex-2-enono-1,4-lactone

C₈H₁₂O₆ 204.179

Mp 59° (hydrate). [α]_D +32 (MeOH).

2-O-Octadecyl: **2-O-Octadecylascorbic acid, 9CI. CV 3611**

[98829-12-0]

C₂₄H₄₄O₆ 428.608

Prod. by *Streptomyces* sp. Free radical

scavenger.

Mp 127-128°. [α]_D²⁴ +29.8 (c, 0.7 in EtOH).

Compd. with 3-pyridinecarboxamide:

Nicotinamide ascorbate. Merpress.

Nicoscorbine. Nicastubin

[1987-71-9]

C₁₂H₁₄N₂O₇ 298.252

Vitamin. Yellow cryst. Mp 141-145°.

[α]_D²⁰ +27.5 (c, 8.0 in H₂O).

Phosphate, compd. with phytostanol: **Phytostanol phosphoryl ascorbate. FM-VP4**

[396080-03-8]

Phase II trials (2002).

Deriv. from plant sterols. Inhibitor of

cholesterol absorption. Shows lipid

lowering and body weight reducing

props. Used as the di-Na salt.

[299-36-5, 5743-28-2, 6485-44-5, 6730-29-6,

25395-66-8, 124928-57-0]

Aldrich Library of FT-IR Spectra, 1st edn., 1985,

1, 702B (ir)

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **1**, 1149C; 1150C; 1151A;

1151B (nmr)

Sadtler Standard Spectra, No. 3126 (pmr)

Herbert, R.W. *et al.*, *J.C.S.*, 1933, 1270-1290

(struct)

Reichstein, T. *et al.*, *Helv. Chim. Acta*, 1934, **17**,

311-328 (synth)

Hirst, E.L. *et al.*, *Prog. Chem. Org. Nat. Prod.*,

1939, **2**, 132-159

Bailey, C.W. *et al.*, *J.A.C.S.*, 1945, **67**, 1184-

1186 (nicotinamide ascorbate)

Wenner, W. *et al.*, *J.O.C.*, 1949, **14**, 22-26

(nicotinamide ascorbate)

Janauer, G.E. *et al.*, *Anal. Chim. Acta*, 1961, **24**,

270-275 (detn, Nb)

Korkisch, J. *et al.*, *Anal. Chim. Acta*, 1963, **28**,

270-277 (detn, Ti)

Sawyer, D.T. *et al.*, *Anal. Chem.*, 1966, **38**, 192-

199 (pmr)

Tanaka, H. *et al.*, *Yakugaku Zasshi*, 1966, **86**,

376-383 (esters, synth)

Pilipenko, A.T. *et al.*, *Zavod. Lab.*, 1966, **32**, 3

(rev, use)

Chu, T.M. *et al.*, *Steroids*, 1968, **12**, 309-321

(Zilascorb, synth)

Hvoslef, J. *et al.*, *Acta Cryst. B*, 1969, **25**, 2214-

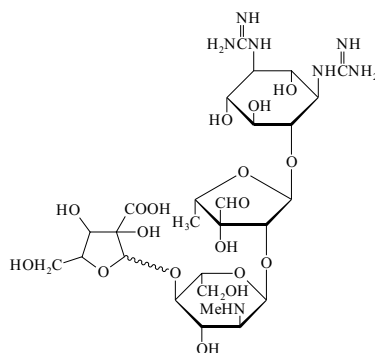
2223 (cryst struct)

- Atchley, R.W. *et al.*, *Org. Prep. Proced. Int.*, 1971, **3**, 299-302 (Zilascorb, synth)
- Bond, A.D. *et al.*, *Arch. Biochem. Biophys.*, 1972, **153**, 207-214 (sulfate, synth, ir, uv)
- Berger, S. *et al.*, *Tetrahedron*, 1977, **33**, 1587-1589 (cmr)
- Muccino, R.R. *et al.*, *Methods Enzymol.*, 1979, **62**, 39-42 (2-sulfate)
- Jernow, J. *et al.*, *Tetrahedron*, 1979, **35**, 1483-1486 (L-2-phosphate, L-2-phosphate salt)
- Crawford, T.C. *et al.*, *Adv. Carbohydr. Chem.*, 1980, **37**, 79-155 (rev)
- Sieb, P.A. *et al.*, *Adv. Chem. Ser.*, 1982, **200**, 1-585 (rev)
- Al-Meshal, I.A. *et al.*, *Anal. Profiles Drug Subst.*, 1982, **11**, 45-78 (rev)
- Ascorbic acid: *Chemistry, Metabolism and Uses* (Adv. Chem. Ser. no. 200), ACS, 1982, (book)
- Sekine, M. *et al.*, *J.O.C.*, 1982, **47**, 3453-3456 (L-2-phosphate)
- Eur. Pat.*, 1985, 146 121, (Takeda); *CA*, **104**, 33286s (CV 3611, synth)
- Eur. Pat.*, 1988, 283 139; *CA*, **111**, 109028b (Zilascorb, synth)
- Kato, K. *et al.*, *J. Med. Chem.*, 1988, **31**, 793-798 (CV 3611, synth, pharmacol)
- Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, ARN000
- U.K. Pat., 1989, 2 208 798; *CA*, **112**, 48786u (Zilascorb, pharmacol)
- Yamamoto, I. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 3020-3023 (2- α -D-glucoside, uv, pmr, cmr, pharmacol)
- Garcia, P.A. *et al.*, *Synth. Commun.*, 1991, **21**, 1153-1161 (synth)
- Davies, M.B. *et al.*, *Vitamin C: its Chemistry and Biochemistry*, RSC, 1991,
- Mandai, T. *et al.*, *Carbohydr. Res.*, 1992, **232**, 197-205 (2-glucoside, cryst struct)
- Parviainen, M.T. *et al.*, *Chromatogr. Sci.*, 1992, **60**, 235-260 (rev, chromatog)
- Barili, P.L. *et al.*, *Tetrahedron*, 1992, **48**, 6273-6284 (synth)
- Csiba, M. *et al.*, *J.O.C.*, 1993, **58**, 7281-7282 (synth)
- Handbook of Pharmaceutical Excipients*, 2nd edn., (eds. Wade, A. *et al.*), American Pharmaceutical Association/Pharmaceutical Press, 1994, 15-18; 19-20; 431-432
- Fujimoto, J. *et al.*, *Int. Congr. Ser. Excerpta Med.*, 1994, **1058**, 411-412 (CV 3611, pharmacol)
- Carlsen, P.H.J. *et al.*, *Acta Chem. Scand.*, 1995, **49**, 297-300 (isopropylidene, cyclohexylidene)
- Canadian Pat., 1995, 2 143 603, (Scotia); 2 152 321; *CA*, **124**, 156000q; 220535x (ascorbyl gamolenate)
- Defeudis, F.V. *et al.*, *Gen. Pharmacol.*, 1995, **26**, 667-680 (CV 3611, rev)
- Ruchmann, A. *et al.*, *Magn. Reson. Chem.*, 1996, **34**, 116-122 (O-17 nmr)
- Encyclopedia of Food and Color Additives*, (ed. Burdock, G.A.), CRC Press, 1997, 205; 212; 213; 369-370; 1106-1107; 2526-2527 (salts, rev)
- Jun, H.-K. *et al.*, *J. Microbiol. Biotechnol.*, 1998, **8**, 710-713 (2-glucoside, isol)
- Wheeler, G.L. *et al.*, *Nature (London)*, 1998, **393**, 365-369 (biosynth)
- Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 1365
- Loewus, F.A. *et al.*, *Phytochemistry*, 1999, **52**, 193-210 (rev, biosynth, metab)
- Wasan, K.M. *et al.*, *J. Pharm. Sci.*, 2001, **90**, 1795-1799; 2003, **92**, 281-288 (FM VP4, pharmacol)
- Yamamoto, I. *et al.*, *J. Med. Chem.*, 2002, **45**, 462-468 (2- α -D-glucoside, bibl)
- Burnett, J.R. *et al.*, *Curr. Opin. Invest. Drugs*, 2003, **41**, 1120-1125 (FM VP4, rev)
- Lukic, T. *et al.*, *Metabolism*, 2003, **52**, 425-431 (FM VP4, metab)

- Toyoda-Ono, Y. *et al.*, *J. Agric. Food Chem.*, 2004, **52**, 2092-2096 (2- β -D-glucoside)
- Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, ARN000; ARN125; CAM600

Ashimycin A [123482-11-1]

A-869

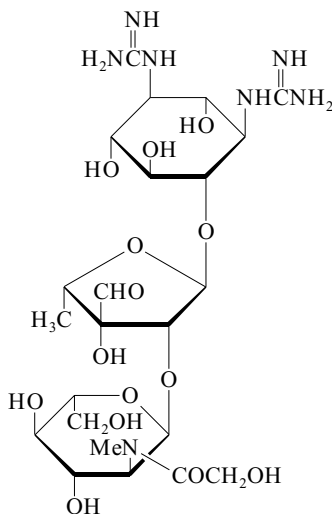
C₂₇H₄₇N₇O₁₈ 757.704

Aminoglycoside antibiotic. Prod. by *Streptomyces griseus*. Powder + 2H₂O (as sesquisulfate salt). Sol. H₂O; poorly sol. MeOH, CHCl₃, hexane. Mp 150° (sulfate). [α]_D²⁵ -37 (c, 1 in H₂O).

Tohma, S. *et al.*, *J. Antibiot.*, 1989, **42**, 1205 (isol, pmr, cmr, ir, struct)

Ashimycin B [123482-12-2]

A-870

C₂₃H₄₁N₇O₁₄ 639.615

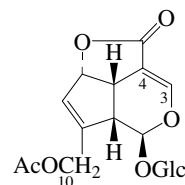
Aminoglycoside antibiotic. Prod. by *Streptomyces griseus*. Powder + 1H₂O (as sulfate salt). Sol. H₂O; poorly sol. MeOH, CHCl₃, hexane. Mp 205° (sulfate). [α]_D²³ -85.3 (c, 0.04 in H₂O).

Tohma, S. *et al.*, *J. Antibiot.*, 1989, **42**, 1205 (isol, pmr, cmr, ir, struct)

Asperuloside

A-872

Rubichloric acid. Asperulin
[14259-45-1]

C₁₈H₂₂O₁₁ 414.365

Isol. from *Asperula*, *Galium*, *Crucianella*, *Coprosma*, *Escallonia*, *Daphniphyllum* spp. and other plants. Antiinflammatory agent. Sol. MeOH, EtOH; poorly sol. hexane. Mp 131-132° (125-127°). [α]_D¹⁸ -204 (H₂O). Log P -4.73 (uncertain value) (calc). λ_{\max} 234 (ε 6800) (EtOH) (Berdy).

6'-Ac: 6'-Acetylasperuloside

C₂₀H₂₄O₁₂ 456.402

Constit. of *Hedyotis chrysotricha*. Powder. [α]_D -52.3 (c, 0.17 in MeOH).

Tetra-Ac: Mp 154.5-155°. [α]_D¹⁷ -128.6 (EtOH).

2'-O-[3-(4-Hydroxyphenyl)propanoyl]:

V₂ Iridoid

[82462-55-3]

C₂₇H₃₀O₁₃ 562.526

Constit. of *Galium verum*. Cryst. (Me₂CO).

Mp 145-150°.

2'-O-[3-(4-Hydroxyphenyl)propanoyl],

10-de-Ac: V₁ Iridoid

[87441-71-2]

C₂₅H₂₈O₁₂ 520.489

Constit. of *Galium verum*. Cryst. (MeOH). Mp 118-120°. λ_{\max} 226 (log ε 4.14); 280 (log ε 3.17) (EtOH).

3ξ,4ξ-Dihydro, 3-methoxy: V₃ Iridoid.

3,4-Dihydro-3-methoxyasperuloside

[82649-56-7]

C₁₉H₂₆O₁₂ 446.407

Constit. of *Galium verum*. Amorph. solid.

O-De-Ac, 6'-Ac: 6'-Acetyldeacetylasperuloside

[224156-09-6]

C₁₈H₂₂O₁₁ 414.365

Constit. of *Hedyotis chrysotricha*. Powder. [α]_D²⁵ -157 (c, 0.06 in MeOH). λ_{\max} 233 (MeOH).

Briggs, L.H. *et al.*, *J.C.S.*, 1965, 2595 (struct)

Swiatek, L. *et al.*, *Herba Pol.*, 1972, **18**, 168 (occur)

Karrer, W. *et al.*, *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 1136 (occur)

Damtoft, S. *et al.*, *Phytochemistry*, 1981, **20**, 2717 (cmr)

Boithe-Horvath, K. *et al.*, *Phytochemistry*, 1982, **21**, 2917-2919 (V₃ Iridoid)

Boithe-Horvath, K. *et al.*, *Tet. Lett.*, 1982, **23**, 965 (V₂ Iridoid)

Uesato, S. *et al.*, *Phytochemistry*, 1986, **25**, 2515 (biosynth)

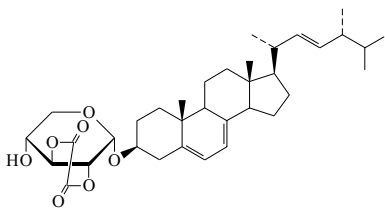
Nakatani, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1993, **66**, 2646 (synth)

Peng, J.N. *et al.*, *Chin. Chem. Lett.*, 1995, **6**, 965 (6'-Ac)

Peng, J.N. *et al.*, *Yaoxue Xuebao*, 1997, **32**, 908-913 (6'-Ac)

Peng, J.-N. *et al.*, *J. Nat. Prod.*, 1999, **62**, 611-612 (6'-Acetyldeacetylasperuloside)
Linden, A. *et al.*, *Acta Cryst. C*, 2000, **56**, 616-618 (*cryst struct*)

Astasin **A-873**
3-O-(2,3-Oxalyl- α -D-xylopyranosyl)ergosterol
[162559-39-9]

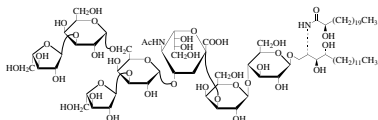


C₃₅H₅₀O₇ 582.776

Glycoside of Ergosta-5,7,22-trien-3-ol contg. unusual oxaloylglycoside residue. Isol. from the euglenoid *Astasia longa*. Cytotoxic agent. $[\alpha]_D^{25}$ -15 (c, 1 in CHCl₃). λ_{\max} 271 (ε 10000); 282 (ε 10600); 293 (ε 6060) (EtOH).

Kaya, K. *et al.*, *Biochim. Biophys. Acta*, 1995, **1255**, 201 (*isol, pmr, cmr, uv, ir, ms*)

Asterinaganglioside A **A-874**
[131489-38-8]

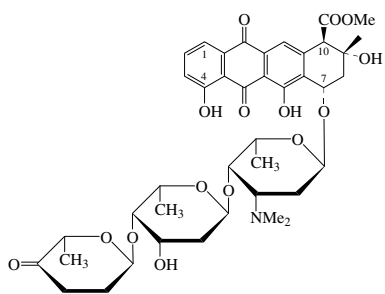


C₈₃H₁₅₀N₂O₄₁ 1832.087

Constit. of the starfish *Asteria pectinifera*. Amorph. powder. Mp 163-165°. $[\alpha]_D^{24}$ +19.9 (c, 0.1 in H₂O).

Higuchi, R. *et al.*, *Annalen*, 1991, **1** (*isol, ir, struct*)

Auramycin A **A-875**
[78173-92-9]



C₄₁H₅₁NO₁₅ 797.852

Anthracycline antibiotic. Numbering systems vary. Isol. from *Streptomyces galilaeus* (OBB-111). Active against gram-positive bacteria, mycobacteria and tumours. Yellow powder. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane. Mp 141°. $[\alpha]_D^{20}$ -8 (c, 0.1 in CHCl₃). λ_{\max} 228 (E1%/1cm 620); 258 (E1%/1cm 375); 288 (E1%/1cm 135); 433 (E1%/1cm 200) (MeOH) (Berdy).

λ_{\max} 239 (E1%/1cm 575); 288 (E1%/1cm 165); 315 (E1%/1cm 90); 525 (E1%/1cm 180) (MeOH/NaOH) (Berdy).

► LD₅₀ (mus, ipr) 100 mg/kg. Q19290700

1-Hydroxy: **1-Hydroxyauramycin A**.

10-Hydroxyauramycin A

[79217-17-7]

C₄₁H₅₁NO₁₆ 813.851

Prod. by *Streptomyces melanogenes* and *Streptomyces galilaeus*. Active against gram-positive bacteria and tumours. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane. Mp 108.5°. $[\alpha]_D^{20}$ +93.1 (c, 0.1 in CHCl₃). λ_{\max} 234 (E1%/1cm 500); 292 (E1%/1cm 103); 493 (E1%/1cm 150); 511 (E1%/1cm 130); 526 (E1%/1cm 140); 570 (E1%/1cm 80) (MeOH) (Berdy). λ_{\max} 241 (E1%/1cm 535); 565 (E1%/1cm 210); 602 (E1%/1cm 170) (MeOH/NaOH) (Berdy).

Aglycone: **Auramycinone**

[78173-89-4]

Yellow powder. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane. Mp 153.5°. $[\alpha]_D^{20}$ +198 (c, 0.1 in CHCl₃).

Aglycone, 7-deoxy: **7-Deoxyauramycinone**.

4-Deoxyauramycinone

[78173-93-0]

C₂₁H₁₈O₇ 382.369

Prod. by *Streptomyces galilaeus* (OBB-111).

Mp 200°. $[\alpha]_D^{20}$ +81.2 (c, 0.1 in CHCl₃).

Aglycone, 1-hydroxy: **1-Hydroxyauramycinone**. 10-Hydroxyauramycinone [76023-81-9]

Red powder. Mp 180.5°. Shows same gross structure as ϵ_1 -Pyromycinone.

Aglycone, 10-epimer, 7-deoxy: **Resomycin A**

C₂₁H₁₈O₇ 382.369

Prod. by *Streptomyces* sp. (GW71/2497). Orange solid. $[\alpha]_D^{20}$ -63 (c, 0.1 in CHCl₃). λ_{\max} 261 (log ε 4.23); 292 (log ε 3.83); 435 (log ε 3.88) (CHCl₃).

Aglycone, 11-hydroxy: **11-Hydroxyauramycinone**

[88458-06-4]

C₂₁H₁₈O₉ 414.368

Prod. by *Streptomyces* sp. (MST-77755).

Red solid.

Mp 177°. $[\alpha]_D$ +60 (c, 0.1 in CHCl₃). λ_{\max} 234 (E1%/1cm 950); 252 (E1%/1cm 605); 295 (E1%/1cm 193); 494 (E1%/1cm 300); 528 (E1%/1cm 276); 576 (E1%/1cm 136) (no solvent reported).

Fujiwara, A. *et al.*, *J. Antibiot.*, 1981, **34**, 912-915; 1982, **35**, 164-175 (*isol, ir, pmr, cmr*)

Rao, A.V.R. *et al.*, *Tet. Lett.*, 1982, **23**, 775-778 (*synth, deriv*)

Hoshino, T. *et al.*, *J. Antibiot.*, 1983, **36**, 1463-1467; 1984, **37**, 1469-1472 (*derivs*)

Krohn, K. *et al.*, *Tetrahedron*, 1984, **40**, 3677-3694 (*synth*)

Jones, D.W. *et al.*, *J.C.S. Perkin I*, 1995, 2747-2755 (*synth, aglycone*)

Maskey, R.P. *et al.*, *J. Antibiot.*, 2003, **56**, 795-800 (7-Deoxyauramycinone, Resomycin A)

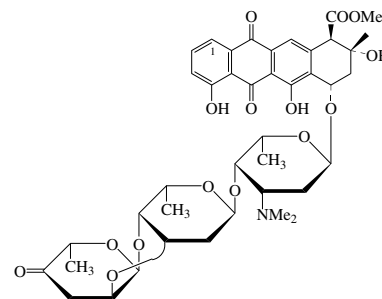
Clark, B. *et al.*, *J. Nat. Prod.*, 2004, **67**, 1729-1731 (11-Hydroxyauramycinone)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, ARS130

Auramycin B

[78173-91-8]

A-876



C₄₁H₄₉NO₁₅ 795.836

Anthracycline antibiotic. Numbering systems vary. Isol. from *Streptomyces galilaeus* (OB111; ATCC31533; P4780). Active against gram-positive bacteria mycobacteria and tumours. Yellow powder. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane.

Mp 161°. $[\alpha]_D^{20}$ -8 (c, 0.1 in CHCl₃).

► LD₅₀ (mus, ipr) 100 mg/kg. Q19278500

Aglycone: See Auramycin A, A-875

1-Hydroxy: **1-Hydroxyauramycin B**. 10-Hydroxyauramycin B

[79206-72-7]

C₄₁H₄₉NO₁₆ 811.835

Prod. by *Streptomyces galilaeus* (AC628) and *Streptomyces melanogenes* (AC180).

Active against gram-positive bacteria and tumours. Red powder. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane.

Mp 151.5°. $[\alpha]_D^{20}$ +89.4 (c, 0.1 in CHCl₃). λ_{\max} 234 (E1%/1cm 555); 256 (E1%/1cm 325); 292 (E1%/1cm 105); 493 (E1%/1cm 185); 526 (E1%/1cm 150); 570 (E1%/1cm 80) (MeOH) (Berdy). λ_{\max} 242 (E1%/1cm 595); 565 (E1%/1cm 240); 602 (E1%/1cm 200) (MeOH/NaOH) (Berdy).

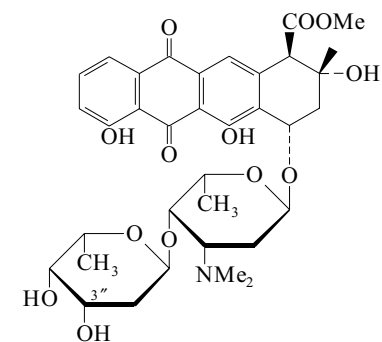
Fujiwara, A. *et al.*, *J. Antibiot.*, 1981, **34**, 912-915; 1982, **35**, 164-175 (*isol, ir, pmr, cmr*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, ARS135

Auramycin C

[83753-71-3]

A-877



C₃₅H₄₃NO₁₃ 685.724

Anthracycline antibiotic. Isol. from *Streptomyces galilaeus* ATCC31534. Active against gram-positive bacteria and tumours. Yellow powder. Sol.

MeOH, CHCl_3 , C_6H_6 , DMSO, acids; poorly sol. H_2O , hexane. Mp 151° . $[\alpha]_{\text{D}}^{20} +78.8$ (c, 0.1 in CHCl_3). λ_{max} 228 (E1%/1cm 640); 258 (E1%/1cm 405); 288 (E1%/1cm 155); 433 (E1%/1cm 190) (MeOH) (Berdy). λ_{max} 237 (E1%/1cm 590); 288 (E1%/1cm 155); 315 (E1%/1cm 85); 525 (E1%/1cm 190) (MeOH-NaOH) (Berdy).

► LD₅₀ (mus, ipr) 90 mg/kg. QI9288982

3''-Deoxy: **Auramycin H**. 3''-Deoxyauramycin C

[83753-70-2]

$\text{C}_{35}\text{H}_{43}\text{NO}_{12}$ 669.724

Prod. by hydrol. of Auramycin G. Isol. from *Streptomyces galilaeus* ATCC31534. Yellow powder. Sol. MeOH, DMSO, CHCl_3 , acids, C_6H_6 ; poorly sol. H_2O , hexane. Mp 119.5° . λ_{max} 228; 258; 288; 433 (MeOH) (Berdy).

4'-Deglycosyl: **Auramycin D**

[82002-76-4]

$\text{C}_{29}\text{H}_{33}\text{NO}_{10}$ 555.58

Prod. by *Streptomyces galilaeus* ATCC31534. Active against gram-positive bacteria and tumours. Yellow powder. Sol. MeOH, DMSO, C_6H_6 , acids, CHCl_3 ; poorly sol. H_2O , hexane. Mp 139.5° . $[\alpha]_{\text{D}}^{20} +189$ (c, 0.1 in CHCl_3). λ_{max} 228 (E1%/1cm 715); 258 (E1%/1cm 450); 288 (E1%/1cm 170); 433 (E1%/1cm 225) (MeOH) (Berdy). λ_{max} 237 (E1%/1cm 675); 288 (E1%/1cm 170); 315 (E1%/1cm 65); 525 (E1%/1cm 210) (MeOH/NaOH) (Berdy).

► LD₅₀ (mus, ipr) 90 mg/kg. QI9288986

De(dimethylamino): [178213-70-2]

$\text{C}_{33}\text{H}_{38}\text{O}_{13}$ 642.655

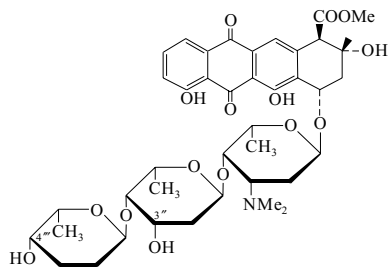
Prod. by *Streptomyces galilaeus* and *Streptomyces nogalater*. Yellow powder. Sol. MeOH, CHCl_3 ; poorly sol. H_2O , hexane.

Fr. Pat., 1982, 2 492 386; CA, **98**, 3537 (isol) Hoshino, T. et al., J. Antibiot., 1982, **35**, 1271 (isol, uv, ir, cmr)

Auramycin F

A-878

[83829-32-7]



$\text{C}_{41}\text{H}_{53}\text{NO}_{15}$ 799.867

Anthracycline antibiotic. Prod. by *Streptomyces galilaeus* ATCC31534. Active against gram-positive bacteria and P388 leukemia cells. Yellow powder. Sol. MeOH, C_6H_6 , acids, DMSO, CHCl_3 ; poorly sol. H_2O , hexane. Mp 160° . $[\alpha]_{\text{D}}^{20} +26.7$ (c, 0.1 in CHCl_3). λ_{max} 228 (E1%/1cm 615); 258 (E1%/1cm 390); 288 (E1%/1cm 150); 433 (E1%/1cm 175) (MeOH) (Berdy). λ_{max} 239

(E1%/1cm 640); 288 (E1%/1cm 195); 315 (E1%/1cm 115); 525 (E1%/1cm 120) (MeOH-NaOH) (Berdy).

4'''-Epimer: **Auramycin E**

[83753-72-4]

$\text{C}_{41}\text{H}_{53}\text{NO}_{15}$ 799.867

Prod. by *Streptomyces galilaeus* ATCC31534. Active against gram-positive bacteria and P388 leukaemia cells. Yellow powder. Sol. MeOH, acids, C_6H_6 , DMSO, CHCl_3 ; poorly sol. H_2O , hexane. Mp 157° . $[\alpha]_{\text{D}}^{20} +32.3$ (c, 0.1 in CHCl_3). λ_{max} 228 (E1%/1cm 515); 258 (E1%/1cm 330); 288 (E1%/1cm 125); 433 (E1%/1cm 155) (MeOH) (Berdy). λ_{max} 237 (E1%/1cm 500); 288 (E1%/1cm 125); 315 (E1%/1cm 95); 525 (E155) (MeOH/NaOH) (Berdy).

► LD₅₀ (mus, ipr) 20 - 40 mg/kg. QI9288984

3''-Deoxy: **Auramycin G**

[83753-73-5]

$\text{C}_{41}\text{H}_{53}\text{NO}_{14}$ 783.868

Prod. by *Streptomyces galilaeus*. Active against gram-positive bacteria and P388 leukaemia cells. Yellow powder. Mp 148.5° . $[\alpha]_{\text{D}}^{20} +38.5$ (c, 0.1 in CHCl_3).

► QI9288988

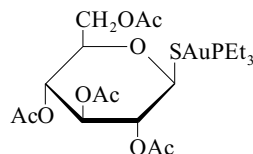
Fr. Pat., 1982, 2 492 386; CA, **98**, 3537 (isol) Hoshino, T. et al., J. Antibiot., 1982, **35**, 1271 (isol, uv, ir, cmr)

Auranofin, BAN, INN, JAN,

A-879

USAN

S-2,3,4,5-Tetraacetyl-1-thiogluco-pyranosato-(triethylphosphine)gold. [1-Thiogluco-pyranose-2,3,4,6-tetrakis(methylcarbama-to)-S]triethylphosphinegold, 10Cl. Akti. Auropan. Crisnor. Crisofin. Ridaura. Ridaurin. AF. SKF D-39162



$\text{C}_{20}\text{H}_{34}\text{AuO}_9\text{PS}$ 678.489

Antiarthritic, antirheumatic drug; also possesses antineoplastic activity. Launched 1983

β-D-form [34031-32-8]

Cryst. Mp $110-111^\circ$. $[\alpha]_{\text{D}}^{25} -55.3$ (c, 1 in MeOH).

► Adverse gastrointestinal effects. LD₅₀ (rat, orl) 265 mg/kg. Exp. reprod. and teratogenic effects. MD6500000

Sutton, B.M. et al., J. Med. Chem., 1972, **15**, 1095 (synth, pharmacol, tox)

Walz, D.T. et al., J. Pharmacol. Exp. Ther., 1976, **197**, 145

Sadler, P.J. et al., Struct. Bonding (Berlin), 1976, **29**, 171 (rev)

U.S. Pat., 1979, 4 124 759, (SmithKline); CA, **90**, 104297b (synth)

Brown, D.H. et al., Chem. Soc. Rev., 1980, **9**, 217 (rev)

Hill, D.T. et al., Cryst. Struct. Commun., 1980, **9**, 676 (cryst struct)

Brown, K. et al., J.A.C.S., 1981, **103**, 4943 (Mössbauer)

U.K. Pat., 1981, 1 586 996, (SmithKline); CA, **95**, 169697e (synth)

Curr. Clin. Pract. Ser., (Eds. Capell, H.A. et al), Vol. 7: Auranofin, Excerpta Medica, Amsterdam, 1983, (book)

Razi, M.T. et al., J.C.S. Dalton, 1983, 1331 (pmr, cmr, P-31 nmr)

Chaffman, M.D. et al., Drugs, 1984, **27**, 378 (rev, pharmacol)

Snyder, R.M. et al., Semin. Arthritis Rheum., 1987, **17**, 71 (rev, pharmacol)

Smith, W.E. et al., Perspect. Bioinorg. Chem., 1991, **1**, 183 (rev)

James, M.J. et al., Biochem. Pharmacol., 1992, **43**, 695 (pharmacol)

Lemmel, E.M. et al., Br. J. Rheumatol., 1993, **32**, 375 (clin trial)

Kizu, R. et al., Chem. Pharm. Bull., 1993, **41**, 1261 (uv, hplc)

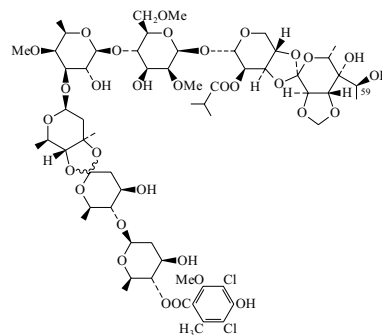
Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 7

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, ARS150

Avilamycin C

A-880

[69787-80-0]



$\text{C}_{61}\text{H}_{90}\text{Cl}_2\text{O}_{32}$ 1406.268

Major component of polyether-type antibiotic complex which consists of 16 components. Isol. from *Streptomyces viridochromogenes*. Active against gram-positive bacteria. Fine plates + $2\text{H}_2\text{O}$. Sol. MeOH, CHCl_3 . Mp $188-189^\circ$. $[\alpha]_{\text{D}} -4.8$ (c, 1.44 in CHCl_3). Log P -0.24 (uncertain value) (calc). λ_{max} 292 (€ 8270) (0.1N NaOH) (Derep). λ_{max} 228 (€ 13200); 286 (€ 2000); 300 (sh) (€ 1320) (MeOH) (Derep). λ_{max} 218 (€ 13200); 284 (€ 2140) (MeOH) (Berdy).

59-Ketone: **Avilamycin A**. Dehydroavilamycin C

[69787-79-7]

$\text{C}_{61}\text{H}_{88}\text{Cl}_2\text{O}_{32}$ 1404.252

From *Streptomyces viridochromogenes*. Active against gram-positive bacteria. Needles (CHCl_3 /petrol). Sol. MeOH, CHCl_3 ; poorly sol. Et_2O , hexane. Mp $181-182^\circ$. $[\alpha]_{\text{D}} -8$ (EtOH). Log P -1.35 (uncertain value) (calc). Medical prod. known as Avilamycin, BAN, INN, USAN contains small amounts of other components. λ_{max} 292 (€ 8270) (0.1N NaOH) (Derep). λ_{max} 228 (€ 13200); 286 (€ 2000); 300 (sh) (€ 1320) (MeOH) (Derep). λ_{max} 216 (€ 14120); 281 (€ 851); 288 (€ 812) (MeOH) (Berdy). λ_{max} 227 (€ 14200); 286 (€ 2140); 300 (€ 1260) (EtOH) (Berdy).

- LD₅₀ (mus, scu) 200 mg/kg; LD₅₀ (mus, scu) 200 mg/kg. OP4090000

[11051-71-1]

Heilman, W. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 1 (isol)

Keller-Schierlein, W. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 7 (struct)

Kupfer, E. *et al.*, *Helv. Chim. Acta*, 1982, **65**, 3
Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1982, 2583 (struct)

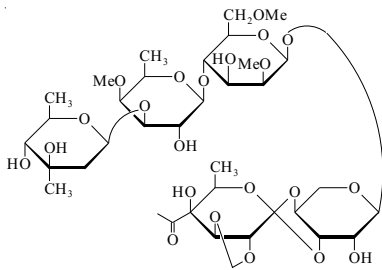
Mertz, J.L. *et al.*, *J. Antibiot.*, 1986, **39**, 877 (isol, struct, components)

Zagar, C. *et al.*, *Carbohydr. Res.*, 1993, **248**, 107 (partial synth)

Avileurekanose A

A-881

[82278-46-4]



C₃₆H₅₈O₂₂ 842.841

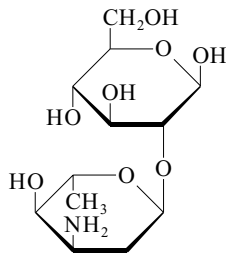
Metab. product of microorganisms. Needles (Me₂CO/Et₂O). Mp 180°.

Kupfer, E. *et al.*, *Helv. Chim. Acta*, 1982, **65**, 3

Avobiose

A-882

2-O-(3-Amino-2,3,6-trideoxy-α-L-ribohexopyranosyl)-D-glucopyranoside



C₁₂H₂₃NO₈ 309.316

Component of avoparcins and helvecaridins.

β-form

Ph glycoside, N-trifluoroacetyl, O-tetra-Ac:

C₂₈H₃₄F₃NO₁₃ 649.571

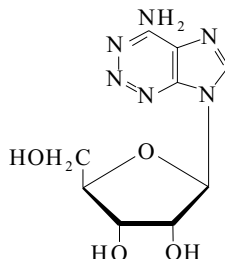
[α]_D²⁰ -261 (c, 0.13 in CHCl₃).

Dong, X. *et al.*, *Carbohydr. Res.*, 1992, **232**, 107 (synth, struct)

2-Azaadenosine, 9CI, 8CI

A-883

7-β-D-Ribofuranosyl-7H-imidazo[4,5-d]-1,2,3-triazin-4-amine, 9CI
[146-94-1]



C₉H₁₂N₆O₄ 268.232

Cytotoxic to human epidermoid carcinoma cells. Mp 260°.

Montgomery, J.A. *et al.*, *J. Med. Chem.*, 1975, **18**, 564

Montgomery, J.A. *et al.*, *Nucleic Acid Chem.*, 1978, **2**, 681 (synth)

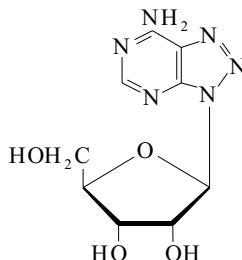
Singh, P. *et al.*, *Acta Cryst. B*, 1979, **35**, 973 (cryst struct)

Bennett, L.L. *et al.*, *Biochem. Pharmacol.*, 1985, **34**, 1293 (pharmacol, metab)

8-Azaadenosine

A-884

3-β-D-Ribofuranosyl-3H-1,2,3-triazolo[4,5-d]pyrimidin-7-amine, 9CI
[10299-44-2]



C₉H₁₂N₆O₄ 268.232

Shows significant carcinostatic props. Mp 218-219°. [α]_D²² -79 (c, 0.46 in H₂O). λ_{max} 279 (ε 12 000), 260 (12 400) (0.1N HCl); 278 nm (12 400) (0.1N NaOH).

► XZ5718000

Picrate: Mp 184° dec.

N,N-Di-Me: [38874-44-1]

C₁₁H₁₆N₆O₄ 296.285

Shows antineoplastic activity. Mp 216°.

Davoll, J. *et al.*, *J.C.S.*, 1958, 1593-1599 (synth)

Andrews, K.J.M. *et al.*, *J.C.S.*, 1958, 2768-2771 (N-di-Me)

Ger. Pat., 1972, 2 209 078; CA, **78**, 27908z (synth)

Hutzenlaub, W. *et al.*, *J. Med. Chem.*, 1972, **15**, 879-893 (N-di-Me)

Singh, P. *et al.*, *J.A.C.S.*, 1974, **96**, 5276-5278 (cryst struct)

Dea, P. *et al.*, *J.O.C.*, 1974, **39**, 3226-3231 (cmr)

Lee, C. *et al.*, *J. Biol. Chem.*, 1975, **250**, 1290-1296 (conformn, pmr)

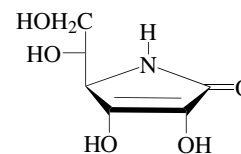
Singh, P. *et al.*, *Acta Cryst. C*, 1989, **45**, 1586-1589 (cryst struct)

Seela, F. *et al.*, *Helv. Chim. Acta*, 1998, **81**, 1139-1155 (synth, uv, pmr, cmr)

Azaascorbic acid

A-885

1,5-Dihydro-3,4-dihydroxy-5-(1,2-dihydroxyethyl)-2H-pyrrol-2-one



C₆H₉NO₅ 175.141

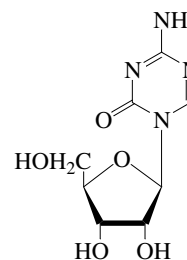
Powder (MeOH). Mp 184° (dec.).

Stachel, H.-D. *et al.*, *Annalen*, 1996, 103 (synth, ir, pmr, cmr, ms)

5-Azacytidine

A-886

4-Amino-1-β-D-ribofuranosyl-1,3,5-triazin-2(1H)-one, 9CI. 1-β-D-Ribofuranosyl-5-azacytosine. Azacitidine, INN, USAN. **Ladakamycin**. Mylosar. Vidaza. NSC 102816. Antibiotic U 18496. U 18496 [320-67-2]



C₈H₁₂N₄O₅ 244.207

Nucleoside antibiotic. Isol. from *Streptovorticillium ladakanus*, *Actinoplanes awajinensis* and *Actinoplanes missouriensis*. Inhibits pyrimidine biosynthesis; antineoplastic agent. Used to treat acute non-lymphoblastic leukaemia.

Approved by FDA (2004) for treatment of myelodysplastic syndrome. Sol. H₂O; poorly sol. MeOH, hexane, DMSO. Mp 232-234° dec. [α]_D²⁵ +39 (c, 1 in H₂O). Log P -4 (calc).

- Human systemic effects when used therapeutically. Exp. neoplastic agent. Exp. reprod. and teratogenic effects. LD₅₀ (mus, orl) 572 mg/kg, LD₅₀ (mus, ipr) 115 mg/kg. Probable human carcinogen (IARC 2A). XZ3017500

4-N-Me:

C₉H₁₄N₄O₅ 258.233

Mp 148-150°.

4-N-Di-Me:

C₁₀H₁₆N₄O₅ 272.26

Mp 128-130°.

2',3',5'-Tribenzoyl: [28998-36-9]

C₂₉H₂₄N₄O₈ 556.531

Mp 186-187°. [α]_D²⁰ -33.1 (c, 1 in CHCl₃).

[52934-49-3]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 831D (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 418B (nmr)

Piskala, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1964, **29**, 2060 (synth)

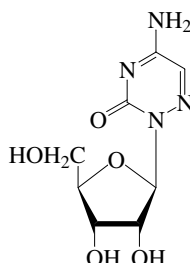
Bergy, M.E. *et al.*, *Antimicrob. Agents Chemother.*, 1966, 619; 625 (isol, struct)

Ger. Pat., 1969, 1 922 702; *CA*, **72**, 79427n
 Jones, A.J. *et al.*, *J. Phys. Chem.*, 1970, **74**, 2684;
CA, **73**, 50542f (cmr)
 Hruska, F.E. *et al.*, *Can. J. Chem.*, 1974, **52**, 497
 (pmr)
 Niedballa, U. *et al.*, *J.O.C.*, 1974, **39**, 3672
 (synth)
Japan. Pat., 1978, 78 104 795; *CA*, **90**, 101950
 (isol)
 Piskala, A. *et al.*, *Nucleic Acid Chem.*, 1978, **1**,
 435 (synth)
 Torikata, A. *et al.*, *CA*, 1979, **90**, 150248 (isol)
 Roberts, J.D. *et al.*, *J.O.C.*, 1981, **46**, 1014 (*N-15*
nmr, bibl)
 Martindale, *The Extra Pharmacopoeia*, 30th
 edn., Pharmaceutical Press, 1993, 457
 Gryn, J. *et al.*, *Leuk. Res.*, 2002, **26**, 893-897
 (pharmacol, tox)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of*
Industrial Materials, 8th edn., Van Nostrand
 Reinhold, 1992, ARY000

6-Azacytidine

A-887

5-Amino-2-β-D-ribofuranosyl-1,2,4-triazin-
 3(2H)-one, 9CI
 [3131-60-0]
 [4724-20-3]



$C_8H_{12}N_4O_5$ 244.207
 Cryst. (H_2O). Mp 220-222°.

2',3',5'-Tri-Ac: [20757-62-4]
 $C_{14}H_{18}N_4O_8$ 370.318
 Mp 162-164°.

2',3',5'-Tribenzoyl: [4336-35-0]
 $C_{29}H_{24}N_4O_8$ 556.531
 Cryst. (EtOH). Mp 218-220°.

Sorm, F. *et al.*, *Experientia*, 1961, **17**, 64-65
 (synth)

Zemlicka, J. *et al.*, *Tet. Lett.*, 1962, 397-399
 (synth)

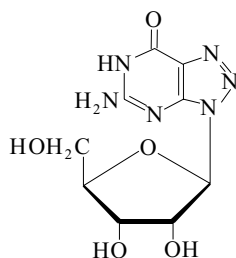
Chernetski, V.P. *et al.*, *Khim. Geterotsikl.*
Soedin., 1967, 1109-1113; *CA*, **69**, 77670a
 (synth)

Singh, P. *et al.*, *Biochemistry*, 1974, **13**, 5445-
 5452 (cryst struct)

8-Azaguanosine

A-888

5-Amino-3,4-dihydro-3-β-D-ribofuranosyl-
 7H-1,2,3-triazolo[4,5-d]pyrimidin-7-one,
 9CI
 [2133-80-4]



$C_9H_{12}N_6O_5$ 284.231
 Purine antagonist. Mp 250-252° dec. λ_{max}
 269 (ε 10 300), 255 (13 600) (0.01N HCl);
 279 (11 600), 221 nm (23 000) (0.03N
 NaOH).

► XZ6157200

5'-Phosphate:

$C_9H_{13}N_6O_8P$ 364.211
 Appears to be the key intermed. in the
 conversion of the anticancer drug,
 8-Azaguanine, into its active form. λ_{max}
 256 nm (ε 12 900) (pH 2).

Friedkin, M. *et al.*, *J. Biol. Chem.*, 1954, **209**,
 295 (synth)

Davoll, J. *et al.*, *J.C.S.*, 1958, 1593 (synth)

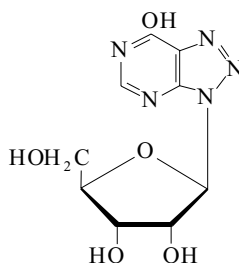
Elliott, R.D. *et al.*, *J. Med. Chem.*, 1976, **19**,
 1186

Luedemann, H.D. *et al.*, *Z. Naturforsch., C*,
 1976, **31**, 135; *CA*, **84**, 146335u (conformn,
 pmr)

8-Azainosine, 9CI, 8CI

A-889

3,4-Dihydro-3-β-D-ribofuranosyl-7H-1,2,3-
 triazolo[4,5-d]pyrimidin-7-one, 9CI
 [4968-68-7]



$C_6H_{11}N_5O_5$ 269.216
 Prod. by *Brevibacterium ammoniagenes*.
 Purine antagonist. Cryst. (MeOH aq.).
 Mp 220°. $[\alpha]_D^{25}$ -80.9 (c, 1 in DMF). λ_{max}
 255 (ε 9 400) (0.1N HCl); 277 nm (10 500)
 (0.1N NaOH).

Davoll, J. *et al.*, *J.C.S.*, 1958, 1593 (synth)
 Montgomery, J.A. *et al.*, *J.O.C.*, 1971, **36**, 1962
 (synth)

Ger. Pat., 1972, 2 209 078; *CA*, **78**, 27908z
 (synth)

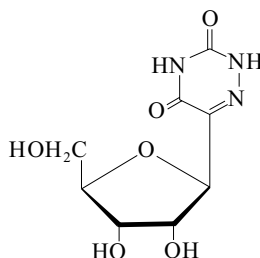
Luedemann, H.D. *et al.*, *Z. Naturforsch., C*,
 1976, **31**, 135; *CA*, **84**, 146335u (conformn,
 pmr)

Chretien, F. *et al.*, *Tetrahedron*, 1982, **38**, 103
 (synth)

6-Azapseudouridine

A-890

6-β-D-Ribofuranosyl-as-triazine-
 3,5(2H,4H)-dione, 8CI. 5-(D-Ribofurano-
 syl)-6-azauracil
 [13455-42-0]



$C_8H_{11}N_3O_6$ 245.191
 Mp 139-141°. $[\alpha]_D^{25}$ -24.9 (c, 0.5 in H_2O).

λ_{max} 263 nm (ε 6 918) (H_2O).

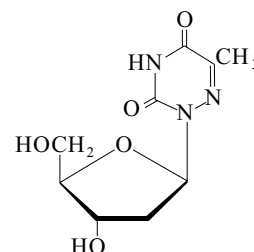
Bobek, M. *et al.*, *Tet. Lett.*, 1968, 1543 (synth,
 pmr)

Bobek, M. *et al.*, *Coll. Czech. Chem. Comm.*,
 1969, **34**, 1690 (synth)

6-Azathymidine, 9CI, 8CI

A-891

2-(2-Deoxy-β-D-erythro-pentofuranosyl)-
 1,2,4-triazine-3,5(2H,4H)-dione, 9CI
 [13410-30-5]



$C_9H_{13}N_3O_5$ 243.219
 Growth inhibitor and thymine antagonist.

► XY7880000

3',5'-Ditoluoyl: [23701-73-7]
 Cryst. (EtOH). Mp 173-175°.

3'-Phosphate:
 $C_9H_{14}N_3O_8P$ 323.199
 Mp 226-227°.

5'-Phosphate:
 $C_9H_{14}N_3O_8P$ 323.199
 Mp 142-143°.

3',5'-Diphosphate:
 $C_9H_{15}N_3O_{11}P_2$ 403.178
 Mp 201-203°.

Prusoff, W.H. *et al.*, *J. Biol. Chem.*, 1957, **226**,
 901 (biosynth)

Hall, R.H. *et al.*, *J.A.C.S.*, 1958, **80**, 1138
 (synth)

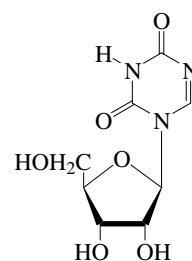
Prystaš, M. *et al.*, *Coll. Czech. Chem. Comm.*,
 1969, **34**, 1104 (ditoluoyl)

Banerjee, A. *et al.*, *Acta Cryst. B*, 1978, **34**, 1294
 (cryst struct)

6-Azauridine

A-892

2-β-D-Ribofuranosyl-1,2,4-triazine-
 3,5(2H,4H)-dione, 9CI. 2-β-D-Ribofura-
 nosyl-as-triazine-3,5(2H,4H)-dione, 8CI.
 1-(β-D-Ribofuranosyl)-6-azauracil.
 Ribozauracil. NSC 32074
 [54-25-1]



$C_8H_{11}N_3O_6$ 245.191
 Pyrimidine antagonist and bacteriostat.
 Antiviral agent active against human
 smallpox and viral eye infections.
 Antineoplastic. Needles (EtOH/Et₂O).

Mp 160-161°. $[\alpha]_D$ -132 (Py). pK_{a1} 6.7 (25°). λ_{max} 225 nm (ϵ 5 754) (50% EtOH aq.).

- Human teratogen. Exp. reprod. and teratogenic effects. LD₅₀ (rat, ipr) 9400 mg/kg. XY8575000

2',3',5'-Tri-Ac: 2',3',5'-Tri-O-acetyl-6-azauridine. **Azaribine**, **BAN**, **INN**, **USAN**. Triazure. NSC 67239. CB 304 [2169-64-4]

C₁₄H₁₇N₃O₉ 371.303

Currently withdrawn; causes thromboembolism in some patients.

Antiviral agent, also used in treatment of psoriasis. Antineoplastic agent.

Mp 102-103°.

- Human systemic effects when used therapeutically. LD₅₀ (rat, orl) 12000 mg/kg. XY8577000

5'-Benzoyl: [23477-49-8]

C₁₅H₁₅N₃O₇ 349.299

Cryst. (EtOAc). Mp 156-157°. $[\alpha]_D^{24}$ -90.5 (c, 0.5 in EtOAc).

2',3',5'-Tribenzoyl:

C₂₉H₂₃N₃O₉ 557.515

Mp 191°. $[\alpha]_D^{24}$ -51 (Py).

2',3'-Dimesyl: [23470-78-2]

C₁₀H₁₅N₃O₁₀S₂ 401.375

Cryst. (EtOAc). Mp 167-169°. $[\alpha]_D^{25}$ -51 (c, 0.43 in 50% EtOH aq.).

2',3'-Dimesyl, 5'-benzoyl: [23393-65-9]

C₁₇H₁₉N₃O₁₁S₂ 505.483

Cryst. (2-propanol). Mp 162-164°. $[\alpha]_D^{25}$ -52.8 (c, 0.5 in EtOAc).

5'-Trityl, 2',3'-dimesyl:

C₂₉H₂₉N₃O₁₀S₂ 643.694

Cryst. (2-propanol). Mp 105-108°. $[\alpha]_D^{25}$ -44.2 (c, 0.4 in CHCl₃).

2',3'-O-Isopropylidene:

C₁₁H₁₅N₃O₆ 285.256

Cryst. (Me₂CO/cyclohexane). Mp 142-143°.

2',3',5'-Trimesyl: [23407-74-1]

C₁₁H₁₇N₃O₁₂S₃ 479.466

Cryst. (EtOH aq.). Mp 104-106°. $[\alpha]_D^{25}$ -17.1 (c, 0.21 in Me₂CO).

5'-Phosphate: 2-[5-O-(Phosphonoxy)-β-D-ribofuranosyl]-1,2,4-triazine-

3,5(2H,4H)-dione, 9CI. 6-Azaurydic acid. **AzaUMP**

[2018-19-1]

C₈H₁₂N₃O₉P 325.171

Formed by the action of *Sphaerotheca fuliginea* on Azauracil. Biologically active intermediate, essential for

antitumour activity of Azauridine.

Cryst. +½H₂O (EtOH/Et₂O). Mp

139-141° (147° dec.). λ_{max} 261 nm

(ϵ 6100) (pH 2).

5'-Phosphate; dicyclohexylammonium salt: Mp 189-190°.

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 1323A; 3, 412C (nmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 814B; 2, 846B (ir)

Smrt, J. et al., Coll. Czech. Chem. Comm., 1960, 25, 130 (isopropylidene, 5'-phosphate, 5'-phosphate dicyclohexylammonium salt, synth)

Prystas, M. et al., Chem. Ind. (London), 1961, 947 (synth, tribenzoyl)

Mizuno, Y. et al., Chem. Pharm. Bull., 1963, 11, 293 (synth, tribenzoyl)

Chládek, S. et al., Coll. Czech. Chem. Comm., 1963, 28, 1301 (isopropylidene)

Beránek, J. et al., Coll. Czech. Chem. Comm., 1969, 34, 618 (5'-benzoyl, 5'-benzoyl dimesyl, dimesyl, dimesyl trityl, trimesyl, synth)

Smahel, O. et al., Neoplasma, 1971, 18, 435 (pharmacol)

Nishimura, T. et al., Methods Carbohydr. Chem., 1972, 6, 436 (rev, synth)

Van't Land, B.G. et al., Neth. J. Plant Pathol., 1972, 78, 242; CA, 79, 112267e (synth)

Wood, D.J. et al., Can. J. Chem., 1973, 51, 2571 (conformn, pmr)

Schwalbe, C.H. et al., J. Mol. Biol., 1973, 75, 129 (cryst struct)

Schweizer, M.P. et al., J.A.C.S., 1973, 95, 3770 (pmr, cmr)

Saenger, W. et al., Nature (London), 1973, 242, 610 (cryst struct)

Beránek, J. et al., Nucleic Acids Res., 1976, 3, 1387 (synth)

Mewade, G.S. et al., Sci. Cult., 1978, 44, 291 (rev, Azaribine)

Saenger, W. et al., Biopolymers, 1979, 18, 2015 (cryst struct)

Martindale, The Extra Pharmacopoeia, 28th/29th edn., Pharmaceutical Press, 1982, 1810; 1813

Masojdkova, M. et al., Coll. Czech. Chem. Comm., 1985, 50, 1899 (pmr, conformn)

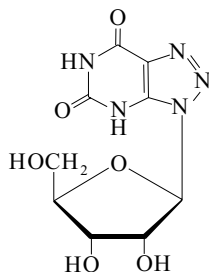
Drell, W. et al., Chem. Eng. News, April 28, 1986, 2 (bibl, use)

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, RJA000; THM750

8-Azaxanthosine

A-893

3-β-D-Ribofuranosyl-3H-1,2,3-triazolo[4,5-d]pyrimidine-5,7(4H,6H)-dione, 9CI. 5,7-Dihydroxy-3-β-D-ribofuranosyl-v-triazolo[d]pyrimidine [4730-45-4]



C₉H₁₁N₅O₆ 285.216

Purine antagonist in biological systems.

Mp 198-199° dec. $[\alpha]_D^{24}$ -103 (c, 1.02 in 0.1N NaOH). λ_{max} 256 (ϵ 9 500), 240 (5 900) (0.1N HCl); 277 (8 800), 252 (9 700) (pH 6.8); 280 (9 500), 251 nm (7 100) (0.1N NaOH).

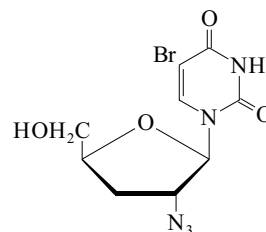
Davoll, J. et al., J.C.S., 1958, 1593 (synth)

Spector, T. et al., J. Biol. Chem., 1975, 250, 7372

2'-Azido-5-bromo-2',3'-dideoxyuridine

A-894

[126543-49-5]



C₉H₁₀BrN₅O₄ 332.113

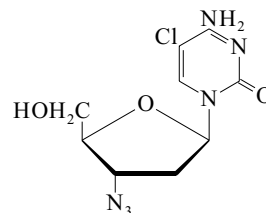
Solid. Mp 148-150°.

Warshaw, J.A. et al., J. Med. Chem., 1990, 33, 1663 (synth, pmr, ir, uv)

3'-Azido-5-chloro-2',3'-dideoxycytidine, 9CI

A-895

[127492-31-3]



C₉H₁₁ClN₆O₃ 286.677

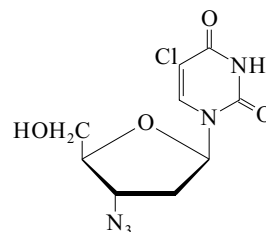
Cryst. (MeOH/Et₂O). Mp 173-175° dec.

Van Aerschot, A. et al., J. Med. Chem., 1990, 33, 1833 (synth, uv, ms, pmr, cmr)

3'-Azido-5-chloro-2',3'-dideoxyuridine, 9CI

A-896

[108441-51-6]



C₉H₁₀ClN₅O₄ 287.662

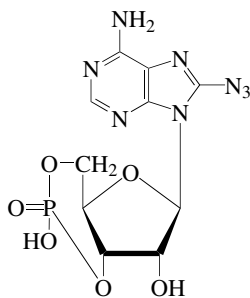
Cryst. (EtOAc). Mp 170°.

Van Aerschot, A. et al., J. Med. Chem., 1990, 33, 1833 (synth, uv, ir, ms, pmr, cmr)

8-Azidocyclic AMP

A-897

8-Azidoadenosine cyclic 3',5'-(hydrogen phosphate), 9CI
[31966-52-6]



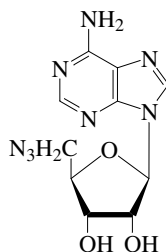
$C_{10}H_{11}N_8O_6P$ 370.221
Photoaffinity reagent used to study cyclic AMP binding sites. Cryst. λ_{\max} 280 (ϵ 17700) (pH 1). λ_{\max} 281 (ϵ 13300) (pH 11).

Muneyama, K. *et al.*, *Biochemistry*, 1971, **10**, 2390-2395 (synth)
Haley, B.E. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1974, **71**, 3367-3371 (synth, use)
Haley, B.E. *et al.*, *Methods Enzymol.*, 1977, **46**, 339-346 (use)

5'-Azido-5'-deoxyadenosine

A-898

[737-76-8]

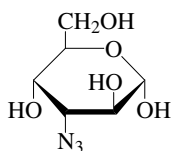


$C_{10}H_{12}N_8O_3$ 292.257
Cryst. (H_2O). No sharp Mp, sinters at 100°.

Jahn, W. *et al.*, *Chem. Ber.*, 1965, **98**, 1705-1708 (synth)
Ciuffreda, P. *et al.*, *Eur. J. Org. Chem.*, 2003, 4748-4751 (synth, pmr)

3-Azido-3-deoxyaltrose

A-899



$C_6H_{11}N_3O_5$ 205.17

D-form

2,4,6-Tri-Me: 3-Azido-3-deoxy-2,4,6-tri-O-methyl-D-altrose
[312714-53-7]
 $C_9H_{17}N_3O_5$ 247.25
Oil. $[\alpha]_D^{25} +60$ (c, 1.65 in CH_2Cl_2). Isol. as a mixt. of pyranose anomers, $\alpha:\beta$ 44:56.

 α -D-Pyranose-form

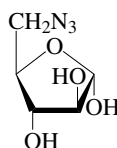
Me glycoside: Methyl 3-azido-3-deoxy- α -D-altropyranoside
[20379-58-2]
 $C_7H_{13}N_3O_5$ 219.197
Oil. $[\alpha]_D^{25} +97$ (c, 1.98 in MeOH).

Me glycoside, 2,4,6-tri-Me: Methyl 3-azido-3-deoxy-2,4,6-tri-O-methyl- α -D-altropyranoside
[312714-52-6]
 $C_{10}H_{19}N_3O_5$ 261.277
Oil. $[\alpha]_D^{25} +114$ (c, 1.23 in CH_2Cl_2).

de García-Martin, M. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 805-815 (D-form tri-Me, α -D-Me pyr, α -D-Me pyr tri-Me, synth, pmr, cmr)

5-Azido-5-deoxyarabinose

A-900



$C_5H_9N_3O_4$ 175.144

D-form [161418-69-5]

Syrup. $[\alpha]_D^{20} +159.2$ (c, 1.0 in H_2O).
Mixt. of anomers.

 α -D-Furanose-form

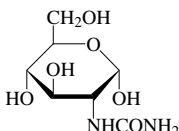
Benzyl glycoside: Benzyl 5-azido-5-deoxy- α -D-arabinofuranoside
[154919-49-0]
 $C_{12}H_{15}N_3O_4$ 265.268
 $[\alpha]_D^{20} +132$ (c, 0.2 in dioxan).

 β -D-Furanose-form

1,2-O-Isopropylidene: 5-Azido-5-deoxy-1,2-O-isopropylidene- β -D-arabinofuranose
[7687-65-2]
 $C_8H_{13}N_3O_4$ 215.208
Syrup. $[\alpha]_D^{20} +56.6$ (c, 1.0 in $CHCl_3$).
Wessel, H.P. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 1173-1186 (benzyl α -D-gly)
Kefurt, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1996, **61**, 1027-1036 (D-form, β -D-fur isopropylidene)

6-Azido-6-deoxyfructose

A-901

 α -D-Pyranose-form

$C_6H_{11}N_3O_5$ 205.17

β -D-Furanose-form predominates (83%) in D_2O (17% α -D-furanose-form).

D-form [115827-10-6]

$[\alpha]_D^{20} +52.5$ (c, 2.1 in H_2O). $[\alpha]_D^{26} +22.2$ (c, 2.9 in H_2O).

 β -D-Furanose-form

3,4-Dibenzyl: 6-Azido-3,4-di-O-benzyl-6-deoxy- β -D-fructofuranose
[155696-78-9]
 $C_{20}H_{23}N_3O_5$ 385.419

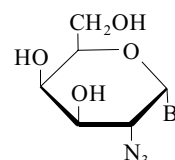
Needles (EtOAc/hexane). Mp 76-77°.
 $[\alpha]_D^{25} +44.3$ (c, 1.4 in MeOH).

[114395-12-9, 127733-60-2]

Durrwachter, J.R. *et al.*, *J.O.C.*, 1988, **53**, 4175 (D-form, synth)
Straub, A. *et al.*, *J.O.C.*, 1990, **55**, 3926 (D-form, synth)
Zou, W. *et al.*, *Carbohydr. Res.*, 1994, **254**, 25 (β -D-fur dibenzyl, pmr, cmr)
Page, P. *et al.*, *Tetrahedron*, 1996, **52**, 1557 (D-form, synth)

2-Azido-2-deoxygalactopyranosyl bromide

A-902



$C_6H_{10}BrN_3O_4$ 268.067

 α -D-form

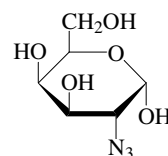
Tri-Ac: 3,4,6-Tri-O-acetyl-2-azido-2-deoxy- α -D-galactopyranosyl bromide
[67673-39-6]
 $C_{12}H_{16}BrN_3O_7$ 394.178
Cryst. (Et_2O /pentane). Mp 101-102° (97-98°). $[\alpha]_D^{20} +188.6$ (c, 2.0 in $CHCl_3$).
 $[\alpha]_D^{20} +172.6$ (c, 1.0 in MeCN).

3,4-Dibenzyl, 6-Ac: 6-O-Acetyl-2-azido-3,4-di-O-benzyl-2-deoxy- α -D-galactopyranosyl bromide
[59464-24-3]
 $C_{22}H_{24}BrN_3O_5$ 490.353
Syrup. $[\alpha]_D^{20} +141$.

Paulsen, H. *et al.*, *Angew. Chem., Int. Ed.*, 1976, **15**, 440 (α -D-dibenzyl Ac)
Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1979, **57**, 1244 (α -D-tri-Ac, pmr)
Broddeffalk, J. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 129-132 (α -D-tri-Ac, Isynth)

2-Azido-2-deoxygalactose

A-903

 α -D-Pyranose-form

$C_6H_{11}N_3O_5$ 205.17

 α -D-Pyranose-form [71142-03-5]

1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-azido-2-deoxy- α -D-galactopyranose
[67817-30-5]
 $C_{14}H_{19}N_3O_9$ 373.319
Cryst. (Et_2O). Mp 114-115°. $[\alpha]_D^{25} +91.7$ (c, 1.05 in $CHCl_3$).

Me glycoside: Methyl 2-azido-2-deoxy- α -D-galactopyranoside
[109914-53-6]
 $C_7H_{13}N_3O_5$ 219.197
Cryst. (EtOAc/hexane). Mp 132-133°.
 $[\alpha]_D^{25} +189$ (c, 1 in MeOH).

β-D-Pyranose-form

Cryst. (EtOH). Mp 161.5-163° dec. $[\alpha]_D^{25} +76.9$ (c, 0.98 in H₂O) (equilib.).

Me glycoside: Methyl 2-azido-2-deoxy-β-D-galactopyranoside

[87376-50-9]

C₇H₁₃N₃O₅ 219.197

Cryst. (EtOAc/hexane). Mp 114-115°.

$[\alpha]_D +11$ (c, 1 in MeOH). Prev. descr. as a syrup having $[\alpha]_D^{24} -72$ (prob. erroneous).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-azido-2-deoxy-β-D-galactopyranoside

C₁₃H₁₉N₃O₈ 345.308

Syrup. $[\alpha]_D^{24} -18$ (c, 6.3 in MeOH).

Me glycoside, 4,6-isopropylidene: Methyl 2-azido-2-deoxy-4,6-O-isopropylidene-β-D-galactopyranoside

C₁₀H₁₇N₃O₅ 259.261

Syrup. $[\alpha]_D^{24} -8$ (c, 1.0 in MeOH).

Me glycoside, 4,6-isopropylidene, Ac: Methyl 3-O-acetyl-2-azido-2-deoxy-4,6-O-isopropylidene-β-D-galactopyranoside

C₁₂H₁₉N₃O₆ 301.299

Syrup. $[\alpha]_D^{24} -12$ (c, 0.3 in MeOH).

Me glycoside, 4,6-O-benzylidene: Methyl 2-azido-4,6-O-benzylidene-2-deoxy-β-D-galactopyranoside

[52885-40-2]

C₁₄H₁₇N₃O₅ 307.305

Mp 170-171°. $[\alpha]_D^{20} -10$ (c, 0.1 in CHCl₃).

Prev. descr. as a syrup.

Me glycoside, 6-benzyl: Methyl 2-azido-6-O-benzyl-2-deoxy-β-D-galactopyranoside

[109914-57-0]

C₁₄H₁₉N₃O₅ 309.321

Mp 70-71°. $[\alpha]_D^{20} +7$ (c, 1.0 in CHCl₃).

Me glycoside, 6-benzyl, 3,4-isopropylidene: Methyl 2-azido-6-O-benzyl-2-deoxy-3,4-O-isopropylidene-β-D-galactopyranoside

[128716-59-6]

C₁₇H₂₃N₃O₅ 349.386

$[\alpha]_D^{20} +14$ (c, 1.4 in CHCl₃).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1979, **57**, 1244 (synth, ir, pmr, cmr)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1984, **135**, 53 (β-D-Me pyr derivs)

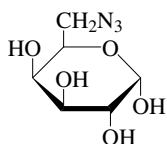
Darbon, N. *et al.*, *Acta Cryst. C*, 1985, **41**, 1100 (cryst struct, β-D-Me pyr)

Jacquinet, J.C. *et al.*, *Carbohydr. Res.*, 1987, **159**, 229 (α-D-Me pyr, β-D-Me pyr)

Marra, A. *et al.*, *Carbohydr. Res.*, 1989, **195**, 39 (derivs)

6-Azido-6-deoxygalactose

A-904



α-D-Pyranose-form

C₆H₁₁N₃O₅ 205.17

β-form [66927-03-5]

2,3,4-Tri-Me: 6-Azido-6-deoxy-2,3,4-tri-O-methyl-D-galactopyranose

C₉H₁₇N₃O₅ 247.25

Cryst. Mp 45-47°. Mixt. of anomers.

α-D-Pyranose-form [73174-38-6]

Cryst. (EtOH). Mp 133-134°. $[\alpha]_D +110 \rightarrow +55$ (c, 1 in H₂O).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-azido-6-deoxy-α-D-galactopyranose

[73108-24-4]

C₁₄H₁₉N₃O₅ 309.321

Plates (EtOH). Mp 92-93°. $[\alpha]_D +110$

(c, 1 in CHCl₃).

1,2:3,4-Diisopropylidene: 6-Azido-6-deoxy-1,2:3,4-di-O-isopropylidene-α-D-galactopyranose

[4711-00-6]

C₁₂H₁₉N₃O₅ 285.299

Syrup. Bp_{0.06} 99°. $[\alpha]_D -107$ (c, 1.2 in CHCl₃) (-96.9).

Me glycoside: Methyl 6-azido-6-deoxy-α-D-galactopyranoside

[18908-43-5]

C₇H₁₃N₃O₅ 219.197

Solid (Me₂CO/Et₂O). Mp 172-173° dec.

$[\alpha]_D +154$ (c, 0.8 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-azido-6-deoxy-α-D-galactopyranoside

C₁₃H₁₉N₃O₈ 345.308

Cryst. Mp 79-80°. $[\alpha]_D +126$ (c, 1.0 in CHCl₃).

Me glycoside, tri-Me: Methyl 6-azido-6-deoxy-2,3,4-tri-O-methyl-α-D-galactopyranoside

C₁₀H₁₉N₃O₅ 261.277

Mp 30-31°. $[\alpha]_D +92$ (c, 1.1 in CHCl₃).

β-D-Pyranose-form [18908-44-6]

Cryst. (EtOH). Mp 145-147° (141°).

$[\alpha]_D^{25} +53$ (c, 1 in H₂O). The reported

opt. rotn. corresponds to a fully mutarotated equilib. mixt. of anomers and

not to the β-anomer.

Me glycoside: Methyl 6-azido-6-deoxy-β-D-galactopyranoside

C₇H₁₃N₃O₅ 219.197

Mp 173°. $[\alpha]_D +154$ (c, 0.8 in H₂O).

Although claimed as the β-anomer, the

phys. props. coincide with those

reported for the α-anomer above.

α-L-Pyranose-form

1,2:3,4-Diisopropylidene: 6-Azido-6-deoxy-1,2:3,4-di-O-isopropylidene-α-L-galactopyranose

[70932-44-4]

C₁₂H₁₉N₃O₅ 285.299

Syrup. $[\alpha]_D^{25} +103.4$ (c, 1.0 in CHCl₃).

β-D-Furanose-form

Me glycoside: Methyl 6-azido-6-deoxy-β-D-galactofuranoside

C₇H₁₃N₃O₅ 219.197

$[\alpha]_D -112$ (c, 1.3 in CHCl₃). Anal.

sample contd. 0.3H₂O.

Me glycoside, tri-Me: Methyl 6-azido-6-deoxy-2,3,5-tri-O-methyl-β-D-galactofuranoside

C₁₀H₁₉N₃O₅ 261.277

Oil. $[\alpha]_D -101$ (c, 0.8 in CHCl₃).

Szarek, W.A. *et al.*, *Can. J. Chem.*, 1965, **43**, 2345-2356 (α-D-pyr diisopropylidene)

Hanessian, S. *et al.*, *J.O.C.*, 1969, **34**, 675-681 (β-D-pyr, α-D-Me-gly)

Kovács, J. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1979, **101**, 7-16 (α-D-pyr, α-D-pyr tetra-Ac)

Ježo, I. *et al.*, *Chem. Zvesti*, 1979, **33**, 533-541; CA, **92**, 147091 (β-D-pyr)

May, J.A. *et al.*, *J. Med. Chem.*, 1979, **22**, 971-976 (α-L-pyr diisopropylidene)

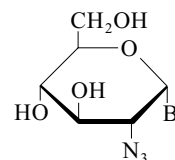
Bundle, D.R. *et al.*, *J.C.S. Perkin I*, 1979, 2751-2755 (α-D-pyr diisopropylidene)

Srivastava, G. *et al.*, *J. Biol. Chem.*, 1992, **267**, 22356-22361 (α-L-pyr diisopropylidene)

Zaliz, C.L.R. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 689-701 (α-D-pyr diisopropylidene, α-D-Me gly)

2-Azido-2-deoxyglucopyranosyl bromide

A-905



C₆H₁₀BrN₃O₄ 268.067

α-D-form

3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl-2-azido-2-deoxy-α-D-glucopyranosyl bromide

C₁₂H₁₆BrN₃O₇ 394.178

$[\alpha]_D^{20} +155$ (c, 0.7 in MeCN).

4-Benzyl, 3,6-di-Ac: 3,6-Di-O-acetyl-2-azido-4-O-benzyl-2-deoxy-α-D-glucopyranosyl bromide

C₁₇H₂₀BrN₃O₆ 442.265

$[\alpha]_D^{20} +122$ (c, 0.8 in MeCN).

3-Benzyl, 4,6-di-Ac: 4,6-Di-O-acetyl-2-azido-3-O-benzyl-2-deoxy-α-D-glucopyranosyl bromide

C₁₇H₂₀BrN₃O₆ 442.265

$[\alpha]_D^{20} +67.5$ (c, 0.95 in MeCN).

3,4-Dibenzyl, 6-Ac: 6-O-Acetyl-2-azido-3,4-di-O-benzyl-2-deoxy-α-D-glucopyranosyl bromide

[55682-50-3]

C₂₂H₂₄BrN₃O₅ 490.353

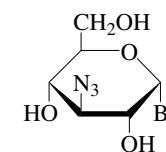
Mp 84°. $[\alpha]_D^{20} +101$ (MeCN).

Paulsen, H. *et al.*, *Angew. Chem., Int. Ed.*, 1975, **14**, 558 (α-D-Ac dibenzyl)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1978, **64**, 339 (α-D-tri-Ac, α-D-di-Ac 4-benzyl, α-D-di-Ac 3-benzyl)

3-Azido-3-deoxyglucopyranosyl bromide

A-906



C₆H₁₀BrN₃O₄ 268.067

α-D-Pyranose-form

Tri-Ac: 2,4,6-Tri-O-acetyl-3-azido-3-deoxy-α-D-glucopyranosyl bromide

[132470-43-0]

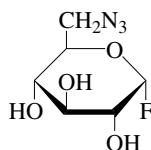
C₁₂H₁₆BrN₃O₇ 394.178

Syrup. $[\alpha]_D +164.5$ (c, 1.66 in CHCl₃).

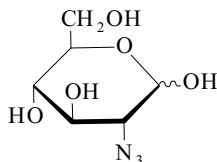
Martin, A. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 853-861 (α-D-pyr tri-Ac)

6-Azido-6-deoxyglucopyranosyl fluoride

A-907

C₆H₁₀FN₃O₄ 207.161**α-D-form** [161925-18-4]Cryst. (EtOAc/hexane). Mp 103-104°. [α]_D²⁰ +115.3 (c, 1.0 in H₂O).Horneman, A.M. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 1-8 (*α-D-form*, *synth*, *pmr*, *cmr*)**2-Azido-2-deoxyglucose, 9CI**

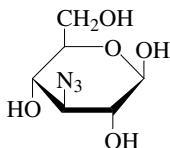
A-908

C₆H₁₁N₃O₅ 205.17**D-form** [56883-39-7][α]_D²⁰ +48.**α-D-Pyranose-form**

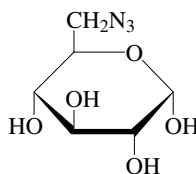
Tetra-Ac:

C₁₄H₁₉N₃O₉ 373.319Mp 120°. [α]_D²⁰ +125.Paulsen, H. *et al.*, *Tet. Lett.*, 1975, 1493 (*synth*)**3-Azido-3-deoxyglucose**

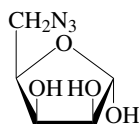
A-909

C₆H₁₁N₃O₅ 205.17**β-D-Pyranose-form***Me glycoside: Methyl 3-azido-3-deoxy-β-D-glucopyranoside* [65784-76-1]C₇H₁₃N₃O₅ 219.197Syrup. [α]_D -13 (c, 2.4 in MeOH).*Me glycoside, tri-Ac: Methyl 2,4,6-tri-O-acetyl-3-azido-3-deoxy-β-D-glucopyranoside* [132470-44-1]C₁₃H₁₉N₃O₈ 345.308Syrup. [α]_D -18.5 (c, 1.2 in CHCl₃).Martin, A. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 853-861 (*β-D-pyr*, *Me gly*, *Me gly tri-Ac*)**6-Azido-6-deoxyglucose**

A-910

C₆H₁₁N₃O₅ 205.17**α-D-Pyranose-form***Me glycoside: Methyl 6-azido-6-deoxy-α-D-glucopyranoside* [23701-87-3]C₇H₁₃N₃O₅ 219.197Cryst. (EtOH). Mp 103°. [α]_D²¹ +126 (c, 1.0 in MeOH). [α]_D²⁵ +155.4 (c, 1.3 in MeOH).*Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-azido-6-deoxy-α-D-glucopyranoside* [21893-05-0]C₁₃H₁₉N₃O₈ 345.308Cryst. (Et₂O). Mp 103°. [α]_D²¹ +133 (+155.4) (c, 1.0 in H₂O).Hanessian, S. *et al.*, *Carbohydr. Res.*, 1978, **63**, 265-269 (*synth*)Maunier, V. *et al.*, *Carbohydr. Res.*, 1997, **299**, 49-57 (*synth*, *pmr*, *cmr*)**5-Azido-5-deoxylyxose**

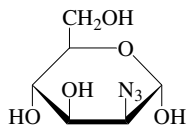
A-911



α-D-Furanose-form

C₅H₉N₃O₄ 175.144**D-form** [182575-46-8]Syrup. [α]_D²⁰ +13 (c, 0.4 in H₂O). Mixt. of α- and β-fur anomers.**β-D-Furanose-form***1,2-O-Isopropylidene: 5-Azido-5-deoxy-1,2-O-isopropylidene-β-D-lyxofuranose* [182575-44-6]C₈H₁₃N₃O₄ 215.208Cryst. (Et₂O/petrol). Mp 48-49°. [α]_D²⁰ +45 (c, 1.3 in CHCl₃).Kefurt, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1996, **61**, 1027-1036 (*D-form*, *β-D-fur isopropylidene*)**2-Azido-2-deoxymannose**

A-912



α-D-Pyranose-form

C₆H₁₁N₃O₅ 205.17**D-form** [97604-58-5]Syrup. [α]_D²⁰ -36.4 (c, 1.1 in MeOH).*4,6-Dibenzyl, 1,3-di-Ac: 1,3-Di-O-Acetyl-2-azido-4,6-di-O-benzyl-2-deoxy-D-mannopyranose*

[219313-15-2]

C₂₄H₂₇N₃O₇ 469.493Syrup. [α]_D +8.8 (c, 0.1 in CHCl₃). Mixt. of α and β-anomers, 5:1.**α-D-Pyranose-form***Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-azido-2-deoxy-α-D-mannopyranose*

[68733-20-0]

C₁₄H₁₉N₃O₉ 373.319Mp 134°. [α]_D²⁰ +81.4 (c, 1.0 in CHCl₃).*tert-Butyldimethylsilyl glycoside, 3,4,6-tri-Ac: tert-Butyldimethylsilyl 3,4,6-tri-O-acetyl-2-azido-2-deoxy-α-D-mannopyranoside*

[99049-66-8]

C₁₈H₃₁N₃O₈Si 445.544

Cryst. (petrol). Mp 75°.

3-Benzyl, 1,4,6-tri-Ac: 1,4,9-Tri-O-acetyl-2-azido-3-O-benzyl-2-deoxy-α-D-mannopyranose

[115945-98-7]

C₁₉H₂₃N₃O₈ 421.406Syrup. [α]_D²¹ +41.8 (c, 1.032 in CHCl₃).*Me glycoside, 3-benzyl: Methyl 2-azido-3-O-benzyl-2-deoxy-α-D-mannopyranoside* [94119-09-2]C₁₄H₁₉N₃O₅ 309.321Syrup. [α]_D^{23.5} +32.9 (c, 1.055 in CHCl₃).*Me glycoside, 3,4-dibenzyl: Methyl 2-azido-3,4-O-dibenzyl-2-deoxy-α-D-mannopyranoside*

[162406-79-3]

C₂₁H₂₅N₃O₅ 399.446[α]_D²⁰ +33.1 (c, 7.14 in CHCl₃).*Me glycoside, 4,6-dibenzyl: Methyl 2-azido-4,6-di-O-benzyl-2-deoxy-α-D-mannopyranoside*

[219313-12-9]

C₂₁H₂₅N₃O₅ 399.446Syrup. [α]_D +94.6 (c, 0.3 in CHCl₃).*Me glycoside, 4,6-dibenzyl, 3-Ac: Methyl 3-O-acetyl-2-azido-4,6-di-O-benzyl-2-deoxy-α-D-mannopyranoside*

[219313-13-0]

C₂₃H₂₇N₃O₆ 441.483Syrup. [α]_D +72 (c, 0.5 in CHCl₃).*Me glycoside, 4,6-dibenzyl, 3-benzoyl: Methyl 2-azido-3-O-benzoyl-4,6-di-O-benzyl-2-deoxy-α-D-mannopyranoside*

[219313-11-8]

C₂₈H₂₉N₃O₆ 503.554Syrup. [α]_D +72 (c, 2.9 in CHCl₃).*Me glycoside, 4,6-O-benzylidene: Methyl 2-azido-4,6-O-benzylidene-2-deoxy-α-D-mannopyranoside*

[116003-78-2]

C₁₄H₁₇N₃O₅ 307.305Syrup. [α]_D²⁵ +69.5 (c, 1.06 in CHCl₃).*Me glycoside, 4,6-O-benzylidene, 3-Ac: Methyl 3-O-acetyl-2-azido-4,6-O-benzylidene-2-deoxy-α-D-mannopyranoside*

[115945-97-6]

C₁₆H₁₉N₃O₆ 349.343Syrup. [α]_D^{25.5} +39.1 (c, 1.005 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, 3-benzyl: Methyl 2-azido-3-O-benzyl-4,6-O-benzylidene-2-deoxy- α -D-mannopyranoside [94160-78-8]

$C_{21}H_{23}N_3O_5$ 397.43

Syrup. $[\alpha]_D^{25} +47.8$ (c, 1.056 in $CHCl_3$).

Allyl glycoside, 3,4,6-tri-Ac: Allyl 3,4,6-tri-O-acetyl-2-azido-2-deoxy- α -D-mannopyranoside [95451-94-8]

$C_{15}H_{21}N_3O_8$ 371.346

Syrup. $[\alpha]_D^{20} +90.2$ (c, 0.7 in $CHCl_3$).

Benzyl glycoside, 3-benzyl: Benzyl 2-azido-3-O-benzyl-2-deoxy- α -D-mannopyranoside [106837-21-2]

$C_{20}H_{23}N_3O_5$ 385.419

Syrup. $[\alpha]_D^{20} +49$ (c, 1.3 in $CHCl_3$).

Benzyl glycoside, 3-benzyl, 4,6-O-benzylidene: Benzyl 2-azido-3-O-benzyl-4,6-O-benzylidene-2-deoxy- α -D-mannopyranoside [106837-20-1]

$C_{27}H_{27}N_3O_5$ 473.527

Syrup. $[\alpha]_D^{20} +51$ (c, 2.0 in $CHCl_3$).

β -D-Pyranose-form [124314-44-9]

Me glycoside: Methyl 2-azido-2-deoxy- β -D-mannopyranoside [97604-60-9]

$C_7H_{13}N_3O_5$ 219.197

Syrup. $[\alpha]_D^{20} -134.7$ (c, 0.6 in MeOH).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-methyl-2-azido-2-deoxy- β -D-mannopyranoside [97604-59-6]

$C_{13}H_{19}N_3O_8$ 345.308

Cryst. (toluene/hexane). Mp 132°. $[\alpha]_D^{20} -88.4$ (c, 1.7 in MeOH).

Allyl glycoside, tri-Ac: Allyl 3,4,6-tri-O-acetyl-2-azido-2-deoxy- β -D-mannopyranoside [97604-61-0]

$C_{15}H_{21}N_3O_8$ 371.346

Mp 137°. $[\alpha]_D^{20} -83.2$ (c, 1.1 in $CHCl_3$).

Me glycoside, 3-benzyl, 4,6-O-benzylidene: Methyl 2-azido-3-O-benzyl-4,6-O-benzylidene-2-deoxy- β -D-mannopyranoside [97604-59-6]

$C_{21}H_{23}N_3O_5$ 397.43

Cryst. (EtOH). Mp 70-74°. $[\alpha]_D -73$

(c, 1.0 in $CHCl_3$).

Me glycoside, 4,6-di-O-benzylidene, 3-Ac: Methyl 3-O-acetyl-2-azido-4,6-O-benzylidene-2-deoxy- β -D-mannopyranoside [97604-59-6]

$C_{16}H_{19}N_3O_6$ 349.343

Cryst. (EtOH). Mp 131-134°. $[\alpha]_D -122$

(c, 0.31 in $CHCl_3$).

Kinzy, W. *et al.*, *Annalen*, 1985, 1537-1545 (*silyl glycoside 3,4,6-tri-Ac*)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1985, **136**, 153-157 (*synth, Me glycosides, allyl glycosides*)

Paulsen, H. *et al.*, *Annalen*, 1987, 431-437 (*benzyl glycosides*)

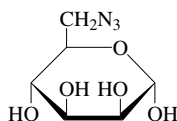
Sugawara, T. *et al.*, *Carbohydr. Res.*, 1988, **172**, 195-207 (*Me gly 3-benzyl, 3-benzyl 4,6-benzylidene, 4,6-benzylidene*)

Auge, C. *et al.*, *Carbohydr. Res.*, 1989, **188**, 201-205 (*synth*)

Yang, G. *et al.*, *Carbohydr. Res.*, 1998, **312**, 77-83 (*4,6-dibenzyl derivs*)

6-Azido-6-deoxymannose

[316379-15-4]



$C_6H_{11}N_3O_5$ 205.17

α -D-Pyranose-form [316379-15-4]

Hygroscopic foam. $[\alpha]_D^{28} +30.5$ (c, 1.54 in H_2O). Anomeric mixt. $\alpha:\beta$ 60:40.

α -D-Pyranose-form [120202-54-2]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-azido-6-deoxy- α -D-mannopyranose [210170-40-4]

$C_{14}H_{19}N_3O_9$ 373.319

Syrup. $[\alpha]_D^{25} +70.6$ (c, 0.68 in $CHCl_3$).

Opt. rotn. for sample containing 16% β -anomer.

Me glycoside: Methyl 6-azido-6-deoxy- α -D-mannopyranoside [66224-56-4]

$C_7H_{13}N_3O_5$ 219.197

Syrup. $[\alpha]_D +70$ (c, 1 in $CHCl_3$).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-azido-6-deoxy- α -D-mannopyranoside [18439-61-7]

$C_{13}H_{19}N_3O_8$ 345.308

Mp 99-100°. $[\alpha]_D^{20} +80.5$ (c, 1.50 in $CHCl_3$).

Me glycoside, 2,3-isopropylidene: Methyl 6-azido-6-deoxy-2,3-O-isopropylidene- α -D-mannopyranoside [120138-99-0]

$C_{10}H_{17}N_3O_5$ 259.261

Syrup. $[\alpha]_D^{28} +10.6$ (c, 1.0 in $CHCl_3$).

α -D-Furanose-form

Me glycoside, 2,3-isopropylidene: Methyl 6-azido-6-deoxy-2,3-O-isopropylidene- α -D-mannofuranoside [210170-42-6]

$C_{10}H_{17}N_3O_5$ 259.261

Syrup. $[\alpha]_D^{25} +52.2$ (c, 2.4 in $CHCl_3$).

Florent, J.-C. *et al.*, *Tetrahedron*, 1978, **34**, 909-914 (α -D-Me pyr)

Kefurt, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1988, **53**, 1795-1805 (*D-form, synth*)

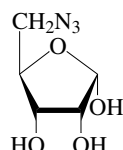
Cottaz, S. *et al.*, *Carbohydr. Res.*, 1993, **247**, 341-345 (α -D-Me pyr tri-Ac)

Kong, D.C.M. *et al.*, *Carbohydr. Res.*, 1998, **305**, 323-329 (α -D-pyr-form, synth, ir, pmr, cmr, ms, α -D-pyr tetra-Ac, α -D-Me-fur isopropylidene)

Kötter, S. *et al.*, *J.C.S. Perkin I*, 1998, 2193-2200 (α -D-Me-pyr tri-Ac)

Ichikawa, Y. *et al.*, *Eur. J. Org. Chem.*, 2004, 468-473 (α -D-Me-pyr isopropylidene)

5-Azido-5-deoxyribose



$C_5H_9N_3O_4$ 175.144

A-913

D-form [182575-45-7]

[144993-83-9]

Syrup. $[\alpha]_D^{20} +105$ (c, 1.2 in H_2O). Mixt. of α - and β -anomers.

α -D-Furanose-form [144993-82-8]

1,2-O-Isopropylidene: 5-Azido-5-deoxy-1,2-O-isopropylidene- α -D-ribofuranose [182575-42-4]

$C_8H_{13}N_3O_4$ 215.208

Cryst. (Et₂O/petrol). Mp 50.5-51.5°.

$[\alpha]_D^{20} +65.5$ (c, 0.5 in $CHCl_3$).

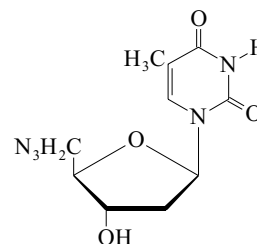
Eur. Pat., 1992, 496 617, (*Gensia*); *CA*, **118**, 234420 (*D-fur-form*)

Kefurt, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1996, **61**, 1027-1036 (*D-form, α -D-fur isopropylidene*)

5'-Azido-5'-deoxythymidine

A-915

[19316-85-9]



$C_{10}H_{13}N_5O_4$ 267.244

Cryst. (MeOH). Mp 164-166.5°. $[\alpha]_D^{25} +98$ (c, 1 in MeOH).

3'-Ac:

$C_{12}H_{15}N_5O_5$ 309.281

Cryst. Mp 113-114°.

Horwitz, J.P. *et al.*, *J.O.C.*, 1962, **27**, 3045 (*synth, uv*)

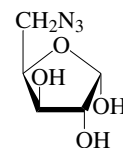
Mullica, D.F. *et al.*, *J. Appl. Crystallogr.*, 1980, **13**, 611 (*cryst struct, Ac*)

Yamamoto, I. *et al.*, *J.C.S. Perkin I*, 1980, 306 (*synth, pmr*)

Schaible, H.G. *et al.*, *Acta Cryst. C*, 1995, **51**, 2410 (*cryst struct*)

5-Azido-5-deoxyxylose

A-916



$C_5H_9N_3O_4$ 175.144

D-form [162089-89-6]

Syrup. $[\alpha]_D^{20} +52$ (c, 1.0 in H_2O). Mixt. of fur-anomers.

α -D-Furanose-form

1,2-O-Isopropylidene: 5-Azido-5-deoxy-1,2-O-isopropylidene- α -D-xylofuranose [4711-03-9]

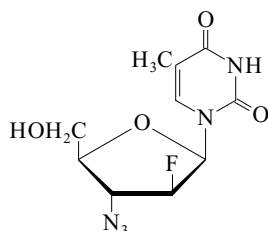
$C_8H_{13}N_3O_4$ 215.208

Cryst. ($CHCl_3$ /hexane). Mp 60°. $[\alpha]_D^{20} -42$ (c, 1.0 in MeOH). $[\alpha]_D^{21} +44$ (c, 1.55 in MeOH). $[\alpha]_D^{20} -39$ (c, 1.2 in $CHCl_3$).

Szarek, W.A. *et al.*, *Can. J. Chem.*, 1965, **43**, 2345-2356 (α -D-fur isopropylidene)

de Raadt, A. *et al.*, *Catal. Today*, 1994, **22**, 549-561 (*D*-form, α -*D*-fur isopropylidene)
Kefurt, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1996, **61**, 1027-1036 (*D*-form, α -*D*-fur isopropylidene)

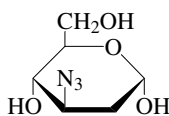
1-(3-Azido-2,3-dideoxy-2-fluoro- β -D-arabinofuranosyl)thymine A-917
1-(3-Azido-2,3-dideoxy-2-fluoro- β -D-arabinofuranosyl)-5-methyl-2,4-(1H,3H)-pyrimidinedione, 9CI. F-AZT
[124424-26-6]



C₁₀H₁₂FN₅O₄ 285.234
Does not show significant antiviral activity. Cryst. (Me₂CO/petrol). Mp 45-50°.

Watanabe, K.A. *et al.*, *J. Med. Chem.*, 1990, **33**, 2145 (*synth*, *ir*, *pmr*)
Sterzycki, R.Z. *et al.*, *J. Med. Chem.*, 1990, **33**, 2150 (*synth*, *pmr*, *cmr*)

3-Azido-2,3-dideoxy-arabino-hexose A-918



C₆H₁₁N₃O₄ 189.171

α -D-Pyranose-form

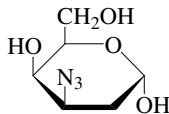
Me glycoside: Methyl 3-azido-2,3-dideoxy- α -D-arabino-hexopyranoside
C₇H₁₃N₃O₄ 203.197
Cryst. (EtOAc/hexane). Mp 117-119°.
[α]_D²⁰ +175 (c, 1.0 in MeOH).

Me glycoside, 4,6-di-Ac: Methyl 4,6-di-O-acetyl-3-azido-2,3-dideoxy- α -D-arabino-hexopyranoside

C₁₁H₁₇N₃O₆ 287.272
Syrup. [α]_D²⁰ +81 (c, 1.0 in CHCl₃).

Dabrowska, A. *et al.*, *Carbohydr. Res.*, 2000, **323**, 230-234 (*synth*, *pmr*, *cmr*, *cryst struct*)

3-Azido-2,3-dideoxy-lyxo-hexose A-919



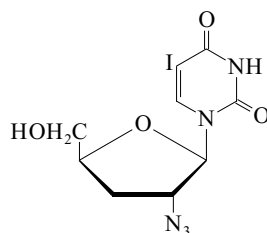
C₆H₁₁N₃O₄ 189.171

α -D-Pyranose-form

Me glycoside: Methyl 3-azido-2,3-dideoxy- α -D-lyxo-hexopyranoside
[562791-51-9]
C₇H₁₃N₃O₄ 203.197
Mp 80-81°. [α]_D²⁰ +138 (c, 1.0 in CHCl₃).

Liberek, B. *et al.*, *Carbohydr. Res.*, 2003, **338**, 795-799 (*Me* α -*D*-gly, *synth*, *ir*, *pmr*, *cmr*, *cryst struct*)

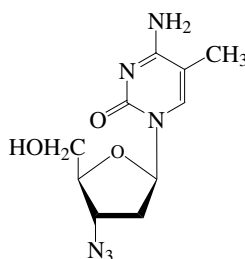
2'-Azido-2',3'-dideoxy-5-iodouridine A-920
[126543-50-8]



C₉H₁₀IN₅O₄ 379.114
Solid. Mp 152-154°.

Warshaw, J.A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1663 (*synth*, *ir*, *pmr*, *uv*)

3'-Azido-2',3'-dideoxy-5-methylcytidine, 9CI A-921
CS 92
[87190-79-2]



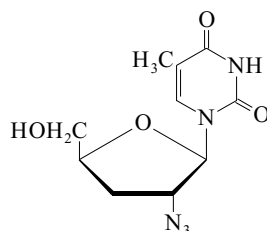
C₁₀H₁₄N₆O₃ 266.259
Anti-HIV agent.

Hydrochloride: [108895-45-0]

Cryst. Mp 176° dec.

Eur. Pat., 1986, 217 580, (*Wellcome*); *CA*, **107**, 40276d (*synth*, *pharmacol*)
Herdewijn, P. *et al.*, *J. Med. Chem.*, 1987, **30**, 1270-1278 (*synth*, *pmr*, *pharmacol*)
Boudinot, F.D. *et al.*, *Drug Metab. Dispos.*, 1993, **21**, 855-860 (*pharmacokinetic*)

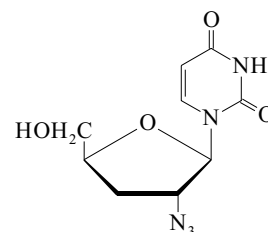
2'-Azido-2',3'-dideoxy-5-methyluridine A-922
[126543-51-9]



C₁₀H₁₃N₅O₄ 267.244
Solid. Mp 167-169°. Regioisomer of Zidovudine, Z-4.

Warshaw, J.A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1663 (*synth*, *ir*, *pmr*, *uv*)

2'-Azido-2',3'-dideoxyuridine A-923
[126543-45-1]

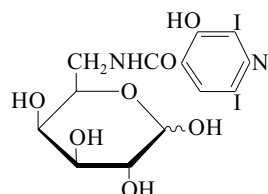


C₉H₁₁N₅O₄ 253.217

Cryst. (EtOH). Mp 167-169°.

Warshaw, J.A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1663 (*synth*, *pmr*, *ir*, *uv*)

6-(4-Azido-2-hydroxy-3,5-diiodobenzamido)-6-deoxygalactose A-924



C₁₃H₁₄I₂N₄O₇ 592.085

***D*-form**

Photoaffinity reagent.

Cryst. (MeOH). Mp 165-167° dec.

α -D-Pyranose-form

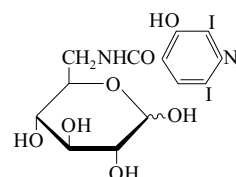
1,2:3,4-Di-O-isopropylidene:

C₁₉H₂₂I₂N₄O₇ 672.214

Needles (MeOH aq.). Mp 90-92°.

Husain, S.N. *et al.*, *Carbohydr. Res.*, 1983, **118**, 57 (*synth*, *pmr*)

6-(4-Azido-2-hydroxy-3,5-diiodobenzamido)-6-deoxyglucose A-925



D-Pyranose-form

C₁₃H₁₄I₂N₄O₇ 592.085

***D*-form**

Photoaffinity reagent.

Cryst. (MeOH). Mp 197-200°.

α -D-Furanose-form

1,2:3,5-Di-O-isopropylidene: 6-(4-Azido-3,5-diiodo-2-hydroxybenzamido)-6-deoxy-1,2:3,5-di-O-isopropylidene- α -D-glucopyranose

C₁₉H₂₂I₂N₄O₇ 672.214

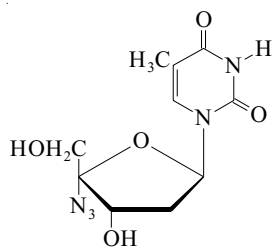
Needles (MeOH aq.). Mp 95-97°.

Husain, S.N. *et al.*, *Carbohydr. Res.*, 1983, **118**, 57 (*synth*, *pmr*)

4'-Azidothymidine, 9CI

A-926

[130108-72-4]

 $C_{10}H_{13}N_5O_5$ 283.243

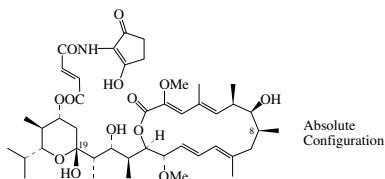
Potent and selective inhibitor of HIV.

Cryst. (EtOH). Mp 175-176°.

Chen, M.S. *et al.*, *J. Biol. Chem.*, 1992, **267**, 257
(*biochem*)Maag, H. *et al.*, *J. Med. Chem.*, 1992, **35**, 1440;
1994, **37**, 431 (*synth, uv, pmr, ir, cryst struct,*
conformn, bibl)

Bafilomycin B₁

37-Decarboxy-2-demethyl-37-[[(2-hydroxy-5-oxo-1-cyclopenten-1-yl)amino] carbonyl]-2-methoxy-24-methylhygrolidin. *Setamycin* [88899-56-3]



C₄₄H₆₅NO₁₃ 815.996

Macrolide antibiotic. Prod. by *Streptomyces griseus* sp. *sulphureus*. Also isol. from actinomycete strain KM-6054 and *Kitasatospora setae*. Active against gram-positive bacteria, trichomonads, fungi and yeasts. Potential antiosteoporotic agent. Yellow amorph. powder. Mp 134-135° (*Setamycin*) Mp 89-96° dec. [α]_D²⁵ +18.3 (c, 1 in MeOH). C-8 stereochem. incorrectly shown in refs. λ_{max} 248 (ε 35000); 285 (sh) (ε 12600); 355 (ε 12500) (MeOH) (*Derep*).

► NG8841000

O¹⁹-*Me*: Bafilomycin B₂

[88907-48-6]

C₄₅H₆₇NO₁₃ 830.023

Formed during isolation procedure. Inactive. Sol. MeOH, Me₂CO; poorly sol. H₂O, hexane. λ_{max} 209 (ε 24170); 246 (ε 32870); 283 (ε 14120) (MeOH) (*Berdy*).

[80112-34-1]

Omura, S. *et al.*, *J. Antibiot.*, 1981, **34**, 1253; 1633 (*Setamycin*, *isol*, *uv*, *ir*, *pmr*)

Werner, G. *et al.*, *Tet. Lett.*, 1983, **24**, 5193 (*Bafilomycin*)

Ger. Pat., 1984, 3 310 533; *CA*, **102**, 22799 (*Bafilomycin*)

Werner, G. *et al.*, *J. Antibiot.*, 1984, **37**, 110 (*Bafilomycin*)

Otogura, K. *et al.*, *J. Antibiot.*, 1988, **41**, 250 (*Setamycin*, *struct*, *props*)

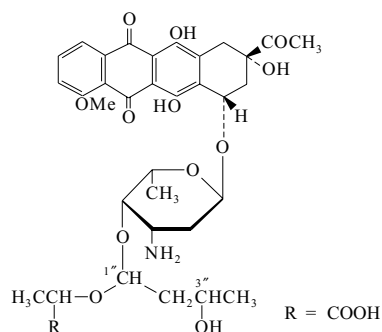
Woo, J.-T. *et al.*, *Biol. Pharm. Bull.*, 1996, **19**, 297-298 (*activity*)

O'Shea, M.G. *et al.*, *J. Antibiot.*, 1997, **50**, 1073-1077 (*abs config*)

Schuhmann, T. *et al.*, *J. Antibiot.*, 2004, **57**, 655-661 (*biosynth*)

Baumycin B1

[64253-72-1]



C₃₄H₄₁NO₁₄ 687.696

B-1

Anthracycline antibiotic. Prod. by *Streptomyces coeruleorubidus* ATCC31276. Shows antitumour activity. Red needles. Sol. MeOH, DMSO, acids, CHCl₃; poorly sol. H₂O, hexane. Mp 181-185°. [α]_D²³ +170 (c, 0.1 in CHCl₃/MeOH). λ_{max} 234 (E1%/1cm 552); 253 (E1%/1cm 385); 290 (E1%/1cm 132); 476 (E1%/1cm 179); 495 (E1%/1cm 181); 530 (E1%/1cm 101) (MeOH) (*Berdy*). λ_{max} 251 (E1%/1cm 453); 380 (E1%/1cm 65); 556 (E1%/1cm 206); 594 (E1%/1cm 195) (MeOH/NaOH) (*Berdy*).

► LD₅₀ (mus, ipr) 40 - 60 mg/kg. Q19297100

Stereoisomer: Baumycin B2

[64312-53-4]

C₃₄H₄₁NO₁₄ 687.696

Prod. by *Streptomyces coeruleorubidus* ATCC31276. Antitumour agent. Red needles. Sol. MeOH, CHCl₃, acids, DMSO; poorly sol. H₂O, hexane. Mp 197-201°. [α]_D²³ +170 (c, 0.1 in CHCl₃/MeOH). Stereoisomeric at C-1'' or C-3''. λ_{max} 234 (E1%/1cm 575); 252 (E1%/1cm 414); 290 (E1%/1cm 130); 478 (E1%/1cm 176); 495 (E1%/1cm 183); 530 (E1%/1cm 120); 577 (E1%/1cm 40) (MeOH) (*Berdy*). λ_{max} 251 (E1%/1cm 499); 350 (E1%/1cm 74); 556 (E1%/1cm 231); 594 (E1%/1cm 218) (MeOH/NaOH) (*Berdy*).

► LD₅₀ (mus, ipr) 75 - 100 mg/kg.

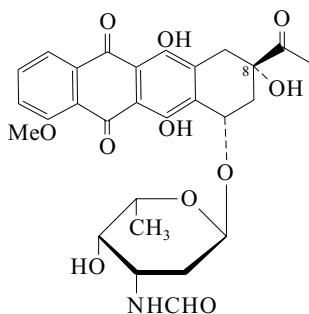
Belg. Pat., 1977, 855 098 (*Baumycins B1 and B2*)

Komiyama, T. *et al.*, *J. Antibiot.*, 1977, **30**, 619 (*isol*, *ir*, *uv*, *ms*, *pmr*, *struct*)

Takahashi, Y. *et al.*, *J. Antibiot.*, 1977, **30**, 622 (*struct*)

Baumycin C1

[63084-42-4]

**B-3**

C₂₈H₂₉NO₁₁ 555.537

Anthracycline antibiotic. Isol. from *Streptomyces coeruleorubidus*. Shows antitumour activity. Orange-red cryst. Mp 154-157°. [α]_D²⁵ +260 (c, 0.1 in CHCl₃). λ_{max} 234 (E1%/1cm 663); 252 (E1%/1cm 480); 290 (E1%/1cm 145); 478 (E1%/1cm 195); 496 (E1%/1cm 204); 531 (E1%/1cm 137); 575 (E1%/1cm 44) (MeOH) (*Berdy*). λ_{max} 251 (E1%/1cm 570); 360 (E1%/1cm 85); 557 (E1%/1cm 254); 596 (E1%/1cm 244) (MeOH-NAOH) (*Berdy*).

► Q19295600

8-*De-Ac*, 8-(1-hydroxyethyl): *Baumycin C2*

[64479-55-6]

C₂₈H₃₁NO₁₁ 557.553

Isol. from *Streptomyces coeruleorubidus*. Shows antitumour activity. Red needles. Mp 213-215°. [α]_D²³ +240 (c, 0.1 in MeOH). λ_{max} 235 (E1%/1cm 510); 252 (E1%/1cm 422); 291 (E1%/1cm 125); 478 (E1%/1cm 161); 496 (E1%/1cm 172); 531 (E1%/1cm 124); 575 (E1%/1cm 44) (MeOH) (*Berdy*). ► Q19445000

Komiyama, T. *et al.*, *J. Antibiot.*, 1977, **30**, 619 (*isol*, *ir*, *uv*, *ms*, *nmr*, *struct*)

Takahashi, Y. *et al.*, *J. Antibiot.*, 1977, **30**, 622 (*struct*)

Beijeran**B-4**

[→3]-α-D-GalA-(1→3)-β-L-Rha-(1→3)-α-D-Glc-6-Ac-(1→)[Exopolysaccharide prod. by *Azotobacter beijerinckii* YNM1. Proposed for use in cosmetics and food industries.

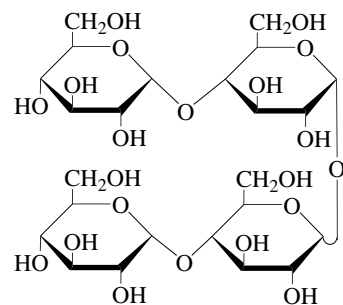
Ogawa, K. *et al.*, *Carbohydr. Res.*, 1997, **300**, 41-45 (*conform*)

Yui, T. *et al.*, *Carbohydr. Res.*, 1997, **304**, 341-345 (*struct*)

Bian, W. *et al.*, *Carbohydr. Res.*, 2002, **337**, 305-314 (*Na salt*, *cryst struct*)

Bemisiotetrose**B-5**

α-D-Glucopyranosyl-(1→4)-α-D-glucopyranosyl α-D-glucopyranosyl-(1→4)-α-D-glucopyranoside, 9CI. α-D-Maltopyranosyl α-D-maltopyranoside. Maltosyl maltoside [181489-17-8]



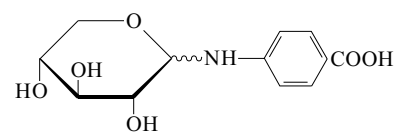
C₂₄H₄₂O₂₁ 666.583

Isol. from the honeydew secreted by the whitefly *Bemisia argentifolii* feeding on cotton. No phys. props. reported.

Wei, Y.-A. *et al.*, *J. Agric. Food Chem.*, 1996, **44**, 3214-3218 (*isol*, *struct*, *pmr*, *cmr*)

Benaxibine, INN**B-6**

4-(Xylosylamino)benzoic acid, 8CI. N-(4-Carboxyphenyl)xylosamine. Chevalizon [27661-27-4]



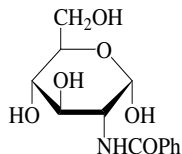
C₁₂H₁₅NO₆ 269.254

Antineoplastic agent (cyclophosphamide synergiser); antidiabetic, antihypertensive agent. Immunopotentiator. Cryst. (EtOH aq.). Mp 172°. [α]_D²⁰ +61.6 (EtOH). Log P -0.81 (calc).

Na salt: K-247 [72782-43-5]

Cryst. (Me₂CO aq.). Mp 149-158°.
 ▶ LD₅₀ (rat, orl) 25400 mg/kg. DI1055000
 Inoue, Y. *et al.*, *Nippon Nogei Kagaku Kaishi*, 1951, **25**, 59; *CA*, **48**, 2001c (synth)
 Shcherbukhin, V.D. *et al.*, *Dokl. Akad. Nauk SSSR, Ser. Khim.*, 1967, **174**, 725; **177**, 607 (ir)
 Stepanenko, B.N. *et al.*, *Dokl. Akad. Nauk SSSR, Ser. Khim.*, 1967, **177**, 607
 U.S. Pat., 1982, 4 315 921, (Kureha); *CA*, **96**, 168753d (synth, pharmacol)
 Toge, T. *et al.*, *Int. J. Immunopharmacol.*, 1984, **6**, 55 (pharmacol)

2-Benzamido-2-deoxyglucose **B-7**
 2-(Benzoylamino)-2-deoxyglucose, 9CI.
 N-Benzoylglucosamine



α-D-Pyranose-form

C₁₃H₁₇NO₆ 283.28

D-form [655-42-5]
 Mp 196-200°.

3,4,6-Tri-Me: 2-Benzamido-2-deoxy-3,4,6-tri-O-methyl-D-glucopyranose
 C₁₆H₂₃NO₆ 325.361
 Mp 213°. [α]_D²⁰ +124 → +105 (Py aq.).

3,4,6-Tribenzyl: 2-Benzamido-3,4,6-tri-O-benzyl-2-deoxy-D-glucopyranose [37111-93-6]
 C₃₄H₃₅NO₆ 553.654
 Needles (EtOH). Mp 221-222°. [α]_D²⁰ +89 (c, 0.5 in CHCl₃).

α-D-form

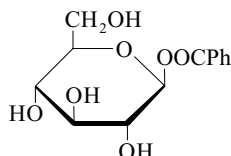
1,3,6-Tri-Ac: 1,3,6-Tri-O-acetyl-2-benzamido-2-deoxy-α-D-glucopyranose
 C₁₉H₂₃NO₉ 409.392
 Mp 128-129°. [α]_D²⁰ +95 (c, 0.43 in CHCl₃).
 1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-benzamido-2-deoxy-α-D-glucopyranose
 C₂₁H₂₅NO₁₀ 451.429
 Cryst. (MeOH/Et₂O). Mp 178-179°. [α]_D²⁰ +111 (c, 0.5 in CHCl₃).
 1,2N,3,4,6-Penta-Ac: 1,3,4,6-Tetra-O-acetyl-2-(N-acetylbenzamido)-2-deoxy-α-D-glucopyranose
 C₂₃H₂₇NO₁₁ 493.466
 Mp 115-117°. [α]_D²⁰ +88 (c, 0.88 in CHCl₃).

β-D-form

1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-benzamido-2-deoxy-β-D-glucopyranose [10385-49-6]
 C₂₁H₂₅NO₁₀ 451.429
 Cryst. (EtOH). Mp 230° Mp 240°. [α]_D²¹ +41.9 (CHCl₃).
 1,2N-3,4,6-Penta-Ac: 1,3,4,6-Tetra-O-acetyl-2-(N-acetylbenzamido)-2-deoxy-β-D-glucopyranose
 C₂₃H₂₇NO₁₁ 493.466
 Mp 118-119°. [α]_D²⁰ -22 (c, 0.85 in CHCl₃).

tert-Butyl glycoside, 3,4,6-tribenzyl: C₃₈H₄₃NO₆ 609.761
 Needles (EtOH). Mp 177-178°. [α]_D²⁰ +25 (c, 1.2 in CHCl₃).
 Bergmann, M. *et al.*, *Ber.*, 1931, **64**, 975, (tetra-Ac)
 Foster, A.B. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 247 (rev)
 Micheel, F. *et al.*, *Chem. Ber.*, 1958, **91**, 673 (tetra-Ac)
 Harrison, R. *et al.*, *J.O.C.*, 1965, **30**, 2317, (D-tribenzyl, β-D-tert-butyl pyr tribenzyl)
 Inch, T.D. *et al.*, *J.O.C.*, 1966, **31**, 1815; 1821, (α-D-pyr tetra-Ac, α-D-pyr penta-Ac, β-D-pyr penta-Ac, β-D-pyr tetra-Ac)

1-O-Benzoylglucose
 Glucosyl benzoate



C₁₃H₁₆O₇ 284.265

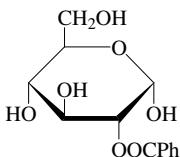
β-D-Pyranose-form

Periplanetin
 [21056-52-0]
 Constit. of *Nauclea*, *Pinus* and *Vaccinium* spp. Also isol. from the cockroaches *Blattella orientalis* and *Periplaneta americana*.
 Mp 193° (187-188°). [α]_D²⁰ -27 (c, 0.4 in H₂O).
 Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1-O-benzoyl-β-D-glucopyranoside [38430-69-2]
 C₂₁H₂₄O₁₁ 452.414
 Mp 145-146° (140-141°). [α]_D -28.6 (c, 0.7 in CHCl₃).
 [123632-51-9]

Quilico, A. *et al.*, *Tetrahedron*, 1959, **5**, 10-14 (isol, ir, struct)
 Higuchi, R. *et al.*, *Phytochemistry*, 1977, **16**, 1587-1590 (isol)
 Horsley, S.B. *et al.*, *Phytochemistry*, 1981, **20**, 1127 (isol, ir, pmr, cmr, ms)
 Pfander, H. *et al.*, *Carbohydr. Res.*, 1982, **99**, 175-179 (synth)
 Jansson, K. *et al.*, *J.O.C.*, 1988, **53**, 5629 (synth)
 Bols, M. *et al.*, *Acta Chem. Scand.*, 1993, **47**, 818-822 (synth)
 Kaneko, T. *et al.*, *Phytochemistry*, 1998, **47**, 259-263 (isol, pmr, cmr)

2-O-Benzoylglucose

B-9



α-D-Pyranose-form

C₁₃H₁₆O₇ 284.265

D-form [63029-01-6]

Constit. of *Vaccinium vitis-idaea* (cowberry) and *Vaccinium macrocarpon* (cranberry).

α-D-Pyranose-form [80358-04-9]
 Constit. of *Globularia nudicaulis*.

Chaudhuri, R.K. *et al.*, *Helv. Chim. Acta*, 1981, **64**, 2401-2404 (isol, pmr, cmr)
 Heimhuber, B. *et al.*, *Phytochemistry*, 1990, **29**, 2726-2727 (isol, synth, nmr)

3-O-Benzoylglucose

B-10

C₁₃H₁₆O₇ 284.265

β-D-Pyranose-form [80358-05-0]

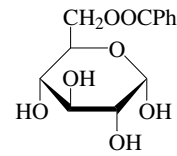
Constit. of *Globularia nudicaulis*.
 Amorph. powder. [α]_D²⁵ -13.1 (c, 0.7 in MeOH).

Chaudhuri, R.K. *et al.*, *Helv. Chim. Acta*, 1981, **64**, 2401-2404 (isol, ir, pmr, cmr)

6-O-Benzoylglucose

B-11

Glucose 6-benzoate, 9CI. *Vacciniin*



α-D-Pyranose-form

C₁₃H₁₆O₇ 284.265

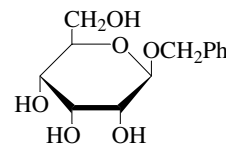
D-form [14200-76-1]

Isol. from *Vaccinium* sp. (red whortleberries and cranberries).
 Amorph., cryst. hydrate (Me₂CO).
 Mp 104-106°. [α]_D +48 (EtOH).
 [90-75-5, 130323-07-8]

Brigl, P. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1934, **229**, 117 (isol, struct)
 Heimhuber, B. *et al.*, *Phytochemistry*, 1990, **29**, 2726 (isol, synth, pmr)

Benzyl alloside

B-12



C₁₃H₁₈O₆ 270.282

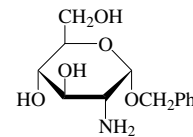
β-D-Pyranose-form [354807-69-5]

Constit. of the leaves and stems of *Passiflora edulis*.
 Characterised spectroscopically.
 Christensen, J. *et al.*, *Org. Lett.*, 2001, **3**, 2193-2195 (isol, pmr, cmr)
 Siegler, D.S. *et al.*, *Phytochemistry*, 2002, **60**, 873-882 (isol)

Benzyl 2-amino-2-deoxyglucopyranoside

B-13

Phenylmethyl 2-amino-2-deoxyglucopyranoside, 9CI. Benzylglucosaminide [50692-69-8]



α-D-Pyranose-form

C₁₃H₁₉NO₅ 269.297

α -D-form*Hydrochloride:*

Granules (2-propanol). Mp 233-234°. $[\alpha]_D^{20} +124$ (c, 1 in H₂O).

N-Ac: Benzyl 2-acetamido-2-deoxy- α -D-glucopyranoside
[13343-62-9]
C₁₅H₂₁NO₆ 311.334
Mp 185-186°. $[\alpha]_D^{20} +168$ (c, 0.2 in H₂O).

4,6-O-Benzylidene, N-Ac: Benzyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-glucopyranoside
[13343-63-0]
C₂₂H₂₅NO₆ 399.443
Prisms (dioxan/2-propanol). Mp 263-264°. $[\alpha]_D^{20} +120$ (c, 1 in Py).

4,6-O-Benzylidene, 3-benzoyl, N-Ac: Benzyl 2-acetamido-3-O-benzoyl-4,6-O-benzylidene-2-deoxy- α -D-glucopyranoside
C₂₉H₂₉NO₇ 503.551
Cryst. (C₆H₆). Mp 218-220°. $[\alpha]_D^{21} +44$ (c, 1 in Py).

3,6-Dibenzyl, N-Ac: Benzyl 2-acetamido-3,6-di-O-benzyl-2-deoxy- α -D-glucopyranoside
[55287-49-5]
C₂₉H₃₃NO₆ 491.583
Cryst. (EtOAc/Et₂O). Mp 145°. $[\alpha]_D^{20} +114$ (c, 1 in CHCl₃).

3,4,6-Tri-Me, N-Ac: Benzyl 2-acetamido-2-deoxy-3,4,6-tri-O-methyl- α -D-glucopyranoside
C₁₈H₂₇NO₆ 353.414
Mp 138°. $[\alpha]_D +118.2$ (MeOH).

3,4,6-Tri-Me, N-benzoyl: Benzyl 2-benzamido-2-deoxy-3,4,6-tri-O-methyl- α -D-glucopyranoside
C₂₃H₂₉NO₆ 415.485
Mp 184°. $[\alpha]_D +123.2$ (CHCl₃).

3-Benzyl, N-benzoyloxycarbonyl, 6-Ac: Benzyl 6-O-acetyl-3-O-benzyl-2N-(benzyloxycarbonylamino)-2-deoxy- α -D-glucopyranoside
C₃₀H₃₃NO₈ 535.593
Mp 114-115°. $[\alpha]_D^{23} +88$ (c, 1.0 in CHCl₃).

 β -D-form [22314-39-2]

Hydrochloride: Mp 176°. $[\alpha]_D +51.5$ (H₂O).

N-Ac: Benzyl 2-acetamido-2-deoxy- β -D-glucopyranoside
[13343-67-4]
C₁₅H₂₁NO₆ 311.334
Prisms (EtOH). Mp 207-208°. $[\alpha]_D^{26} -48$ (c, 1 in H₂O).

3,4,6-Tri-Ac: Benzyl 3,4,6-tri-O-acetyl-2-amino-2-deoxy- β -D-glucopyranoside
C₁₉H₂₅NO₈ 395.408
Mp 237-240° (as hydrobromide). $[\alpha]_D +24.2$ (CHCl₃).

2N,3,4,6-Tetra-Ac: Benzyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy- β -D-glucopyranoside
C₂₁H₂₇NO₉ 437.446
Mp 163°. $[\alpha]_D -38.3$ (CHCl₃).

N-Benzoyl, 3,4,6-tri-Ac: Benzyl 3,4,6-tri-O-acetyl-2-benzamido-2-deoxy- β -D-glucopyranoside
C₂₆H₂₉NO₉ 499.516
Mp 216°. $[\alpha]_D -6.4$ (CHCl₃).

4,6-O-Isopropylidene, N-Ac: Benzyl 2-acetamido-2-deoxy-4,6-O-isopropylidene- β -D-glucopyranoside
C₁₈H₂₅NO₆ 351.399
Needles (EtOH/hexane). Mp 174-176°. $[\alpha]_D^{20} -60$ (c, 0.6 in CHCl₃).

4,6-O-Isopropylidene, N-benzoyl: Benzyl 2-benzamido-2-deoxy-4,6-O-isopropylidene- β -D-glucopyranoside
C₂₃H₂₇NO₆ 413.469
Needles (EtOH). Mp 203-204°. $[\alpha]_D^{20} -71.6$ (c, 1.6 in CHCl₃).

4,6-O-Benzylidene, N-Ac: Benzyl 2-acetamido-4,6-O-benzylidene-2-deoxy- β -D-glucopyranoside
[13343-61-8]
C₂₂H₂₅NO₆ 399.443
Prismatic needles (dioxan). Mp 270-271°. $[\alpha]_D^{25} -89$ (c, 0.8 in Py).

3,4,6-Tri-Me, N-Ac: Benzyl 2-acetamido-2-deoxy-3,4,6-tri-O-methyl- β -D-glucopyranoside
C₁₈H₂₇NO₆ 353.414
Mp 174°. $[\alpha]_D -36.2$ (CHCl₃).

3,4,6-Tri-Me, N-benzoyl: Benzyl 2-benzamido-2-deoxy-3,4,6-tri-O-methyl- β -D-glucopyranoside
C₂₃H₂₉NO₆ 415.485
Mp 180°. $[\alpha]_D -21.8$ (CHCl₃).

3-Benzyl, 4,6-O-isopropylidene, N-Ac: Benzyl 2-acetamido-3-O-benzyl-2-deoxy-4,6-O-isopropylidene- β -D-glucopyranoside
C₂₅H₃₁NO₆ 441.523
Needles (EtOH/hexane). Mp 152-153°. $[\alpha]_D^{20} -21$ (c, 1 in CHCl₃).

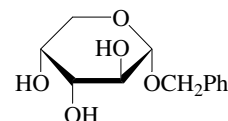
3,4,6-Tribenzyl, N-Ac: Benzyl 2-acetamido-3,4,6-tri-O-benzyl-2-deoxy- β -D-glucopyranoside
C₃₆H₃₉NO₆ 581.707
Cryst. (MeOH). Mp 160-161° Mp 170-172°. $[\alpha]_D^{20} -12.1$ (c, 1.3 in CHCl₃).

3,4,6-Tribenzyl, N-benzoyl: Benzyl 2-benzamido-3,4,6-tri-O-benzyl-2-deoxy- β -D-glucopyranoside
C₄₁H₄₁NO₆ 643.778
Cryst. (EtOH). Mp 154-158°. $[\alpha]_D^{20} +28$ (c, 1.38 in CHCl₃).

3,4,6-Tribenzyl, N-Ac: Benzyl 2-(N-acetylbenzamido)-3,4,6-tri-O-benzyl-2-deoxy- β -D-glucopyranoside
C₄₃H₄₃NO₇ 685.815
 $[\alpha]_D^{20} -14.3$ (c, 4.13 in CHCl₃).

Foster, A.B. et al., *Adv. Carbohydr. Chem.*, 1952, 7, 247 (rev. derivs)
Kuhn, R. et al., *Annalen*, 1958, 611, 236, (α -D-N-Ac benzoyl benzylidene)
Harrison, R. et al., *J.O.C.*, 1965, 30, 2317, (β -D-N-Ac tribenzyl, β -D-N-benzoyl tribenzyl)
Gross, P.H. et al., *J.O.C.*, 1967, 32, 2759, (β -N-Ac, β -4,6-benzylidene N-Ac)
Miyai, K. et al., *Carbohydr. Res.*, 1972, 21, 45 (α -D-form, synth, α -D-N-Ac)
Shulman, M.L. et al., *Carbohydr. Res.*, 1973, 27, 141 (α -D-N-Ac)
Hasegawa, A. et al., *Carbohydr. Res.*, 1973, 29, 209 (β -D-N-Ac isopropylidene, β -D-N-Ac benzyl isopropylidene, β -D-N-benzoyl isopropylidene)
Rhoads, W.O. et al., *Z. Naturforsch., B*, 1973, 28, 647 (α/β -D-N-Ac)
Jacquinet, J.-C. et al., *Carbohydr. Res.*, 1974, 38, 305 (α -D-N-Ac dibenzyl)

Arendt, A. et al., *Rocz. Chem.*, 1974, 48, 1707 (synth, N-Ac)
Garegg, P.J. et al., *Carbohydr. Res.*, 1981, 93, C10 (α -D-N-Ac dibenzyl)
Jacquinet, J.-C. et al., *Carbohydr. Res.*, 1984, 130, 221 (3-benzyl-N-benzoyloxycarbonyl-6-Ac)

Benzyl arabinopyranoside, 9CI, 8CI**B-14** α -D-formC₁₂H₁₆O₅ 240.255 **α -D-form** [61134-26-7]

Cryst. (H₂O). Mp 140-141°. $[\alpha]_D +12.3$ (H₂O). $[\alpha]_D +49.8$ (EtOH).

Tri-Ac: Benzyl 2,3,4-tri-O-acetyl- α -D-arabinopyranoside
C₁₈H₂₂O₈ 366.367
Cryst. (EtOH aq.). Mp 80-81°. $[\alpha]_D^{25} +25.7$ (c, 3 in CHCl₃).

2-Tosyl: Benzyl 2-O-tosyl- α -D-arabinopyranoside
[61134-28-9]
C₁₉H₂₂O₇S 394.445
Cryst. (MeOH aq.). Mp 110-112°. $[\alpha]_D +22$ (c, 1.0 in CHCl₃).

3,4-O-Isopropylidene: Benzyl 3,4-O-isopropylidene- α -D-arabinopyranoside
[76825-34-8]
C₁₅H₂₀O₅ 280.32
Mp 55-58°. $[\alpha]_D -209$ (c, 2.0 in EtOH).

3,4-O-Isopropylidene, 2-tosyl: Benzyl 3,4-O-isopropylidene-2-O-tosyl- α -D-arabinopyranoside
[61134-27-8]
C₂₂H₂₆O₇S 434.509
Cryst. (EtOH aq.). Mp 80-82°. $[\alpha]_D -12$ (c, 1.0 in CHCl₃).

3,4-O-Benzylidene (R-): Benzyl 3,4-O-(R)-benzylidene- α -D-arabinopyranoside
[38099-78-4]
C₁₉H₂₀O₅ 328.364
Mp 148-149°. $[\alpha]_D +10$ (CHCl₃).

3,4-O-Benzylidene (S-): Benzyl 3,4-O-(S)-benzylidene- α -D-arabinopyranoside
[38099-79-5]
C₁₉H₂₀O₅ 328.364
Mp 116-117°. $[\alpha]_D +8$ (CHCl₃).

 β -D-form [5329-50-0]

Cryst. (EtOH). Mp 172-173°. $[\alpha]_D -209$ (c, 0.41 in H₂O).

Tri-Ac: Benzyl 2,3,4-tri-O-acetyl- β -D-arabinopyranoside
C₁₈H₂₂O₈ 366.367
Cryst. (EtOH aq.). Mp 98-100°. $[\alpha]_D -200.5$ (c, 3 in CHCl₃).

2-Tosyl: Benzyl 2-O-tosyl- β -D-arabinopyranoside
[31079-87-5]
C₁₉H₂₂O₇S 394.445
Cryst. (CHCl₃/petrol). Mp 121° (46-48°). $[\alpha]_D^{25} -165.1$ (c, 0.5 in CHCl₃).

2,4-Ditosyl: Benzyl 2,4-di-O-tosyl- β -D-arabinopyranoside
[31079-88-6]

C₂₆H₂₈O₉S₂ 548.634
Cryst. Mp 126°. [α]_D²⁵ -126.8 (c, 0.5 in CHCl₃).

 α -L-form

Cryst. (MeOH). Mp 138-140°. [α]_D -44.6 (c, 1 in EtOH).

Tri-Ac: Benzyl 2,3,4-tri-O-acetyl- α -L-arabinopyranoside

C₁₈H₂₂O₈ 366.367

Cryst. (EtOH). Mp 79.5-81°. [α]_D -24.4 (CHCl₃).

 β -L-form [7473-38-3]

Mp 172-173°. [α]_D +215.2 (H₂O).

Tri-Ac: Benzyl 2,3,4-tri-O-acetyl- β -L-arabinopyranoside

Cryst. (EtOH aq.). Mp 98-100°. [α]_D +200.5 (CHCl₃).

2,3-Dibenzoyl: Benzyl 2,3-di-O-benzoyl- β -L-arabinopyranoside [18403-13-9]

C₂₆H₂₄O₇ 448.471

Cryst. (EtOAc/petrol). Mp 122-123°. [α]_D²² +204 (c, 0.55 in CHCl₃).

2,3-Dibenzoyl, 4-mesyl: Benzyl 2,3-di-O-benzoyl-4-O-mesyl- β -L-arabinopyranoside [18403-16-2]

C₂₇H₂₆O₉S 526.563

Glass. [α]_D²² +194 (c, 0.96 in CHCl₃).

Tribenzoyl: Benzyl 2,3,4-tri-O-benzoyl- β -L-arabinopyranoside [18403-14-0]

C₃₃H₂₈O₈ 552.579

Syrup. [α]_D²² +277 (c, 1.0 in CHCl₃).

2-Tosyl: Benzyl 2-O-tosyl- β -L-arabinopyranoside [26524-58-3]

C₁₉H₂₂O₇S 394.445

Cryst. (EtOH aq.). Mp 122-123°. [α]_D²³ +133.6 (c, 0.5 in DMF).

3,4-O-Isopropylidene: Benzyl 3,4-O-isopropylidene- β -L-arabinopyranoside [18403-22-0]

C₁₅H₂₀O₅ 280.32

Mp 54-56°. [α]_D +220 (CHCl₃).

3,4-O-Isopropylidene, 2-benzoyl: Benzyl 2-O-benzoyl-3,4-O-isopropylidene- β -L-arabinopyranoside [18403-23-1]

C₂₂H₂₄O₆ 384.428

Cryst. (Me₂CO aq.). Mp 110-112°. [α]_D +212 (CHCl₃).

3,4-O-Isopropylidene, 2-tosyl: Benzyl 3,4-O-isopropylidene-2-tosyl- β -L-arabinopyranoside [68753-33-3]

C₂₂H₂₆O₇S 434.509

Cryst. (EtOAc/hexane). Mp 92-93°. [α]_D +160 (c, 0.25 in CH₂Cl₂).

Fletcher, H.G. *et al.*, *J.A.C.S.*, 1950, **72**, 4173, (α -D-form, β -D-form)

Ballou, C.E. *et al.*, *J.A.C.S.*, 1951, **73**, 1140, (α -D-form, β -D-form, α -L-form, β -L-form, α -D-tri-Ac, β -D-tri-Ac, α -L-tri-Ac, β -L-tri-Ac)

Ballou, C.E. *et al.*, *J.A.C.S.*, 1957, **79**, 165, (α -D-3,4-isopropylidene)

Wold, F. *et al.*, *J.O.C.*, 1961, **26**, 197, (β -L-isopropylidene)

Staněk, J. *et al.*, *The Monosaccharides*, Academic Press, 1963, 255

Cohen, S. *et al.*, *Chem. Ind. (London)*, 1964, 1802 (2-tosyl)

Sivakumaran, T. *et al.*, *Can. J. Chem.*, 1967, **45**, 2493 (β -L-dibenzoyl, β -L-dibenzoyl mesyl, β -L-tribenzoyl, β -L-isopropylidene, β -L-isopropylidene benzoyl)

Holý, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 3383 (β -L-form, synth, β -L-tosyl)

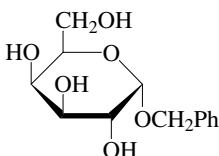
Friedman, N. *et al.*, *Isr. J. Chem.*, 1970, **8**, 663 (β -D-tosyl derivs)

Garegg, P.J. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 518 (α -D-benzylidene)

Buchanan, J.G. *et al.*, *J.C.S. Perkin I*, 1976, 1449 (α -D-isopropylidene tosyl, α -D-tosyl)

Popek, T. *et al.*, *Acta Cryst. C*, 1996, **52**, 1558 (cryst struct, β -L-form, β -L-isopropylidene)

Lugemwa, F.N. *et al.*, *J. Carbohydr. Chem.*, 1997, **16**, 1433-1443 (β -L-form, β -L-isopropylidene, β -L-isopropylidene 2-tosyl, β -L-2-tosyl)

Benzyl galactopyranoside**B-15** α -D-form

C₁₃H₁₈O₆ 270.282

 α -D-form [86196-36-3]

[α]_D²⁵ +158 (c, 0.7 in MeOH).

4,6-O-Benzylidene: Benzyl 4,6-O-benzylidene- α -D-galactopyranoside [57783-86-5]

C₂₀H₂₂O₆ 358.39

Cryst. (EtOH). Mp 108-109°. [α]_D +117 (c, 0.2 in CHCl₃).

6-Benzyl: Benzyl 6-O-benzyl- α -D-galactopyranoside [72550-81-3]

C₂₀H₂₄O₆ 360.406

Cryst. (Et₂O). Mp 126-127°. [α]_D²⁰ +176 (c, 1 in MeOH).

2,3-Dibenzoyl: Benzyl 2,3-di-O-benzoyl- α -D-galactopyranoside [53929-37-6]

C₂₇H₃₀O₆ 450.53

Cryst. (EtOAc/petrol). Mp 116-118°.

[α]_D +87.3 (c, 1 in CHCl₃).

2,3-Dibenzoyl, 4,6-O-benzylidene: Benzyl 2,3-di-O-benzoyl-4,6-O-benzylidene- α -D-galactopyranoside

C₃₄H₃₄O₆ 538.639

Cryst. (EtOH). Mp 140°. [α]_D +111 (c, 0.5 in CHCl₃).

2,6-Dibenzoyl: Benzyl 2,6-di-O-benzoyl- α -D-galactopyranoside [72045-27-3]

C₂₇H₃₀O₆ 450.53

Cryst. (EtOH). Mp 107.5°. [α]_D²⁶ +113 (c, 1 in MeOH).

2,3,4-Tribenzoyl: Benzyl 2,3,4-tri-O-benzoyl- α -D-galactopyranoside [53765-90-5]

C₃₄H₃₆O₆ 540.655

Mp 91-91.5°. [α]_D +58 (CHCl₃).

2,3,4-Tribenzoyl, 6-Me: Benzyl 2,3,4-tri-O-benzoyl-6-O-methyl- α -D-galactopyranoside

C₃₅H₃₈O₆ 554.682

Syrup. [α]_D +70 (c, 0.71 in CHCl₃).

2,3,6-Tribenzoyl: Benzyl 2,3,6-tri-O-benzoyl- α -D-galactopyranoside [53929-38-7]

C₃₄H₃₆O₆ 540.655

Syrup. [α]_D²² +72 (c, 1.0 in CHCl₃).

2-Allyl, 6-benzyl:

C₂₃H₂₈O₆ 400.471

Bp_{0.01} 210°. [α]_D²⁰ +116 (c, 2 in CHCl₃).

 β -D-form [14897-46-2]

Mp 125°. [α]_D²⁷ -25.3 (c, 2.59 in CHCl₃).

2,6-Di-Ac: Benzyl 2,6-di-O-acetyl- β -D-galactopyranoside [16741-11-0]

C₁₇H₂₂O₈ 354.356

Cryst. (C₆H₆). Mp 115-116°. [α]_D²⁵ -36 (c, 1.00 in CHCl₃).

2,3,6-Tri-Ac: Benzyl 2,3,6-tri-O-acetyl- β -D-galactopyranoside [53691-40-0]

C₁₉H₂₄O₉ 396.393

Prisms (diisopropyl ether). Mp 94-95°.

[α]_D -38 (c, 0.86 in CHCl₃).

2,4,6-Tri-Ac: Benzyl 2,4,6-tri-O-acetyl- β -D-galactopyranoside [53691-41-1]

C₁₉H₂₄O₉ 396.393

Needles (diisopropyl ether). Mp 133°.

[α]_D -40 (c, 1.0 in CHCl₃).

3,4,6-Tri-Ac: Benzyl 3,4,6-tri-O-acetyl- β -D-galactopyranoside [53691-39-7]

C₁₉H₂₄O₉ 396.393

Mp 121°. [α]_D -29 (c, 1.14 in CHCl₃).

Tetra-Ac: Benzyl 2,3,4,6-tetra-O-acetyl- β -D-galactopyranoside [83113-54-6]

C₂₁H₂₆O₁₀ 438.43

Syrup. [α]_D -34 (c, 1.12 in CHCl₃).

2-Benzoyl: Benzyl 2-O-benzoyl- β -D-galactopyranoside [16741-15-4]

C₂₀H₂₂O₇ 374.39

Cryst. (Me₂CO/petrol). Mp 175.5-176.5°. [α]_D²⁵ -41 (c, 0.95 in MeOH).

6-Benzoyl: Benzyl 6-O-benzoyl- β -D-galactopyranoside [16741-14-3]

C₂₀H₂₂O₇ 374.39

Cryst. (EtOH). Mp 92-94°. [α]_D²⁵ -22.5 (c, 0.87 in MeOH).

3,4-O-Isopropylidene: Benzyl 3,4-O-isopropylidene- β -D-galactopyranoside [14897-51-9]

C₁₆H₂₂O₆ 310.346

Cryst. (Me₂CO/petrol). Mp 123-124° (118-119°). [α]_D²⁵ -2.8 (c, 1.6 in CHCl₃) (-6.0).

3,4-O-Isopropylidene, 2,6-di-Ac: Benzyl 2,6-di-O-acetyl-3,4-O-isopropylidene- β -D-galactopyranoside [16741-10-9]

C₂₀H₂₆O₈ 394.421

Needles (Me₂CO/petrol). Mp 123-124° (118-119°). [α]_D²⁵ -4.4 (c, 1.07 in CHCl₃).

3,4-O-Isopropylidene, 6-benzoyl: Benzyl 6-O-benzoyl-3,4-O-isopropylidene- β -D-galactopyranoside [16741-12-1]

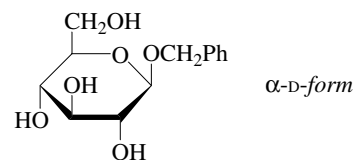
C₂₃H₂₆O₇ 414.454

- Cryst. (Me₂CO/petrol). Mp 114-114.5°. [α]_D²⁵ -9.9 (c, 2.59 in CHCl₃).
- 3,4-O-Isopropylidene, 2,6-dibenzoyl: Benzyl 2,6-di-O-benzoyl-3,4-O-isopropylidene- β -D-galactopyranoside [16741-13-2] C₃₀H₃₀O₈ 518.562 Rosettes (C₆H₆/petrol). Mp 118-118.5°. [α]_D²⁵ -18.5 (c, 1.92 in CHCl₃).
- 6-Trityl, 3,4-O-isopropylidene: Benzyl 3,4-O-isopropylidene-6-O-trityl- β -D-galactopyranoside [15038-68-3] C₃₅H₃₆O₆ 552.666 [α]_D²⁶ -27 (c, 0.74 in CHCl₃).
- 4,6-O-Isopropylidene: Benzyl 4,6-O-isopropylidene- β -D-galactopyranoside [85194-36-1] C₁₆H₂₂O₆ 310.346 Cryst. (Me₂CO/petrol). Mp 124-125°. [α]_D²⁵ -66 (1.03 in CHCl₃).
- 4,6-O-Benzylidene: Benzyl 4,6-O-benzylidene- β -D-galactopyranoside [56341-65-2] C₂₀H₂₂O₆ 358.39 Mp 207-209°. [α]_D -62.4 (c, 1 in CHCl₃).
- 4,6-O-Benzylidene, 2-benzoyl: Benzyl 2-O-benzoyl-4,6-O-benzylidene- β -D-galactopyranoside [26531-95-3] C₂₇H₂₆O₇ 462.498 Cryst. (EtOH). Mp 188-189°. [α]_D²¹ +24 (c, 1.0 in CHCl₃).
- 4,6-O-Benzylidene, 3-benzoyl: Benzyl 3-O-benzoyl-4,6-O-benzylidene- β -D-galactopyranoside [26531-92-0] C₂₇H₂₆O₇ 462.498 Cryst. (2-propanol). Mp 179-180°. [α]_D²² +64.6 (c, 1.6 in CHCl₃).
- 4,6-O-Benzylidene, 2-tosyl, 3-benzoyl: Benzyl 3-O-benzoyl-4,6-O-benzylidene-2-O-tosyl- β -D-galactopyranoside [26531-93-1] C₃₄H₃₂O₉S 616.687 Cryst. (EtOH). Mp 171-172°. [α]_D²¹ +89.5 (c, 0.95 in CHCl₃).
- 4,6-O-Benzylidene, 2,3-dibenzoyl: Benzyl 2,3-di-O-benzoyl-4,6-O-benzylidene- β -D-galactopyranoside [26531-91-9] C₃₄H₃₀O₈ 566.606 Cryst. (EtOH). Mp 177-178°. [α]_D²¹ +118 (c, 1.2 in CHCl₃).
- 4,6-O-Benzylidene, 3-tosyl, 2-benzoyl: Benzyl 2-O-benzoyl-4,6-O-benzylidene-3-O-tosyl- β -D-galactopyranoside [26531-96-4] C₃₄H₃₂O₉S 616.687 Cryst. (2-propanol). Mp 184-185°. [α]_D²² +63 (c, 2.0 in CHCl₃).
- 2-Me, 3,4,6-tri-Ac: Benzyl 3,4,6-tri-O-acetyl-2-O-methyl- β -D-galactopyranoside [53691-42-2] C₂₀H₂₆O₉ 410.42 Cryst. (CHCl₃). Mp 102-106°. [α]_D -10.5 (c, 0.8 in EtOH).

- 3-Me, 2,4,6-tri-Ac: Benzyl 2,4,6-tri-O-acetyl-3-O-methyl- β -D-galactopyranoside [53691-44-4] C₂₀H₂₆O₉ 410.42 Cryst. (diisopropyl ether). Mp 88-89°. [α]_D -38 (c, 0.63 in CHCl₃).
- 4-Me, 2,3,6-tri-Ac: Benzyl 2,3,6-tri-O-acetyl-4-O-methyl- β -D-galactopyranoside [53691-43-3] C₂₀H₂₆O₉ 410.42 Cryst. (diisopropyl ether). Mp 94-96°. [α]_D -30 (c, 0.32 in CHCl₃).
- 2-Benzyl: Benzyl 2-O-benzyl- β -D-galactopyranoside [15038-70-7] C₂₀H₂₄O₆ 360.406 Syrup. [α]_D²⁶ -3.5 (c, 0.79 in CHCl₃).
- 2,3-Dibenzyl: Benzyl 2,3-di-O-benzyl- β -D-galactopyranoside [74801-06-2] C₂₇H₃₀O₆ 450.53 Cryst. (Me₂CO/petrol). Mp 116-117°. [α]_D²⁰ -17 (c, 0.6 in CHCl₃).
- 2-Benzyl, 4,6-O-benzylidene: Benzyl 2-O-benzyl-4,6-O-benzylidene- β -D-galactopyranoside [14897-54-2] C₂₇H₂₈O₆ 448.515 Needles (MeOH). Mp 143.5-144°. [α]_D²⁵ -10.4 (c, 0.68 in CHCl₃).
- 2,6-Dibenzyl: Benzyl 2,6-di-O-benzyl- β -D-galactopyranoside [73108-30-2] C₂₇H₃₀O₆ 450.53 Mp 107-108°. [α]_D -17.1 (CHCl₃) (-15.1).
- 2,6-Dibenzyl, 3,4-isopropylidene: Benzyl 2,6-di-O-benzyl-3,4-O-isopropylidene- β -D-galactopyranoside [73108-28-8] C₃₀H₃₄O₆ 490.595 [α]_D²⁵ +7.3 (c, 1.0 in CHCl₃).
- 2,3,4-Tribenzyl: Benzyl 2,3,4-tri-O-benzyl- β -D-galactopyranoside [35017-04-0] C₃₄H₃₆O₆ 540.655 Cryst. (cyclohexane). Mp 96°. [α]_D -49 (c, 1.3 in CHCl₃).
- 2,3,4-Tribenzyl, 6-Me: Benzyl 2,3,4-tri-O-benzyl-6-O-methyl- β -D-galactopyranoside C₃₅H₃₈O₆ 554.682 Cryst. (cyclohexane). Mp 80-81°. [α]_D -30 (c, 0.80 in CHCl₃).
- 2,3,6-Tribenzyl: Benzyl 2,3,6-tri-O-benzyl- β -D-galactopyranoside [57783-81-0] C₃₄H₃₆O₆ 540.655 Syrup. [α]_D²⁴ -24 (c, 1.1 in CHCl₃).
- 2,3,6-Tribenzyl, 4-Me: Benzyl 2,3,6-tri-O-benzyl-4-O-methyl- β -D-galactopyranoside [57783-83-2] C₃₅H₃₈O₆ 554.682 Cryst. (cyclohexane/hexane). Mp 79-81°. [α]_D -43 (c, 0.50 in CHCl₃).
- 2,4,6-Tribenzyl: Benzyl 2,4,6-tri-O-benzyl- β -D-galactopyranoside [62447-55-6] C₃₄H₃₆O₆ 540.655 Syrup. [α]_D -14.22 (c, 0.9 in CHCl₃).

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- Levy, A. *et al.*, *Carbohydr. Res.*, 1967, **4**, 305, (β -D-4,6-isopropylidene, β -D-3,4-isopropylidene, β -D-isopropylidene di-Ac, β -D-isopropylidene benzoyl, β -D-acetyl derivs)
- Stoffyn, A. *et al.*, *J.O.C.*, 1967, **32**, 4001, (β -D-form, synth, β -D-3,4-isopropylidene, β -D-isopropylidene trityl, β -D-benzyl, β -D-benzylidene benzyl)
- Chittenden, G.J.F. *et al.*, *Carbohydr. Res.*, 1969, **11**, 379 (β -D-benzylidene esters)
- Lee, E.E. *et al.*, *Carbohydr. Res.*, 1974, **35**, 103 (β -D-tri-Ac, β -D-tri-Ac Me)
- Gent, P.A. *et al.*, *J.C.S. Perkin I*, 1974, 1446; 1447 (α -D-dibenzyl, α -D-2,3-dibenzyl, α -D-2,3,4-tribenzyl)
- Lipták, A. *et al.*, *Carbohydr. Res.*, 1975, **44**, 1, (α -D-benzylidene, α -D-benzylidene dibenzyl, α -D-2,3,4-tribenzyl, β -D-2,3,4-tribenzyl derivs)
- Augé, C. *et al.*, *J.C.S. Perkin I*, 1979, 1825, (α -D-6-benzyl, α -D-dibenzyl, α -D-allyl benzyl)
- David, S. *et al.*, *J.C.S. Perkin I*, 1981, 1796, (β -D-benzyl derivs)
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- Catelani, G. *et al.*, *Carbohydr. Res.*, 1988, **182**, 297 (synth, β -D-3,4-isopropylidene)
- Chowdhury, U.S. *et al.*, *Synth. Commun.*, 2000, **30**, 3785-3792 (β -D-2,4,6-tribenzyl)
- Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 2003, **76**, 1603-1615 (α -D-form, α -D-2,3,6-tribenzyl)
- Joseph, C.C. *et al.*, *Synth. Commun.*, 2003, **33**, 493-497 (β -D-4,6-benzylidene)

Benzyl glucopyranoside, 8CI **B-16**
Phenylmethyl glucopyranoside
[34246-23-6]



C₁₃H₁₈O₆ 270.282

- α -D-form [25320-99-4]
Cryst. (Et₂O). Mp 121-122°. [α]_D²³ +133 (c, 1.5 in H₂O).
- Tetra-Ac: Benzyl 2,3,4,6-tetra-O-acetyl- α -D-glucopyranoside [31281-76-2] C₂₁H₂₆O₁₀ 438.43 Mp 109°.
- 2,3,6-Tri-O-benzoyl: Benzyl 2,3,6-tri-O-benzoyl- α -D-glucopyranoside C₃₄H₃₀O₉ 582.606 Cryst. (Et₂O/hexane). Mp 100-101°. [α]_D +144.1 (c, 0.5 in CHCl₃).
- 4,6-O-Benzylidene: Benzyl 4,6-O-benzylidene- α -D-glucopyranoside [35905-28-3] C₂₀H₂₂O₆ 358.39 Mp 161-162°. [α]_D²⁰ +107 (c, 1 in CHCl₃). Values from Lubineau *et al* (1976). This compd. and its Ac and tosyl derivs. were also prepd. by Inch *et al* (1972) but the props. do not agree.
- 4,6-O-Benzylidene, di-Ac: Benzyl 2,3-di-O-acetyl-4,6-O-benzylidene- α -D-glucopyranoside [35905-29-4] C₂₄H₂₆O₈ 442.465

Mp 107-108°. $[\alpha]_D^{20} +114$ (c, 1.4 in CH_2Cl_2).

4,6-O-Benzylidene, 2-tosyl: Benzyl 4,6-O-benzylidene-2-O-tosyl- α -D-glucopyranoside
[35905-30-7]
 $\text{C}_{27}\text{H}_{28}\text{O}_8\text{S}$ 512.579
Mp 154-155°. $[\alpha]_D^{20} +87.5$ (c, 1 in CHCl_3).

4,6-O-Benzylidene, 2,3-ditosyl: Benzyl 4,6-O-benzylidene-2,3-di-O-tosyl- α -D-glucopyranoside
[35905-38-5]
 $\text{C}_{34}\text{H}_{34}\text{O}_{10}\text{S}_2$ 666.769
 $[\alpha]_D^{20} +27$ (c, 1 in CHCl_3).

2,3-Dibenzyl: Benzyl 2,3-di-O-benzyl- α -D-glucopyranoside
[58527-86-9]
 $\text{C}_{27}\text{H}_{30}\text{O}_6$ 450.53
Mp 111.5°. $[\alpha]_D^{20} +65$ (c, 1 in CHCl_3).

2,3-Dibenzyl, 4,6-O-benzylidene: Benzyl 2,3-di-O-benzyl-4,6-O-benzylidene- α -D-glucopyranoside
[58527-85-8]
 $\text{C}_{34}\text{H}_{34}\text{O}_6$ 538.639
Mp 137-138°. $[\alpha]_D^{20} +25$ (c, 1 in CHCl_3).

2,3-Dibenzyl, 6-trityl: Benzyl 2,3-di-O-benzyl-6-O-trityl- α -D-glucopyranoside
[58527-87-0]
 $\text{C}_{46}\text{H}_{44}\text{O}_6$ 692.85
 $[\alpha]_D^{20} +45$ (c, 1 in CHCl_3).

2,3,6-Tribenzyl: Benzyl 2,3,6-tri-O-benzyl- α -D-glucopyranoside
[58527-89-2]
 $\text{C}_{34}\text{H}_{36}\text{O}_6$ 540.655
Bp_{0.01} 280°. $[\alpha]_D^{20} +43$ (c, 1 in CHCl_3).

β -D-form [4304-12-5]
Constit. of *Epimedii grandiflorum* var. *thunbergianum*.
Needles (EtOAc/MeOH).
Mp 123-125°. $[\alpha]_D^{25} -59.2$ (c, 0.67 in MeOH).

2-O-Sulfate: Salvadoside
[143522-29-6]
 $\text{C}_{13}\text{H}_{18}\text{O}_6\text{S}$ 350.346
Constit. of *Salvadora persica*. Needles (MeOH) (as Na salt).
Mp 162-164° (Na salt). $[\alpha]_D -36$ (c, 0.025 in MeOH).

Tetra-Ac: Benzyl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside
[10343-13-2]
 $\text{C}_{21}\text{H}_{26}\text{O}_{10}$ 438.43
Mp 101-104°.

Trimesyl: Benzyl 3,4,6-tri-O-mesyl- β -D-glucopyranoside
[172845-76-0]
 $\text{C}_{16}\text{H}_{24}\text{O}_{12}\text{S}_3$ 504.556
Needles. Mp 137-139°. CAS no. refers to d₆-DMSO complex.

2,4,6-Tribenzoyl: [195063-73-1]
 $\text{C}_{34}\text{H}_{30}\text{O}_9$ 582.606
 $[\alpha]_D -38.2$ (c, 1.1 in CHCl_3).

6-O-(3,4,5-Trihydroxybenzoyl): Benzyl 6-galloyl- β -D-glucopyranoside
 $\text{C}_{20}\text{H}_{22}\text{O}_{10}$ 422.388
Constit. of *Monochaetum multiflorum*.
Amorph. powder. $[\alpha]_D -29.4$ (c, 1.7 in MeOH). λ_{max} 272 (log ϵ 3.68) (MeOH).

4,6-O-Benzylidene: Benzyl 4,6-O-benzylidene- β -D-glucopyranoside
[58006-32-9]
 $\text{C}_{20}\text{H}_{22}\text{O}_6$ 358.39
Mp 159-160°. $[\alpha]_D^{22} -80$ (c, 1 in dioxan).

4,6-O-Benzylidene, 2-Ac: Benzyl 2-O-acetyl-4,6-O-benzylidene- β -D-glucopyranoside
[20853-38-7]
 $\text{C}_{22}\text{H}_{24}\text{O}_7$ 400.427
Mp 167-168°. $[\alpha]_D^{20} -98.4$ (c, 1.1 in CHCl_3).

4,6-O-Benzylidene, 3-Ac: Benzyl 3-O-acetyl-4,6-O-benzylidene- β -D-glucopyranoside
[20853-39-8]
 $\text{C}_{22}\text{H}_{24}\text{O}_7$ 400.427
Mp 145-146°. $[\alpha]_D^{20} -80.6$ (c, 1.6 in CHCl_3).

2,3,4-Tri-Me: Benzyl 2,3,4-tri-O-methyl- β -D-glucopyranoside
[42400-54-4]
 $\text{C}_{16}\text{H}_{24}\text{O}_6$ 312.362
Mp 53-54°. $[\alpha]_D -46.5$ (c, 1 in CH_2Cl_2).

2,3-Dibenzyl: Benzyl 2,3-di-O-benzyl- β -D-glucopyranoside
[67831-41-8]
 $\text{C}_{27}\text{H}_{30}\text{O}_6$ 450.53
Mp 112-113°. $[\alpha]_D^{23} -6.5$ (c, 2 in Me_2CO).

2,3-Dibenzyl, 4,6-O-benzylidene: Benzyl 2,3-di-O-benzyl-4,6-O-benzylidene- β -D-glucopyranoside
[57783-66-1]
 $\text{C}_{34}\text{H}_{34}\text{O}_6$ 538.639
Mp 135-136°. $[\alpha]_D^{23} -53$ (c, 2.2 in CHCl_3).

2,3,4-Tribenzyl: Benzyl 2,3,4-tri-O-benzyl- β -D-glucopyranoside
[27851-29-2]
 $\text{C}_{34}\text{H}_{36}\text{O}_6$ 540.655
Mp 105-106°. $[\alpha]_D^{20} -9.1$ (c, 1.5 in CHCl_3).

2,3,6-Tribenzyl: Benzyl 2,3,6-tri-O-benzyl- β -D-glucopyranoside
[67831-42-9]
 $\text{C}_{34}\text{H}_{36}\text{O}_6$ 540.655
Mp 66-67°. $[\alpha]_D -44.2$ (c, 1.8 in CHCl_3).

3,4,6-Tribenzyl: Benzyl 3,4,6-tri-O-benzyl- β -D-glucopyranoside
[90302-50-4]
 $\text{C}_{34}\text{H}_{36}\text{O}_6$ 540.655
Mp 70-71° (89-90°). $[\alpha]_D^{25} -26.5$ (c, 0.7 in CHCl_3).

3,4,6-Tribenzyl, 2-Ac: Benzyl 2-O-acetyl-3,4,6-tri-O-benzyl- β -D-glucopyranoside
[93179-89-6]
 $\text{C}_{36}\text{H}_{38}\text{O}_7$ 582.692
Mp 68-70°. $[\alpha]_D^{25} -24$ (c, 0.8 in CHCl_3) (-16).

6-Trityl, 2,3,4-tri-Me: Benzyl 2,3,4-tri-O-methyl-6-O-trityl- β -D-glucopyranoside
[42400-53-3]
 $\text{C}_{35}\text{H}_{38}\text{O}_6$ 554.682
Mp 134-135°. $[\alpha]_D -3.2$ (c, 1 in CHCl_3).

Slotta, K.H. *et al.*, *Ber.*, 1930, **63**, 1024, (β -D-form)

Piel, E.V. *et al.*, *J.A.C.S.*, 1939, **61**, 2978 (α -D-form, α -D-tetra-Ac, β -D-form, β -D-tetra-Ac)

Klemer, A. *et al.*, *Chem. Ber.*, 1959, **92**, 218, (β -D-benzylidene, β -D-benzylidene dibenzyl, β -D-dibenzyl)

Glaudemans, C.P.J. *et al.*, *Carbohydr. Res.*, 1968, **7**, 480 (β -D-benzylidene 2-Ac, β -D-benzylidene 3-Ac)

Wing, R.E. *et al.*, *Carbohydr. Res.*, 1969, **10**, 441 (α -D-form, synth)

Inch, T.D. *et al.*, *Carbohydr. Res.*, 1972, **22**, 91 (α -D-benzylidene, α -D-benzylidene di-Ac, α -D-benzylidene tosyl)

Aspinall, G.O. *et al.*, *Can. J. Chem.*, 1973, **51**, 1359 (β -D-tri-Me, β -D-tri-Me trityl)

Bemiller, J.N. *et al.*, *Carbohydr. Res.*, 1973, **28**, 253 (α -D-tetra-Ac)

Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1975, **108**, 3397 (α -D-benzylidene tosyl, α -D-benzylidene ditosyl)

Lubineau, A. *et al.*, *Carbohydr. Res.*, 1976, **46**, 143 (α -D-benzylidene, α -D-benzylidene di-Ac, α -D-benzylidene dibenzyl, α -D-dibenzyl, α -D-tribenzyl)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **121**, 163 (β -D-2,3,4-tribenzyl, β -D-2,3,6-tribenzyl)

Miyase, T. *et al.*, *Chem. Pharm. Bull.*, 1987, **35**, 1109 (β -D-form, occur)

Nepogodev, S.A. *et al.*, *Carbohydr. Res.*, 1992, **232**, 33 (3,4,6-tribenzyl, 3,4,6-tribenzyl 2-Ac)

Kamel, M.S. *et al.*, *Phytochemistry*, 1992, **31**, 2469 (Salvadoside)

Carvalho, C.F. *et al.*, *Aust. J. Chem.*, 1995, **48**, 1767 (synth, cryst struct, trimesyl)

Li, K. *et al.*, *Carbohydr. Res.*, 1995, **273**, 249-253 (2,3,6-tribenzoyl)

Coen, M. *et al.*, *Phytochemistry*, 1995, **40**, 149 (isol, synth, pmr, cmr)

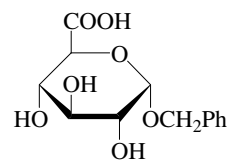
De Rosa, S. *et al.*, *Phytochemistry*, 1996, **42**, 1031 (isol, ir, pmr, cmr)

Ziegler, T. *et al.*, *J. Prakt. Chem.*, 1997, **339**, 534-540 (β -D-2,4,6-tribenzoyl)

Isaza, J.H. *et al.*, *Phytochemistry*, 2001, **58**, 321-327 (Benzyl 6-galloylglucoside)

Benzyl glucopyranosiduronic acid

B-17

 α -D-form $\text{C}_{13}\text{H}_{16}\text{O}_7$ 284.265 α -D-form

2,3-Dibenzyl, Me ester: Methyl (benzyl 2,3-di-O-benzyl- α -D-glucopyranosid)uronate
[42926-99-8]
 $\text{C}_{28}\text{H}_{30}\text{O}_7$ 478.541
Cryst. Mp 56-57°. $[\alpha]_D^{25} +68.1$ (c, 0.21 in CHCl_3).

2,3-Dibenzyl, 4-mesyl, Me ester: Methyl (benzyl 2,3-di-O-benzyl-4-O-mesyl- α -D-glucopyranosid)uronate
 $\text{C}_{29}\text{H}_{32}\text{O}_8\text{S}$ 556.632
Mp 79°. $[\alpha]_D +147$ (MeOH).

 β -D-form [5285-02-9] $[\alpha]_D -74$ (c, 0.5 in H_2O).

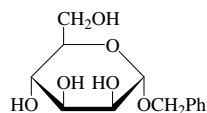
Me ester: Methyl (benzyl β -D-glucopyranosid)uronate
 $\text{C}_{14}\text{H}_{18}\text{O}_7$ 298.292
Mp 131-132°. $[\alpha]_D^{18} -73.8$ (MeOH).

Tri-Ac, Me ester: Methyl (benzyl 2,3,4-tri-O-acetyl- β -D-glucopyranosid)uronate
 $\text{C}_{20}\text{H}_{24}\text{O}_{10}$ 424.404
Cryst. (Et₂O). Mp 137-138°. $[\alpha]_D -67$ (c, 1.0 in CHCl_3).

- 2,3-Dibenzyl, *Me ester*: Methyl (benzyl 2,3-di-O-benzyl- β -D-glucopyranosid)uronate
[42927-00-4]
 $C_{28}H_{30}O_7$ 478.541
Mp 82-83°. $[\alpha]_D^{25}$ -46.3 (c, 0.22 in $CHCl_3$).
- 2,3,4-Tribenzyl: Benzyl 2,3,4-tri-O-benzyl- β -D-glucopyranosiduronic acid
[27851-26-9]
 $C_{34}H_{34}O_7$ 554.638
Cryst. (Me_2CO /cyclohexane). Mp 115-125°. $[\alpha]_D^{20}$ -34.1 (c, 1.0 in $CHCl_3$).
- 2,3,4-Tribenzyl, *Me ester*: Methyl (benzyl 2,3,4-tri-O-benzyl- β -D-glucopyranosid)uronate
[27851-32-7]
 $C_{35}H_{36}O_7$ 568.665
Cryst. (MeOH). Mp 109-110°. $[\alpha]_D^{20}$ -26 (c, 1.0 in $CHCl_3$).
- Kiss, J. *et al.*, *Carbohydr. Res.*, 1969, **10**, 328; 1973, **27**, 282 (α -D-Me ester mesyl dibenzyl, α -D-Me ester dibenzyl, β -D-Me ester dibenzyl)
- Zissis, E. *et al.*, *Carbohydr. Res.*, 1970, **12**, 361 (β -D-tribenzyl, β -D-Me ester tribenzyl)
- Keglević, D. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1979, **36**, 57 (rev)
- Compennolle, F. *et al.*, *Carbohydr. Res.*, 1980, **83**, 135 (β -D-benzyl tri-Ac)

Benzyl glucosinolate**B-18**

- 1-Thio- β -D-glucopyranose 1-[N-(sulfoxy)-benzenethanimidate], 9CI. **Glucotropaeolin**. Phenylmethyl glucosinolate
[499-26-3]
 $PhCH_2C(SGlc)=NOSO_3H$
 $C_{14}H_{19}NO_9S_2$ 409.437
Isol. from seeds of *Tropaeolum majus* (garden nasturtium), *Lepidium sativum* (garden cress) and other crucifers. Present in maca tubers (*Lepidium meyenii*). Possesses antibiotic props.
- K salt*: [5115-71-9]
Amorph. powder.
- Me₄N salt*:
Cryst. Mp 188-189°. $[\alpha]_D^{28}$ -16.7 (H_2O).
- Tetra-Ac*:
Cryst. +1H₂O (EtOH aq.) (as K salt). Mp 197-199° dec. (K salt). $[\alpha]_D^{25}$ -19 (c, 0.5 in H_2O).
- [92761-40-5, 117489-68-6]
- Schultz, O.E. *et al.*, *Z. Naturforsch., B.*, 1952, **7**, 500; 1953, **8**, 151 (*isol*)
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- Ettlinger, M.G. *et al.*, *J.A.C.S.*, 1957, **79**, 1764 (*synth*)
- Benn, M.H. *et al.*, *Can. J. Chem.*, 1963, **41**, 2836 (*synth*)
- Underhill, E.W. *et al.*, *Biochem. Biophys. Res. Commun.*, 1964, **14**, 425 (*biosynth*)
- Fenwick, G.R. *et al.*, *Biomed. Mass Spectrom.*, 1980, **7**, 410; 1981, **8**, 265 (*ms*)
- Hanley, A.B. *et al.*, *J. Sci. Food Agric.*, 1983, **34**, 869 (*isol*)
- Cox, I.J. *et al.*, *Carbohydr. Res.*, 1984, **132**, 323 (*pmr, cmr*)
- Piacente, S. *et al.*, *J. Agric. Food Chem.*, 2002, **50**, 5621-5625 (*isol, maca*)

Benzyl mannoside α -D-Pyranose-form $C_{13}H_{18}O_6$ 270.282 **α -D-Pyranose-form** [15548-45-5]

- Cryst. (EtOAc/Et₂O). Mp 132-133°. $[\alpha]_D^{25}$ +73.5 (c, 1.5 in H_2O).
- 2,3,6-Tri-Ac: Benzyl 2,3,6-tri-O-acetyl- α -D-mannopyranoside
[53691-35-3]
 $C_{19}H_{24}O_9$ 396.393
Cryst. (diisopropyl ether). Mp 108°. $[\alpha]_D$ +48 (c, 0.98 in $CHCl_3$).
- Tetra-Ac*: Benzyl 2,3,4,6-tetra-O-acetyl- α -D-mannopyranoside
[53729-76-3]
 $C_{21}H_{26}O_{10}$ 438.43
Syrup. $[\alpha]_D$ +53 (c, 1.42 in $CHCl_3$).
- Tetrabenzoyl*: Benzyl 2,3,4,6-tetra-O-benzoyl- α -D-mannopyranoside
 $C_{41}H_{34}O_{10}$ 686.714
Amorph. glass. $[\alpha]_D^{20}$ -37.2 (c, 0.49 in $CHCl_3$).
- 2,3-O-Isopropylidene: Benzyl 2,3-O-isopropylidene- α -D-mannopyranoside
 $C_{16}H_{22}O_6$ 310.346
Glass. $[\alpha]_D^{25}$ +42 (c, 1 in $CHCl_3$).
- 2,3,4,6-Di-O-isopropylidene: Benzyl 2,3,4,6-di-O-isopropylidene- α -D-mannopyranoside
 $C_{19}H_{26}O_6$ 350.411
Cryst. (EtOH). Mp 81-82°. $[\alpha]_D^{25}$ +34 (c, 1 in $CHCl_3$).
- 4,6-O-Benzylidene: Benzyl 4,6-O-benzylidene- α -D-mannopyranoside
[40983-94-6]
 $C_{20}H_{22}O_6$ 358.39
Prismatic needles (CH_2Cl_2/C_6H_6). Mp 147-148°. $[\alpha]_D^{25}$ +79 (c, 1.2 in $CHCl_3$).
- 2,3,4,6-Di-O-benzylidene: Benzyl 2,3,4,6-di-O-benzylidene- α -D-mannopyranoside
[58650-53-6]
 $C_{27}H_{26}O_6$ 446.499
Cryst. (CH_2Cl_2 /pentane). Mp 174-176°. $[\alpha]_D^{25}$ +34 (c, 1.0 in $CHCl_3$).
- 4-Me, 2,3,6-tri-Ac: Benzyl 2,3,6-tri-O-acetyl-4-O-methyl- α -D-mannopyranoside
[53691-36-4]
 $C_{20}H_{26}O_9$ 410.42
Mp 79-81°. $[\alpha]_D$ +66 (c, 0.66 in $CHCl_3$).
- 4-Me: Benzyl 4-O-methyl- α -D-mannopyranoside
[53691-37-5]
 $C_{14}H_{20}O_6$ 284.308
Syrup. $[\alpha]_D$ +75 (c, 0.85 in EtOH).
- 2-Benzyl, 4,6-O-benzylidene: Benzyl 2-O-benzyl-4,6-O-benzylidene- α -D-mannopyranoside
[40983-95-7]
 $C_{27}H_{28}O_6$ 448.515
Mp 97-99°. $[\alpha]_D$ +39 (c, 0.3 in $CHCl_3$).
- 2,3-Dibenzyl, 4,6-O-benzylidene: Benzyl 2,3-di-O-benzyl-4,6-O-benzylidene- α -D-mannopyranoside
[57783-75-2]
 $C_{34}H_{34}O_6$ 538.639
Syrup. $[\alpha]_D$ +69 (c, 0.77 in Py).

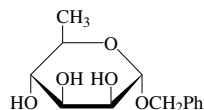
B-19

- 2,3,4-Tribenzyl: Benzyl 2,3,4-tri-O-benzyl- α -D-mannopyranoside
[57783-76-3]
 $C_{34}H_{36}O_6$ 540.655
 $[\alpha]_D$ +54 (c, 0.3 in $CHCl_3$).
- 2,3,4-Tribenzyl, 6-Me: Benzyl 2,3,4-tri-O-benzyl-6-O-methyl- α -D-mannopyranoside
 $C_{35}H_{38}O_6$ 554.682
Syrup. $[\alpha]_D$ +57 (c, 0.7 in $CHCl_3$).
- 3,4,6-Tribenzyl: Benzyl 3,4,6-tri-O-benzyl- α -D-mannopyranoside
[61134-30-3]
 $C_{34}H_{36}O_6$ 540.655
Syrup. $[\alpha]_D$ +35 (c, 1.0 in $CHCl_3$).
- 3,4,6-Tribenzyl, 2-Ac: Benzyl 2-O-acetyl-3,4,6-tri-O-benzyl- α -D-mannopyranoside
[61134-29-0]
 $C_{36}H_{38}O_7$ 582.692
Syrup. $[\alpha]_D$ +38.2 (c, 1.0 in $CHCl_3$).
- 3,4,6-Tribenzyl, 2-mesyl: Benzyl 3,4,6-tri-O-benzyl-2-O-mesyl- α -D-mannopyranoside
[61134-25-6]
 $C_{35}H_{38}O_8S$ 618.746
Syrup. $[\alpha]_D$ +32 (c, 1.0 in $CHCl_3$).
- α -D-Furanose-form**
Mp 54-55°. $[\alpha]_D^{25}$ +78.3 (c, 1.18 in Me_2CO).
- 2,3-O-Isopropylidene: Benzyl 2,3-O-isopropylidene- α -D-mannofuranoside
[20689-03-6]
 $C_{16}H_{22}O_6$ 310.346
Cryst. (EtOAc/petrol). Mp 60-61°. $[\alpha]_D^{30}$ +90 (c, 1.0 in Me_2CO).
- 2,3-O-Isopropylidene, 6-mesyl: Benzyl 2,3-O-isopropylidene-6-O-mesyl- α -D-mannofuranoside
[30572-25-9]
 $C_{17}H_{24}O_8S$ 388.438
Cryst. (Et₂O/petrol). Mp 92-93°. $[\alpha]_D$ +69 (c, 1.0 in $CHCl_3$).
- 2,3-O-Isopropylidene, 5,6-dimesyl: Benzyl 2,3-O-isopropylidene-5,6-di-O-mesyl- α -D-mannofuranoside
[28978-37-2]
 $C_{18}H_{26}O_{10}S_2$ 466.529
Cryst. (MeOH aq.). Mp 107-108°. $[\alpha]_D$ +48 (c, 1.0 in $CHCl_3$).
- 2,3,5,6-Di-O-isopropylidene: Benzyl 2,3,5,6-di-O-isopropylidene- α -D-mannofuranoside
[20689-02-5]
 $C_{19}H_{26}O_6$ 350.411
Cryst. (MeOH aq.). Mp 54-55°. $[\alpha]_D^{30}$ +76.5 (c, 1.1 in Me_2CO).
- β -D-Furanose-form** [79981-90-1]
Gum. $[\alpha]_D^{25}$ -35.9 (c, 0.85 in $CHCl_3$).
- Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1968, 1381 (α -D-fur isopropylidene, α -D-fur diisopropylidene)
- Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1970, **13**, 447 (α -D-fur isopropylidene derivs, *pmr*)
- Lee, E.E. *et al.*, *Carbohydr. Res.*, 1974, **35**, 103 (α -D-pyr tri-Ac, α -D-pyr tri-Ac 4-Me, α -D-pyr tetra-Ac, α -D-pyr 4-Me)
- Lipták, A. *et al.*, *Carbohydr. Res.*, 1974, **44**, 1 (α -D-pyr benzylidene dibenzyl, α -D-pyr 2,3,4-tribenzyl, α -D-pyr 2,3,4-tribenzyl 6-Me)
- Shabana, M.A.E. *et al.*, *Carbohydr. Res.*, 1975, **45**, 105 (α -D-pyr, *synth*, α -D-pyr benzylidene, α -D-pyr dibenzylidene)
- Buchanan, J.G. *et al.*, *J.C.S. Perkin 1*, 1976, 1449 (α -D-pyr 3,4,6-tribenzyl, α -D-pyr 3,4,6-tribenzyl derivs)

Jurczak, J. *et al.*, *Carbohydr. Res.*, 1982, **104**, C18 (diisopropylidene)
 Chung, S.K. *et al.*, *Carbohydr. Res.*, 1994, **260**, 39 (2,3-isopropylidene, 2,3:4,6-diisopropylidene)
 Pakulski, Z. *et al.*, *Synthesis*, 2003, 2074-2078 (α -D-pyr tetrabenzoyl)

Benzyl rhamnoside**B-20**

Benzyl 6-deoxymannoside

 α -D-Pyranose-formC₁₃H₁₈O₅ 254.282 **α -D-Pyranose-form** [191546-20-0]Cryst. (diisopropyl ether). Mp 74-75°. [α]_D²⁵ +85.2 (c, 0.5 in MeOH).

2,4-Dibenzyl: Benzyl 2,4-di-O-benzyl- α -D-rhamnopyranoside [86342-18-9]
 C₂₇H₃₀O₅ 434.531
 Syrup. [α]_D +43 (c, 1.62 in CHCl₃).

3,4-Dibenzyl: Benzyl 3,4-di-O-benzyl- α -D-rhamnopyranoside [86342-17-8]
 C₂₇H₃₀O₅ 434.531
 Syrup. [α]_D +60 (c, 1.25 in CHCl₃).

 α -L-Pyranose-form [3359-35-1]Cryst. (2-propanol). Mp 76-78°. [α]_D²⁵ -58.3 (c, 0.8 in H₂O).

2,3,4-Tri-Ac: Benzyl 2,3,4-tri-O-acetyl- α -L-rhamnopyranoside [3359-36-2]
 C₁₉H₂₄O₈ 380.394
 Cryst. (EtOH). Mp 110°. [α]_D²⁰ -73 (c, 1.0 in CHCl₃).

2,3-O-Isopropylidene: Benzyl 2,3-O-isopropylidene- α -L-rhamnopyranoside [68124-06-1]
 C₁₆H₂₂O₅ 294.347
 Cryst. (petrol). Mp 73-75°. [α]_D -55 (c, 1.0 in CHCl₃).

2,3-O-Isopropylidene, 4-mesyl: Benzyl 2,3-O-isopropylidene-4-O-mesyl- α -L-rhamnopyranoside [18422-80-5]
 C₁₇H₂₄O₇S 372.438
 Cryst. (Et₂O/petrol). Mp 87-88°. [α]_D -28 (c, 2.0 in MeOH).

exo-2,3-O-Benzylidene: Benzyl 2,3-O-exo-benzylidene- α -L-rhamnopyranoside [62777-91-7]
 C₂₀H₂₂O₅ 342.391
 Mp 132-133°. [α]_D -67 (c, 0.42 in CHCl₃).

endo-2,3-O-Benzylidene: Benzyl 2,3-O-endo-benzylidene- α -L-rhamnopyranoside [62774-08-7]
 C₂₀H₂₂O₅ 342.391
 Syrup. [α]_D -68 (c, 1.2 in CHCl₃).

2-Benzyl: Benzyl 2-O-benzyl- α -L-rhamnopyranoside [62774-07-6]
 C₂₀H₂₄O₅ 344.407
 Mp 73-74°. [α]_D -39 (c, 0.88 in CHCl₃).

3-Benzyl: Benzyl 3-O-benzyl- α -L-rhamnopyranoside [62774-06-5]
 C₂₀H₂₄O₅ 344.407

[α]_D -48 (c, 0.5 in CHCl₃).

4-Benzyl: Benzyl 4-O-benzyl- α -L-rhamnopyranoside [4613-15-4]
 C₂₀H₂₄O₅ 344.407

Cryst. (EtOAc/petrol). Mp 86-88°. [α]_D²⁵ -88.8 (c, 3.5 in Me₂CO).

4-Benzyl, exo-2,3-O-benzylidene: Benzyl 4-O-benzyl-2,3-O-exo-benzylidene- α -L-rhamnopyranoside [62774-09-8]
 C₂₇H₂₈O₅ 432.515

Mp 124-125°. [α]_D -81 (c, 0.96 in CHCl₃).

4-Benzyl, endo-2,3-O-benzylidene: Benzyl 4-O-benzyl-2,3-O-endo-benzylidene- α -L-rhamnopyranoside [62774-12-3]
 C₂₇H₂₈O₅ 432.515

Mp 53-54°. [α]_D -57 (c, 0.88 in CHCl₃).

4-Benzyl, 2,3-O-isopropylidene: Benzyl 4-O-benzyl-2,3-O-isopropylidene- α -L-rhamnopyranoside [4613-13-2]
 C₂₃H₂₈O₅ 384.471

Mp 95-97°. [α]_D²⁵ -67.6 (c, 2.1 in Me₂CO).

2,4-Dibenzyl: Benzyl 2,4-di-O-benzyl- α -L-rhamnopyranoside [62774-11-2]
 C₂₇H₃₀O₅ 434.531

Syrup. [α]_D -42 (c, 0.64 in CHCl₃).

3,4-Dibenzyl: Benzyl 3,4-di-O-benzyl- α -L-rhamnopyranoside [62774-10-1]
 C₂₇H₃₀O₅ 434.531

[α]_D -58 (c, 0.6 in CHCl₃).

 β -L-Pyranose-form

4-Benzyl: Benzyl 4-O-benzyl- β -L-rhamnopyranoside [62774-11-2]
 C₂₀H₂₄O₅ 344.407

Mp 76-78°. [α]_D²⁰ +47 (Me₂CO).

4-Benzyl, 2,3-O-isopropylidene: Benzyl 4-O-benzyl-2,3-O-isopropylidene- β -L-rhamnopyranoside [4613-14-3]
 C₂₃H₂₈O₅ 384.471

Mp 102-104°.

4-Benzyl, 2,3-carbonate: Benzyl 4-O-benzyl- β -L-rhamnopyranoside 2,3-carbonate [62777-91-7]
 C₂₁H₂₂O₆ 370.401

Mp 92-93°. [α]_D²⁵ +31.7 (c, 1.9 in CHCl₃).

4-Benzyl, 2,3-thiocarbonate: Benzyl 4-O-benzyl-6-deoxy- β -L-mannopyranoside cyclic thiocarbonate, 8CI. Benzyl 4-O-benzyl- β -L-rhamnopyranoside 2,3-thiocarbonate [4613-17-6]
 C₂₁H₂₂O₅S 386.468

Mp 141-142°. [α]_D²⁸ +49.7 (c, 1.4 in CHCl₃).

 α -L-Furanose-form

5-Benzyl: Benzyl 5-O-benzyl- α -L-rhamnofuranoside [62774-06-5]
 C₂₀H₂₄O₅ 344.407

Mp 77.5°. [α]_D +48.2 (Me₂CO).

5-Benzyl, 2,3-O-isopropylidene: Benzyl 5-O-benzyl-2,3-O-isopropylidene- α -L-rhamnofuranoside [62774-06-5]
 C₂₃H₂₈O₅ 384.471

Mp 84° Mp 104°. Bp_{0.01} 180°. [α]_D +30.3 (Me₂CO).

5-Benzyl, 2,3-di-Me: Benzyl 5-O-benzyl-2,3-di-O-methyl- α -L-rhamnofuranoside [62774-06-5]
 C₂₂H₂₈O₅ 372.46

Mp 119°. Bp_{0.1} 160-170°. [α]_D +71.7 (Me₂CO).

McCloskey, C.M. *et al.*, *Adv. Carbohydr. Chem.*, 1957, **12**, 137 (α -L-fur benzyl ethers, rev)

Haines, A.H. *et al.*, *Carbohydr. Res.*, 1965, **1**, 214 (α -L-pyr isopropylidene benzyl, α -L-pyr benzyl, β -L-pyr benzyl, derivs, β -L-pyr isopropylidene benzyl)

Brimacombe, J.S. *et al.*, *J.C.S.*, 1965, 2292, (α -L-pyr, synth, α -L-pyr tri-Ac)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1967, **5**, 36 (α -L-isopropylidene, α -L-isopropylidene mesyl)

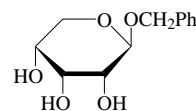
Ferguson, A.C. *et al.*, *J.C.S. (C)*, 1969, 2372, (α -L-pyr isopropylidene benzyl)

Lipták, A. *et al.*, *Carbohydr. Res.*, 1976, **51**, C19-C21; 1978, **65**, 209-217 (α -L-benzylidene derivs, α -L-benzyl ethers)

Lipták, A. *et al.*, *Tetrahedron*, 1979, **35**, 1111-1119; 1982, **38**, 3721-3727 (α -D-pyr 2,4-dibenzyl, α -D-pyr 3,4-dibenzyl, cmr)

Danieli, B. *et al.*, *Tetrahedron*, 1999, **55**, 2045-2060 (α -D-pyr-form, α -L-pyr-form, synth, ir, pmr, cmr)

Hirooka, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2001, **74**, 1679-1694 (α -L-pyr form, α -L-fur form)

Benzyl riboside, 9CI, 8CI**B-21** β -D-Pyranose-formC₁₂H₁₆O₅ 240.255 **β -D-Pyranose-form** [70797-93-2]Cryst. (H₂O). Mp 103-104°. [α]_D -109 (c, 1.32 in H₂O).

Tribenzoyl: Benzyl 2,3,4-tri-O-benzoyl- β -D-ribosepyranoside [13035-46-6]
 C₃₃H₂₈O₈ 552.579

Plates (EtOH). Mp 143-144°. [α]_D -108 (c, 1.28 in CHCl₃).

3,4-O-Isopropylidene: Benzyl 3,4-O-isopropylidene- β -D-ribosepyranoside [32953-58-5]
 C₁₅H₂₀O₅ 280.32

Mp 95-96°. [α]_D²¹ -129 (c, 0.3 in CHCl₃). [α]_D -148 (c, 0.3 in EtOH).

2-Me: Benzyl 2-O-methyl- β -D-ribosepyranoside [51468-38-3]
 C₁₃H₁₈O₅ 254.282

Mp 92-94°. [α]_D²⁰ -135 (c, 0.4 in CHCl₃).

2-Me, 3,4-O-isopropylidene: Benzyl 3,4-O-isopropylidene-2-O-methyl- β -D-ribosepyranoside [51468-37-2]
 C₁₆H₂₂O₅ 294.347

Bp_{0.5} 160-162°. [α]_D²⁰ -121 (c, 1.4 in CHCl₃).

β-D-Furanose-form [54946-48-4]

Cryst. (EtOAc). Mp 95-96°. [α]_D -60.5 (c, 0.7 in H₂O).

5-Tosyl: Benzyl 5-*O*-tosyl-β-D-ribofuranoside

C₁₉H₂₂O₇S 394.445

Mp 78-79°. [α]_D¹⁶ -37.6 (c, 0.78 in EtOH).

2,3,5-Tritosyl: Benzyl 2,3,5-tri-*O*-tosyl-β-D-ribofuranoside

C₃₃H₃₄O₁₁S₃ 702.823

Mp 118°. [α]_D²⁵ +11 (c, 2.7 in dioxan).

5-Benzyl, 2,3-*O*-isopropylidene: Benzyl 5-*O*-benzyl-2,3-*O*-isopropylidene-β-D-ribofuranoside

C₂₂H₂₆O₅ 370.444

Bp_{0.01} 156-162°. [α]_D -75 (CHCl₃).

3,5-Dibenzyl: Benzyl 3,5-di-*O*-benzyl-β-D-ribofuranoside

C₂₆H₂₈O₅ 420.504

Syrup. [α]_D²³ +72.4 (c, 1.0 in CHCl₃).

3,5-Dibenzyl, 2-triflyl:

Cryst. (petrol/Et₂O). Mp 33-34°.

β-L-Pyranose-form [26685-75-6]

Cryst. (petrol/CHCl₃). Mp 105-106°. [α]_D²⁵ +116 (c, 1.3 in H₂O).

3,4-*O*-Isopropylidene: Benzyl 3,4-*O*-isopropylidene-β-L-ribofuranoside [26685-74-5]

C₁₅H₂₀O₅ 280.32

Cryst. (EtOAc/petrol). Mp 96-97°. [α]_D²⁵ +130 (c, 6.07 in CHCl₃).

2-Me: Benzyl 2-*O*-methyl-β-L-ribofuranoside

C₁₃H₁₈O₅ 254.282

Cryst. (petrol/EtOAc). Mp 92-94°. [α]_D²⁵ +134 (c, 1.67 in CHCl₃).

2-Me, 3,4-*O*-isopropylidene: Benzyl 3,4-*O*-isopropylidene-2-*O*-methyl-β-L-ribofuranoside

[26685-76-7]

C₁₆H₂₂O₅ 294.347

Bp_{0.7} 165° (bath). [α]_D²⁵ +130 (c, 1.2 in CHCl₃).

Fletcher, H.G. *et al.*, *J.A.C.S.*, 1954, **76**, 760;

763 (β-D-pyr, β-D-pyr tribenzoyl, β-D-fur)

Haines, A.H. *et al.*, *J.C.S.(C)*, 1970, 1691,

(β-L-pyr, β-L-pyr-isopropylidene, β-L-pyr-

isopropylidene Me, β-L-pyr Me)

Haines, A.H. *et al.*, *Tetrahedron*, 1973, **29**, 2807

(β-D-pyr-isopropylidene, β-D-pyr-

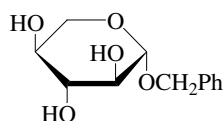
isopropylidene-Me, β-D-pyr-Me, pmr)

de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*

Biochem., 1977, **34**, 179 (cyclic acetals, rev)

Su, T.-L. *et al.*, *J.O.C.*, 1982, **47**, 1506,

(β-D-fur dibenzyl, β-D-fur dibenzyl triflyl)

Benzyl xyloside**B-22**

C₁₂H₁₆O₅ 240.255

β-L-Pyranose-form

3-Ac: Benzyl 3-*O*-acetyl-β-L-xylopyranoside

[200483-06-3]

C₁₄H₁₈O₆ 282.293

Mp 64-65°.

3-Me: Benzyl 3-*O*-methyl-β-L-xylopyranoside

[200483-07-4]

C₁₃H₁₈O₅ 254.282

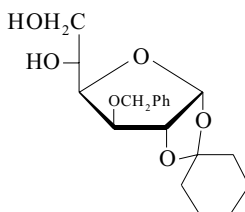
Cryst. (diisopropyl ether). Mp 122-123°.

[α]_D +120 (c, 0.01 in CH₂Cl₂).

Lugemura, F.N. *et al.*, *J. Carbohydr. Chem.*, 1997, **16**, 1433-1443 (β-L-pyr 3-Ac, β-L-pyr 3-Me)

3-*O*-Benzyl-1,2-*O*-cyclohexylideneglucofuranose, 8CI**B-23**

1,2-*O*-Cyclohexylidene-3-*O*-(phenylmethyl)glucofuranose, 9CI



C₁₉H₂₆O₆ 350.411

α-D-form [13322-89-9]

Forms an asymmetric reducing agent

when complexed with LiAlH₄. Syrup.

Bp_{0.05} 200°. [α]_D²⁰ -34.8 (c, 4.3 in CHCl₃).

5,6-*O*-Cyclohexylidene: 3-*O*-Benzyl-1,2:5,6-di-*O*-cyclohexylidene-α-D-glucofuranose

[13322-88-8]

C₂₅H₃₄O₆ 430.54

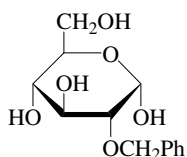
Syrup. Bp_{0.03} 200°. [α]_D²⁰ -17.4 (c, 4.3 in CHCl₃).

Landor, S.R. *et al.*, *J.C.S.(C)*, 1966, 1822; 2280 (synth, use)

Landor, S.R. *et al.*, *J.C.S. Perkin 1*, 1974, 1902 (use)

2-*O*-Benzylglucose**B-24**

2-*O*-(Phenylmethyl)glucose, 9CI

**α-D-Pyranose-form**

C₁₃H₁₈O₆ 270.282

D-form [41897-85-2]

Cryst. (EtOH). Mp 176-177°. [α]_D²³ +56 → +47 (c, 1.0 in MeOH).

3,4,6-Tri-Ac: 3,4,6-Tri-*O*-acetyl-2-*O*-benzyl-D-glucopyranose

C₁₉H₂₄O₉ 396.393

Needles. Mp 41°. [α]_D²³ +67 (c, 1 in CHCl₃).

α-D-form

Tetra-Ac: 1,3,4,6-Tetra-*O*-acetyl-2-*O*-benzyl-α-D-glucopyranose

C₂₁H₂₆O₁₀ 438.43

Needles (petrol). Mp 75°. [α]_D²³ +82 (c, 1.0 in CHCl₃).

β-D-form

Tetra-Ac: 1,3,4,6-Tetra-*O*-acetyl-2-*O*-benzyl-β-D-glucopyranose

C₂₁H₂₆O₁₀ 438.43

Needles (petrol). Mp 88°. [α]_D²³ +44 (c, 1.0 in CHCl₃).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-*O*-acetyl-2-*O*-benzyl-β-D-glucopyranoside

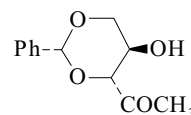
C₂₀H₂₆O₉ 410.42

Needles (petrol). Mp 70°. [α]_D²³ +38 (c, 1.0 in CHCl₃).

Klemer, A. *et al.*, *Chem. Ber.*, 1963, **96**, 634

(synth)

Brennan, S. *et al.*, *J.C.S.(C)*, 1970, 1742 (synth, α-D-tetra-Ac, β-D-tetra-Ac, β-D-Me pyr tri-Ac)

3,5-*O*-Benzylidene-1-deoxy-erythro-pentulose**B-25**

C₁₂H₁₄O₄ 222.24

D-form

Mp 82-83°. [α]_D²³ +40.5 (c, 1.0 in CHCl₃). 2,4-Dinitrophenylhydrazone: Mp 180°. [α]_D²¹ +13.1 (c, 0.4 in CHCl₃).

4-Ac:

C₁₄H₁₆O₅ 264.277

[α]_D²³ +26.6 (c, 1.0 in CHCl₃).

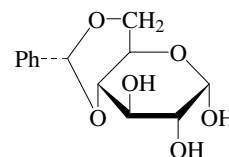
4-Benzoyl:

C₁₉H₁₈O₅ 326.348

Mp 95-96°. [α]_D²² -23.1 (c, 1.0 in CHCl₃).

Collins, P.M. *et al.*, *Carbohydr. Res.*, 1974, **32**, 203

Fischer, J.-C. *et al.*, *Can. J. Chem.*, 1977, **55**, 4078

4,6-*O*-Benzylideneglucopyranose**B-26****α-D-form**

C₁₃H₁₆O₆ 268.266

The benzylidene config. appears to be (*R*-) as illus. but this does not appear to be very explicit in the lit.

α-D-form [25152-90-3]

Mp 188° (172°). [α]_D +39.6 → +4.3 (EtOH). [α]_D -4 (MeOH).

2,3-Di-Ac: 2,3-Di-*O*-acetyl-4,6-*O*-benzylidene-α-D-glucopyranose

[104186-84-7]

C₁₇H₂₀O₈ 352.34

Needles (Et₂O). Mp 185-187°. [α]_D²³ +96.5 (c, 0.8 in CHCl₃).

Tribenzoyl: 1,2,3-Tri-*O*-benzoyl-4,6-*O*-benzylidene-α-D-glucopyranose

C₃₄H₂₈O₉ 580.59

Mp 166-167°. [α]_D +47.4 (CHCl₃).

1,2-*O*-Isopropylidene: 4,6-*O*-Benzylidene-1,2-*O*-isopropylidene- α -D-glucopyranose [38081-50-4]
 $C_{16}H_{20}O_6$ 308.33
 Cryst. (2-propanol). Mp 152-153° (144-145°). $[\alpha]_D^{20} +25.8$ (CHCl₃). $[\alpha]_D^{20} +85$ (c, 1 in CHCl₃). The earlier report of this derivative may be wrong.

1,2-*O*-Benzylidene: 1,2:4,6-Di-*O*-benzylidene- α -D-glucopyranose
 $C_{20}H_{20}O_6$ 356.374
 Mp 161-162°. $[\alpha]_D +107$ (CHCl₃).

1,2-*O*-Benzylidene, 3-*Ac*: 3-*O*-Acetyl-1,2:4,6-di-*O*-benzylidene- α -D-glucopyranose
 $C_{22}H_{22}O_7$ 398.412
 Mp 178°. $[\alpha]_D +81$ (CHCl₃).

1,2-*O*-Benzylidene, 3-benzoyl: 3-*O*-Benzoyl-1,2:4,6-di-*O*-benzylidene- α -D-glucopyranose
 $C_{27}H_{24}O_7$ 460.482
 Mp 181-182°. $[\alpha]_D +41.8$ (CHCl₃).

1,2-*O*-Benzylidene, 3-mesyl: 1,2:4,6-Di-*O*-benzylidene-3-*O*-mesyl- α -D-glucopyranose
 $C_{21}H_{22}O_8S$ 434.466
 Mp 177°. $[\alpha]_D +79.2$ (CHCl₃).

1,2-*O*-Benzylidene, 3-Me: 1,2:4,6-Di-*O*-benzylidene-3-*O*-methyl- α -D-glucopyranose
 $C_{21}H_{22}O_6$ 370.401
 Mp 117-119°. $[\alpha]_D +81.1$ (CHCl₃).

β -D-form

$[\alpha]_D -17.5$ (c, 1.0 in H₂O) (as Na salt).
 Na salt obt. contaminated with 30% α -anomer.

2,3-Di-*Ac*: 2,3-Di-*O*-acetyl-4,6-*O*-benzylidene- β -D-glucopyranose [22893-78-3]
 $C_{17}H_{20}O_8$ 352.34
 Needles (Et₂O). Mp 162-163°. $[\alpha]_D^{25} -7$ (c, 1.0 in Me₂CO).

Tri-*Ac*: 1,2,3-Tri-*O*-acetyl-4,6-*O*-benzylidene- β -D-glucopyranose
 $C_{19}H_{22}O_9$ 394.377
 Mp 201°. $[\alpha]_D -51.7$ (CHCl₃).

1-Benzoyl: 1-*O*-Benzoyl-4,6-*O*-benzylidene- β -D-glucopyranose
 $C_{20}H_{20}O_7$ 372.374
 Mp 212-214°. $[\alpha]_D^{20} -31.8$ (c, 0.9 in Me₂CO).

Tribenzoyl: 1,2,3-Tri-*O*-benzoyl-4,6-*O*-benzylidene- β -D-glucopyranose
 $C_{34}H_{28}O_9$ 580.59
 Mp 193°. $[\alpha]_D -10.6$ (CHCl₃).

Me glycoside: See Methyl 4,6-*O*-benzylidene- β -D-glucopyranoside, M-165 [113566-67-9]

Zervas, L. et al., *Ber.*, 1931, **64**, 2289 (α -D-form, synth, β -D-tri-*Ac*)

Brigl, P. et al., *Ber.*, 1932, **65**, 1428, (β -D-tribenzoyl)

Gakhokidze, A.M. et al., *J. Gen. Chem. USSR (Engl. Transl.)*, 1946, **16**, 1923, (α -D-isopropylidene)

Sowden, J.C. et al., *J.A.C.S.*, 1952, **74**, 686, (α -D-form, synth, α -D-tribenzoyl, β -D-tribenzoyl)

Wood, H.B. et al., *J.A.C.S.*, 1957, **79**, 1986 (*dibenzylidene derivs*)

Korytny, W. et al., *J.C.S.*, 1959, 636, (α -D-di-*Ac*, β -D-tri-*Ac*, α -2,3-di-*Ac*)

Fletcher, H.G. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 307 (α -D-form, synth)

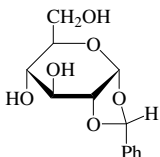
de Belder, A.N. et al., *Adv. Carbohydr. Chem.*, 1965, **20**, 219 (rev. derivs)

Fink, A.L. et al., *Can. J. Chem.*, 1969, **47**, 841 (β -2,3-di-*Ac*)

Dick, W.E. et al., *Carbohydr. Res.*, 1972, **23**, 229 (α -D-isopropylidene)

1,2-*O*-Benzylideneglucose

B-27

 α -D-Pyranose(1'*R*)-form $C_{13}H_{16}O_6$ 268.266

α -D-Pyranose-(1'*R*)-form

Mp 173-174°. $[\alpha]_D +90.6$ (MeOH).

Tri-*Ac*: 3,4,6-Tri-*O*-acetyl-1,2-*O*-(*R*)-benzylidene- α -D-glucopyranose [38081-39-9]
 $C_{19}H_{22}O_9$ 394.377
 Syrup. Bp_{0.1} 210°. $[\alpha]_D^{20} +56$ (c, 1.0 in CHCl₃).

α -D-Pyranose-(1'*S*)-form

Tri-*Ac*: 3,4,6-Tri-*O*-acetyl-1,2-*O*-(*S*)-benzylidene- α -D-glucopyranose [38081-40-2]
 $C_{19}H_{22}O_9$ 394.377
 Mp 112-113°. $[\alpha]_D^{20} +48$ (c, 0.9 in CHCl₃).

α -D-Furanose-form [22154-74-1]

Needles (EtOAc). Mp 176-177°. $[\alpha]_D^{20} +11.9$ (c, 0.8 in MeOH).

Tri-*Ac*: 3,5,6-Tri-*O*-acetyl-1,2-*O*-benzylidene- α -D-glucopyranose
 $C_{19}H_{22}O_9$ 394.377
 Mp 126-127°. $[\alpha]_D^{27} +39$ (CHCl₃).

Tribenzoyl: 3,5,6-Tri-*O*-benzoyl-1,2-*O*-benzylidene- α -D-glucopyranose [22154-75-2]
 $C_{34}H_{28}O_9$ 580.59
 Needles (EtOH). Mp 112-114°. $[\alpha]_D^{25} -62.7$ (CHCl₃).

5,6-*O*-Isopropylidene: 1,2-*O*-Benzylidene-5,6-*O*-isopropylidene- α -D-glucopyranose
 $C_{16}H_{20}O_6$ 308.33
 Mp 120-121°. $[\alpha]_D +3.5$ (CHCl₃).

3,5-*O*-Benzylidene: 1,2:3,5-Di-*O*-benzylidene- α -D-glucopyranose
 $C_{20}H_{20}O_6$ 356.374
 Mp 163-165°. $[\alpha]_D^{20} +35$ (c, 1.1 in Py).

3,5-*O*-Benzylidene, 6-*Ac*: 6-*O*-Acetyl-1,2:3,5-di-*O*-benzylidene- α -D-glucopyranose [22154-72-9]
 $C_{22}H_{22}O_7$ 398.412
 Needles (EtOH). Mp 144-145°. $[\alpha]_D +28.6$ (CHCl₃).

3,5-*O*-Benzylidene, 6-benzoyl: 6-*O*-Benzoyl-1,2:3,5-di-*O*-benzylidene- α -D-glucopyranose [22154-73-0]
 $C_{27}H_{24}O_7$ 460.482
 Cryst. (EtOH). Mp 157-158°. $[\alpha]_D +12.9$ (CHCl₃).

3-Me, 5,6-*O*-isopropylidene: 1,2-*O*-Benzylidene-5,6-*O*-isopropylidene-3-*O*-methyl- α -D-glucopyranose
 $C_{17}H_{22}O_6$ 322.357
 Mp 101-102°. $[\alpha]_D -22.9$ (CHCl₃).

6-Me, 3,5-*O*-benzylidene: 1,2:3,5-Di-*O*-benzylidene-6-*O*-methyl- α -D-glucopyranose [22154-71-8]
 $C_{21}H_{22}O_6$ 370.401
 Cryst. (Et₂O). Mp 98-100°. $[\alpha]_D +25.2$ (CHCl₃).

Helferich, B. et al., *Annalen*, 1953, **582**, 233, (α -D-fur synth, α -D-fur tri-*Ac*)

Wood, H.B. et al., *J.A.C.S.*, 1957, **79**, 3862, (α -D-fur benzylidene derivs, α -D-fur)

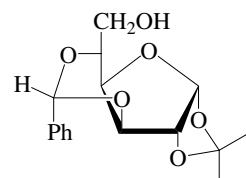
de Belder, A.N. et al., *Adv. Carbohydr. Chem.*, 1965, **20**, 219 (rev. acetals)

Coxon, B. et al., *Carbohydr. Res.*, 1968, **8**, 125 (α -D-fur conformn, pmr)

Dick, W.E. et al., *Carbohydr. Res.*, 1972, **23**, 229 (α -D-pyr-tri-*Ac*, config, pmr)

3,5-*O*-Benzylidene-1,2-*O*-isopropylideneglucopyranose, 8CI

B-28

 α -D-form $C_{16}H_{20}O_6$ 308.33

α -D-form [22164-09-6]

Mp 149°. $[\alpha]_D^{20} +23.4$ (CHCl₃).

6-*Ac*: 6-*O*-Acetyl-3,5-*O*-benzylidene-1,2-*O*-isopropylidene- α -D-glucopyranose
 $C_{18}H_{22}O_7$ 350.368
 Mp 126-127°. $[\alpha]_D +11.8$ (CHCl₃).

6-Benzoyl: 6-*O*-Benzoyl-3,5-*O*-benzylidene-1,2-*O*-isopropylidene- α -D-glucopyranose
 $C_{23}H_{24}O_7$ 412.438
 Mp 124°. $[\alpha]_D +3.5$ (CHCl₃).

6-Mesyl: 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-mesyl- α -D-glucopyranose
 $C_{17}H_{22}O_8S$ 386.422
 Mp 132-133°. $[\alpha]_D +12.8$ (Py).

6-Tosyl: 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-tosyl- α -D-glucopyranose
 $C_{23}H_{26}O_8S$ 462.52
 Mp 121-121.5°. $[\alpha]_D +13.5$ (CHCl₃).

6-Me: 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-methyl- α -D-glucopyranose
 $C_{17}H_{22}O_6$ 322.357
 Cryst. (EtOH aq.). Mp 95-96°. $[\alpha]_D^{20} +3.8$ (c, 7.0 in CHCl₃).

6-Benzyl: 6-*O*-Benzyl-3,5-*O*-benzylidene-1,2-*O*-isopropylidene- α -D-glucopyranose
 $C_{23}H_{26}O_6$ 398.455
 Cryst. (petrol). Mp 83.5-84°. $[\alpha]_D -1.3$ (CHCl₃).

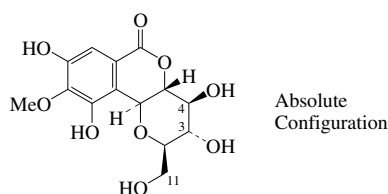
6-Trimethylsilyl: 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-trimethylsilyl- α -D-glucopyranose
 $C_{19}H_{28}O_6Si$ 380.512
 Cryst. (petrol). Mp 92°. $[\alpha]_D^{25} +9.47$ (c, 0.8 in CHCl₃).

Brigl, P. et al., *Ber.*, 1932, **65**, 1428 (α -D-form, synth, α -D-*Ac*, α -D-benzoyl)

Bell, D.J. *et al.*, *J.C.S.*, 1936, 859 (α -D-Me)
 Coleman, G.H. *et al.*, *J.O.C.*, 1957, **22**, 1336,
 (α -D-form, synth, α -D-Ac, α -D-benzyl)
 de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*,
 1965, **20**, 219; 1977, **34**, 179 (rev, acetals)
 Prey, V. *et al.*, *Annalen*, 1965, **682**, 228
 (trimethylsilyl)

Bergenin**B-29**

3,4,4a,10b-Tetrahydro-3,4,8,10-tetrahydroxy-2-(hydroxymethyl)-9-methoxypyran-6(2H)-one, 9CI.
Ardisia acid B. Ardisinic acid. Berginitol. Corylopsin. Cuscutin. Peltophorin. Vakerin
 [477-90-7]



$C_{14}H_{16}O_9$ 328.275
 Constit. of *Astilbe*, *Rodgersia*, *Peltoboykinia* and *Bergenia* spp. Also *Corylopsis*, *Mallotus*, *Caesalpinia*, *Shorea*, *Ardisia*, *Cuscuta*, *Connarus* and others. Antitussive agent. Prisms + $1H_2O$ (H_2O).
 Mp 138-139° Mp 230° (double Mp).
 $[\alpha]_D^{25}$ -47.3 (H_2O). $[\alpha]_D^{25}$ -37.3 (EtOH). Log P -2.03 (calc). λ_{max} 220 (ϵ 26300); 275 (ϵ 8320) (MeOH) (Berdy).

Penta-Ac: Mp 199-203° (192.5-193.5°).

11-O-(4-Hydroxybenzoyl): **11-O-(4-Hydroxybenzoyl)bergenin**
 [189691-23-4]

$C_{21}H_{20}O_{11}$ 448.382
 Constit. of *Bergenia ciliata*.

11-O-(3,4-Dihydroxybenzoyl): **11-O-(3,4-Dihydroxybenzoyl)bergenin**
 [189691-24-5]
 $C_{21}H_{20}O_{12}$ 464.382

Constit. of *Bergenia ciliata*.

11-O-(4-Hydroxy-3-methoxybenzoyl): **11-O-Vanilloylbergenin**
 [167962-93-8]
 $C_{22}H_{22}O_{12}$ 478.409

Constit. of the root of *Ardisia crenata*.

4-O-(3,4,5-Trihydroxybenzoyl): **4-O-Galloylbergenin**
 [82958-45-0]
 $C_{21}H_{20}O_{13}$ 480.381

Isol. from the bark of *Mallotus japonicus* and from the root of *Bergenia purpurascens*. Light brown amorph. powder + $1H_2O$. $[\alpha]_D^{25}$ -51 (c, 1.0 in MeOH).

11-O-(3,4,5-Trihydroxybenzoyl): **11-O-Galloylbergenin**
 [82958-44-9]
 $C_{21}H_{20}O_{13}$ 480.381

Isol. from the bark of *Mallotus japonicus* and from the root of *Bergenia purpurascens* and heartwood of *Peltophorum africanum*. Fine needles (EtOH aq.). Mp 188-190° (179° dec.). $[\alpha]_D^{25}$ +37.6 (c, 1.2 in EtOH).

11-O-(3-Hydroxy-4,5-dimethoxybenzoyl): **11-O-(3,4-Di-O-methylgalloyl)bergenin**
 [167962-94-9]
 $C_{23}H_{24}O_{13}$ 508.435

Constit. of the root of *Ardisia crenata*.

11-O-(4-Hydroxy-3,5-dimethoxybenzoyl): **11-O-Syringoylbergenin**
 [126485-47-0]
 $C_{23}H_{24}O_{13}$ 508.435

Constit. of the root of *Ardisia crenata*.

3,4-Bis-O-(3,4,5-trihydroxybenzoyl): **3,4-Di-O-galloylbergenin**
 [128308-97-4]
 $C_{28}H_{24}O_{17}$ 632.487

Isol. from the bark and leaf of *Mallotus japonicus*. Amorph. powder + $\frac{1}{2}H_2O$. $[\alpha]_D^{25}$ -137.7 (c, 0.5 in MeOH).

4,11-Bis-O-(3,4,5-trihydroxybenzoyl): **4,11-Di-O-galloylbergenin**
 [128332-18-3]
 $C_{28}H_{24}O_{17}$ 632.487

Isol. from the bark and leaf of *Mallotus japonicus*. Amorph. powder + $\frac{1}{2}H_2O$. $[\alpha]_D^{25}$ -12.5 (c, 0.5 in MeOH).

3,4,11-Tris-O-(3,4,5-trihydroxybenzoyl): **3,4,11-Tri-O-galloylbergenin**
 [128308-98-5]
 $C_{35}H_{28}O_{21}$ 784.594

Isol. from the bark and leaf of *Mallotus japonicus*. Amorph. powder + $1H_2O$. $[\alpha]_D^{25}$ -10.2 (c, 0.5 in MeOH).

11-O-(E-4-Hydroxycinnamoyl): **11-O-(E-p-Coumaroyl)bergenin**
 [145204-85-9]
 $C_{23}H_{22}O_{11}$ 474.42

Isol. from the bark of *Peltophorum africanum*. Amorph. powder.
 Mp 206-208°.

8,10-Di-Me ether: **Di-O-methylbergenin**
 [33815-57-5]
 $C_{16}H_{20}O_9$ 356.329

Constit. of *Ardisia japonica* and *Macaranga peltata*. Cryst. (MeOH).
 Mp 196°. $[\alpha]_D^{25}$ -62.7 (c, 1 in MeOH).

Penta-Me ether:
 Needles (H_2O). Mp 106°.

O-De-Me: **Norbergenin. Desmethylbergenin. Demethylbergenin**
 [79595-97-4]
 $C_{13}H_{14}O_9$ 314.248

Constit. of *Woodfordia fruticosa*, *Saxifraga stolonifera* and *Mallotus japonicus*. Prisms or needles (H_2O) (dimorph.). Mp 277-278° (275-277° dec.) (prisms) Mp 178-180° (needles). $[\alpha]_D^{17}$ -22.9 (c, 0.393 in H_2O). Incorrect (enantiomeric) abs. config. shown in the paper descr. this compd.

O-De-Me, 4-O-(3,4,5-trihydroxybenzoyl): **4-O-Galloynorbergenin**
 [126105-49-5]
 $C_{20}H_{18}O_{13}$ 466.354

Isol. from the bark and leaf of *Mallotus japonicus*. Cryst. powder (H_2O).
 Mp 219-220°. $[\alpha]_D^{25}$ -46.5 (c, 0.8 in MeOH).

O-De-Me, 11-O-(3,4,5-trihydroxybenzoyl): **11-O-Galloynorbergenin**
 [82958-46-1]
 $C_{20}H_{18}O_{13}$ 466.354

Isol. from the bark of *Mallotus japonicus*. Cryst. + $2H_2O$ (MeOH aq.).
 Mp 217° dec. $[\alpha]_D^{25}$ +63 (c, 0.7 in EtOH).

4a,10b-Didehydro: **4a,10b-Didehydrobergenin. Saxin**
 [40197-57-7]
 $C_{14}H_{14}O_9$ 326.259

Constit. of the roots of *Saxifraga ciliata*.

7-Hydroxy, O-de-Me, 10-Me ether:
 [438568-27-5]
 $C_{14}H_{16}O_{10}$ 344.274

Constit. of *Tridax procumbens*. Powder.

Mp 194-198°. $[\alpha]_D^{25}$ -36.4 (c, 0.59 in MeOH). λ_{max} 220 (log ϵ 3.18); 272 (log ϵ 4.45) (MeOH).

7-Methoxy, 10-deoxy: [438568-25-3]
 $C_{15}H_{18}O_9$ 342.302

Constit. of *Tridax procumbens*. Powder.
 Mp 198-203°. $[\alpha]_D^{25}$ -41 (c, 0.62 in MeOH).
 λ_{max} 220 (log ϵ 3.27); 270 (log ϵ 4.31) (MeOH).

Demethoxy: **Demethoxybergenin**
 [497161-95-2]
 $C_{13}H_{14}O_8$ 298.249

Constit. of the fruit of *Ardisia colorata*.
 Needles (MeOH).

Mp 305° dec. $[\alpha]_D^{20}$ -22.7 (c, 0.08 in MeOH). λ_{max} 263 (3.47); 321 (3.16) (MeOH).

Posternak, T. *et al.*, *Helv. Chim. Acta*, 1958, **41**, 1159-1162 (struct)

Hay, J.E. *et al.*, *J.C.S.*, 1958, 2231-2238 (isol, struct, synth)

Barry, R.D. *et al.*, *Chem. Rev.*, 1964, **64**, 247-248 (rev)

Joshi, D.S. *et al.*, *Naturwissenschaften*, 1969, **56**, 89-90 (isol)

Karrer, W. *et al.*, *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 1395 (occur)

Manzoor-I-Khuda, M. *et al.*, *Pak. J. Sci. Ind. Res.*, 1972, **15**, 87 (Saxin)

Taneyama, M. *et al.*, *Bot. Mag.*, 1979, **92**, 69-73 (biosynth)

Kalidhar, S.B. *et al.*, *Indian J. Chem., Sect. B*, 1981, **20**, 720-721 (Norbergenin)

Yoshida, T. *et al.*, *Phytochemistry*, 1982, **21**, 1180-1182 (gallates)

Taneyama, M. *et al.*, *Phytochemistry*, 1983, **22**, 1053-1054 (Norbergenin)

Chen, X.-M. *et al.*, *Phytochemistry*, 1987, **26**, 515-517 (gallates)

Bam, M. *et al.*, *Phytochemistry*, 1988, **27**, 3704-3705 (11-gallate)

Saijo, R. *et al.*, *Phytochemistry*, 1990, **29**, 267-270 (gallates)

Frick, W. *et al.*, *Carbohydr. Res.*, 1991, **209**, 101-107; **210**, 71-77 (synth, cryst struct)

Jahodar, L. *et al.*, *Fitoterapia*, 1992, **63**, 260-261 (pmr)

Mebe, P.P. *et al.*, *Phytochemistry*, 1992, **31**, 3286-3287 (11-Coumaroylbergenin)

Hoffmann-Bohm, K. *et al.*, *Planta Med.*, 1992, **58**, 544-548 (isol)

Jia, Z. *et al.*, *Nat. Med. (Tokyo)*, 1995, **49**, 187-189; *CA*, **123**, 193682 (11-benzoyl derivs)

Piacente, S. *et al.*, *J. Nat. Prod.*, 1996, **59**, 565-569 (isol)

Fujii, M. *et al.*, *Nat. Med. (Tokyo)*, 1996, **50**, 404-407; *CA*, **126**, 347184 (4-hydroxybenzoyl, 3,4-dihydroxybenzoyl)

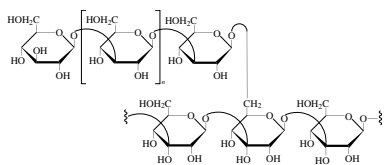
Sumino, M. *et al.*, *Chem. Pharm. Bull.*, 2002, **50**, 1484-1487 (Demethoxybergenin)

Akbar, E. *et al.*, *Heterocycles*, 2002, **57**, 733-739 (*Tridax procumbens* derivs)

Ye, Y.-P. *et al.*, *Acta Cryst. C*, 2004, **60**, o397-o398 (cryst struct)

Betafectin

Poly- $(1 \rightarrow 6)$ - β -D-glucopyranosyl- $(1 \rightarrow 3)$ - β -D-glucopyranose. PGG-glucan



Glucose polymer. Isol. from a proprietary, non-recombinant yeast strain of *Saccharomyces cerevisiae*. Macrophage-specific immunomodulator. Possible prophylactic agent for treating surgical infections. Phase I/II clinical trials (1994)

Jamas, S. *et al.*, *Carbohydr. Polym.*, 1990, **13**, 207-209 (*isol*)

Babineau, T.J. *et al.*, *Ann. Surg.*, 1994, **220**, 601-609 (*pharmacol*)

U.S. Pat., 1994, 5 322 841, (*Alpha-Beta Technology*); CA, **114**, 209485d (*isol*)

Kernodle, D.S. *et al.*, *Antimicrob. Agents Chemother.*, 1998, **42**, 545-549 (*pharmacol*)

Patchen, M.L. *et al.*, *Stem Cells (Miamisburg, Ohio)*, 1998, **16**, 208-217 (*pharmacol*)

Adams, D.S. *et al.*, *J. Cell Biochem.*, 2000, **77**, 221-233 (*pharmacol*)

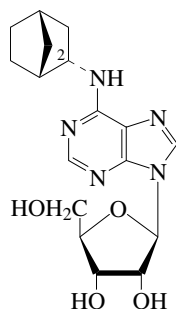
N-Bicyclo[2.2.1]hept-2-yladenosine, 9CI

N⁶-(2-endo-Norbornyl)adenosine.

(S)-ENBA

[121055-05-8]

[117773-72-5]



C₁₇H₂₃N₅O₄ 361.4

Adenosine A₁ receptor agonist. Stereochem. is (1R,2S,4S).

[97826-51-2, 97905-57-2, 117773-73-6, 117773-74-7, 121055-06-9]

Kusachi, S. *et al.*, *J. Med. Chem.*, 1985, **28**, 1636-1643 (*synth, exo, endo, pharmacol*)

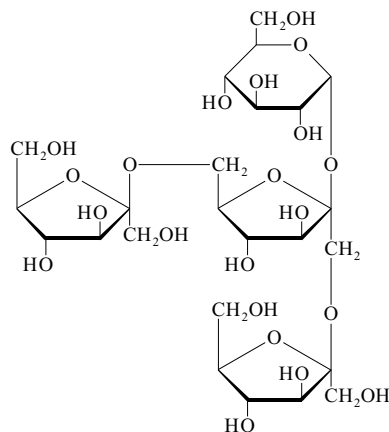
Eur. Pat., 1988, 291 051, (*Warner-Lambert*); CA, **111**, 7756v (*synth, isomers, pharmacol*)

Trivedi, B.K. *et al.*, *J. Med. Chem.*, 1989, **32**, 8-11 (*synth, pharmacol*)

Tomaru, A. *et al.*, *Jpn. J. Pharmacol.*, 1994, **65**, 361-365 (*pharmacol*)

B-30**Bifurcose**

1- β -D-Fructofuranosyl-(2 \rightarrow 1)-[β -D-fructofuranosyl-(2 \rightarrow 6)]- β -D-fructofuranosyl α -D-glucopyranoside. 1,6-Kestotetraose [3568-31-8]



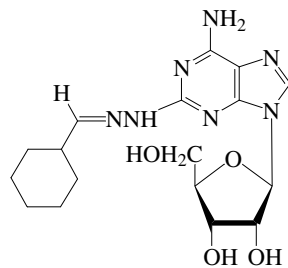
C₂₄H₄₂O₂₁ 666.583

A fructan. See Fructans, F-43. Isol. from barley (*Hordeum vulgare*) and *Panicum miliaceum* (proso millet). Cryst. Mp 156°. [α]_D²⁰ +8.8 (H₂O).

Schlubach, H.H. *et al.*, *Annalen*, 1958, **614**, 126; 1963, **665**, 191; 1964, **677**, 165 (*isol*)

Binodenoson, INN, USAN

2-[(Cyclohexylmethylene)hydrazino]adenosine, 9CI. MRE 0470. SHA 174 [144348-08-3]



C₁₇H₂₅N₇O₄ 391.429

Adenosine A_{2A} receptor agonist. Coronary vasodilator used in the diagnosis of coronary heart disease. Mp 154-157°. Binodenoson relates to the (E)-form.

Niiya, K. *et al.*, *J. Med. Chem.*, 1992, **35**, 4557-4561 (*synth, pharmacol*)

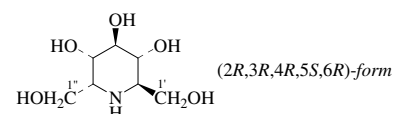
Eur. Pat., 1993, 567 094, (*Whitby Research*); CA, **121**, 9930c (*synth, pharmacol*)

Ijzerman, A.P. *et al.*, *Eur. J. Pharmacol.*, 1994, **268**, 95-104 (*pharmacol*)

Petruzzella, F.D. *et al.*, *J. Nucl. Cardiol.*, 2000, **7**, 123-131 (*activity*)

B-32**2,6-Bis(hydroxymethyl)-3,4,5-piperidinetriol, 9CI**

2,6-Dideoxy-2,6-iminoheptitol



C₇H₁₅NO₅ 193.199

(2R,3R,4R,5S,6R)-form

D-glycero-L-gulo-form.

α -Homonojirimycin

[119557-99-2]

Alkaloid from *Aglaonema treubii*, *Adenophora* spp. *Hyacinthus orientalis* and *Omphalea diandra*. Inhibitor of several α -glucosidases.

Mp 206-207°. [α]_D²⁰ +88.2 (c, 0.54 in H₂O).

7-O- β -D-Glucopyranoside: 1''-O- β -D-Glucopyranosyl- α -homonojirimycin. MDL 25637. 2,6-Dideoxy-7-O- β -D-glucopyranosyl-2,6-imino-D-glycero-L-gulo-heptitol, 9CI [104343-33-1]

[104419-80-9]

C₁₃H₂₅NO₁₀ 355.341

Alkaloid from *Commelina communis*, *Aglaonema treubii*, *Hyacinthus orientalis* and *Lobelia sessilifolia*. Potent α -glucosidase inhibitor, competitive inhibitor for intestinal sucrose. Also inhibits maltase, trehalase, glucoamylase and α -amylase. Antidiabetic agent. Amorph. powder + 1H₂O.

Mp 84-86° Mp 131-134° (as hydrochloride) Mp 216-219° synthetic. [α]_D²⁰ +20 (c, 0.5 in H₂O). [α]_D +24.7 (c, 0.7 in H₂O). [α]_D +27.5 (c, 1 in H₂O).

1,3,4,5-Tetra-O-benzoyl: [110205-71-5] Needles (Et₂O/petrol). Mp 76-78°.

5-O- α -D-Galactopyranoside: 5-O- α -D-Galactopyranosyl- α -homonojirimycin [185826-28-2]

C₁₃H₂₅NO₁₀ 355.341

Alkaloid from *Aglaonema treubii*. [α]_D +168.8 (c, 0.54 in H₂O).

(2R,3R,4R,5R,6S)-form β -Homomanno-

mycin

[154349-07-2]

Alkaloid from *Aglaonema treubii* and *Hyacinthus orientalis*. β -Mannosidase inhibitor.

Hygroscopic solid. [α]_D +12.1 (c, 0.27 in H₂O).

(2R,3R,4S,5R,6S)-form 6-Epi- α -homomanno-

nojirimycin

[127995-31-7]

[127995-28-2] Potent inhibitor of

α -fucosidase.

Hygroscopic solid; cryst. (MeOH/CHCl₃) (as hydrochloride). Mp 203-205° (hydrochloride). [α]_D²⁰ +26.4 (c, 0.5 in H₂O).

(2R,3S,5S,6R)-form D-glycero-L-galacto-

form. α -Homogalactostatin.

3,4-Diepi- α -

homonojirimycin

[169872-51-9]

Alkaloid from *Aglaonema treubii*.

$[\alpha]_D^{25} +39.1$ (c, 0.51 in H₂O). Existence of this isomer as a natural product is in doubt. C-4 is achiral.

(2*R*,3*R*,5*R*,6*R*)-form α -Homomannojirimycin

[127995-29-3]

Alkaloid from *Hyacinthus orientalis* and *Aglaonema treubii*. Nonselective α -glucosidase inhibitor.

Hygroscopic solid. $[\alpha]_D^{20} +4.4$ (c, 0.55 in H₂O) (natural). $[\alpha]_D^{20} +7.4$ (c, 0.55 in H₂O) (synthetic). C-4 is achiral.

(2*R*,3*R*,4*R*,5*R*,6*R*)-form β -Homomannojirimycin

[157544-15-5]

Alkaloid from *Aglaonema treubii* and *Hyacinthus orientalis*.

No phys. props. reported. *Meso*-stereoisomer.

(2*R*,3*R*,4*S*,5*S*,6*R*)-form *D*-glycerol-*L*-allo-form. α -Homoallonojirimycin.

4-Epi- α -homomannojirimycin

[253785-13-6]

Alkaloid from *Aglaonema treubii*.

$[\alpha]_D^{25} +39.1$ (c, 0.51 in H₂O). *Meso*-stereoisomer. Stereochem. of natural product revised in 1999.

Rhinehart, B.L. *et al.*, *J. Pharmacol. Exp. Ther.*, 1987, **24**, 915; *CA*, **107**, 109172m

Liu, P.S. *et al.*, *J.O.C.*, 1987, **52**, 4717-4721,

(α -Homomannojirimycin, *pmr*, *ms*, *derivs*, *synth*)

Kite, G.C. *et al.*, *Tet. Lett.*, 1988, **29**, 6483-6486 (*isol*, *cmr*)

Anzeveno, P.B. *et al.*, *J.O.C.*, 1989, **54**, 2539-2542 (*MDL* 25637, *synth*)

Bruce, T. *et al.*, *Tetrahedron*, 1992, **48**,

10191-10120 (α -Homomannojirimycin,

6-Epi- α -homomannojirimycin, *synth*, *pmr*, *cmr*, *biochem*)

Holt, K.E. *et al.*, *J.C.S. Perkin 1*, 1994, 231-234 (α -Homomannojirimycin, β -Homomannojirimycin, *synth*, *pmr*, *biochem*)

Asano, N. *et al.*, *J. Nat. Prod.*, 1997, **60**, 98-101; 1998, **61**, 625-628 (*isol*, *pmr*, *cmr*)

Asano, N. *et al.*, *J. Med. Chem.*, 1998, **41**, 2565-2571 (*synth*, *cryst struct*, *pmr*, *cmr*, *activity*)

Shilvlock, J.P. *et al.*, *Tetrahedron: Asymmetry*, 1998, **9**, 3505-3516 (α -Homomannojirimycin, β -Homomannojirimycin, *synth*, *pmr*)

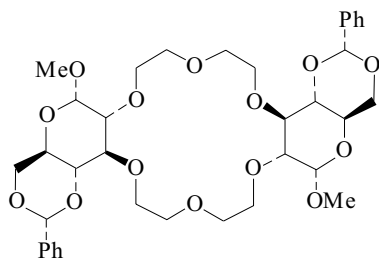
Martin, O.R. *et al.*, *Bioorg. Med. Chem. Lett.*, 1999, **9**, 3171-3174 (*stereochem*)

Kim, H.S. *et al.*, *Planta Med.*, 1999, **65**, 437-439 (*isol*)

Watson, A.A. *et al.*, *Phytochemistry*, 2000, **56**, 265-295 (*rev*)

Bis(methyl-4,6-*O*-benzylidene[2,3-*b*][2',3'-*k*]-1,4,7,10,13,16-hexaoxacyclooctadecane

B-35



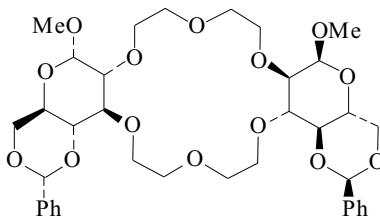
C₃₆H₄₈O₁₄ 704.767

Chiral complexing agent. Mp 258-261°. $[\alpha]_D^{25} +59.3$ (c, 1 in CHCl₃).

Stoddart, J.F. *et al.*, *Chem. Soc. Rev.*, 1979, **8**, 85
Bakó, P. *et al.*, *Annalen*, 1981, 1163

Bis(methyl-4,6-*O*-benzylidene[2,3-*b*][3',2'-*k*]-1,4,7,10,13,16-hexaoxacyclooctadecane

B-36



C₃₆H₄₈O₁₄ 704.767

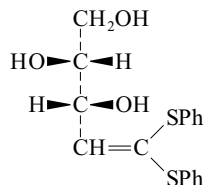
Chiral complexing agent. Mp 227-230°. $[\alpha]_D^{25} +34.2$ (c, 1 in CHCl₃).

Stoddart, J.F. *et al.*, *Chem. Soc. Rev.*, 1979, **8**, 85
Bakó, P. *et al.*, *Annalen*, 1981, 1163

5,5-Bis(phenylthio)-4-pentene-1,2,3-triol

B-37

1,2-Dideoxy-1,1-bis(phenylthio)-pent-1-enitol. 2-Deoxypent-1-enose diphenyl dithioacetal



(2*R*,3*R*)-form

C₁₇H₁₈O₃S₂ 334.459

(2*R*,3*R*)-form *D*-threo-form

1,2-Isopropylidene: 2-Deoxy-4,5-*O*-isopropylidene-*D*-threo-pent-1-enose diphenyl dithioacetal
[37107-88-3]

C₂₀H₂₂O₃S₂ 374.524

Synthon. Pale yellow syrup. $[\alpha]_D^{24} -61$ (c, 1.1 in CHCl₃).

1,2-Isopropylidene, 3-(4-nitrobenzoyl):
[37107-90-7]

Cryst. (MeOH). Mp 90-92°. $[\alpha]_D^{22} -47$ (c, 1.2 in CHCl₃).

(2*R*,3*S*)-form *D*-erythro-form

1,2-Isopropylidene: 1,2-Dideoxy-4,5-*O*-isopropylidene-1,1-bis(phenylthio)-*D*-erythro-pent-1-enitol. 2-Deoxy-4,5-*O*-isopropylidene-*D*-erythro-pent-1-enose diphenyl dithioacetal
[28097-89-4] Carbohydrate synthon. Syrup.

1,2-Isopropylidene, 3-*O*-(4-nitrobenzoyl):
[28697-90-7]

Needles (EtOH). Mp 102-103°. $[\alpha]_D^{23} +38$ (c, 1 in CHCl₃).

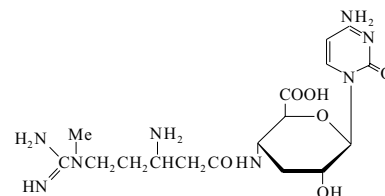
Horton, D. *et al.*, *Carbohydr. Res.*, 1970, **13**, 33 (*synth*, *pmr*)

Berrang, B. *et al.*, *J.O.C.*, 1973, **38**, 187 (*deriv*)

Blasticidin H

B-38

[61461-71-0]



C₁₇H₂₈N₈O₆ 440.458

Nucleoside antibiotic. Isol. from *Streptomyces griseochromogenes*. Shows moderate antibiotic activity. Sol. H₂O. λ_{\max} 231 (ε 8900); 268 (ε 7000) (H₂O) (Derep). λ_{\max} 275 (ε 14800) (0.1*N* HCl) (Derep). λ_{\max} 266 (ε 11400) (0.1*N* NaOH) (Derep). λ_{\max} 270 (ε 9600) (MeOH) (Berdy). λ_{\max} 277 (ε 13500) (H₂O) (Berdy).

Hydrochloride (1:2): Mp 230-235° dec.

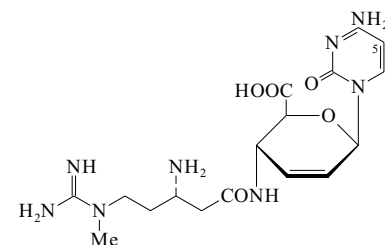
Watanabe, K.A. *et al.*, *Tetrahedron*, 1976, **32**, 1493 (*synth*)

Seto, H. *et al.*, *J. Antibiot.*, 1977, **30**, 1019 (*isol*, *props*)

Blasticidin S

B-39

Cytovirin. NSC 91770. A 83094C. Antibiotic 21544. Antibiotic A 83094C. Bla-S
[2079-00-7]



C₁₇H₂₆N₈O₅ 422.443

Nucleoside-type antibiotic. Isol. from *Streptomyces griseochromogenes*, *Streptomyces globifer*, *Streptomyces olivochromogenes-citovirensis* and *Streptomyces setonii*. Antimicrobial and antifungal agent. Contact fungicide used against rice blast disease in Japan. Needles (H₂O).

Mp 235° (252-253°) dec. $[\alpha]_D^{11} +108.4$ (c, 1 in H₂O). p*K*_{a1} 2.4; p*K*_{a2} 4.6; p*K*_{a3} 8; p*K*_{a4} 0. Hydrol. → Cytosinine. λ_{\max} 275 (ε 14800) (0.1*N* HCl) (Derep). λ_{\max} 266 (ε 11400) (0.1*N* NaOH) (Derep). λ_{\max} 231 (ε 8900); 268 (ε 7000) (H₂O) (Derep).

► LD₅₀ (rat, orl) 16 mg/kg. LD₅₀ (rat, skn) 3100 mg/kg. EC49000000

Hydrochloride: Mp 229° dec.

Hydrochloride (1:2): Mp 195° dec.

Me ester; hydrochloride (1:3): Mp 206-208.5° dec.

***N*-De-Me: Demethylblasticidin S**

[63257-29-4]

C₁₆H₂₄N₈O₅ 408.416

From *Streptomyces griseochromogenes* IFO13413. Active against rice blast. Sol.

H₂O. λ_{\max} 274 (H₂O) (Berdy). λ_{\max} 274 (€ 12900) (HCl) (Berdy). λ_{\max} 267 (€ 9200) (NaOH) (Berdy).

► LD₅₀ (mus, orl) 35 mg/kg. MP8930000

3''-N-Leucyl: **Leucylblesticidin S** Sch 36606. Antibiotic Sch 36606 [19018-47-4]

C₂₃H₃₇N₉O₆ 535.602

Prod. by *Nocardioideus albus* and *Streptomyces griseochromogenes*. Phytotoxin. Shows acaricidal, insecticidal and antiinflammatory props. Needles (H₂O). Sol. H₂O; fairly sol. MeOH, DMSO; poorly sol. CHCl₃, hexane.

Mp 252° dec. λ_{\max} 269 (€ 8000) (H₂O). λ_{\max} 276 (€ 11000) (HCl) (Berdy).

5-Fluoro: **Fluoroblasticidin S** [102865-76-9]

C₁₇H₂₅FN₈O₅ 440.433

Prod. by *Streptomyces griseochromogenes* IFO13413 in presence of fluorocytosine. Antimicrobial agent. Powder. Sol. H₂O; poorly sol. butanol, hexane.

Mp 225-227°. λ_{\max} 280 (€ 13500); 282 (€ 8020) (HCl) (Berdy). λ_{\max} 275 (€ 5500) (NaOH) (Berdy). λ_{\max} 276 (€ 12000) (H₂O) (Berdy).

5-Hydroxymethyl: **5-Hydroxymethylblesticidin S** A 83094B. Antibiotic A 83094B [123067-52-7]

C₁₈H₂₈N₈O₆ 452.469

From *Streptomyces setonii*. Phytotoxin. Herbicide.

Mp 225° dec. λ_{\max} 279 (€ 11000) (0.01M HCl) (Derep). λ_{\max} 272 (€ 8000) (H₂O) (Derep). λ_{\max} 272 (pH 7 buffer) (Berdy).

Yonehara, H. et al., *J. Antibiot., Ser. A*, 1963, **16**, 195

Otake, N. et al., *Tet. Lett.*, 1965, 1411 (struct)

Fox, J.J. et al., *Tet. Lett.*, 1966, 897 (struct)

Yonehara, H. et al., *Tet. Lett.*, 1966, 3785 (abs config)

Seto, H. et al., *Tet. Lett.*, 1966, 3793 (biosynth)

Misato, T. et al., *Antibiotics*, (Gottlieb, D. et al., Ed.), Springer, N.Y., 1967, **1**, 434 (rev)

Seto, H. et al., *Agric. Biol. Chem.*, 1968, **32**, 1299-1305 (Leucylblesticidin S)

Seto, H. et al., *J. Antibiot.*, 1977, **30**, 1022 (isol, deriv)

Swaminathan, V. et al., *Biochim. Biophys. Acta*, 1981, **655**, 335 (cryst struct)

Yonehara, H. et al., *Drugs Pharm. Sci.*, 1984, **22**, 651 (rev)

Japan. Pat., 1985, 60 123 486; *CA*, **105**, 23093 (Fluoroblasticidin S)

Probhakaran, P.C. et al., *Tet. Lett.*, 1986, **27**, 3815 (biosynth)

Kawashima, A. et al., *Agric. Biol. Chem.*, 1987, **51**, 1183 (Fluoroblasticidin S)

Dallwag, H. et al., *J. Antibiot.*, 1988, **41**, 1145-1147 (Leucylblesticidin S)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Larsen, S.H. et al., *J. Antibiot.*, 1989, **42**, 470 (isol, deriv)

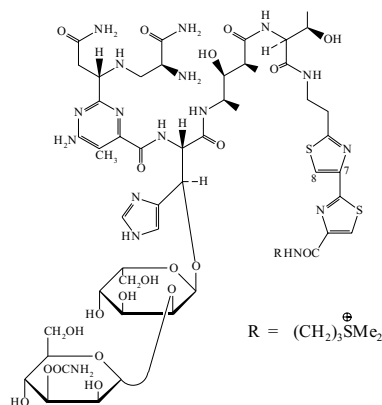
Zhang, Q. et al., *Tetrahedron*, 2000, **56**, 693-701 (biosynth)

Ichikawa, Y. et al., *Chem. Eur. J.*, 2004, **10**, 3241-3251 (synth)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BLX500

Bleomycin A₂

N¹-[3-(Dimethylsulfonio)propyl]bleomycinamide, 9CI. Zhengguangmycin A₂. NSC 125066 [11116-31-7]



C₅₅H₈₄N₁₇O₂₁S₃⁺ 1415.568

Major component of the large Bleomycin complex of glycopeptide antibiotics. Bleomycin complex isol. from *Streptomyces verticillus*. Semisynthetic members are prod. by directed biosynth. or semisynth. Important antitumour agent claimed for clinical use against specific tumours. Active against gram-positive and -negative bacteria. Sol. MeOH, H₂O; fairly sol. EtOH; poorly sol. Me₂CO, hexane. Mol. formula incorrect in *CA* (N₁₆). λ_{\max} 245 (€ 23600); 296 (€ 19600) (H₂O) (Derep). λ_{\max} 243; 290; 595 (MeOH) (Berdy). λ_{\max} 243 (E1%/1cm 86); 290 (E1%/1cm 120) (H₂O) (Berdy).

► Skin, eye and respiratory tract irritant.

Possible human carcinogen (applies to Bleomycin complex). Pulmonary toxicity reported when used therapeutically. LD₅₀ (mus, ipr) 130 mg/kg; LD₅₀ (mus, ivn) 120 mg/kg. EC5988500

7,8-Dihydro: **Phleomycin A₂**

[52198-87-5] C₅₅H₈₆N₁₇O₂₁S₃⁺ 1417.584

From *Streptomyces verticillus*.

► EC5991560

[9041-93-4]

Takita, T. et al., *J. Antibiot.*, 1972, **25**, 755-758 (struct)

Umezawa, H. et al., *Biomedicine*, 1973, **18**, 459-475 (rev, synth, props)

Ger. Pat., 1973, 2 310 462; *CA*, **80**, 69145 (deriv)

Umezawa, H. et al., *Antibiotics (N.Y.)*, 1975, **3**, 21-33 (rev)

Japan. Pat., 1975, 75 123 884; *CA*, **84**, 41981 (isol)

Takita, T. et al., *J. Antibiot.*, 1978, **31**, 801-804 (struct)

Minster, D.K. et al., *J.O.C.*, 1978, **43**, 1624-1626 (synth)

Oppenheimer, N.J. et al., *Biochemistry*, 1979, **18**, 3439-3445 (pmr, struct)

Roy, S.M. et al., *Cancer Res.*, 1981, **41**, 4471

IARC Monog., 1981, **26**, 97; *Suppl.*, **7**, 134 (rev, tox)

Aoyagi, Y. et al., *J.A.C.S.*, 1982, **104**, 5537-5538; 1998, **120**, 11285-11296 (synth)

B-40

Saito, S. et al., *J. Antibiot.*, 1983, **36**, 92-95 (synth)

Takita, T. et al., *Drugs Pharm. Sci.*, 1984, **22**, 594 (rev)

Grigg, G.W. et al., *J. Antibiot.*, 1985, **38**, 99-110 (props)

Kirk-Othmer *Encycl. Chem. Technol.*, 4th edn., Wiley, 1991, **3**, 290 (rev)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 458

Boger, D.L. et al., *J.A.C.S.*, 1994, **116**, 5607-5618; 5619-5630; 5631-5646; 5647-5656 (synth)

Katano, K. et al., *J.A.C.S.*, 1998, **120**, 11285-11296 (synth)

Boger, D.L. et al., *Angew. Chem., Int. Ed.*, 1999, **38**, 448-476 (rev)

Hecht, S.M. et al., *J. Nat. Prod.*, 2000, **63**, 158-168 (rev, props)

Zou, Y. et al., *J.A.C.S.*, 2002, **124**, 9476-9488 (Deamidobleomycin, synth)

Galm, U. et al., *Chem. Rev.*, 2005, **105**, 739-758 (rev)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BLY250

Bleomycin B₂

B-41

N¹-[4-[(Aminoiminomethyl)amino]butyl]bleomycinamide, 9CI. Phleomycin D₂. Zhengguangmycin B₂ [9060-10-0]

As Bleomycin A₂, B-40 with R = -(CH₂)₄NHC(NH₂)=NH

C₅₅H₈₄N₂₀O₂₁S₂ 1425.522

See also Bleomycin A₂, B-40 for props. and general references. Major component of the antibiotic complex Bleomycin, BAN isol. from *Streptomyces verticillus*. Antineoplastic antibiotic.

Log P -13.1 (uncertain value) (calc).

► Possible human carcinogen (IARC 2B). EC5991200

7,8-Dihydro: **Phleomycin D₁**

[11031-11-1]

C₅₅H₈₆N₂₀O₂₁S₂ 1427.538

From *Streptomyces verticillus*. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. λ_{\max} 244 (E1%/1cm 128); 301 (E1%/1cm 46.8) (MeOH) (Berdy).

► LD₅₀ (mus, ivn) 25 mg/kg; LD₅₀ (mus, ivn) 25 - 50 mg/kg. SY0550000

[11031-12-2, 11056-06-7]

Ger. Pat., 1970, 2 006 446, (Microbiological Research Foundation); *CA*, **74**, 11890u (synth)

Takita, T. et al., *J. Antibiot.*, 1972, **25**, 197 (synth)

Umezawa, H. et al., *Biomedicine*, 1973, **18**, 459 (synth)

Fujii, A. et al., *J. Antibiot.*, 1974, **27**, 73 (biosynth)

Chen, D.M. et al., *Biochemistry*, 1977, **16**, 2731 (nmr)

Takita, T. et al., *J. Antibiot.*, 1978, **31**, 801 (struct)

Dell, A. et al., *Biochem. Biophys. Res. Commun.*, 1981, **102**, 730 (ms)

Templin, J. et al., *Biochem. Pharmacol.*, 1992, **43**, 615 (pharmacol)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 458

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BLY760

Bleomycin B₄**Phleomycin F**

[9060-11-1]

As Bleomycin A₂, B-40 withR = -(CH₂)₄NHC(=NH)NH(CH₂)₄NHC(NH₂)=NHC₆₀H₉₅N₂₃O₂₁S₂ 1538.684

See also Bleomycin A₂, B-40 for props. and general references. Minor component of the antibiotic complex Bleomycin, BAN isol. from *Streptomyces verticillus*. Antineoplastic agent. Log P -11.1 (uncertain value) (calc).

► Possible human carcinogen (IARC 2B).

7,8-Dihydro: Phleomycin E

[11031-13-3]

C₆₀H₉₇N₂₃O₂₁S₂ 1540.7

From *Streptomyces verticillus*. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. λ_{max} 244 (E1%/1cm 128); 301 (E1%/1cm 41.8) (MeOH) (Berdy).

► LD₅₀ (mus, ivn) 25 mg/kg; LD₅₀ (mus, ivn) 25 - 50 mg/kg. SY0560000

[11031-14-4, 11056-06-7]

Takita, T. *et al.*, *J. Antibiot.*, 1972, **25**, 197 (struct)

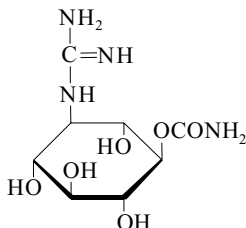
Umezawa, H. *et al.*, *Biomedicine*, 1973, **18**, 459 (struct)

Fujii, A. *et al.*, *J. Antibiot.*, 1974, **27**, 73 (biosynth)

Dell, A. *et al.*, *Biochem. Biophys. Res. Commun.*, 1980, **97**, 987 (ms)

Bluensidine**B-43**

1-O-Carbamoyl-3-deoxy-3-guanidino-scylo-inositol
[4939-64-4]

C₈H₁₆N₄O₆ 264.238

Present in Bluensomycin, B-44.

Hydrochloride: Mp 190-194° dec. [α]_D +1 (H₂O).

N,N,O,O,O,O-Hexa-Ac:

C₂₀H₂₈N₄O₁₂ 516.461

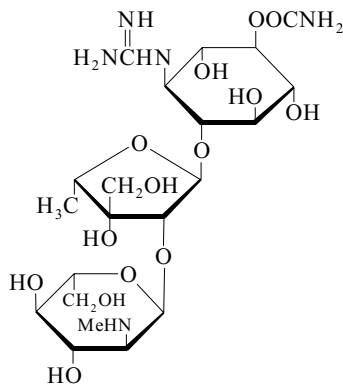
Mp 250-251° dec. [α]_D +5 (c, 0.9 in CHCl₃).

Bannister, B. *et al.*, *J.A.C.S.*, 1963, **85**, 119**B-42 Bluensomycin, INN**

Bluensin. Glebomycin. S 438. U 12898.

Antibiotic S 438. Antibiotic U 12898

[11011-72-6]

C₂₁H₃₉N₅O₁₄ 585.564

Aminoglycoside antibiotic. Isol. from *Streptomyces bluensis* var. *bluensis* and *Streptomyces hygroscopicus* forma *glebosus*. Shows broad-spectrum activity.

► LD₅₀ (mus, ipr) 1250 mg/kg. EC7600000

Hydrochloride: Mp 190-194° dec. [α]_D²⁴ +0.52 (c, 1 in H₂O).

Hydrochloride (1:2): [α]_D²⁵ -92 (c, 1 in H₂O).

Sulfate: [α]_D²⁵ -87 (c, 1 in H₂O).

Mason, D.J. *et al.*, *Antimicrob. Agents Chemother.*, 1962, 607 (isol)

Bergy, M.E. *et al.*, *Antimicrob. Agents Chemother.*, 1962, 614 (isol, props)

Kawaguchi, H. *et al.*, *J. Antibiot., Ser. A*, 1962, **15**, 7; 15; 21 (Glebomycin)

Bannister, B. *et al.*, *J.A.C.S.*, 1963, **85**, 119; 234 (struct)

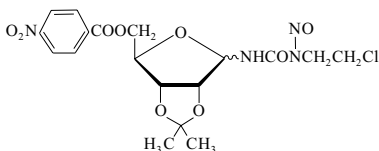
Barlow, C.B. *et al.*, *J. Antibiot.*, 1972, **25**, 281 (struct)

Ochab, S. *et al.*, *Pol. J. Pharmacol. Pharm.*, 1973, **25**, 105 (purifn)

Munro, M.H.G. *et al.*, *J. Antibiot.*, 1982, **35**, 1331 (pmr, cmr, struct)

Bofumustine, INN**B-45**

N-(2-Chloroethyl)-N'-[2,3-O-(1-methylethylidene)-5-O-(4-nitrobenzoyl)-D-ribofuranosyl]-N-nitrosourea, 9CI. 1-(2-Chloroethyl)-3-(2,3-O-isopropylidene-D-ribofuranosyl)-1-nitrosourea 5'-p-nitrobenzoate. ICIG 1105. RFCNU [55102-44-8]

C₁₈H₂₁ClN₄O₉ 472.838

Antineoplastic, immunosuppressive agent. Mp 100-103°. Log P 2.76 (calc).

► LD₅₀ (mus, ipr) 90 mg/kg. Mutagenic props. YS5079000

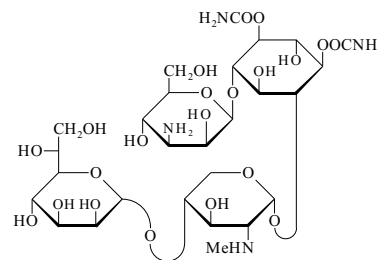
Montero, J.L. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1974, **279**, 809 (synth, pharmacol)

Montero, J.L. *et al.*, *Eur. J. Med. Chem. (Chim. Ther.)*, 1977, **12**, 408 (synth, props)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RFU600

Boholmycin**B-46**

[117192-99-1]

C₂₇H₄₈N₄O₂₁ 764.69

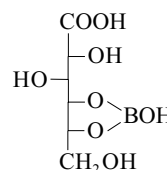
Aminoglycoside antibiotic. Prod. by *Streptomyces hygroscopicus*. Active against gram-positive and -negative bacteria. Amorph. powder + 4H₂O (as dihydrochloride). Sol. H₂O; fairly sol. MeOH; poorly sol. EtOH, hexane. Mp 214-219° dec. (dihydrochloride). [α]_D²⁸ +52 (c, 0.5 in H₂O).

► LD₅₀ (mus, ivn) 1000-2000 mg/kg. NM7521920

Saitoh, K. *et al.*, *J. Antibiot.*, 1988, **41**, 855 (isol, pmr, ir, props)

Borogluconic acid**B-47**

D-Gluconic acid cyclic 4,5-ester with boric acid (H₃BO₃), 10CI, 9CI

C₆H₁₁BO₈ 221.959

Na salt: [62185-81-3] Corrosion inhibitor.

Ca salt (2:1): Calcium borogluconate [5743-34-0] Used to treat hypocalcaemia in cattle (bovine milk fever). Sol. H₂O. Dec. on heating.

Dryerre, H. *et al.*, *Vet. Rec.*, 1935, **15**, 456; *CA*, **29**, 7472 (synth)

Macpherson, H.T. *et al.*, *Biochem. J.*, 1938, **32**, 76 (struct)

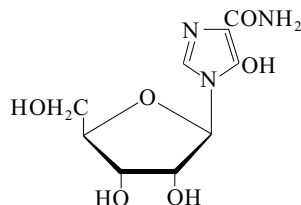
Mullen, P.A. *et al.*, *Vet. Rec.*, 1975, **97**, 87 (use)

Gyrd-Hansen, N. *et al.*, *J. Vet. Pharmacol. Ther.*, 1981, **4**, 15 (use)

Merck Index, 13th edn., 2001, No. 1653 (Ca salt)

Bredinin**B-48**

5-Hydroxy-1- β -D-ribofuranosyl-1H-imidazole-4-carboxamide, 9CI. **Mizoribine**, INN, JAN
[50924-49-7]



C₉H₁₃N₃O₆ 259.218

Nucleoside antibiotic. Isol. from *Eupenicillium brefeldianum* and *Streptomyces brefeldianum*. Possesses antiviral, antitumour and immunosuppressant activity. Launched 1984. Cryst. (MeOH). Sol. H₂O; fairly sol. MeOH, butanol-H₂O, EtOH; poorly sol. butanol, hexane.

Mp 200° dec. $[\alpha]_D^{27}$ -35 (c, 0.8 in H₂O). Log P -2 (calc). λ_{\max} 245 and 279 nm. λ_{\max} 245 (€ 6350); 281 (€ 12800) (0.1M HCl) (Derep). λ_{\max} 277 (€ 17100) (0.1M NaOH) (Derep). λ_{\max} 245 (€ 6480); 279 (€ 15000) (H₂O) (Derep). λ_{\max} 245 (E1%/1cm 250); 279 (E1%/1cm 580) (H₂O) (Berdy). λ_{\max} 245 (E1%/1cm 260); 281 (E1%/1cm 495) (HCl) (Berdy). λ_{\max} 277 (E1%/1cm 660) (NaOH) (Berdy).

► LD₅₀ (rat, orl) 3100 mg/kg. Exp. reprod. and teratogenic effects; LD₅₀ (mus, ivn) 1500 - 2500 mg/kg, LD₅₀ (mus, ipr) 5000 mg/kg, LD₅₀ (mus, ivn) 1500 - 3500 mg/kg. N13980000

Mizuno, K. *et al.*, *J. Antibiot.*, 1974, **27**, 775 (isol, struct, props)

Mizuno, K. *et al.*, *Chem. Pharm. Bull.*, 1975, **23**, 245 (synth)

Mizuno, K. *et al.*, *Tet. Lett.*, 1975, 4031 (struct)

Miles, D.W. *et al.*, *J. Phys. Chem.*, 1983, **87**, 2444 (cd, conformn)

Fukukawa, K. *et al.*, *Chem. Pharm. Bull.*, 1984, **32**, 1644 (synth)

Tarumi, Y. *et al.*, *J. Het. Chem.*, 1984, **21**, 529; 849 (synth, bibl)

Tsukagoshi, S. *et al.*, *Drugs of Today*

(Barcelona), 1985, **21**, 173 (rev, pharmacol)

Gu, R. *et al.*, *CA*, 1986, **105**, 191521 (synth)

Fukukawa, K. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 3653 (synth)

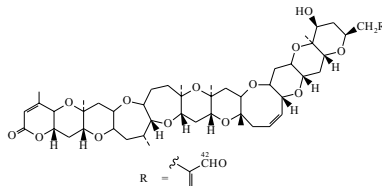
Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 495

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BMM000

Brevetoxin B

Brevetoxin 2. T34 toxin. T47 toxin. Brevetoxin PbTx2. GB2 Toxin. PbTx2. Toxin GB2
[79580-28-2]



C₅₀H₇₀O₁₄ 895.095

Constit. of Florida red tide organism *Gymnodinium breve* (*Ptychodiscus brevis*). Ichthyotoxin. Cryst. Sol. CHCl₃, hexane; poorly sol. H₂O.

Mp 295-297°. λ_{\max} 208 (€ 16000) (MeOH) (Derep). λ_{\max} 213 (EtOH) (Berdy).

► XW5886000

42-Alcohol: **Dihydrobrevetoxin B**.

Brevetoxin PbTx3. Toxin GB3. GB3.

Brevetoxin 3. PbTx3

[85079-48-7]

C₅₀H₇₂O₁₄ 897.11

From *Gymnodinium breve*. Ichthyotoxin and neurotoxin. Needles (MeCN).

Mp 291-293°. Has R = -CH(CH₂OH)=CH₂. λ_{\max} 208 (€ 16000) (MeOH) (Derep).

► XW5885000

37-Ac: GB5 toxin. Toxin GB5. Brevetoxin PbTx5. PbTx5

[97958-42-4]

C₅₂H₇₂O₁₅ 937.132

Prod. by *Gymnodinium breve*. Toxin.

Amorph.

27S,28R-epoxide: GB6 toxin. Toxin GB6.

Brevetoxin PbTx6. PbTx6

[97938-23-3]

C₅₀H₇₀O₁₅ 911.094

Prod. by *Gymnodinium breve*. Toxin.

Cryst. (MeOH).

Mp 295-297°. Sinters at 255°.

Lin, Y. *et al.*, *J.A.C.S.*, 1981, **103**, 6773 (cryst struct)

Chou, H.-N. *et al.*, *Tet. Lett.*, 1982, **23**, 5521;

1985, **26**, 2865 (deriv, isol, cryst struct)

Shimizu, Y. *et al.*, *J.A.C.S.*, 1986, **108**, 514

(struct, bibl)

Rein, K.S. *et al.*, *J.O.C.*, 1994, **59**, 2101; 2107

(conformn, props)

Nicolaou, K.C. *et al.*, *J.A.C.S.*, 1995, **117**, 1171;

1173; 10227; 10239; 10252 (synth)

Crouch, R.C. *et al.*, *Tetrahedron*, 1995, **51**, 8409

(pmr, cmr, deriv)

Nicolaou, K.C. *et al.*, *Angew. Chem., Int. Ed.*,

1996, **35**, 589 (rev, synth)

Nicolaou, K.C. *et al.*, *Classics in Total*

Synthesis, Targets, Strategies, Methods, VCH,

1996, 731 (bibl, synth)

Matsuo, G. *et al.*, *J.A.C.S.*, 2004, **126**, 14374-

14376 (synth)

Brevetoxin C

[82983-92-4]

As Brevetoxin B, B-49 with

R = -COCH₂Cl

C₄₉H₆₉ClO₁₄ 917.528

Constit. of Florida red tide organism *Gymnodinium breve*. Ichthyotoxin and neurotoxin. Sol. CHCl₃, hexane; poorly

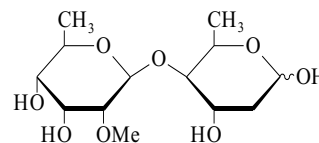
B-49

sol. H₂O. λ_{\max} 208 (€ 16000) (MeOH) (Derep). λ_{\max} 208 (€ 11300) (MeOH) (Berdy).

Golik, J. *et al.*, *Tet. Lett.*, 1982, **23**, 2535
Shimizu, Y. *et al.*, *J.A.C.S.*, 1986, **108**, 514
(struct, bibl)

Brevobiose**B-51**

2,6-Dideoxy-4-O-(6-deoxy-2-O-methyl- β -D-allopyranosyl)-D-xylo-hexose, 9CI. 4-O-(6-Deoxy-2-O-methyl- β -D-allopyranosyl)-D-boivinose
[73491-09-5]



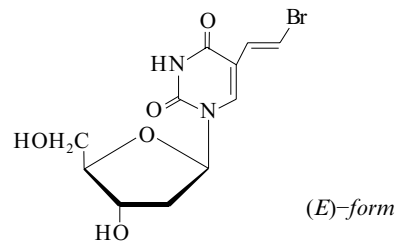
C₁₃H₂₄O₈ 308.328

Isol. from twigs of *Sarcostemma brevis-tigma*. Cryst. + H₂O (Me₂CO/Et₂O). Mp 80-84°. $[\alpha]_D^{26}$ +45 (c, 0.8 in MeOH).

Khare, D.P. *et al.*, *Carbohydr. Res.*, 1980, **79**, 279 (isol, pmr)

Brivudine, INN**B-52**

5-(2-Bromovinyl)-2'-deoxyuridine. 5-(2-Bromoethenyl)-2'-deoxyuridine, 9CI. 2'-Deoxy-5-(2-bromovinyl)uridine. Bromovinyl deoxyuridine. BVDU
[82768-44-3]



C₁₁H₁₃BrN₂O₅ 333.138

Antiviral agent highly active against *Herpes simplex virus* type 1 and *Varicella zoster virus* type 2. Log P -1.27 (uncertain value) (calc).

(E)-form [69304-47-8]

Mp 123-125° dec. (141°). λ_{\max} 253 (13100); 295 (10300) (no solvent reported).

► LD₅₀ (mus, ipr) 1420 mg/kg. YU7355000

3',5'-Di-Ac:

C₁₅H₁₇BrN₂O₇ 417.212

Antiviral active against HSV-1. Needles (2-propanol). Mp 156°.

3-Me:

C₁₂H₁₅BrN₂O₅ 347.165

Cryst. (H₂O).

3'-Me ether:

C₁₂H₁₅BrN₂O₅ 347.165

Solid.

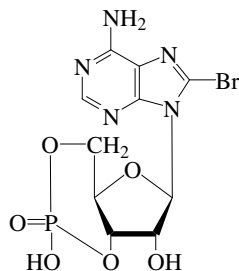
(Z)-form [77530-02-0]

Hemihydrate. λ_{\max} 234 (11904); 295 (8040) (no solvent reported).

Jones, A.S. *et al.*, *J. Med. Chem.*, 1981, **24**, 759 (synth)
 Barr, P.J. *et al.*, *J.C.S. Perkin 1*, 1981, 1665 (synth)
 Sim, T.S. *et al.*, *CA*, 1982, **97**, 207422n (rev)
 Goodchild, J. *et al.*, *J. Med. Chem.*, 1983, **26**, 1252 (synth, Z and E-forms)
 Robins, M.J. *et al.*, *J.O.C.*, 1983, **48**, 1854 (synth)
 De Clercq, E. *et al.*, *J. Antimicrob. Chemother.*, 1984, **14**, 85 (rev, pharmacol)
 De Clercq, E. *et al.*, *Pharmacol. Ther.*, 1984, **26**, 1 (rev, synth, pharmacol)
 Parkanyi, L. *et al.*, *Nucleic Acids Res.*, 1987, **15**, 4111 (cryst struct, conform)
 Reefschaeger, J. *et al.*, *Pharmazie*, 1987, **42**, 407 (rev)
 Ashwell, M. *et al.*, *Tetrahedron*, 1987, **43**, 4601 (synth, props, uv, pmr)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 543
 Keam, S.J. *et al.*, *Drugs*, 2004, **64**, 2091-2097 (rev)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BOL300

8-Bromocyclic AMP B-53

8-Bromoadenosine cyclic 3',5'-(hydrogen phosphate), 9CI
 [23583-48-4]

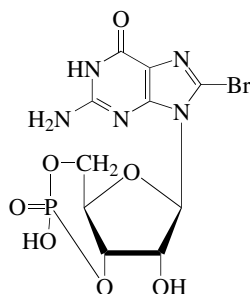


$C_{10}H_{11}BrN_5O_6P$ 408.105
 Powder.

Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1969, **17**, 348-354 (synth)
 Muneyama, K. *et al.*, *Biochemistry*, 1971, **10**, 2390-2395 (synth)
 Lavalley, D.K. *et al.*, *J.A.C.S.*, 1974, **96**, 5552-5556 (synth)
 Myasoedov, N.F. *et al.*, *Khim. Prir. Soedin.*, 1979, **15**, 208-213; *Chem. Nat. Compd. (Engl. Transl.)*, 1979, **15**, 176-179 (synth)

8-Bromocyclic GMP B-54

8-Bromoguanosine cyclic 3',5'-(hydrogen phosphate), 9CI
 [31356-94-2]

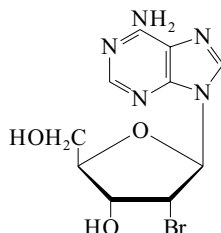


$C_{10}H_{11}BrN_5O_7P$ 424.104
 λ_{max} 263 (ϵ 15940); 271 (sh) (ϵ 13230) (pH 1). λ_{max} 274 (ϵ 13200) (pH 11).

Miller, J.P. *et al.*, *Biochemistry*, 1973, **12**, 5310-5319 (synth)
 Mian, A.M. *et al.*, *J. Med. Chem.*, 1974, **17**, 259-263 (synth)
 Chu, S.-H. *et al.*, *J. Med. Chem.*, 1975, **18**, 559-564 (synth)
 Myasoedov, N.F. *et al.*, *Khim. Prir. Soedin.*, 1979, **15**, 208-213; *Chem. Nat. Compd. (Engl. Transl.)*, 1979, **15**, 176-179 (synth)

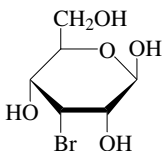
2'-Bromo-2'-deoxyadenosine, 9CI

[65446-56-2]



$C_{10}H_{12}BrN_5O_3$ 330.14
 Cryst. (CHCl₃). Mp 225-226.5°.

Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 2449 (synth, uv, cmr, pmr)

3-Bromo-3-deoxyallose

$C_6H_{11}BrO_5$ 243.054

 β -D-Pyranose-form

Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-bromo-3-deoxy- β -D-allopyranose

[106023-35-2]
 $C_{14}H_{19}BrO_9$ 411.203
 Syrup. $[\alpha]_D^{20}$ -14.1 (c, 1.6 in CHCl₃).

Me glycoside: Methyl 3-bromo-3-deoxy- β -D-allopyranoside
 [127236-54-8]
 $C_7H_{13}BrO_5$ 257.081
 Syrup.

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-bromo-3-deoxy- β -D-allopyranoside
 [77842-63-8]
 $C_{14}H_{17}BrO_5$ 345.189
 Cryst. (EtOAc/petrol). Mp 120-122° (97-99°). $[\alpha]_D^{22}$ -9 (c, 1.5 in CHCl₃). $[\alpha]_D^{22}$ -23 (CHCl₃).

 α -D-Furanose-form

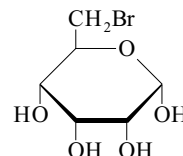
1,2:5,6-Di-O-isopropylidene: 3-Bromo-3-deoxy-1,2:5,6-di-O-isopropylidene- α -D-allofuranose
 [74958-56-8]
 $C_{12}H_{19}BrO_5$ 323.183

Cryst. (pentane). Mp 45°. $[\alpha]_D^{22}$ +55 (c, 1.5 in CHCl₃).

Bundle, D. *et al.*, *J.C.S. Perkin 1*, 1979, 2751, (β -Me pyr benzylidene, pmr)
 Classon, B. *et al.*, *Can. J. Chem.*, 1981, **59**, 339 (β -Me pyr benzylidene)

B-55

Kunz, H.Y. *et al.*, *Annalen*, 1982, 1245 (α -diisopropylidene)
 Korth, H.G. *et al.*, *J.C.S. Perkin 2*, 1986, 1461 (β -tetra-Ac, pmr)
 Krylova, R.G. *et al.*, *Bioorg. Khim.*, 1990, **16**, 105; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1990, **16**, 56 (β -Me pyr derivs, pmr)

6-Bromo-6-deoxyallose**B-57**

$C_6H_{11}BrO_5$ 243.054

 α -D-Pyranose-form

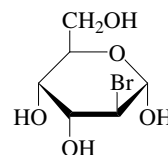
Me glycoside, 4-benzoyl: [52572-05-1]
 $C_{14}H_{17}BrO_6$ 361.189
 Syrup.

Me glycoside, 4-benzoyl, 2,3-di-Ac: [116013-31-1]
 $C_{18}H_{21}BrO_8$ 445.263
 Syrup. $[\alpha]_D$ +42 (CHCl₃).

Me glycoside, 4-benzoyl, 2,3-di-Me: [22893-89-6]
 $C_{16}H_{21}BrO_6$ 389.242
 Syrup. $[\alpha]_D$ +95 (c, 0.5 in CHCl₃).

Me glycoside, 4-benzoyl, 2,3-anhydro: [18933-59-0]
 $C_{14}H_{15}BrO_5$ 343.173
 Cryst. (EtOAc/hexane). Mp 60-61° (55°). $[\alpha]_D$ +177 (CHCl₃).

Brimacombe, J.S. *et al.*, *Chem. Comm.*, 1969, 197 (*di-Me*, ir)
 Baer, H.H. *et al.*, *Carbohydr. Res.*, 1973, **28**, 390 (*anhydro*)
 Collins, P.M. *et al.*, *Carbohydr. Res.*, 1974, **33**, 25 (*4-benzoyl*, ir)
 Chana, J.S. *et al.*, *Chem. Comm.*, 1988, 94, (*di-Ac*, pmr)
 Chretien, F. *et al.*, *Synth. Commun.*, 1990, **20**, 1589 (*anhydro*)

2-Bromo-2-deoxyaltrose**B-58**

$C_6H_{11}BrO_5$ 243.054

 α -D-Pyranose-form **α -D-Pyranose-form**

Me glycoside: Methyl 2-bromo-2-deoxy- α -D-altropyranoside
 $C_7H_{13}BrO_5$ 257.081
 Cryst. (EtOH). Mp 153°. $[\alpha]_D$ +86.2 (c, 0.5 in EtOH).

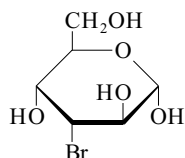
Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-bromo-2-deoxy- α -D-altropyranoside
 [19465-09-9]
 $C_{14}H_{17}BrO_5$ 345.189
 Cryst. (Me₂CO/hexane). Mp 117-118°. $[\alpha]_D^{25}$ +59.2 (c, 1.0 in CHCl₃).

Me glycoside, 3,4-O-isopropylidene: Methyl 2-bromo-2-deoxy-3,4-O-isopropylidene- α -D-altropyranoside
 $C_{10}H_{17}BrO_5$ 297.145
 Mp 64-66°. $[\alpha]_D^{20} +43.1$ ($CHCl_3$).

 β -D-Pyranose-form

1,6-Anhydro, 3,4-di-Ac: 3,4-Di-O-acetyl-1,6-anhydro-2-bromo-2-deoxy- β -D-altropyranose
 $C_{10}H_{13}BrO_6$ 309.113
 Syrup. $Bp_{0.01}$ 160-190° (bath). $[\alpha]_D^{20} -68$ (in $CHCl_3$).

Newth, F.H. *et al.*, *J.C.S.*, 1947, 10 (*anhydro, di-Ac*)
 Richards, G.N. *et al.*, *J.C.S.*, 1953, 2442, (*Me gly, benzylidene*)
 Sharma, M. *et al.*, *Can. J. Chem.*, 1968, **46**, 757 (*benzylidene, ir, pmr*)
 Guindon, Y. *et al.*, *J.O.C.*, 1987, **52**, 1680 (*benzylidene*)

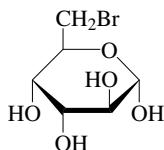
3-Bromo-3-deoxyaltrose**B-59**
 $C_6H_{11}BrO_5$ 243.054
 α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside
 $C_{14}H_{17}BrO_5$ 345.189
 Cryst. Mp 123-124°. $[\alpha]_D +120$ ($CHCl_3$).

Me glycoside, 4,6-O-benzylidene, 2-Ac: Methyl 2-O-acetyl-4,6-O-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside
 [20853-48-9]
 $C_{16}H_{19}BrO_6$ 387.226
 Cryst. ($CHCl_3$ /petrol). Mp 101-103°. $[\alpha]_D^{20} +80.5$ (c, 1.0 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene, 2-benzoyl: Methyl 2-O-benzoyl-4,6-O-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside
 [55169-78-3]
 $C_{21}H_{21}BrO_6$ 449.297
 Cryst. ($EtOAc$ /pentane). Mp 136.5-138°. $[\alpha]_D^{21} +1.6$ (c, 1.5 in $CHCl_3$).

Lee, J.B. *et al.*, *Tetrahedron*, 1961, **12**, 226, (*Me gly benzylidene*)
 Albano, E.L. *et al.*, *Chem. Comm.*, 1968, 357 (*2-Ac, pmr*)
 Albano, E.L. *et al.*, *Carbohydr. Res.*, 1969, **9**, 149 (*2-Ac, ir*)
 Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 1024 (*2-benzoyl*)

6-Bromo-6-deoxyaltrose**B-60** α -D-Pyranose-form
 $C_6H_{11}BrO_5$ 243.054
D-form

3,4-Di-Me, 2,5-dibenzyl: 2,5-Di-O-benzyl-6-bromo-6-deoxy-3,4-di-O-methyl-D-altrose
 [126215-06-3]
 $C_{22}H_{27}BrO_5$ 451.356
 Syrup.

 α -D-Pyranose-form

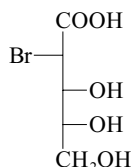
Me glycoside: Methyl 6-bromo-6-deoxy- α -D-altropyranoside
 $C_7H_{13}BrO_5$ 257.081
 Syrup. $[\alpha]_D +80$ (H_2O).

Me glycoside, 2,4-dibenzoyl, 3-Ac: Methyl 3-O-acetyl-2,4-dibenzoyl-6-bromo-6-deoxy- α -D-altropyranoside
 [120123-45-7]
 $C_{23}H_{23}BrO_8$ 507.334
 Syrup. $[\alpha]_D -24.2$ (c, 1.0 in $CHCl_3$).

Me glycoside, 4-benzoyl, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-O-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside
 [73139-31-8]
 $C_{18}H_{21}BrO_8$ 445.263
 Cryst. Mp 112-114°. $[\alpha]_D +48$ ($CHCl_3$).

Me glycoside, 2,3,4-tribenzoyl: Methyl 2,3,4-tri-O-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside
 [76752-92-6]
 $C_{28}H_{25}BrO_8$ 569.405
 Cryst. Mp 146-147°. $[\alpha]_D 0$ ($CHCl_3$).

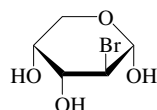
Rosenfeld, D.A. *et al.*, *J.A.C.S.*, 1948, **70**, 2204 (*Me gly*)
 Chana, J.S. *et al.*, *Chem. Comm.*, 1988, 94, (*di-Ac, pmr*)
 Aqeel, A. *et al.*, *J. Carbohydr. Chem.*, 1989, **8**, 405 (*Me gly dibenzoyl 3-Ac*)

2-Bromo-2-deoxyarabinonic acid**B-61**
 $C_5H_9BrO_5$ 229.027
D-form

1,4-Lactone: 2-Bromo-2-deoxy-D-arabinono-1,4-lactone
 [78138-89-3]
 $C_5H_7BrO_4$ 211.012
 Cryst. (Et_2O). Mp 79-81°. $[\alpha]_D^{21} +72$ (c, 4.1 in $EtOAc$).

[71671-95-9]

Bock, K. *et al.*, *Carbohydr. Res.*, 1981, **90**, 17 (*synth, pmr, cmr*)
 Chen, S.Y. *et al.*, *J.O.C.*, 1984, **49**, 2168 (*synth, ir, pmr*)

2-Bromo-2-deoxyarabinose**B-62** α -D-Pyranose-form
 $C_5H_9BrO_4$ 213.028
D-form
 Cryst. Mp 125°. $[\alpha]_D -121$ (H_2O).
 α -D-Pyranose-form

1-Benzoyl, 3,4-di-Ac: 3,4-Di-O-acetyl-1-O-benzoyl-2-bromo-2-deoxy- α -D-arabinopyranose
 [50271-27-7]
 $C_{16}H_{17}BrO_7$ 401.21
 Cryst. (Et_2O /pentane). Mp 144-145°. $[\alpha]_D^{20} -5.57$ (c, 2.3 in $CHCl_3$).

Me glycoside: Methyl 2-bromo-2-deoxy- α -D-arabinopyranoside
 $C_6H_{11}BrO_4$ 227.054
 Cryst. Mp 91-92°. $[\alpha]_D -68$ ($MeOH$).

 α -D-Furanose-form

Me glycoside, 3,5-di-Ac: Methyl 3,5-di-O-acetyl-2-bromo-2-deoxy- α -D-arabinofuranoside
 [23259-82-7]
 $C_{10}H_{15}BrO_6$ 311.129
 Oil.

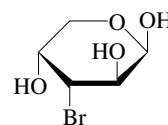
 β -D-Furanose-form

Me glycoside, 3,5-di-Ac: Methyl 3,5-di-O-acetyl-2-bromo-2-deoxy- β -D-arabinofuranoside
 [55734-55-9]
 $C_{10}H_{15}BrO_6$ 311.129
 Cryst. (Et_2O /pentane). Mp 80-81°. $[\alpha]_D^{21} -107$ (c, 2.5 in $CHCl_3$).

Me glycoside, 3,5-dibenzoyl: Methyl 3,5-di-O-benzoyl-2-bromo-2-deoxy- β -D-arabinofuranoside
 [55734-50-4]
 $C_{20}H_{19}BrO_6$ 435.27
 Cryst. (Et_2O /pentane). Mp 109-109.5°. $[\alpha]_D^{20} -98.6$ (c, 2.7 in $CHCl_3$).

L-form

Cryst. Mp 122°. $[\alpha]_D +116$ (H_2O).
 Kent, P.W. *et al.*, *J.C.S.*, 1964, 6196 (*synth, D-form, L-form, α -Me pyr*)
 Reist, E.J. *et al.*, *Carbohydr. Res.*, 1969, **9**, 71, (*α -D-fur di-Ac, ir, pmr*)
 Bock, K. *et al.*, *J.C.S. Perkin 1*, 1973, 1456, (*α -Me pyr*)
 Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 185 (*β -D-fur derivs, pmr*)

3-Bromo-3-deoxyarabinose**B-63** β -D-Pyranose-form
 $C_5H_9BrO_4$ 213.028
 β -D-Pyranose-form

Me glycoside: Methyl 3-bromo-3-deoxy- β -D-arabinopyranoside
 $C_6H_{11}BrO_4$ 227.054
 Syrup.

Me glycoside, 2,4-dibenzoyl: Methyl 2,4-di-O-benzoyl-3-bromo-3-deoxy- β -D-arabinopyranoside
 [54621-51-1]
 $C_{20}H_{19}BrO_6$ 435.27
 Cryst. (cyclohexane). Mp 82-86°. $[\alpha]_D^{25} -267.8$ (c, 1.0 in $CHCl_3$).

α -D-Furanose-form

Me glycoside, 5-Ac: Methyl 5-O-acetyl-3-bromo-3-deoxy- α -D-arabinofuranoside [13052-00-1]
 $C_8H_{13}BrO_5$ 269.092
 Syrup.

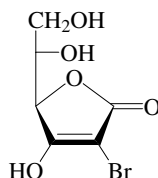
 β -D-Furanose-form

Me glycoside, 5-Ac: Methyl 5-O-acetyl-3-bromo-3-deoxy- β -D-arabinofuranoside [13051-99-5]
 $C_8H_{13}BrO_5$ 269.092
 Oil. $[\alpha]_D^{25}$ -89 (c, 0.91 in $CHCl_3$).
Me glycoside, 5-benzoyl: Methyl 5-O-benzoyl-3-bromo-3-deoxy- β -D-arabinofuranoside [43168-74-7]
 $C_{13}H_{15}BrO_5$ 331.162
 Syrup. $[\alpha]_D$ -73 (c, 1.1 in $CHCl_3$).

Reist, E.J. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 179 (5-Ac, pmr)

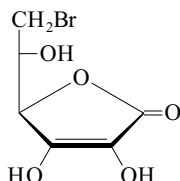
Ritchie, R.G.S. *et al.*, *Chem. Ind. (London)*, 1973, 530 (5-benzoyl)

Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 866 (β -Me pyr deriv, pmr)

2-Bromo-2-deoxyascorbic acid, 9CI**B-64**
 $C_6H_7BrO_5$ 239.022
L-form [189262-87-1]

Cryst. Mp 177-179°. $[\alpha]_D^{25}$ +76.8 (c, 0.25 in MeOH).

Ge, P. *et al.*, *J.O.C.*, 1997, **62**, 3340-3343, (synth, pmr)

6-Bromo-6-deoxyascorbic acid**B-65**
 $C_6H_7BrO_5$ 239.022
L-form [62983-44-2]

Cryst. (EtOAc). Mp 176-177° (170-172°). $[\alpha]_D^{20}$ -6.3 (c, 1.2 in H_2O).

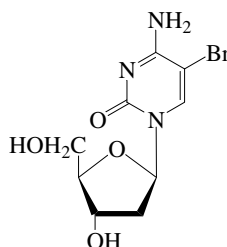
Bock, K. *et al.*, *Carbohydr. Res.*, 1979, **68**, 313 (synth, pmr, cmr)

Suskovic, B. *et al.*, *Croat. Chem. Acta*, 1985, **58**, 231 (synth)

Ruzic-Torus, Z. *et al.*, *Acta Cryst. C*, 1989, **45**, 269 (cryst struct)

5-Bromo-2'-deoxycytidine, 9CI, 8CI

[1022-79-3]


 $C_9H_{12}BrN_3O_4$ 306.116

Cryst. (MeOH/EtOAc). Mp 175-179°.

λ_{max} 289 (ε 7131) (no solvent reported).

Picrate: Mp 190.5-191.5°.

Tri-Ac:

Cryst. (H_2O). Mp 162-163°.

Fukuhara, T.K. *et al.*, *J.A.C.S.*, 1955, **77**,

2393-2398 (synth, tri-Ac)

Frisch, D.M. *et al.*, *J.A.C.S.*, 1959, **81**,

1756-1758 (synth, uv)

Chang, P.K. *et al.*, *Biochem. Pharmacol.*, 1961,

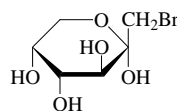
6, 50-52 (synth)

Fritzsche, H. *et al.*, *Z. Chem.*, 1971, **11**, 69-71

(ir, pmr)

Low, J.N. *et al.*, *Cryst. Struct. Commun.*, 1981,

10, 931-936; 1369-1373 (cryst struct)

1-Bromo-1-deoxyfructose**B-67** α -D-Pyranose-form
 $C_6H_{11}BrO_5$ 243.054
D-form

Phenylosazone:

Cryst. (EtOH). Mp 202-205°.

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-bromo-1-deoxy-D-fructose

$C_{14}H_{19}BrO_9$ 411.203

Cryst. Mp 68°. $[\alpha]_D$ +62.5 ($CHCl_3$).

 α -D-Pyranose-form

Me glycoside: Methyl 1-bromo-1-deoxy- α -D-fructopyranoside

[119645-60-2]

$C_7H_{13}BrO_5$ 257.081

Cryst. Mp 84-85°. $[\alpha]_D^{25}$ -4.3 (c, 0.16 in H_2O).

 β -D-Pyranose-form

2,3:4,5-Di-O-isopropylidene: 1-Bromo-

1-deoxy-2,3:4,5-di-O-isopropylidene-

β -D-fructopyranose

[10225-89-5]

$C_{12}H_{19}BrO_5$ 323.183

Cryst. (Et_2O /petrol). Mp 46-47°.

$[\alpha]_D^{23}$ -34.4 (c, 0.48 in $CHCl_3$).

Me glycoside: Methyl 1-bromo-1-deoxy- β -D-fructopyranoside

[119645-61-3]

$C_7H_{13}BrO_5$ 257.081

Cryst. Mp 86-87°. $[\alpha]_D^{25}$ -126.9 (c, 0.13 in H_2O).

B-66 **β -D-Furanose-form**

2,3-O-Isopropylidene, 6-benzoyl: 6-O-Benzoyl-1-bromo-1-deoxy-2,3-O-isopropylidene- β -D-fructofuranose

[83032-01-3]

$C_{16}H_{19}BrO_6$ 387.226

Cryst. (MeOH). Mp 89-90°. $[\alpha]_D^{25}$ +13.9 ($CHCl_3$).

L-form

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-bromo-1-deoxy-L-fructose

[23261-11-2]

$C_{14}H_{19}BrO_9$ 411.203

Cryst. (Et_2O /petrol). Mp 66-67°.

$[\alpha]_D^{23}$ -65 (c, 4.0 in $CHCl_3$).

DL-form

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-bromo-1-deoxy-DL-fructose

[23261-12-3]

$C_{14}H_{19}BrO_9$ 411.203

Cryst. (Et_2O /petrol). Mp 92°. $[\alpha]_D^{23}$ 0

(c, 0.4 in $CHCl_3$).

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1942, **64**, 1701 (D-tetra-Ac)

Humphlett, W.J. *et al.*, *Carbohydr. Res.*, 1968, **7**, 431 (L-tetra-Ac, DL-tetra-Ac)

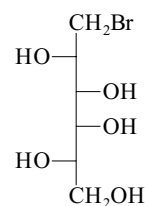
Barnett, J.E.G. *et al.*, *Carbohydr. Res.*, 1972, **25**, 511 (diisopropylidene)

Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, **35**, 1003 (β -D-fur deriv, pmr)

Sinclair, H.B. *et al.*, *Carbohydr. Res.*, 1988, **181**, 115 (α -Me pyr, β -Me pyr, cmr)

1-Bromo-1-deoxygalactitol**B-68**

6-Bromo-6-deoxygalactitol

 L -form
 $C_6H_{13}BrO_5$ 245.07
L-form

1-Bromo-1-deoxy-L-galactitol.

6-Bromo-6-deoxy-D-galactitol

[161168-85-0]

Mp 145-146°. $[\alpha]_D^{20}$ +1.1 (c, 0.95 in

H_2O). Acc. to IUPAC rules for carbohydrate nomenclature, the name 6-bromo-6-deoxy-D-galactitol is preferred to 1-bromo-1-deoxy-L-galactitol.

Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-6-

bromo-6-deoxy-D-galactitol. 2,3,4,5,

6-Penta-O-acetyl-1-bromo-1-deoxy-L-

galactitol

[69617-70-5]

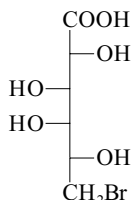
$C_{16}H_{23}BrO_{10}$ 455.256

Plates (EtOH). Mp 137-138°.

$[\alpha]_D^{20}$ -10.1 (c, 1.0 in $CHCl_3$).

Bock, K. *et al.*, *Carbohydr. Res.*, 1979, **68**, 313 (synth, penta-Ac)

Lundt, I. *et al.*, *Tetrahedron*, 1994, **50**, 13285 (synth, cmr)

6-Bromo-6-deoxygalactonic acid**B-69**C₆H₁₁BrO₆ 259.053**D-form** [161085-34-3]Cryst. Mp 130-131°. [α]_D²⁰ -5.2 (c, 1 in H₂O).*1,4-Lactone: 6-Bromo-6-deoxy-1,4-galactonolactone*C₆H₉BrO₅ 241.038

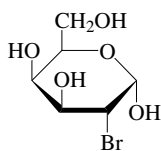
Syrup.

1,4-Lactone, tri-Ac: 2,3,5-Tri-O-acetyl-6-bromo-6-deoxy-1,4-galactonolactone

[69617-68-1]

C₁₂H₁₅BrO₈ 367.15Cryst. (EtOH). Mp 100-101°. [α]_D²⁰ -10.1 (c, 2.5 in CHCl₃).

[161085-34-3]

Bock, K. *et al.*, *Carbohydr. Res.*, 1979, **68**, 313 (lactone)Lundt, I. *et al.*, *Tetrahedron*, 1994, **50**, 13285 (synth, cmr)**2-Bromo-2-deoxygalactose****B-70** α -D-Pyranose-formC₆H₁₁BrO₅ 243.054**D-form** [149675-57-0]Cryst. (EtOH). Mp 140°. [α]_D²⁰ +64.7 → +81.3 (c, 0.33 in H₂O). **α -D-Pyranose-form** [141554-06-5]*Me glycoside: Methyl 2-bromo-2-deoxy- α -D-galactopyranoside*

[76222-08-7]

C₇H₁₃BrO₅ 257.081Cryst. (EtOH). Mp 167°. [α]_D²⁰ +183 (c, 1.8 in H₂O).*Me glycoside, 3,4,6-tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-bromo-2-deoxy- α -D-galactopyranoside*

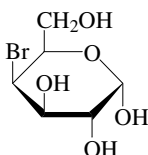
[76222-07-6]

C₁₃H₁₉BrO₈ 383.192Cryst. (Et₂O). Mp 90-91°. [α]_D²⁰ +146 (c, 1 in CH₂Cl₂). **β -D-Pyranose-form***Me glycoside: Methyl 2-Bromo-2-deoxy- β -D-galactopyranoside*

[10226-86-5]

C₇H₁₃BrO₅ 257.081Cryst. (EtOH). Mp 152-153°. [α]_D²² +47.2 (c, 1.2 in H₂O).*Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-bromo-2-deoxy- β -D-galactopyranoside*

[76222-06-5]

C₁₃H₁₉BrO₈ 383.192Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1965, **43**, 1460-1475 (β -D-Me pyr tri-Ac)Kent, P.W. *et al.*, *J.C.S. (C)*, 1966, 910-912, (*D-form, β -D-Me pyr*)Augé, J. *et al.*, *Nouv. J. Chim.*, 1980, **4**, 481-486 (α -D-Me-pyr, α -D-Me pyr tri-Ac, β -D-Me pyr, β -D-Me pyr tri-Ac)Haeckel, R. *et al.*, *Synlett*, 1996, 21-23 (*D-form*)**4-Bromo-4-deoxygalactose****B-71** α -D-Pyranose-formC₆H₁₁BrO₅ 243.054 **α -D-Pyranose-form***Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-bromo-4-deoxy- α -D-galactopyranoside*

[106023-36-3]

C₁₃H₁₉BrO₈ 383.192Cryst. (Et₂O/pentane). Mp 89°. [α]_D²² +170 (c, 0.73 in CHCl₃).*Me glycoside, tribenzyl: Methyl 2,3,6-tri-O-benzyl-4-bromo-4-deoxy- α -D-galactopyranoside*

[219313-38-9]

C₂₈H₃₁BrO₅ 527.454Syrup. [α]_D +116 (c, 0.5 in CHCl₃). **β -D-Pyranose-form***Me glycoside: Methyl 4-bromo-4-deoxy- β -D-galactopyranoside*

[51385-58-1]

C₇H₁₃BrO₅ 257.081Cryst. (MeOH/Et₂O). Mp 184-185°.[α]_D +15.2 (c, 1 in H₂O).*Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-bromo-4-deoxy- β -D-galactopyranoside*

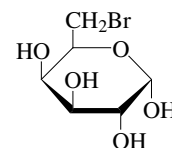
[51996-30-6]

C₁₃H₁₉BrO₈ 383.192Cryst. (MeOH/Et₂O). Mp 99-100°. [α]_D +39.2 (c, 1.55 in CHCl₃).*Me glycoside, tribenzyl: Methyl 2,3,6-tri-O-benzyl-4-bromo-4-deoxy- β -D-galactopyranoside*

[51996-28-2]

C₂₈H₂₅BrO₈ 569.405

Cryst. (MeOH). Mp 151-153°.

[α]_D +52.7 (c, 2 in CHCl₃).Maradufu, A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 261-267 (β -D-Me pyr, β -D-Me pyr tri-Ac, β -D-Me pyr tribenzyl)Korth, H.-G. *et al.*, *J.C.S. Perkin 2*, 1986, 1461-1464 (α -D-Me pyr tri-Ac)Limousin, C. *et al.*, *Carbohydr. Res.*, 1998, **312**, 23-31 (α -D-Me pyr tribenzyl)**6-Bromo-6-deoxygalactose****B-72***6-Bromofucose* α -D-Pyranose-formC₆H₁₁BrO₅ 243.054**D-Pyranose-form** [18981-83-4]Cryst. (EtOAc or CHCl₃/MeOH). Mp 95-97° (115-116°). [α]_D +74 (+65, +56) (H₂O). **α -D-Pyranose-form***Di-O-isopropylidene: 6-Bromo-6-deoxy-1,2:3,4-di-O-isopropylidene- α -D-galactopyranose*

[38838-08-3]

C₁₂H₁₉BrO₅ 323.183Cryst. (hexane). Mp 56° (48-49°). Bp_{0.1} 107-108°. [α]_D²⁵ -66 (c, 1 in CHCl₃).*Me glycoside: Methyl 6-bromo-6-deoxy- α -D-galactopyranoside, 9CI, 8CI*

[24921-00-4]

C₇H₁₃BrO₅ 257.081Cryst. (Et₂O). Mp 174-175°. [α]_D²⁶ +157 (c, 0.5 in H₂O).*Me glycoside, 3,4-O-isopropylidene: Methyl 6-bromo-6-deoxy-3,4-O-isopropylidene- α -D-galactopyranoside*

[73111-77-0]

C₁₀H₁₇BrO₅ 297.145Cryst. (Et₂O/hexane). Mp 66°. [α]_D +114.9 (c, 1.7 in CHCl₃).*Me glycoside, 3,4-O-isopropylidene, 2-(dimethyl-tert-butylsilyl):* [73111-78-1][α]_D +100.2 (c, 0.9 in CHCl₃).*Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-bromo-6-deoxy- α -D-galactopyranoside*

[52290-47-8]

C₁₃H₁₉BrO₈ 383.192Gum. [α]_D²⁵ +130 (c, 0.3 in CHCl₃).*Me glycoside, 4-benzoyl: Methyl 4-O-benzoyl-6-bromo-6-deoxy- α -D-galactopyranoside*

[10368-78-2]

C₁₄H₁₇BrO₆ 361.189Syrup. [α]_D²⁵ +156 (c, 0.6 in MeOH).*Me glycoside, tribenzoyl: Methyl 2,3,4-tri-O-benzoyl-6-bromo-6-deoxy- α -D-galactopyranoside*

[18929-69-6]

C₂₈H₂₅BrO₈ 569.405Mp 122-123°. [α]_D +229 (c, 1.06 in CHCl₃). **β -D-Pyranose-form***Me glycoside, 3,4-O-isopropylidene: Methyl 6-bromo-6-deoxy-3,4-O-isopropylidene- β -D-galactopyranoside*

[73111-71-4]

C₁₀H₁₇BrO₅ 297.145Cryst. (Et₂O/hexane). Mp 88°. [α]_D +24.7 (c, 0.8 in CHCl₃).*Me glycoside, 3,4-O-isopropylidene, 2-benzyl:* [73135-47-4]C₁₇H₂₃BrO₅ 387.27

Cryst. (CH₂Cl₂/hexane). Subl. 103.
[α]_D²⁰ +50.3 (c, 0.6 in CHCl₃).

Me glycoside, 3,4-O-isopropylidene, 2-(dimethyl-tert-butylsilyl): [73111-73-6]
Subl. 77. [α]_D²⁰ +11.8 (c, 0.9 in CCl₄).

Me glycoside, 3,4-O-isopropylidene, 2-mesyl: [73111-74-7]
Cryst. (CH₂Cl₂/hexane). Mp 124°. Subl. 130. [α]_D²⁰ +24.1 (c, 0.9 in CHCl₃).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-bromo-6-deoxy-β-D-galactopyranoside
[39946-30-0]
C₁₃H₁₉BrO₈ 383.192
Cryst. (Et₂O/hexane). Mp 93-93.5°. [α]_D²⁰ -5.3 (c, 1.2 in CHCl₃). [α]_D²⁰ -0.96 (c, 1.0 in MeOH).

Me glycoside, tribenzoyl: Methyl 2,3,4-tri-O-benzoyl-6-bromo-6-deoxy-β-D-galactopyranoside
[18929-73-2]
C₂₈H₂₅BrO₈ 569.405
Mp 158-159°. [α]_D²⁰ +179 (c, 0.91 in CHCl₃).

α-L-Pyranose-form

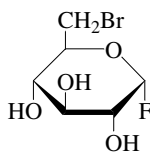
Di-O-isopropylidene: 6-Bromo-6-deoxy-1,2:3,4-di-O-isopropylidene-α-L-galactopyranoside
[70981-52-1]
C₁₂H₁₉BrO₅ 323.183
Syrup. [α]_D²⁵ +95.5 (c, 1 in CHCl₃).

[18465-33-3, 70932-62-6]

Hanessian, S. *et al.*, *J.O.C.*, 1969, **34**, 1035, (α-Me pyr, benzoyl derivs)
Bessell, E.M. *et al.*, *Carbohydr. Res.*, 1971, **19**, 39 (synth)
Hanessian, S. *et al.*, *Carbohydr. Res.*, 1972, **24**, 45 (D-isopropylidene)
Castro, B. *et al.*, *Bull. Soc. Chim. Fr.*, 1973, 3034 (α-Me pyr-tri-Ac)
Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 2992 (β-Me pyr-tri-Ac)
Bernet, B. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 2411 (isopropylidene, pmr, cmr)
Newcomer, M.E. *et al.*, *J. Biol. Chem.*, 1979, **254**, 7529 (synth)
May, J.A. *et al.*, *J. Med. Chem.*, 1979, **22**, 971 (L-isopropylidene)
Paulsen, H. *et al.*, *Annalen*, 1980, 825, (D-isopropylidene)
Gelas, J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1981, **39**, 71 (rev, derivs)
Romero Zaliz, C.L. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 689-701 (α-D-Pyr diisopropylidene)

6-Bromo-6-deoxyglucopyranosyl fluoride

B-73



C₆H₁₀BrFO₄ 245.045

α-D-form

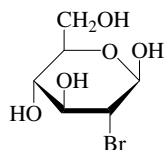
[3108-98-3]
Cryst. (EtOAc/hexane). Mp 131° (101°) dec. [α]_D²⁰ +84.7 (c, 1.0 in H₂O).

Horneman, A.M. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 1-8 (α-D-form, synth, pmr, cmr)

2-Bromo-2-deoxyglucose

B-74

[83378-12-5, 141554-02-1]



β-D-Pyranose-form

C₆H₁₁BrO₅ 243.054

β-D-Pyranose-form

[141554-03-2]
1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-bromo-2-deoxy-β-D-glucopyranose
[2946-11-4]
C₁₄H₁₉BrO₉ 411.203

Cryst. (EtOH). Mp 95-96°. [α]_D²¹ +63 (c, 1.0 in CHCl₃).

Me glycoside: Methyl 2-bromo-2-deoxy-β-D-glucopyranoside
[2880-98-0]
C₇H₁₃BrO₅ 257.081
Cryst. Mp 181-182°. [α]_D²⁰ +2.7 (c, 0.75 in H₂O).

Me glycoside, 4,6-O-benzylidene: Methyl 2-bromo-2-deoxy-4,6-O-benzylidene-β-D-glucopyranoside
C₁₄H₁₇BrO₅ 345.189
Cryst. (MeOH). Mp 208-209°. [α]_D²⁰ -20 (c, 0.6 in CHCl₃).

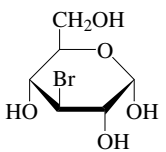
Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-bromo-2-deoxy-β-D-glucopyranoside
[2873-28-1]
C₁₃H₁₉BrO₈ 383.192
Needles (EtOH). Mp 138-139°. [α]_D²³ +39 (c, 1.0 in Me₂CO).

Isopropyl glycoside, tri-Ac: Isopropyl 3,4,6-tri-O-acetyl-2-bromo-2-deoxy-β-D-glucopyranoside
[63069-59-0]
C₁₅H₂₃BrO₈ 411.246
Needles (Et₂O/hexane). Mp 112-112.5°. [α]_D¹⁶ +42.5 (c, 1.0 in CHCl₃).

Fischer, E. *et al.*, *Ber.*, 1920, **53**, 509-547, (β-D-Me pyr tri-Ac)
Nakamura, H. *et al.*, *Chem. Pharm. Bull.*, 1964, **12**, 1302-1307 (β-D-Me pyr, β-D-Me pyr tri-Ac, β-D-Me pyr benzylidene, β-D-pyr tetra-Ac)
Tatsuta, K. *et al.*, *Carbohydr. Res.*, 1977, **54**, 85-104 (β-D-2-propyl pyr tri-Ac)
Binkley, R.W. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 203-219 (β-D-pyr tetra-Ac)

3-Bromo-3-deoxyglucose

B-75



α-D-Pyranose-form

C₆H₁₁BrO₅ 243.054

D-form

[22926-12-1]
Prisms (EtOH). Mp 151°. [α]_D²⁰ +60.9 (c, 2.53 in H₂O).

α-D-Pyranose-form

Me glycoside: Methyl 3-bromo-3-deoxy-α-D-glucopyranoside
[78489-44-8]
C₇H₁₃BrO₅ 257.081
Cryst. (Me₂CO/Et₂O). Mp 133°. [α]_D¹⁵ +109.8 (c, 0.437 in EtOH).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-bromo-3-deoxy-α-D-glucopyranoside
[30571-48-3]
C₁₄H₁₇BrO₅ 345.189
Cryst. (EtOH). Mp 177°. [α]_D¹⁶ +12.8 (c, 2.336 in CHCl₃).

Me glycoside, 4,6-O-ethylidene: Methyl 3-bromo-3-deoxy-4,6-O-ethylidene-α-D-glucopyranoside
[78489-45-9]
C₉H₁₅BrO₅ 283.119
Cryst. (EtOH). Mp 158°.

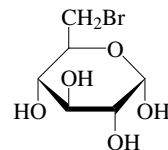
β-D-Pyranose-form

Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-bromo-3-deoxy-β-D-glucopyranose
[71107-11-4]
C₁₄H₁₉BrO₉ 411.203
Cryst. Mp 112°. [α]_D²⁵ +10 (c, 0.5 in CHCl₃).

Newth, F.H. *et al.*, *J.C.S.*, 1947, 10-18 (D-form, α-D-Me pyr)
Barnett, J.E.G. *et al.*, *Biochem. J.*, 1969, **114**, 569-573 (D-form)
Kiburis, J. *et al.*, *Chim. Chron.*, 1979, **8**, 77-82 (β-D-pyr tetra-Ac)
Dwivedi, S.K. *et al.*, *Carbohydr. Res.*, 1981, **91**, 159-164 (D-form, α-D-Me-pyr, α-D-Me pyr benzylidene)

6-Bromo-6-deoxyglucose, 9CI

B-76



α-D-Pyranose-form

C₆H₁₁BrO₅ 243.054

D-form

[40486-92-8]
Cryst. (EtOAc). Mp 129-130° dec. [α]_D³⁰ +82 → +42 (c, 1 in H₂O).

α-D-Pyranose-form

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-bromo-6-deoxy-α-D-glucopyranose
C₁₄H₁₉BrO₉ 411.203
Mp 117-118°. [α]_D²⁰ +58 (c, 1.0 in CHCl₃).

Me glycoside: Methyl 6-bromo-6-deoxy-α-D-glucopyranoside, 9CI, 8CI
[7465-44-3]
C₇H₁₃BrO₅ 257.081
Cryst. (Et₂O). Mp 126-127° Mp 136-137°. [α]_D²⁵ +137 (c, 0.5 in MeOH).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-bromo-6-deoxy-α-D-glucopyranoside
[7404-32-2]
C₁₃H₁₉BrO₈ 383.192
Cryst. (EtOH). Mp 125° (117°). [α]_D²⁰ +121 (c, 1 in CHCl₃). [α]_D²² +128 (c, 2 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 4-benzoyl, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-O-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside
[56543-19-2]
 $C_{18}H_{21}BrO_8$ 445.263
Mp 90°. $[\alpha]_D^{+61}$ (CHCl₃). Also descr. as a syrup.

Me glycoside, tribenzoyl: Methyl 2,3,4-tri-O-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside
[14169-22-3]
 $C_{28}H_{25}BrO_8$ 569.405
Mp 125-126°. $[\alpha]_D^{+51}$.

Me glycoside, 2-mesyl, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-6-bromo-6-deoxy-2-O-mesyl- α -D-glucopyranoside
[34340-11-9]
 $C_{12}H_{19}BrO_9S$ 419.247
Mp 174°. $[\alpha]_D^{+130}$ (c, 2 in CHCl₃) (lit. gives a temp. range).

Me glycoside, 2,3-dibenzoyl, 4-mesyl: Methyl 2,3-di-O-benzoyl-6-bromo-6-deoxy-4-O-mesyl- α -D-glucopyranoside
[30571-99-4]
 $C_{22}H_{23}BrO_9S$ 543.388
Mp 180°. $[\alpha]_D^{+155}$ (c, 2 in CHCl₃) (lit. gives a temp. range).

Me glycoside, tribenzyl: Methyl 2,3,4-tri-O-benzyl-6-bromo-6-deoxy- α -D-glucopyranoside
[73111-14-5]
 $C_{28}H_{31}BrO_5$ 527.454
Cryst. (hexane). Mp 62°. $[\alpha]_D^{+29.3}$ (c, 1 in CHCl₃).

Benzyl glycoside, tribenzyl: Benzyl 2,3,4-tri-O-benzyl-6-bromo-6-deoxy- α -D-glucopyranoside
[79774-73-5]
 $C_{34}H_{35}BrO_5$ 603.551
 $[\alpha]_D^{+69}$ (c, 1 in CHCl₃).

Me glycoside, 4-benzoyl: Methyl 4-O-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside
[10368-81-7]
 $C_{14}H_{17}BrO_6$ 361.189
Cryst. (Me₂CO/Et₂O/pentane). Mp 130-131°. $[\alpha]_D^{+118}$ (c, 1 in CHCl₃).

β -D-Pyranose-form

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-bromo-6-deoxy- β -D-glucopyranoside
[10225-48-6]
 $C_{14}H_{19}BrO_9$ 411.203
Cryst. (EtOH). Mp 124-125°. $[\alpha]_D^{+13}$ (c, 1 in CHCl₃).

Me glycoside: Methyl 6-bromo-6-deoxy- β -D-glucopyranoside, 8CI
[7404-26-4]
 $C_7H_{13}BrO_5$ 257.081
Cryst. (EtOAc). Mp 154°. $[\alpha]_D^{+15.9}$ (c, 0.7 in MeOH).

Me glycoside, 4-benzoyl: Methyl 4-O-benzoyl-6-bromo-6-deoxy- β -D-glucopyranoside
[18929-88-9]
 $C_{14}H_{17}BrO_6$ 361.189
Cryst. (Me₂CO/Et₂O/pentane). Mp 120-121°. $[\alpha]_D^{+9}$ (c, 1 in CHCl₃).

Me glycoside, 4-benzoyl, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-O-benzoyl-6-bromo-6-deoxy- β -D-glucopyranoside
 $C_{18}H_{21}BrO_8$ 445.263
Mp 161-163°. $[\alpha]_D^{-75}$ (CHCl₃).

Me glycoside, tribenzyl: Methyl 2,3,4-tri-O-benzyl-6-bromo-6-deoxy- β -D-glucopyranoside
[73111-12-3]
 $C_{28}H_{31}BrO_5$ 527.454
Cryst. (Et₂O/hexane). Mp 86°. $[\alpha]_D^{+15.3}$ (c, 1 in CHCl₃).

α -D-Furanose-form

1,2:3,5-Di-O-methylene: 6-Bromo-6-deoxy-1,2:3,5-di-O-methylene- α -D-glucofuranose
[65533-33-7]
 $C_8H_{11}BrO_5$ 267.076
Cryst. Mp 100-101°. $[\alpha]_D^{+32}$ (c, 1 in CHCl₃).

1,2-O-Isopropylidene: 6-Bromo-6-deoxy-1,2-O-isopropylidene- α -D-glucofuranose
[66756-62-5]
 $C_9H_{15}BrO_5$ 283.118
Cryst. (Et₂O/hexane). Mp 89°. $[\alpha]_D^{+10.9}$ (c, 2 in CHCl₃).

1,2-O-Isopropylidene, 3,5-dibenzoyl: 3,5-Di-O-benzoyl-6-bromo-6-deoxy-1,2-O-isopropylidene- α -D-glucofuranose
[55169-79-4]
 $C_{23}H_{23}BrO_7$ 491.334
Syrup. $[\alpha]_D^{+114.5}$ (c, 1.2 in CHCl₃).

1,2-O-Isopropylidene, 3,5-O-benzylidene: 3,5-O-Benzylidene-6-bromo-6-deoxy-1,2-O-isopropylidene- α -D-glucofuranose
 $C_{16}H_{19}BrO_5$ 371.227
Mp 114-115°. $[\alpha]_D^{+16}$ (c, 1 in CHCl₃).

1,2:3,5-Di-O-isopropylidene: 6-Bromo-6-deoxy-1,2:3,5-di-O-isopropylidene- α -D-glucofuranose
[38838-11-8]
 $C_{12}H_{19}BrO_5$ 323.183
Bp_{0.1} 106°. $[\alpha]_D^{+19.2}$ (c, 1.8 in CHCl₃).

Hanessian, S. et al., *J.O.C.*, 1969, **34**, 1035.
(α -D-Me pyr, α -D-Me pyr benzoyl, α -D-Me pyr tribenzoyl, β -D-Me pyr, β -D-Me pyr benzoyl)
Paulsen, H. et al., *Chem. Ber.*, 1970, **103**, 2450
(α Tetra-Ac)

Schüep, W. et al., *Helv. Chim. Acta*, 1970, **53**, 1336 (β -D-pyr tetra-Ac)

Ikeda, D. et al., *Bull. Chem. Soc. Jpn.*, 1971, **44**, 2529 (α -D-Me pyr, α -D-Me pyr tri-Ac)

Bessel, E.M. et al., *Carbohydr. Res.*, 1971, **19**, 39 (D -form synth, α -D-fur isopropylidene benzylidene)

Sinclair, H.B. et al., *Carbohydr. Res.*, 1971, **19**, 402 (α -D-Me pyr di-Ac mesyl, α -D-Me pyr tri-Ac, α -D-Me pyr dibenzoyl mesyl, α -D-Me pyr tribenzoyl, pmr)

Hanessian, S. et al., *Carbohydr. Res.*, 1972, **24**, 45 (α -D-Me pyr tri-Ac, α -D-fur diisopropylidene)

Jacobsen, S. et al., *Acta Chem. Scand., Ser. B*, 1974, **28**, 1024 (α -D-fur isopropylidene dibenzoyl)

Deslongchamps, P. et al., *Can. J. Chem.*, 1975, **53**, 1204 (α -D-Me pyr benzoyl di-Ac)

Srivastava, H.C. et al., *Carbohydr. Res.*, 1978, **60**, 210 (D -form, synth, α -D-fur-dimethylidene)

Anisuzzaman, A.K.M. et al., *Carbohydr. Res.*, 1978, **61**, 511 (α -D-1,2-isopropylidene)

von Bernet, B. et al., *Helv. Chim. Acta*, 1979, **62**, 1990 (α -D-Me pyr tribenzyl, β -D-Me pyr tribenzyl)

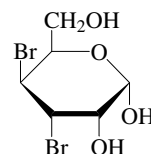
Whistler, R.L. et al., *Methods Carbohydr. Chem.*, 1980, **8**, 227 (α -D-Me pyr, α -D-fur isopropylidene)

Gelas, J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1981, **39**, 71 (rev, derivs)

Le Marechal, P. et al., *Carbohydr. Res.*, 1981, **94**, 1 (α -D-benzyl pyr tribenzyl)

3-Bromo-3-deoxygulose

B-77

 α -D-Pyranose-form $C_6H_{11}BrO_5$ 243.054

α -D-Pyranose-form

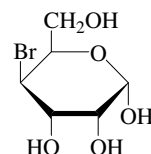
Me glycoside, 4,6-O-benzylidene, 2-Ac: Methyl 2-O-acetyl-4,6-O-benzylidene-3-bromo-3-deoxy- α -D-gulopyranoside
 $C_{16}H_{19}BrO_6$ 387.226
Cryst. Mp 128-129°. $[\alpha]_D^{+67.5}$ (CHCl₃).

β -D-Pyranose-form

Me glycoside, 6-benzoyl: Methyl 6-O-benzoyl-3-bromo-3-deoxy- β -D-gulopyranoside
[24921-01-5]
 $C_{14}H_{17}BrO_6$ 361.189
Syrup. $[\alpha]_D^{+6}$ (c, 1.65 in CHCl₃).
Hedgley, E.J. et al., *J.C.S.*, 1963, 4701 (α -Me pyr deriv)
Hanessian, S. et al., *J.O.C.*, 1969, **34**, 1035, (β -Me pyr deriv)

4-Bromo-4-deoxygulose

B-78

 α -D-Pyranose-form $C_6H_{11}BrO_5$ 243.054

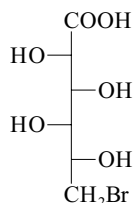
α -D-Pyranose-form

Me glycoside, 2,3-bis(3,5-dinitrobenzoyl), 6-[dimethyl(1,1,2-trimethylpropyl)silyl]: [128843-93-6]
Mp 110-114°. $[\alpha]_D^{+75.4}$ (c, 0.8 in CHCl₃).

Me glycoside, 2,3-anhydro, 6-trityl: Methyl 2,3-anhydro-4-bromo-4-deoxy-6-O-trityl- α -D-gulopyranoside
[118360-83-1]
 $C_{26}H_{25}BrO_4$ 481.385
 $[\alpha]_D^{+31}$ -31 (c, 0.99 in CHCl₃).

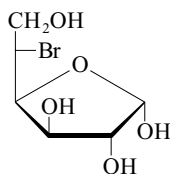
Tatsuta, H. et al., *Bull. Chem. Soc. Jpn.*, 1988, **61**, 2525 (anhydro, pmr)

Rehnberg, N. et al., *J.O.C.*, 1990, **55**, 5467 (silyl, pmr, cmr)

6-Bromo-6-deoxyidonic acid**B-79 α -D-Pyranose-form**C₆H₁₁BrO₆ 259.053**D-form**

1,4-Lactone: 6-Bromo-6-deoxy-D-idono-1,4-lactone

[161085-46-7]

C₆H₉BrO₅ 241.038Syrup. [α]_D²⁰ -31.4 (c, 1.0 in H₂O).Lundt, I. *et al.*, *Tetrahedron*, 1994, **50**, 13285 (synth, cmr)**5-Bromo-5-deoxyidose****B-80**C₆H₁₁BrO₅ 243.054 **β -L-Furanose-form**

1,2-O-Isopropylidene: [130619-43-1]

C₉H₁₅BrO₅ 283.118Syrup. [α]_D²⁰ -6.1 (c, 3.0 in CHCl₃).

1,2-O-Isopropylidene, 6-Me, 3-benzoyl: [18930-14-8]

C₁₇H₂₁BrO₆ 401.253Syrup. [α]_D²⁵ +4.7 (c, 4.15 in CHCl₃).

1,2-O-Isopropylidene, 6-(tetrahydro-2H-pyran-2-yl): [130619-45-3]

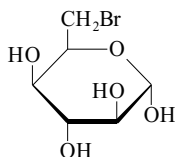
C₁₄H₂₃BrO₆ 367.236

Syrup.

1,2,3,6-Di-O-isopropylidene: [82893-16-1]

C₁₂H₁₉BrO₅ 323.183Syrup. [α]_D²² +51.6 (c, 1.4 in CHCl₃).

[130619-54-4]

Hanessian, S. *et al.*, *J.O.C.*, 1969, **34**, 1053, (6-Me, ir)Kunz, H. *et al.*, *Annalen*, 1982, 1245 (diisopropylidene)Dax, R. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 479 (tetrahydropyranyl, pmr, cmr)**6-Bromo-6-deoxyidose****B-81** α -D-Pyranose-formC₆H₁₁BrO₅ 243.054

Tetra-Ac: [29884-71-7]

C₁₄H₁₉BrO₉ 411.203

Cryst. (EtOH). Mp 117-118°.

[α]_D²⁰ +58 (c, 2.5 in CHCl₃).

Me glycoside: [125280-08-2]

C₇H₁₃BrO₅ 257.081Cryst. (CH₂Cl₂/hexane). Mp 68.5-70°.[α]_D²⁵ +85.1 (CHCl₃).

Me glycoside, 4-benzoyl: [125237-71-0]

C₁₄H₁₇BrO₆ 361.189Cryst. (CH₂Cl₂/hexane).Mp 106.5-107.5°. [α]_D²⁸ +104.1 (CHCl₃).

Me glycoside, tribenzoyl: [79635-97-5]

Cryst. (EtOH). Mp 165-166°.

 β -D-Pyranose-form

1,2-O-Isopropylidene, 3,5-dibenzoyl:

[108802-08-0]

C₂₃H₂₃BrO₇ 491.334Syrup. [α]_D -6 (c, 0.45 in CHCl₃). **β -L-Furanose-form**

1,2-O-Isopropylidene, 5-benzoyl:

[33999-40-5]

C₁₆H₁₉BrO₆ 387.226

Syrup. Attempted crystallisation led to dec.

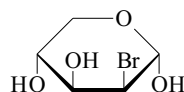
1,2-O-Isopropylidene, 5-benzoyl, 3-Ac:

[34010-38-3]

C₁₈H₂₁BrO₇ 429.264Syrup. [α]_D²⁵ -8 (c, 4 in CHCl₃).

1,2-O-Isopropylidene, 3,5-dibenzyl:

[87357-55-9]

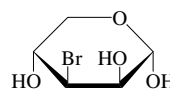
C₂₃H₂₇BrO₅ 463.367Cryst. Mp 131-134°. [α]_D²² -20.73(c, 0.5 in CHCl₃).Paulsen, H. *et al.*, *Chem. Ber.*, 1970, **103**, 2450 (tetra-Ac)Chalk, R.C. *et al.*, *Carbohydr. Res.*, 1971, **20**, 151 (β -L-fur deriv, pmr)Neesser, J.R. *et al.*, *Helv. Chim. Acta*, 1983, **66**, 1018 (β -L-fur deriv, pmr)Jacobsen, S. *et al.*, *Acta Chem. Scand.*, Ser. B, 1984, **38**, 157 (Me pyr tribenzoyl)Guiliano, R.M. *et al.*, *Carbohydr. Res.*, 1989, **191**, 1 (Me α -D-pyr deriv)Lee, C.K. *et al.*, *Carbohydr. Res.*, 1990, **205**, 203 (β -D-fur deriv)**2-Bromo-2-deoxylyxose****B-82**C₅H₉BrO₄ 213.028 **α -D-Pyranose-form**

Me glycoside, di-Ac: Methyl 3,4-di-O-

acetyl-2-bromo-2-deoxy- α -D-

lyxopyranoside

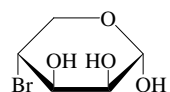
[51385-05-8]

C₁₀H₁₅BrO₆ 311.129Mp 56-57°. [α]_D²⁵ -7 (c, 1.49 in CHCl₃).Van Es, T. *et al.*, *J. S. Afr. Chem. Inst.*, 1973, **26**, 152 (di-Ac, pmr)**3-Bromo-3-deoxylyxose****B-83** α -D-Pyranose-formC₅H₉BrO₄ 213.028 **α -D-Pyranose-form**Me glycoside, dibenzoyl: Methyl 2,4-di-O-benzoyl-3-bromo-3-deoxy- α -D-lyxopyranoside

[54621-50-0]

C₂₀H₁₉BrO₆ 435.27Cryst. (Et₂O/pentane). Mp 103-105°.[α]_D²⁵ -125.4 (c, 1.3 in CHCl₃). **β -D-Pyranose-form**Me glycoside, 4-benzoyl, 2-Me: Methyl 4-O-benzoyl-3-bromo-3-deoxy-2-O-methyl- β -D-lyxopyranoside

[54621-61-3]

C₁₄H₁₇BrO₅ 345.189Syrup. [α]_D²¹ -33.7 (c, 1.3 in CHCl₃).Jacobsen, S. *et al.*, *Acta Chem. Scand.*, Ser. B, 1974, **28**, 866 (Me gly deriv, pmr)**4-Bromo-4-deoxylyxose****B-84** α -D-Pyranose-formC₅H₉BrO₄ 213.028**D-Pyranose-form**Me glycoside: Methyl 4-bromo-4-deoxy- α -D-lyxopyranosideC₆H₁₁BrO₄ 227.054Cryst. Mp 134-135°. [α]_D +14.6

(MeOH).

 α -D-Pyranose-formBenzyl glycoside: Benzyl 4-bromo-4-deoxy- α -D-lyxopyranoside

[104292-63-9]

C₁₂H₁₅BrO₄ 303.152

Cryst. (toluene). Mp 139-142°.

[α]_D²³ -62 (c, 0.8 in CDCl₃). **α -L-Pyranose-form**1-Benzoyl, 2,3-di-Ac: 2,3-Di-O-acetyl-1-O-benzoyl-4-bromo-4-deoxy- α -L-lyxopyranoseC₁₆H₁₇BrO₇ 401.21Cryst. (Et₂O/pentane). Mp 149-150°.[α]_D²⁰ -60.5 (c, 1.0 in CHCl₃).Benzyl glycoside: Benzyl 4-bromo-4-deoxy- α -L-lyxopyranoside

[104292-62-8]

C₁₂H₁₅BrO₄ 303.152

Cryst. (toluene). Mp 139-141°.

[α]_D²⁵ -61 (c, 0.9 in CHCl₃).Benzyl glycoside, 2,3-O-isopropylidene: Benzyl 4-bromo-4-deoxy-2,3-O-isopropylidene- α -L-lyxopyranoside

[123836-17-9]

C₁₅H₁₉BrO₄ 343.217

Syrup.

Me glycoside, 2,3-anhydro: Methyl 2,3-anhydro-4-bromo-4-deoxy- α -L-lyxopyranoside
[106966-39-6]
 $C_6H_9BrO_3$ 209.039
Syrup. Bp₁ 85°. $[\alpha]_D^{20}$ -68 (c, 0.37 in $CHCl_3$).

 β -L-Pyranose-form

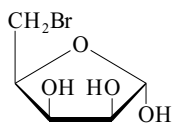
Benzyl glycoside: Benzyl 4-bromo-4-deoxy- β -L-lyxopyranoside
[112348-36-4]
 $C_{12}H_{15}BrO_4$ 303.152
Cryst. (EtOH). Mp 55-56°. $[\alpha]_D^{25}$ -72 (c, 0.47 in $CHCl_3$).

Benzyl glycoside, 2-benzoyl: Benzyl 2-O-benzoyl-4-bromo-4-deoxy- β -L-lyxopyranoside
[112348-34-2]
 $C_{19}H_{19}BrO_5$ 407.26
Syrup. $[\alpha]_D^{25}$ +103 (c, 0.68 in $CHCl_3$).

Benzyl glycoside, dibenzoyl: Benzyl 2,3-di-O-benzoyl-4-bromo-4-deoxy- β -L-lyxopyranoside
[112348-35-3]
 $C_{26}H_{23}BrO_6$ 511.368
Solid. $[\alpha]_D$ +118 (c, 0.94 in $CHCl_3$).

Benzyl glycoside, 2,3-O-isopropylidene: Benzyl 4-bromo-4-deoxy-2,3-O-isopropylidene- β -L-lyxopyranoside
[123836-23-7]
Syrup.

Kent, P.W. *et al.*, *J.C.S.*, 1953, 416 (*Me pyr*)
Bock, K. *et al.*, *J.C.S. Perkin 1*, 1973, 1456, (α -L-pyr deriv, ir, pmr)
Canet, G. *et al.*, *Carbohydr. Res.*, 1986, **152**, 292 (α -L-Me gly, ir, pmr)
Sundin, A. *et al.*, *J.O.C.*, 1986, **51**, 3927, (α -L-benzyl gly, α -D-benzyl gly, pmr, cmr)
Rao, M.V. *et al.*, *J.O.C.*, 1988, **53**, 1432; 1184 (β -L-benzyl gly)
Keck, G.E. *et al.*, *J.O.C.*, 1990, **54**, 5845 (*benzyl gly isopropylidene*)

5-Bromo-5-deoxylyxose**B-85** α -D-Furanose-form $C_5H_9BrO_4$ 213.028**D-form** [42854-92-2]

Syrup.

2,3-O-Isopropylidene: [121668-05-1]

 $C_8H_{13}BrO_4$ 253.092

Syrup.

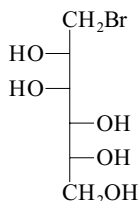
 α -D-furanose-form

Benzyl glycoside, 2,3-O-isopropylidene:
[42854-91-1]
 $C_{15}H_{19}BrO_4$ 343.217
Liq. Bp_{0.03} 130°. $[\alpha]_D^{20}$ +91.6 (c, 1.31 in MeOH).

DL-form [36663-35-1]

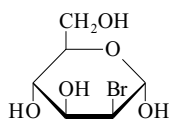
Syrup.

Tamura, T. *et al.*, *J.O.C.*, 1974, **39**, 38 (*D-form, α -D-fur deriv, pmr*)
Webb, T.H. *et al.*, *Tet. Lett.*, 1988, **29**, 6823, (*D-isopropylidene*)

1-Bromo-1-deoxymannitol
6-Bromo-6-deoxymannitol**B-86** $C_6H_{13}BrO_5$ 245.07**D-form** [15430-94-1]

Cryst. (MeOH/ $CHCl_3$). Mp 115-116°. $[\alpha]_D^{20}$ +2.5 (c, 1.0 in H_2O).

Lundt, I. *et al.*, *Tetrahedron*, 1994, **50**, 13285 (*synth, pmr, cmr*)

2-Bromo-2-deoxymannose**B-87** α -D-Pyranose-form $C_6H_{11}BrO_5$ 243.054**D-form**Solid. Mp 120°. $[\alpha]_D^{18}$ +2.72 (H_2O). **α -D-Pyranose-form**

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-bromo-2-deoxy- α -D-mannopyranose
[79733-39-4]

 $C_{14}H_{19}BrO_9$ 411.203

Syrup.

1-Benzoyl, 3,4,6-tri-Ac: 3,4,6-Tri-O-acetyl-1-O-benzoyl-2-bromo-2-deoxy- α -D-mannopyranose
[19237-69-5]

 $C_{19}H_{21}BrO_9$ 473.273

Cryst. Mp 168-169°. $[\alpha]_D^{28}$ +62.3 (c, 1.54 in $CHCl_3$).

Me glycoside: Methyl 2-bromo-2-deoxy- α -D-mannopyranoside
 $C_7H_{13}BrO_5$ 257.081
Syrup. $[\alpha]_D$ +47.5 ($CHCl_3$).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-bromo-2-deoxy- α -D-mannopyranoside
[63069-63-6]

 $C_{13}H_{19}BrO_8$ 383.192Cryst. Mp 115-116°. $[\alpha]_D$ -92 (CCl_4).

Me glycoside, 4,6-O-benzylidene (R-): Methyl 4,6-O-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside
[131564-60-8]

 $C_{14}H_{17}BrO_5$ 345.189

Cryst. (Et₂O/petrol). Mp 83-85° (77-78°). $[\alpha]_D$ +18 (c, 1.0 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene (R-), 3-Ac: Methyl 3-O-acetyl-4,6-O-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside
[131564-61-9]

 $C_{16}H_{19}BrO_6$ 387.226Cryst. $[\alpha]_D$ +7.4 (c, 1.0 in CH_2Cl_2).

Me glycoside, tribenzyl: Methyl 3,4,6-tri-O-benzyl-2-bromo-2-deoxy- α -D-mannopyranoside
[77770-58-2]
 $C_{28}H_{31}BrO_5$ 527.454
Syrup. $[\alpha]_D^{22}$ +21 (c, 1.0 in $CHCl_3$).

 β -D-Pyranose-form

Me glycoside: Methyl 2-bromo-2-deoxy- β -D-mannopyranoside
 $C_7H_{13}BrO_5$ 257.081
Cryst. Mp 181-182°. $[\alpha]_D$ -64 (H_2O).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-bromo-2-deoxy- β -D-mannopyranoside
 $C_{13}H_{19}BrO_8$ 383.192
Cryst. Mp 115-116°. $[\alpha]_D$ -92 (CCl_4).

Me glycoside, tribenzyl: Methyl 3,4,6-tri-O-benzyl-2-bromo-2-deoxy- β -D-mannopyranoside
 $C_{28}H_{31}BrO_5$ 527.454
Syrup. $[\alpha]_D^{22}$ -43 (c, 1.25 in $CHCl_3$).

Manolopoulos, P.T. *et al.*, *J.A.C.S.*, 1962, **84**, 2203 (β -Me gly)

Kent, P.W. *et al.*, *J.C.S.*, 1963, 3273; 1964, 6196 (*D-form, α -Me gly, α -Me gly benzylidene*)

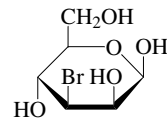
Gross, P.H. *et al.*, *Annalen*, 1965, **681**, 225, (α -Me gly)

Hall, L.D. *et al.*, *Chem. Comm.*, 1968, 35 (*benzoyl, tri-Ac*)

Classen, B. *et al.*, *Can. J. Chem.*, 1981, **59**, 339 (α -Me gly tribenzyl, β -Me gly tribenzyl)

Binkley, R.W. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 203 (*tetra-Ac, pmr, cmr*)

Khan, R. *et al.*, *Carbohydr. Res.*, 1990, **205**, 211 (α -Me gly benzylidene, pmr, cmr, ms)

3-Bromo-3-deoxymannose**B-88** β -D-Pyranose-form $C_6H_{11}BrO_5$ 243.054**D-form** [167033-46-7]

Syrup. Obt. as anomeric mixt., ratio α : β 7:3.

 β -D-Pyranose-form

4,6-O-Benzylidene, 2-benzoyl: Methyl 2-benzoyl-4,6-O-benzylidene-3-bromo-3-deoxy- β -D-mannopyranoside
[167033-53-6]

[167033-42-3]

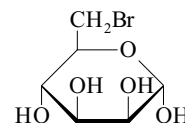
 $C_{21}H_{21}BrO_6$ 449.297

Characterised by pmr and ms.

Fitz, W. *et al.*, *J.O.C.*, 1995, **60**, 3663-3670, (*D-form, β -D-Me pyr benzoyl benzylidene*)

6-Bromo-6-deoxymannose**B-89**

6-Bromorhamnose

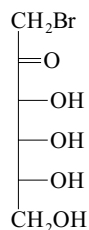
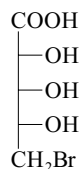
 $C_6H_{11}BrO_5$ 243.054

α -D-Pyranose-form*Me glycoside*: [52340-56-4] $C_7H_{13}BrO_5$ 257.081Cryst. Mp 97-99°. [α]_D²⁰ +57 (c, 1.5 in H₂O).*Me glycoside, tri-Ac*: [30589-67-4] $C_{13}H_{19}BrO_8$ 383.192Cryst. (cyclohexane). Mp 78-81°. [α]_D²⁰ +53 (c, 0.1 in CHCl₃).*Me glycoside, 4-benzoyl*: [18929-78-7] $C_{14}H_{17}BrO_6$ 361.189Amorph. solid (Et₂O/pentane).[α]_D²⁵ -124 (c, 2.39 in CHCl₃).*Me glycoside, 4-benzoyl, 2,3-di-Ac*:

[18929-80-1]

 $C_{18}H_{21}BrO_8$ 445.263Cryst. (Et₂O/petrol). Mp 120-121°.[α]_D²⁵ +21 (c, 1.09 in CHCl₃).*Me glycoside, 2,3-dibenzoyl*: [135216-49-8] $C_{21}H_{21}BrO_7$ 465.297Cryst. (EtOH). Mp 182-184°. [α]_D²⁰ -120 (CHCl₃).*Me glycoside, 2,3-dibenzoyl, 4-tosyl*:

[135216-50-1]

 $C_{28}H_{27}BrO_9S$ 619.486Cryst. (EtOH). Mp 109-110°. [α]_D²⁰ -116 (CHCl₃).*Me glycoside, tribenzoyl*: [18929-79-8] $C_{28}H_{25}BrO_8$ 569.405Cryst. Mp 180-181°. [α]_D²⁵ -115 (c, 0.4 in CHCl₃).Levene, P.A. *et al.*, *Coll. Czech. Chem. Comm.*, 1934, **6**, 354 (*Me gly*)Horton, D. *et al.*, *Carbohydr. Res.*, 1968, **7**, 101 (*tri-Ac*)Hanessian, S. *et al.*, *J.O.C.*, 1969, **34**, 1035, (*Me gly deriv*)Shulman, M.L. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1973, 414; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1973, 394 (*tri-Ac*)Cicero, D. *et al.*, *Carbohydr. Res.*, 1991, **211**, 295 (*Me gly deriv*)**1-Bromo-1-deoxypsicoscose****B-90** $C_6H_{11}BrO_5$ 243.054**D-form***Tetra-Ac*: 3,4,5,6-Tetra-O-acetyl-1-bromo-1-deoxy-D-psicoscose [51296-43-6] $C_{14}H_{19}BrO_9$ 411.203Cryst. Mp 77-79°. [α]_D -15.1 (CHCl₃).Wolf from, M.L. *et al.*, *J.A.C.S.*, 1945, **67**, 1793 (*tetra-Ac*)Vanek, T. *et al.*, *Nucleic Acids Res., Spec. Publ.*, 1978, **4**, 173; *CA*, **90**, 87812w (*tetra-Ac*)**5-Bromo-5-deoxyribonic acid****B-91** $C_5H_9BrO_5$ 229.027**D-form***1,4-Lactone: 5-Bromo-5-deoxy-D-1,4-ribonolactone* [160456-85-9] $C_5H_7BrO_4$ 211.012

Cryst. (EtOAc/pentane). Mp 106-107°.

[α]_D²⁰ +24.6 (c, 1.1 in EtOAc).*1,4-Lactone, 2,3-isopropylidene: 5-Bromo-5-deoxy-2,3-O-isopropylidene-D-ribonolactone* [94324-23-9] $C_8H_{11}BrO_4$ 251.076Cryst. Mp 88.5-89.5°. [α]_D²² -43.55(c, 2.37 in CHCl₃).*1,4-Lactone, 2,3-benzylidene: 2,3-O-Benzylidene-5-bromo-5-deoxy-D-1,4-ribonolactone* [90108-48-8] $C_{12}H_{11}BrO_4$ 299.12Cryst. (Et₂O/petrol). Mp 84-85° (isomer A) Mp 158-159° (isomer B). [α]_D -11.5 (c, 2.0 in CHCl₃) (isomer A). [α]_D -26.5 (c, 2.0 in Me₂CO) (isomer B). Two diastereoisomers characterised.

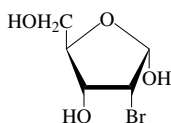
[90108-48-8, 90108-49-9]

Chen, S.-Y. *et al.*, *J.O.C.*, 1984, **49**, 2168

(benzylidene, synth, pmr, ir)

Jaeger, V. *et al.*, *Synthesis*, 1987, 801

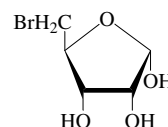
(isopropylidene, synth, pmr)

Kold, H. *et al.*, *Acta Chem. Scand.*, 1994, **48**, 675 (synth, pmr)**2-Bromo-2-deoxyribose****B-92** α -D-Furanose-form $C_5H_9BrO_4$ 213.028 **α -D-Furanose-form***Me glycoside, dibenzoyl: Methyl 3,5-di-O-benzoyl-2-bromo-2-deoxy- α -D-ribofuranoside* [55734-54-8] $C_{20}H_{19}BrO_6$ 435.27

Syrup.

 β -D-Furanose-form [125155-49-9]

Syrup.

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 185 (α -fur deriv, pmr)Ilicheva, I.A. *et al.*, *Bioorg. Khim.*, 1989, **15**, 800; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 428 (β -fur)**5-Bromo-5-deoxyribose****B-93** α -D-Furanose-form $C_5H_9BrO_4$ 213.028 **α -D-Furanose-form***Me glycoside, 2,3-O-isopropylidene: Methyl 5-bromo-5-deoxy-2,3-O-isopropylidene- α -D-ribofuranoside* [120142-51-0] $C_9H_{15}BrO_4$ 267.119

Syrup.

 β -D-Furanose-form*2,3-Dibenzoyl, 1-Ac: 1-O-Acetyl-2,3-di-O-benzoyl-5-bromo-5-deoxy- β -D-ribofuranoside* [120033-32-1] $C_{21}H_{19}BrO_7$ 463.281

Cryst. (hexane). Mp 68.6-69°.

Me glycoside, 2,3-dibenzoyl: Methyl 2,3-di-O-benzoyl-5-bromo-5-deoxy- β -D-ribofuranoside [120033-28-5] $C_{20}H_{19}BrO_6$ 435.27

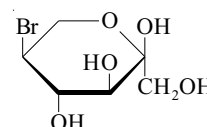
Cryst. (hexane). Mp 60-61°.

Me glycoside, 2,3-O-isopropylidene: Methyl 5-bromo-5-deoxy-2,3-O-isopropylidene- β -D-ribofuranoside [38838-05-0] $C_9H_{15}BrO_4$ 267.119Syrup. Bp_{0.1} 72°. [α]_D²⁵ -80 (c, 2.61 in CHCl₃).

[38838-05-0]

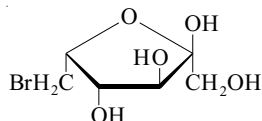
 β -L-Furanose-form*Me glycoside, 2,3-O-isopropylidene: Methyl 5-bromo-5-deoxy-2,3-O-isopropylidene- β -L-ribofuranoside* [118244-91-0] $C_9H_{15}BrO_4$ 267.119Liq. [α]_D²⁵ +65 (c, 1.0 in CHCl₃). **β -DL-Furanose-form***Me glycoside, 2,3-O-isopropylidene: Methyl 5-bromo-5-deoxy-2,3-O-isopropylidene- β -DL-ribofuranoside* [118244-92-1] $C_9H_{15}BrO_4$ 267.119

Liq.

Hanessian, S. *et al.*, *Carbohydr. Res.*, 1972, **24**, 45 (β -Me gly deriv)Kiss, J. *et al.*, *Helv. Chim. Acta*, 1982, **65**, 1522 (*Me gly deriv*)Wagner, J. *et al.*, *Helv. Chim. Acta*, 1988, **71**, 624 (β -L-fur deriv, β -DL-fur deriv)Raju, N. *et al.*, *J. Med. Chem.*, 1989, **32**, 1307, (α -fur deriv, β -fur deriv)**5-Bromo-5-deoxysorbose****B-94** $C_6H_{11}BrO_5$ 243.054

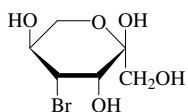
α -L-Pyranose-form

1,2-O-Isopropylidene, 3-Me, 4-(dimethyl-carbamyl): [100350-42-3]
 $C_{13}H_{22}BrNO_6$ 368.224
 Syrup. $[\alpha]_D^{20}$ -24.8 (c, 0.2 in CH_2Cl_2).
 Klemer, A. *et al.*, *Annalen*, 1986, 932
 (isopropylidene deriv)

6-Bromo-6-deoxysorbose**B-95** $C_6H_{11}BrO_5$ 243.054 **α -L-Furanose-form**

2,3-O-Isopropylidene, 6-Bromo-6-deoxy-
 2,3-O-isopropylidene- α -L-sorbofuranose
 [121564-08-7]
 $C_9H_{15}BrO_5$ 283.118
 Mp 109-110°. $[\alpha]_D^{20}$ +13.6 (c, 1.0 in
 MeOH).

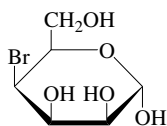
Beaupere, D. *et al.*, *J. Carbohydr. Chem.*, 1989,
 8, 159 (isopropylidene, pmr, cmr)

4-Bromo-4-deoxytagatose**B-96** α -L-Pyranose-form $C_6H_{11}BrO_5$ 243.054 **α -L-Pyranose-form**

Me glycoside, tri-Ac: Methyl 2,3,5-tri-O-
 acetyl-4-bromo-4-deoxy- α -L-tagatopyra-
 noside
 [19877-24-8]
 $C_{13}H_{19}BrO_8$ 383.192
 Cryst. (Et₂O/petrol). Mp 136-138°. $[\alpha]_D^{22}$ -30.9 (c, 1.05 in $CHCl_3$).

 β -Pyranose-form

Me glycoside, tri-Ac: Methyl 2,3,5-tri-O-
 acetyl-4-bromo-4-deoxy- β -
 tagatopyranoside
 [19877-75-9]
 Syrup. $[\alpha]_D^{23}$ +51.3 (c, 0.83 in $CHCl_3$).
 Katsuhara, M. *et al.*, *Bull. Chem. Soc. Jpn.*,
 1968, 41, 1208 (tri-Ac, pmr)

4-Bromo-4-deoxytalose**B-97** α -D-Pyranose-form $C_6H_{11}BrO_5$ 243.054 **α -D-Pyranose-form**

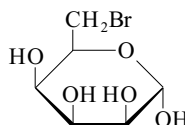
Me glycoside: Methyl 4-bromo-4-deoxy-
 α -D-talopyranoside
 [77770-63-9]
 $C_7H_{13}BrO_5$ 257.081

Cryst. (EtOAc/petrol). Mp 105°. $[\alpha]_D^{22}$ +102 (c, 1.0 in H_2O).

Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-
 acetyl-4-bromo-4-deoxy- α -D-
 talopyranoside
 [77770-65-1]
 $C_{13}H_{19}BrO_8$ 383.192
 Syrup.

Me glycoside, 6-trityl: Methyl 4-bromo-
 4-deoxy-6-O-trityl- α -D-talopyranoside
 [77770-64-0]
 $C_{26}H_{27}BrO_5$ 499.4
 Syrup.

Classon, B. *et al.*, *Can. J. Chem.*, 1981, 59, 339
 (α -Me gly deriv)

6-Bromo-6-deoxytalose**B-98** $C_6H_{11}BrO_5$ 243.054 **α -D-Pyranose-form**

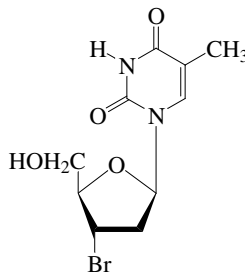
Me glycoside, 2,3-anhydro, 4-benzoyl:
 [18929-81-2]
 $C_{14}H_{15}BrO_5$ 343.173
 Cryst. (Et₂O/pentane). Mp 134-135°. $[\alpha]_D^{25}$ -64 (c, 0.3 in $CHCl_3$).

Hanessian, S. *et al.*, *J.O.C.*, 1969, 34, 1035,
 (Me gly deriv, ir)

Hanessian, S. *et al.*, *Methods Carbohydr. Chem.*,
 1972, 6, 183 (Me gly deriv)

3'-Bromo-3'-deoxythymidine, 9CI**B-99**

[99785-51-0]



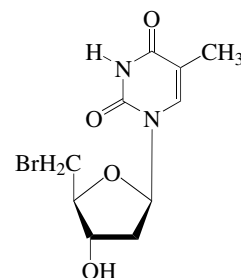
$C_{10}H_{13}BrN_2O_4$ 305.128
 Needles (H_2O). Mp 150° (dec.).

5'-Trityl:

$C_{29}H_{27}BrN_2O_4$ 547.447
 Cubes ($Me_2CO/MeOH$). Mp 144°.
 Michelson, A.M. *et al.*, *J.C.S.*, 1955, 816-823
 (5'-trityl)
 Moss, G.P. *et al.*, *J.C.S.*, 1963, 1149-1154
 (synth)

5'-Bromo-5'-deoxythymidine, 9CI**B-100**

[20905-51-5]



$C_{10}H_{13}BrN_2O_4$ 305.128
 Cryst. (MeOH/EtOAc or H_2O). Mp 129°
 (dec.) Mp 157-158° (dec.). The lower Mp
 is for material crystallised from H_2O .

3'-Ac: [34647-05-7]

$C_{12}H_{15}BrN_2O_5$ 347.165
 Cryst. ($CHCl_3$ /hexane).
 Mp 158.5-159.5°.

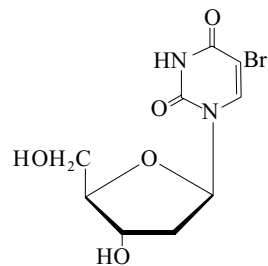
Michelson, A.M. *et al.*, *J.C.S.*, 1955, 816-821
 (synth)

Verheyden, J.P.M. *et al.*, *J.O.C.*, 1972, 37,
 2289-2299 (synth, 3'-Ac, uv)

Baeschlin, D.K. *et al.*, *J.O.C.*, 1996, 61,
 7620-7626 (synth, pmr, cmr, uv)

5-Bromo-2'-deoxyuridine, 9CI, 8CI**B-101**

Broxuridine, INN, JAN. Bromouridine.
Radibud. BRDU. NSC 38297
 [59-14-3]



$C_9H_{11}BrN_2O_5$ 307.1
 Antineoplastic agent, used to label DNA
 of tumour cells *in vivo*. Cryst. (EtOH). Mp
 187-189°. $[\alpha]_D^{20}$ +39.4 (c, 2.0 in *N* NaOH).
 Log P -1.24 (calc). λ_{max} 280 (ε 9 900)
 (HCl), 277 nm (7 200) (NaOH).

► Exp. reprod. and teratogenic effects. LD₅₀
 (rat, orl) 8400 mg/kg. YU7350000

3'-Ac: [15414-62-7]

$C_{11}H_{13}BrN_2O_6$ 349.137
 Mp 188-190°. λ_{max} 278 (ε 9 520) (0.1M
 HCl), 276 nm (6 840) (0.1M NaOH).

5'-Trityl: [15414-60-5]

$C_{28}H_{25}BrN_2O_5$ 549.42
 Mp 144-146°. λ_{max} 279 (ε 9 400) (0.1M
 HCl), 275 nm (6 800) (0.1M NaOH).

Aldrich Library of 13C and 1H FT NMR
Spectra, 1992, 3, 375A (nmr)

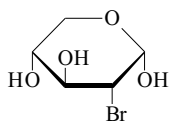
Aldrich Library of FT-IR Spectra, 1st edn., 1985,
 2, 816C (ir)

Beltz, R.E. *et al.*, *J.A.C.S.*, 1955, 77, 736 (synth)
 Iball, J. *et al.*, *Nature (London)*, 1966, 209, 1230
 (cryst struct)

Montgomery, J.A. *et al.*, *J. Med. Chem.*, 1967, **10**, 1163 (*Ac*, *trityl*)
 Wigler, P.W. *et al.*, *J. Med. Chem.*, 1972, **15**, 1020 (*trityl*)
 Hruska, F.E. *et al.*, *Can. J. Chem.*, 1974, **52**, 497 (*pmr*)
 Davies, D.B. *et al.*, *Stud. Biophys.*, 1976, **55**, 29; *C.A.*, **85**, 59065h (*cmr*)
 Du Frain, R.J. *et al.*, *Basic Life Sci.*, 1984, **29A**, 41; 59; 83 (*revs*)
 Aoyama, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 1987, **60**, 2073 (*synth*)
 Asakura, J. *et al.*, *J.O.C.*, 1990, **55**, 4928 (*synth*, *pmr*, *uv*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 460
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BNC750

Reist, E.J. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 179 (β -Me fur *Ac*, *uv*, *pmr*)
 Ritchie, R.G.S. *et al.*, *Chem. Ind. (London)*, 1973, 530 (β -Me fur)
 Bock, K. *et al.*, *J.C.S. Perkin 1*, 1973, 1456, (α -pyr, β -pyr)
 Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 185 (*D*-form, α -Me fur)

Reist, E.J. *et al.*, *Carbohydr. Res.*, 1969, **9**, 71 (*Me gly di-Ac*, *pmr*, *ir*)
 Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 866 (*Me gly dibenzoyl*)
 Rao, M.V. *et al.*, *J.O.C.*, 1988, **53**, 1184, (α -benzyl gly)
 Rehnberg, N. *et al.*, *J.O.C.*, 1990, **55**, 5467, (β -benzyl gly, *pmr*)

2-Bromo-2-deoxyxylose**B-102** α -D-Pyranose-form $C_5H_9BrO_4$ 213.028**D-form**

3,4-Dibenzoyl: [50271-31-3]
 $C_{19}H_{17}BrO_6$ 421.244
 Cryst. (Et₂O/pentane). Mp 145-146°. [α]_D²⁰ -64.5 → -30.8 (equilib.) (c, 2.5 in CHCl₃).

 α -D-Pyranose-form

Tribenzoyl: [50271-36-8]
 $C_{26}H_{21}BrO_7$ 525.352
 Syrup.

 β -D-Pyranose-form

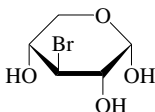
1-Benzoyl, 3,4-di-Ac: [50271-22-2]
 $C_{16}H_{17}BrO_7$ 401.21
 Cryst. (Et₂O/pentane). Mp 120-121°. [α]_D²⁰ -25 (c, 1.8 in CHCl₃).
 1,3-Dibenzoyl, 4-Ac: [50271-41-5]
 $C_{21}H_{19}BrO_7$ 463.281
 Cryst. (Et₂O/pentane). Mp 65-68°. [α]_D²¹ +20.5 (c, 0.66 in CHCl₃).

 α -D-Furanose-form

Me glycoside, di-Ac: [55734-58-2]
 $C_{10}H_{15}BrO_6$ 311.129
 Syrup.
Me glycoside, dibenzoyl: [55734-56-0]
 $C_{20}H_{19}BrO_6$ 435.27
 Syrup. [α]_D²¹ +163.1 (c, 5.9 in CHCl₃).

 β -D-Furanose-form

Me glycoside, 5-Ac: [13051-98-4]
 $C_8H_{13}BrO_5$ 269.092
 Oil. [α]_D²² -35 (c, 0.97 in CHCl₃).
Me glycoside, di-Ac: [55734-59-3]
 Syrup.
Me glycoside, 3-benzoyl: [43168-70-3]
 $C_{13}H_{15}BrO_5$ 331.162
 Syrup. [α]_D +29 (c, 3.3 in CCl₄).
Me glycoside, 5-benzoyl: [43168-69-0]
 $C_{13}H_{15}BrO_5$ 331.162
 Syrup. [α]_D -16.6 (c, 4.7 in CCl₄).
Me glycoside, dibenzoyl: [43168-71-4]
 Cryst. (MeOH). Mp 67.5-68°. [α]_D -6 (c, 1.06 in CHCl₃).

3-Bromo-3-deoxyxylose**B-103** α -D-Pyranose-form $C_5H_9BrO_4$ 213.028 **α -D-Pyranose-form**

Benzyl glycoside, dibenzoyl: Benzyl 2,4-di-O-benzoyl-3-bromo-3-deoxy- α -D-xylopyranoside
 [112483-00-8]
 $C_{26}H_{23}BrO_6$ 511.368
 Syrup.

 β -D-Pyranose-form

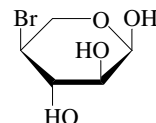
Me glycoside: Methyl 3-bromo-3-deoxy- β -D-xylopyranoside
 $C_6H_{11}BrO_4$ 227.054
 Cryst. Mp 101-102°. [α]_D -16.4 (MeOH).
Benzyl glycoside, 2-Me: Benzyl 3-bromo-3-deoxy-2-O-methyl- β -D-xylopyranoside
 [128843-90-3]
 $C_{13}H_{17}BrO_4$ 317.179
 Syrup.
Benzyl glycoside, 4-Me: Benzyl 3-bromo-3-deoxy-4-O-methyl- β -D-xylopyranoside
 [128843-91-4]
 $C_{13}H_{17}BrO_4$ 317.179
 Cryst. (EtOAc/heptane). Mp 103-104°. [α]_D²⁵ -39 (c, 1.7 in CHCl₃).

 α -D-Furanose-form

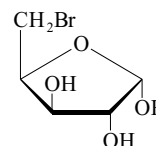
Me glycoside, di-Ac: Methyl 2,5-di-O-acetyl-3-bromo-3-deoxy- α -D-xylofuranoside
 [23259-83-8]
 $C_{10}H_{15}BrO_6$ 311.129
 Oil.
Me glycoside, dibenzoyl: Methyl 2,5-di-O-benzoyl-3-bromo-3-deoxy- α -D-xylofuranoside
 [54621-63-5]
 $C_{20}H_{19}BrO_6$ 435.27
 Syrup.

 β -D-Furanose-form

Me glycoside, di-Ac: Methyl 2,5-di-O-acetyl-3-bromo-3-deoxy- β -D-xylofuranoside
 [23259-86-1]
 $C_{10}H_{15}BrO_6$ 311.129
 Oil.
Me glycoside, dibenzoyl: Methyl 2,5-di-O-benzoyl-3-bromo-3-deoxy- β -D-xylofuranoside
 [54621-64-6]
 Syrup. [α]_D²¹ +31.8 (c, 3.0 in CHCl₃).
 [112483-17-7]
 Kent, P.W. *et al.*, *J.C.S.*, 1949, 1232 (β -Me pyr)

4-Bromo-4-deoxyxylose**B-104** α -L-Pyranose-form $C_5H_9BrO_4$ 213.028 **α -L-Pyranose-form**

1,2-O-Benzylidene: 1,2-O-Benzylidene-4-bromo-4-deoxy- α -L-xylopyranose
 [55169-80-7]
 $C_{12}H_{13}BrO_4$ 301.136
 Mp 125-126°. [α]_D²¹ -43.3 (c, 1.7 in CHCl₃).
Me glycoside, dibenzoyl: Methyl 2,3-di-O-benzoyl-4-bromo-4-deoxy- α -L-xylopyranoside
 [18930-05-7]
 $C_{20}H_{19}BrO_6$ 435.27
 Cryst. (cyclohexane). Mp 109-110°. [α]_D²⁵ -129.7 (c, 1.1 in CHCl₃).
Me glycoside, 3-benzoyl, 2-Me: Methyl 3-O-benzoyl-4-bromo-4-deoxy-2-O-methyl- α -L-xylopyranoside
 [54621-62-4]
 $C_{14}H_{17}BrO_5$ 345.189
 Cryst. (Et₂O/pentane). Mp 73-74°. [α]_D²¹ -76.2 (c, 1.3 in CHCl₃).
 [55169-81-8]
 Jacobsen, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 866; 1024 (*benzylidene*, α -Me gly deriv, *pmr*)
 Chana, J.S. *et al.*, *Chem. Comm.*, 1988, 94, (α -Me gly deriv)

5-Bromo-5-deoxyxylose**B-105** α -D-Furanose-form $C_5H_9BrO_4$ 213.028**D-form** [42854-95-5]

Syrup.

 α -D-Furanose-form

1,2-O-Isopropylidene: [42854-94-4]
 $C_8H_{13}BrO_4$ 253.092
 Needles (hexane). Mp 93-94°. [α]_D²⁰ -22.2 (c, 1.58 in MeOH).
 1,2-O-Isopropylidene, 3-benzoyl:
 [41164-25-4]
 $C_{15}H_{17}BrO_5$ 357.2
 Glass. [α]_D²⁵ -46.6 (c, 1.0 in CHCl₃).
 1,2-O-Isopropylidene, 3-Me: [17954-93-7]
 $C_9H_{15}BrO_4$ 267.119

Syrup. Bp_{0.2} 67°. [α]_D¹⁸ -77.6 (c, 1.0 in CHCl₃).

Me glycoside, di-Ac: [56570-73-1]
C₁₀H₁₅BrO₆ 311.129
Syrup.

 β -D-Furanose-form

Me glycoside, di-Ac: [56587-55-4]
Cryst.

DL-form [36663-36-2]

Syrup.

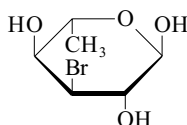
Inokawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1968, **41**, 1472; 1973, **46**, 3301 (3-*Me*)

Culbertson, T.P. *et al.*, *J.O.C.*, 1973, **38**, 3624, (3-*benzoyl*, *pmr*)

Tamura, T. *et al.*, *J.O.C.*, 1974, **39**, 38 (*synth*, *D-form*, *DL-form*, *isopropylidene*, *pmr*, *ir*)

Hollenberg, D.H. *et al.*, *Carbohydr. Res.*, 1975, **42**, 241 (3-*benzoyl*, α -*Me gly di-Ac*, β -*Me gly di-Ac*, *pmr*)

Pan, C. *et al.*, *CA*, 1989, **110**, 8765p (*isopropylidene*)

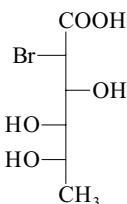
3-Bromo-3,6-dideoxyaltrose**B-106**

C₆H₁₁BrO₄ 227.054

 α -L-Pyranose-form

Me glycoside, 2-benzoyl: Methyl 2-*O*-benzoyl-3-bromo-2,6-dideoxy- α -L-altropyranoside [64880-43-9]
C₁₄H₁₇BrO₅ 345.189
Cryst. (hexane/Et₂O). Mp 52-53°. [α]_D²⁰ +12 (c, 1.54 in CHCl₃).

Florent, J.-C. *et al.*, *Carbohydr. Res.*, 1977, **56**, 301 (*synth*, *ms*)

2-Bromo-2,6-dideoxygluconic acid**B-107**

C₆H₁₁BrO₅ 243.054

L-form

1,4-Lactone: 2-Bromo-2,6-dideoxy-L-glucono-1,4-lactone

[78138-24-6]

C₆H₉BrO₄ 225.039

Cryst. (EtOAc/pentane). Mp 111-113°. [α]_D²⁰ -19 (c, 2.2 in EtOAc).

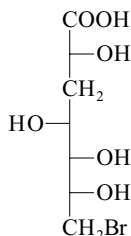
Bock, K. *et al.*, *Carbohydr. Res.*, 1981, **90**, 7 (*synth*, *pmr*, *cmr*)

7-Bromo-3,7-dideoxy-gluco-heptonic acid**B-108** **α -L-form**

Di-Ac: 3,4-Di-*O*-acetyl-2-bromo-2,6-dideoxy- α -L-talopyranosyl bromide [103321-25-1]
C₁₀H₁₄Br₂O₅ 374.026

Syrup. [α]_D²² -77 (c, 1.4 in CH₂Cl₂).

Horton, D. *et al.*, *J.O.C.*, 1986, **51**, 3479 (*di-Ac*, *ms*, *cmr*, *pmr*)



C₇H₁₃BrO₆ 273.08

D-form

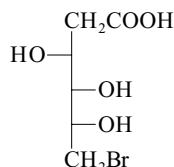
1,4-Lactone: 7-Bromo-3,7-dideoxy-D-gluco-heptono-1,4-lactone

[116386-11-9]

C₇H₁₁BrO₅ 255.065

Cryst. (EtOAc/Et₂O). Mp 131-133°. [α]_D²⁰ -33 (c, 2.2 in H₂O).

Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **174**, 331 (*synth*, *cmr*)

6-Bromo-2,6-dideoxy-arabino-hexonic acid**B-109**

C₆H₁₁BrO₅ 243.054

D-form

1,4-Lactone: 6-Bromo-2,6-dideoxy-D-arabino-hexono-1,4-lactone

[71672-01-0]

C₆H₉BrO₄ 225.039

Cryst. (EtOAc). Mp 71-73°. [α]_D²⁰ +65.6 (c, 2.9 in H₂O).

1,4-Lactone, 3,5-di-Ac: 3,5-Di-*O*-acetyl-6-bromo-2,6-dideoxy-D-arabino-hexono-1,4-lactone

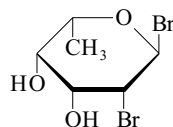
[69617-73-8]

C₁₀H₁₃BrO₆ 309.113

Cryst. (Et₂O/pentane). Mp 99-100°. [α]_D²⁰ -2.9 (c, 1.3 in CHCl₃).

Bock, K. *et al.*, *Carbohydr. Res.*, 1979, **68**, 313; 1981, **90**, 7 (*synth*, *cmr*)

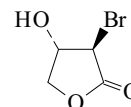
Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1984, **38**, 555 (*synth*)

2-Bromo-2,6-dideoxytalopyranosyl bromide**B-110**

C₆H₁₀Br₂O₃ 289.951

3-Bromodihydro-4-hydroxy-2(3H)-furanone**B-111**

2-Bromo-2-deoxy-1,4-tetrolactone



(3*R*,4*S*)-form

C₄H₅BrO₃ 180.986

(3*R*,4*S*)-form

L-threo-form. 2-Bromo-2-deoxy-L-threono-1,4-lactone

[117859-49-1]

Syrup. Bp₂ 150-160°. [α]_D²⁰ +14 (c, 5.0 in CHCl₃).

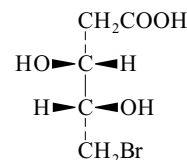
(3*S*,4*S*)-form

L-erythro-form. 2-Bromo-2-deoxy-L-erythrono-1,4-lactone

[117858-88-5]

Syrup. Bp_{1.5} 135-145° (lit. gives pressure range). [α]_D²⁰ +5 (c, 4 in CHCl₃).

Bols, M. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, **42**, 67 (*synth*, *cmr*)

5-Bromo-3,4-dihydroxypentanoic acid**B-112**

(3*R*,4*S*)-form

C₅H₉BrO₄ 213.028

(3*R*,4*S*)-form

D-threo-form

1,4-Lactone: 5-Bromo-2,5-dideoxy-D-threo-pentono-1,4-lactone

[38996-09-7]

C₅H₇BrO₃ 195.012

[α]_D²⁵ +59 (c, 2.6 in H₂O).

(3*S*,4*S*)-form

D-erythro-form

1,4-Lactone: 5-Bromo-2,5-dideoxy-D-erythro-pentono-1,4-lactone

[78139-03-4]

C₅H₇BrO₃ 195.012

Syrup. [α]_D +13.8 (c, 1.7 in Me₂CO).

1,4-Lactone, Ac: 3-*O*-Acetyl-5-bromo-2,5-dideoxy-D-erythro-pentono-1,4-lactone

[78139-02-3]

C₇H₉BrO₄ 237.05

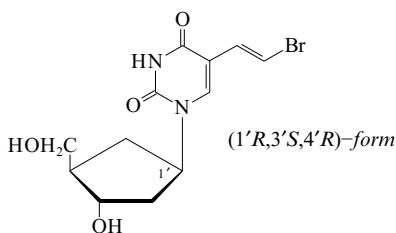
Cryst. (EtOAc/pentane). Mp 63.5-64°. [α]_D²⁵ -4 (c, 3.5 in EtOAc).

Nakaminami, G. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, **45**, 2624 (*synth*, *ir*)

Bock, K. *et al.*, *Carbohydr. Res.*, 1981, **90**, 17 (*D-form*, *synth*, *D-Ac*, *pmr*, *cmr*)

Chen, S.Y. *et al.*, *J.O.C.*, 1984, **49**, 2168 (*D*-form, *synth*, *pmr*)

5-(2-Bromoethenyl)-1-[3-hydroxy-4-(hydroxymethyl)cyclopentyl]-2,4(1*H*,3*H*)-pyrimidinedione, 9CI **B-113**



$C_{12}H_{15}BrN_2O_4$ 331.165

Shows significant activity against herpes simplex virus. Carbocyclic analogue of Brivudine, B-52. Log P -2.12 (uncertain value) (calc).

(1'*R*,3'*S*,4'*R*)-form [95463-56-2]

Cryst. (MeOH). Mp 184-185° dec. $[\alpha]_D^{20} +4.9$ (c, 1.58 in MeOH).

(1'*S*,3'*R*,4'*S*)-form [120963-50-0]

Cryst. (MeOH). Mp 184-185° dec. $[\alpha]_D^{20} -4.9$ (c, 1.73 in MeOH).

(1'*RS*,3'*SR*,4'*RS*)-form [91661-22-2]

Cryst. (MeOH). Mp 185° dec. (181-183° dec.).

(1'*RS*,3'*RS*,4'*SR*)-form [103476-38-6]

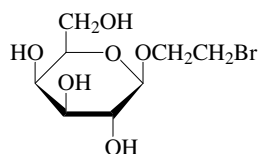
Solid. Mp 157-160° dec.

[103302-21-2, 103302-22-3]

Heredewijn, P. *et al.*, *J. Med. Chem.*, 1985, **28**, 550 (*synth*, *uv*, *ms*, *pmr*, *cmr*)

Balzanini, J. *et al.*, *J. Med. Chem.*, 1989, **32**, 1861 (*synth*, *pmr*, *cmr*, *uv*, *resoln*)

2-Bromoethyl galactopyranoside **B-114**



β -D-form

$C_8H_{15}BrO_6$ 287.107

α -D-form

Tetra-Ac:

$C_{16}H_{23}BrO_{10}$ 455.256
Mp 114-116°. $[\alpha]_D^{23} -5$ (c, 1.4 in $CDCl_3$).

Tetrabenzyl:

$C_{36}H_{39}BrO_6$ 647.605
Syrup. $[\alpha]_D^{23} +30.5$ (c, 1.4 in $CHCl_3$).

β -D-form

4,6-O-Benzylidene:

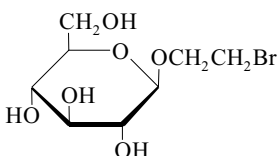
$C_{15}H_{19}BrO_6$ 375.215
Mp 138-139°. $[\alpha]_D^{24} -30$ (c, 1.2 in $CHCl_3$).

2,3,6-Tri-Ac, *4-(tetra-O-acetyl- α -D-galactopyranosyl)*: 2-Bromoethyl 4-O-(2,3,4,6-tetra-O-acetyl- α -D-galactopyranosyl)-2,3,6-tri-O-acetyl- β -D-galactopyranoside
Mp 174-177°. $[\alpha]_D^{23} +75$ (c, 2.0 in $CHCl_3$).

2,3,6-Tri-Ac, *4-(tetra-O-acetyl- β -D-galactopyranosyl)*: 2-Bromoethyl 4-O-(2,3,4,6-tetra-O-acetyl- β -D-galactopyranosyl)-2,3,6-tri-O-acetyl- β -D-galactopyranoside
Amorph. $[\alpha]_D^{23} +6$ (c, 2.4 in $CDCl_3$).

Dahmen, J. *et al.*, *Carbohydr. Res.*, 1982, **111**, C1; 1983, **116**, 303; 1984, **125**, 237 (*synth*, *pmr*)

2-Bromoethyl glucopyranoside **B-115**



$C_8H_{15}BrO_6$ 287.107

β -D-form

Tetra-Ac:

$C_{16}H_{23}BrO_{10}$ 455.256
Mp 119-120°. $[\alpha]_D^{23} -11$ (c, 1.2 in $CDCl_3$).

2,3,6-Tri-Ac, *4-(tetra-O-acetyl- β -D-galactopyranosyl)*: 2-Bromoethyl 2,3,6-tri-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl- β -D-galactopyranosyl)- β -D-glucopyranoside
Amorph. $[\alpha]_D^{23} -11$ (c, 1.3 in $CHCl_3$).

2,3,6-Tribenzyl: 2-Bromoethyl 2,3,6-tri-O-benzyl- β -D-glucopyranoside
 $C_{29}H_{33}BrO_6$ 557.48

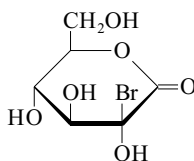
Mp 63-64°. $[\alpha]_D^{21} -18$ (c, 1 in $CHCl_3$).

4,6-O-Benzylidene: 2-Bromoethyl 4,6-O-benzylidene- β -D-glucopyranoside
 $C_{15}H_{19}BrO_6$ 375.215

Mp 157-159°. $[\alpha]_D^{21} -43$ (c, 2 in $CHCl_3$).

Dahmen, J. *et al.*, *Carbohydr. Res.*, 1982, **111**, C1; 1983, **116**, 303; 1984, **127**, 15 (*synth*, *pmr*)

2-C-Bromo-1,5-gluconolactone **B-116**



$C_6H_9BrO_6$ 257.037

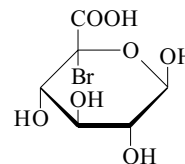
D-form

Tetrabenzoyl: 2-C-Bromo-2,3,4,6-tetra-O-benzoyl-D-glucono-1,5-lactone
[76514-09-5]

$C_{34}H_{25}BrO_{10}$ 673.469
Mp 96-98°. $[\alpha]_D +97$ ($CHCl_3$).

Ferrier, R.J. *et al.*, *J.C.S. Perkin 1*, 1980, 2762 (*synth*, *pmr*)

5-C-Bromoglucopyranuronic acid **B-117**



$C_6H_9BrO_7$ 273.037

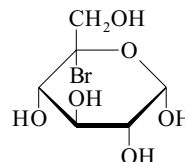
β -D-Pyranose-form

Tetra-Ac, *Me ester*: Methyl 1,2,3,4-tetra-O-acetyl-5-bromo- β -D-glucopyranuronate
[65615-69-2]

$C_{15}H_{19}BrO_{11}$ 455.212
Cryst. (EtOH). Mp 160-162°. $[\alpha]_D -107$ ($CHCl_3$).

Ferrier, R.J. *et al.*, *J.C.S. Perkin 1*, 1977, 1996 (*synth*, *pmr*)

5-Bromoglucose **B-118**



$C_6H_{11}BrO_6$ 259.053

α -D-Pyranose-form

Pentabenzoyl: 1,2,3,4,6-Penta-O-benzoyl-5-bromo- α -D-glucopyranose
[75860-53-6]

$C_{41}H_{31}BrO_{11}$ 779.593
Cryst. (EtOH). Mp 126-128°. $[\alpha]_D +46$ ($CHCl_3$).

β -D-Pyranose-form

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-bromo- β -D-glucopyranose
[69534-61-8]

$C_{16}H_{21}BrO_{11}$ 469.239
Cryst. (Et₂O). Mp 119-120°. $[\alpha]_D -90$ ($CHCl_3$).

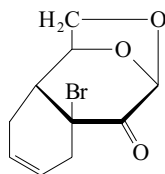
Pentabenzoyl: 1,2,3,4,6-Penta-O-benzoyl-5-bromo- β -D-glucopyranose
[69534-63-0]

$C_{41}H_{31}BrO_{11}$ 779.593
Cryst. (EtOH/ CCl_4). Mp 171-172°. $[\alpha]_D -12$ ($CHCl_3$).

Blattner, R. *et al.*, *J.C.S. Perkin 1*, 1980, 1523 (*synth*, *pmr*)

Ferrier, R.J. *et al.*, *J.C.S. Perkin 1*, 1980, 1528 (*synth*, *pmr*)

5a-Bromo-1,2,5a,6,9,9a-hexahydro-1,4-epoxy-3-benzoxepin-5(4H)-one
1,6-Anhydro-3-bromo-3,4-(2-butene-1,4-diyl)-3,4-dideoxy-arabino-hexopyranos-2-ulose
[79849-66-4]



$C_{10}H_{11}BrO_3$ 259.099

D-form

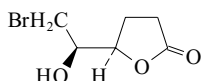
Carbohydrate synthon.

Oil.

Ward, D.D. *et al.*, *Carbohydr. Res.*, 1981, **95**, 155 (synth, pmr, cmr)

Isobe, M. *et al.*, *Tet. Lett.*, 1990, **31**, 3327 (synth)

5-(2-Bromo-1-hydroxyethyl)-dihydro-2(3H)-furanone, 9CI
6-Bromo-2,3,6-trideoxy-1,4-hexonolactone



(1'R,5R)-form

$C_6H_9BrO_3$ 209.039

(1'R,5R)-form

L-erythro-form

[137584-85-1]

Cryst. (H_2O). Mp 77-78°. $[\alpha]_D^{20}$ -21.6 (c, 1.6 in H_2O).

(1'R,5S)-form

L-threo-form

[129151-35-5]

Cryst. ($CHCl_3$). Mp 72-74°. $[\alpha]_D^{20}$ +31 (c, 1.96 in H_2O).

(1'S,5R)-form

D-threo-form

[152501-77-4]

Cryst. (EtOAc/pentane). Mp 72-74°. $[\alpha]_D^{20}$ -32.6 (c, 1.8 in H_2O).

(1'S,5S)-form

D-erythro-form

[107855-21-0]

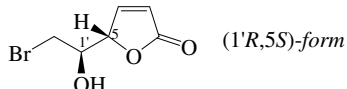
Cryst. (Et_2O). Mp 76-78°. $[\alpha]_D^{20}$ +20.3 (c, 5 in $CHCl_3$).

Lundt, I. *et al.*, *Synthesis*, 1986, 1052 (synth, cmr)

Vekemans, J. *et al.*, *J.O.C.*, 1990, **55**, 5336 (synth, pmr)

Pedersen, C. *et al.*, *Acta Chem. Scand.*, 1993, **47**, 885 (synth, pmr)

5-(2-Bromo-1-hydroxyethyl)-2(5H)-furanone
6-Bromo-2,3,6-trideoxyhex-2-enono-1,4-lactone



(1'R,5S)-form

$C_6H_7BrO_3$ 207.023

(1'R,5S)-form

L-threo-form

[111975-47-4]

Needles ($CHCl_3$). Mp 105.5-106°. $[\alpha]_D^{20}$ -107 (c, 1.5 in H_2O).

(1'S,5R)-form

D-threo-form

[129151-49-1]

Cryst. Mp 104-106°. $[\alpha]_D^{20}$ +108 (c, 1.05 in H_2O).

(1'S,5S)-form

D-erythro-form

[111975-51-0]

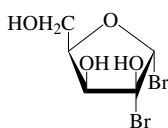
Oil. $[\alpha]_D^{20}$ -111 (c, 1.3 in H_2O).

Dehydrates on attempted purification.

Vekemans, J.A.J.M. *et al.*, *J.O.C.*, 1988, **53**, 627; 1990, **55**, 5336 (synth, pmr)

2-C-Bromolixosyl bromide

B-122



α -D-Furanose-form

$C_5H_8Br_2O_4$ 291.924

α -D-Pyranose-form

Tribenzoyl: 2,3,5-Tri-O-benzoyl-2-C-bromo- α -D-lyxopyranosyl bromide
[73322-31-3]

$C_{26}H_{20}Br_2O_7$ 604.248

Syrup. $[\alpha]_D^{23}$ +4.6 (c, 1.0 in $CHCl_3$).

β -D-Pyranose-form

Tribenzoyl: 2,3,5-Tri-O-benzoyl-2-C-bromo- β -D-lyxopyranosyl bromide
[73322-34-6]

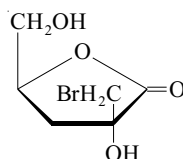
$C_{26}H_{20}Br_2O_7$ 604.248

Syrup. $[\alpha]_D^{24}$ -99.8 (c, 0.5 in $CHCl_3$).

Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1980, **113**, 471

2-C-(Bromomethyl)-3-deoxy-erythro-1,4-pentonolactone
2-Bromo-2-deoxy- α -isosaccharino-1,4-lactone

B-123



$C_6H_9BrO_4$ 225.039

D-form

Di-Ac: 2,5-Di-O-acetyl-2-C-(bromomethyl)-3-deoxy-D-erythro-1,4-pentonolactone

[111507-10-9]

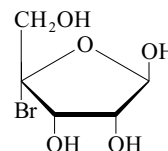
$C_{10}H_{13}BrO_6$ 309.113

Syrup. $[\alpha]_D^{20}$ +86.1 (c, 1 in $CHCl_3$).

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1987, **41**, 13 (synth, pmr, cmr)

4-Bromoribose

B-124



$C_5H_9BrO_5$ 229.027

β -D-Furanose-form

2,3,5-Tribenzoyl, 1-Ac: 1-O-Acetyl-2,3,5-tri-O-benzoyl-4-bromo- β -D-ribofuranose
[94396-44-8]

$C_{28}H_{23}BrO_9$ 583.388

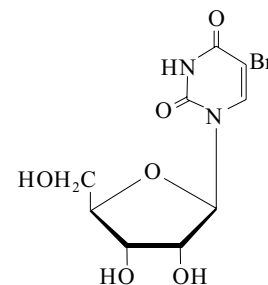
$[\alpha]_D^{20}$ +20.5 ($CHCl_3$).

Ferrier, R.J. *et al.*, *J.C.S. Perkin 1*, 1984, 1675; 1983 (synth, pmr, cmr)

5-Bromouridine, 9CI, 8CI

B-125

[957-75-5]



$C_9H_{11}BrN_2O_6$ 323.1

Mp 181-184° dec. $[\alpha]_D^{21}$ -15.4 (c, 1.0 in H_2O).

► YU7300000

2',3'-O-Anisylidene:

Cryst. (EtOH/ Me_2CO). Mp 224-226°.

2',3'-O-Anisylidene, 5'-benzoyl:

Needles ($MeOH/EtOAc$). Mp 221-223°.

2',3'-O-Isopropylidene, 5'-benzoyl:

$C_{19}H_{19}BrN_2O_7$ 467.272

Needles ($MeOH$). Mp 206-208°. λ_{max} 225 and 274 nm (ϵ 13 500, 8 300) ($MeOH$).

2',3'-O-Isopropylidene, 5'-tosyl:

$C_{19}H_{21}BrN_2O_8S$ 517.353

Prisms (C_6H_6). Mp 125-127°.

2'-Me:

$C_{10}H_{13}BrN_2O_6$ 337.126

Cryst. ($EtOH$). Mp 235-237°. $[\alpha]_D^{25}$ +4.36 (c, 1.0 in $MeOH$).

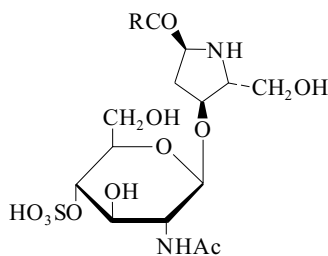
5'-Deoxy: 5-Bromo-5'-deoxyuridine

$C_9H_{11}BrN_2O_5$ 307.1

Cryst. ($EtOAc$ /petrol). Mp 172-173° dec.

Bulgecin A

β -Lactam activator F2
[92953-54-3]



R = NHCH₂CH₂SO₃H

C₁₆H₂₉N₃O₁₄S₂ 551.549

Aminoglycoside antibiotic. Isol. from *Pseudomonas acidophila* and *Pseudomonas mesoacidophila*. Induces formn. of bulges in bacterial cell walls by cooperation with β -lactam antibiotics. Sol. H₂O; fairly sol. MeOH, DMSO; poorly sol. EtOAc, phenol, hexane. Major component of Bulgecin complex.
► LD₅₀ (mus, ivn) 1000-3000 mg/kg.

Mono-Na salt:

Needles (MeOH aq.). Mp 211-212°. [α]_D²⁰ +6.5 (c, 0.5 in 1M AcOH).

Imada, A. *et al.*, *J. Antibiot.*, 1982, **35**, 1400;

1985, **38**, 17 (isol, ir, pmr, cmr, struct)

Shinagawa, S. *et al.*, *Tetrahedron*, 1984, **40**, 3465 (isol, struct)

Cintas, P. *et al.*, *Tetrahedron*, 1991, **47**, 6079 (synth)

Bulgecin B

F6. Antibiotic F6

[95863-86-8]

As Bulgecin A, B-130 with

R = -NHCH₂CH₂COOH

C₁₇H₂₉N₃O₁₃S 515.494

Aminoglycoside antibiotic. From *Pseudomonas acidophila* and *Pseudomonas mesoacidophila*. Induces the formation of bulges in bacterial cell walls by cooperation with β -lactam antibiotics. Powder + 1H₂O (MeOH aq.) (as Na salt). [α]_D²⁰ -2.6 (c, 0.5 in 1M AcOH) (Na salt). Minor component of Bulgecin complex.

Imada, A. *et al.*, *J. Antibiot.*, 1982, **35**, 1400;

1985, **38**, 17 (isol, ir, pmr, cmr, struct)

Shinagawa, S. *et al.*, *Tetrahedron*, 1984, **40**, 3465 (isol, struct)

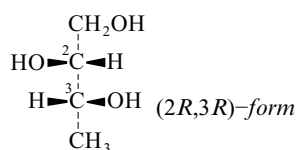
Cintas, P. *et al.*, *Tetrahedron*, 1991, **47**, 6079 (synth)

1,2,3-Butanetriol, 9CI

1-Methylglycerol

[4435-50-1]

[41167-49-1, 61913-75-5, 61913-76-6, 122920-28-9, 138257-33-7]

**B-130**

C₄H₁₀O₃ 106.121

Liq. with sweet taste. Bp_{0.4} 145°. All reported racemic samples appear to be diastereoisomeric mixts.

(2R,3R)-form

1-Deoxy-D-threitol

[33818-52-9]

Hygroscopic syrup. Bp_{0.15} 98-99°. n_D²⁶ 1.4604.

Tris(4-nitrobenzoyl): [34290-51-2]

Cryst. (CHCl₃/MeOH). Mp 129-131°.

[α]_D²³ -9.05 (c, 2.19 in CHCl₃).

(2R,3S)-form 1-Deoxy-L-erythritol

Constit. of the fruit of *Carum ajowan* (ajowan).

Amorph. powder. [α]_D²³ -30 (c, 0.3 in H₂O).

2-O-β-D-Glucopyranoside:

C₁₀H₂₀O₈ 268.263

Constit. of the fruit of *Pimpinella anisum* (anise). Amorph. powder. [α]_D²¹ -29 (c, 0.1 in MeOH).

(2S,3R)-form 1-Deoxy-D-erythritol

[4144-94-9] Bp_{0.05} 94°. [α]_D +5.6 (c,

0.033 in MeOH). n_D²⁰ 1.4568.

1,3-Dibenzoyl: [195512-74-4]

C₁₈H₁₈O₅ 314.337

Oil. [α]_D +51 (c, 0.875 in CHCl₃).

Tris(4-nitrobenzoyl): [4233-69-6]

Cryst. + 1/3 CHCl₃ (CHCl₃/MeOH). Mp

86-88° (loses solv., resolidifies) Mp

159-160° (double Mp).

1,3-Dibenzyl: [114185-05-6]

C₁₈H₂₂O₃ 286.37

Oil. [α]_D +28.8 (c, 1.25 in CHCl₃).

(2R,3R)-form

Constit. of the fruit of *Foeniculum vulgare* (fennel).

Amorph. powder. [α]_D²³ +3 (c, 0.1 in MeOH).

Chaby, R. *et al.*, *Tetrahedron*, 1971, **27**,

3197-3205 (synth)

Bebault, G.M. *et al.*, *Can. J. Chem.*, 1972, **50**,

3373-3378 (synth)

Garson, M.J. *et al.*, *J.C.S. Perkin 1*, 1984,

1021-1026 (synth, ir)

Andrews, M.A. *et al.*, *J.O.C.*, 1989, **54**,

5257-5264 (synth, pmr, cmr, ms)

Peng, L. *et al.*, *Helv. Chim. Acta*, 1997, **80**,

1494-1512 (synth, ir, pmr, cmr, ms,

2S,3R-form, dibenzoyl, dibenzyl)

Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999,

47, 988-992 (isol, pmr, cmr)

Ishikawa, T. *et al.*, *Chem. Pharm. Bull.*, 2001,

49, 840-844 (1-Deoxy-L-erythritol, isol)

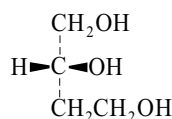
Fujimatu, E. *et al.*, *Phytochemistry*, 2003, **63**,

609-616 (2-glucoside)

1,2,4-Butanetriol, 9CI

2-Deoxytetritol

[3068-00-6]

B-133

(R)-form

C₄H₁₀O₃ 106.121

► EK7176000

(R)-form

L-glycero-form

[70005-88-8]

Constit. of the fruit of *Foeniculum vulgare* (fennel).

Oil. [α]_D²⁵ +27 (c, 1.365 in MeOH).

4-Benzyl ether: [86990-91-2]

C₁₁H₁₆O₃ 196.246

Syrup. [α]_D²³ -4.81 (c, 1.33 in CHCl₃).

(S)-form D-glycero-form

[42890-76-6]

Oil. Bp_{0.15} 130° (bath). [α]_D²² -28.2

(c, 2.8 in EtOH).

Tri-Ac: [52067-45-5]

C₁₀H₁₆O₆ 232.233

[α]_D²⁵ -20.9 (c, 1.84 in CHCl₃).

2-Me ether: 2-Methoxy-1,4-butanediol

C₅H₁₂O₃ 120.148

Bp_{0.03} 85-95°. [α]_D¹⁸ -23.5 (c, 14 in Me₂CO).

1,2-O-Isopropylidene: [32233-43-5]

C₇H₁₄O₃ 146.186

Oil. Bp_{0.05} 55-61°. [α]_D²⁴ -2.23 (c, 9.8 in MeOH).

(±)-form [6810-31-7]

Hygroscopic syrup with sweet, burning taste. Misc. H₂O, EtOH. d₂₀ 1.18. Bp₁₈ 190-191°. n_D²⁰ 1.4750.

1,4-Di-Ac:

C₈H₁₄O₅ 190.196

Bp₁₈ 161-163°.

Tri-Ac: [14835-47-3] Bp₁₁ 150°.

2-Me ether: [13942-68-2] Bp_{0.02} 83°.

4-Me ether: 4-Methoxy-1,2-butanediol

C₅H₁₂O₃ 120.148

Bp₁₂ 116°.

Trisphenylurethane:

Needles (C₆H₆). Mp 149-152°.

[57314-07-5]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 183C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 284B; 284C (nmr)

Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, **3**, 262B; 262C (ir)

Lardon, A. *et al.*, *Helv. Chim. Acta*, 1949, **32**, 2003-2009 (2-Me ether)

Olsen, S. *et al.*, *Acta Chem. Scand.*, 1950, **4**, 462-472 (tri-Ac, synth)

Hayashi, H. *et al.*, *J.A.C.S.*, 1973, **95**, 8749 (synth, ir, pmr)

Hungerbühler, E. *et al.*, *Helv. Chim. Acta*, 1981, **64**, 1467 (synth)

Hanessian, S. *et al.*, *Can. J. Chem.*, 1984, **62**, 2146 (synth)

Meyers, A.I. *et al.*, *J.O.C.*, 1986, **51**, 5111 (deriv, synth, pmr, bibl)

Kociński, P.J. *et al.*, *J.C.S. Perkin 1*, 1987, 2183 (synth, ir)

Van der Eycken, E. *et al.*, *Tet. Lett.*, 1987, **28**, 4759 (synth)

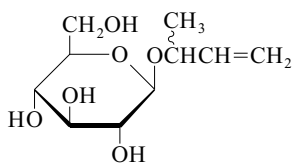
Lubineau, A. *et al.*, *J.C.S. Perkin 1*, 1992, 1631 (synth)

Yamada, O. *et al.*, *Synthesis*, 1995, 1291, (R-form, synth)

Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 988-992 (isol, pmr, cmr)

Seki, M. *et al.*, *Synthesis*, 1999, 745-747, (S-form, synth, pmr, cmr)

Nakamura, S. *et al.*, *Tetrahedron*, 2002, **58**, 10353-10374 (R-form, benzyl ether)

3-Buten-2-yl glucopyranoside**B-134** $C_{10}H_{18}O_6$ 234.249 **β -D-form**

Building block for oligosaccharide syntheses. Potential use in carbohydrate combinatorial chemistry.

Hygroscopic cryst.

Tetra-Ac: 3-Buten-2-yl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside

$C_{18}H_{26}O_{10}$ 402.397

Cryst. Characterised spectroscopically.

2,3,4-Tribenzyl: 3-Buten-2-yl 2,3,4-tri-O-benzyl- β -D-glucopyranoside

$C_{31}H_{36}O_6$ 504.622

Characterised spectroscopically.

Tetrabenzyl: 3-Buten-2-yl 2,3,4,6-tetra-O-benzyl- β -D-glucopyranoside

$C_{38}H_{42}O_6$ 594.746

Characterised spectroscopically.

Boons, G.-J. *et al.*, *Angew. Chem., Int. Ed.*, 1996, **35**, 2845 (synth, pmr, cmr, ms)

Boons, G.-J. *et al.*, *J.O.C.*, 1996, **61**, 4262

3-Butenyl glucosinolate**B-135**

1-Thio- β -D-glucopyranose 1-[N-(sulfoxy)-4-pentenimide], 9CI. **Gluconapin** [19041-09-9]

$H_3C=CHCH_2CH_2C(SGlc)=NOSO_3H$

$C_{11}H_{19}NO_9S_2$ 373.404

Isol. from rape seeds and many other *Brassica* spp. Highly hygroscopic, amorph. solid (as K salt).

Mp 125° (K salt). $[\alpha]_D^{25}$ -23.5 (c, 1.8 in H_2O).

Tetra-Ac:

Cryst. (EtOH) (as K salt). Mp 189° (K salt). $[\alpha]_D^{27}$ -17.1 (c, 1.3 in H_2O).

Salt with Sinapine: **Boreavan A**. Sinapinyl gluconapate

[169272-87-1]

$C_{27}H_{42}N_2O_{14}S_2$ 682.766

Constit. of the fruit of *Boreava orientalis*. Amorph. powder. $[\alpha]_D^{24}$ -8.5 (c, 0.01 in MeOH).

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1953, **7**, 1271; 1968, **22**, 3324 (isol, synth)

Ettlinger, M.G. *et al.*, *J.A.C.S.*, 1955, **77**, 1831 (occur)

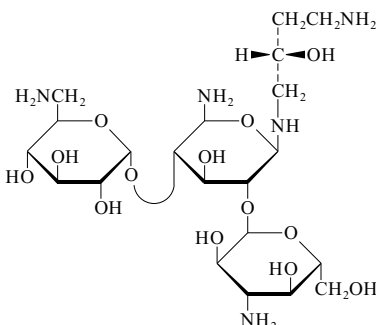
Hanley, A.B. *et al.*, *J. Sci. Food Agric.*, 1983, **34**, 869 (isol)

Cox, I.J. *et al.*, *Carbohydr. Res.*, 1984, **132**, 323 (cmr)

Sakushima, A. *et al.*, *Phytochemistry*, 1995, **40**, 483-485 (*Boreavan A*)

Butikacin, BAN, INN, USAN**B-136**

1-N-(4-Amino-2-hydroxybutyl)kanamycin
A. UK 18892. Antibiotic UK 18892
[59733-86-7]



$C_{22}H_{45}N_5O_{12}$ 571.624

Aminoglycoside antibiotic. Semisynthetic.

Active against a wide range of pathogenic bacteria, including many gentamicin-resistant strains. Log P -8.99 (uncertain value) (calc).

Sulfate salt: [68779-22-6] Highly active against aminoglycoside resistant bacteria.

►WK1951000

Ger. Pat., 1976, 2 547 738; CA, **85**, 33368 (synth) Richardson, K. *et al.*, *J. Antibiot.*, 1977, **30**, 843 (synth, props)

Wise, R. *et al.*, *Antimicrob. Agents Chemother.*, 1978, **14**, 228 (use)

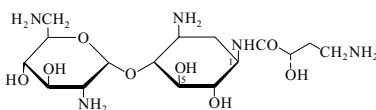
Jevons, S. *et al.*, *Antimicrob. Agents Chemother.*, 1978, **14**, 277 (use)

Kendall, M.J. *et al.*, *J. Antimicrob. Chemother.*, 1978, **4**, 459 (pharmacol)

Coleman, M.W. *et al.*, *J. Antibiot.*, 1979, **32**, 355 (cmr)

Butirosamine**B-137**

1-N-(4-Amino-2-hydroxybutanoyl) neamine
[50474-68-5]



$C_{16}H_{33}N_5O_8$ 423.465

Sol. H_2O ; poorly sol. butanol, hexane.

►LD₅₀ (mus, ivn) 500 - 900 mg/kg. WK2160000

Hydrochloride (1:4): [52152-50-8]

Dihydrate. Mp 200-217°. $[\alpha]_D^{20}$ +52.4 (c, 1 in H_2O).

5-Deoxy: [59867-74-2]

$C_{16}H_{33}N_5O_7$ 407.466

Semisynthetic. Shows similar activity to butirosamine. Sol. H_2O ; poorly sol. butanol, hexane.

Yung, N. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 109

Woo P.W.K., *et al.*, *Carbohydr. Res.*, 1973, **31**, 27 (cmr)

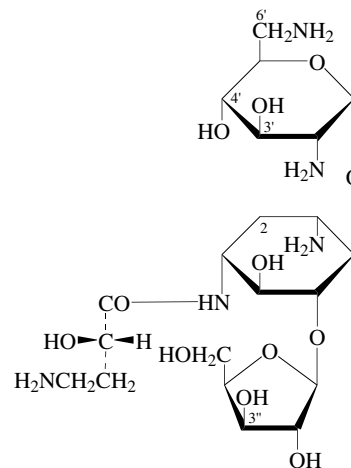
Tsukiura, H. *et al.*, *J. Antibiot.*, 1973, **26**, 351 (synth)

Saeki, H. *et al.*, *Chem. Pharm. Bull.*, 1974, **22**, 1151 (synth)

Taylor, H.D. *et al.*, *J. Antibiot.*, 1976, **29**, 532 (synth, props)

Butirosin A**B-138**

Ambutyrosin A, 8CI. **Butirosin**, INN.
Ambutyrosin. CI 642
[34291-02-6]



$C_{21}H_{41}N_5O_{12}$ 555.581

Major component (80-85%) of the aminoglycoside antibiotic complex Butirosin INN. The pharmaceutical prod. is a mixt. of Butirosins A and B. The H_2SO_4 salt of the complex has Mp =225° dec., $[\alpha]_D^{25}$ +29° (c, 2 in H_2O). Isol. from strains of *Bacillus circulans* (NRRL B-3312 and B-3313). Broad spectrum antibiotic. Amorph. solid. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.
Mp 149° (broad Mp). $[\alpha]_D^{25}$ +26 (c, 1.46 in H_2O). Log P -8.28 (uncertain value) (calc). Melts over wide range beginning at ca. 149°.

►LD₅₀ (mus, scu) 3050 mg/kg; LD₅₀ (mus, ivn) 457 mg/kg, LD₅₀ (mus, ipr) 2198 mg/kg. WK2302000

3''-Epimer: **Butirosin B**. *Ambutyrosin B*, 8CI
[34291-03-7]

$C_{21}H_{41}N_5O_{12}$ 555.581

Minor component of the Butirosin complex from *Bacillus circulans* NRRL B3312. Broad-spectrum antibiotic.

Amorph. solid + $2H_2O$. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.

Mp 146° (broad range). $[\alpha]_D^{25}$ +33 (c, 1.5 in H_2O).

►LD₅₀ (mus, ivn) 450 mg/kg. BE0186000

4'-Deoxy: **Butirosin BU 1975C₁**. BU 1975C₁. Antibiotic BU 1975C₁
[52760-38-0]

$C_{21}H_{41}N_5O_{11}$ 539.582

Isol. from *Bacillus circulans*. Has antibiotic props. Amorph. solid. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.

Mp 245-247° dec. (as sulfate salt). $[\alpha]_D^{21}$ +24.5 (c, 1 in H_2O).

►LD₅₀ (mus, ivn) 520 mg/kg; LD₅₀ (mus, ivn) 720 mg/kg. WK2400000

3',4'-Dideoxy: 3',4'-Dideoxybutirosin A
[53318-76-6]

$C_{21}H_{41}N_5O_{10}$ 523.582

Isol. from *Bacillus circulans* incubated

with 3,4-dideoxyneamine. Active against both butirosin-sensitive and butirosin-resistant bacterial strains. Monohydrate (as carbonate salt). Sol. H₂O. Mp 195-200° dec. (carbonate salt). $[\alpha]_D^{25} +25$ (c, 0.4 in H₂O).

4'-Deoxy, 3''-epimer: Butirosin BU 1975C₂. 4'-Deoxybutirosin B. BU 1975C₂. Antibiotic BU 1975C₂ [53185-10-7] C₂₁H₄₁N₅O₁₁ 539.582

Isol. from *Bacillus circulans*. Has antibiotic props. Amorph. solid. Sol. H₂O; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.

3'-Deoxy, 3'-chloro: 3'-Chloro-3'-deoxybutirosin A [57322-54-0] C₂₁H₄₀ClN₅O₁₁ 574.027

Isol. from *Bacillus circulans* incubated with 3'-chloroneamine. Sol. H₂O.

3',4'-Dideoxy, 3''-epimer: 3',4'-Dideoxybutirosin B [42242-66-0] C₂₁H₄₁N₅O₁₀ 523.582

Isol. from *Bacillus circulans* in the presence of 3,4-dideoxyneamine. Shows antibiotic activity comparable with that of Butirosin B. Monohydrate (as carbonate salt). Sol. H₂O.

Mp 190-195° dec. (carbonate). $[\alpha]_D^{25} +32$ (c, 0.4 in H₂O). $[\alpha]_D^{16} +25$ (c, 1.8 in H₂O).

6'-Deamino, 6'-hydroxy: Butirosin BU 1709E₁. BU 1709E₁. Antibiotic BU 1709E₁ [54333-82-3] C₂₁H₄₀N₄O₁₃ 556.566

Isol. from *Bacillus circulans*. Shows broad-spectrum antibiotic activity. Amorph. powder. $[\alpha]_D +28$ (c, 1.47 in H₂O). Indefinite Mp.

► LD₅₀ (mus, ivn) 890 mg/kg. WK2125000

6'-Deamino, 6'-hydroxy, 3''-epimer: Butirosin 1709E₂. BU 1709E₂. Antibiotic BU 1709E₂

[66749-41-5] C₂₁H₄₀N₄O₁₃ 556.566

Isol. from *Bacillus circulans*. Shows broad-spectrum antibacterial activity. Amorph. powder. Sol. H₂O; poorly sol. butanol, hexane. $[\alpha]_D +33$ (c, 1.30 in H₂O).

3',4'-Dideoxy, 6'-N-Me: 3',4'-Dideoxy-6'-N-methylbutirosin A [64981-62-0] C₂₂H₄₃N₅O₁₀ 537.609

Isol. from *Bacillus circulans* in presence of 3',4'-dideoxy-6'-N-methylnamine. Active against gram-positive and -negative bacteria. Dihydrate (as carbonate salt). Sol. H₂O; fairly sol. MeOH; poorly sol. butanol-hexane.

Mp 175-178° dec. (carbonate). $[\alpha]_D^{25} +20.7$ (c, 0.3 in H₂O).

► LD₅₀ (mus, ivn) 720 mg/kg.

3',4'-Dideoxy, 6'-N-methyl, 3''-epimer: 3',4'-Dideoxy-6'-N-methylbutirosin B [65025-70-9] C₂₂H₄₃N₅O₁₀ 537.609

Isol. from *Bacillus circulans* in presence of 3,4-dideoxy-6'-N-methylnamine. Shows broad-spectrum activity, slightly less than Butirosin A. Amorph. powder + 2H₂O (as carbonate salt). Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. Mp 190-195° dec. (carbonate). $[\alpha]_D^{25} +25.2$ (c, 0.5 in H₂O).

► LD₅₀ (mus, ivn) 720 mg/kg.

2S-Hydroxy: 2-Hydroxybutirosin [59867-75-3] C₂₁H₄₁N₅O₁₃ 571.581

Aminoglycoside antibiotic. Isol. from *Bacillus circulans* with Streptamine. Sol. H₂O; poorly sol. butanol, hexane.

[12772-35-9]

Woo, P.W.K. *et al.*, *Tet. Lett.*, 1971, 2617; 2621; 2625 (ms, ir, struct)

Dion, H.W. *et al.*, *Antimicrob. Agents Chemother.*, 1972, 2, 84 (isol, struct)

Akita, E. *et al.*, *J. Antibiot.*, 1973, 26, 365 (synth, ir, pmr)

Tsukiura, H. *et al.*, *J. Antibiot.*, 1973, 26, 386; 1979, 32, 18 (derivs)

Ikeda, D. *et al.*, *Bull. Chem. Soc. Jpn.*, 1974, 47, 3136 (synth, nmr, derivs)

Saeki, H. *et al.*, *Chem. Pharm. Bull.*, 1974, 22, 1145; 1975, 25, 2089 (synth, pmr, derivs)

Kawaguchi, H. *et al.*, *J. Antibiot.*, 1974, 27, 460 (derivs)

Kanishi, M. *et al.*, *J. Antibiot.*, 1974, 27, 471 (struct, derivs)

Taylor, H.D. *et al.*, *J. Antibiot.*, 1976, 29, 532, (2-Hydroxybutirosin)

Japan. Pat., 1976, 76 01 694; 76 80 839; CA, 85, 3876; 16913 (deriv)

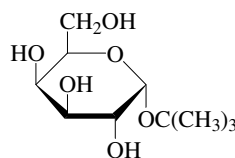
Takeda, K. *et al.*, *J. Antibiot.*, 1978, 31, 247; 250; 1023; 1031 (derivs, biosynth)

Cox, J.R. *et al.*, *Carbohydr. Res.*, 1995, 271, 55 (pmr, conformn)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BSX325

tert-Butyl galactopyranoside

B-139



α-D-form

C₁₀H₂₀O₆ 236.264

α-D-form

Noncryst. $[\alpha]_D^{20} +131.3$ (c, 1.0 in CHCl₃).

2,3,6-Tribenzoyl: tert-Butyl 2,3,6-tri-O-benzoyl-α-D-galactopyranoside

C₃₁H₃₂O₉ 548.588

Oil. $[\alpha]_D^{20} +131.5$ (c, 1.0 in CHCl₃).

β-D-form

Tetra-Ac: tert-Butyl 2,3,4,6-tetra-O-acetyl-β-D-galactopyranoside

C₁₈H₂₈O₁₀ 404.413

Cryst. (Et₂O/hexane). Mp 70°.

$[\alpha]_D^{20} -20.8$ (c, 1.0 in CHCl₃).

Risbood, P.A. *et al.*, *Carbohydr. Res.*, 1981, 88, 245 (synth)

Butyl glucosinolate

B-140

1-Thio-β-D-glucopyranose 1/[N-(sulfooxy)pentanimidate], 9CI [35535-42-3]

H₃C(CH₂)₃C(SGlc)=NOSO₃H

C₁₁H₂₁NO₉S₂ 375.42

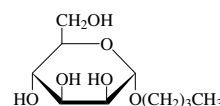
Present in leaves of *Capparis flexuosa* and in seeds of *Brassica oleracea* (cabbage).

Kjaer, A. *et al.*, *Phytochemistry*, 1971, 10, 3155 (occur)

Macleod, A.J. *et al.*, *Phytochemistry*, 1989, 28, 1405 (occur)

Butyl mannoside

B-141



α-D-Pyranose-form

C₁₀H₂₀O₆ 236.264

α-D-Pyranose-form [146453-36-3]

Constit. of the rhizomes of *Acanthopanax obovatus*.

$[\alpha]_D^{20} -128.4$ (c, 1.6 in MeOH).

2,3,4,6-Tetra-O-benzoyl: Butyl 2,3,4,6-tetra-O-benzoyl-α-D-mannopyranoside [146399-93-1]

C₃₈H₃₆O₁₀ 652.696

Syrup. $[\alpha]_D^{20} -16.7$ (c, 0.6 in CH₂Cl₂).

β-D-Pyranose-form [143289-25-2]

Syrup. $[\alpha]_D^{20} -26.2$ (c, 0.7 in H₂O).

Meldal, M. *et al.*, *Carbohydr. Res.*, 1992, 235, 115 (α-D-pyr, tetra-O-benzoyl, pmr, cmr)

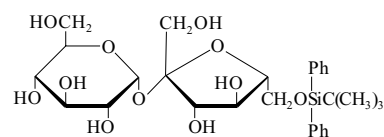
Taubken, N. *et al.*, *Synthesis*, 1992, 517, (β-D-pyr, pmr, cmr)

Taubken, N. *et al.*, *J. Carbohydr. Chem.*, 1993, 12, 651; 1994, 13, 343 (β-D-pyr, pmr, cmr)

Si, J. *et al.*, 1993, 35, 483 (isol)

6'-O-(tert-Butyldiphenylsilyl)sucrose

B-142



C₂₈H₄₀O₁₁Si 580.703

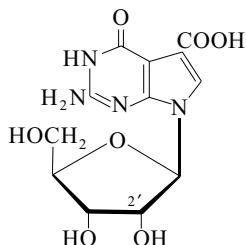
Mp 192-195°. $[\alpha]_D +44$ (c, 1 in MeOH).

Karl, H. *et al.*, *Carbohydr. Res.*, 1982, 101, 31

Cadeguomycin

C-1

2-Amino-4,7-dihydro-4-oxo-7-β-D-ribofuranosyl-1H-pyrrolo[2,3-d]pyrimidine-5-carboxylic acid. 7-Carboxy-7-deazaguanosine [81645-08-1]



C₁₂H₁₄N₄O₇ 326.265

Nucleoside antibiotic. Isol. from *Streptomyces hygroscopicus*. Shows antineoplastic activity and immunostimulatory effects. Needles. Sol. MeOH, DMSO; fairly sol. H₂O; poorly sol. EtOH, hexane. Mp 231-239° dec. Log P -2.94 (calc). λ_{max} 231 (ε 14100); 272 (ε 6310); 297 (ε 6920) (0.1N HCl) (Derep). λ_{max} 225 (sh) (ε 9175); 268 (ε 9175); 282 (sh) (ε) (H₂O at pH 11) (Derep). λ_{max} 232 (ε 19680); 272 (ε 6881); 298 (ε 7610) (H₂O) (Derep). λ_{max} 232 (ε 19677); 272 (ε 6881); 298 (ε 7607) (H₂O) (Berdy). λ_{max} 232; 272; 298 (HCl) (Berdy). λ_{max} 268 (ε 9175) (NaOH) (Berdy). λ_{max} 232 (ε 19710); 272 (ε 6890); 299 (ε 7630) (H₂O) (Berdy).

► LD₅₀ (mus, ipr) 200 - 600 mg/kg. UY9358980

Nitrile: 2-Amino-4,7-dihydro-4-oxo-7-β-D-ribofuranosyl-1H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile, 9CI. 5-Cyano-7-deazaguanosine

C₁₂H₁₃N₅O₅ 307.265

Isol. from tRNA^{tyr} of an *E. coli* mutant. Pale yellow cryst. Mp 260-270° dec. [α]_D¹⁵ -59.1 (c, 0.1 in DMSO).

2'-Deoxy: 2'-Deoxycadeguomycin

C₁₂H₁₄N₄O₆ 310.266
Cryst. (H₂O). Mp 310° dec.

Noguchi, S. *et al.*, *Nucleic Acids Res.*, 1978, **5**, 4215 (isol, nitrile)

Tanaka, H. *et al.*, *J. Antibiot.*, 1982, **35**, 272 (isol)

Wu, R.T. *et al.*, *J. Antibiot.*, 1982, **35**, 279 (struct)

Beylin, V.G. *et al.*, *Tet. Lett.*, 1983, **24**, 4793 (synth)

Yuan, B.D. *et al.*, *J. Antibiot.*, 1985, **38**, 642 (props)

Kondo, T. *et al.*, *Tetrahedron*, 1986, **42**, 199; 207 (synth, pmr, uv, ir, acid, nitrile)

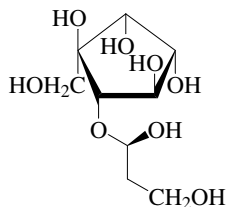
Kim, S.H. *et al.*, *J. Antibiot.*, 1987, **40**, 1776 (pharmacol)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)
Ramasamy, K. *et al.*, *J.C.S. Perkin I*, 1989, 2375 (synth, ir, pmr, uv)

Calditol

C-2

5-(2,3-Dihydroxypropoxy)-1-(hydroxymethyl)-1,2,3,4-cyclohexanetetrol, 9CI [164300-76-9]



C₆H₁₈O₈ 254.236

Originally assigned a branched chain nonitol struct. Correct struct established by synthesis in 1999. Degradation prod. of a complex of macrocyclic tetraether lipids isol. from membranes of thermoacidophilic archaeobacteria of the *Caldariella* group and *Methanospirillum* species, e.g. *Sulfolobus solfataricus*. Also found in *Methanobacteria* spp. [α]_D -8.72 (c, 1.3 in H₂O).

[74554-26-0, 74578-16-8, 248263-78-7]

De Rosa, M. *et al.*, *Phytochemistry*, 1980, **19**, 249-254; 827-831 (isol, cmr)

Nicolaus, B. *et al.*, *Biochem. J.*, 1990, **266**, 785-791 (biosynth)

Jeganathan, S. *et al.*, *Tet. Lett.*, 1990, **31**, 1717-1720

Sugai, A. *et al.*, *Lipids*, 1995, **30**, 339-344 (isol, struct, cmr, pmr)

Fairbanks, A.J. *et al.*, *Tet. Lett.*, 1995, **36**, 893-896 (bibl)

Blériot, Y. *et al.*, *Chem. Eur. J.*, 2002, **8**, 240-246; 1512 (synth, struct)

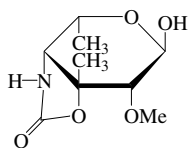
Gambacorta, A. *et al.*, *Tet. Lett.*, 2002, **43**, 451-453 (biosynth)

Yamauchi, N. *et al.*, *Bull. Chem. Soc. Jpn.*, 2004, **77**, 771-778 (biosynth)

Callipeltose

C-3

4-Amino-4,6-dideoxy-2O,3C-dimethyltalopyranosyl-3,4-urethane. 4-Amino-3O,4N-carbonyl-4,6-dideoxy-3C,2O-dimethyltalose



α-L-Pyranose-form

C₉H₁₅NO₅ 217.221

L-form

Sugar component of Callipeltoside A.

α-L-Pyranose-form

Me glycoside: Tetrahydro-6,7-dimethoxy-4,7a-dimethyl-4H-pyrano[3,4-d]oxazol-2(3H)-one, 9CI [211804-32-9]

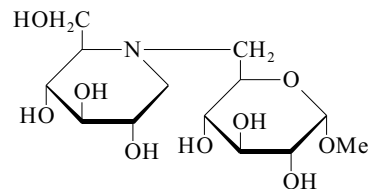
C₁₀H₁₇NO₅ 231.248
Solid. Mp 147-148°. [α]_D -88.5 (c, 0.76 in MeOH).

Smith, G.R. *et al.*, *Carbohydr. Res.*, 1998, **308**, 223-227 (Me gly, pmr, cmr)

Camiglibose, INN, USAN

C-4

Methyl 6-deoxy-6-[3,4,5-trihydroxy-2-(hydroxymethyl)-1-piperidinyl]-α-D-glucopyranoside, 9CI. MDL 73945. 1, 5-Dideoxy-1,5-[(6-deoxy-1-O-methyl-6-α-D-glucopyranosyl)imino]-D-glucitol. 1, 5-Anhydro-5-aza-5-deoxyglucitol(N⁵→6)-methyl-α-D-glucopyranoside [127214-23-7]



C₁₃H₂₅NO₉ 339.342

α-Glucosidase inhibitor. Potential antidiabetic agent. Foam. Log P -4.46 (uncertain value) (calc).

[132438-21-2]

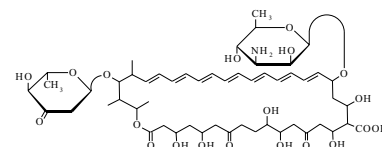
Eur. Pat., 1989, 344 383, (Merrell Dow); *CA*, **112**, 235769c (synth)

Robinson, K.M. *et al.*, *Diabetes*, 1991, **40**, 825 (rev)

Candidoin

C-5

[65776-69-4]



C₅₃H₇₉NO₂₀ 1050.202

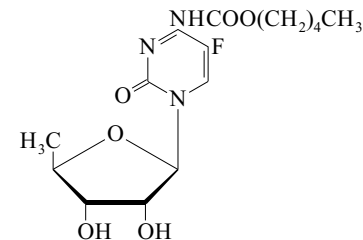
Cyclic polyene. Candidin deriv. Prod. by *Streptomyces viridoflavus*. Antifungal agent. Sol. AcOH; fairly sol. MeOH; poorly sol. H₂O, Me₂CO, hexane. λ_{max} 347 (ε); 362 (ε); 382 (ε 115000); 406 (ε) (MeOH) (Derep).

Synak, R. *et al.*, *J. Antibiot.*, 1983, **36**, 1415 (isol)

Capecitabine, BAN, INN, USAN

C-6

Pentyl [1-(5-deoxy-β-D-ribofuranosyl)-5-fluoro-1,2-dihydro-2-oxo-4-pyrimidinyl]-carbamate. *Xeloda*. Ro 09-1978/000 [154361-50-9]



C₁₅H₂₂FN₃O₆ 359.354

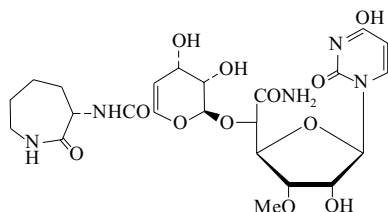
Antineoplastic agent. Launched in Switzerland (1998). Cryst. (EtOAc). Mp 110-121°. The Mp is prob. a misprint.

Eur. Pat., 1994, 602 454, (Hoffmann-La Roche); *CA*, **122**, 240352 (synth, pharmacol)
Hoshi, A. *et al.*, *Drugs of the Future*, 1996, **21**, 358
Ishikawa, T. *et al.*, *Biochem. Pharmacol.*, 1998, **55**, 1091
Kaye, S.B. *et al.*, *Br. J. Cancer*, Suppl. 3, 1998, **78**, 1
Dooley, M. *et al.*, *Drugs*, 1999, **58**, 69-76
Wagstaff, A.J. *et al.*, *Drugs*, 2003, **63**, 217-236 (rev)

Capuramycin

C-7

Antibiotic 446-S3-1. Antibiotic A 500359B. A 500359B
[102135-48-8]



$C_{23}H_{31}N_5O_{12}$ 569.524

Nucleoside antibiotic. Prod. by *Streptomyces griseus*. Active against *Streptococcus pneumoniae* and *Mycobacterium smegmatis*. Amorph. Mp 173-176°. $[\alpha]_D^{25} +99$ (c, 0.5 in H_2O). λ_{max} 214 (ε 16200); 257 (MeOH) (Derep).

O-De-Me: Antibiotic A 500359G. A 500359G

$C_{22}H_{29}N_5O_{12}$ 555.497

Prod. by *Streptomyces griseus* SANK 60196. Powder. $[\alpha]_D^{20} +110$ (c, 0.72 in H_2O). λ_{max} 257 (ε 10000) (H_2O).

Yamaguchi, H. *et al.*, *J. Antibiot.*, 1986, **39**, 1047 (isol, struct, props, nmr, uv)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

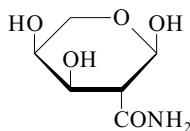
Seto, H. *et al.*, *Tet. Lett.*, 1988, **29**, 2343 (struct)

Knapp, S. *et al.*, *J.O.C.*, 1994, **59**, 281 (synth)

Muramatsu, Y. *et al.*, *J. Antibiot.*, 2003, **56**, 243-252; 253-258; 259-267; 268-279 (isol, pmr, cmr, biosynth)

2-C-Carbamoyl-2-deoxyarabinose

C-8



$C_6H_{11}NO_5$ 177.157

α-L-Pyranose-form

Me glycoside, 3,4-dibenzyl, N-tosyl: Methyl 3,4-di-O-benzyl-2-deoxy-2-C-(tosylcarbamoyl)-α-L-arabinopyranoside. Methyl 3,4-di-O-benzyl-2-deoxy-2-C-[(tosylamino)carbonyl]-α-L-arabinopyranoside
[135735-83-0]

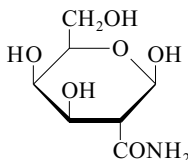
$C_{28}H_{31}NO_7S$ 525.621

Mp 69-70°. $[\alpha]_D +68$ (c, 1 in CH_2Cl_2).

Mostowicz, D. *et al.*, *Carbohydr. Res.*, 1991, **212**, 283 (synth, pmr)

2-C-Carbamoyl-2-deoxygalactose

C-9



$C_7H_{13}NO_6$ 207.183

β-D-Pyranose-form

Me glycoside, 3,4,6-tribenzyl, N-tosyl: Methyl 3,4,6-tri-O-benzyl-2-deoxy-2-C-(tosylcarbamoyl)-β-D-galactopyranoside
[135735-82-9]

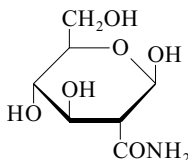
$C_{36}H_{39}NO_8S$ 645.772

Mp 175-176°. $[\alpha]_D +32$ (c, 1 in CH_2Cl_2).

Mostowicz, D. *et al.*, *Carbohydr. Res.*, 1991, **212**, 283 (synth, pmr)

2-C-Carbamoyl-2-deoxyglucose

C-10



$C_7H_{13}NO_6$ 207.183

β-D-Pyranose-form

Me glycoside, 3,4,6-tribenzyl, N-tosyl: Methyl 3,4,6-tri-O-benzyl-2-deoxy-2-C-(tosylcarbamoyl)-β-D-glucopyranoside. Methyl 3,4,6-tri-O-benzyl-2-deoxy-2-C-[(tosylamino)carbonyl]-β-D-glucopyranoside
[135735-81-8]

$C_{36}H_{39}NO_8S$ 645.772

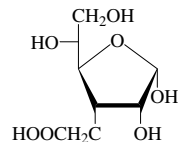
Mp 170-171°. $[\alpha]_D +30$ (c, 1 in CH_2Cl_2).

Mostowicz, D. *et al.*, *Carbohydr. Res.*, 1991, **212**, 283 (synth, pmr)

N-Carbamoylglucosamine

C-11

SF 1993. Antibiotic SF 1993
[71868-25-2]



α-D-Furanose-form

$C_7H_{14}N_2O_6$ 222.197

Aminoglycoside antibiotic.

► LZ6656000

D-form

[73376-47-3, 73376-48-4] Prod. by *Streptomyces halstedii* and *Streptomyces aburaviensis rufus*. Active against gram-negative bacteria and fungi. Needles.

Mp 158-159°. $[\alpha]_D^{20} +73.6$ (c, 0.98 in H_2O). Related to Antibiotic CV 1. The separate

isolation of α- and β-anomers, without details, is descr., but these presumably equilibrate.

Michael, F. *et al.*, *Chem. Ber.*, 1956, **89**, 1246 (synth)

Shomura, T. *et al.*, *J. Antibiot.*, 1979, **32**, 427;

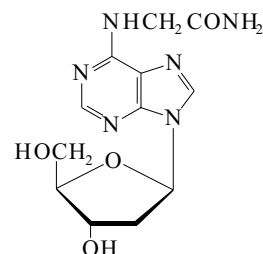
436 (isol, struct, props)

Japan. Pat., 1979, 79 154 713; *CA*, **92**, 196384v (isol)

Yasuzawa, T. *et al.*, *J. Antibiot.*, 1987, **40**, 727 (synth)

N⁶-(Carbamoylmethyl)-2'-deoxyadenosine

C-12



$C_{12}H_{16}N_6O_4$ 308.296

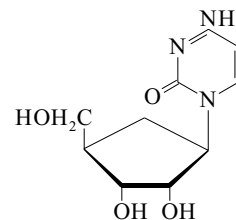
Modified nucleoside found in *E. coli* bacteriophage Mu. Needles (MeOH). Mp 215-216° (211°).

Seela, F. *et al.*, *Helv. Chim. Acta*, 1987, **70**, 1649 (synth, uv, pmr, bibl)

Carbodine

C-13

4-Amino-1-[2,3-dihydroxy-4-(hydroxymethyl)cyclopentyl]-2(1H)-pyrimidinone. Carbocyclic cytidine
[62805-43-0]



$C_{10}H_{15}N_3O_4$ 241.246

Carbocyclic analogue of Cytidine, C-201.

Antineoplastic, antiviral agent. Cryst. (H_2O). Mp 253-255°. Log P -3.82 (calc).

Shealy, Y.F. *et al.*, *J. Het. Chem.*, 1976, **13**, 1353; 1980, **17**, 353 (synth, ms, uv, pmr, cmr)

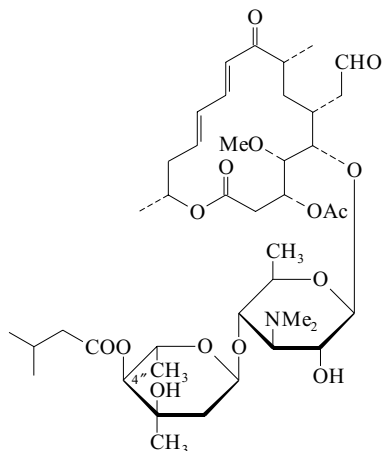
Shealy, Y.F. *et al.*, *J. Med. Chem.*, 1986, **29**, 1720 (biochem, bibl)

De Clercq, E. *et al.*, *Biochem. Pharmacol.*, 1990, **39**, 319 (pharmacol)

Carbomycin B

C-14

9-Deoxy-9-oxoleucomycin V 3-acetate
4^B-(3-methylbutanoate), 9CI
[21238-30-2]



C₄₂H₆₇NO₁₅ 825.989

Macrolide antibiotic. Isol. from *Streptomyces halstedii*. Shows antibiotic props. Antibacterial agent. Prolyl endopeptidase inhibitor. Cryst. Sol. MeOH, Et₂O; poorly sol. H₂O, hexane. Mp 141-144° dec. λ_{max} 279 (ε 23000) (MeOH) (Berdy). λ_{max} 278 (E1%/1cm 309) (EtOH) (Berdy).

► LD₅₀ (mus, ivn) 300 mg/kg. FF5075000
Hydrochloride: Mp 164-166° dec. [α]_D²⁵ -35 (c, 2 in CHCl₃).

O-De-Ac: **Niddamycin B**
[20283-69-6]

C₄₀H₆₅NO₁₄ 783.952

From *Streptomyces djakartensis*. Active against gram-positive bacteria. Sol. MeOH, Et₂O; poorly sol. H₂O, hexane. Mp 132-134°. [α]_D -68 (MeOH). λ_{max} 280 (E1%/1cm 222) (MeOH) (Berdy). λ_{max} 279 (E1%/1cm 275) (EtOH) (Berdy).

► LD₅₀ (mus, scu) 350 mg/kg. QT4910000

10,11-Dihydro, O-de-Ac: **Niddamycin A₁**
[115178-49-9]

C₄₀H₆₇NO₁₄ 785.968

From *Streptomyces* sp.

4''-O-De(3-methylbutanoyl), 4''-O-butanoyl, O-de-Ac: **Niddamycin F**
[81014-77-9]

C₃₉H₆₃NO₁₄ 769.925

From *Streptomyces* sp.

Hochstein, F.A. et al., *J.A.C.S.*, 1954, **76**, 5080 (isol)

Woodward, R.B. et al., *Angew. Chem.*, 1957, **69**, 50 (struct)

Huber, G. et al., *Arzneim.-Forsch.*, 1962, **12**, 1191 (Niddamycin)

Mitscher, L.A. et al., *J. Antibiot.*, 1973, **26**, 55 (Niddamycin)

Rakhit, S. et al., *J. Antibiot.*, 1974, **27**, 221 (Niddamycin)

Omura, S. et al., *J.A.C.S.*, 1975, **97**, 4001 (cmr)

Tatsuta, K. et al., *J.A.C.S.*, 1977, **99**, 5826 (synth)

Omura, S. et al., *Tet. Lett.*, 1977, 1045 (synth)

Tatsuta, K. et al., *Tet. Lett.*, 1980, 2837 (synth)

Nicolaou, K.C. et al., *J.A.C.S.*, 1981, **103**, 1222 (synth)

Seitz, S.P. et al., *Diss. Abstr. Int.*, B, 1982, **43**, 732 (synth)

Nakajima, N. et al., *Heterocycles*, 1990, **31**, 5 (synth)

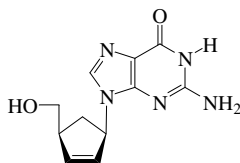
Keck, G.E. et al., *J.O.C.*, 1994, **59**, 3113 (synth)

Christner, C. et al., *J. Antibiot.*, 1998, **51**, 368-371 (activity)

Carbovir

C-15

2-Amino-1,9-dihydro-9-[4-(hydroxy-methyl)-2-cyclopenten-1-yl]-6H-purin-6-one, 9CI. Carbocyclic 2',3'-dideohydro-2',3'-dideoxyguanosine. GR 90352. NSC 614846
[118353-05-2]



(-)-form

C₁₁H₁₃N₅O₂ 247.256

Antiviral agent; inhibits HIV-I replication *in vitro*. Log P -1.97 (calc).

(+)-form [124915-24-8]

Off-white solid. [α]_D²⁶ +59.5 (c, 0.4 in MeOH).

(-)-form [120443-30-3]

Cryst. (H₂O). Mp 210-220° dec Mp 278-281° dec. [α]_D²⁴ -66 (c, 0.4 in MeOH). Pharmacol. active isomer.

(±)-form

Cryst. (MeOH aq.). Mp 254-256° dec.

[124915-20-4, 124915-24-8, 133319-45-6]

Vince, R. et al., *Biochem. Biophys. Res. Commun.*, 1988, **156**, 1046; 1990, **168**, 912 (pharmacol, resoln)

Ger. Pat., 1989, 3 901 502; *CA*, **112**, 56589x (synth)

Bundoc, L.L. et al., *Biochemistry*, 1990, **29**, 9839 (metab)

Brouwer, K.R. et al., *Drug Metab. Dispos.*, 1990, **18**, 842; 1078; 1084 (metab)

Kurtzberg, J. et al., *Exp. Hematol. (Charlottesville, Va.)*, 1990, **18**, 1094 (tox)

Rommel, R.P. et al., *J. Chromatogr.*, 1990, **534**, 109 (hplc)

Vince, R. et al., *J. Med. Chem.*, 1990, **33**, 17 (synth, ms, ir, uv, pmr, pharmacol)

Coates, J.A. et al., *Antiviral Res.*, 1991, **15**, 161 (activity)

Exall, A.M. et al., *J.C.S. Perkin 1*, 1991, 2467 (synth, ir, uv, pmr, cryst struct)

Jones, M.F. et al., *J.C.S. Perkin 1*, 1991, 2479 (synth, pmr, uv, ir)

Mahony, W.B. et al., *J. Biol. Chem.*, 1992, **267**, 19792; 21220 (pharmacol)

Trost, B.M. et al., *J.A.C.S.*, 1992, **114**, 8745 (synth, bibl)

Evans, C.T. et al., *J.C.S. Perkin 1*, 1992, 589 (synth, pmr, uv)

Parker, W.B. et al., *Antimicrob. Agents Chemother.*, 1993, **37**, 1004 (metab)

MacKeith, R.A. et al., *J.C.S. Perkin 1*, 1993, 313 (synth)

MacKeith, R.A. et al., *Bioorg. Med. Chem.*, 1994, **2**, 387 (synth)

Hildbrand, S. et al., *Helv. Chim. Acta*, 1994, **77**, 1236 (synth)

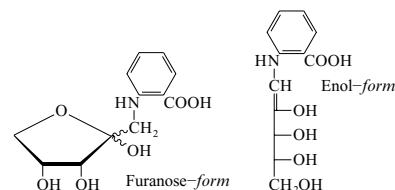
Olivo, H.F. et al., *J.C.S. Perkin 1*, 1998, 391-392 (synth)

Trost, B.M. et al., *J.A.C.S.*, 2000, **122**, 5947-5956 ((-)-form, synth, pmr, cmr)

1-(2-Carboxyanilino)-1-deoxy-yrribulose

C-16

1-[N-(2-Carboxylphenyl)amino]-1-deoxy-erythro-pentulose. Anthranilic deoxyribuloside



C₁₂H₁₅NO₆ 269.254

D-form [5962-30-1] Intermediate in the biosynthesis of tryptophan in cultures of *Schizophyllum commune* and mutants of *E. coli*, *Aerobacter aerogenes* and *Salmonella typhimurium*.

2,4-Dinitrophenylhydrazon: Mp 214°.

5-Phosphate: Anthranilic deoxyribulotide C₁₂H₁₆NO₉P 349.233

Intermed. in Tryptophan biosynth.

5-Phosphate, Di-Na salt: Mp 177-181°. Hygroscopic.

Doy, C.H. et al., *Biochem. J.*, 1959, **72**, 586

Doy, C.H. et al., *Nature (London)*, 1961, **189**, 461; 1966, **211**, 736

Doy, C.H. et al., *Methods Enzymol.*, 1963, **6**, 591

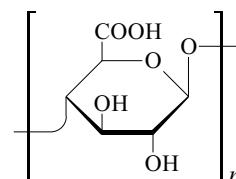
Epstein, E. et al., *Nature (London)*, 1966, **211**, 855

Bode, R. et al., *Cell. Mol. Biol.*, 1980, **26**, 615 (isol)

6-Carboxycellulose, 9CI

C-17

Cellulosic acid, 8CI. Celluronic acid. Oxidized cellulose. Monocarboxycellulose. Polyanhydroglucuronic acid
[9032-53-5]



Formed by oxidn. of cellulose by nitrogen dioxide; side reactions forming non-uronic carboxyl groups, aldehyde groups, and ketone groups also occur.

Fluffy fibrous solid. Sol. alkali solns.; insol. H₂O, acid solns.

[9069-12-9]

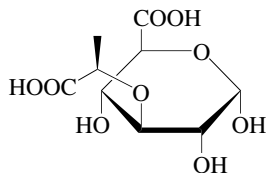
Yackel, E.C. et al., *J.A.C.S.*, 1942, **64**, 121 (synth)

Nevell, T.P. et al., *Methods Carbohydr. Chem.*, 1963, **3**, 164 (synth)

Encyclopaedia of Polymer Science and Engineering, 2nd edn., Wiley-Interscience, New York, 1985, **3**, 134 (rev)

3-*O*-(1-Carboxyethyl)glucuronic acid

C-18

C₉H₁₄O₉ 266.204**β-(1'*R*)-form**

Component of the exopolysaccharide of bacterium *Alteromonas* sp. from a deep sea hydrothermal vent.

Dubureucq, G. *et al.*, *Carbohydr. Res.*, 1996, **290**, 175-181 (*isol, struct*)

4-*O*-(1-Carboxyethyl)glucuronic acid

C-19

C₉H₁₄O₉ 266.204**β-(1'*S*)-form**

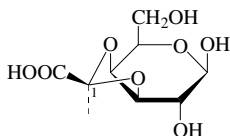
Isol. from *Klebsiella* type 37 polysaccharide.

Lindberg, B. *et al.*, *Carbohydr. Res.*, 1976, **49**, 411-417

3,4-*O*-(1-Carboxyethylidene)-galactose, 9CI

C-20

[87391-96-6]

C₉H₁₄O₈ 250.205**(β-D,1'*R*)-form** [84315-02-6]

Me pyranoside: Methyl 3,4-*O*-(1-carboxyethylidene)-β-*D*-galactopyranoside
C₁₀H₁₆O₈ 264.232
[α]_D²⁵ -5 (c, 0.3 in H₂O).

Me pyranoside, Ba salt: [81672-42-6]
[α]_D²⁵ -6 (c, 0.3 in H₂O).

Me pyranoside, Me ester: [78886-27-8]
C₁₁H₁₈O₈ 278.258
Mp 152-153°. [α]_D²⁵ -8 (c, 1.0 in MeOH).

(β-D,1'*S*)-form [84315-03-7]

Me pyranoside: [78886-24-5]
[α]_D²⁵ -10 (c, 0.2 in H₂O).

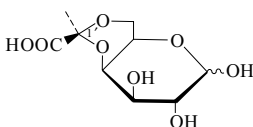
Me pyranoside, Ba salt: [81689-28-3]
[α]_D²⁵ -6 (c, 0.3 in H₂O).

Me pyranoside, Me ester: [78886-26-7]
C₁₁H₁₈O₈ 278.258
Mp 147-149°. [α]_D²⁵ -13 (c, 0.5 in MeOH).

Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1981, **92**, C1; 1982, **100**, 1

4,6-*O*-(1-Carboxyethylidene)-galactose

[50692-52-9]

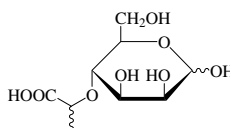
(β-D,1'*R*)-formC₉H₁₄O₈ 250.205**(β-D-Pyranose, 1'*R*)-form** [75247-35-7][α]_D²⁵ +42 (c, 0.2 in H₂O).*Me glycoside*:C₁₀H₁₆O₈ 264.232[α]_D²⁵ -24 (c, 1.5 in H₂O).*Me glycoside, Me ester*:C₁₁H₁₈O₈ 278.258[α]_D²⁵ -36 (c, 1.6 in CHCl₃).*Benzyl glycoside, Me ester*:C₁₇H₂₂O₈ 354.356[α]_D²⁵ -25 (c, 0.8 in EtOH).**(β-D-Pyranose, 1'*S*)-form**[α]_D²⁵ +53 (c, 0.2 in H₂O).

Benzyl glycoside, Me ester: [α]_D²⁵ -25 (c, 0.7 in EtOH).

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1979, **77**, 71
Fontana, J.D. *et al.*, *Carbohydr. Res.*, 1982, **108**, 221

4-*O*-(1-Carboxyethyl)mannose

C-22

4-Lactylmannose. *O*-4-Mannosyllactic acid

β-D-Pyranose-form

C₉H₁₆O₈ 252.221

Isol. from exopolysaccharides of the blue-green alga *Cyanospira capsulata*. Both epimers have been synthesised but the cmr spectra were too similar to allow assignment of config. to the nat. prod.

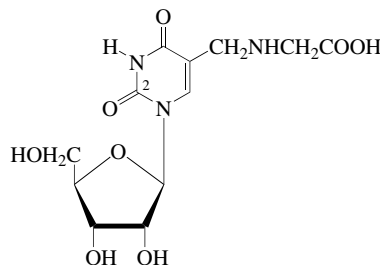
Kochetkov, N.K. *et al.*, *Carbohydr. Res.*, 1979, **71**, 193-203 (*isol, synth, cmr*)

Garozzo, D. *et al.*, *Carbohydr. Res.*, 1995, **270**, 97-106 (*isol*)

5-(Carboxymethylamino-methyl)uridine

C-23

N-[(1,2,3,4-Tetrahydro-2,4-dioxo-1-β-*D*-ribofuranosyl-5-pyrimidinyl)methyl]glycine, 9CI
[69181-26-6]

C₁₂H₁₇N₃O₈ 331.282

Modified nucleoside found in tRNA's.

Prisms (EtOH aq.).

Mp 197° (dec.). [α]_D²⁰ -5.4 (c, 1 in H₂O) (as hydrochloride). λ_{max} 267 (ε 9100) (H₂O).

2-Thio analogue: 5-(Carboxymethylamino-methyl)-2-thiouridine
[78173-95-2]

C₁₂H₁₇N₃O₇S 347.348
Modified nucleoside found in tRNA's.

Cryst.

Mp 211-212° (dec.). [α]_D²⁰ -7.4 (c, 1 in H₂O) (as hydrochloride). λ_{max} 277 (ε 12900) (EtOH aq.).

[89129-02-2, 89129-03-3, 137405-04-0]

Malkiewicz, A. *et al.*, *Tet. Lett.*, 1983, **24**, 5395 (*synth, pmr*)

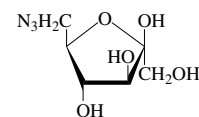
Reese, C.B. *et al.*, *Chem. Comm.*, 1984, 62 (*synth*)

Sierzputowska-Gracz, H. *et al.*, *J.A.C.S.*, 1987, **109**, 7171 (*occur, uv, pmr, cmr*)

Galdecki, Z. *et al.*, *Monatsh. Chem.*, 1991, **122**, 487 (*cryst struct*)

3-*C*-Carboxymethyl-3-deoxyallose

C-24



β-D-Furanose-form

C₈H₁₄O₇ 222.194**α-D-Furanose-form**

1,2-Isopropylidene, *Me ester*: 3-Deoxy-1,2-*O*-isopropylidene-3-*C*-(methoxycarbonylmethyl)-α-*D*-allofuranose
[19029-63-1]

C₁₂H₂₀O₇ 276.286
Intermed. in 11-oxaprostaglandin synth.

Cryst. Mp 89-90°. [α]_D²⁵ +63 (c, 1 in CHCl₃).

1,2:5,6-Diisopropylidene, *Me ester*: 3-Deoxy-1,2:5,6-di-*O*-isopropylidene-3-*C*-(methoxycarbonylmethyl)-α-*D*-allofuranose
[18427-18-4]

C₁₅H₂₄O₇ 316.35

Cryst. (petrol or MeOH aq.).

Mp 57-58°. [α]_D²² +65 (c, 2 in EtOH).

1,2:5,6-Diisopropylidene, *Et ester*: 3-Deoxy-3-*C*-(ethoxycarbonylmethyl)-1,2:5,6-di-*O*-isopropylidene-α-*D*-allofuranose
C₁₆H₂₆O₇ 330.377

Mp 90-91°. [α]_D²³ +67 (c, 1.1 in CHCl₃).

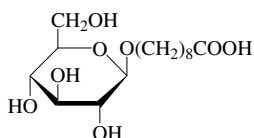
β-D-Furanose-form3²,5-Lactone, 1,5,6-tri-Ac: [58399-73-8]C₁₄H₁₈O₉ 330.291

Cryst. Mp 106-107°. [α]_D²³ -69 (c, 1.7 in CHCl₃).

[58399-55-6]

Rosenthal, A. *et al.*, *J.O.C.*, 1969, **34**, 1029 (*synth, pmr*)

Lourens, G.J. *et al.*, *Tet. Lett.*, 1975, 3719 (*synth, pmr*)

8-Carboxyoctyl glucopyranose C-25 β -D-form $C_{15}H_{28}O_8$ 336.381 **α -D-form**

Me ester, 4-O- α -D-glucopyranosyl:
8-Methoxycarboxyloctyl α -D-maltopyranoside
 [71721-51-2]
 $C_{22}H_{40}O_{13}$ 512.55
 Syrup. $[\alpha]_D^{20}$ +106.7 (c, 1.2 in MeOH)
 (lit. gives a temp. range).

Me ester, 4-O- β -D-glucopyranosyl:
8-Methoxycarboxyloctyl α -D-cellobiopyranoside
 [71721-48-7]
 $C_{22}H_{40}O_{13}$ 512.55
 Mp 104-106°. $[\alpha]_D^{20}$ +63.4 (c, 0.8 in H_2O)
 (lit. gives a temp. range).

Me ester, 4-O- β -D-galactopyranosyl:
8-Methoxycarboxyloctyl α -D-lactopyranoside
 [71721-49-8]
 $C_{22}H_{40}O_{13}$ 512.55
 Mp 99-100°. $[\alpha]_D^{20}$ +68.8 (c, 1.6 in MeOH) (lit. gives a temp. range).

Et ester, 4-O- α -D-glucopyranosyl,
hepta-Ac: 8-Ethoxycarboxyloctyl
hepta-O-acetyl- α -D-maltopyranoside
 [71715-62-3]
 Syrup. $[\alpha]_D^{20}$ +102.8 (c, 1.9 in $CHCl_3$) (lit. gives a temp. range).

Et ester, 4-O- β -D-glucopyranosyl,
hepta-Ac: 8-Ethoxycarboxyloctyl
hepta-O-acetyl- α -D-cellobiopyranoside
 [71721-57-8]
 Mp 76-77°. $[\alpha]_D^{20}$ +39.6 (c, 1.5 in $CHCl_3$)
 (lit. gives a temp. range).

 β -D-form

Me ester, 4-O- α -D-glucopyranosyl:
8-Methoxycarboxyloctyl β -D-maltopyranoside
 [71721-50-1]
 $C_{22}H_{40}O_{13}$ 512.55
 Syrup. $[\alpha]_D^{20}$ +43.3 (c, 2.0 in H_2O) (lit. gives a temp. range).

Me ester, 4-O- β -D-glucopyranosyl:
8-Methoxycarboxyloctyl β -D-cellobiopyranoside
 [64448-43-7]
 $C_{22}H_{40}O_{13}$ 512.55
 Mp 139-140°. $[\alpha]_D^{20}$ -18.7 (c, 1.0 in H_2O)
 (lit. gives a temp. range).

Me ester, 4-O- β -D-galactopyranosyl:
8-Methoxycarboxyloctyl β -D-lactopyranoside
 [70761-83-0]
 $C_{22}H_{40}O_{13}$ 512.55
 Mp 158-159°. $[\alpha]_D^{20}$ +3.1 (c, 1.1 in $CHCl_3$) (lit. gives a temp. range).

Et ester, 4-O- α -D-glucopyranosyl,
hepta-Ac: 8-Ethoxycarboxyloctyl
hepta-O-acetyl- β -D-maltopyranoside
 Syrup. $[\alpha]_D^{20}$ +40.1 (c, 1.2 in $CHCl_3$)
 (lit. gives a temp. range).

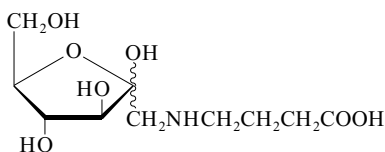
Et ester, 4-O- β -D-glucopyranosyl,
hepta-Ac: 8-Ethoxycarboxyloctyl
hepta-O-acetyl- β -D-cellobiopyranoside
 [71715-54-3]
 Mp 91-92°. $[\alpha]_D^{20}$ -15 (c, 1.0 in $CHCl_3$)
 (lit. gives a temp. range).

Et ester, 4-O- β -D-galactopyranosyl,
hepta-Ac: 8-Ethoxycarboxyloctyl
hepta-O-acetyl- β -D-lactopyranoside
 [70761-82-9]
 Syrup. $[\alpha]_D^{20}$ -11.2 (c, 2.0 in $CHCl_3$) (lit. gives a temp. range).

Banoub, J. *et al.*, *Can. J. Chem.*, 1979, **57**, 2085; 2091 (synth, pmr, cmr)
 Bundle, D.R. *et al.*, *Can. J. Biochem.*, 1979, **57**, 367

1-[(3-Carboxypropyl)amino]-1-deoxyfructose, 9CI

1-Deoxy-1-(N- γ -aminobutyric acid) fructose

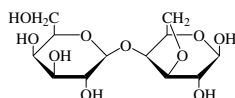
 $C_{10}H_{19}NO_7$ 265.263**D-form [10003-63-1]**

Isol. from cured tobacco leaves and from stored apricots and peaches.
 Amorph.

Anet, E.F.L.J. *et al.*, *Aust. J. Chem.*, 1957, **10**, 182 (isol)
 Tomita, H. *et al.*, *Agric. Biol. Chem.*, 1965, **29**, 959 (isol, synth)

Carrabiose C-27

3,6-Anhydro-4-O- β -D-galactopyranosyl-D-galactose, 9CI. Carrobiose
 [19253-99-7]

 β -Pyranose-form $C_{12}H_{20}O_{10}$ 324.284

Produced by partial methanolysis of the polysaccharide from marine alga *Chondrus crispus* (κ -carrageenan) and the red alga *Furcellaria fastigiata*. Amorph. solid. $[\alpha]_D^{17}$ +15.2 (c, 1.25 in H_2O).

Phenyllosazone: Mp 214-215°. $[\alpha]_D^{10}$ +68.2 \rightarrow +45 (c, 0.6 in EtOH/Py).

Phenylhydrazone:

Yellow cryst. (EtOH/Et₂O). Mp 211-213°. $[\alpha]_D^{21}$ +110 (c, 0.4 in MeOH).

Di-Et dithioacetal:

$C_{16}H_{30}O_9S_2$ 430.54
 Cryst. (EtOH/Et₂O). Mp 116-117°. $[\alpha]_D^{25}$ +4 (c, 1.8 in H_2O).

Di-Et dithioacetal, hexa-Ac:

$C_{28}H_{42}O_{15}S_2$ 682.763
 Cryst. (EtOH aq.). Mp 118-119°. $[\alpha]_D$ -4 (c, 1.2 in $CHCl_3$).

 α -Pyranose-form

Me glycoside: Methyl α -carrabioside

 $C_{13}H_{22}O_{10}$ 338.311

Cryst. (MeOH/EtOH). Mp 203-204°. $[\alpha]_D^{17}$ +36 (c, 1.0 in H_2O).

 β -Pyranose-form

Me glycoside: Methyl β -carrabioside

 $C_{13}H_{22}O_{10}$ 338.311

Needles (EtOH/Me₂CO). Mp 136-138° (as monohydrate). $[\alpha]_D$ -78.6 (c, 0.70 in H_2O).

O'Neill, A.N. *et al.*, *J.A.C.S.*, 1955, **77**, 6324 (occur, struct, di-Et dithioacetal, di-Et dithioacetal hexa Ac)

Araki, C. *et al.*, *Bull. Chem. Soc. Jpn.*, 1956, **29**, 770 (β -D-Me pyr)

Painter, T.J. *et al.*, *J.C.S.*, 1964, 1396 (struct)
 Hirase, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1967, **40**, 2627 (synth, α -D-Me pyr)

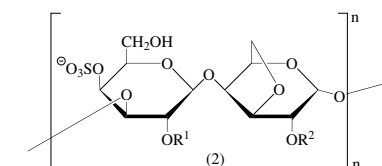
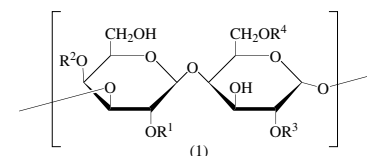
Lambda, D. *et al.*, *Carbohydr. Res.*, 1986, **155**, 11 (cryst struct, deriv)

Parra, E. *et al.*, *Carbohydr. Res.*, 1990, **208**, 83 (synth, α -D-Me pyr)

Storz, C.A. *et al.*, *Carbohydr. Res.*, 2002, **337**, 2311-2323 (conformn)

Carrageenan**C-28**

Carrageenin. Carragheen. Genuvisco J. FEMA 2596. E407
 [9000-07-1]



A complex mixt. of polysaccharides composed of galactans, the proportions of which vary with spp., season and environment. The major structural feature is $\beta(1 \rightarrow 3)$ and $\alpha(1 \rightarrow 4)$ linked galactose units with various degrees and sites of sulfation (sulfate ester content 15-40%). The Greek prefixes denote the idealised constitution of different disaccharide units although native carrageenans show variation from these idealised structs. The struct. also varies during life-cycle of the alga. Obt. from red seaweeds in the families Furcellariaceae, Gigartiniaceae, Phyllophoraceae and Solieraceae. Used for gelling, thickening and emulsion stabilisation of foods (salts may also be used). Sol. H_2O ; fairly sol. DMSO; poorly sol. oils, MeOH, hexane. v component also referred to in the lit. alongside those descr. below.

► FI0700000

Ethylidimethyl(1-methyl-3,3-diphenylpropyl)ammonium salt: Emepronium carrageenate, BAN. Cetiprin novum
 Anticholinergic agent. Muscarinic antagonist. Consists mainly of κ and λ fractions.

μ-form [51311-96-7]

Isol. from *Furcellaria fastigiata*. Structure (1) with $R^1 = R^3 = H$, $R^2 = R^4 = SO_3^-$. Minor fraction of carrageenan samples.

λ-form

Picnin A
[9064-57-7]

Isol. from *Chondrus crispus*. Present particularly in algal tetrasporophytes. Structure (1) with $R^1 = R^3 = R^4 = SO_3^-$, $R^2 = H$. Major fraction.

► FI0704000

ε-form [51311-95-6]

Isol. from *Furcellaria fastigiata*. Structure (1) with $R^1 = R^3 = SO_3^-$, $R^2 = R^4 = H$.

ι-form [9062-07-1]

Isol. from *Eucheuma spinosum* and *Agardhiella tenera* red seaweeds. Structure (2) with $R^1 = H$, $R^2 = SO_3^-$. Major fraction.

κ-form [11114-20-8]

Isol. from *Chondrus crispus*. Present particularly in algal gametophytes. Structure (2) with $R^1 = R^2 = H$. Major fraction.

► FI0703000

ξ-form [70431-33-3]

Isol. from *Gigartina* spp. tetrasporophytes. Structure (1) with $R^1 = R^3 = SO_3^-$, $R^2 = R^4 = H$.

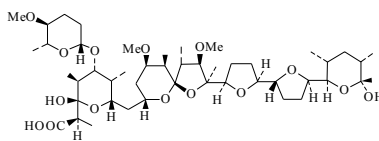
π-form [71078-00-7] Structure (1) with $R^1 = R^3 = SO_3^-$, $R^4 = H$, C_4-C_6 pyruvate bridge in left-hand residue.

υ-form Structure (2) with $R^1 = R^2 = SO_3^-$.
[8015-95-0, 8036-85-9, 60063-90-3, 64366-24-1]

O'Neill, A.N. *et al.*, *J.A.C.S.*, 1955, **77**, 2837-2839; 6324-6326 (*κ-form*, *isol*, *struct*)
Dolan, T.C.S. *et al.*, *J.C.S.*, 1965, 3534-3539, (*λ-form*, *struct*)
Painter, T.J. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 98-100 (*κ-form*, *isol*)
Rees, D.A. *et al.*, *Adv. Carbohydr. Chem.*, 1969, **24**, 267-332 (*rev*)
Penman, A. *et al.*, *J.C.S. Perkin 1*, 1973, 2191-2196 (*κ-form*, *struct*)
Massey, J.A. *et al.*, *Br. J. Urol.*, 1986, **58**, 125-128 (*emeprium carrageenan*)
Hallen, B. *et al.*, *Arzneim.-Forsch.*, 1988, 1482-1485 (*emeprium carrageenan*)
Millane, R.P. *et al.*, *Carbohydr. Res.*, 1988, **182**, 1-17 (*κ-form*, *struct*, *bibl*)
Falshaw, R. *et al.*, *Carbohydr. Res.*, 1995, **276**, 155-165 (*ξ-form*, *isol*, *bibl*)
Chiovitti, A. *et al.*, *Carbohydr. Res.*, 1997, **299**, 229-243 (*isol*)
Arndt, E.R. *et al.*, *Carbohydr. Res.*, 1997, **303**, 73-78 (*cd*, *struct*)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 500-516 (*props*, *use*)
Martindale, The Extra Pharmacopoeia, 32nd edn., Pharmaceutical Press, 1999, 461 (*emeprium carrageenan*)
Janaswamy, S. *et al.*, *Carbohydr. Res.*, 2001, **335**, 181-194 (*ι-form*, *struct*)
Yu, G. *et al.*, *Carbohydr. Res.*, 2002, **337**, 433-440 (*κ-form*, *purifn*, *struct*)
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, CCL250; CCL350

Carriomycin

6,27-Didemethoxyantibiotic A 204A.
T 42082. Antibiotic T 42082
[65978-43-0]



$C_{47}H_{80}O_{15}$ 885.14

Polyether antibiotic. Isol. from *Streptomyces hygroscopicus*. Ionophore. Needles.

Mp 120-122°. Structurally related to Septamycin.

► CB9376436

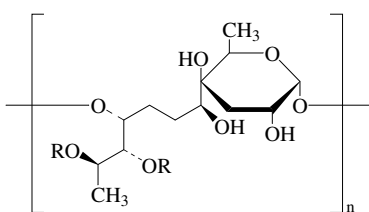
Na salt: Mp 180-182°. $[\alpha]_D^{25}$ -4.5 (c, 1 in $CHCl_3$).

[59979-84-9]

Imada, A. *et al.*, *J. Antibiot.*, 1978, **31**, 7
Radios, N.A. *et al.*, *Bull. Soc. Chim. Belg.*, 1978, **87**, 437 (*conformn*)
Nakayama, H. *et al.*, *J.C.S. Perkin 2*, 1979, 293 (*cryst struct*)
Canadian Pat., 1980, 1 091 175; *CA*, **94**, 154981 (*isol*)

Caryophyllan

C-30



$R = H, Ac$

Partially acetylated homopolymer of Caryophyllose, C-31. *O*-Specific polysaccharide from the lipopolysaccharide fraction of *Pseudomonas caryophylli* (*Burkholderia caryophylli*).

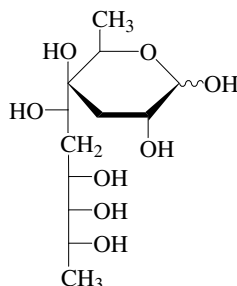
De Castro, C. *et al.*, *Carbohydr. Res.*, 2001, **335**, 205-211 (*isol*, *pmr*, *cmr*, *struct*)

Caryophyllose

C-31

3,6-Dideoxy-4-C-(2,6-dideoxyhexitol-1-C-yl)-β-D-xylo-hexopyranoside, 9CI.
3,6,10-Trideoxy-4-C-(1-hydroxyethyl)-D-erythro-D-gulo-decose
[172291-92-8]

[163438-33-3]



$C_{12}H_{24}O_8$ 296.317

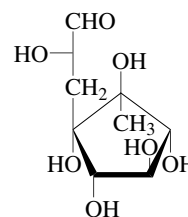
Obt. from the lipopolysaccharide fraction of *Pseudomonas caryophylli*.
 $[\alpha]_D$ -15 (c, 3 in H_2O).

Adinolfi, M. *et al.*, *Carbohydr. Res.*, 1995, **267**, 307-311; **274**, 223-232 (*isol*, *pmr*, *cmr*, *struct*)
Prandi, J. *et al.*, *Carbohydr. Res.*, 2001, **332**, 241-247 (*Me glycoside*, *synth*)

Caryose

C-32

α,1,2,3,4,5-Hexahydroxy-2-methylcyclopentanepropanal, 9CI. 4,8-Cyclo-3,9-dideoxy-L-erythro-D-ido-nonose
[176952-07-1]



$C_9H_{16}O_7$ 236.221

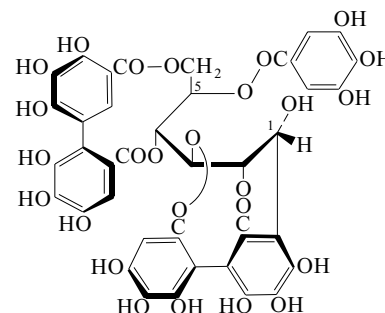
Isol. from the cell wall lipopolysaccharide fraction of *Pseudomonas caryophylli*. Syrup. $[\alpha]_D +81$ (c, 1.75 in H_2O). The first known naturally occurring carbocyclic sugar.

Adinolfi, M. *et al.*, *Carbohydr. Res.*, 1996, **284**, 111-118 (*isol*, *pmr*, *cmr*, *struct*, *abs config*)
Adinolfi, M. *et al.*, *Tetrahedron*, 1997, **53**, 11767 (*synth*, *cmr*)

Casuarinin

C-33

[79786-01-9]



$C_{41}H_{28}O_{26}$ 936.657

Isol. from *Casuarina stricta*, *Quercus stenophylla*, *Stachyurus praecox* and *Corylus heterophylla* (Siberian filbert). Pale yellow amorph. powder + 7 H_2O . $[\alpha]_D +43.6$ (c, 1 in MeOH). λ_{max} 221 (ε 74130); 267 (ε 32360) (MeOH) (Berdy).

5-Degalloyl: Casuariin. Casauriin (*incorr.*)
[79786-04-2]

$C_{34}H_{24}O_{22}$ 784.55

Tannin from *Corylus stricta* and *Stachyurus praecox*. Pale yellow amorph. powder + 4 H_2O . $[\alpha]_D +162$ (c, 0.5 in MeOH).

1-Epimer: **Stachyurin**

[81739-27-7]

$C_{41}H_{28}O_{26}$ 936.657

Tannin from *Corylus stricta* and *Stachyurus praecox*. Off-white amorph.

powder + 5H₂O. $[\alpha]_D^{25} +39$ (c, 0.4 in MeOH).

1-Epimer, 5-O-degalloyl: Castanin†.
Tomentosin†. 5-Desgalloylstachyurin
 [115406-24-1]
 C₃₄H₂₄O₂₂ 784.55

Isol. from *Euphorbia thymifolia*, *Castanea mollissima* (Chinese chestnut) and *Rhodomyrtus tomentosa* (hill gooseberry). Pale brown amorph. powder. $[\alpha]_D^{20} -26.5$ (c, 0.8 in MeOH).

Okuda, T. *et al.*, *Chem. Pharm. Bull.*, 1982, **30**, 766 (*struct.*, *uv*, *pmr*)

Okuda, T. *et al.*, *J.C.S. Perkin 1*, 1983, 1765, (*ir*, *uv*, *cd*, *pmr*)

Feng, H. *et al.*, *Phytochemistry*, 1988, **27**, 1185 (*Castanin*)

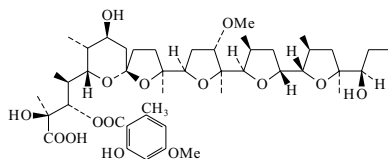
Nonaka, G. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 2151 (*struct.*, *abs config*)

Lee, S.H. *et al.*, *Phytochemistry*, 1990, **29**, 3621 (*5-Desgalloylstachyurin*)

Liu, Y.Z. *et al.*, *Chin. Chem. Lett.*, 1997, **8**, 39-40 (*Tomentosin*)

Cationomycin, 10CI

Antibiotic 76-11
 [80394-65-6]



C₄₅H₇₀O₁₅ 851.039

Polyether antibiotic. Isol. from *Actinomadura azurea*. Active against gram-positive bacteria and mycobacteria. Coccidiostat. Sol. MeOH, C₆H₆; fairly sol. H₂O; poorly sol. hexane. Mp 108-112°. $[\alpha]_D^{25} +366$ (c, 0.382 in CHCl₃). pK_{a1} 4.6; pK_{a2} 11.1 (67% dioxan). λ_{max} 260 (€ 7800); 308 (€ 4480) (dil. NaOH) (Derep). λ_{max} 217 (€ 27300); 262 (€ 16400); 301 (€ 6100) (H₂O) (Derep). λ_{max} 217 (€ 27300); 262 (€ 16400); 301 (€ 6100) (MeOH) (Berdy). λ_{max} 217; 262; 301 (MeOH-HCl) (Berdy). λ_{max} 260 (€ 7800); 308 (€ 4480) (MeOH-NaOH) (Berdy).

► LD₅₀ (mus, ipr) 1000 mg/kg, LD₅₀ (mus, orl) 3000 mg/kg. FI5983000

Na salt:

Cryst. (MeOH). Mp 184-188°. $[\alpha]_D^{25} +36.6$ (c, 0.38 in CHCl₃).

TL salt: Mp 205-208°.

[82987-42-6]

Nakamura, G. *et al.*, *J. Antibiot.*, 1981, **34**, 1513; 1983, **36**, 1468 (*isol*, *props*)

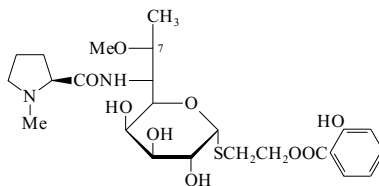
Ubukata, M. *et al.*, *J.A.C.S.*, 1984, **106**, 2213 (*biosynth*)

Ubukata, M. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 1153 (*props*)

Dauphin, G. *et al.*, *J.C.S. Perkin 2*, 1993, 399 (*pmr*, *conform*)

Celesticetin

[2520-21-0]



C₂₄H₃₆N₂O₉S 528.622

Isol. from *Streptomyces caelestis* NRRL2418. Active against gram-positive organisms and plant pathogens. Sol. MeOH, butanol, CHCl₃, EtOAc, Me₂CO; poorly sol. H₂O, hexane, Et₂O. $[\alpha]_D^{24} +126.6$ (c, 0.5 in CHCl₃). Amphoteric base related structurally to Lincomycin, L-41. λ_{max} 240 (€ 10200); 310 (€ 4490) (EtOH/HCl) (Derep). λ_{max} 245 (€ 6880); 338 (€ 4860) (EtOH/KOH) (Derep). λ_{max} 239 (€ 10100); 307 (€ 4440) (95% EtOH) (Derep). λ_{max} 239 (E1%/1cm 184); 307 (E1%/1cm 80.6) (EtOH) (Berdy). λ_{max} 248 (E1%/1cm 180); 341 (E1%/1cm 104) (EtOH-NaOH) (Berdy).

► LD₅₀ (mus, ipr) 167 mg/kg. RH6125000
 Oxalate: Mp 147-152°. $[\alpha]_D^{24} +106.6$ (c, 0.5 in H₂O).

N-De-Me: N-Demethylcelesticetin

[40736-31-0]
 C₂₃H₃₄N₂O₉S 514.596

Prod. by *Streptomyces caelestis* mutant (NRRL5481; NRRL2418). Active against gram-positive bacteria. Cryst. Sol. MeOH. $[\alpha]_D^{25} +112.5$ (c, 1 in H₂O) (as hydrochloride). λ_{max} 238; 304 (MeOH) (Berdy). λ_{max} 241; 332 (NaOH) (Berdy).

O⁷-De-Me: O-Demethylcelesticetin

[39032-05-8]
 C₂₃H₃₄N₂O₉S 514.596

Produced by mutant *Streptomyces caelestis* NRRL5520. Shows antibiotic props. Sol. H₂O, MeOH, EtOH. $[\alpha]_D^{25} +115$ (c, 0.85 in H₂O) (as hydrochloride). λ_{max} 240 (€ 10200); 310 (€ 4490) (EtOH/HCl) (Derep). λ_{max} 245 (€ 6880); 338 (€ 4860) (EtOH/KOH) (Derep). λ_{max} 239 (€ 10100); 307 (€ 4440) (95% EtOH) (Derep). λ_{max} 238; 304 (MeOH) (Berdy). λ_{max} 242; 352 (MeOH/NaOH) (Berdy).

N,O⁷-Di-de-Me: N,O-Didemethylcelesticetin

[40736-32-1]
 C₂₂H₃₂N₂O₉S 500.569

Prod. by *Streptomyces caelestis* mutant (NRRL5481). Active against gram-positive bacteria. Needles (as hydrochloride). Sol. H₂O, MeOH. $[\alpha]_D^{25} +122$ (c, 1 in H₂O) (as hydrochloride). λ_{max} 238 (€ 8830); 303 (€ 3600) (MeOH/HCl) (Derep). λ_{max} 241 (€ 5710); 332 (€ 4250) (MeOH/NaOH) (Derep). λ_{max} 238 (€ 8830); 303 (€ 3600) (MeOH as hydrogen halide salt) (Derep).

ar-Deoxy, ar-amino: Celesticetin C
 [42715-02-6]

C₂₄H₃₇N₃O₈S 527.638

Prod. by *Streptomyces caelestis* NRRL5320. Shows antibiotic props.

C-35

Cryst. (as hydrochloride). Sol. H₂O, MeOH. $[\alpha]_D^{25} +123$ (c, 1 in H₂O) (as hydrochloride). Contains a 2-aminobenzoyl residue in place of 2-hydroxybenzoyl. λ_{max} 228 (€ 9910); 270 (€ 843); 280 (sh) (€ 632) (0.5N HCl) (Derep). λ_{max} 242 (€ 6320); 321 (€ 2850) (0.5N NaOH) (Derep). λ_{max} 247 (€ 6480); 338 (€ 4480) (EtOH/acid salt) (Derep). λ_{max} 247; 338 (EtOH) (Berdy). λ_{max} 243; 328 (H₂O) (Berdy). λ_{max} 228; 270 (HCl) (Berdy).

De Boer, C. *et al.*, *Antibiot. Annu.*, 1954, 831 (*isol*)

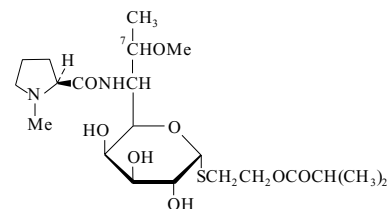
Hoecksema, H. *et al.*, *Antibiot. Annu.*, 1954, 837 (*isol*)

Hoecksema, H. *et al.*, *J.A.C.S.*, 1964, **86**, 4224; 1968, **90**, 755 (*struct*)

Argoudelis, A.D. *et al.*, *J. Antibiot.*, 1972, **25**, 445; 1973, **26**, 7; 131; 1974, **27**, 642 (*isol*, *ms*, *deriv*)

Celesticetin B

[42715-01-5]



C₂₁H₃₈N₂O₈S 478.606

Isol. from *Streptomyces caelestis*. Shows antibiotic props.

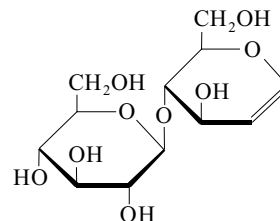
Hydrochloride:

Cryst. $[\alpha]_D^{25} +146$ (c, 1 in H₂O).

Argoudelis, A.D. *et al.*, *J. Antibiot.*, 1972, **25**, 194; 1973, **26**, 131; 1974, **27**, 642 (*isol*, *struct*, *ms*)

Cellobial

C-37
 1,5-Anhydro-2-deoxy-4-(O-β-D-glucopyranosyl)-D-arabino-hex-1-enitol



C₁₂H₂₀O₉ 308.285

Mp 177°. $[\alpha]_D^{17} +1$ (c, 1.6 in H₂O).

Hexa-Ac:

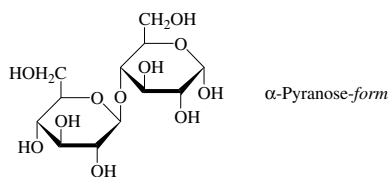
C₂₄H₃₂O₁₅ 560.508

Mp 137°. $[\alpha]_D^{18} -20$ (c, 1.2 in CHCl₃).

Haworth, W.N. *et al.*, *J.C.S.*, 1930, 2636

Cellobiose
C-38

4-O- β -D-Glucopyranosyl-D-glucose, 9CI.
Cellulose. Cellodextrin 2
[528-50-7]



$C_{12}H_{22}O_{11}$ 342.299
Unit of cellulose and lichenin. Microcryst. powder.
Mp 225° dec. (unsharp). $[\alpha]_D^{20} +24.4$
→ +35.2 (H₂O).

 α -Pyranose-form [13299-27-9]

Mp 214°. $[\alpha]_D^{20} +68.7$ → +34.9
(c, 1.0 in H₂O). Anomerises in humid atmosphere.

Me glycoside: Methyl 4-O- β -D-glucopyranosyl- α -D-glucopyranoside
 $C_{13}H_{24}O_{11}$ 356.326
Mp 144-145°. $[\alpha]_D^{20} +96.8$ (CHCl₃).

Me glycoside, hepta-Ac:
 $C_{27}H_{38}O_{18}$ 650.586
Mp 185°. $[\alpha]_D^{25} +55.7$ (CHCl₃).

Octa-Ac: Octa-O-acetyl- α -cellobiose
[5346-90-7]
 $C_{28}H_{38}O_{19}$ 678.597
Mp 229.5°. $[\alpha]_D^{20} +42$ (CHCl₃).

1-Bromo-1-deoxy, hepta-Ac: Acetobromocellobiose
[14227-66-8]
 $C_{26}H_{35}BrO_{17}$ 699.456
Mp 183°. $[\alpha]_D^{20} +95.8$ (CHCl₃).

1-Chloro-1-deoxy, hepta-Ac: Acetochlorocellobiose
 $C_{26}H_{35}ClO_{17}$ 655.005
Mp 200-201°. $[\alpha]_D^{20} +73$ (CHCl₃).

 β -Pyranose-form [13360-52-6]

Cryst. Mp 224-225°. $[\alpha]_D^{20} +16.2$ → +34.9 (c, 1.0 in H₂O).

Octa-Ac: Octa-O-acetyl- β -cellobiose
 $C_{28}H_{38}O_{19}$ 678.597
Mp 202° (192°). $[\alpha]_D^{20} -14.5$ (CHCl₃).

Me glycoside: Methyl 4-O- β -D-glucopyranosyl- β -D-glucopyranoside
 $C_{13}H_{24}O_{11}$ 356.326
Mp 193°. $[\alpha]_D^{17} -19.1$ (H₂O).

Me glycoside, 4'-Me: Methyl 4-O-methyl- β -D-glucopyranosyl-(1→4)- β -D-glucopyranoside
[112988-85-9]
 $C_{14}H_{26}O_{11}$ 370.353

Cellulose model compd. Cryst. (MeOH).
Mp 219-221° (196-198°). $[\alpha]_D^{20} -11$ (c, 0.4 in H₂O).

Me glycoside, hepta-Ac:
 $C_{27}H_{38}O_{18}$ 650.586
Mp 187°. $[\alpha]_D^{25} -25.7$ (CHCl₃).

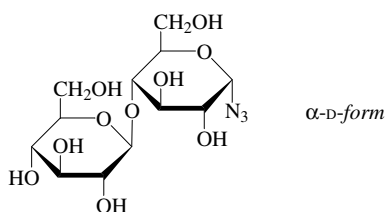
Benzyl glycoside, 2,3,6-tribenzyl:
 $C_{40}H_{46}O_{11}$ 702.797
Amorph. powder. $[\alpha]_D^{20} +10.4$ (c, 0.8 in CHCl₃).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 195B; 626A (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 308B (nmr)
Brauns, D.H. et al., J.A.C.S., 1923, **45**, 2388 (Acetobromocellobiose)
Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, 4th edn., J.A. Barth, 1935, 436 (rev. gly derivs, Ac derivs)
Org. Synth., Coll. Vol., 2, 1943, 122 (isol)
Haynes, L.J. et al., Adv. Carbohydr. Chem., 1955, **10**, 207 (Acetobromocellobiose)
Van der Veen, J.M. et al., J.O.C., 1963, **28**, 564 (pmr)
Brown, C.J. et al., J.C.S. (A), 1966, 927 (struct)
Moncrief, J.W. et al., Chem. Comm., 1969, 914 (abs config)
Pazur, J.H. et al., The Carbohydrates, Academic Press, 2nd Ed., 1970, 109 (rev)
Rendleman, J.A. et al., Carbohydr. Res., 1972, **21**, 235 (NaI complexes, equilib, nmr)
Gi, C.T. et al., Chem. Pharm. Bull., 1978, **26**, 1570 (α -Me-pyr, α -Me-pyr hepta-Ac, β -Me-pyr hepta-Ac, pmr)
Pfeffer, P.E. et al., J.A.C.S., 1979, **101**, 1265 (cmr)
Edwards, R.G. et al., Dev. Food Carbohydr., Applied Science Publ., 1980, 229 (rev)
Hall, L.D. et al., J.A.C.S., 1980, **102**, 1745 (nmr)
Takeo, K. et al., Carbohydr. Res., 1983, **121**, 163 (synth, β -pyr-form, β -benzyl-pyr tribenzyl, α -Me-pyr)
Mackie, I.D. et al., Carbohydr. Res., 2002, **337**, 161-166; 1065 (Me glycoside 4'-Me, synth, pmr, cmr, cryst struct)

Cellobiosyl azide
C-39

4-O- β -D-Glucopyranosyl-D-glucopyranosyl azide, 9CI



$C_{12}H_{21}N_3O_{10}$ 367.312

 α -D-form

Hepta-Ac: [133321-47-8]
 $C_{26}H_{35}N_3O_{17}$ 661.572
Cryst. Mp 196-198°. $[\alpha]_D^{20} +69$ (c, 0.32 in CHCl₃).

 β -D-form [69194-62-3]

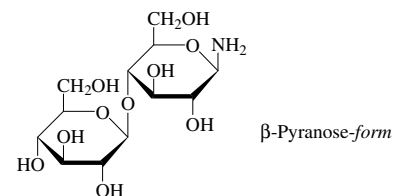
Glass. $[\alpha]_D^{20} -24$ (c, 1 in H₂O).

Hepta-Ac: [33012-50-9]
Cryst. (CHCl₃/Et₂O). Mp 184-186°. $[\alpha]_D^{24} -31$ (c, 1 in CHCl₃).

Dunstan, D. et al., Carbohydr. Res., 1972, **23**, 17 (hepta-Ac)
Szarek, W.A. et al., Tetrahedron, 1978, **34**, 1427 (synth)
Peto, C. et al., Annalen, 1991, 505 (hepta-Ac, synth, ir, pmr, cmr)

Cellobiosylamine
C-40

4-O- β -D-Glucopyranosyl- β -D-glucopyranosylamine, 9CI. 1-Aminocellobiose
[71075-35-9]

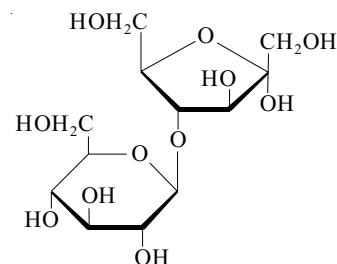


$C_{12}H_{23}NO_{10}$ 341.314
Mp 159° (dec.). $[\alpha]_D^{24} +20$ (c, 1 in H₂O).

Tamura, M. et al., Carbohydr. Res., 1984, **133**, 207-218 (synth, ir)
Likhoshervostov, L.M. et al., Carbohydr. Res., 1986, **146**, C1-C5 (synth)
Urge, L. et al., Carbohydr. Res., 1992, **235**, 83-93 (synth)
Lubineau, A. et al., Carbohydr. Res., 1995, **266**, 211-219 (synth)

Cellobiulose, 8CI
C-41

4-O- β -D-Glucopyranosyl-D-fructofuranose, 8CI
[26391-66-2]

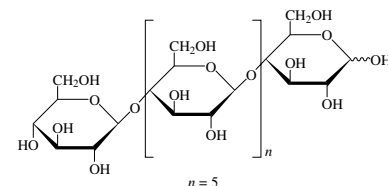


$C_{12}H_{22}O_{11}$ 342.299
An aq. soln. at 25° contains 61% β -pyr, 10% α -fur, and 29% β -fur. Amorph. hygroscopic powder. $[\alpha]_D^{23} -60.1$ (c, 2.4 in H₂O).

Corbett, W.M. et al., J.C.S., 1955, 1431 (isol)
MacLaurin, D.J. et al., Can. J. Chem., 1969, **47**, 3957 (isol)
Schanbacher, F.L. et al., J. Biol. Chem., 1970, **245**, 5057 (pharmacol)
Pfeffer, P.E. et al., Carbohydr. Res., 1982, **102**, 11 (cmr)
Hicks, K.B. et al., Carbohydr. Res., 1983, **112**, 37 (synth, hplc)
Angyal, S.J. et al., Adv. Carbohydr. Chem. Biochem., 1984, **42**, 15 (equilib)

Celloheptaose
C-42

O- β -D-Glucopyranosyl-[(1→4)-O- β -D-glucopyranosyl]₅-(1→4)-D-glucose, 8CI
[52646-27-2]



$C_{42}H_{72}O_{36}$ 1153.009
Formed by hydrol. of cellulose or as its acetate by acetolysis.
Mp 283-286° dec. $[\alpha]_D^{30} +7$ (c, 0.1 in H_2O).

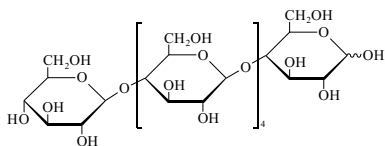
 α -form

Tricosa-Ac: Mp 263-266°. $[\alpha]_D^{21} -4.4$ (c, 1.7 in $CHCl_3$).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1952, **74**, 5331 (*struct, isol*)
Whitaker, D.R. *et al.*, *Arch. Biochem. Biophys.*, 1954, **53**, 439

Cellohexaose**C-43**

O- β -D-Glucopyranosyl-[(1 \rightarrow 4)-O- β -D-glucopyranosyl] $_4$ -(1 \rightarrow 4)-D-glucose, 8CI. Cellodextrin 6 [2478-35-5]



$C_{36}H_{62}O_{31}$ 990.867
Formed by hydrol. of cellulose or as its acetate by acetolysis.
Mp 275-278° dec. $[\alpha]_D^{30} +10$ (c, 1.2 in H_2O).

 α -form

Eicosa-Ac: Mp 252-254°. $[\alpha]_D^{30} -0.23$ (c, 2.4 in $CHCl_3$).

 β -form

Eicosa-Ac: Mp 241-243°. $[\alpha]_D -18.9$ ($CHCl_3$).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1952, **74**, 5331 (*struct, isol*)
Whitaker, D.R. *et al.*, *Arch. Biochem. Biophys.*, 1954, **53**, 439

Cellooctaose**C-44**

O- β -D-Glucopyranosyl-[(1 \rightarrow 4)-O- β -D-glucopyranosyl] $_6$ -(1 \rightarrow 4)-D-glucose [120434-20-0]
As Celloheptaose, C-42 with n = 6

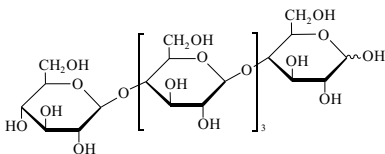
$C_{48}H_{82}O_{41}$ 1315.151

Hexacosia-Ac: [185515-64-4]
Syrup. $[\alpha]_D^{25} -2.25$ (c, 0.4 in $CHCl_3$).

Nishimura, T. *et al.*, *Carbohydr. Res.*, 1996, **294**, 53-64 (*hexacosia-Ac*)

Cellopentaose**C-45**

O- β -D-Glucopyranosyl-[(1 \rightarrow 4)-O- β -D-glucopyranosyl] $_3$ -(1 \rightarrow 4)-D-glucopyranose, 8CI. Cellodextrin 5 [2240-27-9]



$C_{30}H_{52}O_{26}$ 828.725
Formed by hydrol. of cellulose or as its acetate by acetolysis. Sol. H_2O ; poorly sol. Me_2CO . λ_{max} 267 (pH 2 buffer) (Berdy).

λ_{max} 271 (H_2O) (Berdy). λ_{max} 271 (pH 12 buffer) (Berdy).

► LD₅₀ (mus, ipr) 50 mg/kg.

 α -form

Heptadeca-Ac: [26469-36-3]
Mp 240-243°. $[\alpha]_D^{28} +4.7$ (c, 2.4 in $CHCl_3$).

 β -form

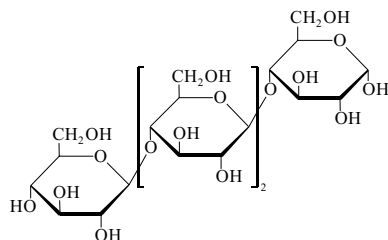
Mp 266-268° dec. $[\alpha]_D^{30} +8 \rightarrow +11$ (c, 4.1 in H_2O).

Heptadeca-Ac: Mp 238-239°. $[\alpha]_D +18.5$ ($CHCl_3$).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1952, **74**, 5331 (*isol, synth*)
Michell, A.J. *et al.*, *Carbohydr. Res.*, 1970, **12**, 453 (*conformn, pmr*)

Cellotetraose**C-46**

O- β -D-Glucopyranosyl-(1 \rightarrow 4)-O- β -D-glucopyranosyl-(1 \rightarrow 4)-O- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose. Cellodextrin 4 [38819-01-1]



$C_{24}H_{42}O_{21}$ 666.583
Mp 252° dec. $[\alpha]_D^{23} +8.4 \rightarrow +16.5$ (c, 3.4 in H_2O).

 α -form

Tetradeca-Ac: Mp 230-234°. $[\alpha]_D +13.4$ ($CHCl_3$).

 β -form

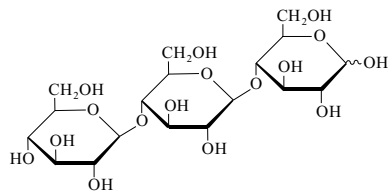
Tetra-Ac: Mp 224-225°. $[\alpha]_D -18.2$ ($CHCl_3$).

Benzyl pyranoside, 2,2',3,3',6,6'-hexabenzyl: $[\alpha]_D^{20} +5.2$ (c, 1.9 in $CHCl_3$).

Wolfrom, D. *et al.*, *J.A.C.S.*, 1952, **74**, 5331
Inhat, M. *et al.*, *Can. J. Chem.*, 1967, **45**, 2353
Poppleton, B.J. *et al.*, *Nature (London)*, 1968, **219**, 1046 (*cryst struct*)
Luchsinger, W.W. *et al.*, *Carbohydr. Res.*, 1976, **46**, 1
Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **121**, 163 (*synth*)

Cellotriose**C-47**

O- β -D-Glucopyranosyl-(1 \rightarrow 4)-O- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI. Cellodextrin 3 [33404-34-1]



$C_{18}H_{32}O_{16}$ 504.441

Formed by hydrol. of cellulose or as its acetate by acetolysis.

Mp 206-209° Mp 238°.

Phenylosazone: Mp 208°.

 α -form

Undeca-Ac:
 $C_{40}H_{54}O_{27}$ 966.85
Mp 223-224°. $[\alpha]_D^{23} +22.6$ (c, 0.5 in $CHCl_3$).

 β -form

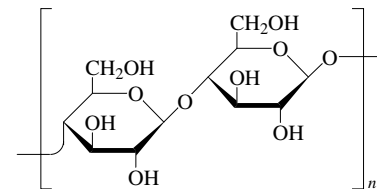
Undeca-Ac: Mp 210-211°. $[\alpha]_D -17.9$ ($CHCl_3$).

Benzyl pyranoside, 2,3,6-tribenzyl: Mp 193-194°. $[\alpha]_D^{20} +4.9$ (c, 2.0 in $CHCl_3$).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1952, **74**, 5331
Whitaker, D.R. *et al.*, *Arch. Biochem. Biophys.*, 1954, **53**, 439
Kamerling, J.P. *et al.*, *Tetrahedron*, 1972, **28**, 3037 (*config, pmr*)
Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **121**, 163 (*synth*)
Raymond, S. *et al.*, *Carbohydr. Res.*, 1995, **277**, 209-229 (*cryst struct, Me β -gly*)
Storz, C.A. *et al.*, *Carbohydr. Res.*, 2003, **338**, 95-107 (*conformn*)

Cellulose, 9CI, 8CI**C-48**

E460
[9004-34-6]



$C_6H_{10}O_5$ 162.142

An unbranched polymer composed of 1,4 β -linked glucopyranose units. Polymeric. Minimum formula given. Native cellulose consists of two different crystal structures, a two-chain monoclinic phase and a single chain triclinic phase. The most abundant organic material found in plants forming the principal constit. of their cell walls giving them structural strength. Cotton is almost pure cellulose. Wood is the most important industrial source. Basic material for textile and paper manuf. Used in the isol. of heavy metals. Anticaking agent, binding agent and other uses in food. Capsule and tablet diluent. Insol. H_2O , most solvs., but forms sol. complexes in conc. aq. $ZnCl_2$, copper-amine solutions and with Fe sodium tartrate solution.

► OES: long-term 10 mg m⁻³ for total inhalable dust; 5 mg m⁻³ for respirable dust. OES: short-term 20 mg m⁻³ for total inhalable dust. Reacts vigorously with oxidants. FJ5691460

Poly-O-sulfate: Cellulose sulfate. Usher cell [9032-43-3] Used in food thickeners, textile sizes and viscosity modifiers for oil-drilling muds. Excipient. Microbicidal gel for prevention of HIV and sexually transmitted diseases. Contraceptive. Sol. H_2O .

- Poly-O-phosphate, Na salt:** *Cellulose sodium phosphate, USAN. Calcisorb. Calcibind* [9038-41-9]
[9015-14-9] Flameproofing treatment for cotton. Ion-exchange material. Used for the treatment of kidney stones. Cream powder.
- Poly-O-nitro:** *Nitrocellulose. Collodion cotton. Collodion wool. Colloxylin. Celloidin. Cellulose nitrate. Guncotton. Nitron. Parlodion* [9004-70-0] Used in explosives (propellants), lacquers, adhesives, plastics (e.g. Celluloid).
Propellant grade nitrocellulose consists mostly of 2,3,6-trinitro residues with smaller amts. of di- and mononitro residues.
- **Highly flammable**, fl. p. 13°, autoignition temp. 160-170°. Subject to degradation on storage leading to fire and explosion. QW0975180
- Xanthate:** *Cellulose xanthate* [9032-37-5] Used in manuf. of viscose rayon.
- Per-Ac:** *Cellulose acetate, 9CI* [9004-35-7]
[9012-09-3, 9035-69-2] Prepared by acetylation of cellulose with acetic anhydride/acetic acid in the presence of sulfuric acid. Acetylation is normally carried out fully to produce a product known as primary acetate, which approaches the triacetate stoichiometry, and which may then be partially hydrolysed to secondary acetate (DS value 2.2-2.5). Used in manuf. of textile fibres, cigarette filters and lacquers, including photographic films. World production 740000 t in 1987.
Flake or powder. Mp 306° (triacetate form). $[\alpha]_D^{25}$ -20.9 (CHCl₃) (as triacetate).
- Perpropanoyl:** [9004-48-2]
Mp 234° (shrinks at 229°). $[\alpha]_D^{25}$ -19 (c, 1 in CHCl₃).
- Polybutanoyl:** *Cellulose butyrate* [9015-12-7] Used in manufacture of lacquers, films and fibres. Mp 183° (shrinks at 178°). $[\alpha]_D^{25}$ -15.7 (c, 1 in CHCl₃). Phys. props. are for the fully esterified form.
- Poly(Ac, propanoyl):** *Cellulose acetate propionate. Tenite propionate™. Cellidor CP™* [9004-39-1] Produced by esterification of cellulose with mixed anhydrides of acetic and propionic acid in the presence of H₂SO₄. Available commercially in a wide variety of forms varying from 3 to 8% acetic acid content and 55 to 65% propanoic acid content. Thermoplastic moulding material.
Flakes or powder.
- Poly(Ac, butanoyl):** *Cellaburate, INN, USAN. Cellulose acetate butyrate. Cabufocon. CAB* [9004-36-8] Thermoplastic. Used in extrusion and injection moulding, and in lacquers for protective coatings.
- Poly(Ac, phthaloyl):** *Cellacefate, INN. Cellulose acetate phthalate* [9004-38-0] Used as film coating for tablets and capsules. Prac. insol. H₂O, EtOH; sol. Me₂CO.
- Per(phenylcarbamoyl):** [9047-07-8] Chiral stationary phase for resolu. of enantiomers by hplc.
Yellowish solid. Sol. Me₂CO. $[\alpha]_D^{25}$ -100 (CHCl₃).
- Per(3,5-dimethylphenylcarbamoyl):** [103938-44-9] Synth. from cellulose and 3,5-dimethylphenyl isocyanate. Chiral stationary phase for resolu. of enantiomers by hplc. $[\alpha]_D^{25}$ -45.4 (c, 1 in dioxan).
- Per-Me ether:** *Methyl cellulose. FEMA 2696. E461* [9004-67-5] Defoamer, adhesive, thickener and nontoxic food additive. Used as sensitising surfactant in photometric detn. of transition metal ions (with Bromopyrogallol Red). Tablet binder and disintegrant. Veterinary laxative.
- FJ5959000
- Poly-Et ether:** *Ethyl cellulose. Ethocel. Ethylcellulose, INN* [9004-57-3] Prepared by etherification of alkaline cellulose with ethyl chloride. Commercial samples have DS values of 2.2 - 2.7. Annual worldwide production ca. 5000t. Used in hot-melt adhesives and electrically insulating layers and coatings. Binder and coating for pharmaceutical tablets. Binder and coating for pharmaceutical tablets.
Powder or granules. Sol. most org. solvs. Only low DS products (1.3) show significant H₂O solubility.
- Poly-O-benzyl:** *Phenylmethyl cellulose ether* [9015-11-6] Prepared by etherification of alkaline cellulose with benzyl chloride to give a DS value of ca. 2. Developed as a replacement for celluloid in photographic films; has had minor uses as a plastic moulding material. No longer used due to poor thermal and light stability and physical props.
- Poly(carboxymethyl) ether:** *Croscarmellose, BAN, INN. Carboxymethyl cellulose. Carmellose, BAN. Carmellose gum. Cepol. FEMA 2239. E466* [9000-11-7]
[9045-95-8, 9050-04-8] Surfactant. Used as Na salt (Croscarmellose sodium, USAN) to increase the sensitivity of the photometric detn. of Cd, Cu, Mn, Zn with Bromogallol Red. Pharmaceutical aid (tablet disintegrant). Pharmaceutical aid (tablet disintegrant).
Amorph. powder. Sol. H₂O. Mp 300°.
- Exp. reprod. effects. LD₅₀ (rat, orl) 27000 mg/kg. FJ5950000
- Poly(carboxymethyl, Et) ether:** [37205-99-5] Polymer.
- Poly-O-(carboxymethyl, 2-hydroxyethyl):** [9004-30-2] Used in drilling fluids for oil and gas production. Sol. H₂O.
- Poly-O-(2-carboxyethyl):** [9004-42-6] [9032-39-7] Prepared by alkylation of alkaline cellulose with acrylonitrile or acrylamide followed by hydrolysis. Not produced industrially.
- Poly-O-(hydroxymethyl):** *Methylol cellulose* [37353-59-6] Synth. from cellulose and.
- Poly-O-(2-hydroxyethyl):** *HEC Natrasol®, Tylose H®, Cellozise. Cellobond®* [9004-62-0] Prepared by etherification of alkaline cellulose with ethylene oxide. Commercial samples have MS values of 1.8 - 3.5. Worldwide production in 1987 38,500 t. Thickener, binder, stabiliser and suspending agent with widespread uses in the paint, oil and polymer industries.
White-tan powder. Sol. H₂O; insol. org. solvs. High MS products partially sol. in MeOH.
- Poly(2-hydroxyethyl, Me) ether:** *Hydroxyethyl methyl cellulose. HEMC* [9032-42-2] Prepared by etherification of alkaline cellulose with chloromethane and oxirane. Commercial samples have methyl DS values of 1.3 - 2.2 and hydroxyethyl MS values of 0.06 - 0.5. Thickening and binding agent with widespread industrial uses in adhesives, building products, films, wetting agents. Pharmaceutical adjuvant. Better water solubility and electrolyte tolerance than methyl cellulose. Thermally gellable in hot water. Soly. in org. solvs. varies with DS value.
- Poly(2-hydroxyethyl, Et) ether:** *Ethyl hydroxyethyl cellulose. Etulos. EMEC* [9004-58-4] Useful in solvent coating applications, inks, paints and as an additive to cement and gypsum based plasters and mortars. Laxative.
Powder. Sol. hydrocarbons. Insol. EtOH, boiling H₂O.
- Poly(2-hydroxypropyl, Me) ether:** *Hydroxypropyl methyl cellulose. HPMC. E463. Hypromellose, USAN. Hydroxypropylmethylcellulose, JAN. Cellulose hydroxypropyl methyl ether, BAN, INN* [9004-65-3] Prepared by etherification of alkaline cellulose with methyl chloride and propylene oxide. Commercial samples have methyl DS values of 1.1-2.0 and hydroxypropyl MS values of 0.1 - 1.0. Thickening and binding agent with widespread industrial uses in adhesives, building products, films, protective creams and colloids.
Approved for food use in US and EU. Used in deep fried batters. Shows better water solubility and electrolyte tolerance than methylcellulose. Component of artificial tears.
Powder. Sol. H₂O. Thermally gellable in hot water. Sol. in aq. solns. varies with DS value.
- Poly(2-hydroxybutyl, Me) ether:** *HBMC. Methocel HB®* [37228-15-2]
[9041-56-9] Made from alkaline cellulose by etherification with methyl chloride and butylene oxide either stepwise or

simultaneously. Surfactant, gelling agent. Antiredeposition agent for textile washing. Powder. Sol. H₂O, alcohols, glycols. Mp 278-281°.

Poly-(2-methoxypropyl, phthaloyl): [9050-31-1] Coating for controlled release of pharmaceutical formulations.

Poly-O-(2-aminoethyl): 2-Aminoethylcellulose. AE-cellulose [9032-36-4] Substrate for immobilised enzymes in affinity chromatography.

Poly-O-(2-diethylaminoethyl): DEAE-cellulose [9013-34-7] Prepared by etherification of alkaline cellulose with 2-chloroethyl-N,N-diethylamine. Weakly basic ion-exchange material. Widely used as a stationary phase in displacement chromatography of proteins.

Poly-O-(2-cyanoethyl): [9004-41-5] Little commercial significance as such, but low levels of cyanoethylation are used to improve the strength and electrical resistance of speciality cellulose polymers.

[9004-32-4, 9004-57-3, 9004-64-2, 9013-34-7, 55841-00-4, 71138-97-1, 81859-24-7]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 2, 1180B (ir)

Reid, J.D. *et al.*, *Ind. Eng. Chem.*, 1949, **41**, 2828-2831; 2831-2834 (phosphate)

Malm, C.J. *et al.*, *Ind. Eng. Chem.*, 1951, **43**, 684-688 (triesters, synth, props)

Ott, E. *et al.*, *Cellulose and Cellulose Derivatives*, Wiley Interscience, 1954.

Ger. Pat., 1957, 1000367; *CA*, **54**, 5088f (ethyl 2-hydroxyethyl ether)

U.S. Pat., 1958, 2835666; *CA*, **52**, 211016, (2-hydroxybutyl methyl ether)

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **3**, 3-395 (rev)

Timell, T.E. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 100-103 (purifn)

U.S. Pat., 1967, 3342805; *CA*, **67**, 101205j, (2-hydroxypropyl methyl ether)

Ward, K. *et al.*, *The Carbohydrates*, (eds. Pigman, W. *et al.*), Academic Press, 1970, **2A**, 413

Baker, R.H. *et al.*, *High Polym.*, 1971, **5**, 181-212 (pmr)

Munro, P.A. *et al.*, *Biotechnol. Bioeng.*, 1977, **19**, 121-124 (2-aminoethyl ether, use)

Sandell, E.B. *et al.*, *Photometric Determination of Traces of Metals, General Aspects*, Wiley, New York, 1978.

Cellulose and other Natural Polymer Systems: Biogenesis, Structure and Degradation, (ed. Brown, R.M.), Plenum Press, 1982.

Delmer, D.P. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 105-153 (rev, biosynth)

Cellulose Chemistry and its Applications, (ed. Nevell, T.P.), Ellis Horwood, 1985.

Encyclopaedia of Polymer Science and Engineering, 1985, **1**, 615; **3**, 68; 158; 239 (rev)

Xu, Q. *et al.*, *Fenxi Huaxue*, 1985, **13**, 170; *CA*, **103**, 204989j (carboxymethyl ether)

Cellulose: Structure, Modification and Hydrolysis, (eds. Young, R.A. *et al.*), Wiley, 1986.

Ger. Pat., 1986, 3446361; *CA*, 135797x (carboxymethyl 2-hydroxyethyl ether)

Okamoto, Y. *et al.*, *J. Chromatogr.*, 1986, **363**, 173-186 (phenylcarbamates)

Samil, R.K. *et al.*, *J. Macromol. Sci., Part C: Rev. Macromol. Chem. Phys.*, 1986, **26**, 81 (rev, graft copolymers)

Eur. Pat., 1987, 219426; *CA*, **77**, 7578t (hydrogen 1,2-benzendicarboxylate, 2-hydroxypropyl methyl ether)

Rosell, K.G. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 525-536 (Methylcellulose, struct)

Okamoto, Y. *et al.*, *Chirality*, 1989, **1**, 239-242 (3,5-dimethylphenylcarbamate)

Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, CCU150; CCU250; SFO500; MIF760

Buchanan, C.M. *et al.*, *J.A.C.S.*, 1989, **111**, 7312-7319 (triesters, cmr)

Braun, D. *et al.*, *Papier (Darmstadt)*, 1989, **43**, 688-694 (benzyl ether)

Boeden, H.F. *et al.*, *J. Chromatogr.*, 1991, **552**, 389-414 (2-diethylaminoethyl ether)

Japan. Pat., 1991, 03 260 193; *CA*, **116**, 86123r (2-cyanoethyl ether)

Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **5**, 476; 545; **6**, 1023; **7**, 292; **8**, 451 (rev, esters, ethers, phosphate)

Curtis, N.J. *et al.*, *Aust. J. Chem.*, 1992, **45**, 627-634 (pmr, cmr, nitrate)

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. *et al.*), American Pharmaceutical Association/Pharmaceutical Press, 1994, 84-87; 88-90; 91-93; 141-142; 306-309

Heiner, A.P. *et al.*, *Carbohydr. Res.*, 1995, **273**, 207-223 (bibl, struct)

Martindale, The Extra Pharmacopoeia, 31st edn., Pharmaceutical Press, 1996, 995; 1536; 1537

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 482; 551; 552; 554; 556; 1385 (use, derivs)

Christensen, N.D. *et al.*, *Antimicrob. Agents Chemother.*, 2001, **45**, 3427-3432; 2002, **46**, 2692-2695; 2004, **48**, 2025-2036 (cellulose sulfate, pharmacol)

Ullmann's Encycl. Ind. Chem., 5th edn., **A5**, 375-418; 419-459; 461-488 (rev, esters, ethers)

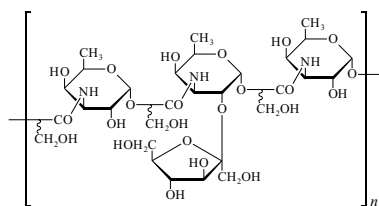
Bretherick, L. *et al.*, *Handbook of Reactive Chemical Hazards*, 2nd edn., Butterworths, 1979, 33

Luxon, S.G. *et al.*, *Hazards in the Chemical Laboratory*, 5th edn., Royal Society of Chemistry, 1992, 282; 283

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, CCU150; CNH000; CCU250; SFO500; MIF760

Eubacterium saburreum Cell-wall antigen

C-49

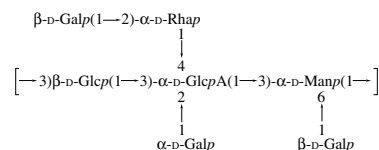


New type of biopolymer, not strictly a polysaccharide. Isol. from *Eubacterium saburreum* strain L13.

Jansson, P.E. *et al.*, *Carbohydr. Res.*, 1985, **137**, 197 (isol, pmr, cmr, struct)

Cepacian

C-50



MW 781000 ± 55000. The structure includes one Ac group per repeating unit, the position of which is currently unknown. Exopolysaccharide prod. by strains of *Burkholderia cepacia*, a multi-drug resistant bacterium causing chronic infections in cystic fibrosis patients.

Sist, P. *et al.*, *Carbohydr. Res.*, 2003, **338**, 1861-1867 (bibl)

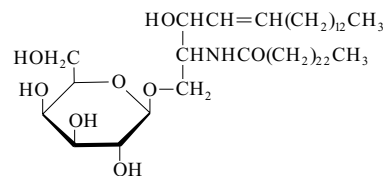
Cerasinge

C-51

N-[1-[(β-D-Galactopyranosyloxy)-methyl]-2-hydroxy-3-heptadecenyl]tetracosanamide, 9CI. 1-O-β-D-Galactopyranosyl-2-tetracosanoylamino-4-octadecene-1, 3-diol. N-Tetracosanoylgalactocerebroside.

Kerasin

[536-13-0]



C₄₈H₉₃NO₈ 812.265

Cerebroside isol. from brain tissue.

Mp 182°. [α]_D²⁵ -3.4 (Py).

Penta-Ac: Mp 57-58°. [α]_D²⁵ -18 (c, 1.0 in CHCl₃/MeOH).

Dihydro: Mp 180°. [α]_D²⁶ +5.5 (Py).

Shapiro, D. *et al.*, *J.A.C.S.*, 1961, **83**, 3327 (isol)

Klenk, E. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1967, **348**, 1061 (isol)

Martin-Lomas, M. *et al.*, *Chem. Phys. Lipids*, 1973, **10**, 152 (pmr)

Oldani, D. *et al.*, *Biochim. Biophys. Acta*, 1975, **382**, 1 (struct)

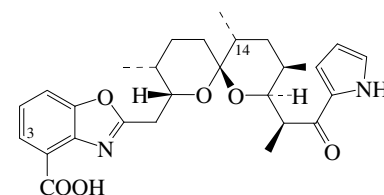
Wood, G.W. *et al.*, *Chem. Phys. Lipids*, 1977, **18**, 316 (ms)

Gigg, R. *et al.*, *Chem. Phys. Lipids*, 1980, **26**, 287 (rev)

Cezomycin

C-52

De(methylamino)calcimycin [83874-22-0]



C₂₈H₃₄N₂O₆ 494.586

Polyether antibiotic. Prod. by *Streptomyces chartreusis* NRRL3882 with added tryptophan. Assists in transportation of calcium across a chloroformic membrane. Shows similar

antibiotic activity to Calcimycin. Poorly sol. hexane.
Mp 75-77°. $[\alpha]_D^{25} +151$ (c, 0.012 in CHCl_3).

3-Hydroxy: 3-Hydroxycezymycin. AC

7230. Antibiotic AC 7230

$\text{C}_{28}\text{H}_{34}\text{N}_2\text{O}_7$ 510.586

From *Dactylosporangium* sp. AC 7320.

Active against gram-positive bacteria.

Needles (as Na salt). Sol. MeOH,

DMSO, CHCl_3 ; poorly sol. H_2O ,

hexane.

Mp 300° (Na salt). $[\alpha]_D^{26} +328$ (c, 0.6 in

CHCl_3). Stereochem. not confirmed.

λ_{max} 204 (ϵ 30700); 257 (ϵ 15100); 306

(ϵ 21800) (EtOH) (Derep). λ_{max} 203

(E1%/1cm 599); 258 (E1%/1cm 304);

306 (E1%/1cm 442) (MeOH) (Berdy).

▶ LD₅₀ (mus, ipr) 50 mg/kg.

14-Demethyl: 11-Demethylcezymycin.

Frankiamide

[726188-57-4]

$\text{C}_{27}\text{H}_{32}\text{N}_2\text{O}_6$ 480.56

Prod. by *Frankia* sp. strain AiPsl. Powder.

$[\alpha]_D^{25} +192.4$ (c, 0.008 in CHCl_3). Struct. of Frankiamide revised in 2003.

David, L. et al., *J. Antibiot.*, 1982, **35**, 1409;

1616 (isol, nmr, ms, biosynth)

Prudhomme, M. et al., *Experientia*, 1983, **39**,

256 (synth)

Yaginuma, S. et al., *J. Antibiot.*, 1987, **40**, 239

(isol, struct)

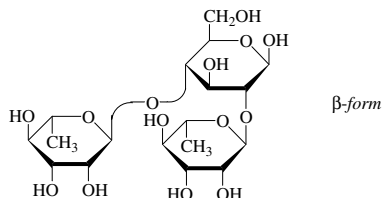
Klika, K.D. et al., *Z. Naturforsch. B.*, 2003, **58**,

1210-1215 (Frankiamide)

Chacotriose

C-53

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-
[6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)]-
D-glucopyranose, 8CI. α -L-Rhamnopyrano-
syl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-
(1 \rightarrow 4)]-D-glucose
[550-72-1]



$\text{C}_{18}\text{H}_{32}\text{O}_{14}$ 472.442

Constit. of numerous glycosides, e.g. α -solanine (see in *The Combined Chemical Dictionary*).

[58846-56-3]

Kuhn, R. et al., *Ber.*, 1955, **88**, 1690 (occur, struct)

Briggs, L.H. et al., *J.C.S. Perkin I*, 1975, 2455 (occur, struct)

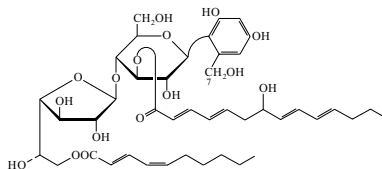
Morillo, M. et al., *Carbohydr. Res.*, 2001, **334**, 281-287 (per-Ac, synth)

Lehmann, M. et al., *Carbohydr. Res.*, 2002, **337**, 2153-2159 (glycosides, synth)

Lequart, V. et al., *Chem. Lett.*, 2004, 444-445 (synth)

Chaetiacandin

[96989-32-1]



$\text{C}_{43}\text{H}_{60}\text{O}_{16}$ 832.937

Glycolipid antibiotic. Struct. revised in

1995. Isol. from *Monochaetia dimorphospora*. Shows strong activity against yeasts and weak activity against filamentous fungi. Sol. MeOH, EtOAc; poorly sol. H_2O .

Mp 128-132° dec. $[\alpha]_D^{22} -1.5$ (c, 1 in

MeOH). Related to the Papulacandins

(see Papulacandin A, P-6. λ_{max} (no

shifts reported) (Derep). λ_{max} 230 (sh)

(ϵ 38300); 261 (ϵ 43300) (MeOH/NaOH)

(Derep). λ_{max} 225 (ϵ 32600); 230 (sh)

(ϵ 32500); 263 (ϵ 39500) (MeOH)

(Derep). λ_{max} 225 (E1%/1cm 392); 263

(E1%/1cm 475) (MeOH) (Berdy). λ_{max}

225 (E1%/1cm 401); 263 (E1%/1cm 480)

(MeOH-HCl) (Berdy). λ_{max} 261 (E1%/

1cm 520) (MeOH-NaOH) (Berdy).

▶ LD₅₀ (mus, ipr) 1000 - 3000 mg/kg.

LZ4293000

7-O-Sulfate: Lecythophorin

$\text{C}_{43}\text{H}_{60}\text{O}_{19}\text{S}$ 913.002

Prod. by *Lecythophora hoffmannii*.

Inhibitor of the fungus *Ophiostoma*

crassivaginatatum. Amorph. powder. Sol.

MeOH. $[\alpha]_D +8.4$ (c, 0.6 in MeOH).

λ_{max} 263 (MeOH) (Berdy).

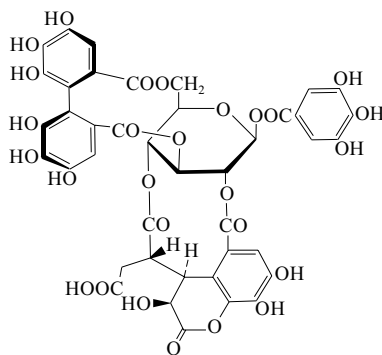
Komori, T. et al., *J. Antibiot.*, 1985, **38**, 455; 544 (isol, uv, ir, pmr, cmr)

Dubois, E. et al., *Carbohydr. Res.*, 1992, **223**, 157

Ayer, W.A. et al., *Tet. Lett.*, 1995, **36**, 7953 (struct, Lecythophorin)

Chebulagic acid

[23094-71-5]



$\text{C}_{41}\text{H}_{30}\text{O}_{27}$ 954.672

Tannin derived from divi-divi (fruit of

Caesalpinia coriaria) and myrobalans

(fruit of *Terminalia chebula*). Present in

Geranium spp. Shows anti-HIV activity.

Potent DNA topoisomerase inhibitor.

Rhombic cryst. + 10 H_2O .

C-54

Mp 240° dec. $[\alpha]_D^{20} -57$ (H_2O). Log P -1.2 (uncertain value) (calc).

Dodeca-Me:

Cryst. (butanol). Mp 258°. $[\alpha]_D -30$

(CHCl_3).

Haslam, E. et al., *J.C.S. (C)*, 1967, 2381 (isol)

Yoshida, T. et al., *Chem. Pharm. Bull.*, 1980, **28**,

3713; 1982, **30**, 2655 (struct, abs config)

Haddock, E.A. et al., *J.C.S. Perkin I*, 1982,

2535 (pmr, cmr)

Nonaka, G. et al., *J. Nat. Prod.*, 1990, **53**, 587

(anti-HIV activity)

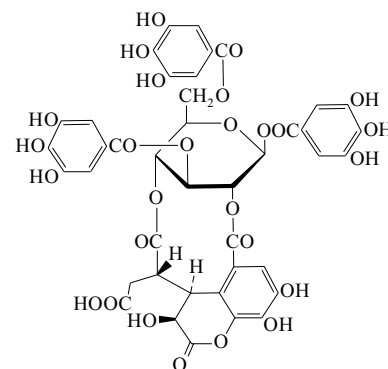
Hecht, S.M. et al., *J. Nat. Prod.*, 1992, **55**, 401 (pharmacol)

Chebulinic acid

Eutannin

[18942-26-2]

C-56



$\text{C}_{41}\text{H}_{32}\text{O}_{27}$ 956.688

Tannin derived from divi-divi (fruit of

Caesalpinia coriaria) and myrobalans

(fruit of *Terminalia chebula*). Also

obtainable from *Geranium thunbergii* and

the seeds of sal (*Shorea robusta*). Shows

anti-HIV activity. Needles (H_2O).

Mp 234°. $[\alpha]_D^{20} -65.1$ (c, 1.0 in Me_2CO).

Log P -0.61 (uncertain value) (calc).

3,6-Bis-O-degalloyl: Chebulanin. Terminalic acid†

[166833-80-3]

$\text{C}_{27}\text{H}_{24}\text{O}_{19}$ 652.475

Constit. of *Terminalia chebula*. Topoi-

somerase I inhibitor. Powder. $[\alpha]_D +9.1$

(MeOH). λ_{max} 221 (ϵ 42660) (no solvent

reported).

Haslam, E. et al., *J.C.S. (C)*, 1967, 2381 (isol, ms)

Yoshida, T. et al., *Chem. Pharm. Bull.*, 1980, **28**,

3713; 1982, **30**, 2655 (struct, abs config)

Haddock, E.A. et al., *J.C.S. Perkin I*, 1982,

2535 (pmr, cmr)

Nonaka, G. et al., *J. Nat. Prod.*, 1990, **53**, 587

(anti-HIV activity)

Weaver, J.L. et al., *Biochem. Pharmacol.*, 1992,

43, 2479 (pharmacol)

Japan. Pat., 1995, 95 138 165; CA, **123**, 152874j

(Chebulanin)

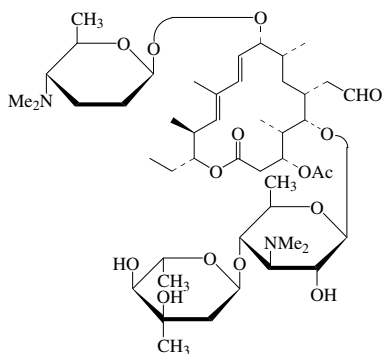
Liu, Y.Z. et al., *Chin. Chem. Lett.*, 1998, **9**,

827-828 (Terminalic acid)

Chimeramycin A

[87084-47-7]

C-57

 $C_{48}H_{82}N_2O_{14}$ 911.181

Macrolide antibiotic. Prod. by *Streptomyces ambifaciens* in the presence of protylonide. Shows broad-spectrum antibacterial activity. Powder. Sol. MeOH, C_6H_6 , $CHCl_3$; fairly sol. Et_2O ; poorly sol. H_2O , hexane. Mp 108–110°. $[\alpha]_D^{22} +40$ (c, 1 in $CHCl_3$). λ_{max} 232 (MeOH). Related to Foromicidin. λ_{max} 232 (ε 26200) (MeOH) (Derep). λ_{max} 232 (E1%/1cm 288) (MeOH) (Berdy).

O-De-Ac: Chimeramycin B

[87092-83-9]

 $C_{46}H_{80}N_2O_{13}$ 869.144

Prod. by *Streptomyces ambifaciens* in the presence of protylonide. Shows broad-spectrum activity. Powder. Sol. MeOH, $CHCl_3$, C_6H_6 ; fairly sol. Et_2O ; poorly sol. H_2O , hexane. Mp 114–115°. $[\alpha]_D^{22} +14.4$ (c, 1 in $CHCl_3$). λ_{max} 232 nm (MeOH). λ_{max} 232 (ε 26500) (MeOH) (Derep). λ_{max} 232 (E1%/1cm 305) (MeOH) (Berdy).

O-De(2,6-dideoxy-3-C-methyl-ribo-hexosyl): $C_{41}H_{70}N_2O_{11}$ 767.011

Shows stronger activity than the parent compd. Mp 91–93°. $[\alpha]_D^{22} -15.9$ (c, 0.5 in $CHCl_3$).

O-De(2,6-dideoxy-3-C-methyl-ribo-hexosyl), O-de-Ac: $C_{39}H_{68}N_2O_{10}$ 724.974

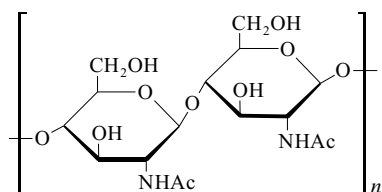
Shows greater activity than the parent compd. Mp 98–100°. $[\alpha]_D^{22} +23.2$ (c, 0.5 in $CHCl_3$).

Omura, S. *et al.*, *J. Antibiot.*, 1983, **36**, 927 (biosynth, uv, cmr)

Chitin, 9CI, 8CI

[1398-61-4]

C-58

 $C_8H_{13}NO_5$ 203.194

A linear polymer of 2-Acetamido-2-deoxyglucose, A-8. Minimum formula given. Occurs in shells of crustacea, most fungi, mycelial yeast, green algae and some brown and red algae. Antihæmorrhagic. Used as a wound healtant. $[\alpha]_D^{20} -14 \rightarrow +56$ (HCl). The fully N-deacetylated prod. is called Chitan.

▶ LD₅₀ (rat, ivn) 50 mg/kg. FM6125000

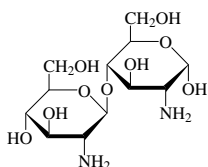
Partially deacetylated deriv.: See Chitosan in *The Combined Chemical Dictionary*.

[39280-86-9, 87582-10-3, 88650-88-8]

Foster, A.B. *et al.*, *Adv. Carbohydr. Chem.*, 1960, **15**, 371 (rev)BeMiller, J.N. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 103 (synth)Jeuniaux, C. *et al.*, *Compr. Biochem.*, (eds.Florkin, M. *et al.*), 1971, **26C**, 595Pervaiz, S.M. *et al.*, *Z. Naturforsch. C.*, 1975, **30**, 571 (struct)Muzzarelli, R.A.A. *et al.*, *Chitin*, Pergamon, N.Y., 1977,Austin, P.R. *et al.*, *Science (Washington, D.C.)*, 1981, **212**, 749 (rev)*Encyclopaedia of Polymer Science and Engineering*, 1985, **3**, 430 (rev)*Chitin Nat. Technol. Proc. Int. Conf. Chitin**Chitosan*, 3rd, 1985, (Eds. Muzzarelli, R.A.A. *et al.*), Plenum Press, 1986, (book)*Chitin and Chitosan: Biochem. Phys. Props., Applications*, (Eds. Skjåk-Braek, G. *et al.*), Elsevier, Amsterdam, 1989, (book)Brine, C.J. *et al.*, *Adv. Chitin Chitosan*, Elsevier Applied Science, 1992,Nishimura, Y. *et al.*, *Hoshasen Kagaku (Tokyo)*, 1992, **35**, 13 (rev)Perfect, J.R. *et al.*, *Clin. Dermatol.*, 1993, **7**, 365 (pharmacol)Tanioka, S.-I. *et al.*, *Front. Biomed. Biotechnol.*, 1993, **1**, 153 (rev, use)Winterowd, J.G. *et al.*, *Food Sci. Technol.*, 1995, **67**, 441 (rev, use, activity)Chang, K.L.B. *et al.*, *Carbohydr. Res.*, 1997, **303**, 327–332 (synth, Chitosan)Muzzarelli, R. *et al.*, *Carbohydrates in Europe*, 1997, **19**, 10–17 (rev)Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, CDM750**Chitobiose, 9CI, 8CI**

C-59

2-Amino-2-deoxy-4-O-(2-amino-2-deoxy-β-D-glucopyranosyl)-D-glucose. 4-β-Glucosaminylglucosamine [577-76-4]



α-Pyranose-form

 $C_{12}H_{24}N_2O_9$ 340.33

Isol. from the partial acid hydrolysate of chitosan. Chitinases are of widespread occurrence, particularly in moulds and many of them e.g. *Streptomyces griseus* and *Streptomyces albus* degrade chitin or N-acetylchitodextrins to N,N'-diacetylchitobiose. This is subsequently hydrolysed by a separate chitobiase to chitobiose.

Pyranose-form

N,N'-Di-Ac: 2-Acetamido-2-deoxy-4-O-(2-acetamido-2-deoxy-β-D-glucopyranosyl)-D-glucose [35061-50-8]

 $C_{16}H_{28}N_2O_{11}$ 424.404

Intermed. in breakdown of chitin (see Chitin, C-58).

Mp 260–267° (245–247°). $[\alpha]_D +25$ (+18) (H_2O).

Octa Ac: 2-Acetamido-3,4,6-tri-O-acetyl-2-deoxy-β-D-glucopyranosyl-(1→4)-2-acetamido-1,3,6-tri-O-acetyl-2-deoxyglucopyranose

 $[\alpha]_D +30.8$ (c, 0.52 in DMSO).**α-Pyranose-form**

Octa-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-2-deoxy-β-D-glucopyranosyl-(1→4)-2-acetamido-1,3,6-tri-O-acetyl-2-deoxy-α-D-glucopyranose [7284-18-6]

 $C_{28}H_{40}N_2O_{17}$ 676.627

Cryst. Mp 303–304° dec. $[\alpha]_D^{20} +56$ (c, 0.50 in AcOH).

β-Pyranose-form

Octa-Ac: 2-Acetamido-3,4,6-tri-O-acetyl-2-deoxy-β-D-glucopyranosyl-(1→4)-2-acetamido-1,3,6-tri-O-acetyl-2-deoxy-β-D-glucopyranose [117467-63-7]

 $C_{28}H_{40}N_2O_{17}$ 676.627

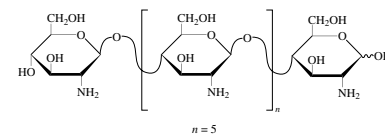
Mp 226–228° dec. $[\alpha]_D^{19} -29$ (c, 1.0 in $CHCl_3$).

[2706-64-1, 34147-27-8]

Zilliken, F. *et al.*, *J.A.C.S.*, 1955, **77**, 1296 (isol)Horowitz, S.T. *et al.*, *J.A.C.S.*, 1957, **79**, 5046Barker, S.A. *et al.*, *J.C.S.*, 1958, 2218 (isol)Dierickx, L. *et al.*, *Biochim. Biophys. Acta*, 1962, **58**, 7Izume, M. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 1189 (synth)Nanjo, F. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 67–82 (octa-Ac)Domrad, M.A. *et al.*, *Int. J. Biol. Macromol.*, 1989, **11**, 297 (synth)Terayama, H. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 81–93 (di-Ac, octa-Ac, enzymic synth)**Chitoheptaose**

C-60

2-Amino-2-deoxy-β-D-glucopyranosyl-(1→4)-[2-amino-2-deoxy-β-D-glucopyranosyl-(1→4)]₅-D-glucose [68232-35-9]



n = 5

 $C_{42}H_{79}N_7O_{29}$ 1146.116

Obt. by acid or enzymic hydrol. of, Partially deacetylated deriv.

N,N',N'',N''',N'''',N''''',N''''''-Hepta-Ac: [79127-58-5]

 $C_{56}H_{93}N_7O_{36}$ 1440.376

Not. obt. cryst. $[\alpha]_D -12.6$ (c, 0.3 in H_2O) (equilib.).

Barker, S.A. *et al.*, *J.C.S.*, 1958, 2218–2227 (synth, ir)

Lopatin, S.A. *et al.*, *Anal. Biochem.*, 1995, **227**, 285-288 (*synth*, *ms*)
 Aiba, S. *et al.*, *Adv. Chitin Sci.*, 1996, **1**, 192-197 (*synth*)

Chitohexaose C-61

2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)]₄-D-glucose

[41708-95-6]
 As Chitoheptaose, C-60 with $n = 4$

C₃₆H₆₈N₆O₂₅ 984.958

Obt. by acid or enzymic hydrol. of, Partially deacylated deriv.

N,N',N'',N''',N''',N''''-Hexa-Ac:

[38854-46-5]

C₄₈H₈₀N₆O₃₁ 1237.182

Not. obt. cryst. [α]_D -11.4 (c, 0.8 in H₂O) (equilib.).

Barker, S.A. *et al.*, *J.C.S.*, 1958, 2218-2227 (*synth*, *ir*)

Coduti, P.L. *et al.*, *Anal. Biochem.*, 1977, **78**, 9-20 (*cd*)

Nanjo, F. *et al.*, *Agric. Biol. Chem.*, 1989, **53**, 2189-2195 (*synth*)

Lopatin, S.A. *et al.*, *Anal. Biochem.*, 1995, **227**, 285-288 (*synth*, *ms*)

Aiba, S. *et al.*, *Adv. Chitin Sci.*, 1996, **1**, 192-197 (*synth*)

Aly, M.R.E. *et al.*, *Carbohydr. Res.*, 2001, **331**, 129-142 (*synth*)

Chitopentaose C-62

2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)]₃-D-glucose

[41708-94-5]
 As Chitoheptaose, C-60 with $n = 3$

C₃₀H₅₇N₅O₂₁ 823.801

Obt. by acid or enzymic hydrol. of, Partially deacylated deriv.

N,N',N'',N''',N''''-Penta-Ac: [36467-68-2]

C₄₀H₆₇N₅O₂₆ 1033.987

Needles. Mp 285-295° dec. [α]_D²⁰ -9.1 (c, 1.0 in H₂O) (equilib.).

Heptadeca-Ac:

[65887-29-8]

C₆₄H₉₁N₅O₃₈ 1538.434

Dihydrate. [α]_D²⁰ +15.3 (c, 0.59 in DMSO).

Barker, S.A. *et al.*, *J.C.S.*, 1958, 2218-2227 (*synth*, *ir*)

Zehavi, U. *et al.*, *Biochem. Prep.*, 1971, **13**, 14-18 (*synth*)

Coduti, P.L. *et al.*, *Anal. Biochem.*, 1977, **78**, 9-20 (*cd*)

Izume, M. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 1189-1191 (*synth*)

Nanjo, F. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 67-82 (*heptadeca-Ac*)

Lopatin, S.A. *et al.*, *Anal. Biochem.*, 1995, **227**, 285-288 (*synth*, *ms*)

Aiba, S. *et al.*, *Adv. Chitin Sci.*, 1996, **1**, 192-197 (*synth*)

Chitotetraose C-63

2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)]₂-D-glucose, 9CI

[5567-52-2]
 As Chitoheptaose, C-60 with $n = 2$

C₂₄H₄₆N₄O₁₇ 662.644

Obt. by acid or enzymic hydrol. of, Partially deacylated deriv. Component of Chitin, C-58. Cryst. (MeOH aq.).

N,N',N'',N''',N''',N''''-Tetra-Ac: [2706-65-2]

C₃₂H₅₄N₄O₂₁ 830.793

Needles. Mp 290-300° dec. [α]_D²⁰ -4.1 (c, 1.0 in H₂O) (equilib.).

Tetradeca-Ac:

[53942-46-4, 117399-51-6]

C₅₂H₇₄N₄O₃₁ 1251.165

Sesquihydrate. [α]_D²⁰ +16.6 (c, 0.66 in DMSO).

[55601-98-4]

Barker, S.A. *et al.*, *J.C.S.*, 1958, 2218-2227 (*synth*, *ir*)

Zehavi, U. *et al.*, *Biochem. Prep.*, 1971, **13**, 14-18 (*synth*)

Teichberg, V.I. *et al.*, *Biochim. Biophys. Acta*, 1972, **278**, 250-257 (*uv*)

Cornelius, D.A. *et al.*, *Methods Enzymol.*, Part B, 1974, **34**, 639-645 (*synth*)

Coduti, P.L. *et al.*, *Anal. Biochem.*, 1977, **78**, 9-20 (*cd*)

Izume, M. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 1189-1191 (*synth*)

Nanjo, F. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 67-82 (*tetradeca-Ac*)

Bosso, C. *et al.*, *Org. Mass Spectrom.*, 1992, **27**, 799-806 (*ms*)

Lopatin, S.A. *et al.*, *Anal. Biochem.*, 1995, **227**, 285-288 (*synth*, *ms*)

Singh, S. *et al.*, *Carbohydr. Res.*, 1995, **279**, 293-305 (*synth*, *pmr*)

Aly, M.R.E. *et al.*, *Carbohydr. Res.*, 2001, **331**, 129-142 (*synth*)

Chitotriose C-64

2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose.

4²- β -Glucosaminyl-4- β -glucosaminylglucosamine

[41708-93-4]

As Chitoheptaose, C-60 with $n = 1$

C₁₈H₃₅N₃O₁₃ 501.487

N,N',N''-Tri-Ac: 2-Acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-acetamido-

2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy-D-glucose. 4²- β -N-Acetylglucosaminyl-4- β -N-acetylglucosaminyl-N-acetylglucosamine

[38864-21-0]
 C₂₄H₄₁N₃O₁₆ 627.598

The simplest member of the N-acetylchitodextrins obt. as intermeds. in the degradn. of chitin by endochitinases. Mp 309-311°. [α]_D +2.5 (H₂O).

Undeca-Ac:

[53942-45-3, 117399-49-2]

C₄₀H₅₇N₃O₂₄ 963.896

Monohydrate. [α]_D²⁰ +23.1 (c, 0.52 in DMSO).

Pyranose-form

Octa-Ac:

C₃₄H₅₁N₃O₂₁ 837.784

Mp 304-305°. [α]_D +30 (CHCl₃).

[2624-24-0]

Berger, L.R. *et al.*, *Biochim. Biophys. Acta*, 1958, **29**, 522 (*isol*)

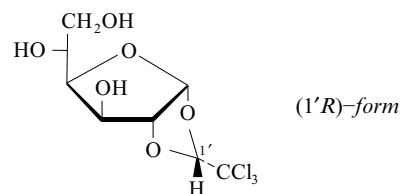
Dierickx, L. *et al.*, *Biochim. Biophys. Acta*, 1962, **58**, 7 (*isol*)

Boyd, J. *et al.*, *Carbohydr. Res.*, 1985, **139**, 35 (*pmr*, *cmr*)

Nanjo, F. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 67-82 (*undeca-Ac*)

Chloralose, 8CI, BSI, INN, ISO C-65

1,2-O-(2,2,2-Trichloroethylidene)glucofuranose, 9CI. Glucochloralose. Glucochloral. Anhydroglucochloral. Chloralosane. Somio. Aphasal. Dulcidor. Alphakil



C₈H₁₁Cl₃O₆ 309.529 Log P -0.3 (calc).

(1'R)-form

α -form. Alphachloralose

[15879-93-3] Bird repellent in grain seeds, photographic developer and rodenticide. Hypnotic.

Needles (EtOH or Et₂O). Mp 187°. [α]_D²² +19 (c, 5.00 in EtOH).

► Produces a coma (usually non-fatal) in cases of acute human poisoning. LD₅₀ (rat, orl) 400 mg/kg. FM9450000

(1'S)-form

β -form

[16376-36-6] Photographic developer.

Less sol. than α -form. Mp 227-230°.

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 315C (*nmr*)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 201A (*ir*)

Pictet, A. *et al.*, *Helv. Chim. Acta*, 1923, **6**, 621 (*synth*, *struct*)

Freudenburg, W. *et al.*, *J.A.C.S.*, 1937, **59**, 1955 (*synth*, *struct*)

Lees, P. *et al.*, *Vet. Rec.*, 1972, **91**, 330 (*pharmacol*, *tox*)

Belg. Pat., 1979, 875 250; CA, **91**, 36002r (*use*)

Sapru, H.N. *et al.*, *Eur. J. Pharmacol.*, 1979, **53**, 151; CA, 1979, **90**, 14579f (*use*)

Ger. Pat., 1979, 2 729 739; CA, **90**, 153589g (*synth*, *use*)

Taga, T. *et al.*, *Acta Cryst. B*, 1982, **38**, 1874 (*cryst struct*)

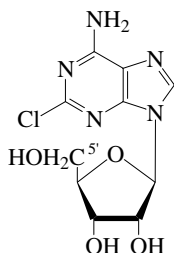
Pesticide Manual, 9th edn., 1991, No. 2130

Agrochemicals Handbook, 3rd edn., Royal Society of Chemistry, 1992, A12

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 570

Lewis, R.J. *et al.*, Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, GFA000

Handbook of Pesticide Toxicology, (Eds. Hayes, W.J. *et al.*), Academic Press, 1991, 1306

2-Chloroadenosine, 9CIAT 265B. Antibiotic AT 265B
[146-77-0]C₁₀H₁₂ClN₅O₄ 301.689

Nucleoside antibiotic. Isol. from *Streptomyces rishiriensis*. Blood platelet aggregation inhibitor. Weakly active against gram-positive and -negative bacteria. Nucleoside transporter substrate. Cryst. + ½ H₂O. Sol. H₂O; fairly sol. MeOH; poorly sol. Me₂CO, hexane. Mp 133-136° dec. [α]_D²² -49.5 (c, 0.1 in H₂O). Log P -2.16 (calc). λ_{max} 263 (ε 12270) (H₂O) (Berdy).

► Exp. teratogen; LD₅₀ (mus, ipr) .2 mg/kg. AU7357550

5'-O-Sulfamoyl: **2-Chloro-5'-sulfamoyladenosine**. AT 265. Antibiotic AT 265. Dealanylascamycin. CP54951. Antibiotic CP 54951 [66522-52-9]

C₁₀H₁₃ClN₅O₆S 380.768

From *Streptomyces rishiriensis*. Blood platelet aggregation inhibitor. Active against gram-positive and -negative bacteria. Herbicide. Needles. Mp 210-213° dec. [α]_D²² -17.5 (c, 0.2 in MeOH). λ_{max} 264 (ε 13100) (0.05N HCl) (Derep). λ_{max} 264 (ε 14000) (0.05N NaOH) (Derep). λ_{max} 264 (ε 14000) (H₂O) (Derep). Launched 1993 (US)

2'-Deoxy: **2-Chloro-2'-deoxyadenosine**.**Cladribine, BAN, INN. Leustatin.**

Leustatin. RWJ 26251. NSC 105014 [4291-63-8]

C₁₀H₁₂ClN₅O₃ 285.689

Antileukaemic agent. Nucleoside transporter substrate. Cryst. (EtOH). Mp 220° softens. Log P -1.57 (calc). Resolidifies and browns on further heating.

► AU7357560

[81012-94-4]

Montgomery, J.A. et al., *J. Het. Chem.*, 1964, **1**, 213 (synth, bibl)

Gough, G.R. et al., *J. Med. Chem.*, 1978, **21**, 520 (synth)

Takahashi, E. et al., *J. Antibiot.*, 1982, **35**, 939 (isol, struct)

Japan. Pat., 1982, 82 206 397; CA, **98**, 177496 (isol, struct)

Kazimierzczuk, Z. et al., *J.A.C.S.*, 1984, **106**, 6379 (deriv)

Jarvis, S.M. et al., *Biochem. Pharmacol.*, 1985, **34**, 3237-3241 (pharmacol)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Bryson, H.M. et al., *Drugs*, 1993, **46**, 872 (Cladribine, rev)

Drugs of Today (Barcelona), 1993, **29**, 379 (Cladribine, rev)

Kristinsson, H. et al., *Tetrahedron*, 1994, **50**, 6825-6838 (synth)

C-66

Petersen, A.J. et al., *Eur. J. Haematol.*, 1996, **56**, 213-220 (Cladribine)

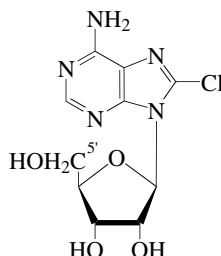
Lioux, T. et al., *Eur. J. Org. Chem.*, 2003, 3997-4002 (pmr, cmr)

Janeba, Z. et al., *J.O.C.*, 2003, **68**, 989-992 (Cladribine, synth)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, CEF100

8-Chloroadenosine, 9CI, 8CI

[34408-14-5]

C₁₀H₁₂ClN₅O₄ 301.689

Cryst. (EtOH). Mp 205° (188-190°). λ_{max} 262 (ε 13900) (0.1M HCl). λ_{max} 263 (ε 11700) (0.1M NaOH).

3',4',5'-Tribenzoyl: [34388-77-7]

C₃₁H₂₄ClN₅O₇ 614.013

Foam. λ_{max} 233 (ε 41300); 261 (ε 18700) (pH 1).

3',5'-Cyclic phosphate: **Tocladesine, INN, USAN**

[41941-56-4]

C₁₀H₁₁ClN₅O₆P 363.653

Immunomodulator. Cryst. (H₂O). Mp 232-234°. λ_{max} 259 (pH 1).

Schmidt, C.L. et al., *J.O.C.*, 1972, **37**,

2300-2302 (synth, tribenzoyl)

Brentnall, H.J. et al., *Tet. Lett.*, 1972, 2595-2596 (synth, ms, pmr)

Muneyama, K. et al., *J. Carbohydr. Nucleosides, Nucleotides*, 1974, **1**, 55-60 (tocladesine)

Ryu, E.K. et al., *J.O.C.*, 1981, **46**, 2819-2823 (synth, pmr)

Pat. Coop. Treaty (WIPO), 1989, 89 05 648, (Nucleic Acid Research Institute); CA, **112**,

210975d (synth, pharmacol)

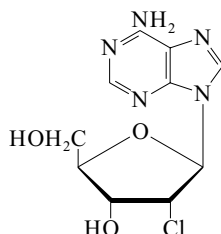
Borsellino, N. et al., *Pharmacol. Res.*, 1994, **30**, 81-90 (pharmacol)

Boee, R. et al., *Br. J. Cancer*, 1995, **72**, 1151-1159 (pharmacol)

Tortora, G. et al., *Clin. Cancer Res.*, 1995, **1**, 377-384 (phase 1 clin study)

2'-Chloro-2'-deoxyadenosine, 9CI

[2627-62-5]

C₁₀H₁₂ClN₅O₃ 285.689Cryst. (H₂O). Mp 221-222°.

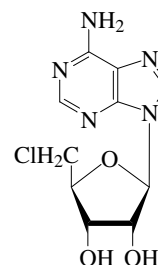
C-67

Ikehara, M. et al., *Chem. Pharm. Bull.*, 1978, **26**, 2449 (synth, uv, cmr, pmr)

5'-Chloro-5'-deoxyadenosine, 9CI

[892-48-8]

C-69

C₁₀H₁₂ClN₅O₃ 285.689

Cryst. Mp 104-105° (hydrate) Mp 190° (dec.) (anhyd.). [α]_D²⁵ -27.7 (c, 0.5 in H₂O).

Kiwagiwa, K. et al., *Tet. Lett.*, 1971, 87-90 (synth, uv)

Verheyden, J.P.H. et al., *J.O.C.*, 1972, **37**, 2289-2299 (synth, uv)

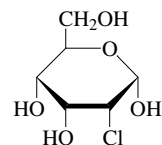
Gibbs, D.E. et al., *Synth. Commun.*, 1976, **6**, 563-573 (synth)

Looze, Y. et al., *Anal. Lett.*, 1980, **13**, 871-879 (cmr)

Francesconi, K.A. et al., *J.C.S. Perkin 1*, 1992, 1349-1357 (synth)

2-Chloro-2-deoxyallose

C-70



α-D-Pyranose-form

C₆H₁₁ClO₅ 198.603**α-D-Pyranose-form**

Me glycoside: Methyl 2-chloro-2-deoxy-α-D-allopyranoside

C₇H₁₃ClO₅ 212.629

Cryst. Mp 160-161°. [α]_D +111 (MeOH).

Me glycoside, 3,4-O-benzylidene (R-):

Methyl 3,4-O-(R)-benzylidene-2-chloro-2-deoxy-α-D-allopyranoside

[35775-03-2]

C₁₄H₁₇ClO₅ 300.738Syrup. [α]_D²⁰ +20 (c, 3.0 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-chloro-2-deoxy-α-D-allopyranoside

[35775-02-1]

C₁₄H₁₇ClO₅ 300.738

Cryst. Mp 102-103.5°. [α]_D +88.4 (CHCl₃).

Me glycoside, 4,6-O-benzylidene, 3-Me: Methyl 4,6-O-benzylidene-2-chloro-2-deoxy-3-O-methyl-α-D-allopyranoside

[19685-18-8]

C₁₅H₁₉ClO₅ 314.765

Cryst. (Me₂CO/Et₂O/petrol). Mp 121-122°. [α]_D +68 (c, 0.82 in CHCl₃).

Me glycoside, 3,4-O-isopropylidene: Methyl 2-chloro-2-deoxy-3,4-O-isopropylidene- α -D-allopyranoside
 $C_{10}H_{17}ClO_5$ 252.694
 Mp 60°. $[\alpha]_D +75.9$ (CHCl₃).

 β -D-Pyranose-form

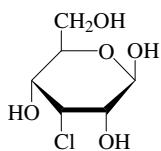
1,6-Anhydro, 3,4-di-Ac: 3,4-Di-O-acetyl-1,6-anhydro-2-chloro-2-deoxy- α -D-allopyranoside
 $C_{10}H_{13}ClO_6$ 264.662
 Cryst. Mp 90-91°. $[\alpha]_D -212$ (CHCl₃).

Newth, F.H. *et al.*, *J.C.S.*, 1947, 10
 (isopropylidene, β -D-deriv)

Richards, G.N. *et al.*, *J.C.S.*, 1956, 496,
 (4,6-benzylidene)

Hanessian, S. *et al.*, *J.O.C.*, 1969, 34, 2163,
 (3-Me, pmr)

Inch, T.D. *et al.*, *Carbohydr. Res.*, 1972, 21, 37
 (benzylidene)

3-Chloro-3-deoxyallose C-71 β -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603 **β -D-Pyranose-form**

Me glycoside: Methyl 3-chloro-3-deoxy- β -D-allopyranoside
 [4991-00-8]
 $C_7H_{13}ClO_5$ 212.629
 Syrup. $[\alpha]_D^{25} -49$ (c, 1.0 in H₂O). $[\alpha]_D +51$
 (c, 1.0 in MeOH). Widely varying $[\alpha]_D$
 values in the literature.

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-chloro-3-deoxy- β -D-allopyranoside
 [4990-99-2]
 $C_{14}H_{17}ClO_5$ 300.738

Cryst. (Et₂O). Mp 132-133°
 (125.5-127°). $[\alpha]_D +50.5$ (c, 1.0 in
 CHCl₃). $[\alpha]_D^{25} -47$ (c, 1.02 in CHCl₃).
 Widely varying $[\alpha]_D$ values in the
 literature.

Me glycoside, 4,6-O-benzylidene (R-), 2-Ac: Methyl 2-O-acetyl-4,6-O-(R)-benzylidene-3-chloro-3-deoxy- β -D-allopyranoside
 [131474-43-6]
 $C_{16}H_{19}ClO_6$ 342.775
 $[\alpha]_D -94$ (c, 1.0 in CH₂Cl₂).

 α -D-Furanose-form

1,2:5,6-Di-O-isopropylidene: 3-Chloro-3-deoxy-1,2:5,6-di-O-isopropylidene- α -D-allofuranose
 [74925-18-1]
 $C_{12}H_{19}ClO_5$ 278.732
 Cryst. Mp 52°. $[\alpha]_D^{22} +41$ (c, 1.0 in
 CHCl₃).

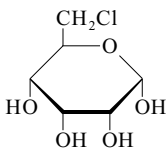
Williams, E.H. *et al.*, *Can. J. Chem.*, 1971, 49,
 796 (β -Me gly, benzylidene)

Arita, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, 45,
 567 (benzylidene)

Szarek, W.A. *et al.*, *Can. J. Chem.*, 1974, 52,
 3394 (benzylidene, cmr)

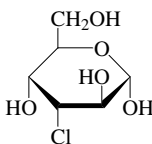
Kunz, H. *et al.*, *Annalen*, 1982, 1245
 (diisopropylidene)

Khan, R. *et al.*, *Carbohydr. Res.*, 1990, 205, 211
 (β -Me gly deriv, pmr, cmr, ms)

6-Chloro-6-deoxyallose C-72 α -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603 **α -D-Pyranose-form**

Me glycoside, 2,3-anhydro: [19685-17-7]
 $C_7H_{11}ClO_4$ 194.614
 Cryst. (Et₂O/petrol). Mp 93-94°. $[\alpha]_D$
 +155 (c, 0.59 in CHCl₃).

Hanessian, S. *et al.*, *J.O.C.*, 1969, 34, 2163
 (anhydro, pmr)

3-Chloro-3-deoxyaltrose C-73 α -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603 **α -D-Pyranose-form**

Me glycoside: Methyl 3-chloro-3-deoxy- α -D-altropyranoside
 $C_7H_{13}ClO_5$ 212.629
 Syrup. $[\alpha]_D^{20} +103.5$ (c, 1.0 in EtOH).

Me glycoside, tri-Ac: Methyl 2,4,6-tri-O-acetyl-3-chloro-3-deoxy- α -D-altropyranoside
 $C_{13}H_{19}ClO_8$ 338.741
 Cryst. (EtOH). Mp 98-99°. $[\alpha]_D^{20} +70.3$
 (CHCl₃). $[\alpha]_D^{20} +73$ (c, 1.61 in CHCl₃).

Me glycoside, 4,6-O-benzylidene (R-): Methyl 4,6-O-(R)-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside
 [131613-80-4]
 $C_{14}H_{17}ClO_5$ 300.738
 Syrup.

Me glycoside, 4,6-O-benzylidene, 2-Ac: Methyl 2-O-acetyl-4,6-O-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside
 $C_{16}H_{19}ClO_6$ 342.775
 Cryst. (EtOH). Mp 126°. $[\alpha]_D^{17} +90$
 (c, 1.89 in CHCl₃).

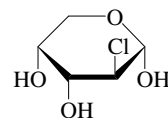
 β -D-Pyranose-form

Me glycoside: Methyl 3-chloro-3-deoxy- β -D-altropyranoside
 $C_7H_{13}ClO_5$ 212.629
 Cryst. (EtOAc). Mp 128-129°. $[\alpha]_D^{20} -111.8$ (c, 0.33 in EtOH).

1,6-Anhydro, 2,4-di-Ac: 2,4-Di-O-acetyl-1,6-anhydro-3-chloro-3-deoxy- β -D-altropyranoside
 $C_{10}H_{13}ClO_6$ 264.662
 Cryst. (EtOH). Mp 114-115°. $[\alpha]_D^{19} -202$
 (c, 0.91 in CHCl₃).

Newth, F.H. *et al.*, *J.C.S.*, 1953, 989 (α -Me gly,
 β -Me gly, anhydro)

Hughes, A.B. *et al.*, *Aust. J. Chem.*, 1990, 43,
 1681 (benzylidene, pmr)

2-Chloro-2-deoxyarabinose C-74 α -D-Pyranose-form $C_5H_9ClO_4$ 168.576**D-form**

Mp 135°. $[\alpha]_D -126$ (H₂O).

Di-Et dithioacetal:

$C_9H_{19}ClO_3S_2$ 274.832
 Mp 83° dec. $[\alpha]_D^{20} +67$ (c, 2.0 in dioxan).

 α -D-Pyranose-form

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-chloro-2-deoxy- α -D-arabino-pyranoside
 $C_{10}H_{15}ClO_6$ 266.678
 Cryst. Mp 99-100°. $[\alpha]_D -59.6$ (CHCl₃).

 α -D-Furanose-form

Tri-Ac: 1,3,5-Tri-O-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside
 [30589-74-3]
 $C_{11}H_{15}ClO_7$ 294.688
 Bp_{0.2} 135°. $[\alpha]_D^{20} +28.1$ (c, 1.0 in CHCl₃).

Me glycoside: Methyl 2-chloro-2-deoxy- α -D-arabinofuranoside
 [55735-87-0]
 $C_6H_{11}ClO_4$ 182.603
 Syrup.

Me glycoside, 3,5-di-Ac: Methyl 3,5-di-O-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside
 [55735-88-1]
 $C_{10}H_{15}ClO_6$ 266.678
 Syrup. Bp_{0.08} 100°. $[\alpha]_D^{20} +45.2$ (c, 2.0 in
 CHCl₃).

Me glycoside, 3,5-dibenzyl: Methyl 3,5-di-O-benzyl-2-chloro-2-deoxy- α -D-arabinofuranoside
 [55740-54-0]
 $C_{20}H_{23}ClO_4$ 362.852
 Syrup.

Et glycoside, 3,5-di-Ac: Ethyl 3,5-di-O-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside
 $C_{11}H_{17}ClO_6$ 280.704
 Bp_{0.02} 87°. $[\alpha]_D^{20} +25$ (c, 2.0 in CHCl₃).

 β -D-Furanose-form

Me glycoside: Methyl 2-chloro-2-deoxy- β -D-arabinofuranoside
 $C_6H_{11}ClO_4$ 182.603
 Syrup. $[\alpha]_D^{20} -95.1$ (c, 2.0 in H₂O).

Me glycoside, 3,5-di-Ac: Methyl 3,5-di-O-acetyl-2-chloro-2-deoxy- β -D-arabinofuranoside
 $C_{10}H_{15}ClO_6$ 266.678
 Cryst. (C₆H₆/petrol). Mp 74-76°. Bp_{0.2}
 115-117°. $[\alpha]_D^{20} -122$ (c, 2.0 in CHCl₃).

Vargha, L. *et al.*, *Chem. Ber.*, 1963, 96, 411,
 (D-form, α -Me pyr)

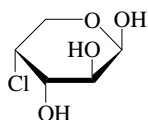
Kuszmanski, J. *et al.*, *Chem. Ber.*, 1963, 96, 2327
 (D-form deriv, Me β -D-fur, α -Et fur)

Ritzmann, G. *et al.*, *Carbohydr. Res.*, 1975, 39,
 227 (Me α -D-fur)

Kuszmanski, J. *et al.*, *Carbohydr. Res.*, 1979, **14**, 415 (*tri-Ac*)
 Ilicheva, I.A. *et al.*, *Bioorg. Khim.*, 1989, **15**, 800; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 428 (*conformn*)

4-Chloro-4-deoxyarabinose

C-75

 β -D-Pyranose-formC₅H₉ClO₄ 168.576 **β -D-Pyranose-form**

Me glycoside: Methyl 4-chloro-4-deoxy- β -D-arabinopyranoside
 C₆H₁₁ClO₄ 182.603
 Needles (EtOAc). Mp 152°. [α]_D +237 (c, 0.96 in MeOH).

L-form

Cryst. (EtOH). Mp 150°. [α]_D +155 \rightarrow +119 (equilib.) (c, 0.4 in H₂O).

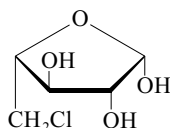
Phenylosazone:

Yellow cryst. (MeOH aq.). Mp 123° dec.

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1962, **40**, 1408 (*synth, L-form, Me gly*)
 Barnett, J.E.G. *et al.*, *Adv. Carbohydr. Chem.*, 1967, **22**, 177 (*rev*)

5-Chloro-5-deoxyarabinose

C-76

C₅H₉ClO₄ 168.576 **β -L-Furanose-form**

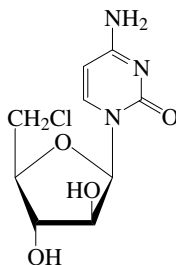
1,2-O-Isopropylidene, 3-mesyl: 5-Chloro-5-deoxy-1,2-O-isopropylidene-3-O-mesyl- β -L-arabinofuranose
 [105953-27-3]
 C₉H₁₅ClO₆S 286.733
 Cryst. (diisopropyl ether). Mp 58-59°. [α]_D -4 (c, 0.50 in CHCl₃).

Hughes, N.A. *et al.*, *J.C.S. Perkin 1*, 1986, 695 (*isopropylidene deriv, pmr*)

5'-Chloro-5'-deoxyarabinosyl-cytosine

C-77

4-Amino-1-(5-chloro-5-deoxy- β -D-arabinofuranosyl)-2(1H)-pyrimidinone
 [32659-31-7]



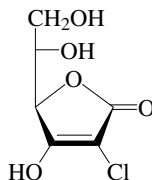
C₉H₁₂ClN₃O₄ 261.664
 Potent and specific inhibitor of DNA synthesis in tumour cells. Cryst. (H₂O). Mp 206-208.5° (202-204.5°). [α]_D²⁵ +163.8 (c, 0.5 in H₂O). Log P -1.7 (calc).

► Mutagen. UW7352000

Kikugawa, K. *et al.*, *J.O.C.*, 1972, **37**, 284 (*synth, uv*)
 Hřebabeký, H. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 599 (*synth*)
 Birnbaum, G.I. *et al.*, *Can. J. Chem.*, 1988, **66**, 1203 (*cryst struct, pmr, cmr, bibl*)
 Novotný, L. *et al.*, *Anti-Cancer Drugs*, 1991, **2**, 495 (*pharmacol*)

2-Chloro-2-deoxyascorbic acid, 9CI

C-78

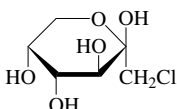
C₆H₇ClO₅ 194.571**L-form** [189262-94-0]

Light yellow hygroscopic powder.

Ge, P. *et al.*, *J.O.C.*, 1997, **62**, 3340-3343 (*synth, pmr*)

1-Chloro-1-deoxyfructose

C-79

 β -D-Pyranose-formC₆H₁₁ClO₅ 198.603**D-form** [32785-93-6]

Syrup. [α]_D²² -63 (c, 0.25 in H₂O)
 [α]_D -53.3 (c, 1.38 in H₂O).

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-chloro-1-deoxy-D-fructose
 C₁₄H₁₉ClO₉ 366.751
 Cryst. (Et₂O/petrol). Mp 77.5-78°. [α]_D +68 (c, 0.4 in CHCl₃).

 β -D-Pyranose-form

2,3:4,5-Di-O-isopropylidene: 1-Chloro-1-deoxy-2,3:4,5-di-O-isopropylidene- β -D-fructopyranose
 [32785-90-3]
 C₁₂H₁₉ClO₅ 278.732

Cryst. (Et₂O/petrol). Mp 53-53.5°. [α]_D²² -29.5 (c, 0.19 in CHCl₃).

 α -D-Furanose-form

Me glycoside: Methyl 1-chloro-1-deoxy- α -D-fructofuranoside
 [82877-67-6]
 C₇H₁₃ClO₅ 212.629
 Syrup. [α]_D²⁵ +63.7 (MeOH).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-1-chloro-1-deoxy- α -D-fructofuranoside
 [82877-49-4]
 C₁₃H₁₉ClO₈ 338.741

Cryst. (CHCl₃/hexane). Mp 73.5-74.5°. [α]_D²⁵ 0 (CHCl₃).

 β -D-Furanose-form

2,3-O-Isopropylidene: 1-Chloro-1-deoxy-2,3-O-isopropylidene- β -D-fructofuranose
 [83032-07-9]
 C₉H₁₅ClO₅ 238.667
 Cryst. (CHCl₃/hexane). Mp 94.5-95.5°. [α]_D²⁵ +12.4 (CHCl₃).

Me glycoside: Methyl 1-chloro-1-deoxy- β -D-fructofuranoside
 [82877-68-7]
 C₇H₁₃ClO₅ 212.629

Hygroscopic syrup. [α]_D²⁵ -46.7 (MeOH).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-1-chloro-1-deoxy- β -D-fructofuranoside
 [82877-56-3]
 C₁₃H₁₉ClO₈ 338.741
 Syrup. [α]_D²⁵ -30.7 (CHCl₃).

L-form

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-chloro-1-deoxy-L-fructose
 [23261-13-4]
 C₁₄H₁₉ClO₉ 366.751
 Cryst. (Et₂O/petrol). Mp 76-77°. [α]_D²³ -68 (c, 4.0 in CHCl₃).

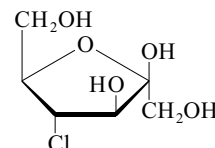
DL-form

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-chloro-1-deoxy-DL-fructose
 [23261-14-5]
 C₁₄H₁₉ClO₉ 366.751
 Cryst. Mp 101°.

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1942, **64**, 1701 (*D-tetra-Ac*)
 Humphlett, W.J. *et al.*, *Carbohydr. Res.*, 1968, **7**, 43 (*L-tetra-Ac, DL-tetra-Ac*)
 Haylock, C.R. *et al.*, *Carbohydr. Res.*, 1971, **16**, 375 (*synth, D-form, diisopropylidene*)
 Barnett, J.E.G. *et al.*, *Carbohydr. Res.*, 1972, **25**, 511 (*synth, D-form, diisopropylidene*)
 Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, **35**, 1003 (*isopropylidene, α -Me fur deriv, β -Me fur deriv, pmr*)
 Caldwell, G.W. *et al.*, *Org. Mass Spectrom.*, 1989, **24**, 1051 (*ms*)

4-Chloro-4-deoxyfructose

C-80

C₆H₁₁ClO₅ 198.603 **β -D-Furanose-form**

2,3-O-Isopropylidene, 1,6-ditosyl: 4-Chloro-4-deoxy-2,3-O-isopropylidene-1,6-di-O-tosyl- β -D-fructofuranose
 [82064-04-8]
 C₂₃H₂₇ClO₉S₂ 547.046
 Mp 99-99.5°. [α]_D +20 (c, 1.0 in CHCl₃).

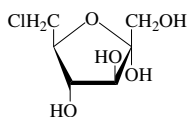
Guthrie, R.D. *et al.*, *Carbohydr. Res.*, 1982, **103**, 1 (*isopropylidene, cmr*)

6-Chloro-6-deoxyfructose

C-81

2-Chloro-2-deoxygalactose

C-82

 α -D-Furanose-form $C_6H_{11}ClO_5$ 198.603

D-form [66451-66-9] Potential use as a male contraceptive. Exhibits antifertility activity in male rats.

Tetra-Ac: 1,3,4,5-Tetra-O-acetyl-6-chloro-6-deoxy-D-fructose

 $C_{14}H_{19}ClO_9$ 366.751Cryst. Mp 108°. $[\alpha]_D^{25} +45.3$ (CHCl₃). **α -D-Furanose-form**

Me glycoside: Methyl 6-chloro-6-deoxy- α -D-fructofuranoside

[70836-64-5]

 $C_7H_{13}ClO_5$ 212.629Cryst. (MeOH). Mp 71-73° (70.6-71.5°). $[\alpha]_D^{25} +40$ (c, 0.5 in MeOH). $[\alpha]_D^{25} +47$ (MeOH).

Me glycoside, 1-tosyl: Methyl 6-chloro-6-deoxy-1-O-tosyl- α -D-fructofuranoside

[83031-91-8]

 $C_{14}H_{19}ClO_7S$ 366.819Syrup. $[\alpha]_D^{25} +23.1$ (CHCl₃). **β -D-Furanose-form**

2,3-O-Isopropylidene: 6-Chloro-6-deoxy-2,3-O-isopropylidene- β -D-fructofuranose

[83032-10-4]

 $C_9H_{15}ClO_5$ 238.667Mp 73-74°. $[\alpha]_D^{25} +4.9$ (CHCl₃).

2,3-O-Isopropylidene, 1-tosyl: 6-Chloro-6-deoxy-2,3-O-isopropylidene-1-O-tosyl- β -D-fructofuranose

[82064-02-6]

 $C_{16}H_{21}ClO_7S$ 392.856Cryst. (MeOH). Mp 76°. $[\alpha]_D +17$ (c, 1.0 in CHCl₃).

Me glycoside: Methyl 6-chloro-6-deoxy- β -D-fructofuranoside

[70836-65-6]

 $C_7H_{13}ClO_5$ 212.629Cryst. (MeOH). Mp 98-99°. $[\alpha]_D^{25} -35$ (CHCl₃).

Me glycoside, 1-tosyl: Methyl 6-chloro-6-deoxy-1-O-tosyl- β -D-fructofuranoside

[83031-82-7]

 $C_{14}H_{19}ClO_7S$ 366.819Syrup. $[\alpha]_D^{25} -23.6$ (CHCl₃).

Pacsu, E. *et al.*, *J.A.C.S.*, 1933, **55**, 3018,

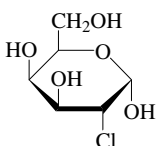
(D-tetra-Ac)

Ford, W.C.L. *et al.*, *Clin. Androl.*, 1980, **5**, 123; *CA*, **96**, 174597x (pharmacol)

Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, **35**, 1003; 1019 (α -Me fur, α -Me fur derivs, β -Me fur, β -Me fur derivs, pmr)

Guthrie, R.D. *et al.*, *Carbohydr. Res.*, 1982, **103**, 1 (β -Me fur tosyl, pmr, cmr, ms)

Page, P. *et al.*, *Tetrahedron*, 1996, **52**, 1557-1572 (synth)

 α -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603**D-form** [149675-54-7]

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-chloro-2-deoxy- β -D-galactopyranose

[141510-63-6]

[141510-62-5]

 $C_{14}H_{19}ClO_9$ 366.751

Characterised spectroscopically.

 α -D-Pyranose-form [141554-09-8]

Me glycoside: Methyl 2-chloro-2-deoxy- α -D-galactopyranoside

[25817-54-3]

 $C_7H_{13}ClO_5$ 212.629Cryst. Mp 145-147°. $[\alpha]_D +75.4$ (c, 0.52 in MeOH).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-chloro-2-deoxy- α -D-galactopyranoside

 $C_{13}H_{19}ClO_8$ 338.741Cryst. (Et₂O/petrol). Mp 86-88°. $[\alpha]_D +73.8$ (c, 1.5 in CHCl₃). **β -D-Pyranose-form**

Me glycoside: Methyl 2-chloro-2-deoxy- β -D-galactopyranoside

[25817-55-4]

 $C_7H_{13}ClO_5$ 212.629Mp 143.5-144.5°. $[\alpha]_D^{20} +11$ (c, 1 in MeOH).

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-chloro-2-deoxy- β -D-galactopyranoside

 $C_{13}H_{19}ClO_8$ 338.741Cryst. (EtOH). Mp 127-129°. $[\alpha]_D +33.3$ (c, 1.5 in CHCl₃).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1965, **43**, 1460-1475 (α -D-Me pyr, α -D-Me pyr tri-Ac, β -D-Me pyr, β -D-Me pyr tri-Ac)

Hoge, R. *et al.*, *J.C.S. (A)*, 1969, 2170-2174, (α -D-Me pyr, β -D-Me pyr, cryst struct)

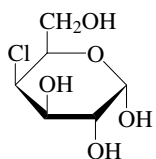
Lemieux, R.U. *et al.*, *Nouv. J. Chim.*, 1978, **2**, 321-329 (β -D-Me pyr)

Liu, K.K.-C. *et al.*, *J.O.C.*, 1992, **57**, 3748-3750 (β -D-pyr tetra-Ac)

4-Chloro-4-deoxygalactose

C-83

[61489-30-3]

 α -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603 **α -D-Pyranose-form**

Me glycoside, 2,3,6-Tribenzyl: Methyl 2,3,6-tri-O-benzyl-4-chloro-4-deoxy- α -D-galactopyranoside

[219313-37-8]

 $C_{28}H_{31}ClO_5$ 483.003Syrup. $[\alpha]_D +48$ (c, 1.1 in CHCl₃). **β -D-Pyranose-form**

Me glycoside: Methyl 4-chloro-4-deoxy- β -D-galactopyranoside

[51385-56-9]

 $C_7H_{13}ClO_5$ 212.629Needles (MeOH/Et₂O). Mp 158-159°. $[\alpha]_D +8.7$ (c, 1 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-chloro-4-deoxy- β -D-galactopyranoside

[51996-32-8]

 $C_{13}H_{19}ClO_8$ 338.741Cryst. (EtOH). Mp 96-97°. $[\alpha]_D +30.9$ (c, 1 in CHCl₃).

Me glycoside, tribenzoyl: Methyl 2,3,6-tri-O-benzoyl-4-chloro-4-deoxy- β -D-galactopyranoside

[51996-31-7]

 $C_{28}H_{25}ClO_8$ 524.953Cryst. (MeOH). Mp 131-132°. $[\alpha]_D +60.7$ (c, 3 in CHCl₃).

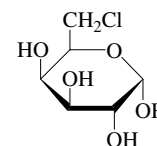
Maradufu, A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 261-277 (β -D-Me pyr, β -D-Me pyr tri-Ac, β -D-Me pyr tribenzoyl)

Limousin, C. *et al.*, *Carbohydr. Res.*, 1998, **312**, 23-31 (α -D-Me pyr tribenzoyl)

6-Chloro-6-deoxygalactose

C-84

6-Chlorofucose

 α -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603 **α -D-Pyranose-form**

1,2:3,4-Diisopropylidene: 6-Chloro-6-deoxy-1,2:3,4-di-O-isopropylidene- α -D-galactopyranoside

[13454-63-2]

 $C_{12}H_{19}ClO_5$ 278.732Syrup. Bp_{0.1} 95-100° (bath). $[\alpha]_D^{25} -66$ (c, 0.78 in CHCl₃).

Me glycoside: Methyl 6-chloro-6-deoxy- α -D-galactopyranoside

[21307-62-0]

 $C_7H_{13}ClO_5$ 212.629Cryst. (EtOH). Mp 157°. $[\alpha]_D +165$ (c, 1.4 in MeOH). **β -D-Pyranose-form**

Me glycoside: Methyl 6-chloro-6-deoxy- β -D-galactopyranoside

[58178-94-2]

 $C_7H_{13}ClO_5$ 212.629Cryst. Mp 100-103°. $[\alpha]_D^{20} -4.5$ (c, 1 in MeOH).

Hanessian, S. *et al.*, *J.O.C.*, 1969, **34**, 2163

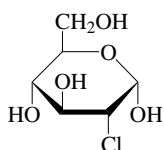
(synth, pmr, diisopropylidene)

Hanessian, S. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 190 (diisopropylidene)

Spinelli, D. *et al.*, *J.C.S. Perkin 2*, 1975, 1388 (β -Me gly, synth)

Garegg, P.G. *et al.*, *Synthesis*, 1984, 168 (synth)

Toufeili, I.A. *et al.*, *Aust. J. Chem.*, 1985, **38**, 1425 (α -Me gly, synth, cmr)

2-Chloro-2-deoxyglucose**C-85** α -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603**D-form** [14685-79-1]

[25581-35-5]

Solid. Mp 149°. $[\alpha]_D^{25} +56 \rightarrow +71$ (equilib., c, 1.1 in H_2O). **α -D-Pyranose-form** [154569-00-3]*Me glycoside: Methyl 2-chloro-2-deoxy- α -D-glucopyranoside* [20513-89-7]

[29702-45-2]

 $C_7H_{13}ClO_5$ 212.629Cryst. (EtOAc). Mp 143-143.5°. $[\alpha]_D^{24} +182.6$ (c, 1.1 in MeOH).*Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-chloro-2-deoxy- α -D-glucopyranoside*

[20513-90-0]

 $C_{13}H_{19}ClO_8$ 338.741Cryst. (Et₂O/hexane). Mp 81.5-82.5°. $[\alpha]_D^{20} +18.2$ (c, 3.3 in CH_2Cl_2).*Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside* [76221-99-3] $C_{14}H_{17}ClO_5$ 300.738Cryst. (EtOH). Mp 180°. $[\alpha]_D^{20} +113$ (c, 0.5 in CH_2Cl_2).*Me glycoside, 3-benzyl, 4,6-O-benzylidene: Methyl 3-O-benzyl-4,6-O-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside*

[76222-01-0]

 $C_{21}H_{23}ClO_5$ 390.862Cryst. Mp 110-111°. $[\alpha]_D^{20} +52$ (c, 0.5 in CH_2Cl_2). **β -D-Pyranose-form** [154569-01-4]*Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-chloro-2-deoxy- β -D-glucopyranose* [25581-36-6] $C_{14}H_{19}ClO_9$ 366.751Solid. Mp 110-111°. $[\alpha]_D^{25} +52.8$ (c, 1.0 in $CHCl_3$).*Me glycoside: Methyl 2-chloro-2-deoxy- β -D-glucopyranoside*

[14685-78-0]

 $C_7H_{13}ClO_5$ 212.629Solid. Mp 168-169°. $[\alpha]_D^{24} -11.9$ (c, 1.27 in H_2O).*Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-chloro-2-deoxy- β -D-glucopyranoside*

[23025-29-8]

 $C_{13}H_{19}ClO_8$ 338.741Cryst. (Me₂CO/hexane). Mp 154-155°. $[\alpha]_D^{23} +48.6$ (c, 1.0 in $CHCl_3$).*Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-chloro-2-deoxy- β -D-glucopyranoside*

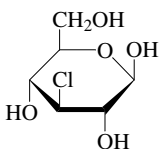
[76221-98-2]

 $C_{14}H_{17}ClO_5$ 300.738Cryst. (EtOH). Mp 192-193°. $[\alpha]_D^{20} -18$ (c, 1 in CH_2Cl_2).*Me glycoside, 3-benzyl, 4,6-O-benzylidene: Methyl 3-O-benzyl-4,6-O-benzylidene-2-chloro-2-deoxy- β -D-glucopyranoside* [76222-00-9] $C_{21}H_{23}ClO_5$ 390.862Cryst. (MeOH). Mp 175-176°. $[\alpha]_D^{20} -41$ (c, 0.9 in CH_2Cl_2). **β -D-Furanose-form***Me glycoside: Methyl 2-chloro-2-deoxy- β -D-glucufuranoside*

[69617-77-2]

 $C_7H_{13}ClO_5$ 212.629

Syrup.

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1964, **42**, 532-538 (α -D-Me pyr, β -D-Me pyr)Buncel, E. *et al.*, *Can. J. Chem.*, 1967, **45**, 515-519 (*D*-form, β -D-pyr tetra-Ac)Igarashi, K. *et al.*, *Tet. Lett.*, 1968, 755-760, (α -D-Me pyr, β -D-Me pyr)Adamson, J. *et al.*, *Carbohydr. Res.*, 1969, **10**, 517 (*D*-form, β -D-pyr tetra-Ac)Igarashi, K. *et al.*, *J.O.C.*, 1970, **35**, 610-616, (α -D-Me-pyr, α -D-Me pyr tri-Ac, β -D-Me pyr, β -D-Me pyr tri-Ac)Lönnberg, H. *et al.*, *Finn. Chem. Lett.*, 1978, 244 (β -D-Me fur)Augé, J. *et al.*, *Nouv. J. Chim.*, 1980, **4**, 481-486 (α -D-Me pyr tri-Ac, β -D-Me pyr tri-Ac, α -D-Me pyr benzylidene, β -D-Me pyr benzylidene)Binkley, R.W. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 203-219 (β -D-pyr tetra-Ac)**3-Chloro-3-deoxyglucose****C-86** β -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603**D-form** [22933-89-7]

[29702-44-1]

Cryst. (EtOH aq.). Mp 150-152°. $[\alpha]_D^{22} +66$ (c, 0.18 in H_2O). **α -D-Pyranose-form***Me glycoside: Methyl 3-chloro-3-deoxy- α -D-glucopyranoside*

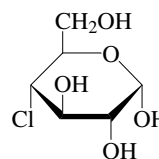
[87668-71-1]

 $C_7H_{13}ClO_5$ 212.629Needles (EtOAc). Mp 136-138°. $[\alpha]_D^{20} +158.5$ ($CHCl_3$). **β -D-Pyranose-form***Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-chloro-3-deoxy- β -D-glucopyranose*

[71107-10-3]

 $C_{14}H_{19}ClO_9$ 366.751Cryst. (petrol). Mp 119-120°. $[\alpha]_D^{25} +1$ (c, 0.5 in $CHCl_3$). **α -D-Furanose-form***1,2:5,6-Di-O-isopropylidene: 3-Chloro-3-deoxy-1,2:5,6-di-O-isopropylidene- α -D-glucufuranose*

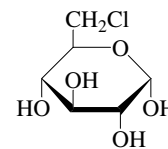
[32785-94-7]

 $C_{12}H_{19}ClO_5$ 278.732Syrup. Bp_{0.05} 84-88°.Newth, F.H. *et al.*, *J.C.S.*, 1947, 10-18 (*D*-form)
Barnett, J.E.G. *et al.*, *Biochem. J.*, 1969, **114**, 569-573 (*D*-form, α -D-fur diisopropylidene)
Kiburis, J. *et al.*, *Chim. Chron.*, 1978, **8**, 77-82 (β -D-pyr tetra-Ac)
Afza, N. *et al.*, *J.C.S. Perkin 1*, 1983, 1349-1351 (α -D-Me pyr)
Toufeili, I.A. *et al.*, *Aust. J. Chem.*, 1985, **38**, 1425-1427 (cmr)**4-Chloro-4-deoxyglucose****C-87** $C_6H_{11}ClO_5$ 198.603

Work reported in 1953 was later revised.

 α -D-Pyranose-form*Me glycoside: Methyl 4-chloro-4-deoxy- α -D-glucopyranoside* [97892-15-4] $C_7H_{13}ClO_5$ 212.629Cryst. (EtOAc). Mp 114-115°. $[\alpha]_D^{21} +130.9$ (c, 1.03 in H_2O).Buchanan, J.G. *et al.*, *J.C.S.*, 1958, 995-1000, (α -D-Me pyr)Toufeili, I.A. *et al.*, *Aust. J. Chem.*, 1985, **38**, 1425-1427 (cmr)**6-Chloro-6-deoxyglucose****C-88**

6-Chloroquinovose

 α -D-Pyranose-form $C_6H_{11}ClO_5$ 198.603**D-form** [40656-44-8] Shows male antifertility props. *in vivo*.
Cryst. (EtOAc/EtOH). Mp 137°. $[\alpha]_D +97.8$ (2 min) $\rightarrow +43$ (c, 2, equilib. in H_2O). **α -D-Pyranose-form** [28528-86-1]*Me glycoside: Methyl 6-chloro-6-deoxy- α -D-glucopyranoside*

[4144-87-0]

 $C_7H_{13}ClO_5$ 212.629Cryst. (1-propanol). Mp 113-114°. $[\alpha]_D^{30} +139$ (c, 2.4 in H_2O). $[\alpha]_D^{25} +152.8$ (c, 1 in MeOH).*Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-chloro-6-deoxy- α -D-glucopyranoside* [6087-46-3] $C_{13}H_{19}ClO_8$ 338.741Cryst. (MeOH). Mp 96-97°. $[\alpha]_D +175.7$ (c, 1 in $CHCl_3$).*Me glycoside, 2-benzoyl: Methyl 2-O-benzoyl-6-chloro-6-deoxy- α -D-glucopyranoside*

[91595-54-9]

 $C_{14}H_{17}ClO_6$ 316.737

Cryst. (EtOAc/C₆H₆). Mp 170-172°. $[\alpha]_D^{25} +117$ (c, 0.53 in CHCl₃).

Me glycoside, 2,3-dibenzoyl: Methyl 2, 3-di-O-benzoyl-6-chloro-6-deoxy-α-D-glucopyranoside [91595-55-0]

C₂₁H₂₁ClO₇ 420.845

Cryst. (CHCl₃/hexane). Mp 119-121°. $[\alpha]_D^{19} +163$ (c, 3.5 in CHCl₃).

Me glycoside, tri-Me: Methyl 6-chloro-6-deoxy-2,3,4-tri-O-methyl-α-D-glucopyranoside [32934-02-4]

C₁₀H₁₉ClO₅ 254.71

Solid. Mp 64°. $[\alpha]_D^{20} +163$ (c, 2.28 in CHCl₃).

Me glycoside, 2,3-dibenzoyl: Methyl 2, 3-di-O-benzoyl-6-chloro-6-deoxy-α-D-glucopyranoside [67776-12-9]

C₂₁H₂₅ClO₅ 392.878

Solid. Mp 50-51° (43-45°). $[\alpha]_D +89$ (c, 1.1 in MeOH). $[\alpha]_D^{25} +81.5$ (c, 1.2 in MeOH).

Me glycoside, tribenzyl: Methyl 2,3,4-tri-O-benzyl-6-chloro-6-deoxy-α-D-glucopyranoside [142543-88-2]

C₂₈H₃₁ClO₅ 483.003

$[\alpha]_D +56$ (c, 0.93 in CH₂Cl₂).

β-D-Pyranose-form [56688-73-4]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-chloro-6-deoxy-β-D-glucopyranose [35905-21-6]

C₁₄H₁₉ClO₉ 366.751

Cryst. (C₆H₆). Mp 115-117°. $[\alpha]_D^{22} +18.4$ (c, 1 in CHCl₃).

Me glycoside: Methyl 6-chloro-6-deoxy-β-D-glucopyranoside [4990-84-5]

C₇H₁₃ClO₅ 212.629

Cryst. (propanol). Mp 157-159°.

$[\alpha]_D^{30} -49$ (c, 1.0 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,5-tri-O-acetyl-6-chloro-6-deoxy-β-D-glucopyranoside [53691-80-8]

C₁₃H₁₉ClO₈ 338.741

Cryst. (EtOAc). Mp 141°. $[\alpha]_D^{19} -9.8$ (c, 0.25 in Py).

α-D-Furanose-form

1,2-O-Isopropylidene: 6-Chloro-6-deoxy-1,2-O-isopropylidene-α-D-glucofuranose [57569-50-3]

C₉H₁₅ClO₅ 238.667

Cryst. (Et₂O/hexane). Mp 80°.

$[\alpha]_D^{25} -11$ (c, 2 in CHCl₃).

1,2-O-Isopropylidene, di-Ac: 3,5-Di-O-acetyl-6-chloro-6-deoxy-1,2-O-isopropylidene-α-D-glucofuranose [51533-09-6]

C₁₃H₁₉ClO₇ 322.742

Cryst. (Et₂O/petrol). Mp 117-118°. $[\alpha]_D 0$ (c, 2.8 in CHCl₃) (approx.).

1,2-O-Isopropylidene, dibenzoyl: 3, 5-Di-O-benzoyl-6-chloro-6-deoxy-1,2-O-isopropylidene-α-D-glucofuranose [85386-40-9]

C₂₃H₂₃ClO₇ 446.883

Cryst. (MeOH). Mp 86-88°.

$[\alpha]_D -129$ (c, 2.1 in CHCl₃).

1,2-O-Isopropylidene, 3-tosyl, 5-Ac: 5-O-Acetyl-6-chloro-6-deoxy-1,2-O-isopropylidene-3-O-tosyl-α-D-glucofuranose [28251-89-0]

C₁₈H₂₃ClO₈S 434.894

Mp 75-76°. $[\alpha]_D^{20} -43$ (c, 0.56 in CHCl₃).

1,2,5,6-Di-O-methylidene: 6-Chloro-6-deoxy-1,2,3,5-di-O-methylidene-α-D-glucofuranose [65533-34-8]

C₈H₁₁ClO₅ 222.625

Cryst. (MeOH). Mp 70-71°. $[\alpha]_D +40$

(c, 1 in CHCl₃).

1,2,3,5-Diisopropylidene: 6-Chloro-6-deoxy-1,2,3,5-di-O-isopropylidene-α-D-glucofuranose [19685-14-4]

C₁₂H₁₉ClO₅ 278.732

Syrup. Bp_{0.05} 84-85°. $[\alpha]_D^{25} +36$ (c, 2.6 in CHCl₃).

Helferich, B. *et al.*, *Ber.*, 1926, **59**, 79-85; 1927, **60**, 1995-2001; 2002-2005 (*D-form*, *α-D-Me pyr*, *α-D-Me pyr tri-Ac*, *β-D-Me pyr*, *β-D-Me pyr tri-Ac*)

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1965, **43**, 2372-2386 (*α-D-Me pyr*, *β-D-Me pyr*)

Sinclair, H.B. *et al.*, *J.O.C.*, 1965, **30**, 1283-1284 (*α-D-Me pyr*)

Evans, M.E. *et al.*, *J.O.C.*, 1968, **33**, 1074-1076 (*α-D-Me pyr*, *β-D-Me pyr*)

Hanessian, S. *et al.*, *J.O.C.*, 1969, **34**, 2163, (*D-form*, *α-D-fur diisopropylidene*, *pmr*)

Mogel, L.G. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1970, **40**, 682 (*α-D-pyr*)

Haylock, C.R. *et al.*, *Carbohydr. Res.*, 1971, **16**, 375-382 (*α-D-fur diisopropylidene*)

Klemer, A. *et al.*, *Carbohydr. Res.*, 1972, **22**, 425-431 (*α-D-Me pyr tri-Me*, *β-D-pyr tetra-Ac*)

Evans, M.E. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 177; 193 (*α-D-Me pyr*)

Hanessian, S. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 190 (*D-form*, *α-D-fur diisopropylidene*)

Cocker, D. *et al.*, *J.C.S. Perkin 2*, 1975, 1391-1395 (*β-D-Me pyr tri-Ac*)

Baer, H.H. *et al.*, *Can. J. Chem.*, 1977, **55**, 1100-1103 (*α-D-Me pyr*, *α-D-Me pyr tri-Ac*)

Srivastava, H.C. *et al.*, *Carbohydr. Res.*, 1978, **60**, 210-218 (*D-form*, *α-D-fur dimethylidene*)

Anisuzzaman, A.K.M. *et al.*, *Carbohydr. Res.*, 1978, **61**, 511-518 (*D-form*, *α-D-Me pyr*, *α-D-fur isopropylidene*)

Simon, P. *et al.*, *Carbohydr. Res.*, 1978, **64**, 257-262 (*α-D-Me pyr dibenzyl*)

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1980, **8**, 227-231 (*D-form*, *α-D-Me pyr*, *α-D-fur isopropylidene*)

Parolis, H. *et al.*, *Carbohydr. Res.*, 1983, **114**, 21-33 (*D-form*, *α-D-fur isopropylidene derivs*)

Holzappel, C.W. *et al.*, *S. Afr. J. Chem.*, 1984, **37**, 19-21 (*α-D-Me pyr benzoyl*, *α-D-Me pyr dibenzoyl*)

Garegg, P.J. *et al.*, *Synthesis*, 168-170 (*α-D-Me pyr tri-Ac*)

Jones, A.R. *et al.*, *Contraception*, 1991, **44**, 649-655 (*pharmacol*)

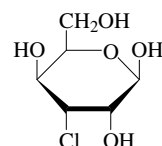
Dubreuil, D. *et al.*, *Carbohydr. Res.*, 1994, **252**, 149-157 (*α-D-Me pyr tribenzyl*)

Limousin, C. *et al.*, *Carbohydr. Res.*, 1998, **312**, 23-31 (*α-D-Me pyr dibenzyl*, *α-D-Me pyr tribenzyl*)

Olsson, R. *et al.*, *J.C.S. Perkin 1*, 1998, 785-790 (*α-D-Me pyr tri-Me*)

3-Chloro-3-deoxygulose

C-89



β-D-Pyranose-form

C₆H₁₁ClO₅ 198.603

α-D-Pyranose-form

Me glycoside: Methyl 3-chloro-3-deoxy-α-D-gulopyranoside [101947-68-6]

C₇H₁₃ClO₅ 212.629

Prisms. Mp 142° dec. $[\alpha]_D^{24} +114.5$ (c, 1.2 in H₂O).

β-D-Pyranose-form

Me glycoside, 4-(N,N-dimethylcarbamoyl), 2,6-di-Me: [84730-46-1]

C₁₂H₂₂ClNO₆ 311.762

Prisms (diisopropyl ether/pentane).

Mp 58-60°. $[\alpha]_D^{22} -65$ (CHCl₃).

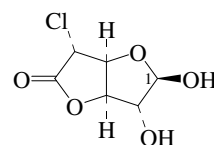
Buchanan, J.G. *et al.*, *J.C.S.*, 1958, 2511, (*α-Me pyr*)

Copeland, C. *et al.*, *Aust. J. Chem.*, 1982, **35**, 2257 (*β-Me pyr deriv*)

Toufeili, I.A. *et al.*, *Aust. J. Chem.*, 1985, **38**, 1425 (*α-Me pyr*, *cmr*)

5-Chloro-5-deoxyidofuranuro- no-6,3-lactone

C-90



α-L-form

C₆H₇ClO₅ 194.571

α-L-form

Me glycoside: Methyl 5-chloro-5-deoxy-α-L-idofuranosiduronate-6,3-lactone [57569-49-0]

C₇H₉ClO₅ 208.598

Needles (CHCl₃/petrol). Mp 137-139°.

$[\alpha]_D -87$ (c, 1.5 in CHCl₃).

β-L-form

1,2-Isopropylidene: [57569-46-7]

C₉H₁₁ClO₅ 234.636

Cryst. Mp 136-137°. $[\alpha]_D^{20} +49.2$ (c, 1.02 in CHCl₃).

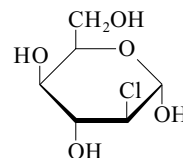
Dax, K. *et al.*, *Annalen*, 1981, 1768

(*isopropylidene*, *synth*)

Parolis, H. *et al.*, *Carbohydr. Res.*, 1983, **114**, 21 (*glycoside*, *synth*, *ms*)

2-Chloro-2-deoxyidose

C-91

C₆H₁₁ClO₅ 198.603

α -D-Pyranose-form

Me glycoside: Methyl 2-chloro-2-deoxy- α -D-idopyranoside

$C_7H_{13}ClO_5$ 212.629

Cryst. Mp 124-126°. [α]_D +86.6 (H₂O).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-chloro-2-deoxy- α -D-idopyranoside

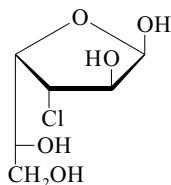
$C_{14}H_{17}ClO_5$ 300.738

Cryst. Mp 166°. [α]_D +64.8 (CHCl₃).

Buchanan, J.G. *et al.*, *J.C.S.*, 1958, 995 (α -D-Me pyr, benzylidene)

3-Chloro-3-deoxyidose

C-92



$C_6H_{11}ClO_5$ 198.603

 β -D-Furanose-form

1,2:5,6-Di-O-isopropylidene: 3-Chloro-3-deoxy-1,2:5,6-di-O-isopropylidene- β -D-idofuranose
[32785-97-0]

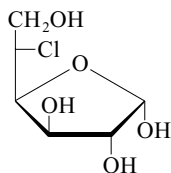
$C_{12}H_{19}ClO_5$ 278.732

Cryst. (petrol). Mp 108.5-110°. [α]_D +24.7 (c, 0.65 in cyclohexane).

Haylock, C.R. *et al.*, *Carbohydr. Res.*, 1971, 16, 375 (diisopropylidene, pmr)

5-Chloro-5-deoxyidose

C-93



$C_6H_{11}ClO_5$ 198.603

 β -L-Furanose-form

1,2-O-Isopropylidene: [69465-26-5]

$C_9H_{15}ClO_5$ 238.667

Cryst. (Et₂O/petrol). Mp 106-107°. [α]_D -31 (c, 0.5 in MeOH).

1,2-O-Isopropylidene, 6-benzoyl, 3-Ac: [118176-22-0]

$C_{18}H_{21}ClO_7$ 384.812

Cryst. (Et₂O). Mp 143-144°. [α]_D -12 (c, 0.5 in CH₂Cl₂).

1,2-O-Isopropylidene, 3,6-dibenzoyl: [118176-23-1]

$C_{23}H_{23}ClO_7$ 446.883

Cryst. (Et₂O/petrol). Mp 103-104°. [α]_D -43 (c, 0.3 in CH₂Cl₂).

1,2-O-Isopropylidene, 6-(methoxymethyl): [130619-46-4]

$C_{11}H_{19}ClO_6$ 282.72

Syrup. [α]_D²⁰ +1.6 (c, 3.1 in CHCl₃).

1,2:3,6-Di-O-isopropylidene: [82893-17-2]

$C_{12}H_{19}ClO_5$ 278.732

Syrup. [α]_D²² +48.8 (c, 2.5 in CHCl₃).

Klemer, A. *et al.*, *Carbohydr. Res.*, 1979, 68, 391 (isopropylidene)

Kunz, H. *et al.*, *Annalen*, 1982, 1245

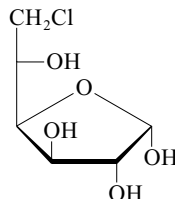
(diisopropylidene)

Lee, C.K. *et al.*, *Carbohydr. Res.*, 1988, 177, 247 (isopropylidene, pmr)

Dax, R. *et al.*, *J. Carbohydr. Chem.*, 1990, 2, 479 (methoxymethyl)

6-Chloro-6-deoxyidose

C-94



$C_6H_{11}ClO_5$ 198.603

 β -L-Furanose-form

1,2-O-Isopropylidene: [118176-24-2]

$C_9H_{15}ClO_5$ 238.667

Cryst. (Et₂O/petrol). Mp 106-107°.

[α]_D -31 (c, 0.5 in MeOH).

1,2-O-Isopropylidene, 5-benzoyl, 3-tosyl: [28642-60-6]

$C_{23}H_{25}ClO_8S$ 496.964

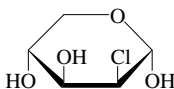
Syrup. [α]_D²⁵ +9 (c, 1.1 in CHCl₃).

Chalk, R.C. *et al.*, *Carbohydr. Res.*, 1971, 20, 151 (isopropylidene, pmr, cmr)

Lee, C.K. *et al.*, *Carbohydr. Res.*, 1988, 177, 247 (isopropylidene deriv)

2-Chloro-2-deoxylyxose

C-95



α -D-Pyranose-form

$C_5H_9ClO_4$ 168.576

 α -D-Pyranose-form [29217-61-6]

Cryst. (Me₂CO/Et₂O). Mp 157-159°.

[α]_D -0.5 → -15.5 (equilib.) (c, 1.03 in MeOH).

Me glycoside, di-Ac: Methyl 3,4-di-O-acetyl-2-chloro-2-deoxy- α -D-lyxopyranoside
[51385-06-9]

$C_{10}H_{15}ClO_6$ 266.678

Syrup. [α]_D²⁵ +8 (c, 1.71 in CHCl₃).

 β -D-Pyranose-form

Me glycoside: Methyl 2-chloro-2-deoxy- β -D-lyxopyranoside
[29217-60-5]

$C_6H_{11}ClO_4$ 182.603

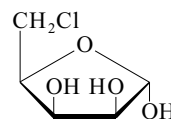
Syrup. [α]_D²¹ -96 (c, 1.3 in CHCl₃).

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1970, 48, 1834 (synth, β -Me pyr)

Van Es, T. *et al.*, *J. S. Afr. Chem. Inst.*, 1973, 26, 152 (α -Me pyr deriv, pmr)

5-Chloro-5-deoxylyxose

C-96



$C_5H_9ClO_4$ 168.576

 α -D-Furanose-form

Me glycoside: Methyl 5-chloro-5-deoxy- α -D-lyxofuranoside

$C_6H_{11}ClO_4$ 182.603

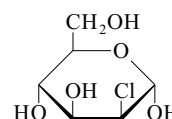
Known as a cyclic phosphonate deriv.

[90213-32-4]

Koroteev, M.P. *et al.*, *Zh. Obshch. Khim.*, 1984, 54, 279; *J. Gen. Chem. USSR (Engl. Transl.)*, 1983, 54, 245 (Me gly deriv, pmr)

2-Chloro-2-deoxymannose

C-97



α -D-Pyranose-form

$C_6H_{11}ClO_5$ 198.603

 α -D-Pyranose-form

3,4,6-Tri-Ac: [50603-56-0]

$C_{12}H_{17}ClO_8$ 324.714

Amorph. [α]_D²⁰ +19 (c, 2.5 in CHCl₃).

Tetra-Ac: [50603-57-1]

$C_{14}H_{19}ClO_9$ 366.751

Cryst. (Et₂O/petrol). Mp 97°. [α]_D²⁰ +6.8 (c, 0.9 in CHCl₃).

1-Benzoyl, tri-Ac: [23259-30-5]

$C_{19}H_{21}ClO_9$ 428.822

Cryst. (EtOH). Mp 169-170°. [α]_D²⁸ +79.3 (c, 0.52 in CHCl₃).

Me glycoside: Methyl 2-chloro-2-deoxy- α -D-mannopyranoside
[20512-21-4]

$C_7H_{13}ClO_5$ 212.629

Syrup. [α]_D²⁴ +81.1 (c, 0.95 in MeOH).

Me glycoside, tri-Ac: [22931-82-4]

$C_{13}H_{19}ClO_8$ 338.741

Syrup. [α]_D²⁴ +45.1 (c, 1.02 in CHCl₃).

[α]_D²³ +37.4 (CHCl₃).

Me glycoside, 4,6-O-benzylidene (R-): [131564-58-4]

$C_{14}H_{17}ClO_5$ 300.738

Cryst. (Et₂O/petrol). Mp 89°. [α]_D +39 (c, 1.0 in CH₂Cl₂).

Me glycoside, 4,6-O-benzylidene (R-), 3-benzoyl: [131564-59-5]

$C_{21}H_{21}ClO_6$ 404.846

Syrup. [α]_D +99.5 (c, 1.0 in CHCl₃).

 β -D-Pyranose-form

Me glycoside: Methyl 2-chloro-2-deoxy- β -D-mannopyranoside
[20513-88-6]

$C_7H_{13}ClO_5$ 212.629

Plates (EtOAc). Mp 134-134.5°.

[α]_D²⁴ -78.6 (c, 1.05 in MeOH).

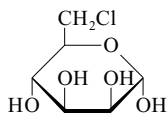
Me glycoside, tri-Ac: [20512-22-5]

Cryst. Mp 120.5-121°. [α]_D^{22.5} -86.9

(CHCl₃).

Igarashi, K. *et al.*, *Tet. Lett.*, 1968, 755 (α -Me gly, β -Me gly)
 Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **47**, 379 (*1-benzoyl*)
 Igarashi, K. *et al.*, *J.O.C.*, 1970, **35**, 610 (α -Me gly, β -Me gly)
 Boullanger, P. *et al.*, *Bull. Soc. Chim. Fr.*, 1973, 2149 (*Ac derivs*, *pmr*)
 Khan, R. *et al.*, *Carbohydr. Res.*, 1990, **205**, 211 (*benzylidene deriv*, *pmr*, *cmr*)

6-Chloro-6-deoxymannose **C-98**
 6-Chlororhamnose



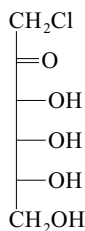
$C_6H_{11}ClO_5$ 198.603

D-form [4990-81-2]
 Syrup.

α -D-Pyranose-form

Me glycoside: [4990-80-1]
 $C_7H_{13}ClO_5$ 212.629
 Cryst. (propanol). Mp 75°. [α]_D³⁰ +60 (c, 1.0 in H₂O).
Me glycoside, 4-benzoyl, 2,3-di-Ac: [52290-42-3]
 $C_{18}H_{21}ClO_8$ 400.812
 Cryst. Mp 120-121°. [α]_D²⁵ +21 (c, 1.09 in CHCl₃).
Me glycoside, tribenzoyl: $C_{28}H_{25}ClO_8$ 524.953
 Cryst. (MeOH). Mp 181-182°. [α]_D -115 (c, 0.4 in CHCl₃).
Me glycoside, 2,3-O-isopropylidene, 4-O-(p-bromobenzenesulfonyl): [22932-32-7]
 Cryst. (EtOH). Mp 121-122°. [α]_D²⁴ -8.6 (c, 1.38 in MeOH).
 Evans, M.E. *et al.*, *J.O.C.*, 1968, **33**, 1074, (α -Me pyr)
 Stevens, C.L. *et al.*, *J.O.C.*, 1970, **35**, 592 (*broxyl*, *ms*)
 Castro, B. *et al.*, *Bull. Soc. Chim. Fr.*, 1973, 3034 (α -Me pyr)
 Mathlouthi, M. *et al.*, *Carbohydr. Res.*, 1986, **152**, 47 (*D-form*)

1-Chloro-1-deoxypsicosose **C-99**



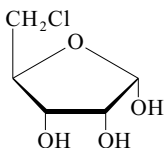
$C_6H_{11}ClO_5$ 198.603

D-form

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-chloro-1-deoxy-D-psicosose
 $C_{14}H_{19}ClO_9$ 366.751
 Cryst. Mp 89-91°. [α]_D -26 (CHCl₃).
 Wolfrom, D. *et al.*, *J.A.C.S.*, 1945, **67**, 1793 (*tetra-Ac*)

5-Chloro-5-deoxyribose

C-100



α -D-Furanose-form

$C_5H_9ClO_4$ 168.576

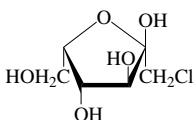
α -D-Furanose-form

Me glycoside: Methyl 5-chloro-5-deoxy- α -D-ribofuranoside
 $C_6H_{11}ClO_4$ 182.603
 Liq. Bp_{0.3} 99-112°. [α]_D -19 (c, 1.0 in CHCl₃).
Me glycoside, 2,3-bis(chlorosulfate): [55053-19-5]
 Cryst. Mp 115-116°. [α]_D +88 (c, 1.0 in CHCl₃).
 β -D-Furanose-form

Me glycoside: Methyl 5-chloro-5-deoxy- β -D-ribofuranoside
 $C_6H_{11}ClO_4$ 182.603
 Cryst. Mp 69.5-70.5°. [α]_D -65 (c, 1.0 in CHCl₃).
Me glycoside, 2,3-bis(chlorosulfate): [55053-21-9]
 Cryst. Mp 78.5-79.5°. [α]_D +36 (c, 1.0 in CHCl₃).
Me glycoside, 2,3-O-isopropylidene: Methyl 5-chloro-5-deoxy-2,3-O-isopropylidene- β -D-ribofuranoside [38838-07-2]
 $C_9H_{15}ClO_4$ 222.668
 Liq. [α]_D²⁵ -93 (c, 2.04 in CHCl₃).
 Hanessian, S. *et al.*, *Carbohydr. Res.*, 1972, **24**, 45 (β -Me gly deriv)
 Rabello, J.J. *et al.*, *Carbohydr. Res.*, 1973, **30**, 381 (β -Me gly deriv)
 Achmatowicz, B. *et al.*, *Carbohydr. Res.*, 1974, **36**, C14 (α -Me gly, β -Me gly)

1-Chloro-1-deoxysorbose

C-101



α -L-Furanose-form

$C_6H_{11}ClO_5$ 198.603

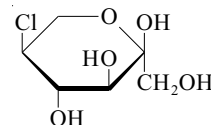
L-form [32785-89-0]
 Syrup. Mp 95.5-97°. [α]_D -34.5 (c, 1.2 in H₂O).

α -L-Furanose-form

2,3-O-Isopropylidene: 1-Chloro-1-deoxy-2,3-O-isopropylidene- α -L-sorbofuranose [32785-88-9]
 $C_9H_{15}ClO_5$ 238.667
 Cryst. (EtOAc/petrol). Mp 71-72°. [α]_D +1.9 (c, 1.56 in H₂O).
 2,3,4,6-Di-O-Isopropylidene: 1-Chloro-1-deoxy-2,3,4,6-di-O-isopropylidene- α -L-sorbofuranose [32785-87-8]
 $C_{12}H_{19}ClO_5$ 278.732
 Cryst. (petrol). Mp 56-58°. Bp_{0.05} 83-86°. [α]_D -22.3 (c, 0.71 in CHCl₃).

Haylock, C.R. *et al.*, *Carbohydr. Res.*, 1971, **16**, 375 (*synth*, *L-form*, α -L-fur derivs, *pmr*)
 Beaupere, D. *et al.*, *J. Carbohydr. Chem.*, 1989, **8**, 159 (*synth*, *L-form*)

5-Chloro-5-deoxysorbose **C-102**

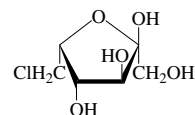


$C_6H_{11}ClO_5$ 198.603

α -L-Pyranose-form

2,3-Isopropylidene: 5-Chloro-5-deoxy-2,3-O-isopropylidene- α -L-sorbofuranose [82944-97-6]
 $C_9H_{15}ClO_5$ 238.667
 Liq.
 2-Chloroethyl glycoside: 2-Chloroethyl 5-chloro-5-deoxy- α -L-sorbofuranoside [99042-78-1]
 $C_8H_{14}Cl_2O_5$ 261.101
 Cryst. (EtOH). Mp 100-102° dec. [α]_D -66 (c, 1.0 in CHCl₃).
 2-Chloroethyl glycoside, tri-Ac: 2-Chloroethyl 1,3,4-tri-O-acetyl-5-chloro-5-deoxy- α -L-sorbofuranoside [99042-77-0]
 $C_{14}H_{20}Cl_2O_8$ 387.213
 Cryst. (EtOH). Mp 98-99°. [α]_D -21 (c, 1.0 in CHCl₃).
 2-Chloroethyl glycoside, 1,3-O-isopropylidene: 2-Chloroethyl 5-chloro-5-deoxy-1,3-O-isopropylidene- α -L-sorbofuranoside [99042-79-2]
 $C_{11}H_{18}Cl_2O_5$ 301.166
 Cryst. Mp 148-150° dec. [α]_D -58 (c, 1.0 in CHCl₃).
 Martin, O.R. *et al.*, *Can. J. Chem.*, 1982, **60**, 1857 (*isopropylidene*, *pmr*)
 Chan, J.Y.C. *et al.*, *J.C.S. Perkin 1*, 1985, 1447 (*2-chloroethyl gly derivs*, *pmr*, *ms*)

6-Chloro-6-deoxysorbose **C-103**



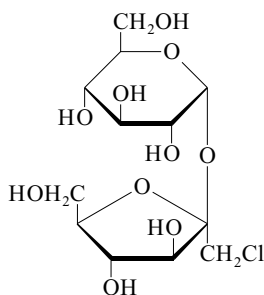
α -L-Furanose-form

$C_6H_{11}ClO_5$ 198.603

L-form
 Syrup.

α -L-Furanose-form [121564-10-1]

2,3-O-Isopropylidene: [121564-07-6]
 $C_9H_{15}ClO_5$ 238.667
 Mp 107-108°. [α]_D²⁰ +4 (c, 1.0 in MeOH).
 Beaupere, D. *et al.*, *J. Carbohydr. Chem.*, 1989, **8**, 159 (*synth*, *L-form*, α -L-fur isopropylidene, *pmr*, *cmr*)

1'-Chloro-1'-deoxysucrose**C-104**

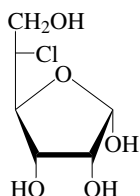
$C_{12}H_{21}ClO_{10}$ 360.745
 $[\alpha]_D^{25} +57.8$ (c, 0.7 in H_2O).

Hepta-Ac:

$C_{26}H_{35}ClO_{17}$ 655.005

Syrup. $[\alpha]_D^{25} +55$ (c, 1.2 in $CHCl_3$).

Khan, R. *et al.*, *Carbohydr. Res.*, 1980, **78**, 173
 (synth, pmr, ms)

5-Chloro-5-deoxytalose**C-105** β -L-Furanose-form

$C_6H_{11}ClO_5$ 198.603

D-form [124729-12-0]
 Syrup.

 β -L-Furanose-form

1,2-O-Isopropylidene, 3-benzoyl, 6-Ac: 6-O-Acetyl-3-O-benzoyl-5-chloro-5-deoxy-1,2-O-isopropylidene- β -L-talofuranose
 [131289-38-8]

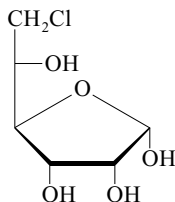
$C_{18}H_{21}ClO_7$ 384.812

Syrup. $[\alpha]_D^{25} +66$ (c, 0.8 in Me_2CO).

Pat. Coop. Treaty (WIPO), 1989, 89 07 602;

CA, **112**, 99132k (D-form)

Lee, C.K. *et al.*, *Carbohydr. Res.*, 1990, **205**, 203
 (β -L-fur deriv)

6-Chloro-6-deoxytalose**C-106**

$C_6H_{11}ClO_5$ 198.603

 β -L-Furanose-form

1,2-O-Isopropylidene: [131289-41-3]

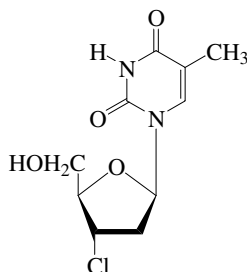
$C_9H_{15}ClO_5$ 238.667

Cryst. Mp 146-148°. $[\alpha]_D^{25} +74$ (c, 0.15 in EtOH).

Lee, C.K. *et al.*, *Carbohydr. Res.*, 1990, **205**, 203
 (isopropylidene, pmr)

3'-Chloro-3'-deoxythymidine, 9CI

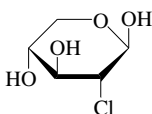
[25526-94-7]



$C_{10}H_{13}ClN_2O_4$ 260.676

Cryst. (Me_2CO /hexane). Mp 181-182°.

Verheyden, J.P.H. *et al.*, *J.O.C.*, 1972, **27**,
 2289-2299 (synth, uv)

2-Chloro-2-deoxyxylose**C-108** β -D-Pyranose-form

$C_5H_9ClO_4$ 168.576

D-Pyranose-form [29217-64-9]

Syrup. $[\alpha]_D^{25} +103.5 \rightarrow 0$ (equilib.) (c, 1.0 in MeOH).

3,4-Di-Ac: 3,4-Di-O-acetyl-2-chloro-2-deoxy-D-xylopyranose

$C_9H_{13}ClO_6$ 252.651

Mp 126°. $[\alpha]_D^{25} +49.9$ ($CHCl_3$).

 β -D-Pyranose-form

Me glycoside: Methyl 2-chloro-2-deoxy- β -D-xylopyranoside
 [29217-63-8]

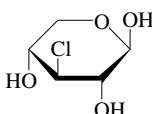
$C_6H_{11}ClO_4$ 182.603

Cryst. ($CHCl_3$ /petrol). Mp 136-137°.

$[\alpha]_D^{25} -21$ (c, 1.5 in MeOH).

Gakhokidze, A.M. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1945, **15**, 530; *CA*, **40**, 4673 (di-Ac)

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1970, **48**,
 1834 (β -Me gly)

3-Chloro-3-deoxyxylose**C-109** β -D-Pyranose-form

$C_5H_9ClO_4$ 168.576

 β -D-Pyranose-form

Me glycoside: Methyl 3-chloro-3-deoxy- β -D-xylopyranoside
 [18417-47-5]

$C_6H_{11}ClO_4$ 182.603

Syrup. Bp_{0.008} 135-140°. $[\alpha]_D^{25} -24.3$ ($CHCl_3$).

Me glycoside, di-Ac: Methyl 2,4-di-O-acetyl-3-chloro-3-deoxy- β -D-xylopyranoside
 [18417-48-6]

$C_{10}H_{15}ClO_6$ 266.678

Cryst. (EtOH aq.). Mp 116-117°.
 $[\alpha]_D^{25} -50$ (c, 1.2 in $CHCl_3$).

 α -D-Furanose-form

Me glycoside, 5-trityl: Methyl 3-chloro-3-deoxy-5-O-trityl- β -D-xylopyranoside
 [40147-76-0]

$C_{25}H_{25}ClO_4$ 424.923

Oil.

Me glycoside, 5-trityl, 2-(4-nitrobenzoyl):
 [40147-77-1]

Cryst. Mp 169-171°. $[\alpha]_D^{25} +90$ (c, 1.0 in $CHCl_3$).

 β -D-Furanose-form

Me glycoside, 5-trityl: Methyl 3-chloro-3-deoxy-5-O-trityl- β -D-xylofuranoside
 [40147-71-5]

$C_{25}H_{25}ClO_4$ 424.923

Glass.

Me glycoside, 5-trityl, 2-benzoyl: Methyl 2-O-benzoyl-3-chloro-3-deoxy-5-O-trityl- β -D-xylofuranoside
 [40147-72-6]

$C_{32}H_{29}ClO_5$ 529.031

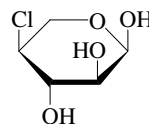
Cryst. (C_6H_6 /Et₂O/petrol). Mp 163-165°. $[\alpha]_D^{25} -10$ (c, 1.0 in $CHCl_3$).

Allerton, R. *et al.*, *J.C.S.*, 1951, 1480 (*Me pyr*)

Ali, S.S. *et al.*, *Carbohydr. Res.*, 1967, **5**, 118

(*Me pyr*)

Jenkins, S.R. *et al.*, *Carbohydr. Res.*, 1973, **26**,
 71 (*Me fur, pmr*)

4-Chloro-4-deoxyxylose**C-110** α -L-Pyranose-form

$C_5H_9ClO_4$ 168.576

 α -L-Pyranose-form

Me glycoside, 2-mesyl: Methyl 4-chloro-4-deoxy-2-O-mesyl- α -L-xylopyranoside
 [18417-51-1]

$C_7H_{13}ClO_6S$ 260.695

Cryst. (MeOH). Mp 119-120°. $[\alpha]_D^{25} -74$ (c, 3.25 in $CHCl_3$).

Me glycoside, 2-mesyl, 3-chlorosulfate:

[18417-50-0]

$C_7H_{12}Cl_2O_8S_2$ 359.204

Cryst. (MeOH). Mp 99-100°. $[\alpha]_D^{25} -38$ (c, 5.4 in $CHCl_3$).

Me glycoside, 2,3-anhydro: Methyl 2,3-anhydro-4-chloro-4-deoxy- α -L-xylopyranoside

$C_6H_9ClO_3$ 164.588

Syrup. Bp₁₅ 40°. $[\alpha]_D^{25} -84$ (c, 4.2 in $CHCl_3$).

 β -L-Pyranose-form

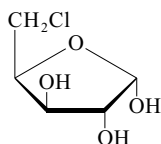
Mp 128-131°. $[\alpha]_D^{25} +57 \rightarrow 0$ (MeOH).

Jones, J.K.N. *et al.*, *Can. J. Chem.*, 1959, **37**,
 1412; 1960, **38**, 1122 (β -L-pyr)

Ali, S.S. *et al.*, *Carbohydr. Res.*, 1967, **5**, 118,
 (α -L-pyr deriv, ir)

5-Chloro-5-deoxyxylose

C-111

 α -D-Furanose-formC₅H₉ClO₄ 168.576 **α -D-Furanose-form**

1,2-O-Isopropylidene: [105953-29-5]

C₈H₁₃ClO₄ 208.641

Cryst. (diisopropyl ether/petrol). Mp 93-94° (91-92°).

1,2-O-Isopropylidene, 3-Ac: [61207-43-0]

C₁₀H₁₅ClO₅ 250.678

Syrup.

1,2-O-Isopropylidene, 3-mesyl:

[105953-28-4]

C₉H₁₅ClO₆S 286.733

Cryst. (diisopropyl ether). Mp 68-69°.

[α]_D -77 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, 3-chlorosulfate:

C₈H₁₂Cl₂O₆S 307.151Cryst. Mp 96.5-97.5° (Et₂O/petrol).[α]_D -76 (c, 1.76 in CHCl₃).*Me glycoside: Methyl 5-chloro-5-deoxy- α -D-xylofuranoside*C₆H₁₁ClO₄ 182.603Cryst. Mp 73.5-74°. [α]_D +24 (c, 1.0 in MeOH).*Me glycoside, di-Ac: [56570-74-2]*C₁₀H₁₅ClO₆ 266.678

Oil.

*Me glycoside, dichlorosulfate:*C₆H₉Cl₃O₈S₂ 379.622Cryst. Mp 73.5-74.5°. [α]_D -15 (c, 1.0 in CHCl₃). **β -D-Furanose-form**

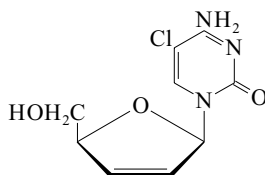
1,2-Di-Ac, 3-chlorosulfate:

C₉H₁₂Cl₂O₈S 351.16Cryst. (Et₂O/petrol). Mp 81.5-82°.[α]_D -105 (c, 1.2 in CHCl₃).*Me glycoside: Methyl 5-chloro-5-deoxy- β -D-xylofuranoside*C₆H₁₁ClO₄ 182.603Syrup. [α]_D -102 (c, 1.0 in MeOH).*Me glycoside, di-Ac: [56570-75-3]*C₁₀H₁₅ClO₆ 266.678

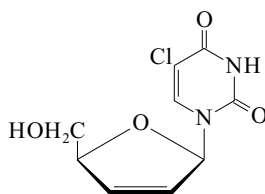
Oil.

Achmatowicz, B. *et al.*, *Carbohydr. Res.*, 1974, **36**, C14 (α -Me fur, β -Me fur, dichlorosulfate)Hollenberg, D.H. *et al.*, *Carbohydr. Res.*, 1975, **42**, 241 (*di-Ac*, *pmr*)Hughes, N.A. *et al.*, *J.C.S. Perkin I*, 1986, 695 (*isopropylidene*)Naidoo, N.T. *et al.*, *S. Afr. J. Chem.*, 1986, **39**, 208; 1987, **40**, 100 (*3-chlorosulfate*, *ir*, *pmr*, *ms*)**5-Chloro-2',3'-didehydro-2',3'-dideoxycytidine, 9CI**

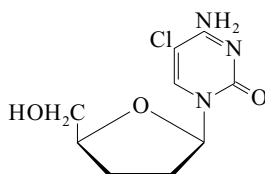
[124743-30-2]

C₉H₁₀ClN₃O₃ 243.649Cryst. (MeOH/Et₂O). Mp 144-145°.Van Aerschot, A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1833 (*synth*, *uv*, *pmr*, *cmr*, *ms*)**5-Chloro-2',3'-didehydro-2',3'-dideoxyuridine, 9CI**

[120815-05-6]

C₉H₉ClN₂O₄ 244.634Cryst. (MeOH/Et₂O). Mp 140-142° dec.Van Aerschot, A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1833 (*synth*, *uv*, *ms*, *pmr*, *cmr*)**5-Chloro-2',3'-dideoxycytidine, 9CI**

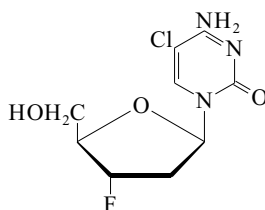
[124743-31-3]

C₉H₁₂ClN₃O₃ 245.665

Cryst. Mp 172°.

Van Aerschot, A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1833 (*synth*, *uv*, *pmr*, *ms*, *cmr*)**5-Chloro-2',3'-dideoxy-3'-fluorocytidine, 9CI**

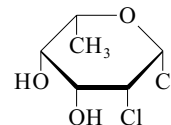
[127492-32-4]

C₉H₁₁ClFN₃O₃ 263.655Cryst. (MeOH/Me₂CO). Mp 184-185°.Van Aerschot, A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1833 (*synth*, *uv*, *pmr*, *cmr*, *ms*)

C-112

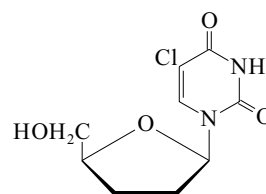
2-Chloro-2,6-dideoxytalopyranosyl chloride

C-116

C₆H₁₀Cl₂O₃ 201.049 **β -L-form***Di-Ac: 3,4-Di-O-acetyl-2-chloro-2,6-dideoxy- β -L-talopyranosyl chloride* [103321-23-9]C₁₀H₁₄Cl₂O₅ 285.123Syrup. [α]_D²⁵ +4 (c, 0.4 in CH₂Cl₂).Horton, D. *et al.*, *J.O.C.*, 1986, **51**, 3479, (*di-Ac*, *ir*, *ms*, *pmr*, *cmr*)**5-Chloro-2',3'-dideoxyuridine, 9CI**

C-117

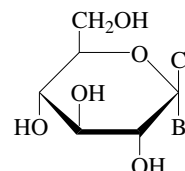
[127592-40-9]

C₉H₁₁ClN₂O₄ 246.65

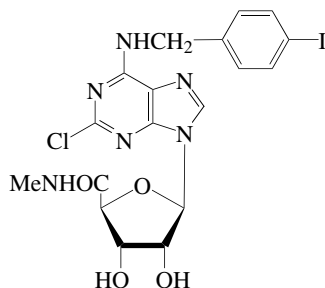
Cryst. Mp 154-155° dec.

Van Aerschot, A. *et al.*, *J. Med. Chem.*, 1990, **33**, 1833 (*synth*, *uv*, *ms*, *pmr*, *cmr*)**1-C-Chloroglucopyranosyl bromide, 9CI**

C-118

C₆H₁₀BrClO₅ 277.499 **α -D-Pyranose-form***Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1-C-chloro- α -D-glucopyranosyl bromide* [112290-59-2]C₁₄H₁₈BrClO₉ 445.648[α]_D²⁰ +136 (c, 1.4 in Me₂CO).Praly, J.P. *et al.*, *Tetrahedron*, 1989, **45**, 4141

1-[2-Chloro-6-[[3-iodophenyl)methyl]amino]-9H-purin-9-yl]-1-deoxy-N-methyl-β-D-ribofuranuramide, 9CI
 2-Chloro-N⁶-(3-iodobenzyl)adenosine-5'-N-methyluronamide. 2-Chloro-1B-MECA
 [163042-96-4]

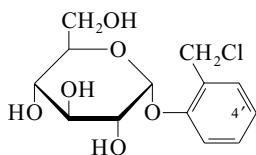


C₁₈H₁₈ClIN₆O₄ 544.735
 Adenosine A₃-receptor agonist. Solid. Mp 206-207°.

Dibenzoyl: [163042-90-8]
 Foam.

Kim, H.O. *et al.*, *J. Med. Chem.*, 1994, **37**, 3614-3621 (*synth*, *pmr*, *pharmacol*, *sar*)
 Jacobson, K.A. *et al.*, *J. Med. Chem.*, 1995, **38**, 1720-1735 (*pharmacol*)
Pat. Coop. Treaty (WIPO), 1995, 95 02 604, (US Dept Health and Human Services); *CA*, **123**, 257265q (*synth*, *pharmacol*)

[2-(Chloromethyl)phenyl] glucopyranoside C-120



C₁₃H₁₇ClO₆ 304.726

α-D-form [143836-15-1]
 Mp 104-106° dec. [α]_D +192 (c, 1.0 in MeOH).

4'-Nitro: (2-Chloromethyl-4-nitrophenyl) α-D-glucopyranoside
 [143836-10-6]

C₁₃H₁₆ClNO₈ 349.724

Inhibitor of yeast α-glucosidase. Mp 133-135°. [α]_D +220 (c, 0.3 in MeOH).

6'-Nitro: (2-Chloromethyl-6-nitrophenyl) α-D-glucopyranoside
 [161767-43-7]

C₁₃H₁₆ClNO₈ 349.724

[α]_D -5.3 (c, 3.6 in H₂O).

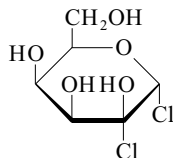
6'-Nitro, tetra-Ac: [161767-45-9]

C₂₁H₂₄ClNO₁₂ 517.873

Mp 100-101°.

Briggs, J.C. *et al.*, *J.C.S. Perkin 1*, 1995, 27 (*synth*, *pmr*)

2-C-Chlorotalopyranosyl chloride



C₆H₁₀Cl₂O₅ 233.047

α-D-form

Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl-2-C-chloro-α-D-talopyranosyl chloride
 [55628-80-3]

C₃₄H₂₆Cl₂O₉ 649.479

Syrup. [α]_D²⁵ +85.5 (c, 8.5 in CHCl₃).

Lundt, I. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 70 (*tetrabenzoyl*, *cmr*, *pmr*)

2-Chloro-9H-thioxanthen-9-one, 9CI

2-Chlorothioxanthone
 [86-39-5]

C₁₃H₇ClOS 246.716

Yellow solid, pale yellow needles (AcOH or EtOH). Mp 152-153° (142°).

S,S-Dioxide:

C₁₃H₇ClO₃S 278.715

Mp 230° (222°).

Aldrich Library of NMR Spectra, 2nd edn., 1983, **2**, 96D (*nmr*)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 92C (*ir*)

Ullman, F. *et al.*, *Ber.*, 1905, **38**, 740 (*synth*)

Gilman, H. *et al.*, *J.O.C.*, 1959, **24**, 1914 (*synth*, *ir*, *dioxide*)

Okabashi, I. *et al.*, *Yakugaku Zasshi*, 1969, **89**, 112 (*synth*)

Chu, S.S.C. *et al.*, *Acta Cryst. B*, 1976, **32**, 2248 (*cryst struct*)

Terney, A.L. *et al.*, *J. Het. Chem.*, 1986, **23**, 1879 (*pmr*, *cmr*)

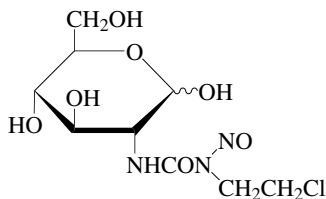
Carmichael, I. *et al.*, *J. Phys. Chem., Ref. Data*, 1986, **15**, 1 (rev, uv)

Harwood, J.S. *et al.*, *J.C.S. Perkin 2*, 1989, 325 (*cmr*)

Chlorozotocin C-123

2-[[[(2-Chloroethyl)nitrosoamino]carbonyl]amino]-2-deoxyglucose, 9CI.

2-[3-(2-Chloroethyl)-3-nitrosoureido]-2-deoxyglucopyranose
 [54749-90-5]



C₉H₁₆ClN₃O₇ 313.694

Antineoplastic agent. Cryst. (EtOH). Mp 140-141° dec.

► Probable human carcinogen (IARC 2A).

Burns, H. *et al.*, *Org. Prep. Proced. Int.*, 1974, **6**, 259-263 (*synth*)

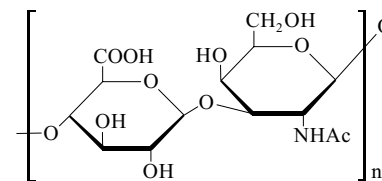
C-121

Anderson, T. *et al.*, *Cancer Res.*, 1975, **35**, 761-765 (*pharmacol*)
 Johnston, T.P. *et al.*, *J. Med. Chem.*, 1975, **18**, 104-106 (*synth*, *ir*, *pmr*, *pharmacol*)
 Wong, K.H. *et al.*, *Cancer Res.*, 1989, **49**, 6169-6173 (*pharmacol*)

Chondroitin

[9007-27-6]

C-124



Some sulfate ester groups are present.

Found in amniotic fluid, aorta, leucocytes, cornea, placenta (but decreasing with term) and urine. A good source is bovine cornea.
 [α]_D -37 (H₂O).

[9007-28-7]

Hoffman, P. *et al.*, *Biochim. Biophys. Acta*, 1958, **30**, 184

Schubert, M. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 109 (*isol*)

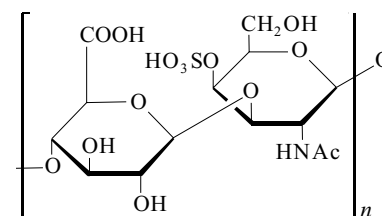
Jeanloz, R.W. *et al.*, *The Carbohydrates*, 1970, **2**, 597 (*isol*)

Kobayashi, S. *et al.*, *J.A.C.S.*, 2003, **125**, 14357-14369 (*synth*)

Chondroitin sulfate

Chondroitinsulfuric acid

C-125



C₁₄H₂₁NO₁₄S 459.384

Mucopolysaccharides containing D-Glucuronic acid and sulphated N-Acetyl-D-galactosamine. MW = 20,000-50,000. Polymeric. Minimum formula given. Type A (illus.) is the 4-sulfate and type C is the 6-sulfate. Main source human cartilage and aorta (type A), heart valves (type C). Component of the heparinoid danaparoid. Used in the treatment of ischaemic heart disease, osteoporosis and hyperlipidaemias. Also used as an adjunct to ocular surgery. Shows antiviral activity against tobacco mosaic virus. [α]_D -26 (H₂O) (type A). [α]_D -12 (H₂O) (type B).

► Exp. teratogen.

Na salt: **Chondroitin sulfate sodium, JAN**
 [39455-18-0]

[9082-07-9, 12678-07-8, 24967-93-9, 25322-46-7]

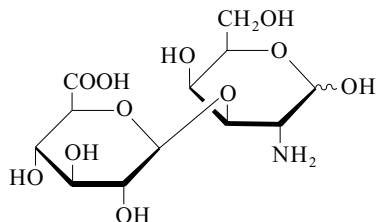
Jeanloz, R.W. *et al.*, *Methods Carbohydr. Chem.*, 1972, **5**, 110 (*prep*)

Brewer, C.F. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1975, **72**, 3421 (*cmr*)

Hamer, G. *et al.*, *Carbohydr. Res.*, 1976, **49**, 37 (*pmr*)

- Lindahl, U. *et al.*, *Annu. Rev. Biochem.*, 1978, **47**, 385
 Carr, S.A. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 381-401 (ms)
 Probst, L.E. *et al.*, *J. Cataract. Refract. Surgery*, 1994, **20**, 145 (use)
 Sano, Y. *et al.*, *Carbohydr. Polym.*, 1997, **33**, 125-129 (activity)
 Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 1562
 Yeung, B.K.S. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 799-865 (rev, synth)

Chondrosine **C-126**
 2-Amino-2-deoxy-3-O-β-D-glucopyranuronosyl-D-galactose, 9CI
 [499-14-9]

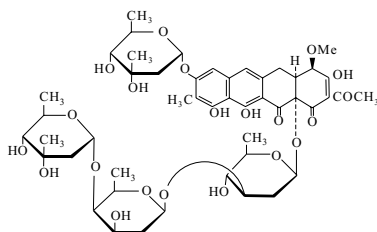


$C_{12}H_{21}NO_{11}$ 355.298
 Disaccharide unit of chondroitin 4-sulphate and 6-sulphate. Cryst. (EtOH). $[\alpha]_D^{20} +39$ (c, 1.0 in H_2O). Darkens at 185° but does not melt.

Me ester:

$C_{13}H_{23}NO_{11}$ 369.325
 Cryst. (EtOH) as hydrochloride. Mp $159-161^\circ$. $[\alpha]_D^{23} +42$ (c, 2.0 in H_2O).
 Davidson, E.A. *et al.*, *J.A.C.S.*, 1954, **76**, 5686 (isol)
 Takanashi, S. *et al.*, *J.A.C.S.*, 1962, **84**, 3029 (synth)
 Senma, M. *et al.*, *Chem. Lett.*, 1974, 1415 (abs config)

Chromocyclomycin **C-127**
 [21509-80-8]



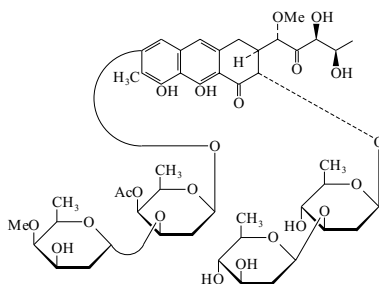
$C_{48}H_{64}O_{21}$ 977.021
 Belongs to Chromomycin family of antibiotics. Metab. of a *Streptomyces* sp. LA-7017 and *Streptomyces atroolivaceus*. Shows antitumour activity. Cryst. (Me_2CO). Sol. EtOAc, $CHCl_3$, MeOH; poorly sol. hexane, H_2O . Mp $196-198^\circ$. $[\alpha]_D^{27} -209$ (1.5 min) $\rightarrow +21$ (8h) (c, 0.3 in Py). λ_{max} 229 (ε 34670); 283 (ε 55000); 322 (ε 16200); 335 (ε 13500); 420 (ε 10500) (EtOH) (Berdy).

Aglycone: Chromocycline

[25312-41-8]
 $C_{22}H_{20}O_9$ 428.395
 Shows weak antibacterial activity. Cryst.

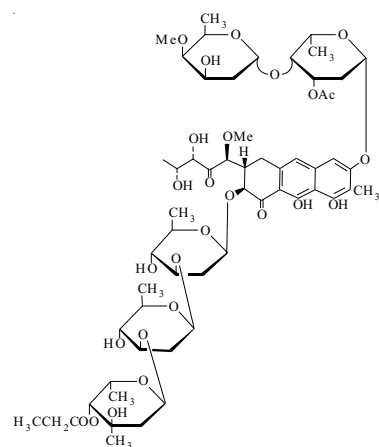
(MeCN). Mp $226-228^\circ$. $[\alpha]_D^{27} -350$ (1.5 min) $\rightarrow -109$ (1h) (c, 0.3 in Py).
 Berlin, Yu.A. *et al.*, *Khim. Priro. Soedin.*, 1973, **9**, 532; 504; *Chem. Nat. Compd. (Engl. Transl.)*, 1973, **9**, 498; 504 (struct, pmr, ord)
 Stajner, K. *et al.*, *Folia Microbiol. (Prague)*, 1974, **19**, 498 (isol)

Chromomycin A₄ **C-128**
 7-Methylolivomycin D, 9CI. Aburamycin D
 [7198-11-0]



$C_{48}H_{68}O_{22}$ 997.052
 Prod. by *Streptomyces griseus* ATCC13273 and by part. hydrol. of Chromomycin A₃. Antineoplastic antibiotic. Yellow powder + H_2O . Sol. MeOH, Me_2CO , EtOAc; poorly sol. hexane. $[\alpha]_D^{21} -47$ (c, 1.0 in EtOH). λ_{max} 230 (ε 18600); 279 (ε 46770); 318 (ε 7080); 332 (ε 5890); 415 (ε 8510) (EtOH) (Berdy).
 ▶ LD₅₀ (mus, ivn) 1.5 mg/kg. GB7876000
 Miyamoto, M. *et al.*, *Tet. Lett.*, 1966, 545 (struct)
 Berlin, Yu.A. *et al.*, *Tet. Lett.*, 1966, 1643 (struct)
 Berlin, Yu.A. *et al.*, *Nature (London)*, 1968, **218**, 193

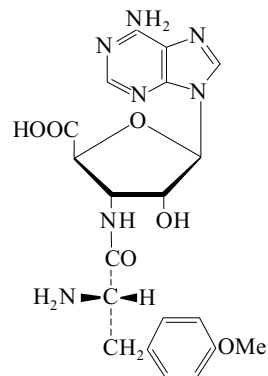
Chromomycin A_p **C-129**
 [64967-61-9]



$C_{58}H_{84}O_{26}$ 1197.286
 Chromomycin-type antibiotic. Isol. from *Streptomyces griseus*. Antibacterial and anticancer agent. Sol. MeOH, $CHCl_3$, THF, dioxan; fairly sol. Et₂O, phenol; poorly sol. hexane, CS₂, CCl₄. λ_{max} 230 (ε 24600); 279 (ε 51300); 318 (ε 8100); 332 (ε 6920); 413 (ε 9780) (EtOH) (Berdy).

▶ LD₅₀ (mus, ipr) 1 - 1.5 mg/kg. RK4385100
 Japan. Pat., 1977, 77 102 202; CA, **88**, 49002h (isol)

Chrysandin **C-130**
 Antibiotic FR 48736. Antibiotic WF 4629. FR 48736. WF 4629
 [86936-90-5]

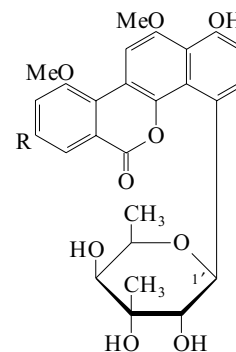


$C_{20}H_{23}N_7O_6$ 457.445
 Nucleoside antibiotic. Isol. from *Chrysosporium pannorum*. Antifungal, antibacterial agent. Sol. H_2O , MeOH; poorly sol. Me_2CO , $CHCl_3$. Log P -3.66 (calc). λ_{max} 258 (ε 30600) (0.1M HCl) (Derep). λ_{max} 260 (ε 33400) (0.1M NaOH) (Derep). λ_{max} 260 (ε 32500) (H_2O) (Derep). λ_{max} 260 (E1%/1cm 730) (MeOH) (Berdy). λ_{max} (H_2O) (Berdy). λ_{max} (HCl) (Berdy). λ_{max} 260 (ε 34300) (NaOH) (Berdy).
 ▶ LD₅₀ (mus, ipr) 1000 - 3000 mg/kg.

Hydrochloride (1:2): [86936-92-7]
 Needles + H_2O (0.1M HCl). Mp $215-233^\circ$ dec. $[\alpha]_D^{22} +34$ (c, 1 in 1M HCl).

▶ VJ2247250
 Yamashita, M. *et al.*, *J. Antibiot.*, 1984, **37**, 1279; 1284 (isol, ir, pmr, props, synth)
 Yamashita, M. *et al.*, *Tet. Lett.*, 1984, **25**, 4689
 Komori, T. *et al.*, *J. Antibiot.*, 1985, **38**, 1182 (synth, props)
 Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Chrysomycin A **C-131**
 Chrysomycin V. Virenomycin V
 [82196-88-1]



R = CH=CH₂

C₂₈H₂₈O₉ 508.524

C-Glycoside antibiotic. Identity of Chrysomycin A and Virenomyacin V not conclusively establ. (sugar stereochem. not fully clear). Props. are similar. From *Streptomyces* sp. A-419 and *Streptomyces vires*. Active against gram-positive bacteria and bacteriophages. Weakly active against gram-negative bacteria and some fungi. Greenish-yellow needles or yellow cryst. Mp 240° subl Mp 255-260° dec. $[\alpha]_D^{22} +16$ (c, 1 in AcOH). $[\alpha]_D^{20} +12.5$ (c, 0.24 in AcOH).

Tri-Ac: Mp 311-312°. λ_{\max} 217 ; 251 ; 265 ; 307 ; 325 ; 337 ; 392 (CHCl₃).

1'-Epimer: *Albacarcin V*

[92841-46-8]

C₂₈H₂₈O₉ 508.524

Isol. from *Streptomyces albadumcas*. Antitumour and antibacterial substance. Sol. MeOH, EtOAc; poorly sol. H₂O, hexane. λ_{\max} 246 (ε 33259); 286 (ε 33970); 392 (ε 7272) (MeOH) (Berdy).

[1403-38-9, 83138-95-8]

Asheshov, I.N. *et al.*, *Antibiot. Chemother.* (Washington, D.C.), 1954, **4**, 380

Strelitz, F. *et al.*, *J. Bacteriol.*, 1955, **69**, 280 (isol)

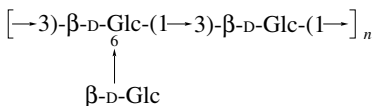
Gauze, G.F. *et al.*, *Antibiotiki (Moscow)*, 1977, **22**, 963 (isol)

Brazhnikova, M.G. *et al.*, *Antibiotiki (Moscow)*, 1977, **22**, 967 (props)

Kudinova, M.K. *et al.*, *Antibiotiki (Moscow)*, 1982, **27**, 507 (isol)

Weiss, U. *et al.*, *J. Antibiot.*, 1982, **35**, 1194 (struct)

U.S. Pat., 1984, 4 461 831; CA, **102**, 4456 (*Albacarcin V*)

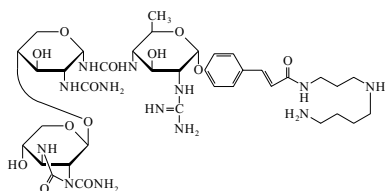
Cinerean**C-132**

MW 50,000-200,000. Extracellular glucan prod. by *Botrytis cinerea*.

Stahmann, K.P. *et al.*, *Carbohydr. Res.*, 1995, **266**, 115-128 (isol, struct)

Cinodine I, 9CI**C-133**

Glycocinnaspermicidin B. Antibiotic *BM 123_{γ1}*. *BM 123_{γ1}*. Antibiotic *LL-BM 123_{γ1}*. *LL-BM 123_{γ1}* [60830-76-4]

C₃₇H₅₉N₁₃O₁₃ 893.952

Glycolipid antibiotic. Isol. from *Nocardia* spp. Active against gram-positive and -negative bacteria and exp. infections in mice. DNA gyrase inhibitor. Sol. H₂O; fairly sol. MeOH; poorly sol. Et₂O,

hexane, butanol. λ_{\max} 286 (ε 22500) (H₂O) (Derep). λ_{\max} 286 (E1%/1cm 225) (MeOH) (Berdy).

► LD₅₀ (mus, scu) 88 mg/kg. GE3753000

Hydrochloride: *Cinodine hydrochloride*. CL 98984

[68782-58-1]

Amorph. powder. $[\alpha]_D^{25} +55$ (c, 0.8 in H₂O). Dec. at ca. 200°.

Tresner, H. *et al.*, *J. Antibiot.*, 1978, **31**, 394-397 (isol)

Martin, J.H. *et al.*, *J. Antibiot.*, 1978, **31**, 398-404 (isol, props)

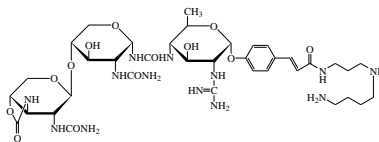
Ellestad, G.A. *et al.*, *J.A.C.S.*, 1978, **100**, 2515-2524 (struct)

Chiu, S.H.L. *et al.*, *J. Antibiot.*, 1984, **37**, 1000-1006; 1079-1081 (biosynth, cmr)

Osborne, M.S. *et al.*, *Antimicrob. Agents Chemother.*, 1990, **34**, 1450-1452 (activity)

Cinodine II, 9CI**C-134**

LL-BM 123_{γ2}. Antibiotic *LL-BM 123_{γ2}*. *BM 123_{γ2}*. Antibiotic *BM 123_{γ2}*. *Glycocinnaspermicidin C* [60830-75-3]

C₃₇H₅₉N₁₃O₁₃ 893.952

Glycolipid antibiotic. Isol. from *Nocardia* sp. Active against gram-positive and -negative bacteria and exp. infections in mice. Amorph. powder (as hydrochloride). Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. Mp 200° dec. (hydrochloride). $[\alpha]_D^{25} +60$ (c, 0.85 in H₂O). λ_{\max} 286 (ε 22500) (H₂O) (Derep). λ_{\max} 286 (E1%/1cm 220) (MeOH) (Berdy). λ_{\max} 286 (E1%/1cm 220) (HCl) (Berdy). λ_{\max} 286 (E1%/1cm 220) (NaOH) (Berdy).

► CB9626010

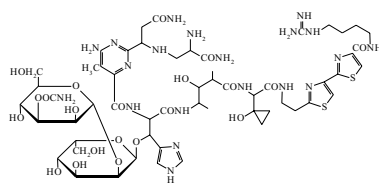
Ellestad, G.A. *et al.*, *J.A.C.S.*, 1978, **100**, 2515 (struct)

U.S. Pat., 1979, 4 154 925; CA, **91**, 138848t (manuf)

Chiu, S.H.L. *et al.*, *J. Antibiot.*, 1984, **37**, 1000; 1079 (biosynth)

Cleomycin B₂**C-135**

[76741-88-3]



Peptide antibiotic. Isol. from *Streptomyces verticillus*. Active against gram-positive and -negative bacteria and tumours. Sol. H₂O. Occurs complexed with Cu. λ_{\max} 244 ; 294 (MeOH) (Berdy).

Hydrochloride:

Pale-yellow amorph. powder. Mp 185-188° dec.

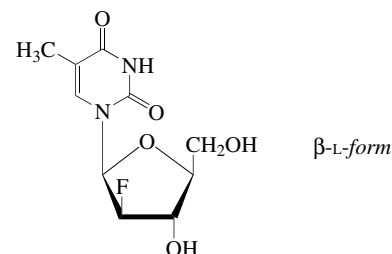
Cu complex; hydrochloride:

Blue powder. Mp 197-201°.

Umezawa, H. *et al.*, *J. Antibiot.*, 1980, **33**, 1079 (struct, nmr)

Clevudine, INN, USAN**C-136**

1-(2-Deoxy-2-fluoroarabinofuranosyl)-5-methyl-2,4(1H,3H)-pyrimidinedione, 9CI. 1-(2-Deoxy-2-fluoroarabinofuranosyl)thymine. 2'-Fluoro-5-methylarabinofuranosyluracil. FMAU

C₁₀H₁₃FN₂O₅ 260.222

Strictly, the name Clevudine refers to the β-L-form. Antiviral agent for hepatitis B virus and Epstein-Barr virus.

Clin. trial discontinued due to neurotoxic effects

β-D-form

β-FMAU. D-FMAU

[69256-17-3] Antiviral agent with antineoplastic activity *in vitro*.

Cryst. (H₂O). Mp 187-188°.

β-L-form

L-FMAU

[163252-36-6]

Cryst. (MeOH/CHCl₃). Mp 184-185°.

$[\alpha]_D^{25} -111.77$ (c, 0.23 in MeOH).

► Lacks toxicity profile associated with β-D-form.

[97672-34-9, 172494-45-0]

Watanabe, K.A. *et al.*, *J. Med. Chem.*, 1979, **22**, 21-24; 1983, **26**, 152-156 (β-D-form, synth, biochem)

Philips, F.S. *et al.*, *Cancer Res.*, 1983, **43**, 3619-3627 (β-D-form, pharmacol)

Feinberg, A. *et al.*, *Drug Metab. Dispos.*, 1984, **12**, 784-786 (β-D-form, metab)

Tann, C.H. *et al.*, *J.O.C.*, 1986, **50**, 3644-3647 (β-D-form, synth, ir, pmr)

Chou, T.C. *et al.*, *Antimicrob. Agents Chemother.*, 1987, **31**, 1355-1358 (β-D-form, biochem)

Abbruzzese, J.L. *et al.*, *Invest. New Drugs*, 1989, **7**, 195-201 (β-D-form, use, tox)

Watanabe, K.A. *et al.*, *Carbohydr. Res.*, 1991, **216**, 1-9 (β-D-form, pmr)

Chu, C.K. *et al.*, *Antimicrob. Agents Chemother.*, 1995, **39**, 979-981 (synth, activity, clevudine)

Pat. Coop. Treaty (WIPO), 1995, 95 20 595, (Univ. of Georgia Res. Found.); CA, **124**, 56575n (synth, pharmacol)

Yao, G.-Q. *et al.*, *Biochem. Pharmacol.*, 1996, **51**, 941-947 (pharmacol)

Wright, J.D. *et al.*, *Biopharm. Drug Dispos.*, 1996, **17**, 197-207 (pharmacokinetic)

Ma, T. *et al.*, *J. Med. Chem.*, 1996, **39**, 2835-2843 (synth, pmr, uv, pharmacol)

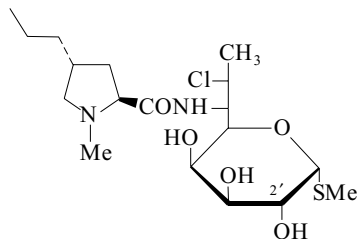
Aguesse-Germon, S. *et al.*, *Antimicrob. Agents Chemother.*, 1998, **42**, 369-376 (activity)

Liu, S.-H. *et al.*, *Antimicrob. Agents Chemother.*, 1998, **42**, 833-839 (pharmacol)

Chu, C.K. *et al.*, *Drugs of the Future*, 1998, **23**, 821-826 (rev)

Clindamycin, BAN, INN, JAN, USAN

7-Chloro-7-deoxylincomycin. *Aclinda*. *Basocin*. *Cleocin*. *Cleocin T*. *Clinda*. *ClindaDerm*. *ClindaHexal*. *Clindatech*. *Clinimycin*†. *CIT/S*. *Dalacin C*. *Dalacin T*. *Klindamycin*. *Klinicin*. *Lanacine*. *Sobelin*. *Turimycin*. U 21251. Antibiotic U 21251. Many other names [18323-44-9]



$C_{18}H_{33}ClN_2O_5S$ 424.988
Semisynthetic. Broad spectrum antibiotic. Used in the treatment of acne. Marketed drug. Approved for pharmaceutical use 1992[α]_D +214 (CHCl₃). Log P 1.02 (uncertain value) (calc).

- Gastrointestinal disturbances, hypersensitivity reactions and hepatic effects reported when used therapeutically. LD₅₀ (rat, scu) 2618 mg/kg. RH6300000

Hydrochloride: **Clindamycin hydrochloride**, *USAN*. *Dalactine*

[21462-39-5]

Cryst. (EtOH/EtOAc). Mp 141-143°. [α]_D +144 (H₂O).

- LD₅₀ (rat, orl) 2193 mg/kg. GF2275000

O²-Phosphate: **Clindamycin phosphate**, *USAN*. U 28508 [24729-96-2]

$C_{18}H_{34}ClN_2O_8PS$ 504.968
Mp 109-114°.

- Cardiotoxic effects reported when used intravenously. LD₅₀ (rat, scu) 3861 mg/kg; LD₅₀ (rat, orl) 1832 mg/kg. Exp. reprod. and teratogenic effects. GF2625000

2'-Hexadecanoate; *hydrochloride*: **Clindamycin palmitate hydrochloride**, *USAN* [25507-04-4]

- LD₅₀ (rat, scu) 2000 mg/kg.

4-Depropyl, 4-ethyl: **Clindamycin B** [18323-43-8]

$C_{17}H_{31}ClN_2O_5S$ 410.961
Semisynthetic.

[36688-78-5]

South African Pat., 1968, 67 06 645; *CA*, **71**, 13337 (*phosphate*)

Birkenmeyer, R.D. *et al.*, *J. Med. Chem.*, 1970, **13**, 616 (*synth*)

Ger. Pat., 1971, 2 125 112; *CA*, **76**, 46464 (*synth*)

Ninomiya, M. *et al.*, *J. Antibiot.*, 1973, **26**, 157

Yamanaka, Y. *et al.*, *Jpn. J. Antibiot.*, 1974, **27**, 32 (*pharmacol*, *phosphate*)

Brown, L.W. *et al.*, *Anal. Profiles Drug Subst.*, 1981, **10**, 75 (rev)

LeFrock, J.L. *et al.*, *Med. Clin. North Am.*, 1982, **66**, 103 (rev, *pharmacol*)

Polyak, M.S. *et al.*, *Antibiotiki (Moscow)*, 1984, **29**, 628 (rev)

Zambrano, D. *et al.*, *Clin. Ther.*, 1991, **13**, 58 (rev)

Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **3**, 162 (rev)

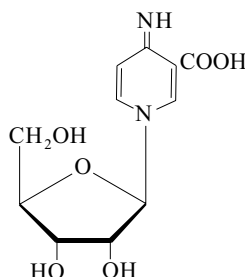
Martindale, The Extra Pharmacopoeia, 32nd edn., Pharmaceutical Press, 1999, 191

Bowden, K. *et al.*, *J. Serb. Chem. Soc.*, 2000, **65**, 691-694 (*synth*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, CMV675; CMV690

Clitidine

1,4-Dihydro-4-imino-1-β-D-ribofuranosyl-3-pyridinecarboxylic acid. *Chrytidine* [63592-84-7]



$C_{11}H_{14}N_2O_6$ 270.241

Constit. of the toxic mushroom *Clitocybe acromelalga*.

Mp 189-191° (monohydrate). [α]_D²⁴ -50.6 (c, 1.0 in H₂O). λ_{max} 267 (ε 14500) (H₂O at pH 2) (Derep). λ_{max} 271 (ε 15100) (H₂O at pH 12) (Derep). λ_{max} 271 (ε 12590) (H₂O) (Derep).

- Toxic.

5'-Phosphate: **Clitidine 5'-monophosphate**. *Clitidine 5'-mononucleotide*

[65411-71-4]

$C_{11}H_{15}N_2O_9P$ 350.221

Constit. of *Clitocybe acromelalga*.

[α]_D¹⁸ -43.5 (c, 0.4 in H₂O). λ_{max} 268 (log ε 4.31) (H₂O).

3',5'-Dibenzoyl: Mp 160-161°.

Konno, K. *et al.*, *Tet. Lett.*, 1977, 481 (*synth*, *struct*, *pmr*, *ms*)

Tono-oka, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1981, **54**, 212-216 (*synth*)

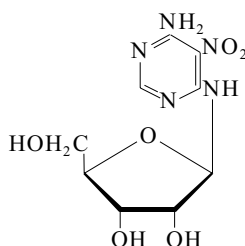
Konno, K. *et al.*, *Tetrahedron*, 1982, **38**, 3281 (*abs config*)

Yamano, K. *et al.*, *Phytochemistry*, 1994, **35**, 897-899 (5'-phosphate)

Shirahama, H. *et al.*, *Heterocycles*, 1998, **47**, 661-664 (*tautom*, *cryst struct*)

Clitocine

N-(6-Amino-5-nitro-4-pyrimidinyl)-β-D-ribofuranosylamine, 9CI. 6-Amino-5-nitro-4-imino-β-D-ribofuranosylpyrimidine [105798-74-1]



C-139

$C_9H_{13}N_5O_6$ 287.232

Nucleoside isol. from the mushroom

Clitocybe inversa. Insecticidal agent. Sol.

MeOH, EtOAc; poorly sol. cyclohexane.

Mp 228-230°. λ_{max} 255 (ε 7950); 330

(ε 2190) (EtOH) (Derep). λ_{max} 255

(ε 7450); 330 (ε 2190) (EtOH) (Berdy).

Kubo, I. *et al.*, *Tet. Lett.*, 1986, **27**, 4277 (*isol*, *uv*, *ir*, *pmr*, *cmr*, *ms*)

Larson, S.B. *et al.*, *Acta Cryst. C*, 1988, **44**, 1076 (*cryst struct*)

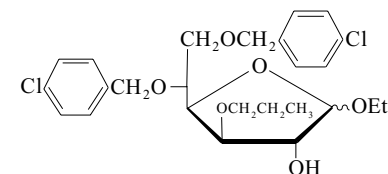
Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Kamikawa, T. *et al.*, *Chem. Comm.*, 1988, 195 (*synth*)

Palmer, C.F. *et al.*, *Tet. Lett.*, 1990, **31**, 279 (*synth*)

Clobenoside, INN

Ethyl 5,6-bis-O-(4-chlorobenzyl)-3-O-propyl β-D-glucopyranoside. *Ciba* 43853 [29899-95-4]



$C_{25}H_{32}Cl_2O_6$ 499.43

Antiinflammatory agent. Launched 1988.

Yellowish oil. Bp_{0.03} 220°. [α]_D²⁰ -24

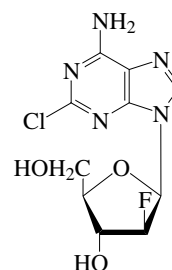
(c, 1.0 in CHCl₃). Log P 5.71 (calc).

U.K. Pat., 1971, 1 246 117; *CA*, **76**, 34536p (*synth*, *pharmacol*)

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 1355

Clofarabine

2-Chloro-9-(2-deoxy-2-fluoro-β-D-arabinofuranosyl)-9H-purin-6-amine, 9CI. 2-Chloro-9-(2-deoxy-2-fluoro-β-D-arabinofuranosyl)adenine [123318-82-1]



$C_{10}H_{11}ClFN_5O_3$ 303.68

Antineoplastic agent. Phase II trials

(2003). Cryst. (H₂O). Mp 225-226°.

Parker, W.B. *et al.*, *Cancer Res.*, 1991, **51**, 2386-2394 (*pharmacol*)

Pat. Coop. Treaty (WIPO), 1992, 92 20 347, (*Southern Res. Instit.*); *CA*, **118**, 192189t (*synth*, *pharmacol*)

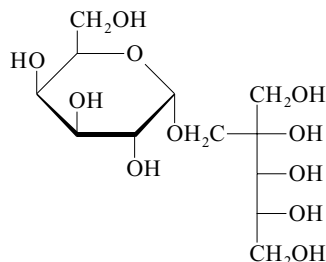
Carson, D.A. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1992, **89**, 2970-2974 (*pharmacol*)

Kantarjian, H. *et al.*, *Blood*, 2003, **102**, 2379-2386; 2004, **103**, 784-789 (*pharmacol*)

Sternberg, A. *et al.*, *Curr. Opin. Invest. Drugs*, 2003, **4**, 1479-1487 (rev)

Clusianose

1-O- α -D-Galactopyranosyl-2-C-(hydroxymethyl)-D-ribitol, 9CI. 1-O- α -D-Galactopyranosylhamamelitol [24570-20-5]



C₁₂H₂₄O₁₁ 344.315

Isol. from several species of *Primula* e.g. *Primula clusiana*, *Primula glaucescens*, *Primula spectabilis*, *Primula deorum* and *Primula integrifolia*. Hygroscopic cryst. (EtOH).

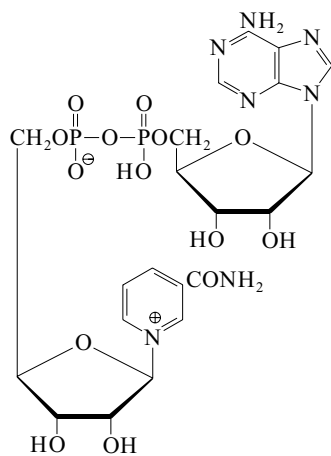
Mp 180-190°. [α]_D²⁰ +131 (H₂O).

Sellmair, J. et al., *Z. Pflanzenphysiol.*, 1969, **61**, 360 (isol)

Sellmair, J. et al., *Phytochemistry*, 1977, **16**, 1201

Coenzyme I, 8CI

Adenosine 5'-(trihydrogen diphosphate) (5'→5') ester with 3-(aminocarbonyl)-1- β -D-ribofuranosylpyridinium hydroxide inner salt, 9CI. Nicotinamide adenine dinucleotide. **Nadide**, **BAN**, **INN**, **JAN**, **USAN**. Codehydrase I. Codehydrogenase I. Cozymase. Diphosphopyridine nucleotide. Enzopride. DPN. NAD⁺. NSC 20272. Co I. NAD⁺ [53-84-9]



C₂₁H₂₇N₇O₁₄P₂ 663.43

Isol. from bakers' yeast. Antagonist to alcohol and narcotic analgesics. Biological hydrogen acceptor. Hygroscopic powder. Sol. H₂O. λ_{\max} 260 (ϵ 17.6 \times 10⁶) (H₂O), 340 nm (6.2 \times 10⁶) (reduced form). Forms a complex with alkaline cyanide which may be used for its estimation. Stable for weeks in cold neutral soln. Less stable in acid soln., rapidly dec. by alkali.

► LD₅₀ (mus, ipr) 4333 mg/kg. UU3450000
Dihydro: Adenosine 5'-(trihydrogen

C-142

diphosphate) (5'→5') ester with 1, 4-dihydro-1- β -D-ribofuranosyl-3-pyridinecarboxamide, 9CI. **NADH**. Reduced codehydrogenase. DPNH [58-68-4]

C₂₁H₂₉N₇O₁₄P₂ 665.446

Reduced form of Coenzyme I in biological systems.

λ_{\max} 259, 338 nm.

[606-68-8]

Biochem. Prep., 1949, **1**, 28 (isol)

Biochem. Prep., 1953, **3**, 20 (isol, synth)

Hughes, N.A. et al., *J.C.S.*, 1957, 3733 (synth)

Shiffrini, S. et al., *Nature (London)*, 1959, **183**, 1529 (NADH, struct)

Dalziel, K. et al., *Biochem. J.*, 1962, **84**, 240

(NADH, synth, props)

Lemieux, R.U. et al., *Can. J. Chem.*, 1963, **41**, 889 (stereochem)

Biochem. Prep., 1966, **11**, 84 (purifn)

Sarma, R.H. et al., *J. Biol. Chem.*, 1969, **244**, 771 (pmr)

Sarma, R.H. et al., *Biochemistry*, 1970, **9**, 557 (conformn, pmr)

Birdsall, B. et al., *J.C.S. Perkin 2*, 1972, 1643

(NADH, cmr)

Sarma, R.H. et al., *Org. Magn. Reson.*, 1972, **4**, 577 (NADH, P-31 nmr)

Blumenstein, M. et al., *Biochemistry*, 1973, **12**, 3585 (cmr)

Nishizuka, Y. et al., *Method. Chim.*, 1977, **11**, 84 (rev)

Walsh, C. et al., *Annu. Rev. Biochem.*, 1978, **47**, 881 (rev)

Loesche, W. et al., *Methods Enzymol.*, 1980, **66**, 11 (purifn, rev)

Whitesides, G.M. et al., *ACS Symp. Ser.*, 1982, **185**, 205 (enzymic synth, rev)

Kemal, C. et al., *Compr. Heterocycl. Chem.*,

Katritzky A.R. and Rees C.W., Eds.,

Pergamon, 1984, **1**, 247 (rev, bibl)

Walt, D.R. et al., *J.A.C.S.*, 1984, **106**, 234 (synth)

Yue, K.T. et al., *Biochemistry*, 1986, **25**, 4941 (Raman)

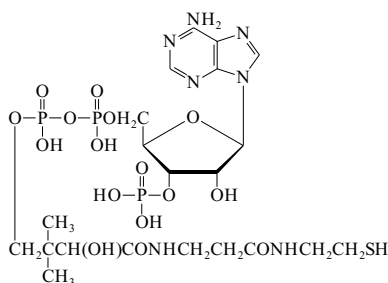
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 685

Lee, J. et al., *Chem. Comm.*, 1999, 729-730 (synth)

Coenzyme A, 9CI**C-144**

Adenosine 5'-(trihydrogen diphosphate) 3'-(dihydrogen phosphate) 5'-[3-hydroxy-4-[3-(2-mercaptoethyl)amino]-3-oxopropyl]amino]-2,2-dimethyl-4-oxobutyl] ester. **Aluzime**. **CoA**. **Coalip**. **Lucina** [85-61-0]

[31416-98-5]



C₂₁H₃₆N₇O₁₆P₃S 767.54

Constit. of many microorganisms. A cofactor in enzymatic acetyl transfer reactions. S-Acyl derivs (see below) are biochemically important in acyl transfer

reactions. They are powerful inhibitors of *de novo* fatty acid biosynthesis. Powder. Sol. H₂O. Inactivated by phosphatase. Oxid. by air to inactive disulfide. λ_{\max} 260 (ϵ 16800) (H₂O).

S-Ac: **Acetylcoenzyme A** [72-89-9]

[75520-41-1]

C₂₃H₃₈N₇O₁₇P₃S 809.577

The most important metabolic acyl transfer agent. In aerobic organisms the Ac group is formed by degradn. of carbohydrates, aminoacids and fats; in anaerobic organisms by carbonylation of Me groups attached to tetrahydrofolic acid.

S-Propanoyl: [317-66-8]

C₂₄H₄₀N₇O₁₇P₃S 823.604

S-Butanoyl: [2140-48-9]

C₂₅H₄₂N₇O₁₇P₃S 837.631

S-(2E-Butenoyl): **Crotonylcoenzyme A** [992-67-6]

C₂₅H₄₀N₇O₁₇P₃S 835.615

S-Hexanoyl: [5060-32-2]

C₂₇H₄₆N₇O₁₇P₃S 865.685

S-Octanoyl: [1264-52-4]

C₂₉H₅₀N₇O₁₇P₃S 893.738

S-Decanoyl: [1264-57-9]

C₃₁H₅₄N₇O₁₇P₃S 921.792

S-Dodecanoyl: [6244-92-4]

C₃₃H₅₈N₇O₁₇P₃S 949.845

S-Tetradecanoyl: [3130-72-1]

C₃₅H₆₂N₇O₁₇P₃S 977.899

S-Hexadecanoyl: **Palmitoylcoenzyme A** [1763-10-6]

C₃₇H₆₆N₇O₁₇P₃S 1005.953

S-Octadecanoyl: **Stearoylcoenzyme A**

[362-66-3]

C₃₉H₇₀N₇O₁₇P₃S 1034.006

S-(9Z-Octadecenoyl): **Oleylcoenzyme A** [1716-06-9]

C₃₉H₆₈N₇O₁₇P₃S 1031.99

S-(9Z,12Z-Octadecadienoyl): [6709-57-5]

C₃₉H₆₆N₇O₁₇P₃S 1029.975

S-(5Z,8Z,11Z,14Z-Eicosatetraenoyl): [17046-56-9]

C₄₁H₆₆N₇O₁₇P₃S 1053.997

S-(3-Methyl-2-butenoyl): β -Methylcrotonylcoenzyme A

[6712-03-4]

C₂₆H₄₂N₇O₁₇P₃S 849.642

S-(3-Oxobutanoyl): **Acetoacetylcoenzyme A** [1420-36-6]

C₂₅H₄₀N₇O₁₈P₃S 851.615

S-(Carboxyacetyl): **Malonylcoenzyme A**. 5-(Hydrogen propanedioate)coenzyme A, 9CI

[524-14-1]

C₂₄H₃₈N₇O₁₉P₃S 853.587

Involved in control of hepatic fatty acid synthesis and oxidation. Acts as a metabolic coupling factor in pancreatic β -cell signal transduction mechanisms linking insulin secretion and fatty acid metabolism. λ_{\max} 236 (H₂O).

S-(Methoxycarbonylacetyl):

Methylmalonylcoenzyme A

[1264-45-5]

C₂₅H₄₀N₇O₁₉P₃S 867.614

S-(3-Carboxypropanoyl): Succinylcoenzyme A
[604-98-8]
C₂₅H₄₀N₇O₁₉P₃S 867.614

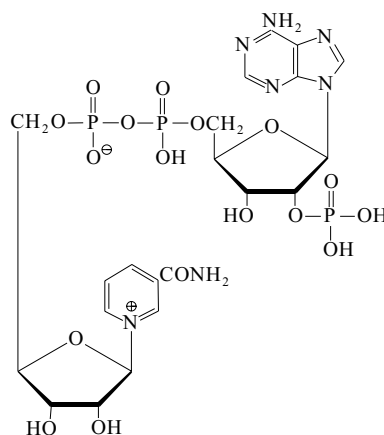
S-(4-Carboxy-3-hydroxy-3-methylbutanoyl): β-Hydroxy-β-methylglutarylcoenzyme A. HMG-CoA
[1553-55-5]
C₂₇H₄₄N₇O₂₀P₃S 911.667

Biochemical precursor of mevalonic acid.
[18439-24-2, 55672-92-9, 59042-85-2, 116928-84-8]

Lipmann, F. et al., *J. Biol. Chem.*, 1950, **186**, 235 (isol)
Wilson, I.B. et al., *J.A.C.S.*, 1952, **74**, 3205-3206 (synth)
Lipmann, F. et al., *Bacteriol. Rev.*, 1953, **17**, 1 (rev)
Kaufman, S. et al., *J. Biol. Chem.*, 1953, **203**, 869-888 (synth)
Simon, E.J. et al., *J.A.C.S.*, 1953, **75**, 2520-2520 (Succinylcoenzyme A)
Baddiley, J. et al., *Adv. Enzymol. Relat. Subj. Biochem.*, 1955, **16**, 1 (rev)
Hilz, H. et al., *Biochem. Z.*, 1958, **329**, 476-489 (synth, acyl derivs)
Lynen, F. et al., *Biochem. Z.*, 1958, **330**, 269-295 (synth, acyl derivs)
Goldman, P. et al., *J. Biol. Chem.*, 1961, **236**, 2620-2623 (Palmitoylcoenzyme A, Oleoylcoenzyme A)
Moffatt, J.G. et al., *J.A.C.S.*, 1961, **83**, 663 (synth)
Eggerer, H. et al., *Biochem. Z.*, 1962, **335**, 540-547 (Maleoylcoenzyme A, synth)
Kloss, R.A. et al., *Biochim. Biophys. Acta*, 1963, **70**, 90-91 (Maleoylcoenzyme A, synth)
Bonner, W.M. et al., *J. Biol. Chem.*, 1972, **247**, 3123-3133 (Stearoylcoenzyme A)
Pullman, M.E. et al., *Anal. Biochem.*, 1973, **54**, 188-198 (chromatog)
Lee, C. et al., *J.A.C.S.*, 1975, **97**, 1225 (conformn)
Wilson, A. et al., *J.A.C.S.*, 1975, **97**, 2907 (pmr)
Pucci, P. et al., *Clin. Ter. (Rome)*, 1977, **82**, 161; 269 (revs)
Baker, F.C. et al., *Anal. Biochem.*, 1979, **94**, 417-424 (anal, purifn, esters)
Kawaguchi, A. et al., *J. Biochem. (Tokyo)*, 1981, **89**, 337-339 (synth, hplc, acyl derivs)
Shimizu, S. et al., *FEBS Lett.*, 1983, **151**, 303 (synth)
Robishaw, J.D. et al., *Am. J. Physiol.*, 1985, **248**, E1 (metab, rev)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1357
Prentki, M. et al., *Diabetes*, 1996, **45**, 273-283 (Maleoylcoenzyme A, rev, biol)

Coenzyme II, 9CI, 8CI

Adenosine 5'-(trihydrogen diphosphate)-2'-(dihydrogen phosphate) (5' → 5') ester with 3-(aminocarbonyl)-1-β-D-ribofuranosylpyridinium hydroxide inner salt, 9CI. Nicotinamide adenine dinucleotide phosphate. Codehydrase II. Codehydrogenase II. Nadifosphate. Phosphocozymase. Triphosphopyridine nucleotide. NADP. TPN†. NADP⁺ [53-59-8]



C₂₁H₂₈N₇O₁₇P₃ 743.41

Wide occurrence in living matter, particularly in the liver and in red blood corpuscles, mainly in the reduced form. A component of vitamin B₂ complex. Hydrogen carrier in biochemical redox systems. In the hexose monophosphoric acid system it is reduced to Dihydrocoenzyme II and reoxid. in the presence of flavoproteins. Greyish-white powder. Sol. H₂O. pK_{a1} 3.9; pK_{a2} 6.1. λ_{max} 260 (ε 18 × 10⁶)(H₂O), 340 nm (ε 6.2 × 10⁶) (reduced form).

► UU3440000

Mono-Na salt: [1184-16-3]

Cryst. + H₂O. Mp 175-178° dec.

Dihydro: NADPH. TPNH. NADPH₂ [53-57-6]

C₂₁H₃₀N₇O₁₇P₃ 745.426

Reduced form of Coenzyme II in biological systems.

λ_{max} 259, 340 nm. Contains a 1,4-dihydropyridine ring.

[2646-71-1]

Aldrich Library of NMR Spectra, 2nd edn., 1983, **2**, 608B (nmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 815D (ir)

Todd, A.R. et al., *J.C.S.*, 1941, 427 (rev)

Lepage, G.A. et al., *J. Biol. Chem.*, 1949, **180**, 975 (isol)

Biochem. Prep., 1953, **3**, 24 (isol, synth)

Silverstein, E. et al., *Anal. Biochem.*, 1965, **12**, 199 (purifn)

Jardetzky, O. et al., *J. Biol. Chem.*, 1966, **241**, 85 (pmr)

Sund, R. et al., *The Pyridine Nucleotide Coenzymes*, in *Biological Oxidations*, (Singer, T., Ed.), Interscience, N.Y., 1968, 603 (rev)

Blumenstein, M. et al., *Biochemistry*, 1972, **11**, 1643; 1973, **12**, 3585 (cmr, P-31 nmr)

Sarma, R.H. et al., *Can. J. Chem.*, 1973, **51**, 1843 (nmr)

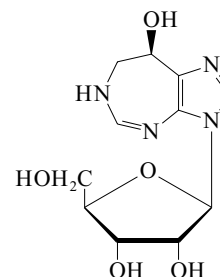
Nishizuka, Y. et al., *Method. Chim.*, 1977, **11**, 84 (rev)

C-145

Wood, H.C.S. et al., *Compr. Org. Chem.*, Eds., Barton D.H.R. and Ollis, W.D., Pergamon, 1979, **5**, 490 (rev, bibl)
Whitesides, G.M. et al., *ACS Symp. Ser.*, 1982, **185**, 205 (synth, rev)
Walt, D.R. et al., *J.A.C.S.*, 1984, **106**, 234 (synth)

Coformycin**C-146**

3,4,7,8-Tetrahydro-3-β-D-ribofuranosylimidazo[4,5-d][1,3]diazepin-8-ol, 9CI [11033-22-0]



C₁₁H₁₆N₄O₅ 284.271

Nucleoside antibiotic. Isol. from *Nocardia interforma*, *Streptomyces lavendulae* and *Streptomyces kaniharaensis*. Shows antibiotic props. AMP deaminase inhibitor. Sol. H₂O, MeOH, DMSO; poorly sol. EtOH, hexane. Mp 182-184°. [α]_D²⁴ +34 (c, 1 in H₂O). Log P -3.68 (uncertain value) (calc). λ_{max} 273 (ε 7500) (H₂O at pH 2) (Derep). λ_{max} 282 (ε 8000) (H₂O at pH 11) (Derep). λ_{max} 282 (ε 8100) (pH 7 H₂O) (Derep). λ_{max} 282 (E1%/1cm 290) (H₂O) (Berdy). λ_{max} 284 (E1%/1cm 292) (NaOH) (Berdy). λ_{max} 264 (E1%/1cm 257) (HCl) (Berdy).

► LD₅₀ (mus, ivn) 35 mg/kg; LD₅₀ (mus, ivn) 35 mg/kg. NI2931500

[90494-44-3]

Japan. Pat., 1970, 7 012 278, (Meiji Confectionary); CA, **73**, 65025p (isol)

Ohno, M. et al., *J.A.C.S.*, 1974, **96**, 4326; 4327 (synth, struct)

Nakamura, H. et al., *Acta Cryst. B*, 1976, **32**, 1206 (cryst struct)

Fr. Pat., 1978, 2 383 966, (Microbiochemical Research Foundation); CA, **91**, 57420v (purifn)

Hawkins, L.D. et al., *Nucleosides Nucleotides*, 1983, **2**, 479 (synth, props)

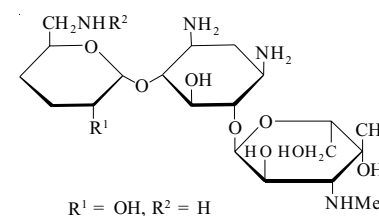
Lukey, T. et al., *Adv. Exp. Med. Biol.*, 1984, **165B**, 189 (pharmacol)

Thomas, H.J. et al., *Nucleosides Nucleotides*, 1986, **5**, 431 (synth)

Kline, P.C. et al., *J. Biol. Chem.*, 1994, **269**, 22385

Combimicin A₂**C-147**

[72300-83-5]



C₂₀H₄₀N₄O₉ 480.557

Aminoglycoside antibiotic. Isol. from *Micromonospora echinospora*, grown in the presence of kanamycin. Active against gram-negative and -positive bacteria. Cryst. + 1H₂O. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, hexane. Mp 129-131°. [α]_D²⁵ +147.5 (c, 1 in H₂O). λ_{max} (H₂O) (Berdy).

Oka, Y. et al., *J. Antibiot.*, 1981, **34**, 777**Combimicin B₁****C-148**

[72265-93-1]

As Combimicin A₂, C-147 withR¹ = NH₂ R² = HC₂₀H₄₁N₅O₈ 479.573

Glycoside antibiotic. Isol. from *Micromonospora echinospora* grown in the presence of kannamycin B. Active against gram-negative and -positive bacteria. Monohydrate. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, hexane. Mp 108-111°. [α]_D²⁵ +120 (c, 1 in H₂O). λ_{max} (H₂O) (Berdy).

Oka, Y. et al., *J. Antibiot.*, 1981, **34**, 777**Combimicin B₂****C-149**

[72265-90-8]

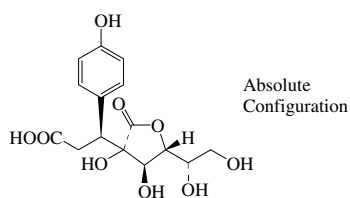
As Combimicin A₂, C-147 withR¹ = NH₂ R² = CH₃C₂₁H₄₃N₅O₈ 493.599

Glycoside antibiotic. Isol. from *Micromonospora echinospora* grown in the presence of kannamycin B. Active against gram-negative and -positive bacteria. Hydrate. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, hexane. Mp 143-146°. [α]_D²⁵ +142 (c, 1 in H₂O). λ_{max} (H₂O) (Berdy).

►WK2291600

Oka, Y. et al., *J. Antibiot.*, 1981, **34**, 777**Conocarpic acid****C-150**

5-(1,2-Dihydroxyethyl)tetrahydro-3,4-dihydroxy-β-(4-hydroxyphenyl)-2-oxo-3-furanpropanoic acid, 9CI
[39236-59-4]

C₁₅H₁₈O₉ 342.302

Constit. of the leaves of *Leucospermum reflexum* and *Leucospermum conocarpendron*. Needles (H₂O).

Mp 126-136°. [α]_D -117 (c, 0.95 in EtOH).Me ester: **Reflexin**[†]

[38971-88-9]

C₁₆H₂₀O₉ 356.329

Isol. from leaves of *Leucospermum reflexum*.

Mp 110-114°. [α]_D +36 (EtOH).

Me ester, penta-Ac: [38971-89-0]

Cryst. (AcOH aq.). Mp 118-119°.

Lactone: See Leucodrin in *The Combined Chemical Dictionary*.

Kruger, P.E.J. et al., *J.C.S. (C)*, 1970, 2127 (isol)
Perold, G.W. et al., *J.C.S. Perkin 1*, 1972, 2450; 2457

Highet, R.J. et al., *J.O.C.*, 1976, **41**, 3860 (nmr, struct)

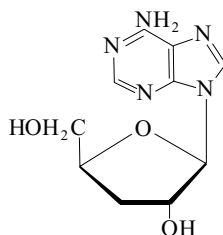
Corallan**C-151**

Sulfated glycoprotein containing D-Glc, D-Gal, L-Gal, D-Ara, L-Fuc and D-Glucuronic acid residues. Struct. has been partially determined. Isol. from the Caribbean soft coral *Pseudopterogorgia americana*. Sol. H₂O; poorly sol. MeOH, hexane.

Molchanova, V.I. et al., *Carbohydr. Res.*, 1985, **141**, 289

Cordycepin, 9CI, 8CI**C-152**

3'-Deoxyadenosine, 9CI, 8CI. 9-Cordyceposidoadenosine. Adenine cordyceposide [73-03-0]

C₁₀H₁₃N₅O₃ 251.244

Metab. of *Cordyceps militaris* and *Aspergillus nidulans*. Strong inhibitor of RNA synthesis showing cytostatic activity. Sol. MeOH, EtOH, butanol, Me₂CO, acids; fairly sol. H₂O; poorly sol. CHCl₃, hexane. Mp 222-224°, (230-231°). [α]_D²⁵ -44 (c, 0.5 in H₂O) (c, 9.4 in H₂O). Log P -2.31 (calc). λ_{max} 260 (ε 12000) (H₂O) (Derep). λ_{max} 260 (HCl) (Berdy). λ_{max} 259 (ε 13100) (pH 4 buffer) (Berdy). λ_{max} 250 (ε 13100) (pH 4 buffer). λ_{max} 260 (ε 13700) (pH 11 buffer).

►Exp. reprod. effects. AU7358610

Picrate:

Yellow needles. Mp 195° dec.

5'-Triphosphate: [73-04-1]

[71997-32-5]

C₁₀H₁₅N₅O₁₂P₃ 490.176

No phys. props. reported.

2'-Ac: [9643-88-3]

C₁₂H₁₅N₅O₄ 293.282

Cryst. (MeOH). Mp 231-232°.

[α]_D²⁵ -16.4 (c, 1 in MeOH).

5'-Ac: 5'-Acetyl-3'-deoxyadenosine.

5'-Acetylcordycepin

[137530-37-1]

C₁₂H₁₅N₅O₄ 293.282Isol. from *Emericella nidulans* var. *lata*.Needles (CHCl₃). Sol. MeOH.Mp 166-168°. [α]_D²⁵ -21.2 (c, 0.5 in MeOH).λ_{max} 258 (ε 17000) (MeOH) (Berdy).

6N,6N,2',5'-Tetrabenzoyl: [66884-45-5]

Mp 179-180°.

2-Deoxy, 2-fluoro: [15386-69-3]

C₁₀H₁₂FN₅O₃ 269.235

Potential cytotoxic agent. Mp 259-260°. [α]_D -65 (c, 0.165 in EtOH).

Kredich, N.M. et al., *Biochim. Biophys. Acta*, 1960, **41**, 363-365 (isol)

Suhadolnik, R.J. et al., *J.A.C.S.*, 1964, **86**, 948-949 (biosynth)

Walton, E. et al., *J.A.C.S.*, 1964, **86**, 2952 (synth)

Hanessian, S. et al., *Biochim. Biophys. Acta*, 1966, **117**, 480-482 (ms)

Guarino, A.J. et al., *Antibiotics*, (Gottlieb, D. et al., Ed.), Springer-Verlag, 1967, **1**, 468 (rev)

Dickinson, M.J. et al., *J. Med. Chem.*, 1967, **10**, 1165-1166 (2-deoxy 2-fluoro deriv, synth, biochem)

Nagpal, K.L. et al., *J.O.C.*, 1971, **36**, 3743-3745 (synth, pmr)

Jain, T.C. et al., *J.O.C.*, 1974, **39**, 30-38 (synth)

Frederiksen, S. et al., *Handb. Exp. Pharmacol.*, 1975, **38**, 657-669 (rev, pharmacol)

Barton, D.H.R. et al., *Chem. Comm.*, 1976, 867-868 (synth)

Robins, M.J. et al., *J.A.C.S.*, 1976, **98**, 8204-8213 (synth)

Etaix, E. et al., *J. Carbohydr. Nucleosides*,

Nucleotides, 1978, **5**, 91-110 (5'-triphosphate)

Radwan, M.M. et al., *Acta Cryst. B*, 1980, **36**, 2185-2187 (cryst struct)

Norman, D.G. et al., *Synthesis*, 1983, 304-306 (synth)

Hansske, F. et al., *Tet. Lett.*, 1985, **26**, 4295-4298 (synth, rev)

Kawahara, N. et al., *Phytochemistry*, 1992, **31**, 1409-1410 (5'-Ac, isol, pmr, cmr)

Karthe, P. et al., *Acta Cryst. C*, 1997, **53**, 1694-1696 (cryst struct)

Aman, S. et al., *Org. Process Res. Dev.*, 2000, **4**, 601-605 (synth, pmr)

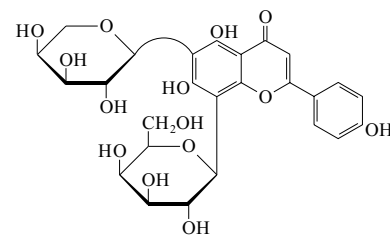
Ciuffreda, P. et al., *Tetrahedron*, 2000, **56**, 3239-3243 (2'-Ac, 5'-Ac, synth, pmr)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAQ225

Corymboside**C-153**

6-α-L-Arabinopyranosyl-8-β-D-galactopyranosyl-5,7-dihydroxy-2-(4-hydroxyphenyl)-4H-1-benzopyran-4-one, 9CI.

6-Arabinopyranosyl-8-galactopyranosyl-4',5',7-trihydroxyflavone. 6-Arabinopyranosyl-8-galactopyranosylapigenin. 6-Arabinosyl-8-galactosylapigenin
[73543-87-0]

C₂₆H₂₈O₁₄ 564.499

Glycosylflavone from *Carlina corymbosa*. Also isol. from *Triticum aestivum* (wheat) (as acyl derivs.). Yellow powder. [α]_D +79 (c, 0.67 in H₂O).

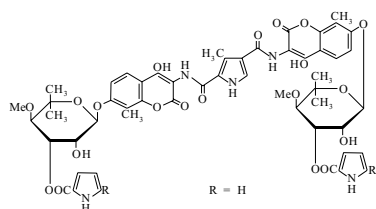
Besson, E. et al., *Phytochemistry*, 1979, **18**, 1899

Wagner, H. et al., *J. Nat. Prod.*, 1980, **43**, 583 (isol, derivs)

Gaffield, W. et al., *Phytochemistry*, 1984, **22**, 1317 (cd)

Coumermycin A₂

Notomycin A₂, *Sugordomycin D_{1d}*
[3130-60-7]



C₅₃H₅₅N₅O₂₀ 1082.039

Isol. from *Streptomyces rishiriensis* and other *Streptomyces* spp. Sol. MeOH, bases, EtOAc; fairly sol. CHCl₃, C₆H₆; poorly sol. hexane, H₂O. λ_{max} 267 (ε 50000); 340 (ε 42000) (EtOH) (Derep).

Berger, J. et al., *Antimicrob. Agents Chemother.*, 1965, 778 (isol)

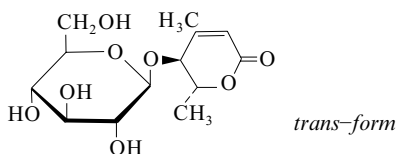
Kawaguchi, H. et al., *J. Antibiot., Ser. A*, 1965, 18, 220 (struct)

Berger, J. et al., *J. Chromatogr. Libr.*, 1978, 15, 101 (rev)

Claridge, C.A. et al., *Drugs Pharm. Sci.*, 1984, 22, 413 (rev)

Crassinodin**C-155**

5-(β-D-Glucopyranosyloxy)-5,6-dihydro-4,6-dimethyl-2H-pyran-2-one. 4-β-D-Glucopyranosyloxy-3-methyl-2-hexen-5-olide



C₁₃H₂₀O₈ 304.296

Constit. of *Dendrobium crassinode*.

cis-form [59870-77-8]

Tetra-Ac: Mp 162-163°. [α]_D²¹ -101 (c, 0.2 in MeOH).

trans-form [59905-82-7]

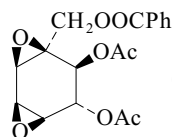
Mp 94.5° Mp 177.5-182°. [α]_D²⁵ +39 (c, 0.7 in MeOH).

Tetra-Ac: Mp 171-173°. [α]_D²⁵ +28 (c, 0.3 in MeOH).

Dahmen, J. et al., *Acta Chem. Scand., Ser. B*, 1976, 30, 297 (isol, pmr)

Crotopoxide**C-156**

2,3:4,5-Dianhydro-2-C-[(benzoyloxy)-methyl]-D-epi-inositol diacetate, 11 CI. 4-[(Benzoyloxy)methyl]-3,8-dioxatricyclo[5.1.0.0^{2,4}]octane-5,6-diol diacetate, 9 CI. Futoxide [20421-13-0]



C₁₈H₁₈O₈ 362.335

(+)-form

Constit. of *Croton macrostachys*, a *Boersenbergia* sp. and *Monoanthotaxis caffra*. Mp 152-153°. [α]_D²⁵ +75 (c, 1.70 in CHCl₃) (+64). Pharmacol. active isomer.

(±)-form [58072-91-6]

Needles (MeOH). Mp 110-111°.

Kupchan, S.M. et al., *J.A.C.S.*, 1968, 90, 2982 (isol, cryst struct, config, pharmacol)

Coggon, P. et al., *J.C.S. (B)*, 1969, 534 (cryst struct)

Kupchan, S.M. et al., *J.O.C.*, 1969, 34, 3898 (isol, uv)

Oda, K. et al., *Tet. Lett.*, 1975, 3187 (synth)

Demuth, M.R. et al., *J.A.C.S.*, 1976, 98, 634 (synth)

Matsumoto, M. et al., *Tet. Lett.*, 1977, 3361 (synth)

Schlessinger, R.H. et al., *J.O.C.*, 1981, 46, 5252 (synth)

Pancharven, O. et al., *Aust. J. Chem.*, 1984, 37, 221 (cryst struct)

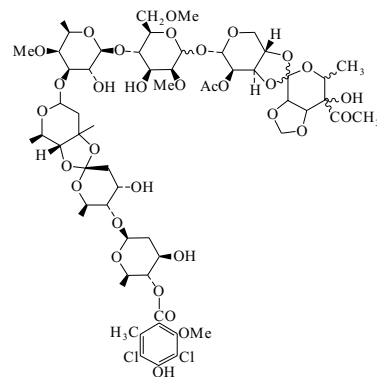
Ogawa, S. et al., *Bull. Chem. Soc. Jpn.*, 1987, 60, 800 (synth)

Shing, T.K.M. et al., *J.O.C.*, 1998, 63, 1547-1554 (synth)

Mulholland, D. et al., *Biochem. Syst. Ecol.*, 2000, 28, 595-597 (isol, pmr, cmr)

Curamycin A**C-157**

Avilamycin B
[73240-30-9]



C₅₉H₈₄Cl₂O₃₂ 1376.199

Oligosaccharide-type antibiotic. Prod. by *Streptomyces curacoi*. Active against gram-pos. bacteria and some viruses. Cryst. (2-propanol/EtOAc).

Mp 192-194°. [α]_D -5.3 (c, 1 in CHCl₃). pK_a 7.48 (2-methoxyethanol). λ_{max} 294 (ε 7800) (0.1N NaOH) (Derep). λ_{max} 284 (ε 1360) (95% EtOH) (Derep).

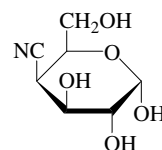
Me ether:

Needles. Mp 224°. [α]_D +6.6 (c, 1.21 in Py).

Galmarini, D.L. et al., *Tetrahedron*, 1961, 15, 76 (isol)

Ganguly, A.K. et al., *J. Antibiot.*, 1979, 32, 1213 (uv, ir, cmr, struct)

Ganguly, A.K. et al., *Heterocycles*, 1981, 15, 1621 (cmr, struct)

4-Cyano-4-deoxygalactose**C-158**

α-D-Pyranose-form

C₇H₁₁NO₅ 189.168

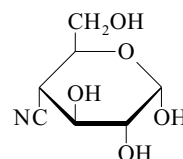
α-D-Pyranose-form

Me glycoside, 2,3,6-tribenzyl: Methyl 2,3,6-tri-O-benzyl-4-cyano-4-deoxy-α-D-galactopyranoside [155726-53-7]

C₂₉H₃₁NO₅ 473.568

Cryst. (EtOH). Mp 93-94°. [α]_D^{23.5} +89.7 (c, 2.8 in CH₂Cl₂).

Reed, L.A. et al., *Carbohydr. Res.*, 1994, 254, 133 (synth, pmr, cmr)

4-Cyano-4-deoxyglucose**C-159**

C₇H₁₁NO₅ 189.168

α-D-Pyranose-form

Me glycoside, tribenzyl: Methyl 2,3,6-tri-O-benzyl-4-cyano-4-deoxy-α-D-glucopyranoside [127214-50-0]

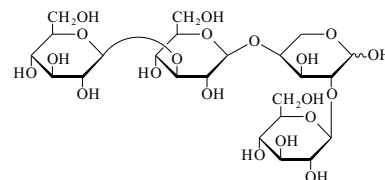
C₂₉H₃₁NO₅ 473.568

Oil. [α]_D^{23.5} +57.4 (c, 7.0 in CH₂Cl₂).

Reed, L.A. et al., *Carbohydr. Res.*, 1994, 254, 133 (synth, pmr, cmr)

Cyclamotetraose**C-160**

β-D-Glucopyranosyl-(1→3)-β-D-glucopyranosyl-(1→4)-[β-D-glucopyranosyl-(1→2)]-L-arabinose [23643-62-1]



Pyranose-form

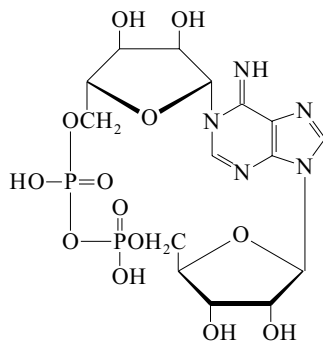
C₂₃H₄₀O₂₀ 636.557

Sugar present in Cyclamin (see 13, 28-Epoxy-3,16-dihydroxy-30-oleananal in the Combined Chemical Dictionary). [α]_D²⁰ +12.2 (c, 0.96 in H₂O).

Tschesche, R. et al., *Annalen*, 1969, 721, 194

Cyclic ADP-ribose

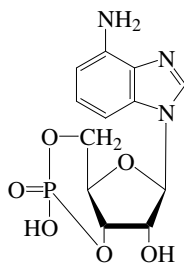
[119340-53-3]

 $C_{15}H_{21}N_5O_{13}P_2$ 541.304

Found in mammalian tissues. Biochemical calcium regulator.

Gu, Q.M. *et al.*, *J.A.C.S.*, 1994, **116**, 7481
(*struct.*, *synth.*, *pmr.*, *bibl.*)**Cyclic AMP**

Adenosine cyclic 3',5'-(hydrogenphosphate), 9CI, 8CI. Acrasin. cAMP [60-92-4]

 $C_{10}H_{12}N_5O_6P$ 329.208Found in several higher plants, bacteria and most animal cells. Excreted in human urine. Formed by action of adenylate cyclase on ATP *in vivo*. Intracellular regulator of several cellular processes. Involved in hormone-mediated biological systems as a "second messenger". Cryst. + $1H_2O$. Sol. H_2O .Mp 219-220°. $[\alpha]_D$ -43 (H_2O). λ_{max} 256 (ϵ 14500) (pH 2 buffer) (Berdy). λ_{max} 258 (ϵ 14650) (pH 7 buffer) (Berdy). λ_{max} 258 (H_2O) (Berdy).► LD₅₀ (mus, orl) 14000 mg/kg. AU7357600

Na salt: [37839-81-9]

Dihydrate.

► AU7357900

N-Butanoyl: [13117-60-7]

 $C_{14}H_{18}N_5O_7P$ 399.299Possesses cyclic AMP-like activity but with greater resistance to *in vivo* inactivation by phosphodiesterase. No phys. props. reported. Launched 1984N,O²-Dibutanoyl: **Bucladesine**, INN.

Dibutyrylcyclic AMP. Actosin. Aztosin [362-74-3]

 $C_{18}H_{24}N_5O_8P$ 469.39

Cardiostimulant.

► ES5055000

C-161

N,O²-Dibutanoyl, Na salt: **Bucladesine sodium**, JAN

[16980-89-5]

[123334-06-5] Mp 240-245° dec. (as monohydrate). CAS no. refers to monohydrate.

2'-Deoxy: [1157-33-1]

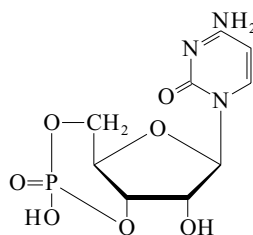
 $C_{10}H_{12}N_5O_5P$ 313.209

Cryst. (EtOH aq.) (as Na salt).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 725A; 725C (ir)Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 229A; 229C (nmr)Sutherland, E.W. *et al.*, *J. Biol. Chem.*, 1958, **232**, 1077 (isol)Lipkin, D. *et al.*, *J.A.C.S.*, 1959, **81**, 6075; 6198Posternak, T. *et al.*, *Biochim. Biophys. Acta*, 1962, **65**, 558-560 (N-butanoyl, N,O-dibutanoyl)Borden, R.K. *et al.*, *J.O.C.*, 1966, **31**, 3247 (synth)Jost, J.P. *et al.*, *Annu. Rev. Biochem.*, 1971, **40**, 741 (biochem)Robison, G.A. *et al.*, *Cyclic AMP, Cell Growth Immune Response*, Proc. Symp., Academic Press, New York, 1971,Lapper, R.D. *et al.*, *J.A.C.S.*, 1972, **94**, 6243 (pmr, nmr, Bucladesine)Meyer, R.B. *et al.*, *Biochemistry*, 1975, **14**, 3315Kainosho, M. *et al.*, *J.A.C.S.*, 1975, **97**, 6839 (pmr)Miller, J.P. *et al.*, *Biochemistry*, 1976, **15**, 217-223 (2'-deoxy)Furusawa, K. *et al.*, *J.C.S. Perkin I*, 1976, 1711 (synth)Kainosho, M. *et al.*, *Org. Magn. Reson.*, 1979, **12**, 548 (cmr)Brown, E.G. *et al.*, *Phytochemistry*, 1981, **20**, 2453 (rev, occur, props)Kingston, E.E. *et al.*, *Biomed. Mass Spectrom.*, 1984, **11**, 367 (ms)Koch, H. *et al.*, *Pharm. Int.*, 1986, **7**, 81 (rev, Bucladesine)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 664Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AOA130; COV625**Cyclic CMP**

C-163

Cytidine cyclic 3',5'-(hydrogen phosphate), 9CI. Cyclic 3',5'-cytidylic acid [3616-08-8]

 $C_9H_{12}N_3O_7P$ 305.183 λ_{max} 279 (ϵ 12430) (pH 2), 272 nm (9340) (H_2O , pH 7).

Na salt: [54925-33-6]

Solid + H_2O . λ_{max} 280 (ϵ 13650) (H_2O , pH 2), 272 nm (9550) (pH 7).

Ammonium salt: [55727-00-9]

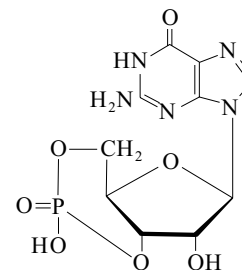
Solid.

[108464-51-3]

Smith, M.S. *et al.*, *J.A.C.S.*, 1961, **83**, 698 (synth, uv)Ito, M. *et al.*, *Agric. Biol. Chem.*, 1974, **38**, 2081 (synth)Kainosho, M. *et al.*, *J.A.C.S.*, 1975, **97**, 6839 (conform, pmr)Wierenga, W. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1977, **4**, 189 (synth, uv, deriv)Baraniak, J. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1982, **56**, 441 (synth, pmr)Beres, J. *et al.*, *J. Med. Chem.*, 1985, **28**, 418 (synth)Baraniak, J. *et al.*, *J.C.S. Perkin I*, 1987, 1645 (synth)Newton, R.P. *et al.*, *Nucleosides Nucleotides*, 1990, **9**, 365 (ms)**Cyclic GMP**

C-164

Guanosine cyclic 3',5'-(hydrogen phosphate), 9CI, 8CI. cGMP [7665-99-8]

 $C_{10}H_{12}N_5O_7P$ 345.208

Found in animal and bacterial cells.

Excreted in human urine. Formed *in vivo*

by action of guanylate cyclase on GTP.

Has also been isol. from *Evodia fructus*.

Intracellular regulator of cellular processes.

Involved in hormone mediated

biological systems as a "second messenger".

Decahydrate (as Ca salt). λ_{max} 254(ϵ 12 950) (pH 7), 256.5 (11 350) (pH 1),

262 nm (12 400) (pH 12).

2'-Ac: [56879-79-9]

 $C_{12}H_{14}N_5O_8P$ 387.245 λ_{max} 252 (ϵ 16 000), 274 sh (10 600) (pH

7), 256 (14 200) (pH 1), 257 nm (14 400)

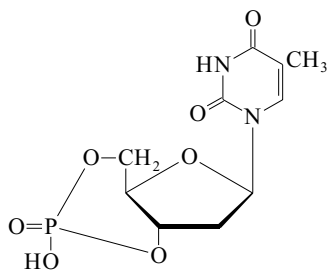
(pH 11).

N,O-Dibutanoyl: [32266-35-6]

 $C_{18}H_{24}N_5O_9P$ 485.39Analogue of bucladesine (see under C-162). λ_{max} 256 (No solvent reported).Borden, R.K. *et al.*, *J.O.C.*, 1966, **31**, 3247 (synth)Adv. Cyclic Nucleotide Res., (Greengard, P. *et al.*, Eds.), Raven Press, N.Y., Vol. 3, 1973, 155 (rev)Nature (London), 1973, **246**, 186 (rev)Chwang, A.K. *et al.*, *Acta Cryst. B*, 1974, **30**, 1233 (cryst struct)Michal, G. *et al.*, *Pharmacol. Res. Commun.*, 1974, **6**, 203-252 (dibutanoyl)Kainosho, M. *et al.*, *J.A.C.S.*, 1975, **97**, 6839 (pmr)Miller, J.P. *et al.*, *Biochemistry*, 1976, **15**, 217 (synth)Kainosho, M. *et al.*, *Org. Magn. Reson.*, 1979, **12**, 548 (cmr)Cyong, J.C. *et al.*, *Chem. Pharm. Bull.*, 1982, **30**, 2463 (isol)

Cyclic TMP**C-165**

Thymidine cyclic 3',5'-(hydrogen phosphate), 9CI. Cyclic 3',5'-thymidylic acid [6453-60-7]



$C_{10}H_{13}N_2O_7P$ 304.196

λ_{\max} 260 nm (ϵ 10000) (H_2O , pH 7).

Na salt: [76567-90-3]

Solid.

Ammonium salt: [119999-00-7]

Solid.

Me ester: Thymidine cyclic 3',5'-(methylphosphate) [120056-31-7]

$C_{11}H_{15}N_2O_7P$ 318.222

Solid. Mp 92-102°.

[120056-30-6]

Tener, G.M. *et al.*, *J.A.C.S.*, 1958, **80**, 6223 (synth, uv)

Furusawa, K. *et al.*, *J.C.S. Perkin 1*, 1976, 1711 (synth, uv)

Kainosho, M. *et al.*, *Org. Magn. Reson.*, 1979, **12**, 548 (cmr)

Japan. Pat., 1980, 80 120 793; *CA*, **94**, 137816f (manuf)

Ramos, D.L. *et al.*, *J. Chromatogr.*, 1983, **261**, 83 (hplc)

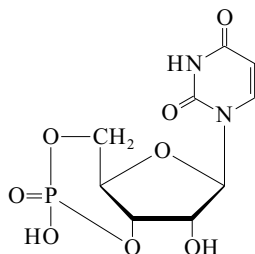
Bentruide, W.G. *et al.*, *J.A.C.S.*, 1989, **111**, 3981 (synth)

Broeders, N.L.H.L. *et al.*, *J.A.C.S.*, 1990, **112**, 7475 (synth, P-31 nmr, deriv)

Newton, R.P. *et al.*, *Nucleosides Nucleotides*, 1990, **9**, 365 (ms)

Cyclic UMP**C-166**

Uridine cyclic 3',5'-(hydrogen phosphate), 9CI. Cyclic-3',5'-uridylic acid [4004-57-3]



$C_9H_{11}N_2O_8P$ 306.168

λ_{\max} 260 nm (ϵ 10000) (H_2O , pH 7).

Ammonium salt:

Solid + 2H₂O.

Triethylammonium salt:

Cryst. (EtOH/Et₂O or MeOH). Mp 220-223° dec. λ_{\max} 261 (ϵ 9940) (pH 7), 260 nm (7740) (H_2O , pH 12).

Me ester: [56883-43-3]

$C_{10}H_{13}N_2O_8P$ 320.195

Powder (dioxan).

Benzyl ester: [56942-15-5]

$C_{16}H_{17}N_2O_8P$ 396.293

Powder.

2'-Ac: [7390-55-8]

$C_{11}H_{13}N_2O_9P$ 348.205

Cryst. (EtOH) (as triethylammonium salt). Mp 245° dec. (triethylammonium salt).

2'-Benzoyl: [52301-27-6]

$C_{16}H_{15}N_2O_9P$ 410.276

λ_{\max} 262 nm (MeOH).

[56942-13-3]

Smith, J. *et al.*, *J.A.C.S.*, 1961, **83**, 698; 1959, **81**, 2911 (synth, uv, deriv)

Borden, R.K. *et al.*, *J.O.C.*, 1966, **31**, 3247

(synth)

Blackburn, B.J. *et al.*, *J.A.C.S.*, 1973, **95**, 2873

(pmr)

Lapper, R.D. *et al.*, *J.A.C.S.*, 1973, **95**, 2878

(cmr)

Cozzone, P.J. *et al.*, *Biochemistry*, 1976, **15**, 4853

(P-31 nmr)

Furusawa, K. *et al.*, *J.C.S. Perkin 1*, 1976, 1711

(synth, uv)

Engels, J. *et al.*, *Chem. Ber.*, 1977, **110**, 2 (synth,

pmr, deriv)

Uesugi, S. *et al.*, *Org. Magn. Reson.*, 1979, **12**,

143 (cmr)

Wang, X. *et al.*, *CA*, 1980, **94**, 140088a (synth)

Zheng, Q. *et al.*, *CA*, 1981, **30**, 1369 (cryst

struct)

Lerner, D.B. *et al.*, *Biopolymers*, 1984, **23**, 2157

(ir, P-31 nmr)

Baraniak, J. *et al.*, *J.C.S. Perkin 1*, 1987, 1645

(benzoyl)

Newton, R.P. *et al.*, *Nucleosides Nucleotides*,

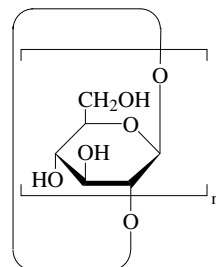
1990, **9**, 365 (ms)

Perrett, D. *et al.*, *Biomed. Chromatogr.*, 1991, **5**,

207; *CA*, **115**, 251308u (hplc)

Cyclic-(1 → 2)-β-D-glucans**C-167**

Cyclophoraoses

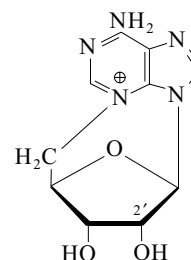


$n \sim 17-40$

A family of unbranched cyclic β(1 → 2) glucans. Prod. as *exo*- or *endo*-oligo-saccharides by gram-negative bacteria *Agrobacterium* and *Rhizobium* spp. Complexing agent for solubility enhancement of poorly soluble guest molecules. Chiral complexing agent. Play an important role in osmoregulation and in root-nodule formation by *R. spp.*

Choi, Y.H. *et al.*, *Carbohydr. Res.*, 2000, **326**, 227-234 (struct, bibl)

Lee, S. *et al.*, *Carbohydr. Res.*, 2003, **338**, 1143-1146 (use, bibl)

3,5'-Cycloadenosine**C-168**

$C_{10}H_{12}N_5O_3^+$ 250.236

2',3'-O-Isopropylidene, 4-methylbenzenesulfonate: Mp 296° dec.

2',3'-O-Isopropylidene, iodide:

$C_{13}H_{16}IN_5O_3$ 417.206

Mp 277° dec.

2'-Deoxy: 3,5'-Cyclodeoxyadenosine

$C_{10}H_{12}N_5O_2^+$ 234.237

Mp 195.5° (as 4-methylbenzenesulfonate).

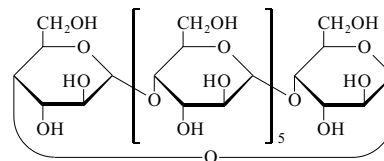
Clark, V.M. *et al.*, *J.C.S.*, 1951, 2953 (synth)

Zussman, J. *et al.*, *Acta Cryst.*, 1953, **6**, 504 (cryst struct)

Anderson, W. *et al.*, *J.C.S.*, 1954, 1882 (deoxy)

β-Cycloaltrin**C-169**

Cycloheptakis-(1 → 4)-(α-D-altropyranose) [171482-55-6]



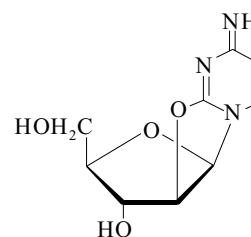
$C_{42}H_{70}O_{35}$ 1134.994

Mp 227° dec. $[\alpha]_D^{16} +63.4$ (c, 0.41 in H₂O).

Fujita, K. *et al.*, *Angew. Chem., Int. Ed.*, 1995, **34**, 1621 (synth, pmr, cmr)

Cyclocytidine**C-170**

2,3,3a,9a-Tetrahydro-3-hydroxy-6-imino-6H-furo[2',3':4,5]oxazolo[3,2-a]pyrimidine-2-methanol, 9CI. 2,2'-Anhydro-1-arabino-furanosylcytosine, 8CI. **Ancitabine**, INN. Ancitabine. NSC 129220. Cyclo-C [31698-14-3]



$C_9H_{11}N_3O_4$ 225.204

Antineoplastic agent with antiviral activity.

► Exp. teratogen. LD₅₀ (mus, orl) 3400 mg/kg. LV2610000

Hydrochloride: Ancitabine hydrochloride, JAN. KJ 101. NSC 145668

[10212-25-6]

Needles (MeOH/Me₂CO). Mp 266-267° dec. [α]_D²⁵ -22.6 (c, 0.2 in H₂O).

▶ LV2615000

Hydrobromide:

Needles (MeOH). Mp 263-265° dec.

Acetate:Cream needles (MeOH/Et₂O). Mp 190-192° dec.**Picrate:**

Yellow needles (EtOH). Mp 218-221°.

Aldrich Library of ¹³C and ¹H FT NMR Spectra, 1992, 3, 388B (nmr)

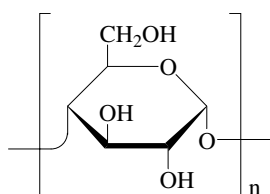
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 2, 832A (ir)

Walwick, E.R. et al., *Proc. Chem. Soc., London*, 1959, 84 (synth)Doerr, I.L. et al., *J.O.C.*, 1967, 32, 1462Brennan, T. et al., *Biochem. Biophys. Res. Commun.*, 1973, 52, 1348 (cryst struct)Russell, A.F. et al., *J.O.C.*, 1974, 39, 2182

(synth, pmr, uv)

Tsueno, W. et al., *Bull. Chem. Soc. Jpn.*, 1975, 48, 505 (synth)Ho, D.H.W. et al., *Clin. Pharmacol. Ther. (St. Louis)*, 1975, 17, 66 (pharmacol)Neumann, M. et al., *Drugs of Today (Barcelona)*, 1976, 12, 303 (rev)Hamamura, E.K. et al., *J. Med. Chem.*, 1976, 19, 654 (synth)Finklestein, J.Z. et al., *Cancer Treat. Rep.*, 1979, 63, 1331 (props)Hoshi, A. et al., *Gann*, 1979, 24, 143 (rev)Venkatasubramanian, K. et al., *Indian J. Phys., A*, 1982, 56, 213 (cryst struct)Davies, D.B. et al., *Magn. Reson. Chem.*, 1985, 23, 72 (cmr)Nakamura, K. et al., *J. Med. Virol.*, 1990, 31, 141 (pharmacol)Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 542Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, COW875; COW900 **α -Cyclodextrin, 9CI**

C-171

Cyclohexakis-(1→4)-(α-D-glucopyranose). Cyclohexaamylose. Cyclomaltohexaose. **Alfadex**, **BAN**, **INN** [10016-20-3]

n = 6

C₃₆H₆₀O₃₀ 972.852

Obt. from the breakdown of starch by the action of *Bacillus macerans*. Pharmaceutical aid (sequestering agent). Used as carrier molecules for drug delivery systems. Shows anomalous soly. props.: v. sol. cold H₂O (15g per 100cm³ at 25°); almost insol. hot H₂O. [α]_D +150.5 (c, 1.0 in H₂O). Forms cryst. complexes with propanol and iodine.

▶ LD₅₀ (rat, ipr) 1000 mg/kg. GU2292000

6-O-α-D-Glucopyranosyl: [10058-19-2]

C₄₂H₇₀O₃₅ 1134.994Cryst. (H₂O).**Octadeca-Ac:**C₇₂H₉₆O₄₈ 1729.522[α]_D +105.5 (c, 1.0 in CHCl₃).

6,6',6'',6''',6''',6''''-Hexabenzoyl:

[204259-38-1]

C₇₈H₈₄O₃₆ 1597.5Mp 275-280°. [α]_D²⁵ +77.75 (c, 1.04 in CHCl₃).

3'',6-Di-Me ether, 6''''-carbamoyl,

6''''-butanoyl, 6'-Ac: [105694-29-9]

C₄₅H₇₃NO₃₃ 1156.059Isol. from a blue-green alga *Tolypothrix byssoides*.[α]_D +112 (c, 1.1 in CHCl₃) (as trideca-Ac). Two regioisomers also isol.**Hexakis(2,6-di-O-Me):** [51166-72-4]C₄₈H₈₄O₃₀ 1141.174Mp 301-307° dec. [α]_D²⁵ +154.2 (c, 1 in H₂O).

Octadeca-O-Me: Hexakis(2,3,6-tri-O-methyl)cyclomaltohexaose. Permethyloxycyclodextrin [68715-56-0]

C₅₄H₉₆O₃₀ 1225.334

Rod-shaped cryst. Shows anomalous soly. props.: more sol. in H₂O than the parent OH compd.; more sol. in cold H₂O (20g per 100 cm³ at 25°) than hot H₂O.

Octadeca-O-benzyl: [110237-97-3]C₁₆₂H₁₆₈O₃₀ 2595.091[α]_D²⁵ +34.1 (c, 0.7 in CHCl₃).

2,2',2'',2''',2''',2''''-Hexaepimer: α-Cyclomannin. Cyclohexakis-(1→4)-(α-D-mannopyranose). Cyclomannohexaose [123880-20-6]

C₃₆H₆₀O₃₀ 972.852Hemihydrate. [α]_D²⁵ +26.5 (c, 0.2 in H₂O).

6,6',6'',6''',6''',6''''-Hexadeoxy:

Hexakis(6-deoxy)cyclomaltohexaose

[53784-89-7]

C₃₆H₆₀O₂₄ 876.856Hexahydrate. Mp 245°. [α]_D +107 (c, 1.1 in Py).

[12619-70-4]

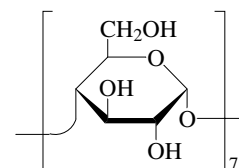
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 197D (ir)

French, D. et al., *J.A.C.S.*, 1949, 71, 353-356 (isol)French, D. et al., *Adv. Carbohydr. Chem.*, 1957, 12, 189-260 (rev)Manor, P.C. et al., *J.A.C.S.*, 1974, 96, 3630-3639 (cryst struct)Colson, P. et al., *J.A.C.S.*, 1974, 96, 8081-8094 (conformn, cmr)Bender, M.L. et al., *Cyclodextrin Chemistry*, Springer-Verlag, 1978,Klar, B. et al., *Acta Cryst. B*, 1980, 36, 1154-1165 (cryst struct)Saenger, W. et al., *Angew. Chem., Int. Ed.*, 1980, 19, 344-362 (rev, use)Szejtli, J. et al., *Cyclodextrins and Their Inclusion Complexes*, Akadémiai, Kiado, Budapest, 1982,Kobayashi, S. et al., *Carbohydr. Res.*, 1984, 126, 215-224 (glucopyranosyl)Entzeroth, M. et al., *J.O.C.*, 1986, 51, 5307-5310 (*Tolypothrix byssoides* carbamates)Takahashi, Y. et al., *Carbohydr. Res.*, 1987, 164, 277-296 (synth, cmr)Le Bas, G. et al., *Cyclodextrins Their Ind. Uses*, 1987, 105-130 (rev, cryst struct)Clarke, R.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1988, 46, 205-249 (rev, complexes)Takahashi, Y. et al., *ACS Symp. Ser.*, 1989, 386, 150-158 (synth)Mori, M. et al., *Tet. Lett.*, 1989, 30, 1273-1276 (α-Cyclomannin)Tanimoto, T. et al., *Chem. Pharm. Bull.*, 1990, 38, 318-322 (dodeca-Me)Szejtli, J. et al., *Cyclodextrins: Properties and Applications, Drug Invest., Suppl.* 4, 1990, 2, 11Baer, H.H. et al., *Carbohydr. Res.*, 1992, 228, 307-314 (hexadeoxy)Li, S. et al., *Chem. Rev.*, 1992, 92, 1457-1470 (rev, anal)Steiner, T. et al., *Carbohydr. Res.*, 1996, 282, 53-63; 296, 69-82 (cryst struct, octadeca-Me, dodeca-Me)Shieh, W.J. et al., *J. Macromol. Sci., Part A: Pure Appl. Chem.*, 1996, 33, 673-683 (rev)Irie, T. et al., *J. Pharm. Sci.*, 1997, 86, 147-162 (rev, toxicol, safety)D'Souza, V.T. et al., *Chem. Rev.*, 1998, 98, 1743-1753 (rev)Schneider, H.J. et al., *Chem. Rev.*, 1998, 98, 1755-1785 (pmr, cmr)Cuzzola, A. et al., *Synth. Commun.*, 1998, 28, 813-821 (hexabenzoyl)Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 1569**β-Cyclodextrin, 9CI**

C-172

Cycloheptakis-(1→4)-(α-D-glucopyranose). Cycloheptaamylose. Cyclomaltoheptaose. **Betadex**, **BAN**, **INN**, **USAN**. Beta cyclodextrin, **USAN**. Cycloheptaglucon. Cycloheptamaltose. β-Schardinger dextran. E459 [7585-39-9]

[68168-23-0]

C₄₂H₇₀O₃₅ 1134.994

Obt. from the breakdown of starch by the action of *Bacillus macerans*. Forms inclusion complexes which have been used to induce stereoselectivity in reactions. Many complexes studied structurally. Pharmaceutical aid (sequestering agent). Monoclinic cryst. + H₂O (H₂O). Mp 260° dec. [α]_D +162.5 (c, 1.0 in H₂O). Forms cryst. complexes with propanol and iodine.

▶ GU2293000

Heneicos-Ac: [23739-88-0]C₈₄H₁₁₂O₅₆ 2017.775Cryst. (toluene). Mp 200°. [α]_D +122 (c, 1.0 in CHCl₃).6^A-(4-Methylbenzenesulfonyl):

[67217-55-4]

C₄₉H₇₆O₃₇S 1289.183Cryst. (H₂O). Mp 172-174° dec. [α]_D²⁰ +131 (c, 4 in DMSO).

2,2',2'',2''',2''',2''''-Tetradeca-O-Me: **Heptakis(2,6-dimethyl)cyclomaltoheptaose. Dimethyl-β-cyclodextrin. DIMEB** [51166-71-3]

C₅₆H₉₈O₃₅ 1331.369Shows anomalous soly. props.: sol. in H₂O approx. 60g per 100 cm³ at r.t., but

<1g per 100cm³ at temps. >70°. Mp 312°. [α]_D²⁰ +122 (CHCl₃).

Heptacosyl-O-Me: Heptakis(2,3,6-trimethyl)cyclomaltoheptaose. Trimeb [55216-11-0]
C₆₃H₁₁₂O₃₅ 1429.557
Enantioselective stationary phase for hplc and glc resolutions. Cryst. (cyclohexane or H₂O). Mp 88-89° Mp 156-158°. [α]_D +157 (CHCl₃).

Poly-O-(2-hydroxypropyl): Hydroxypropyl-β-cyclodextrin [94035-02-6] Improves solubility of drugs in plasma by clathrate formation. Powder. V. sol. H₂O, EtOH; spar. sol. Me₂CO. [α]_D²³ +130 (c, 1 in H₂O). Props. refer to a typical prep. contg. 8-12 CH₂CH(OH)CH₃ groups per cyclodextrin molecule. A higher degree of substn. can apparently be obt.

6,6',6'',6''',6''',6''''-Heptadeoxy: Heptakis(6-deoxy)cyclomaltoheptaose [51515-89-0]
C₄₂H₇₀O₂₈ 1022.998
Mp 269.5-271.5°. [α]_D +112 (c, 0.9 in Py).

6-O-α-D-Glucopyranosyl: O-α-D-Glucopyranosyl-(1→6'')-β-cyclodextrin, 9CI [92517-02-7]
C₄₈H₈₀O₄₀ 1297.136
Isol. from commercial starch syrup Celdex™. Amorph. [α]_D²⁵ +178 (c, 0.3 in H₂O). [α]_D +172 (c, 0.6 in H₂O).

2,2',2'',2''',2''',2''''-Heptaepimer: β-Cyclomannin. Cycloheptakis-(1→4)-(α-D-mannopyranose) [130322-66-6]
C₄₂H₇₀O₃₅ 1134.994
[α]_D²³ +47.4 (c, 0.3 in H₂O).

French, D. et al., *J.A.C.S.*, 1942, **64**, 1651-1653 (cryst struct)
French, D. et al., *J.A.C.S.*, 1949, **71**, 353-356 (isol)
Barker, S.A. et al., *J.C.S.*, 1954, 171-176 (ir)
French, D. et al., *Adv. Carbohydr. Chem.*, 1957, **12**, 189-260 (rev)
Casu, B. et al., *Tetrahedron*, 1968, **24**, 803-821 (heptacosyl-O-Me, conf, pmr)
Colson, P. et al., *J.A.C.S.*, 1974, **96**, 8081-8094 (conform, cmr)
Fieser and Fieser's Reagents for Organic Synthesis, Wiley, 1977, **6**, 151 (use)
Bender, M.L. et al., *Cyclodextrin Chemistry*, Springer-Verlag, 1978,
Casu, B. et al., *Carbohydr. Res.*, 1979, **76**, 59-66 (heptacosyl-O-Me)
Lindner, K. et al., *Carbohydr. Res.*, 1982, **99**, 103-115 (cryst struct)
Szejtli, J. et al., *Cyclodextrins and Their Inclusion Complexes*, Budapest, 1982,
Ueno, A. et al., *Tet. Lett.*, 1982, **23**, 3451-3454 (6'-4-methylbenzenesulfonyl)
Abe, J. et al., *Carbohydr. Res.*, 1984, **131**, 175-179 (α-glucopyranosyl)
Pitha, J. et al., *Int. J. Pharm.*, 1986, **29**, 73-82 (Hydroxypropyl-β-cyclodextrin)
Clarke, R.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1988, **46**, 205-249 (rev. complexes)
Fugedi, P. et al., *Carbohydr. Res.*, 1988, **175**, 173-181 (synth, cmr)
Gidley, M.J. et al., *J.A.C.S.*, 1988, **110**, 3820-3829 (cmr)
Mori, M. et al., *Tet. Lett.*, 1990, **31**, 3191-3194 (β-Cyclomannin)
Sophianopoulos, A.J. et al., *Anal. Chem.*, 1992, **64**, 2652-2654 (purifn)

Baer, H.H. et al., *Carbohydr. Res.*, 1992, **228**, 307-314 (hexadeoxy)
Meier-Angenstein, W. et al., *Z. Naturforsch. B.*, 1992, **47**, 877-885 (heptacosyl-O-Me, synth, cmr, conform)
Tokutakes, S. et al., *Carbohydr. Res.*, 1993, **238**, 192-213 (6'-tosyl, synth, ir, pmr)
Steiner, T. et al., *Carbohydr. Res.*, 1995, **275**, 77-82 (cryst struct, tetradeca-Me)
Shieh, W.J. et al., *J. Macromol. Sci., Part A: Pure Appl. Chem.*, 1996, **33**, 673-683 (rev)
Irie, T. et al., *J. Pharm. Sci.*, 1997, **86**, 147-162 (rev, tox)
D'Souza, V.T. et al., *Chem. Rev.*, 1998, **98**, 1743-1753 (rev)
Schneider, H.J. et al., *Chem. Rev.*, 1998, **98**, 1755-1785 (pmr, cmr)
Reibenspies, J.H. et al., *Carbohydr. Res.*, 2000, **328**, 217-227 (cryst struct, derivs)
Org. Synth., 2000, **77**, 220-224; 225-230, (4-methylbenzenesulfonyl, synth, pmr, cmr)
Osvath, R. et al., *Food Chem. News*, 2001, **43(16)**, 6 (use)
Food Chem. News, 2001, **43(40)**, 8-9 (use)
Añibarro, M. et al., *J.A.C.S.*, 2001, **123**, 11854-11862 (heptacosyl-O-Me, synth, cmr)
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, COW925

δ-Cyclodextrin C-173

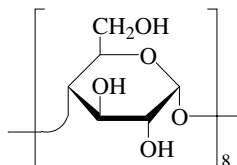
Cyclononaamylose. Cyclomaltononaose. Cyclononakis-(1→4)-(α-D-glucopyranose) [85220-53-7]
As α-Cyclodextrin, C-171 with n = 9
C₅₄H₉₀O₄₅ 1459.278
Endo, T. et al., *Carbohydr. Res.*, 1995, **269**, 369-373 (isol, cmr)
Miyazawa, I. et al., *Eur. J. Pharm. Sci.*, 1995, **3**, 153-162 (isol, pmr, cmr)
Endo, T. et al., *Chem. Pharm. Bull.*, 1997, **45**, 532-536 (cmr)

ε-Cyclodextrin C-174

Cyclodecaamylose. Cyclomaltodecaose. Cyclodecakis-(1→4)-(α-D-glucopyranose) [156510-98-4]
As α-Cyclodextrin, C-171 with n = 10
C₆₀H₁₀₀O₅₀ 1621.42
Separated from commercial cyclodextrin. Some confusion in the lit. between ε- and α-cyclodextrin.
Endo, T. et al., *Chem. Pharm. Bull.*, 1997, **45**, 532-536 (isol, cmr)
Jacob, J. et al., *Angew. Chem., Int. Ed.*, 1998, **37**, 606-609 (cryst struct)

γ-Cyclodextrin, 9CI, 8CI C-175

Cyclooctakis-(1→4)-(α-D-glucopyranose). Cyclooctaamylose. Cyclomaltooctaose [17465-86-0]



C₄₈H₈₀O₄₀ 1297.136
Obt. from the breakdown of starch by the action of *Bacillus macerans*.

[α]_D +177.4 (c, 1.0 in H₂O). Forms cryst. complexes with propanol and iodine.

Hexadeca-Ac: [123155-10-2]
C₈₀H₁₁₂O₅₆ 1969.731
[α]_D +138.5 (c, 1.0 in CHCl₃).

Tetracosyl-O-Me: [110934-22-0]
C₇₂H₁₂₈O₄₀ 1633.779
Rod-shaped cryst. +2 or 4.5 H₂O. Sol. cold H₂O, spar. sol. hot H₂O. Cryst. with difficulty.

2,2',2'',2''',2''',2''''-Octaepimer: γ-Cyclomannin. Cyclooctakis-(1→4)-(α-D-mannopyranose) [130322-69-9]
C₄₈H₈₀O₄₀ 1297.136
[α]_D²³ +27.2 (c, 0.3 in H₂O).

Per(2,6-di-O-pentyl), octakis-3-O-butanoyl: Lipodex E
C₁₆₀H₂₈₈O₄₈ 2980.006
Lipophilic chiral selector.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 198B (ir)

French, D. et al., *J.A.C.S.*, 1949, **71**, 353-356 (isol)

French, D. et al., *Adv. Carbohydr. Chem.*, 1957, **12**, 189-260 (rev)

Takeo, K. et al., *Chem. Lett.*, 1973, 1233-1236 (conform, cmr)

Bender, M.L. et al., *Cyclodextrin Chemistry*, Springer-Verlag, 1978,

Bender, H. et al., *Carbohydr. Res.*, 1983, **124**, 225-233 (synth)

Takahashi, Y. et al., *Carbohydr. Res.*, 1987, **169**, 127-149 (synth)

Clarke, R.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1988, **46**, 205-249 (rev, complexes)

Mori, M. et al., *Tet. Lett.*, 1990, **31**, 3191-3194 (γ-Cyclomannin)

Shieh, W.J. et al., *J. Macromol. Sci., Part A: Pure Appl. Chem.*, 1996, **33**, 673-683 (rev)

Irie, T. et al., *J. Pharm. Sci.*, 1997, **86**, 147-162 (rev, toxicol, safety)

D'Souza, V.T. et al., *Chem. Rev.*, 1998, **98**, 1743-1753 (rev)

Schneider, H.J. et al., *Chem. Rev.*, 1998, **98**, 1755-1785 (pmr, cmr)

Aree, T. et al., *Carbohydr. Res.*, 2000, **328**, 399-407 (tetracosyl-O-Me, synth)

Osvath, R. et al., *Food Chem. News*, 2000, **42**, 7-8 (use)

Mele, A. et al., *Carbohydr. Res.*, 2003, **338**, 625-635 (Lipodex E)

η-Cyclodextrin C-176

Cyclododecaamylose. Cyclomaltododecaose. Cyclododecakis-(1→4)-(α-D-glucopyranose) [156510-96-2]
As α-Cyclodextrin, C-171 with n = 12

C₇₂H₁₂₀O₆₀ 1945.704
Separated from commercial cyclodextrin.

Endo, T. et al., *Carbohydr. Res.*, 1995, **269**, 369-373 (isol, cmr)

Endo, T. et al., *Chem. Pharm. Bull.*, 1997, **45**, 532-536 (cmr)

ι-Cyclodextrin C-177

Cyclotetradecaamylose. Cyclomaltotetradecaose. Cyclotetradecakis-(1→4)-(α-D-glucopyranose) [156510-94-0]
As α-Cyclodextrin, C-171 with n = 14

C₈₄H₁₄₀O₇₀ 2269.988
Obt. in a mixt. with other higher

cycloamyloses by action of cyclodextrin glucanotransferase on synthetic amylose, followed by chromatographic separation. Cryst. + 29.7 H₂O. Some confusion in the lit. between ϵ - and ι -cyclodextrin.

Endo, T. *et al.*, *Chem. Pharm. Bull.*, 1997, **45**, 532-536 (*isol, cmr, struct*)
Jacob, J. *et al.*, *Angew. Chem., Int. Ed.*, 1998, **37**, 604-609 (*synth, purifn, cryst struct*)
Jacob, J. *et al.*, *Carbohydr. Res.*, 1999, **322**, 228-246 (*cryst struct*)

u-Cyclodextrin C-178

Cyclotridecaamylose. Cyclomaltotridecaose. Cyclotridecakis-(1→4)-(α-D-glucopyranose)
[156510-95-1]

As α-Cyclodextrin, C-171 with n = 13

C₇₈H₁₃₀O₆₅ 2107.846
Separated from commercial cyclodextrin.

Endo, T. *et al.*, *Chem. Pharm. Bull.*, 1997, **45**, 532-536 (*isol, cmr*)

ζ-Cyclodextrin C-179

Cycloundecaamylose. Cyclomaltoundecaose. Cycloundecakis-(1→4)-(α-D-glucopyranose)
[156510-97-3]

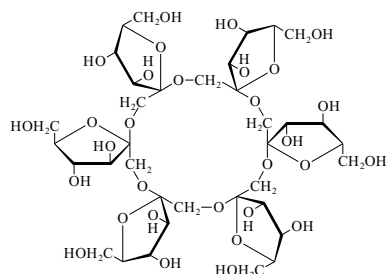
As α-Cyclodextrin, C-171 with n = 11

C₆₆H₁₁₀O₅₅ 1783.562
Separated from commercial cyclodextrin.

Endo, T. *et al.*, *Chem. Pharm. Bull.*, 1997, **45**, 532-536 (*isol, ms, cmr*)

Cyclofructan 6 C-180

Cycloinulohexaose. Cyclohexakis-(2→1)-β-D-fructofuranose
[124277-48-1]

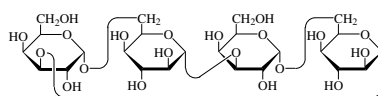


C₃₆H₆₀O₃₀ 972.852
Prod. from Inulin, I-38 by the extracellular cycloinulo-oligosaccharide fructotransferase of *Bacillus circulans*. Dendritic cryst. (MeOH) + 3H₂O. Mp 231-233° dec. [α]_D²⁰ -64.6 (c, 1.08 in H₂O).

Kawamura, M. *et al.*, *Carbohydr. Res.*, 1989, **192**, 83 (*isol, struct, cmr, ms*)
Sawada, M. *et al.*, *Carbohydr. Res.*, 1991, **217**, 7 (*cryst struct*)
Kushibe, S. *et al.*, *Biosci., Biotechnol., Biochem.*, 1994, **58**, 1136 (*isol*)

Cyclo[(1→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(→6)-α-D-glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→)] CTS

[159640-28-5]



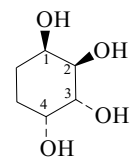
C₂₄H₄₀O₂₀ 648.568

Prod. by the action of alternanase on alternan or by action of novel glycosyltransferases from *Bacillus globisporus* on starch or maltooligosaccharides. Characterised spectroscopically.

Biely, P. *et al.*, *Eur. J. Biochem.*, 1994, **226**, 641-648 (*synth*)
Bradbrook, G.M. *et al.*, *Carbohydr. Res.*, 2000, **329**, 655-665 (*cryst struct*)
Côté, G.L. *et al.*, *Carbohydr. Res.*, 2001, **332**, 373-379 (*synth*)
Aga, H. *et al.*, *J. Biosci. Bioeng.*, 2002, **94**, 336-342 (*isol*)

1,2,3,4-Cyclohexanetetrol, 9CI C-182

Dihydroconduritol. Cyclohexaneerythritol
[3877-34-7]



(1R,2R,3R,4R)-form

C₆H₁₂O₄ 148.158

All possible stereoisomers known.

(1R,2R,3R,4R)-form
(-)-(1α,2α,3β,4β)-form

[2975-92-0]
Cryst. (EtOH). Mp 218°. [α]_D -73.7 (c, 11.4 in H₂O).

(1R,2R,3R,4S)-form
(-)-(1α,2α,3β,4α)-form

[18422-12-3]
Cryst. (EtOH). Mp 161°. [α]_D²¹ -38.5 (c, 7.7 in H₂O).

(1R,2R,3S,4R)-form
(-)-(1α,2α,3α,4β)-form

[18424-51-6]
Cryst. (EtOH). Mp 158-160°. [α]_D²⁰ -35.8 (c, 4.7 in H₂O).

(1R,2S,3S,4R)-form
(-)-(1α,2β,3α,4β)-form

[78147-99-6]
Plates (EtOH). Mp 146-148°. [α]_D¹⁷ -28.8 (c, 1.11 in H₂O).

Tetrabenzoyl:

Fine needles (AcOH). Mp 244-246°. [α]_D²¹ -26.3 (c, 0.95 in CHCl₃).

(1S,2R,3R,4S)-form (+)-(1α,2β,3α,4β)-form

Tetra-Ac:
Cryst. (EtOH). Mp 125.5-127°.

(1S,2S,3S,4R)-form (+)-(1α,2α,3β,4α)-form

[129938-05-2]
Cryst. (EtOH). Mp 158-160°. [α]_D¹⁸ +38 (c, 0.46 in H₂O).

(1S,2S,3S,4S)-form (+)-(1α,2α,3β,4β)-form

Prisms (MeOH). Mp 215°. [α]_D²⁶ +72 (c, 1.14 in H₂O).

(1RS,2RS,3RS,4RS)-form (±)-

(1α,2α,3β,4β)-form. *Dihydroconduritol E*
[160081-34-5]
Cryst. (EtOH). Mp 216° Mp 208-209°. Forms a dihydrate. Sublimes.

Tetra-Ac:

C₁₄H₂₀O₈ 316.307
Mp 110°.

(1RS,2RS,3RS,4SR)-form (±)-

(1α,2α,3β,4α)-form. *Dihydroconduritol F*
[129829-52-3]
Small prisms (EtOH). Mp 142° Mp 135-136°. Sublimes.

Tetrabenzoyl:

C₃₄H₂₈O₈ 564.59
Mp 154-155°.

(1RS,2RS,3SR,4RS)-form (±)-

(1α,2α,3α,4β)-form. *Dihydroconduritol C*
[18424-68-5]
Fine needles (EtOH). Mp 157° Mp 152-153°. Sublimes.

Tetrabenzoyl: Mp 154°.

(1RS,2RS,3SR,4SR)-form (±)-

(1α,2α,3α,4α)-form. *Dihydroconduritol D*
[199013-92-8]
Noncryst.

Tetra-Ac:

Noncryst.

(1RS,2SR,3RS,4SR)-form (±)-

(1α,2β,3β,4α)-form. *Dihydroconduritol A. Toxocarol*
[20089-18-3]
Isol. from *Toxocarus himalensis* and *Marsdenia tomentosa*.
Needles (EtOH).
Mp 210° Mp 205-207°. *meso*-form. Sublimes.

Tetrabenzoyl: Mp 146°.

(1RS,2SR,3SR,4RS)-form (±)-

(1α,2β,3α,4β)-form. *Dihydroconduritol B*
[129829-63-6]
Needles (EtOH). Mp 187°.

Tetrabenzoyl:

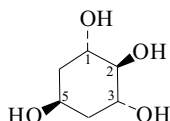
Cryst. (AcOH). Mp 260°.

Posternak, T. *et al.*, *Helv. Chim. Acta*, 1953, **36**, 251; 1955, **38**, 195; 1961, **44**, 257; 267 (*synth*)
Angyal, S.J. *et al.*, *J.C.S.*, 1958, 375 (*synth*)
Suami, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1971, **44**, 2804 (*synth*)
Ogawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1978, **51**, 2957 (*synth*)
Chastrette, M. *et al.*, *Can. J. Chem.*, 1981, **59**, 907 (*cd*)
Zhang, Z. *et al.*, *Jiegou Huaxue*, 1987, **6**, 128 (*isol, cryst struct, Toxocarol*)
Akbulut, N. *et al.*, *J.O.C.*, 1988, **53**, 3338 (*synth*)
Le Drian, C. *et al.*, *Helv. Chim. Acta*, 1990, **73**, 161 (*synth*)
Tschamber, T. *et al.*, *Helv. Chim. Acta*, 1992, **75**, 1052 (*synth*)

Anslyn, E.V. *et al.*, *Synth. Commun.*, 1994, **24**, 2757 (*synth*, *pmr*, *cmr*)
 Phillipson, N. *et al.*, *J.C.S. Perkin 1*, 1997, 2821-2829 (*synth*, *pmr*, *cmr*)
 Abe, F. *et al.*, *Phytochemistry*, 1998, **47**, 1297-1301 (*isol*, *pmr*, *cmr*)

1,2,3,5-Cyclohexanetetrol, 9CI, 8CI

C-183

(1 α ,2 β ,3 α ,5 β)-formC₆H₁₂O₄ 148.158

(1 α ,2 β ,3 α ,5 β)-form [53585-08-3]

Cryst. (C₆H₆/MeOH). Mp 181.5-182.5°. *Meso*-.

Tetrazobenzoyl:

C₃₄H₂₈O₈ 564.59

Mp 207-208°.

Tetra-Ac:

C₁₄H₂₀O₈ 316.307

Mp 88-89°.

(1 α ,2 α ,3 α ,5 β)-form

Mp 193°. *Meso*-.

Dangschat, G. *et al.*, *Naturwissenschaften*, 1939, **27**, 756 (*synth*)

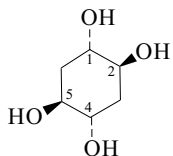
McCasland, G.E. *et al.*, *J.A.C.S.*, 1954, **76**, 2373 (*synth*)

McCasland, G.E. *et al.*, *J.O.C.*, 1964, **29**, 2354 (*synth*, *nmr*)

Fr. Pat., 1977, 2 318 864; *CA*, **87**, 167614 (*synth*)

1,2,4,5-Cyclohexanetetrol, 9CI

C-184



(1S,2S,4S,5S)-form

C₆H₁₂O₄ 148.158

5 Stereoisomeric forms possible, 3 *meso* and 2 (\pm). All are known.

(1S,2S,4S,5S)-form

(1 α ,2 β ,4 α ,5 β)-(\pm)-form. *D*-form (*obsol.*)

Constit. of the alga *Monochrysis lutheri*. Prisms (EtOH).

Mp 205-207° dec. (after sintering at 131-132°). $[\alpha]_D^{21} +22.5$ (c, 1.06 in H₂O).

Tetra-Ac:

C₁₄H₂₀O₈ 316.307

Viscous oil. $[\alpha]_D^{21} +10.1$ (c, 1.53 in CHCl₃).

Tetrazobenzoyl:

C₃₄H₂₈O₈ 564.59

Viscous oil. $[\alpha]_D^{21} -28.3$ (c, 1.06 in CHCl₃).

Tetrakis-O-trifluoroacetyl:

C₁₄H₈F₁₂O₈ 532.193

Mp 104-106°.

Tetrakis-O-trimethylsilyl:

C₁₈H₄₄O₄Si₄ 436.885

Mp 57-59°.

(1*RS*,2*RS*,4*RS*,5*RS*)-form (1 α ,2 β ,4 α ,5 β)-(\pm)-form. *D,L*-form (*obsol.*)

Cryst. (EtOH). Mp 208°.

Tetra-Ac:

Cryst. (EtOH). Mp 148°.

Tetrazobenzoyl: Mp 181°.

(1*RS*,2*SR*,4*RS*,5*SR*)-form(1 α ,2 α ,2 α ,3 α ,4 α)-form. all-cis-form

Cryst. (EtOH). Mp 224-225°. Opt. inactive (*meso*-).

Tetra-Ac:

Cryst. (EtOH). Mp 127-128°.

(1*RS*,2*SR*,4*SR*,5*SR*)-form (1 α ,2 α ,4 β ,5 β)-form

[45775-30-2]

Cryst. (EtOH). Mp 240-241°. Opt. inactive (*meso*-).

Tetra-Ac:

Cryst. (EtOH). Mp 169-170°.

(1*RS*,2*RS*,4*SR*,5*SR*)-form (1 α ,2 β ,4 β ,5 α)-form

Cryst. (EtOH). Mp 284-285° dec. Opt. inactive (*meso*-).

Tetrazobenzoyl:

Cryst. (CHCl₃/EtOH). Mp 266-267°.

(1*RS*,2*SR*,4*RS*,5*RS*)-form (1 α ,2 α ,4 α ,5 β)-(\pm)-form

Cryst. (EtOH). Mp 208-209°.

Tetrazobenzoyl:

Cryst. (EtOH/C₆H₆). Mp 172-173°.

McCasland, G.E. *et al.*, *J.A.C.S.*, 1954, **76**, 1654; 2373 (*synth*)

Shoolery, J.N. *et al.*, *J.O.C.*, 1963, **28**, 894 (*synth*, *pmr*)

Ramanathan, J.D. *et al.*, *Tet. Lett.*, 1966, 1527 (*isol*, *abs config*)

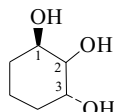
Tschamber, T. *et al.*, *Helv. Chim. Acta*, 1992, **75**, 1052 (*synth*)

Maras, A. *et al.*, *Carbohydr. Res.*, 1998, **308**, 435-437 (1*RS*,2*RS*,4*RS*,5*RS*-form, !*synth*)

1,2,3-Cyclohexanetriol, 9CI

C-185

Pyrogallitol. Hexahydropyrogallol [6286-43-7]

(1*R*,3*R*)-formC₆H₁₂O₃ 132.159

All three possible stereoisomeric forms known, two *meso*- and one (\pm)-. The latter is also known in opt. active form.

(1*R*,3*R*)-form*L*-form. (\pm)- β -form

Cryst. (petrol). Mp 129-131°. $[\alpha]_D^{20} +72.8$ (c, 1.02 in H₂O).

Tri-Ac:

C₁₂H₁₈O₆ 258.271Syrup. $[\alpha]_D^{20} -51.5$ (c, 0.05 in MeNO₂).

Tribenzoyl:

C₂₇H₂₄O₆ 444.483

Mp 141-142°. $[\alpha]_D^{20} -190.5$ (c, 0.98 in CHCl₃).

(1*RS*,3*RS*)-form (\pm)- β -form

Cryst. (EtOAc). Mp 124-125°.

Tribenzoyl:

Cryst. (AcOH). Mp 184°.

(1 α ,2 β ,3 α)-form α -(*meso*)-formNeedles (EtOAc or Me₂CO). Mp 108°.

Tribenzoyl: [13302-89-1]

Needles (EtOH). Mp 142°.

(1 α ,2 α ,3 α)-form γ -(*meso*)-form

Cryst. (AcOH). Mp 148°.

Tribenzoyl:

Cryst. (EtOH). Mp 142°.

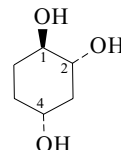
Lindemann, H. *et al.*, *Annalen*, 1930, **483**, 31 (*synth*)

Posternak, T. *et al.*, *Helv. Chim. Acta*, 1947, **30**, 441 (*config*)

Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 331 (*synth*, *abs config*)

1,2,4-Cyclohexanetriol, 9CI

C-186

(1*RS*,2*RS*,4*RS*)-formC₆H₁₂O₃ 132.159All four (\pm)-forms known.(1*RS*,2*RS*,4*RS*)-form(1 α ,2 β ,4 β)-(\pm)-form

Tribenzoyl:

C₂₇H₂₄O₆ 444.483

Mp 116°.

(1*RS*,2*SR*,4*SR*)-form (1 α ,2 α ,4 α)-(\pm)-form

Mp 138°.

Tris-(4-methylbenzenesulfonyl):

C₂₇H₃₀O₉S₃ 594.727

Mp 140°.

(1*RS*,2*SR*,4*RS*)-form (1 α ,2 α ,4 β)-(\pm)-form
Mp 161°.

Tris-(4-methylbenzenesulfonyl): Mp 110°.

(1*RS*,2*RS*,4*SR*)-form (1 α ,2 β ,4 α)-(\pm)-form

Tribenzoyl: Mp 154°.

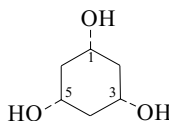
Zelinsky, N. *et al.*, *Ber.*, 1931, **64**, 140 (*synth*)

McCasland, G.E. *et al.*, *J.O.C.*, 1966, **31**, 3079 (*synth*, *config*, *nmr*)

1,3,5-Cyclohexanetriol, 9CI

C-187

Phloroglucitol. Phloroglucite. Hexahydrophloroglucinol [2041-15-8]

(1 α ,3 α ,5 α)-formC₆H₁₂O₃ 132.159

2 possible stereoisomers.

(1 α ,3 α ,5 α)-form*cis*-form. α -form

[50409-12-6]

Cryst. + 2H₂O (H₂O). Spar. sol. C₆H₆, Me₂CO. Mp 110-112° (anhyd. 185°).

Tri-Ac:

C₁₂H₁₈O₆ 258.271

Mp 79°.

Trisphenylurethane: Mp 245°.

(1 α ,3 α ,5 β)-form *trans*-form. β -form

[13314-30-2]

Cryst. (EtOH). Sol. H₂O, spar. sol.
C₆H₆, Me₂CO. Mp 145°.

Trisphenylurethane: Mp 160°.

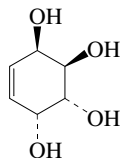
Tri-Ac: [58006-28-3]

Mp 60-61°.

[38551-69-8]

Lindemann, H. *et al.*, *Annalen*, 1930, **477**, 78
(*synth*)Strong, P.N. *et al.*, *J.O.C.*, 1975, **40**, 956 (*synth*,
pmr)Stetter, H. *et al.*, *Annalen*, 1984, 1577 (*synth*)**5-Cyclohexene-1,2,3,4-tetrol C-188**

3,4,5,6-Tetrahydroxycyclohexene.

Conduritol(1*R*,2*R*,3*R*,4*R*)-formC₆H₁₀O₄ 146.143**(1*R*,2*R*,3*R*,4*R*)-form**(1 α ,2 α ,3 β ,4 β)-form. *Conduritol E*

[4942-62-5]

Mp 179-180°. A racemate. Known also
in opt. active forms ((+)-form, Mp 193°,
[α]_D +332 (H₂O)).Tetra-Ac: Tetra-*O*-acetylconduritol *E*

[143615-78-5]

C₁₄H₁₈O₈ 314.291Cryst. (EtOAc/hexane). Mp 156° (153°).
Bp_{0.6} 165°.1,2:3,4-Di-*O*-isopropylidene: 1,2:3,4-Di-*O*-
isopropylideneconduritol *E*

[142129-09-7]

C₁₂H₁₈O₄ 226.272

Mp 60-61°.

(1*R*,2*R*,3*R*,4*R*)-form (1 α ,2 α ,3 β ,4 α)-
form. **Conduritol F**. *Leucanthevit*
[4782-76-7][6090-98-8] Constit. of *Chrysanthemum*
leucanthemum, *Chrysanthemum maximum*,
Hoya carnosa, *Thuja occidentalis*, and
Chlorella fusca. Found in opt. active form
in nearly all green plants in small amts.
Mp 103-104°. A racemate, to which the
Mp given refers. The naturally occurring
isomer is the (+)-form having Mp 134°,
[α]_D +101.5 (H₂O).Tetra-Ac: Tetra-*O*-acetylconduritol *F*

[6216-24-6]

C₁₄H₁₈O₈ 314.291

Mp 92°.

2-*O*- β -*D*-Glucopyranoside: [209542-57-4]C₁₂H₂₀O₉ 308.285Constit. of *Marsdenia tomentosa*. Solid.
[α]_D²⁵ -22.5 (c, 1.2 in H₂O).3-*O*- β -*D*-Glucopyranoside:C₁₂H₂₀O₉ 308.285Constit. of *Asclepias curassavica* and
Cynanchum liukiuense. Amorph. solid.
[α]_D²⁵ -30 (c, 0.25 in H₂O).4-*O*- β -*D*-Glucopyranoside:C₁₂H₂₀O₉ 308.285Constit. of *Cynanchum liukiuense*.Amorph. solid. [α]_D²⁶ -4.6 (c, 0.34 in
MeOH).**(1*R*,2*R*,3*R*,4*R*)-form** (1 α ,2 α ,3 α ,4 β)-
form. *Conduritol C*

[4942-61-4]

Mp 150-152° (146-148°). A racemate.

Known also in opt. active forms. ((-)-
form, Mp 146-148°, [α]_D²⁵ -209 (H₂O)).Tetra-Ac: Tetra-*O*-acetylconduritol *C*

[143615-79-6]

C₁₄H₁₈O₈ 314.291

Mp 92°.

(1*R*,2*R*,3*R*,4*R*)-form (1 α ,2 α ,3 α ,4 α)-
form. *Conduritol D*[4782-75-6] Opt. inactive (*meso*-).Tetra-Ac: Tetra-*O*-acetylconduritol *D*

[123354-99-4]

C₁₄H₁₈O₈ 314.291

Mp 102-104°.

Tetrabenzoyl: Tetra-*O*-benzoylconduritol *D*C₃₄H₂₆O₈ 562.575

Mp 184°.

1,2:3,4-Di-*O*-isopropylidene:C₁₂H₁₈O₄ 226.272

Mp 67-68°. Cryst. with difficulty.

(1*R*,2*R*,3*R*,4*R*)-form (1 α ,2 β ,3 β ,4 α)-
form. **Conduritol A**

[526-87-4]

Constit. of condurango bark (*Marsdenia*
condurango), four genera of Aselepiada-
ceae, and six families of Dicotyledons.
Large tetragonal prisms.Mp 118° Mp 142-143°. Opt. inactive
(*meso*-).1-*O*- α -*D*-Galactopyranoside: [209542-55-2]C₁₂H₂₀O₉ 308.285Constit. of *Marsdenia tomentosa*. Solid.
[α]_D²⁴ +106.5 (c, 0.8 in MeOH).2- or 3-*O*- β -*D*-Glucopyranoside:C₁₂H₂₀O₉ 308.285Constit. of *Marsdenia tomentosa*. Solid.
[α]_D²⁶ +21.3 (c, 0.5 in H₂O).**(1*R*,2*R*,3*R*,4*R*)-form** (1 α ,2 β ,3 α ,4 β)-
form. *Conduritol B*

[25348-64-5]

Mp 205°. A racemate. Known also in
opt. active forms. ((-)-form, Mp 179.2°,
[α]_D²⁰ -156.0 (MeOH)).Tetra-Ac: Tetra-*O*-acetylconduritol *B*

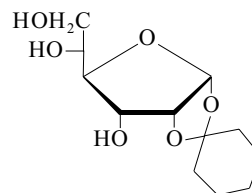
[25348-63-4]

C₁₄H₁₈O₈ 314.291

Mp 92-93° (85-85.5°).

Nakajima, M. *et al.*, *Chem. Ber.*, 1957, **90**,246-250 (*Conduritol A*, *Conduritol B*,
Conduritol C, *Conduritol E*, *synth*)Angyal, S.J. *et al.*, *J.C.S.*, 1958, 375-379(Conduritol *D*, *synth*)Posternak, Th. *et al.*, *The Cyclitols*,

Holden-Day, San Francisco, 1965, 145

Kindl, H. *et al.*, *Monatsh. Chem.*, 1966, **97**,1783-1786 (*Leucanthevit*, *isol*)Sütbeyaz, Y. *et al.*, *Chem. Comm.*, 1988,1330-1331 (*Conduritol A*, *synth*)Le Drian, C. *et al.*, *Helv. Chim. Acta*, 1989, **72**,338; 1990, **73**, 161-168 (*Conduritol C*, *Condu-*ritol *B*, *Conduritol F*, *synth*, *bibl. abs config*)Cambie, R.C. *et al.*, *Synth. Commun.*, 1989, **19**,537-546 (*Conduritol A*, *synth*)Balci, M. *et al.*, *Tetrahedron*, 1990, **46**,
3715-3742 (*rev*)Carless, H.A.J. *et al.*, *Chem. Comm.*, 1992,
234-235 (*Conduritol C*, *synth*)Tschamber, T. *et al.*, *Helv. Chim. Acta*, 1992, **75**,
1052-1060 (*Conduritol C*, *Conduritol D*,
Conduritol E, *synth*, *pmr*)Dumortier, L. *et al.*, *Synlett*, 1992, 243-245
(*Conduritol C*, *Conduritol E*, *Conduritol F*,
synth)Secen, H. *et al.*, *Synth. Commun.*, 1992, **22**,2613-2619 (*Conduritol C*, *Conduritol E*, *synth*)Akiyama, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1993,
66, 3760-3767 (*Conduritol B*, *Conduritol F*,
synth)Chretien, F. *et al.*, *Nat. Prod. Lett.*, 1993, **2**,69-75 (*Conduritol E*, *Conduritol F*, *synth*)Guo, Z.X. *et al.*, *Carbohydr. Res.*, 1994, **264**,
147-153 (*Conduritol B*, *synth*)Mereyala, H.B. *et al.*, *J.C.S. Perkin 1*, 1994,2187-2190 (*Conduritol A*, *Conduritol C*, *synth*)Takano, S. *et al.*, *J.O.C.*, 1994, **59**, 54-57
(*Conduritol E*, *synth*)Secen, H. *et al.*, *Synth. Commun.*, 1994, **24**,
2103-2108 (*Conduritol F*, *synth*, *cmr*)Patti, A. *et al.*, *J.O.C.*, 1996, **61**, 6458-6461
(*Conduritol F*, *synth*)Balci, M. *et al.*, *Pure Appl. Chem.*, 1997, **69**,
97-104 (*rev*, *synth*)Yoshizaki, H. *et al.*, *J.O.C.*, 1998, **63**, 9339-9341
(*Conduritol C*, *synth*, *pmr*, *cmr*)Abe, F. *et al.*, *Phytochemistry*, 1998, **47**, 1297-
1301 (*isol*, *glycosides*)Angelaud, R. *et al.*, *J.O.C.*, 1999, **64**, 9613-9624
(*Conduritol E*, *synth*, *pmr*)Abe, F. *et al.*, *Chem. Pharm. Bull.*, 2000, **48**,
1090-1092 (*glucosides*)Mehta, G. *et al.*, *Tet. Lett.*, 2000, **41**, 3509-3512
(*Conduritol E*, *synth*)Cere, V. *et al.*, *Tetrahedron*, 2000, **56**, 1225-1231
(*synth*)Kwon, Y.-U. *et al.*, *J.O.C.*, 2002, **67**, 3327-3338
(*synth*)de Souza, S.E. *et al.*, *Tetrahedron*, 2002, **58**,
4643-4654 (*Conduritol F*, *synth*, *tetra-Ac*)Gultekin, M.S. *et al.*, *Curr. Org. Chem.*, 2004, **8**,
1159-1186 (*rev*)**1,2-*O*-Cyclohexylideneallofuran-
anose, 9CI, 8CI C-189**C₁₂H₂₀O₆ 260.286 **α -*D*-form** [22250-02-8]Cryst. (petrol/EtOAc). Mp 111-112°.
[α]_D²⁵ +46.1 (c, 0.56 in EtOH).5,6-*O*-Cyclohexylidene: 1,2:5,6-Di-*O*-
cyclohexylidene- α -*D*-allofuranoseC₁₈H₂₈O₆ 340.416Mp 123-125.5°. [α]_D¹⁴ +12.4 (c, 0.93 in
CHCl₃).5,6-*O*-Cyclohexylidene, 3-*mesyl*: 1,2:5,
6-Di-*O*-cyclohexylidene-3-*O*-*mesyl*- α -*D*-
allofuranose

[58109-18-5]

C₁₉H₃₀O₆S 418.507Mp 119.5-121.5°. [α]_D²³ +82.2 (c, 1.3 in
CHCl₃).

5,6-*O*-Cyclohexylidene, 3-*C-Me*: 1,2:5,6-*Di-O-cyclohexylidene-3-C-methyl- α -D-allofuranose*
[22384-94-7]
 $C_{19}H_{30}O_6$ 354.442
Cryst. (petrol). Mp 119-121°. $[\alpha]_D^{20} +28.4$ (c, 1.0 in $CHCl_3$).

5,6-*O*-Cyclohexylidene, 3-*C-Et*: 1,2:5,6-*Di-O-cyclohexylidene-3-C-ethyl- α -D-allofuranose*
 $C_{20}H_{32}O_6$ 368.469
Cryst. (petrol). Mp 98-100°. $[\alpha]_D^{20} +27$ (c, 1.0 in $CHCl_3$).

5,6-*O*-Cyclohexylidene, 3-*C-vinyl*: 1,2:5,6-*Di-O-cyclohexylidene-3-C-vinyl- α -D-allofuranose*
 $C_{20}H_{30}O_6$ 366.453
Cryst. (petrol). Mp 91-92°. $[\alpha]_D^{20} +32.3$ (c, 2.0 in $CHCl_3$).

James, K. *et al.*, *J.C.S. (C)*, 1967, 2681, (α -D-cyclohexylidene)

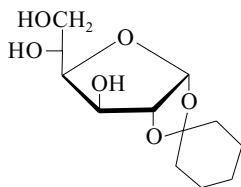
Kawana, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1968, 41, 2199 (α -D-form, α -D-cyclohexylidene)

Rees, R.D. *et al.*, *J.C.S. (C)*, 1968, 2716, (α -D-cyclohexylidene Me, α -D-cyclohexylidene Et, α -D-cyclohexylidene vinyl)

Ogawa, T. *et al.*, *Agric. Biol. Chem.*, 1971, 35, 1825 (α -D-cyclohexylidene)

Kawana, M. *et al.*, *Tet. Lett.*, 1975, 3395, (α -D-cyclohexylidene mesyl)

1,2-*O*-Cyclohexyldene- α -D-glucopyranose, 9CI, 8CI C-190



$C_{12}H_{20}O_6$ 260.286

α -D-form [16832-21-6]

Mp 151-153°. $[\alpha]_D +4$ (Me_2CO).

3,5,6-Tribenzoyl: 3,5,6-Tri-*O*-benzoyl-1,2-*O*-cyclohexylidene- α -D-glucopyranose
 $C_{33}H_{32}O_9$ 572.61
Mp 124-126°. $[\alpha]_D -90.4$ ($CHCl_3$).

3,5-*O*-Methylene: 1,2-*O*-Cyclohexylidene-3,5-*O*-methylene- α -D-glucopyranose
[23397-82-2]
 $C_{13}H_{20}O_6$ 272.297
Mp 68-70°. $[\alpha]_D +22$ (c, 1.0 in EtOH).

5,6-*O*-Cyclohexylidene: 1,2:5,6-*Di-O-cyclohexylidene- α -D-glucopyranose*
[23397-76-4]
 $C_{18}H_{28}O_6$ 340.416
Mp 131-133°. $[\alpha]_D +1.6$ ($CHCl_3$).

5,6-*O*-Cyclohexylidene, 3-benzoyl: 3-*O*-Benzoyl-1,2:5,6-*Di-O-cyclohexylidene- α -D-glucopyranose*
 $C_{25}H_{32}O_7$ 444.524
Mp 111-112.5°. $[\alpha]_D -37$ ($CHCl_3$).

5,6-*O*-Cyclohexylidene, 3-tosyl: 1,2:5,6-*Di-O-cyclohexylidene-3-O-tosyl- α -D-glucopyranose*
 $C_{25}H_{34}O_8S$ 494.605
Mp 89-91°. $[\alpha]_D -67.6$ ($CHCl_3$).

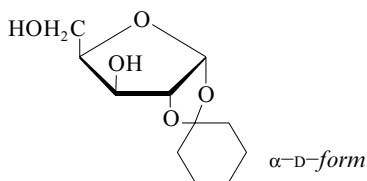
3,5-*O*-Benzylidene: 3,5-*O*-Benzylidene-1,2-*O*-cyclohexylidene- α -D-glucopyranose
 $C_{19}H_{24}O_6$ 348.395
Mp 140-141°. $[\alpha]_D +31$.

6-Benzyl, 3,5-*O*-benzylidene: 6-*O*-Benzyl-3,5-*O*-benzylidene-1,2-*O*-cyclohexylidene- α -D-glucopyranose
 $C_{26}H_{30}O_6$ 438.519
Mp 139-140°.

3,5,6-Orthoformate: $C_{13}H_{18}O_6$ 270.282
Cryst. (C_6H_6). Mp 191°. $[\alpha]_D -30$ (c, 1.0 in $CHCl_3$).

Hockett, R.C. *et al.*, *J.A.C.S.*, 1949, 71, 3072 (α -D-form, synth, α -D-cyclohexylidene, α -D-cyclohexylidene acetals, α -D-tribenzoyl)
de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, 20, 219 (rev, derivs)
Bhattacharjee, S.S. *et al.*, *Can. J. Chem.*, 1969, 47, 1195 (α -D-methylene, α -D-orthoformate)

1,2-*O*-Cyclohexyldene- α -D-xylofuranose C-191



$C_{11}H_{18}O_5$ 230.26

α -D-form [22250-06-2]

Mp 91-92°. $[\alpha]_D -12.4$ (c, 0.89 in H_2O).

5-Mesyl: 1,2-*O*-Cyclohexylidene-5-*O*-mesyl- α -D-xylofuranose
 $C_{12}H_{20}O_7S$ 308.352
Mp 159-162°. $[\alpha]_D -13$ ($MeOH$).

3,5-Dimesyl: 1,2-*O*-Cyclohexylidene-3,5-*di-O*-mesyl- α -D-xylofuranose
 $C_{13}H_{22}O_9S_2$ 386.443
Mp 135°.

5-Tosyl: 1,2-*O*-Cyclohexylidene-5-*O*-tosyl- α -D-xylofuranose
[22170-03-2]
 $C_{18}H_{24}O_7S$ 384.449
Mp 123-125°. $[\alpha]_D -10$ ($CHCl_3$).

3,5-Ditosyl: 1,2-*O*-Cyclohexylidene-3,5-*di-O*-tosyl- α -D-xylofuranose
 $C_{25}H_{30}O_9S_2$ 538.639
Mp 134°.

3,5-*O*-Cyclohexylidene: 1,2:3,5-*Di-O-cyclohexylidene- α -D-xylofuranose*
 $C_{17}H_{26}O_5$ 310.389
Cryst. (EtOH). Mp 105°. $[\alpha]_D -2.9$ (EtOH).

5-Trityl: 1,2-*O*-Cyclohexylidene-5-*O*-trityl- α -D-xylofuranose
[40773-82-8]
 $C_{30}H_{32}O_5$ 472.58
Mp 145-147°. $[\alpha]_D^{25} -28.3$ (c, 1.0 in EtOH).

α -L-form

Mp 83-84°. $[\alpha]_D +0.41$ (Me_2CO).

5-Tosyl: 1,2-*O*-Cyclohexylidene-5-*O*-tosyl- α -L-xylofuranose
 $C_{18}H_{24}O_7S$ 384.449
Mp 124°.

3,5-*O*-Cyclohexylidene: 1,2:3,5-*Di-O-cyclohexylidene- α -L-xylofuranose*
 $C_{17}H_{26}O_5$ 310.389
Cryst. (EtOH). Mp 103-104°. $[\alpha]_D^{20} -2.88$ (c, 9.1 in Me_2CO).

Kazimirova, V.F. *et al.*, *Zh. Obshch. Khim.*, 1960, 30, 732

Heyns, K. *et al.*, *Chem. Ber.*, 1961, 94, 348, (*D*-form, *D*-cyclohexylidene)

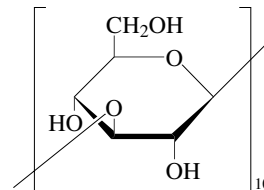
de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, 20, 219; 1977, 34, 179 (rev)

v. Schuching, S. *et al.*, *J.O.C.*, 1965, 30, 1288, (*L*-form, *L*-cyclohexylidene)

Veksler, V.I. *et al.*, *Zh. Obshch. Khim.*, 1968, 38, 1649

Cyclolaminarirose

C-192

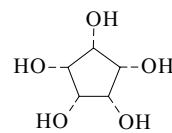


$C_{60}H_{100}O_{50}$ 1621.42

Isol. from a recombinant strain of *Rhizobium meliloti* TY7. The cyclooligosaccharide isol. from *Rhizobium meliloti* was substituted at one of the 6-positions by a β -laminarabiosyl residue.

Pfeffer, P.E. *et al.*, *Carbohydr. Res.*, 1996, 296, 23-37

1,2,3,4,5-Cyclopentanepentol C-193



(1 α ,2 α ,3 α ,4 α ,5 α)-form

$C_5H_{10}O_5$ 150.131

Four stereoisomers known, all *meso*-.

(1 α ,2 α ,3 α ,4 α ,5 α)-form

1,2,3,4,5/0-form. *cis*-1,2,*cis*-1,3,*cis*-1,4,*cis*-1,5-form

[34322-89-9]

Long needles. Mp 283° (darkens at 220°).

(1 α ,2 α ,3 α ,4 α ,5 β)-form

1,2,3,4/5-form. *cis*-1,2,*cis*-1,3,*cis*-1,4,*trans*-1,5-form

[18939-02-1]

Mp 199-200°.

Pentabenzoyl:

$C_{40}H_{30}O_{10}$ 670.671

Mp 119°.

(1 α ,2 α ,3 α ,4 β ,5 β)-form 1,2,3/4,5-form. *cis*-1,2,*cis*-1,3,*trans*-1,4,*trans*-1,5-form

[18939-07-6]

Mp 176°.

Pentabenzoyl: Mp 241°.

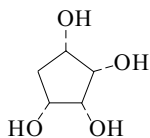
(1 α ,2 α ,3 β ,4 α ,5 β)-form 1,2,4/3,5-form. *cis*-1,2,*trans*-1,3,*cis*-1,4,*trans*-1,5-form

[57784-52-8]

Cryst. (EtOH aq.). Mp 149-150°.

Pentabenzoyl:

Small prisms (EtOH). Mp 172-173°.
Posternak, T. *et al.*, *Naturwissenschaften*, 1968, **55**, 82
Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1970, **23**, 1831 (*synth*)
Cocu, F.G. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1676 (*synth*)

1,2,3,4-Cyclopentanetetrol, 9CI, 8CI**C-194**(1 α ,2 α ,3 α ,4 α)-formC₅H₁₀O₄ 134.132**(1 α ,2 α ,3 α ,4 α)-form** [34361-77-8]
Mp 196-197°. *Meso*-.**Tetra-Ac:**C₁₃H₁₈O₈ 302.28
Oil.**Tetrabenzoyl:**C₃₃H₂₆O₈ 550.564
Mp 119°.**(1 α ,2 β ,3 α ,4 β)-form**

Mp 91-92°. Racemate.

Tetrabenzoyl: Mp 63-66°.**(1 α ,2 α ,3 α ,4 β)-form**

Mp 73-74°. Racemate.

Tetrabenzoyl: Mp 135-136°.**(1 α ,2 α ,3 β ,4 α)-form**

Syrup. Racemate.

Tetrabenzoyl:

Cryst. in two forms. Mp 107-108° Mp 113°.

(1 α ,2 β ,3 β ,4 α)-form [14003-71-5]Mp 135-136°. *Meso*-.**Tetrabenzoyl:** Mp 126-128° (resolidifies and remelts at 144-146°).**(1 α ,2 α ,3 β ,4 β)-form**

Mp 127-128°. Racemate.

Tetra-Ac:

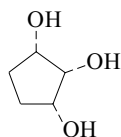
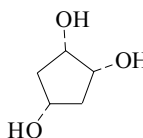
Oil.

Tetrabenzoyl:

Long needles. Mp 146-147°.

Sable, H.Z. *et al.*, *Helv. Chim. Acta*, 1963, **46**, 1157 (*synth*)Cocu, F.G. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1676 (*synth*)Ritchie, R. *et al.*, *Can. J. Chem.*, 1975, **53**, 1424 (*nmr*)Singy, G.A. *et al.*, *Helv. Chim. Acta*, 1975, **58**, 2164 (*ms*)Zuckerman-Schpector, J. *et al.*, *Acta Cryst. C*, 1996, **52**, 1298 (*cryst struct, mono-Ac*)Donohoe, T.J. *et al.*, *J.O.C.*, 2002, **67**, 7946-7956 (*tetra-Ac, synth, pmr, cmr, ir*)**1,2,3-Cyclopentanetriol, 9CI, 8CI****C-195**

[56772-27-1]

(1 α ,2 α ,3 α)-formC₅H₁₀O₃ 118.132**(1 α ,2 α ,3 α)-form** [34361-69-8] Bp_{0.1} 60°. *Meso*-.**Tribenzoyl:**C₂₆H₂₂O₆ 430.456
Cryst. (petrol). Mp 77-78°.**(1 α ,2 α ,3 β)-form**Cryst. (Me₂CO/petrol). Mp 73-75°. Racemate. Known also in enantiomeric forms.**Tribenzoyl:** Mp 96-97°.**1-O-(3,4-Dihydroxycinnamoyl) (E-):**C₁₄H₁₆O₆ 280.277
Constit. of the fruit of *Prunus cerasus*.
Antioxidant. Oil. λ_{\max} 203 (log ϵ 3.95);
215 (log ϵ 3.94); 243 (log ϵ 3.76); 299
(log ϵ 3.81); 327 (log ϵ 3.9) (MeOH).**(1 α ,2 β ,3 α)-form** [56570-86-6] *Meso*-.**Tribenzoyl:** Mp 95.5-96°.**2-O-(3,4-Dihydroxycinnamoyl) (E-):**C₁₄H₁₆O₆ 280.277
Constit. of the fruit of *Prunus cerasus*.
Antioxidant. Pale yellow oil. λ_{\max} 206
(log ϵ 3.99); 215 (log ϵ 4); 243 (log ϵ 3.83); 299 (log ϵ 3.86); 325 (log ϵ 3.89)
(MeOH).Posternak, Th. *et al.*, *Naturwissenschaften*, 1968, **55**, 82 (*synth, nmr*)Wolczunowicz, G. *et al.*, *Helv. Chim. Acta*, 1970, **53**, 2275 (*synth*)Cocu, F.G. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1676 (*synth*)Steyn, R. *et al.*, *Tetrahedron*, 1971, **27**, 4429 (*synth*)Ritchie, R. *et al.*, *Can. J. Chem.*, 1975, **53**, 1424 (*nmr*)Singy, G.A. *et al.*, *Helv. Chim. Acta*, 1975, **58**, 2164 (*ms*)Hancock, A.J. *et al.*, *J. Lipid Res.*, 1975, **16**, 300 (*synth*)Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 331 (*synth, abs config*)Wang, H. *et al.*, *J. Nat. Prod.*, 1999, **62**, 86-88 (*isol, dihydroxycinnamates*)Donohoe, T.J. *et al.*, *J.O.C.*, 2002, **67**, 7946-7956 (α,α,α -form, *synth, pmr, cmr, ir*)**1,2,4-Cyclopentanetriol, 9CI, 8CI****C-196**(1 α ,2 α ,4 α)-formC₅H₁₀O₃ 118.132**(1 α ,2 α ,4 α)-form** [34311-02-9]Oil. *Meso*-.**Tribenzoyl:**C₂₆H₂₂O₆ 430.456
Cryst. (EtOH). Mp 71-72° (68-69.5°).**(1 α ,2 α ,4 β)-form** [58022-52-9]Oil. *Meso*-.**Tribenzoyl:**

Cryst. (EtOH). Mp 110-112°.

(1 α ,2 β ,4 α)-form [42142-32-5]

Oil. Racemate.

Tri-Ac: [42142-31-4]C₁₁H₁₆O₆ 244.244
Bp_{0.4} 112-114°.**Tribenzoyl:**

Cryst. (EtOH). Mp 111.5-112.5°.

(1 β ,2 α ,4 α)-form

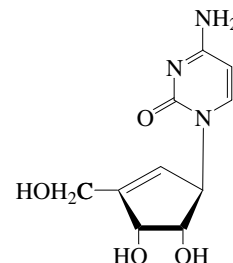
Oil. Racemate.

Tri-Ac:

Oil.

Steyn, R. *et al.*, *Tetrahedron*, 1969, **25**, 3579 (*synth*)Cocu, F.G. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1676 (*synth*)Hornback, J.M. *et al.*, *J.O.C.*, 1973, **38**, 4122 (*synth*)Ritchie, R. *et al.*, *Can. J. Chem.*, 1975, **53**, 1424
Singy, G.A. *et al.*, *Org. Mass Spectrom.*, 1975, **10**, 702 (*ms*)Bloodworth, A.J. *et al.*, *J.C.S. Perkin 1*, 1981, 3272 (*synth, pmr*)Drake, A.F. *et al.*, *J.C.S. Perkin 1*, 1996, 2739 (β,α,α -form, *synth, ir, pmr, cmr, ms*)**Cyclopentenylcytosine****C-197****4-Amino-1-[4,5-dihydroxy-3-(hydroxy-methyl)-2-cyclopenten-1-yl]-2(1H)-pyrimidinone, 9CI.** NSC 375575
[90597-22-1]

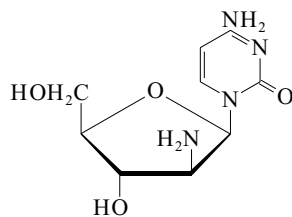
[115224-32-3, 123165-20-8]

C₁₀H₁₃N₃O₄ 239.23Antineoplastic and antiviral agent. Mp 138-141°. [α]_D²³ -104.5 (c, 0.13 in H₂O).Lim, M.I. *et al.*, *J. Med. Chem.*, 1984, **27**, 1536-1538 (*synth, pharmacol, uv, pmr*)Moyer, J.D. *et al.*, *Cancer Res.*, 1986, **46**, 3325-3329 (*pharmacol*)Marquez, V.E. *et al.*, *J. Med. Chem.*, 1988, **31**, 1687-1694; 1991, **34**, 208-212 (*synth, pmr, pharmacol*)U.S. Pat., 1989, 307 115, (US Dept Health and Human Services); CA, **112**, 36390x (*synth, pharmacol*)Blaney, S.M. *et al.*, *Cancer Res.*, 1990, **50**, 7915-7919 (*metab, pharmacol*)Ford, H. *et al.*, *Cancer Res.*, 1991, **51**, 3733-3740 (*pharmacol*)Politi, P.M. *et al.*, *Cancer Chemother. Pharmacol.*, 1995, **36**, 513-523 (*clin trial*)Viola, J.J. *et al.*, *Cancer Res.*, 1995, **55**, 1306-1309 (*pharmacol*)

Hegedus, L. *et al.*, *J. Chromatogr. B: Biomed. Appl.*, 1997, **692**, 169-179 (*hplc*)
 Agbaria, R. *et al.*, *Oncol. Res.*, 1997, **9**, 111-118 (*pharmacol*)

Cytaramin C-198

4-Amino-1-(2-amino-2-deoxy-β-D-arabinofuranosyl)-2(1H)-pyrimidinone, 9CI.
 1-(2-Amino-2-deoxy-β-D-arabinofuranosyl)cytosine
 [67013-99-4]



C₉H₁₄N₄O₄ 242.234
 Antineoplastic nucleoside. Shows significant activity against mouse leukaemia L1210, human T-cell acute lymphoblastic leukaemia Molt 4F and HeLa cells *in vitro*. Log P -3.03 (calc). Resistant to cytidine deaminase.

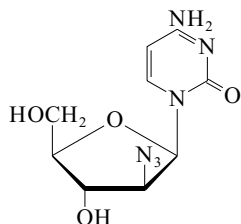
Hydrochloride (1:2):
 Cryst. (MeOH aq.). Mp 192°.

[135304-45-9]

Bobek, M. *et al.*, *J. Med. Chem.*, 1978, **21**, 597
 Matsuda, A. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 1659 (*synth, pmr*)
 Japan. Pat., 1991, 03 48 693, (*Yamasa Shoyu*);
 CA, **115**, 92836w

Cytarazid C-199

4-Amino-1-(2-azido-2-deoxy-β-D-arabinofuranosyl)-2(1H)-pyrimidinone, 9CI.
 2'-Azido-2'-deoxy-β-D-arabinofuranosylcytosine. 2'-Azido-2'-deoxy-2-epicytidine
 [67013-98-3]



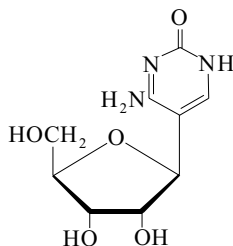
C₉H₁₂N₆O₄ 268.232
 Antineoplastic nucleoside.

Hydrochloride: [135304-44-8]
 Cryst. (MeOH). Mp 165°.

Bobek, M. *et al.*, *J. Med. Chem.*, 1978, **21**, 597 (*synth, pharmacol*)
 Pat. Coop. Treaty (WIPO), 1979, 79 01 068, (*Research Corp*); CA, **93**, 26736q (*synth, pharmacol*)
 Cheng, Y.C. *et al.*, *Cancer Res.*, 1981, **41**, 3144 (*pharmacol*)
 Matsuda, A. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 1659 (*synth, pmr*)
 Matsuda, A. *et al.*, *J. Med. Chem.*, 1991, **34**, 999 (*synth, pmr, pharmacol*)

ψ-Cytidine C-200

Pseudocytidine. 5-β-D-Ribofuranosylcytosine



C₆H₁₃N₃O₅ 243.219
 Mp 191-192° (161°). [α]_D²⁵ -64.1 (c, 0.7 in H₂O).

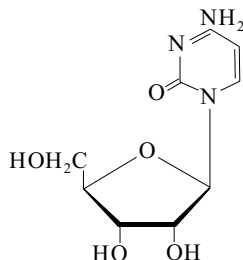
2',3'-O-Isopropylidene:
 C₁₂H₁₇N₃O₅ 283.283
 Mp 259-260°.

2',3'-O-Isopropylidene, 5'-tosyl: Mp 180-182°.

David, S. *et al.*, *Carbohydr. Res.*, 1973, **29**, 15
 Pankiewicz, K.W. *et al.*, *Carbohydr. Res.*, 1984, **127**, 227

Cytidine, 9CI, 8CI C-201

1-β-D-Ribofuranosylcytosine, 9CI.
 4-Amino-1-β-D-ribofuranosyl-2(1H)-pyrimidinone
 [65-46-3]



C₆H₁₃N₃O₅ 243.219
 Constit. of nucleic acids. Isol. from yeast nucleic acid. Needles.
 Mp 230° dec. [α]_D²¹ +29.6 (H₂O). λ_{max} 280 (ε 13400) (pH 2.2). λ_{max} 271 (ε 9100) (pH 8.2).

► LD₅₀ (mus, ipr) 2700 mg/kg. UW7370000
 Sulfate: [32747-18-5]

[6018-48-0]
 Prismatic needles. Mp 224-225° dec. [α]_D²⁴ +34 (H₂O).

Picrate: Mp 185-187°.

4N-Ac: N⁴-Acetylcytidine
 [3768-18-1]

C₁₁H₁₅N₃O₆ 285.256
 Modified nucleoside present in t-RNAs.
 Mp 208-209°. λ_{max} 212 (ε 18200); 245 (ε 15100); 294 (ε 8600) (H₂O).

4N,5'-Di-Ac:

C₁₃H₁₇N₃O₇ 327.293
 Mp 172-176°. λ_{max} 247 (ε 15140); 297 (ε 7413) (MeOH).

4N, 2',5'-Tri-Ac:

C₁₅H₁₉N₃O₈ 369.33
 Mp 182-185°. λ_{max} 248 (ε 16600); 297 (ε 7244) (MeOH).

2',3',5'-Tri-Ac: [56787-28-1]

C₁₅H₁₉N₃O₈ 369.33
 Mp 165-168°.

4N-Benzoyl: [13089-48-0]

C₁₆H₁₇N₃O₆ 347.327
 Mp 237-238°. [α]_D²⁷ +55 (c, 0.1 in MeOH). λ_{max} 257 (ε 18000); 302 (ε 9900) (H₂O).

4N,5'-Dibenzoyl:

C₂₃H₂₁N₃O₇ 451.435
 Mp 186-190°. λ_{max} 229 (ε 21880); 261 (ε 23990); 305 (ε 10470) (95% EtOH).

4N,3',5'-Tribenzoyl:

C₃₀H₂₅N₃O₈ 555.543
 Mp 198-202°. λ_{max} 232 (ε 34670); 262 (ε 26920); 304 (ε 10000) (95% EtOH).

2',3',5'-Tribenzoyl: [31652-74-1]

C₃₀H₂₅N₃O₈ 555.543
 Mp 226-227° (as hydrochloride). CAS no. refers to hydrochloride. λ_{max} 230 (ε 29700); 280 (ε 9650) (EtOH).

3'-Mesityl:

C₁₀H₁₅N₃O₇S 321.31
 Mp 170-176° (as hydrochloride). λ_{max} 277 (ε 13490) (0.01M HCl).

5'-Trityl: [22596-01-6]

C₂₈H₂₇N₃O₅ 485.538
 Mp 244-245°.

3N-Me: 3-Methylcytidine

[2140-64-9]
 C₁₀H₁₅N₃O₅ 257.246

Found in yeast soluble RNA. Isol. from the marine sponge *Geodia baretii*.

Mp 193-194° (as methanesulfonate). pK_a 8.7. λ_{max} 254 (H₂O) (Berdy). λ_{max} 278 (ε 11800) (pH 4). λ_{max} 266 (ε 900) (pH 12).

2'-Phosphate: See Cytidine 2'-(dihydrogen phosphate), C-203

3'-Phosphate: See Cytidine 3'-(dihydrogen phosphate), C-204

5'-Phosphate: See Cytidine 5'-(dihydrogen phosphate), C-205

2',3'-Diphosphate: See Cytidine cyclic 2',3'-(hydrogen phosphate), C-202

2'-Me: 2'-O-Methylcytidine, 9CI, 8CI
 [2140-72-9]

C₁₀H₁₅N₃O₅ 257.246
 Located in the primary sequence of a number of specific tRNAs usually at the 5'-OH end of the anticodon loop. Bipyr-amidal cryst. (EtOH aq.).
 Mp 256-257° (252-253°). [α]_D²¹ +54 (c, 1.1 in H₂O). pK_a 4.2. λ_{max} 273 (ε 8200) (EtOH) (pH7). λ_{max} 281 (ε 12900) (pH1). λ_{max} 272 (ε 8900) (pH11).

4N-Me: [10578-79-7]

C₁₀H₁₅N₃O₅ 257.246
 Cryst. (EtOAc). Mp 61-63°.

4N-Et: [22342-50-3]

C₁₁H₁₇N₃O₅ 271.272
 Cryst. (EtOAc). Mp 48-50°.

2'O,4N-Di-Me: 4N, 2'-O-Dimethylcytidine

C₁₁H₁₇N₃O₅ 271.272
 pK_a 3.9. λ_{max} 238. λ_{max} 281 (pH 1).

2',3'-Di-Me: 2',3'-Di-O-methylcytidine

C₁₁H₁₇N₃O₅ 271.272
 Needles (EtOH) (as hydrochloride). Mp 195-197°. λ_{max} 280 (ε 12900) (pH 2). λ_{max} 271 (ε 8700) (pH 12).

2',3',5'-Tri-Me: 2',3',5'-Tri-O-methylcytidine
 $C_{12}H_{19}N_3O_5$ 285.299
 Mp 239-241°. λ_{\max} 280 (ϵ 13200) (pH 2).
 λ_{\max} 271 (ϵ 9000) (pH 12).

[7607-04-7, 21028-20-6, 26524-60-7]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 2, 831A; 832C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 3, 387A; 389B; 389C (nmr)

Fox, J.J. et al., Adv. Carbohydr. Chem., 1959, 14, 283 (rev, derivs)

Brookes, P. et al., J.O.C., 1962, 1348 (N-methyl)

Hall, R.H. et al., Biochem. Biophys. Res. Commun., 1963, 12, 361 (isol)

Ulbricht, T.L.V. et al., Tet. Lett., 1963, 1027; 1964, 695 (tautom, ord)

Anteunis, M. et al., Bull. Soc. Chim. Belg., 1965, 74, 481 (pmr)

Furukawa, J. et al., Chem. Pharm. Bull., 1965, 13, 1273 (synth, derivs)

Watanabe, K.A. et al., Angew. Chem., Int. Ed., 1966, 5, 579 (4N-Ac, 4N-benzoyl)

Fromageot, H.P.M. et al., Tetrahedron, 1967, 23, 2315 (synth)

Martin, D.M.G. et al., Biochemistry, 1968, 7, 1406 (synth, derivs)

Hancock, R.L. et al., J. Chromatogr. Sci., 1969, 7, 366 (N-methyl)

Choi, Y.C. et al., J. Biol. Chem., 1970, 245, 1954 (occur, 2-Me)

Jones, A.J. et al., Proc. Natl. Acad. Sci. U.S.A., 1970, 65, 27; CA, 72, 96682j (cmr)

Lee, G.C.Y. et al., Biochem. Biophys. Res. Commun., 1971, 43, 435 (N-methyl)

Goody, R.S. et al., Tetrahedron, 1971, 27, 65 (2',3',5'-tribenzoyl)

Kusmirek, J.T. et al., Biochemistry, 1973, 12, 194 (synth, derivs)

Remin, M. et al., J.A.C.S., 1973, 95, 8146 (pmr, derivs)

Basic Princ. Nucleic Acid Chem., (Ts'O, P.O.P., Ed.), Academic Press, 1974, 1, (rev)

Liehr, J.G. et al., Biomed. Mass Spectrom., 1974, 1, 281 (ms, derivs)

Hruska, F.E. et al., Can. J. Chem., 1974, 52, 497 (cmr)

Ueda, T. et al., Chem. Pharm. Bull., 1974, 22, 2377 (N-methyl)

Hingerty, B.E. et al., CA, 1975, 83, 54807a (cryst struct, 2-Me)

Guy, J.J. et al., Acta Cryst. B, 1976, 32, 2909 (cryst struct)

Post M.L. et al., Biochim. Biophys. Acta, 1977, 479, 133 (cryst struct)

Mosset, P.A. et al., Acta Cryst. B, 1979, 35, 1908 (cryst struct)

Kaito, A. et al., Bull. Chem. Soc. Jpn., 1980, 53, 3073 (N-methyl)

Mathlouth, M. et al., Carbohydr. Res., 1986, 146, 1 (ir, Raman)

Lidgren, G. et al., J. Nat. Prod., 1988, 51, 1277 (isol)

Yamauchi, K. et al., J.C.S. Perkin I, 1989, 13 (N-methyl)

Ward, D.L. et al., Acta Cryst. C, 1993, 49, 1789 (cryst struct)

Saladino, R. et al., Tetrahedron, 1996, 52, 6759-6780 (synth, N'-alkyl derivs)

Moyroud, E. et al., Tetrahedron, 1999, 55, 1277-1284 (synth, L-form, pmr, cmr)

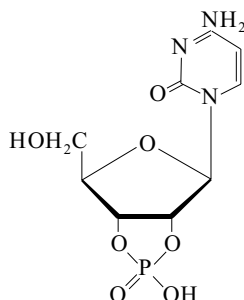
Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, CQM500

Cytidine cyclic 2',3'-(hydrogen phosphate), 9CI, 8CI C-202

Cytidine 2',3'-phosphate, 2',3'-CMP.

Cifostidine, INN. Cytipos

[633-90-9]



$C_9H_{12}N_3O_7P$ 305.183

Synthesised from Cytidine 2'-(dihydrogen phosphate), C-203 or Cytidine 3'-(dihydrogen phosphate), C-204. Intermed. formed during digestion of ribonucleic acid by ribonuclease. Ophthalmologic agent. Substrate for RNAase.

Na salt: [41161-51-7]

[15718-51-1]

Solid + 2H₂O. Mp 245° (dec.) (dihydrate).

CAS no. refers to dihydrate.

K salt: [20486-23-1]

Hygroscopic cryst. + 1H₂O. λ_{\max} 268 nm (ϵ 8 650) (pH 7.5).

Ba salt:

Amorph. powder. λ_{\max} 268 (ϵ 8 400), 232 nm (ϵ 8 500) (H₂O).

[35094-85-0]

Aldrich Library of NMR Spectra, 2nd edn., 1983, 2, 718A (nmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 2, 838C (ir)

Brown, D.M. et al., J.C.S., 1952, 2708

Biochem. Prep., 1968, 12, 107 (synth)

Coulter, C.L. et al., J.A.C.S., 1973, 95, 570 (cryst struct)

Lapper, R.D. et al., J.A.C.S., 1973, 95, 2880 (pmr)

Davies, D.B. et al., Stud. Biophys., 1976, 55, 29; CA, 85, 59065h (cmr)

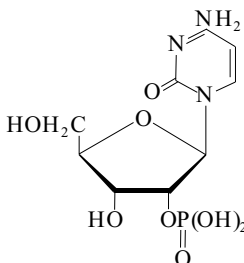
Reddy, B.S. et al., Acta Cryst. B, 1978, 34, 1520 (cryst struct)

Cytidine 2'-(dihydrogen phosphate), 9CI, 8CI C-203

2'-Cytidylic acid, 9CI, 8CI. Cytidylic acid

a. Cytosylic acid a

[85-94-9]



$C_9H_{14}N_3O_8P$ 323.199

Hydrol. product of yeast ribonucleic acid. Ribonuclease inhibitor.

Mp 238-240° dec. $[\alpha]_D^{20}$ +20.7 (H₂O). pK_{a1} 0.8; pK_{a2} 4.4; pK_{a3} 6.2 (25°). λ_{\max} 278 (ϵ 12 700) (pH 2), 272 nm (8 600) (pH 12).

Na salt: $[\alpha]_D^{19}$ -4 (H₂O).

Di-Na salt: $[\alpha]_D^{24.5}$ -8 (H₂O).

Ba salt: $[\alpha]_D^{26}$ +5.5 (H₂O).

Harris, R.J.C. et al., J.C.S., 1953, 489 (isol)

Baron, F. et al., J.C.S., 1955, 2855 (struct)

Rammner, D.H. et al., J.A.C.S., 1962, 84, 3112 (synth)

Saffhill, R. et al., J.O.C., 1970, 35, 2881 (synth)

Davies, D.B. et al., Biochemistry, 1975, 14, 543 (pmr)

Cytidine 3'-(dihydrogen phosphate), 9CI, 8CI C-204

3'-Cytidylic acid, 9CI, 8CI. Cytidylic acid b. Cytosylic acid b

[84-52-6]

$C_9H_{14}N_3O_8P$ 323.199

Hydrolytic product of yeast ribonucleic acid. Ribonuclease inhibitor. Sol. H₂O.

Mp 232-234° dec. $[\alpha]_D^{20}$ +49.4 (c, 1.0 in H₂O). pK_{a1} 0.8; pK_{a2} 4.3; pK_{a3} 6. λ_{\max} 279 (ϵ 13 000) (pH 2), 272 nm (8 900) (pH 12).

Na salt: $[\alpha]_D^{19}$ +47 (H₂O).

Di-Na salt: [81487-29-8]

$[\alpha]_D^{24.5}$ +46 (H₂O).

Harris, R.J.C. et al., J.C.S., 1953, 489 (isol)

Baron, F. et al., J.C.S., 1955, 2855 (struct)

Lohrmann, R. et al., J.A.C.S., 1964, 86, 4188 (synth)

Bugg, C.E. et al., J. Mol. Biol., 1967, 25, 67; CA, 67, 15833f (cryst struct)

Ts'O, P.O.P. et al., Biochemistry, 1969, 8, 997 (pmr)

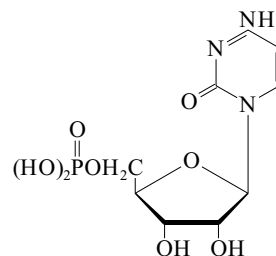
Saffhill, R. et al., J.O.C., 1970, 35, 2881 (synth)

Cytidine 5'-(dihydrogen phosphate), 9CI, 8CI C-205

5'-Cytidylic acid, 9CI, 8CI. Cytidine

5'-phosphoric acid

[63-37-6]



$C_9H_{14}N_3O_8P$ 323.199

Isol. from biol. sources, e.g. Phaseolus aureus (mung bean) seedlings.

Mp 233° dec. (monohydrate).

► HA3980000

Ba salt: [13435-44-4]

$[\alpha]_D^{16}$ +11.4 (c, 0.33 in H₂O).

Dibrucine salt: Mp 215° dec.

[6757-06-8, 25249-24-5, 30811-80-4]

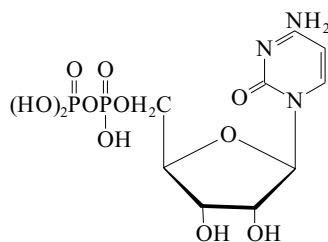
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 2, 838A (ir)

Aldrich Library of NMR Spectra, 2nd edn., 1983, 2, 717C (nmr)

Michelson, A.M. *et al.*, *J.C.S.*, 1949, 2476 (synth)
 Beaucamp, K. *et al.*, *Biochem. Z.*, 1966, **344**, 121 (cryst struct)
 Dorman, D.E. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1970, **65**, 19; *CA*, **72**, 107074r (cmr)
 Ohtsuka, E. *et al.*, *Nucleic Acids Res.*, 1974, **1**, 323
 Takaku, O. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 2373 (pmr)

Cytidine 5'-diphosphate C-206

Cytidine 5'-(trihydrogen diphosphate), 9CI. Cytidine pyrophosphate [63-38-7]



C₉H₁₅N₃O₁₁P₂ 403.178

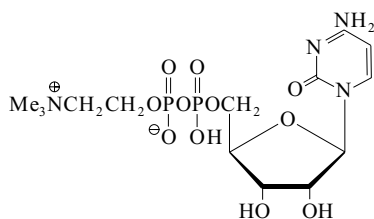
Exists as zwitterion. Prod. by *Plasmodium berghei* and *Bacillus brevis*. Found in heart, liver, leukaemia cells. Affects bladder contraction. Powder.

► HA3917000

Kimura, A. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 1469 (manuf)
 Viswamitra, M.A. *et al.*, *Nature (London)*, 1975, **258**, 497 (cryst struct)
 Labotka, R.J. *et al.*, *J.A.C.S.*, 1976, **98**, 3699 (nmr)
 Iio, M. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 155 (synth)
 Kim, C.H. *et al.*, *J.A.C.S.*, 1978, **100**, 1571 (conform)
 Scheller, K.H. *et al.*, *J.A.C.S.*, 1983, **105**, 5891 (pmr)
 Veda, T. *et al.*, *J. Chromatogr.*, 1987, **386**, 273 (hplc)
 Davisson, V.J. *et al.*, *J.O.C.*, 1987, **52**, 1794 (synth, cmr, nmr, pmr)

Cytidine diphosphate choline C-207

Cytidine 5'-(trihydrogen diphosphate) hydroxide mono[2-(trimethylammonio)ethyl] ester. Choline hydroxide 5'-ester with cytidine 5'-(trihydrogen pyrophosphate) inner salt. CDP-Choline. Cytidine diphosphocholine. **Citicoline**, INN, JAN. **Cereb. Citidoline**. **Colite**. **Cyscholin**. **Nicholin** [987-78-0]



C₁₄H₂₆N₄O₁₁P₂ 488.327

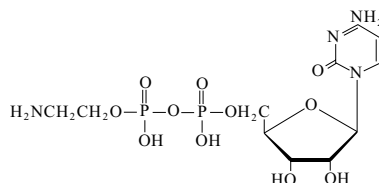
Used to treat cerebrovascular disorders. Involved in the biosynth. of lecithin and sphingomyelin and in the formation of

plasmalogen in the liver and brain. Hygroscopic powder + 3H₂O. λ_{max} 271 (ε 9 100), 280 nm (13 700) (0.1M HCl). ► Exp. reprod. effects. LD₅₀ (rat, orl) 18000 mg/kg. GA4027000 [1256-10-6]

Kennedy, E.P. *et al.*, *J. Biol. Chem.*, 1956, **222**, 193
 Makishima, K. *et al.*, *Arzneim.-Forsch.*, 1971, **21**, 1343 (pharmacol)
 Viswamitra, M.A. *et al.*, *Nature (London)*, 1975, **258**, 497 (cryst struct)
 Furusawa, K. *et al.*, *J.C.S. Perkin 1*, 1976, 1711 (synth, uv)
 Al-Shammary, F.J. *et al.*, *Anal. Profiles Drug Subst.*, 1990, **19**, 429 (rev)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1354
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, CMF350

Cytidine diphosphate ethanolamine C-208

Cytidine 5'-(trihydrogen diphosphate) mono(2-aminoethyl) ester, 9CI. Cytidine 5'-(trihydrogen pyrophosphate) mono(2-aminoethyl) ester, 8CI. CDP-ethanolamine [3036-18-8]



C₁₁H₂₀N₄O₁₁P₂ 446.247

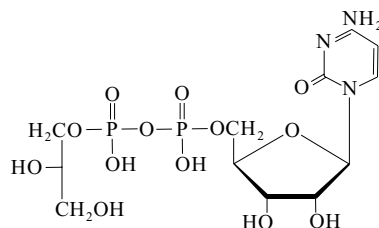
Isol. from *Fusarium* sp. Biogenetic precursor of cephalins and lecithins in yeast. Amorph. λ_{max} 272 nm, λ_{min} 249 nm (H₂O); λ_{max} 280 nm, λ_{min} 242 nm (H₃O⁺).

N-Tri-Me: See Cytidine diphosphate choline, C-207

Kennedy, E.P. *et al.*, *J.A.C.S.*, 1955, **77**, 250
 Kennedy, E.P. *et al.*, *J. Biol. Chem.*, 1956, **22**, 193
 Sanno, Y. *et al.*, *Chem. Pharm. Bull.*, 1960, **8**, 753; 1962, **10**, 231 (synth)
 Ballio, A. *et al.*, *Gazz. Chim. Ital.*, 1964, **94**, 156
 Chojnacki, T. *et al.*, *Nature (London)*, 1966, **210**, 947 (synth)
 Ger. Pat., 1972, 2 059 429; *CA*, **77**, 102141d (synth)

Cytidine diphosphate glycerol C-209

Cytidine 5'-(trihydrogen diphosphate) mono(2,3-dihydroxypropyl) ester(S), 9CI. CDP-glycerol [6665-99-2]



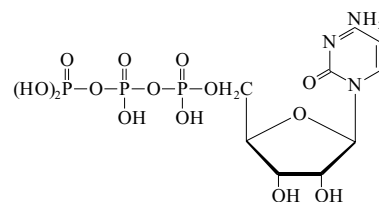
C₁₂H₂₁N₃O₁₃P₂ 477.258

The biosynthetic precursor of the tri (glycerol phosphate) which links teichoic acid to the peptidoglycan in *Staphylococcus aureus*, *Bacillus* and *Micrococcus* spp.

Baddiley, J. *et al.*, *J.C.S.*, 1958, 3107
 Roseman, S. *et al.*, *J.A.C.S.*, 1961, **83**, 659 (synth)
 Baddiley, J. *et al.*, *Biochem. J.*, 1968, **110**, 565
 Hancock, I. *et al.*, *J. Bacteriol.*, 1976, **125**, 880

Cytidine 5'-triphosphate C-210

Cytidine 5'-(tetrahydrogen triphosphate), 9CI. Cytidine 5'-triphosphoric acid [65-47-4]



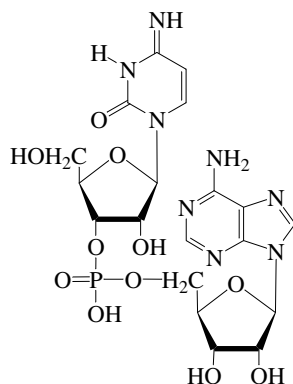
C₉H₁₆N₃O₁₄P₃ 483.158

Prod. by *Leishmania* and *Streptomyces griseus*; found in erythrocytes and lymphocytes. Enzyme inhibitor. Implicated in purine and pyrimidine metabolism disorders. Contracts arteries. Cryst. powder (as Na salt).

► HA3914000

[1637-76-9, 7358-19-2, 18609-48-8, 20764-52-7, 24951-83-5, 27908-30-1, 34973-27-8, 34973-28-9, 36051-68-0, 36792-26-4, 40147-56-6, 50694-74-1, 54619-78-2, 61994-39-6, 69113-64-0, 75898-70-3, 75898-71-4, 75898-74-7, 81012-87-5, 84495-58-9, 86527-73-3, 87015-26-7, 90290-70-3, 90290-71-4, 90290-72-5, 90290-73-6, 90290-80-5, 91999-08-5, 123334-07-6]

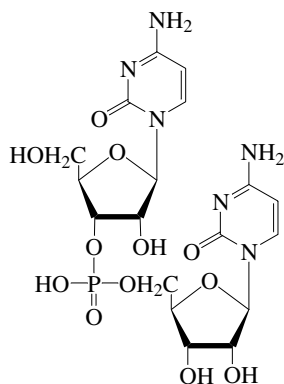
Bergkvist, R. *et al.*, *Acta Cryst.*, 1956, **10**, 1303; 1957, **11**, 1457 (isol)
 Tanaka, K. *et al.*, *Chem. Pharm. Bull.*, 1962, **10**, 220 (synth)
 Moffat, J.G. *et al.*, *Can. J. Chem.*, 1964, **42**, 599-604 (synth)
 Lee, G.C.Y. *et al.*, *J.A.C.S.*, 1972, **94**, 951 (tautom, pmr)
 Labotka, R.J. *et al.*, *J.A.C.S.*, 1976, **98**, 3699, (P-31 nmr)
 Iio, M. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 155-160 (synth)
 Takaku, H. *et al.*, *Chem. Lett.*, 1977, 655 (synth)
 Jost, W. *et al.*, *Anal. Biochem.*, 1983, **135**, 120 (chromatog)
 Scheller, K.H. *et al.*, *J.A.C.S.*, 1983, **105**, 5891 (pmr)
 Kehr, J. *et al.*, *Fresenius' Z. Anal. Chem.*, 1986, **325**, 466 (hplc)
 Veda, T. *et al.*, *J. Chromatogr.*, 1987, **386**, 273 (hplc)
 Hammer, D.F. *et al.*, *Anal. Biochem.*, 1988, **169**, 300 (hplc)
 Simon, E.S. *et al.*, *Tet. Lett.*, 1988, **29**, 1123 (synth)
 Lim, C.K. *et al.*, *J. Chromatogr.*, 1989, **461**, 259 (hplc)
 Simon, E.S. *et al.*, *J.A.C.S.*, 1989, **111**, 8920-8921 (synth)

**Cytidylyl-(3' → 5')-adenosine,
9CI***CpA*
[2382-66-3] $C_{19}H_{25}N_8O_{11}P$ 572.427
No phys. props. reported.

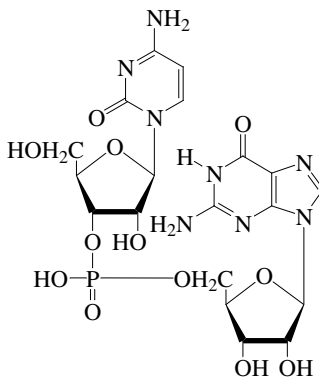
Lohrmann, R. *et al.*, *J.A.C.S.*, 1964, **86**, 4188-4194; 1966, **88**, 829-833 (*synth*)
 Akashi, M. *et al.*, *Chem. Lett.*, 1988, 1093-1096 (*hplc*)
 Orban, J. *et al.*, *J. Biomol. Struct. Dyn.*, 1990, **7**, 837-848 (*pmr, conformn*)
 Yashima, E. *et al.*, *J. Chromatogr.*, 1992, **603**, 111-119 (*hplc*)

**Cytidylyl-(3' → 5')-cytidine,
9CI**

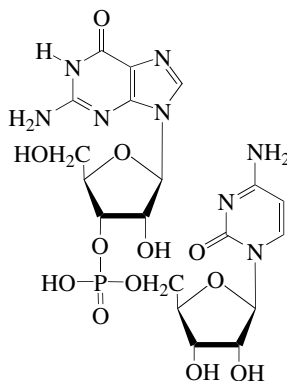
[2536-99-4]

 $C_{18}H_{25}N_6O_{12}P$ 548.402

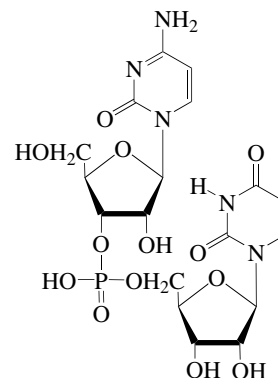
Dimroth, K. *et al.*, *Annalen*, 1959, **620**, 109-122 (*synth*)
 Lohrmann, R. *et al.*, *J.A.C.S.*, 1964, **86**, 4188-4194; 1966, **88**, 819-829; 829-833 (*synth*)
 Hunt, D.F. *et al.*, *Biochem. Biophys. Res. Commun.*, 1968, **33**, 378-383 (*ms*)
 Lee, C.H. *et al.*, *Biochemistry*, 1976, **15**, 3627-3639 (*pmr*)
 Causley, G.C. *et al.*, *Biopolymers*, 1983, **22**, 945-967 (*cd, conformn*)

**Cytidylyl-(3' → 5')-guanosine,
9CI***CpG*
[2382-65-2] $C_{19}H_{25}N_8O_{12}P$ 588.427

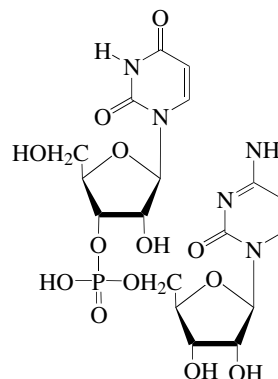
Chladek, S. *et al.*, *Coll. Czech. Chem. Comm.*, 1964, **29**, 214-233; 1966, **31**, 3198-3212 (*synth*)
 Lohrmann, R. *et al.*, *J.A.C.S.*, 1964, **86**, 4188-4194; 1966, **88**, 829-833 (*synth, uv*)
 Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**, 29-38 (*ord*)
 Brimacombe, R. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2074-2086 (*synth, uv*)
 Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997-1029 (*pmr*)
 Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (*ms*)
 Buchanan, G.W. *et al.*, *Can. J. Chem.*, 1986, **64**, 2038-2041 (*cmr*)

**Cytidylyl-(5' → 3')-guanosine,
9CI***Guanylyl-(3' → 5')-cytosine. GpC*
[4785-04-0] $C_{19}H_{25}N_8O_{12}P$ 588.427

Lohrmann, R. *et al.*, *J.A.C.S.*, 1964, **86**, 4188-4194; 1966, **88**, 829-833 (*synth, uv*)
 Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**, 29-38 (*ord*)
 Neilson, T. *et al.*, *Can. J. Chem.*, 1973, **51**, 1068-1074 (*synth*)
 Day, R.O. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1973, **70**, 849-853 (*cryst struct*)
 Ohtsuka, E. *et al.*, *Nucleic Acids Res.*, 1974, **1**, 323-329 (*synth*)
 Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (*ms*)

**Cytidylyl-(3' → 5')-uridine,
9CI***CpU*
[2382-64-1] $C_{18}H_{24}N_5O_{13}P$ 549.387

Smrt, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1963, **28**, 61-71; 1966, **31**, 3800-3816 (*synth*)
 Lohrmann, R. *et al.*, *J.A.C.S.*, 1964, **86**, 4188-4194; 1966, **88**, 829-833 (*synth, uv*)
 Brimacombe, R. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2074-2086 (*synth, uv*)
 Fromageot, H.P.M. *et al.*, *Tetrahedron*, 1968, **24**, 3533-3540 (*synth, uv*)
 Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997-1029 (*pmr*)
 Warshaw, M.M. *et al.*, *Biopolymers*, 1970, **9**, 1079-1103 (*cd*)

**Cytidylyl-(5' → 3')-uridine,
9CI***Uridylyl-(3' → 5')-cytidine. UpC*
[3013-97-6] $C_{18}H_{24}N_5O_{13}P$ 549.387

Rammler, D.H. *et al.*, *J.A.C.S.*, 1962, **84**, 3112-3122 (*synth*)
 Griffin, B.E. *et al.*, *Tetrahedron*, 1967, **24**, 639-662 (*synth*)
 Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997-1029 (*pmr*)
 Warshaw, M.M. *et al.*, *Biopolymers*, 1970, **9**, 1079-1103 (*cd*)

Cytolipin H**C-217**

N-[1-[(4-O-β-D-Galactopyranosyl-β-D-glucopyranosyl)oxy]methyl]-2-hydroxy-3-heptadecenyl]tetracosanamide.
Cerebronylsphingosylglucosidogalactoside.
Ganglioside *G*_{A3}. Lactosylceramide. 1-O-(4-O-β-D-Galactopyranosyl-β-D-glucopyranosyl)ceramide
[4682-48-8]

C₅₄H₁₀₃NO₁₃ 974.407

Isol. from human epidermoid cells. Major neutrophil glycolipid serving as a differentiation marker.

► **FK1000000**

[71965-57-6]

Rapport, M.M. *et al.*, *Cancer (Philadelphia)*, 1959, **12**, 438 (*isol*)

Rapport, M.M. *et al.*, *J. Biol. Chem.*, 1962, **237**, 1056 (*struct*)

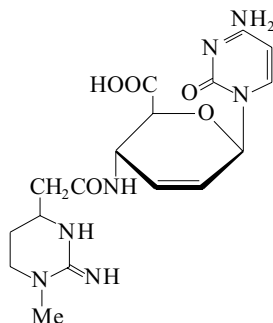
Graf, L. *et al.*, *Chem. Phys. Lipids*, 1974, **13**, 367

Symington, F.W. *et al.*, *J. Biol. Chem.*, 1987, **262**, 11356

Nicolaou, K.C. *et al.*, *J.A.C.S.*, 1988, **110**, 7910 (*synth*)

Cytomycin*Saitomycin*

[2005-98-3]

C-218C₁₇H₂₃N₇O₅ 405.413

Nucleoside-type antibiotic. Degrad. prod. of Blastidicin *S* by microbes such as *Pseudomonas marginalis*, *Pseudomonas ovalis* and *Fusarium oxysporum*. Possesses antitumour activity. Sol. H₂O; fairly sol. MeOH; poorly sol. Me₂CO, hexane.

Mp 237-239° dec. λ_{max} 274 (ε 13600) (pH 3) (Derep). λ_{max} 266 (ε 7450) (pH 9) (Derep). λ_{max} 274 (ε 13600) (pH 3 H₂O) (Derep). λ_{max} 274 (ε 13380) (HCl) (Berdy). λ_{max} 266 (ε 7750) (NaOH) (Berdy).

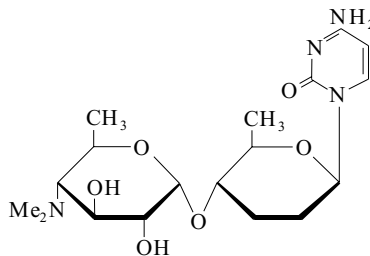
► **LD₅₀ (mus, ipr) 2000 mg/kg. HA5375000**

Otake, N. *et al.*, *Tet. Lett.*, 1965, 1411; *Agric. Biol. Chem.*, 1966, **30**, 132

Yamaguchi, I. *et al.*, *Agric. Biol. Chem.*, 1972, **36**, 1719 (*isol*)

Cytosamine, 9CI, 8CI**C-219**

4-Amino-1-[2,3,6-trideoxy-4-O-[4,6-di-deoxy-4-(dimethylamino)-α-D-glucopyranosyl]-β-D-erythro-hexopyranosyl]-2(1H)-pyrimidinone, 9CI
[26758-91-8]

C₁₈H₃₀N₄O₆ 398.458

Alkaline degrad. prod. of the antibiotic Amicetin. Aminoacyl cytosamine derivs. are used as bactericides.

Mp 160-165° (hydrate) Mp 254-256° dec. (anhyd.). pK_{a1} 3.9; pK_{a2} 7.

4N-Benzoyl:C₂₅H₃₄N₄O₇ 502.566

Mp 130-135°.

4N-(4-Nitrobenzoyl): Mp 147-149°.**4N-(3,5-Dinitrobenzoyl):** Mp 140-143°.**N⁴,O^{2'},O^{3'}-Tri-Ac:**C₂₄H₃₆N₄O₉ 524.57

Mp 220-222°.

Flynn, E.H. *et al.*, *J.A.C.S.*, 1953, **75**, 5867 (*isol*)

Haskell, T.H. *et al.*, *J.A.C.S.*, 1958, **80**, 747

Kindl, H. *et al.*, *Monatsh. Chem.*, 1966, **97**, 1778 (*biosynth*)

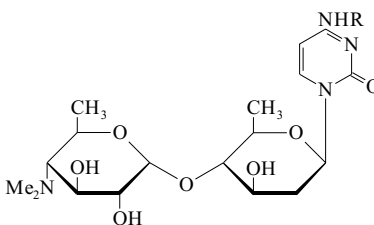
U.S. Pat., 1967, 3 308 117; *CA*, **67**, 100416s

Stevens, C.L. *et al.*, *J.A.C.S.*, 1972, **94**, 3280 (*synth*)

Sygyusch, J. *et al.*, *Acta Cryst. B*, 1974, **30**, 40 (*cryst struct*)

Cytosaminomycin A**C-220***Antibiotic KO 8119A. KO 8119A*

[157878-02-9]



R = COCH=CHSMc

C₂₂H₃₄N₄O₈S 514.599

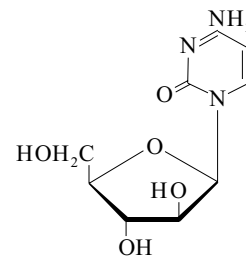
Nucleoside antibiotic. Prod. by *Streptomyces* sp. KO-8119. Anticoccidial agent.

Pale yellow powder. Sol. MeOH, EtOAc; poorly sol. H₂O. [α]_D²⁴ +144 (c, 0.1 in MeOH). λ_{max} 204 (ε 14200); 256 (ε 9300); 309 (ε 30600) (MeOH) (Berdy).

Haneda, K. *et al.*, *J. Antibiot.*, 1994, **47**, 774; 782

Cytosine arabinoside**C-221**

4-Amino-1-arabinofuranosyl-2(1H)-pyrimidinone, 9CI. Arabinosylcytosine.
4-Amino-1-arabinofuranosyl-2-oxo-1,2-dihydropyrimidine. Arabinofuranosylcytosine.
Cyclocide

C₉H₁₃N₃O₅ 243.219**β-D-Furanose-form****Cytarabine, BAN, INN, JAN, USAN.***Alexan. Aracytidine. Ara-C. Aracytin.*

Cytosar-U. Tarabine. NSC 63878. U 19920
[147-94-4]

Isol. from the mushroom *Xerocomus nigromaculatus* of unknown palatability. Antineoplastic and antiviral agent, inhibits synth. of DNA, antileukaemic agent. Nucleoside transporter substrate.

Prisms (EtOH aq.). Sol. H₂O, MeOH. Mp 212-213° Mp 223-224°. [α]_D²⁵ +155.2 (c, 0.7 in H₂O). Log P -3.08 (calc). λ_{max} 197 (ε 24550); 272 (ε 12020) (H₂O) (Berdy).

► **Skin and eye irritant. Adverse systemic effects when used therapeutically. Exp. reprod. and teratogenic effects. LD₅₀ (mus, orl) 3150 mg/kg; LD₅₀ (mus, orl) 3150 mg/kg. HA5425000****Hydrochloride: Cytarabine hydrochloride, USAN**

[69-74-9]

Cryst. (EtOH aq.). Mp 188-193°. [α]_D²⁵ +131 (c, 0.7 in H₂O).

► **Eye irritant. LD₅₀ (mus, orl) 826 mg/kg. HA5500000**

1-Adamantanecarboxylate: Adamantoylcytarabine. Adam CA. AdoAra C. AdOCA. NSC 117614. U 26516

[23113-01-1] Immunosuppressive agent.

5'-Phosphate: [7075-11-8]C₉H₁₄N₃O₈P 323.199

[α]_D²⁵ +100.1 (c, 1 in 2:1 CHCl₃/MeOH) (as di-Na salt). Dec. with frothing at 200°.

5'-Triphosphate: [13191-15-6]C₉H₁₆N₃O₁₄P₃ 483.159

No phys. props. reported. Launched 1993 (Japan)

5'-(Octadecyl hydrogen phosphate), Na salt: Cytarabine octofosphate sodium. Starasid

[65093-40-5]

C₂₇H₄₉N₃NaO₈P 597.663 Launched 1983

N-Docosanoyl: Enocitabine, INN, JAN.

N⁴-Behenoyl-1-β-D-arabinofuranosylcytosine. Behenoylcytarabine. BH-Ac. NSC 239336. Sunrabine
[55726-47-1]

C₃₁H₅₅N₃O₆ 565.792

Antineoplastic, antileukaemic agent, metab. *in vivo* to Cytarabine. Cryst. (DMSO). Mp 141-142°. $[\alpha]_D^{22} +70$ (c, 1 in THF). Log P 7.68 (uncertain value) (calc).

► JR1230400

N⁴-Hexadecyl: [103426-87-5]

C₂₅H₄₅N₃O₅ 467.648

Antineoplastic agent. Powder (MeOH aq.). Mp 162-164°.

N⁴-Octadecyl: Alkasar-18

[158233-67-1]

C₂₇H₄₉N₃O₅ 495.701

Antineoplastic agent. Lipophilic deriv. of ara-C.

Tri-O-benzyl:

C₃₀H₃₁N₃O₅ 513.592

Cryst. (EtOAc). Mp 153-154°. $[\alpha]_D +123$ (c, 2 in CH₂Cl₂).

[116459-64-4]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 830D (ir)

Walwick, E.R. *et al.*, *Proc. Chem. Soc., London*, 1959, 84 (synth)

Cardeilhac, P.J. *et al.*, *Cancer Res.*, 1964, **24**, 1595-1603 (triphosphate)

Shen, T.Y. *et al.*, *J.O.C.*, 1965, **30**, 835 (synth)

Roberts, W.K. *et al.*, *J.O.C.*, 1967, **32**, 816 (synth)

Greig, M.E. *et al.*, *Arch. Int. Pharmacodyn. Ther.*, 1969, **182**, 364 (metab, deriv)

Tolman, R.L. *et al.*, *J. Med. Chem.*, 1971, **14**, 1112 (synth)

Tougard, P. *et al.*, *Acta Cryst. B*, 1974, **30**, 86 (cryst struct)

Akiyama, M. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 981 (synth, spectra, deriv)

Beranek, J. *et al.*, *Nucleic Acid Chem.*, 1978, **1**, 239; 249; 255 (synth)

Sherfinski, J.S. *et al.*, *Acta Cryst. B*, 1979, **35**, 2141 (5'-phosphate)

Turcotte, J.G. *et al.*, *Biochim. Biophys. Acta*, 1980, **619**, 604-618 (5'-phosphate, synth, ir, uv)

Ohishi, J. *et al.*, *Cancer Res.*, 1981, **41**, 2501 (metab, deriv)

Krenitsky, T.A. *et al.*, *Carbohydr. Res.*, 1981, **97**, 139 (synth)

Hruska, F.E. *et al.*, *Can. J. Chem.*, 1982, **60**, 3026 (pmr, cmr)

Creasey, W.A. *et al.*, *Antibiotics (N.Y.)*, 1983, **6**, 12 (rev)

Pallavicini, M.G. *et al.*, *Pharmacol. Ther.*, 1984, **25**, 207 (rev, pharmacol)

Tsukagoshi, S. *et al.*, *Drugs of Today (Barcelona)*, 1986, **22**, 169 (rev, deriv, pharmacol)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 1297

Woodcock, D.M. *et al.*, *Semin. Oncol.*, 1987, **14**, 251 (rev, cytotoxicity)

Jamieson, G.P. *et al.*, *Cancer Res.*, 1989, **49**, 309-313 (cytarabine)

Takahashi, A. *et al.*, *Chem. Pharm. Bull.*, 1992, **40**, 1313 (isol, pmr)

Schwendener, R.A. *et al.*, *Int. J. Cancer*, 1992, **51**, 466-469 (hexadecyl, synth, pharmacol)

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 471; 477

Horber, D.H. *et al.*, *Br. J. Cancer*, 1995, **72**, 1067-1073 (hexadecyl, pharmacol)

Schwendener, R.A. *et al.*, *Drugs of the Future*, 1995, **20**, 11-15 (Alkasar-18, rev, synth)

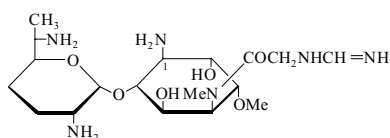
Abraham, T.W. *et al.*, *J. Med. Chem.*, 1996, **39**, 4569-4575 (5'-phosphate, synth, pmr, P-31 nmr)

Koller-Lucae, S.K.M. *et al.*, *J. Pharmacol. Exp. Ther.*, 1997, **282**, 1572-1580 (Alkasar-18)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AQQ750; AQR000; EAU075

Dactimicin

SF 2052. Antibiotic SF 2052
[73196-97-1]



$C_{18}H_{36}N_6O_6$ 432.519

Aminoglycoside antibiotic. From *Dactylosporangium matsuzakiense* and *Dactylosporangium vinaceum*. Active against gram-positive and -negative bacteria. Sol. H_2O ; fairly sol. MeOH; poorly sol. Me_2CO , EtOAc.

► Less nephrotoxic than congeners; LD₅₀ (mus, ivn) 300 mg/kg.

Hydrochloride: Mp 209-210° (dec. with foaming). $[\alpha]_D^{25} +87$ (c, 1 in H_2O).

1-Epimer: **1-Epidactimicin**

[103531-05-1]

$C_{18}H_{36}N_6O_6$ 432.519

From *Streptomyces tenjimariensis*. Similar biol. props. as Dactimicin. Powder (as sulfate salt 1:2).

Mp 205° dec. (sulfate). $[\alpha]_D^{21} +92$ (c, 0.15 in H_2O).

Inouye, S. *et al.*, *J. Antibiot.*, 1979, **32**, 1354 (isol)

Shomura, T. *et al.*, *J. Antibiot.*, 1980, **33**, 924 (isol)

Ohba, K. *et al.*, *J. Antibiot.*, 1981, **34**, 1090 (struct)

Atsumi, K. *et al.*, *J. Antibiot.*, 1982, **35**, 90 (synth)

Japan. Pat., 1982, 82 43 694, (Meiji Seika Kaisha); CA, **97**, 22081g (manuf)

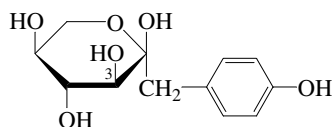
Matsukashi, Y. *et al.*, *Antimicrob. Agents Chemother.*, 1985, **27**, 589 (props)

Omoto, S. *et al.*, *Drugs Exp. Clin. Res.*, 1987, **13**, 719 (pharmacol)

Morioka, M. *et al.*, *J. Antibiot.*, 1989, **42**, 831 (epimer)

Dactylose A

1-(4-Hydroxyphenyl)-1-deoxy- α -L-sorbopyranose, 9CI
[191164-55-3]



$C_{12}H_{16}O_6$ 256.255

Constit. of the roots of *Dactylorhiza hatagirea*. Amorph. powder. $[\alpha]_D^{24} -23.8$ (c, 1 in H_2O). λ_{max} 220 (log ϵ 3.67); 274 (log ϵ 3.17) (MeOH).

3-Epimer: **Dactylose B**. 1-(4-Hydroxyphenyl)-1-deoxy-L-tagatopyranose

$C_{12}H_{16}O_6$ 256.255

Constit. of the roots of *Dactylorhiza hatagirea*. Amorph. powder. $[\alpha]_D^{26} +15$ (c, 0.08 in H_2O). An anomeric mixt. containing 9% β -anomer. λ_{max} 220 (log ϵ 3.67); 274 (log ϵ 3.12) (MeOH).

Preobrazhenskaya, M.N. *et al.*, *Tetrahedron*, 1997, **53**, 6971-6976 (synth)

D-2

Kizu, H. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 1618-1625 (isol)

Dalteparin

Fragmin. Kabi 2165

Low MW heparin (see Heparin, H-5). Av. MW =5000. Approved 1994

Na salt: **Dalteparin sodium**, BAN, INN, USAN

Used in the treatment of deep vein thrombosis.

Lockner, D. *et al.*, *Haemostasis*, 1986, **16**, 25; 30 (use)

Cziraky, M.J. *et al.*, *Clin. Pharm.*, 1993, **12**, 892 (rev)

Rasmussen, C. *et al.*, *Int. J. Gynaecol. Obstet.*, 1994, **47**, 121 (use)

Matthiasson, S.E. *et al.*, *Thromb. Res.*, 1994, **74**, 655 (use)

Dunn, C.J. *et al.*, *Drugs*, 2000, **60**, 203-237 (rev)

D-3

Danaparoid

Org 10172. Mucoglucuronon. Lomoparan. Orgaran

Low MW heparinoid (see Heparin, H-5). Mixt. of sulfated glycosaminoglycans.

Isol. from animal mucosa. Anticoagulant for the prevention of deep vein thrombosis. Approved by FDA (1996)

Meuleman, D.G. *et al.*, *Haemostasis*, 1992, **22**, 58 (rev)

Oforu, F.A. *et al.*, *Haemostasis*, 1992, **22**, 66 (pharmacol)

Stiekema, J.C.J. *et al.*, *Br. J. Clin. Pharmacol.*, 1993, **36**, 51 (pharmacol)

Sasaka, M. *et al.*, *Br. J. Pharmacol.*, 1993, **110**, 107 (pharmacol)

Vogel, G.M.T. *et al.*, *Thromb. Haemostas.*, 1993, **69**, 29 (pharmacol)

Wilde, M.I. *et al.*, *Drugs*, 1997, **54**, 903-924 (pharmacol, rev)

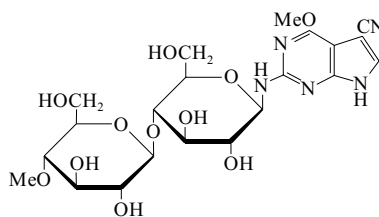
Ibbotson, T. *et al.*, *Drugs*, 2002, **62**, 2283-2314 (rev)

D-4

Dapiramicin B

[90044-18-1]

D-5



$C_{21}H_{29}N_5O_{11}$ 527.487

Nucleoside antibiotic. Isol. from *Micromonospora* sp. SF1917. Active against against sheath blight of rice; less effective than Dapiramicin A. Needles + $1H_2O$ (MeOH aq.). Sol. AcOH, DMF; fairly sol. MeOH, H_2O ; poorly sol. Me_2CO , Et_2O .

Mp 241-243°. $[\alpha]_D^{20} -37.6$ (c, 1 in 50% AcOH). λ_{max} 228 (ϵ 21700); 250 (ϵ 22500); 305 (ϵ 7670) (0.1N NaOH) (Derep). λ_{max} 227 (ϵ 40200); 289 (ϵ 8640) (MeOH or H_2O) (Derep). λ_{max} 227 (E1%/1cm 650); 289 (E1%/1cm 220) (HCl) (Berdy).

1'-Epimer, 6'-deoxy: **Epidapiramicin A**
[90044-19-2]

$C_{21}H_{29}N_5O_{10}$ 511.488

Isol. from *Micromonospora* sp. Shows activity against sheath blight of rice. Less effective than Dapiramicin A.

6'-Deoxy: **Dapiramicin A**. SF 1917. Antibiotic SF 1917

[67298-15-1]

$C_{21}H_{29}N_5O_{10}$ 511.488

Isol. from *Micromonospora* sp. SF-1917. Effective against sheath blight of rice. Needles. Sol. MeOH, EtOH, AcOH, DMF, butanol; fairly sol. H_2O ; poorly sol. EtOAc, Me_2CO , hexane.

Mp 220-222°. $[\alpha]_D^{20} +117$ (c, 0.5 in MeOH). λ_{max} 228 (ϵ 21700); 250 (ϵ 22500); 305 (ϵ 7670) (0.1N NaOH) (Derep). λ_{max} 227 (ϵ 40200); 289 (ϵ 8640) (MeOH or H_2O) (Derep). λ_{max} 226 (E1%/1cm 410); 288 (E1%/1cm 140) (MeOH-HCl) (Berdy).

λ_{max} 228 (E1%/1cm 200); 248 (E1%/1cm 210); 301 (E1%/1cm 55) (MeOH-NaOH) (Berdy).

► LD₅₀ (mus, ivn) 400 200 mg/kg, LD₅₀ (mus, ipr) 1000 500 mg/kg. UY9105600

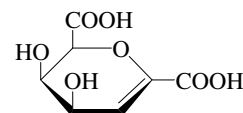
Nishizawa, N. *et al.*, *J. Antibiot.*, 1984, **37**, 1 (isol, uv, ir, pmr, props)

Daucic acid

D-6

2,6-Anhydro-3-deoxy-D-lyxo-hept-2-enaric acid, 9CI

[34098-52-7]



$C_7H_8O_7$ 204.136

Free acid not obt. pure. Found in wheat, sugar beet, sunflower and tobacco.

Di-Me ester: [33573-25-0]

Cryst. (EtOAc/petrol). Mp 130-131°.

$[\alpha]_D^{24.5} -102$ (c, 0.9 in Me_2CO).

Previously incorrectly assigned the D-xylo configuration.

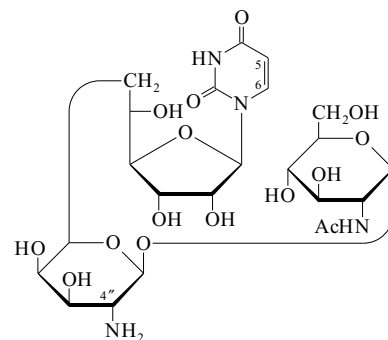
Lichtenhaler, F.W. *et al.*, *Tetrahedron:*

Asymmetry, 2003, **14**, 3973-3986 (synth, struct, bibl)

N-Deacyltunicamycin

D-7

N-Deacylstreptovirudin. N-Deacylcorynetoxin



$C_{23}H_{36}N_4O_{15}$ 608.555

The closely related Tunicamycin, Streptovirudin and Corynetoxin complexes are all mixts. of N^{4'}-acyl derivs. of the same

C₃₈H₆₄N₄O₁₆ 832.941

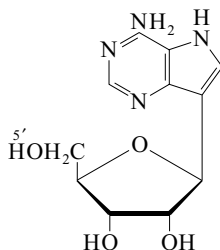
Needles (MeOH aq.). Sol. MeOH, Py, bases; fairly sol. EtOH, butanol; poorly sol. Me₂CO, hexane. Mp 252-253° dec. [α]_D²² +46 (c, 0.5 in MeOH). λ_{max} 213 (MeOH) (Berdy).

[11089-65-9]

Eckhardt, K. *et al.*, *J. Antibiot.*, 1975, **28**, 274; 1980, **33**, 908; 1981, **34**, 1631 (*isol, struct*)
 Mahoney, W.C. *et al.*, *J. Biol. Chem.*, 1979, **254**, 6572 (*props*)
 Ito, T. *et al.*, *Agric. Biol. Chem.*, 1980, **44**, 695 (*isol*)
 Mahoney, W.C. *et al.*, *J. Chromatogr.*, 1980, **198**, 506
 Elbein, D. *et al.*, *Biochemistry*, 1981, **20**, 4210
 Edgar, J.A. *et al.*, *Chem. Comm.*, 1982, 222 (*isol, struct, Corynetoxins*)
 Cockrum, P.A. *et al.*, *J. Chromatogr.*, 1983, **268**, 245 (*Corynetoxins*)
 Eckardt, K. *et al.*, *J. Nat. Prod.*, 1983, **46**, 483 (*struct*)
 Suami, T. *et al.*, *Carbohydr. Res.*, 1985, **143**, 85 (*synth, Tunicamycin V*)
 Kamogashira, T. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 859 (*isol*)
 Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)
 Myers, A.G. *et al.*, *J.A.C.S.*, 1993, **115**, 2036; 1994, **116**, 4697 (*synth*)

9-Deazaadenosine**D-8**

1-C-(4-Amino-5H-pyrrolo[3,2-d]pyrimidin-7-yl)-1,4-dihydro-D-ribitol, 9CI
 [77691-03-3]

C₁₁H₁₄N₄O₄ 266.256

Isol. from the cyanobacterium *Anabaena affinis*. Cytotoxic agent. Sol. H₂O, MeOH; poorly sol. EtOAc, hexane.

Hydrochloride: [77699-40-2]

Cryst. (EtOH). Mp 179-183°.

5'-O- α -D-Glucopyranoside: [146445-11-6]C₁₇H₂₄N₄O₉ 428.398

Isol. from *Anabaena affinis*. Sol. H₂O, MeOH; poorly sol. EtOAc, hexane. [α]_D²⁸ +21.9 (c, 0.05 in H₂O). λ_{max} 229; 268; 276 (H₂O) (Berdy). λ_{max} 235; 272 (HCl) (Berdy).

[77699-39-9]

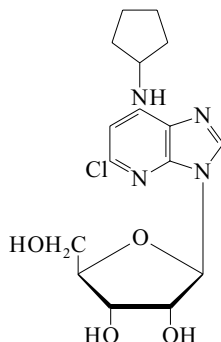
Lim, M.-I. *et al.*, *Tet. Lett.*, 1981, **22**, 25 (*synth, pmr*)

Chu, M.Y. *et al.*, *Biochem. Pharmacol.*, 1984, **33**, 1229 (*props*)

Namikoshi, M. *et al.*, *J.A.C.S.*, 1993, **115**, 2504 (*isol, struct*)

1-Deaza-2-chloro-N⁶-cyclopentyladenosine**D-9**

5-Chloro-N-cyclopentyl-3- β -D-ribofuranosyl-3H-imidazo[4,5-b]pyridin-7-amine, 9CI
 [113646-62-1]

C₁₆H₂₁ClN₄O₄ 368.819

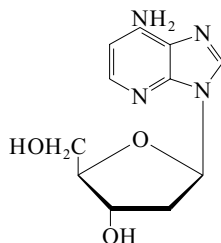
Adenosine A₁-receptor agonist.
 Mp 166-168°. Log P 1 (calc).

Cristalli, G. *et al.*, *J. Med. Chem.*, 1988, **31**, 1179 (*synth, pharmacol*)

Barajas-Lopez, C. *et al.*, *J. Pharmacol. Exp. Ther.*, 1991, **258**, 490 (*pharmacol*)

1-Deaza-2'-deoxyadenosine**D-10**

7-Amino-3-(2-deoxy- β -D-erythro-pentofuranosyl)-3H-imidazo[4,5-b]pyridine
 [85687-20-3]

C₁₁H₁₄N₄O₃ 250.257

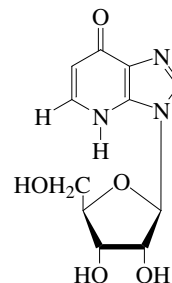
Synthetic nucleoside showing Hoogsteen or reverse-Hoogsteen type base pairing. Incapable of Watson-Crick pairing. Cryst. (MeOH). Mp 217°.

Seela, F. *et al.*, *Helv. Chim. Acta*, 1994, **77**, 1485 (*synth, uv, pmr, cmr, props, bibl*)

Seela, F. *et al.*, *Tetrahedron*, 1999, **55**, 1295-1308 (*cryst struct, cmr, pmr*)

1-Deazaguanosine**D-11**

5-Amino-3-(β -D-ribofuranosyl)imidazo[4,5-b]pyridin-7-one
 [57048-45-0]

C₁₁H₁₄N₄O₅ 282.255

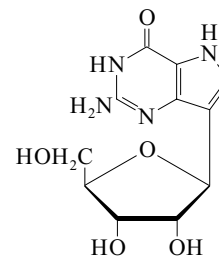
Cryst. (EtOH). Mp 148-150° Mp 137-138° (dihydrate).

Cline, B.L. *et al.*, *J. Het. Chem.*, 1978, **15**, 839-847 (*synth, uv, pmr*)

Kojima, N. *et al.*, *Tetrahedron*, 2000, **56**, 7909-7914 (*synth, pmr, cmr*)

9-Deazaguanosine**D-12**

2-Amino-1,5-dihydro-7- β -D-ribofuranosyl-4H-pyrrolo[3,2-d]pyrimidin-4-one, 9CI
 [102731-45-3]

C₁₁H₁₄N₄O₅ 282.255

Purine nucleoside phosphorylase inhibitor. Potential immunotherapeutic and antileukaemic agent.

Hydrochloride: [84649-11-6]

Cryst. (MeOH). Mp 280°.

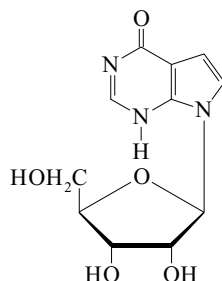
Lim, M.-I. *et al.*, *J.O.C.*, 1983, **48**, 780 (*synth, pmr, uv*)

Stoeckler, J.D. *et al.*, *Cancer Res.*, 1986, **46**, 1774 (*pharmacol*)

Girgis, N.S. *et al.*, *J. Med. Chem.*, 1990, **33**, 2750 (*synth, uv, pmr, activity*)

7-Deazainosine**D-13**

1,7-Dihydro-7-β-D-ribofuranosyl-4H-pyrrolo[2,3-d]pyrimidin-4-one, 9CI. XK 101-2. Antibiotic XK 101-2. B 15645. Antibiotic B 15645 [2862-16-0]



$C_{11}H_{13}N_3O_5$ 267.241

Nucleoside antibiotic. Identity with B 15645 not certain. Prod. by *Micromonospora chalicea tuberculida* and *Streptomyces griseolus*. Also isol. from the ascidian *Aplidium pantherinum*. Cytotoxic. Needles (H_2O). Mp 241–244°. $[\alpha]_D^{18}$ -6.72 (c, 0.5 in H_2O). $[\alpha]_D^{20}$ -47.5 (c, 0.5 in H_2O).

► UY9450000

Mizuno, Y. *et al.*, *J.O.C.*, 1963, **28**, 3331 (synth) *Japan. Pat.*, 1970, 20 559; *CA*, **73**, 108248h, (B 15645)

Chenon, M.T. *et al.*, *J.A.C.S.*, 1975, **97**, 4627 (cmr)

Japan. Pat., 1978, 78 124 685; *CA*, **90**, 136241v (isol)

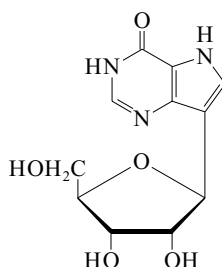
Seela, F. *et al.*, *Chem. Ber.*, 1980, **113**, 3389 (synth, uv, pmr)

Kim, J. *et al.*, *J. Nat. Prod.*, 1993, **56**, 1813-1816 (isol)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAE200

9-Deazainosine**D-14**

1,5-Dihydro-7-β-D-ribofuranosyl-4H-pyrrolo[3,2-d]pyrimidin-4-one, 9CI. 7-β-D-Ribofuranosyl-4-oxo-3H,5H-pyrrolo[3,2-d]pyrimidine [89458-19-5]



$C_{11}H_{13}N_3O_5$ 267.241

Inhibits *Pneumocystis carinii* *in vitro* and *in vivo*. Purine nucleoside phosphorylase inhibitor. Antileishmanial and potential antileukaemic agent. Struct. originally assigned to Pyrrolosine, P-117.

Hydrochloride: [74458-08-5]

Cryst. (MeOH). Mp 270°. Darkens at 220°.

Tri-O-Ac: [84649-18-3]

$C_{17}H_{19}N_3O_8$ 393.352
Cryst. (MeOH). Mp 240–241°.

[102731-47-5]

Lim, M.-I. *et al.*, *J.O.C.*, 1983, **48**, 780 (synth, uv, pmr)

Marr, J.J. *et al.*, *Antimicrob. Agents Chemother.*, 1984, **25**, 292; 1985, **27**, 33 (sar)

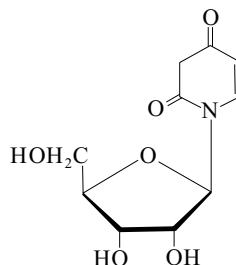
Stoeckler, J.D. *et al.*, *Cancer Res.*, 1986, **46**, 1774 (synth, pharmacol)

Berman, J.D. *et al.*, *Antimicrob. Agents Chemother.*, 1987, **31**, 111 (activity)

Smith, J.W. *et al.*, *Diagn. Microbiol. Infect. Dis.*, 1987, **7**, 113 (activity)

3-Deazauridine**D-15**

4-Hydroxy-1β-D-ribofuranosyl-2(1H)-pyridinone, 9CI, 8CI. NSC 126849. WR 199830 [23205-42-7]



$C_{10}H_{13}NO_6$ 243.216

Possess moderate activity against a number of bacterial systems *in vitro* and has a wide spectrum of anti-RNA viral activity in various cell cultures. Under investigation as an antineoplastic agent. Mp 230–232°. $[\alpha]_D^{25}$ +34.1 (c, 1.0 in H_2O). Log P -2.19 (calc). λ_{max} 278 (ε 4 470) (pH 1); 268(6 450), 255 nm (8 280) (pH 11).

► UV1148000

2',3',5'-Tribenzoyl: [23220-74-8]

$C_{31}H_{25}NO_9$ 555.54
Mp 140–141°.

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 374C (nmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 816B (ir)

Robins, M.J. *et al.*, *Chem. Comm.*, 1968, 1547 (synth)

Schwalbe, C.H. *et al.*, *Acta Cryst. B*, 1973, **29**, 61 (cryst struct)

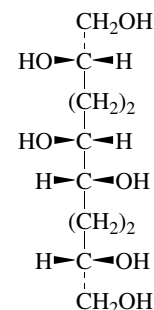
Cook, P.D. *et al.*, *J. Het. Chem.*, 1977, **14**, 1295 (synth, pmr)

Martindale, The Extra Pharmacopoeia, 28th/29th edn., Pharmaceutical Press, 1982, 19045

Moriconi, W.J. *et al.*, *Invest. New Drugs*, 1986, **4**, 67 (rev)

1,2,5,6,9,10-Decanehexaol**D-16**

3,4,7,8-Tetradecoxydeciol, 9CI



(2S,5R,6R,9S)-form

$C_{10}H_{22}O_6$ 238.28

(2S,5R,6R,9S)-form
D-manno-form

1,2:9,10-Di-O-isopropylidene:

[174645-22-8]

$C_{16}H_{30}O_6$ 318.409

$[\alpha]_D^{20}$ +26.8 (c, 1.065 in $CHCl_3$).

(2S,5S,6S,9S)-form
D-ido-form

1,2:9,10-Di-O-isopropylidene:

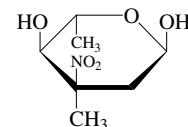
[174645-24-0]

$[\alpha]_D^{20}$ -2.3 (c, 1.43 in $CHCl_3$).

Koert, U. *et al.*, *Chem. Eur. J.*, 1997, **3**, 1170-1180 (derivs, synth, pmr, cmr)

Decilonitrose**D-17**

2,3,6-Trideoxy-3-C-methyl-3-nitro-L-ribohexose, 9CI [86402-43-9]



α-Pyranose-form

$C_7H_{13}NO_5$ 191.183

Component of Arugomycin and Decilorubicin, D-18.

α-Pyranose-form

Me glycoside: Methyl 2,3,6-trideoxy-3-C-methyl-3-nitro-α-L-ribo-hexopyranoside
 $C_8H_{15}NO_5$ 205.21

Cryst. (hexane). Mp 101.5–103°.

$[\alpha]_D$ -172 (c, 0.25 in $CHCl_3$).

β-Pyranose-form

Me glycoside: Methyl 2,3,6-trideoxy-3-C-methyl-3-nitro-β-L-ribo-hexopyranoside
 $C_8H_{15}NO_5$ 205.21

Syrup. $[\alpha]_D^{25}$ -13 (c, 0.2 in $CHCl_3$).

Ishi, K. *et al.*, *J. Antibiot.*, 1983, **36**, 454

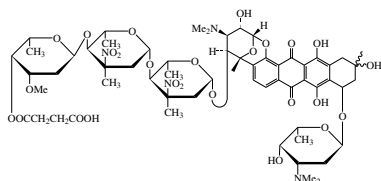
Kawai, H. *et al.*, *Tet. Lett.*, 1984, **25**, 1937

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1985, **140**, 163 (synth, pmr)

Giuliano, R.M. *et al.*, *Carbohydr. Res.*, 1986, **158**, 249 (synth, Me-α-gly)

Decolorubicin

[86016-61-7]

C₆₀H₈₂N₄O₂₆ 1275.319

Anthracycline antibiotic. Prod. by *Streptomyces virginiae* ATCC31910. Active against gram-positive bacteria and mouse leukaemia. Red powder. Sol. DMSO, MeOH-CHCl₃, Py, DMF; poorly sol. H₂O. Mp 170-174° dec. $[\alpha]_D^{25} +460$ (c, 0.05 in CHCl₃/MeOH). λ_{\max} 220 (€ 28000); 235 (€ 37100); 255 (€ 32200); 292 (€ 8300); 383 (€ 3400); 475 (€ 11800); 498 (€ 12500); 535 (€ 7000) (MeOH/HCl) (Derep). λ_{\max} 253 (€ 35400); 295 (sh) (€ 6400); 360 (€ 5000); 560 (€ 13600); 597 (€ 13500) (MeOH/NaOH) (Derep). λ_{\max} 220 (€ 28000); 235 (€ 35000); 254 (€ 27400); 290 (€ 6800); 380 (€ 3200); 476 (€ 9400); 496 (€ 10200); 535 (€ 7600); 586 (€ 4300) (MeOH) (Derep).

► LD₅₀ (mus, ivn) 50 - 100 mg/kg, LD₅₀ (mus, ipr) 50 - 100 mg/kg.

Me ester: Mp 178-182° dec. $[\alpha]_D^{25} +462$ (c, 0.05 in CHCl₃).

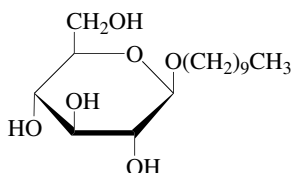
Ishii, K. *et al.*, *J. Antibiot.*, 1983, **36**, 451-453; 454-456 (isol, struct, props)

Nishimura, Y. *et al.*, *J. Antibiot.*, 1990, **43**, 54-61 (struct)

Aoki, M. *et al.*, *J. Antibiot.*, 1991, **44**, 635 (cmr)
Noecker, L. *et al.*, *J. Carbohydr. Chem.*, 1998, **17**, 39-48 (partial synth)

Decyl glucoside

D-19

C₁₆H₃₂O₆ 320.425**β-D-Pyranose-form** [58846-77-8]

Surfactant. Mp 74-75°. $[\alpha]_D^{20} -27.8$ (MeOH).

Tetra-Ac: [161344-77-0]

C₂₄H₄₀O₁₀ 488.574

$[\alpha]_D^{20} -7.6$ (c, 2.0 in CH₂Cl₂).

De Grip, W.J. *et al.*, *Chem. Phys. Lipids*, 1979, **23**, 321-335 (synth, props)

Koeltzow, D.E. *et al.*, *J. Am. Oil Chem. Soc.*, 1984, **61**, 1651-1655 (synth, props)

Kiwada, H. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 753-759 (use)

Chung, Y.J. *et al.*, *Biochim. Biophys. Acta*, 1989, **985**, 300-306 (props)

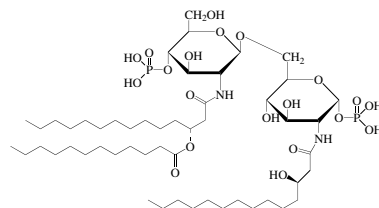
Klotz, W. *et al.*, *Annalen*, 1993, 683-690 (synth)

D-18

Defoslimod, INN

D-20

2-Deoxy-6-O-[2-deoxy-2-[[1-oxo-3-[(1-oxododecyl)oxy]tetradecyl]amino]-4-O-phosphono-β-D-glucopyranosyl]-2-[(3-hydroxy-1-oxotetradecyl)amino]-α-D-glucopyranose 1-(dihydrogen phosphate), 9CI [171092-39-0]

C₅₂H₁₀₀N₂O₂₀P₂ 1135.311

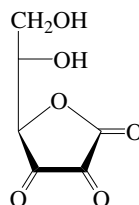
Immunomodulator. No phys. props. reported.

Pat. Coop. Treaty (WIPO), 1995, 95 14 026, (Laboratories Om); CA, **124**, 9326x (synth, pharmacol)

Dehydroascorbic acid

D-21

threo-2,3-Hexadiulosono-1,4-lactone, 9CI, 8CI

C₆H₆O₆ 174.11**L-form** [490-83-5]

Widespread in plants, as oxidn. prod. of Ascorbic acid, A-868. Formed reversibly *in vivo* from ascorbic acid and shows similar vitamin function. Mp 225° dec. (196° dec.). $[\alpha]_D^{20} +56 \rightarrow -6$ (6d) (c, 1 in phthalate/HCl buffer at pH 3.5). Probably exists in hydrated form as the 2,3-bis-gem-diol or as a C-2 hydrated bicyclic form in aq. soln.

2-Phenylhydrazone:

Yellow needles (EtOH). Mp 167-170°.

2,3-Bisphenylhydrazone: [22393-11-9]

Mp 223°.

2,3-Bis(2,4-dinitrophenylhydrazone): Mp 280° dec.

D-form

2,3-Bis(2,4-dinitrophenylhydrazone):

[19192-77-9]

Cryst. (EtOH). Mp 252-254°.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 702C (ir)

Herbert, R.W. *et al.*, *J.C.S.*, 1933, 1270 (deriv)

Kenyon, J. *et al.*, *J.C.S.*, 1948, 158 (synth)

El Khadem, H. *et al.*, *Carbohydr. Res.*, 1970, **13**, 57; 1972, **21**, 430 (hydrazones)

Weiss, W. *et al.*, *Annalen*, 1971, **754**, 152-153 (deriv)

Hvoslef, J. *et al.*, *Acta Cryst. B*, 1976, **32**, 448 (struct)

Matusch, R. *et al.*, *Z. Naturforsch., B*, 1977, **32**, 562-568 (cmr)

Ashny, E.S.H.E. *et al.*, *Chem. Rev.*, 1980, **79**, 151-154 (ir)

Tolbert, B.M. *et al.*, *Adv. Chem. Ser.*, 1982, 200 (rev)

Ohmuri, W. *et al.*, *Agric. Biol. Chem.*, 1986, **47**, 607-608 (deriv, synth, ir)

Kilany, Y.E. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 187-198 (deriv)

Wolf, G. *et al.*, *Nutr. Rev.*, 1993, **51**, 337-338 (rev)

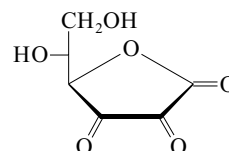
Kurata, T. *et al.*, *Biosci., Biotechnol., Biochem.*, 2000, **64**, 1651-1655 (props)

Merck Index, 13th edn., 2001, No. 2886 (bibl)

Dehydroisoascorbic acid

D-22

erythro-Hex-2,3-diulosono-1,4-lactone

C₆H₆O₆ 174.11

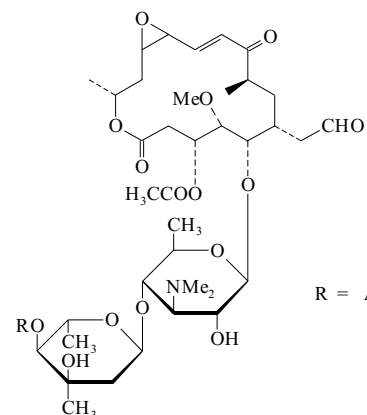
Obt. and studied in soln. Shows equilib. between various monomeric and dimeric species.

Hvoslef, J. *et al.*, *Carbohydr. Res.*, 1981, **92**, 9 (pmr, cmr, struct)

Deltamycin A₁

D-23

[58880-22-1]



R = Ac

C₃₉H₆₁NO₁₆ 799.908

Macrolide antibiotic. Prod. by *Streptomyces halstedii* deltae. Active against gram-positive organisms. Needles (C₆H₆/hexane). Sol. MeOH, C₆H₆; poorly sol. H₂O, hexane.

Mp 201-204°. $[\alpha]_D^{24} -49.3$ (c, 0.23 in CHCl₃). λ_{\max} 239 (E1%/1cm 167); 240 (€ 14800) (MeOH) (Berdy).

► LD₅₀ (mus, ipr) 200 - 600 mg/kg. OH4729040

4''-De-Ac: Deltamycin X

[40625-70-5]

C₃₇H₅₉NO₁₅ 757.871

Prod. by *Streptomyces halstedii* deltae.

Okamura, K. *et al.*, *J. Ferment. Technol.*, 1977, **55**, 347 (isol)

Shimauchi, Y. *et al.*, *J. Antibiot.*, 1978, **31**, 261; 270; 1979, **32**, 878 (isol, props, struct)

Deltamycin A₂**D-24**

[58880-23-2]

As Deltamycin A₁, D-23 withR = COCH₂CH₃C₄₀H₆₃NO₁₆ 813.935

Macrolide antibiotic. Isol. from *Streptomyces halstedii*. Biol. activity similar to Deltamycin A₁, D-23. Needles (C₆H₆/hexane). Sol. MeOH, C₆H₆; poorly sol. H₂O, hexane.

Mp 189-194°. [α]_D²⁴ -55.3 (c, 0.25 in CHCl₃). λ_{max} 239 (ε 14800); 240 (E1%/1cm 158) (MeOH) (Berdy).

► LD₅₀ (mus, ipr) 200 - 600 mg/kg. OH4729020

Shimauchi, Y. *et al.*, *J. Antibiot.*, 1978, **31**, 261; 270 (isol, props)

Shimauchi, Y. *et al.*, *J. Antibiot.*, 1979, **32**, 878 (struct)

Deltamycin A₃**D-25**

[58880-24-3]

As Deltamycin A₁, D-23 withR = COCH₂CH₂CH₃C₄₁H₆₅NO₁₆ 827.962

Macrolide antibiotic. Isol. from *Streptomyces halstedii*. Similar biol. activity to Deltamycin A₁, D-23. Needles (C₆H₆/hexane). Sol. MeOH, C₆H₆; poorly sol. H₂O, hexane.

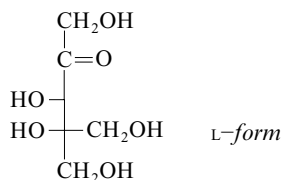
Mp 197-201°. [α]_D²⁴ -56.7 (c, 0.26 in CHCl₃). λ_{max} 239 (E1%/1cm 152) (MeOH) (Berdy).

► LD₅₀ (mus, ipr) 200 - 600 mg/kg. OH4726650

Shimauchi, Y. *et al.*, *J. Antibiot.*, 1978, **31**, 261; 270; 1979, **32**, 878 (isol, props, struct)

Dendroketose**D-26**

4-Hydroxymethyl-1,3,4,5-tetrahydroxy-2-pentanone, 8CI. 4-C-Hydroxymethylglycero-pentulose. β-Acrose

C₆H₁₂O₆ 180.157**D-form**

(R)-form

1,2:3,4-Di-O-isopropylidene: 4-C-Hydroxymethyl-1,2:3,4-di-O-isopropylidene-D-glycero-pentose

C₁₂H₂₀O₆ 260.286Mp 89°. [α]_D¹⁶ -121 (Me₂CO).

2,3:4,4'-Di-O-isopropylidene: 4-C-Hydroxymethyl-2,3:4,4'-di-O-isopropylidene-D-glycero-pentose

C₁₂H₂₀O₆ 260.286Mp 64-65°. [α]_D¹⁷ +60.5 (Me₂CO).**L-form**

(S)-form

[58641-74-0]

2,3-O-Isopropylidene: 4-C-Hydroxymethyl-2,3-O-isopropylidene-L-glycero-pentose

C₉H₁₆O₆ 220.222[α]_D -14.3 (c, 0.6 in CHCl₃).

1,2:3,4-Di-O-isopropylidene: 4-C-Hydroxymethyl-1,2:3,4-di-O-isopropylidene-L-glycero-pentose

C₁₂H₂₀O₆ 260.286Mp 87-88°. [α]_D +117 (c, 1.2 in Me₂CO).

2,3:4,4'-Di-O-isopropylidene: 4-C-Hydroxymethyl-2,3:4,4'-di-O-isopropylidene-L-glycero-pentose

C₁₂H₂₀O₆ 260.286Mp 58-59°. [α]_D -63.2 (c, 1.6 in Me₂CO).**D,L-form**

Phenylosazone: Mp 157°.

Utkin, L.M. *et al.*, *Zh. Obshch. Khim.*, 1955, **25**, 530-536; *CA*, **50**, 3228f (*L*-form, *DL*-form, *synth*)

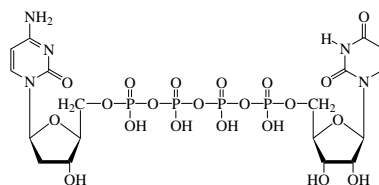
Vzas, D.M. *et al.*, *Carbohydr. Res.*, 1975, **45**, 151-159 (*derivs*)

Szarek, W.A. *et al.*, *Carbohydr. Res.*, 1977, **53**, 101-108 (*L*-form, *synth*)

Ho, P.-T. *et al.*, *Can. J. Chem.*, 1979, **57**, 384-386 (*L*-form, *synth*)

Denufosol, INN**D-27**

Uridine 5'-(pentahydrogen tetraphosphate), P'''-5'-ester with 2'-deoxycytidine, 9CI. dCP4U. INS 37217 [211448-85-0]

C₁₈H₂₇N₅O₂₁P₄ 773.327

Purine P_{2Y} receptor agonist. Used in the treatment of rhinitis, upper respiratory infection and lung disease, cystic fibrosis, retinal detachment and oedema.

Tetra-Na salt: **Denufosol tetrasodium**,**USAN**

[318250-11-2]

Cryst. Mp 202-210°.

Pat. Coop. Treaty (WIPO), 1998, 98 34 942, (*Inspire*); *CA*, **129**, 175919r (*synth*, *pharmacol*)

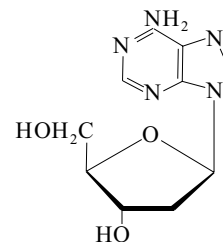
Eur. Pat., 2002, 11 91 032, (*Yamasa*); *CA*, **134**, 91109s (*synth*)

Maminishkis, A. *et al.*, *Invest. Ophthalmol. Visual Sci.*, 2002, **43**, 3565-3566; 3567-3574; 2003, **44**, 4505-4514 (*pharmacol*)

Yerxa, B.R. *et al.*, *J. Pharmacol. Exp. Ther.*, 2002, **302**, 871-880 (*pharmacol*)

2'-Deoxyadenosine, 9CI, 8CI**D-28**

9-(2-Deoxy-β-D-erythro-pentofuranosyl) adenine, 9CI. Adenine deoxyriboside [958-09-8]

C₁₀H₁₃N₅O₃ 251.244

A common component of deoxyribonucleic acid. Isol. from Dong Chong Xia Chao (*Cordyceps sinensis*). Sol. H₂O. Mp 187-192°. [α]_D²⁰ -27 (c, 0.4 in H₂O). pK_a 3.79 (20°). λ_{max} 260 (ε 15220) (H₂O).

► AU7358600

3'-Phosphate: 2'-Deoxy-3'-adenylic acid [15731-72-3]

C₁₀H₁₄N₅O₆P 331.224

Trihydrate (as Ca salt). [α]_D¹⁹ -10.8 (c, 0.46 in H₂O). λ_{max} 260 (ε 14450) (H₂O).

5'-Phosphate: 2'-Deoxy-5'-adenylic acid [653-63-4]

C₁₀H₁₄N₅O₆P 331.224

Dihydrate (as Ca salt). [α]_D¹⁹ -26 (c, 0.38 in H₂O). λ_{max} 260 (ε 13600) (H₂O).

5'-Diphosphate: [2793-06-8]

C₁₀H₁₅N₅O₉P₂ 411.204

No phys. props. reported.

5'-Triphosphate: [1927-31-7]

[95069-73-1]

C₁₀H₁₆N₅O₁₂P₃ 491.184

RNA polymerase inhibitor. Solid (EtOH aq.). λ_{max} 259 (H₂O).

3'-Ac: [6612-73-3]

C₁₂H₁₅N₅O₄ 293.282

Prisms (EtOAc). Mp 216-217°. [α]_D²⁵ -28.6 (c, 1 in MeOH). λ_{max} 260 (ε 14300) (H₂O).

5'-Ac:

C₁₂H₁₅N₅O₄ 293.282

Cryst. (EtOH). Mp 140-141°. [α]_D²⁵ -6.8 (c, 1 in MeOH). λ_{max} 260 (ε 14400) (H₂O).

3',5'-Di-Ac: [17318-24-0]

C₁₄H₁₇N₅O₅ 335.319

Needles (EtOAc/petrol). Mp 151-152°.

6N-Benzoyl: [4546-72-9]

C₁₇H₁₇N₅O₄ 355.352Needles (H₂O). Mp 113-115°.

3',5'-Dibenzoyl: [20838-22-6]

C₂₄H₂₁N₅O₅ 459.46Cryst. (C₆H₆/hexane). Mp 116-117.5°.

3'-Tosyl, 5'-Ac:

C₁₉H₂₁N₅O₆S 447.471Plates (CHCl₃/petrol). Mp 147-148°.

5'-Trityl:

C₂₉H₂₇N₅O₃ 493.564

Mp 195-197°.

5'-(4,4'-Dimethoxytrityl), 6N-benzoyl: [64325-78-6]

C₃₈H₃₅N₅O₆ 657.724

Research tool for antiviral and anticancer studies. Powder.

[16373-93-6]

Andersen, W. *et al.*, *J.C.S.*, 1954, 1882,

(3'-Ac, 5'-Ac, di-Ac, 3'-tosyl 5'-Ac, 5'-trityl)

Hayes, D.H. *et al.*, *J.C.S.*, 1955, 808

(phosphates)

Lehman, I.R. *et al.*, *J. Biol. Chem.*, 1958, **233**,

163-170 (5'-triphosphate)

Pedersen, C. *et al.*, *J.A.C.S.*, 1960, **82**, 5210

(synth)

Biemann, K. *et al.*, *J.A.C.S.*, 1962, **84**, 2005

(ms)

Kuszmarn, J. *et al.*, *Chem. Ber.*, 1963, **96**, 2327

(synth)

Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3821-3827

(6N-benzoyl, 5'-(4,4-dimethoxytrityl) deriv)

Letsinger, R.L. *et al.*, *Tet. Lett.*, 1968, 2621

(3',5'-dibenzoyl)

Jones, A.J. *et al.*, *J.A.C.S.*, 1970, **92**, 4079 (cmr)

Davies, D.B. *et al.*, *J.C.S. Perkin 2*, 1975, 1703

(pmr)

Saneyoshi, M. *et al.*, *Nucleic Acids Res.*, 1981,

9, 3129-3138 (5'-triphosphate)

Sato, T. *et al.*, *Acta Cryst. C*, 1984, **40**, 880

(cryst struct)

Kazimierczuk, Z. *et al.*, *J.A.C.S.*, 1984, **106**,

6379 (synth)

Ladner, W.E. *et al.*, *J.O.C.*, 1985, **50**, 1076-1079

(5'-triphosphate)

Tanaka, T. *et al.*, *Tet. Lett.*, 1986, **27**, 5641-5644

(5'-diphosphate)

Ciuffreda, P. *et al.*, *Tetrahedron*, 2000, **56**,

3239-3243 (3'-Ac, 5'-Ac, synth, pmr)

Li, T.S.C. *et al.*, *Chinese and Related North*

American Herbs, CRC Press, 2002, 46 (occur)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of*

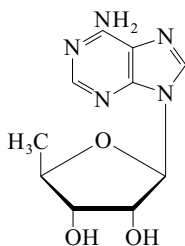
Industrial Materials, 8th edn., Van Nostrand

Reinhold, 1992, DAQ200

5'-Deoxyadenosine

D-29

[4754-39-6]



$C_{10}H_{13}N_5O_3$ 251.244

Cryst. (EtOH). Mp 213-214.5° (premelts from 130°). $[\alpha]_D^{26}$ -53.5 (c, 1.01 in EtOH).

Kissman, H.M. *et al.*, *J.A.C.S.*, 1957, **79**, 5534

(synth)

McCarthy, J.R. *et al.*, *J.A.C.S.*, 1968, **90**, 4993

(synth, uv)

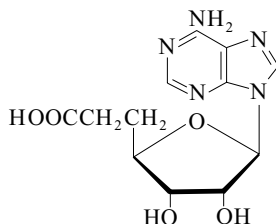
Lerner, L.M. *et al.*, *Carbohydr. Res.*, 1988, **184**,

250 (synth)

5'-Deoxy-5'-adenosineacetic acid

D-30

9-(5,6-Dideoxy-β-D-ribo-heptofuranosyluronic acid)adenine
[41355-20-8]



$C_{12}H_{15}N_5O_5$ 309.281

Model nucleotide for AMP. Cryst. (H₂O). Mp 233-234° dec.

Et ester: [41355-18-4]

Cryst. (EtOAc/hexane). Mp 86-91°.

Walker, T.E. *et al.*, *Carbohydr. Res.*, 1973, **27**,

225-234 (synth, uv, pmr)

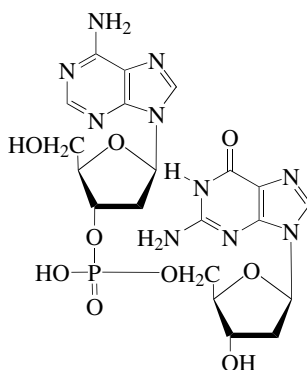
Ishida, T. *et al.*, *J.C.S. Perkin 1*, 1983,

1325-1331 (pmr, cryst struct)

2'-Deoxyadenylyl-(3'→5')-2'-deoxyguanosine, 9CI

D-31

d(ApG)
[4336-87-2]



$C_{20}H_{25}N_{10}O_9P$ 580.453

Melby, L.R. *et al.*, *J.O.C.*, 1969, **34**, 427-431

(synth)

Cantor, C.R. *et al.*, *Biopolymers*, 1970, **9**,

1059-1077 (cd)

Heikkilä, J. *et al.*, *Acta Chem. Scand., Ser. B*,

1985, **39**, 657-659 (synth, pmr, P-31 nmr)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**,

424-435 (ms)

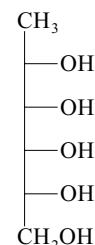
Hashmi, S.A. *et al.*, *Nucleosides Nucleotides*,

1994, **13**, 1059-1067 (synth)

1-Deoxyallitol

D-32

6-Deoxyallitol. Allomethylitol



D-form

$C_6H_{14}O_5$ 166.174

D-form

1-Deoxy-D-allitol. 6-Deoxy-L-allitol

[18545-98-7]

Cryst. Mp 94-96° (62-63°). $[\alpha]_D^{23}$ +15.9

(c, 0.97 in H₂O).

3,4-O-Isopropylidene: [105617-51-4]

$C_9H_{18}O_5$ 206.238

Needles (Et₂O/hexane). Mp 72-73°. $[\alpha]_D^{15}$ +27.5 (c, 1.0 in CHCl₃).

L-form 6-Deoxy-D-allitol, 9CI. 1-Deoxy-L-allitol

[95120-27-7] Detected in normal urine and in those of uremia patients.

Cryst. Mp 62-63°. $[\alpha]_D^{16}$ -11 (H₂O).

Penta-Ac: [51607-20-6]

$C_{16}H_{24}O_{10}$ 376.36

Syrup.

Iwaware, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1942,

17, 296 (synth, D-form)

Bollenback, G.N. *et al.*, *J.A.C.S.*, 1950, **72**, 741

(synth, L-form)

Heinz, K. *et al.*, *Helv. Chim. Acta*, 1967, **50**,

2280 (synth, L-form)

Perry, M.B. *et al.*, *Carbohydr. Res.*, 1973, **31**,

131 (penta-Ac)

Buchanan, J.G. *et al.*, *J.C.S. Perkin 1*, 1974,

1943 (pmr)

Niwa, T. *et al.*, *J. Chromatogr.*, 1984, **336**, 345

(glc, ms)

Nakata, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1989,

62, 2618 (isopropylidene)

Wiesler, W.T. *et al.*, *J.A.C.S.*, 1989, **111**, 9205

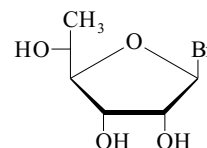
(synth)

Lewis, D. *et al.*, *J.C.S. Perkin 2*, 1991, 197

(conformn)

6-Deoxyallofuranosyl bromide

D-33



$C_6H_{11}BrO_4$ 227.054

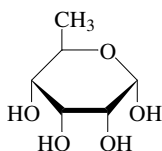
β-D-form

Tris(4-nitrobenzoyl): [80851-28-1]

Cryst. (CH₂Cl₂/hexane). Mp 118° (some dec. at 113°).

El-Khadem, H.S. *et al.*, *Carbohydr. Res.*, 1981,

98, 195 (nitrobenzoyl, ir)

6-Deoxyallose*Allomethylose* α -D-Pyranose-form $C_6H_{12}O_5$ 164.158**D-form** [4348-84-9]Found in plant glycosides, e.g. from *Xysmalobium undulatum*.Needles (EtOH or Me₂CO).Mp 151-152° (140°). $[\alpha]_D^{20} +1.2$ (H₂O).*Phenylhydrazone*: Mp 163-164°. $[\alpha]_D +20$ (H₂O).*Phenylosazone*: Mp 182-183°. $[\alpha]_D -72.3$ (Py/EtOH).*2-Me: 6-Deoxy-2-O-methylallose, 8CI.**Javose*

[921-90-4]

 $C_7H_{14}O_5$ 178.185Sugar component of glycosides found in seeds of *Antiaris toxicaria*.Mp 112-114°. $[\alpha]_D^{20} -54 \rightarrow -40$ (c, 1.6 in H₂O).*3-Me: 6-Deoxy-3-O-methyl-D-allose*

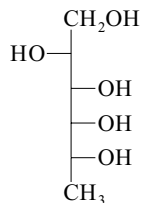
[7045-53-6]

 $C_7H_{14}O_5$ 178.185Constit. of the leaves of *Marsdenia erecta* and of the Chinese crude drug "Wujiapi".Cryst. (Me₂CO/Et₂O).Mp 122-123°. $[\alpha]_D^{30} +9$ (c, 1.0 in Et₂O). **α -D-Pyranose-form***Me glycoside, 2-Me: Methyl 6-deoxy-2-O-methyl- α -D-allopyranoside*

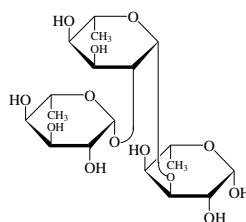
[17013-99-9]

 $C_8H_{16}O_5$ 192.211 $[\alpha]_D^{22} +90$ (c, 1.6 in CHCl₃).*Me glycoside, 3-Me: Methyl 6-deoxy-3-O-methyl- α -D-allopyranoside* $C_8H_{16}O_5$ 192.211Cryst. (C₆H₆/petrol). Mp 110-111°. $[\alpha]_D^{22} +195$ (c, 0.67 in MeOH).*Me glycoside, 3-Me, 2-tosyl: Methyl 6-deoxy-3-O-methyl-2-O-tosyl- α -D-allopyranoside* $C_{15}H_{22}O_7S$ 346.401Mp 116-117°. $[\alpha]_D +70$ (c, 1.0 in CHCl₃). **β -D-Pyranose-form***Me glycoside, 2-Me: Methyl 6-deoxy-2-O-methyl- β -D-allopyranoside*

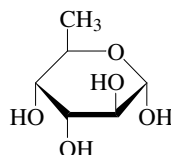
[14917-72-7]

 $C_8H_{16}O_5$ 192.211Mp 97-98°. $[\alpha]_D^{26} -82.8$ (c, 1.5 in MeOH).Hunger, A. *et al.*, *Helv. Chim. Acta*, 1952, **35**, 1073Yamana, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1963, **36**, 473Reichstein, T. *et al.*, *Helv. Chim. Acta*, 1963, **46**, 8Hoffmann, St. *et al.*, *Helv. Chim. Acta*, 1966, **49**, 2209 (*synth*, *pmr*)Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1966, 499; 1967, 1503; 1971, 2305 (*synth*, *struct*)Saner, A. *et al.*, *Helv. Chim. Acta*, 1970, **53**, 221 (*isol*, 3-Me)**D-34****6-Deoxyaltritol***1-Deoxytalitol*

D-form

 $C_6H_{14}O_5$ 166.174**D-form**Present in cell-wall polysaccharides of *Nocardia asteroides* R399.Mp 104°. $[\alpha]_D^{20} -6$ (c, 0.02 in H₂O) (+2).**L-form**Mp 104°. $[\alpha]_D -2.3$ (H₂O).Votoček, E. *et al.*, *Coll. Czech. Chem. Comm.*, 1930, **2**, 36; 47 (*synth*, D-form, L-form)Voiland, A. *et al.*, *Carbohydr. Res.*, 1985, **141**, 283 (*isol*, *ms*, *synth*)**6-Deoxy- β -L-altropyranosyl-****(1 \rightarrow 2)-6-deoxy- β -L-altropyranosyl-****(1 \rightarrow 3)-6-deoxy-L-altrose, 9CI** β -Pyranose-form $C_{18}H_{32}O_{13}$ 456.443Repeating unit in the O-antigenic lipopolysaccharides of *Yersinia enterocolitica* serovars 0:1,2a,3 and 0:2a,2b,3. Different serovars vary in the acetyl group composition at C-3 of altropyranosyl units. **β -Pyranose-form** [97451-29-1]

Syrup.

Gorshkova, R.P. *et al.*, *Eur. J. Biochem.*, 1985, **150**, 527 (*isol*, *struct*)**6-Deoxyaltrose***Altromethylose***D-37** α -D-form $C_6H_{12}O_5$ 164.158An aq. soln. at 30° contains 33.3% α -Pyr, 38.5% β -Pyr, 15.4% α -Fur and 12.8% β -Fur. Found in polysialoglycoprotein of *Salvelinus leucomaemis* eggs. Only 6-deoxyhexose other than fucose found in glycoproteins. Residue present in some strains of *Eubacterium saburreum*.**D-form** [18546-02-6]Syrup. $[\alpha]_D +16.2$ (H₂O).*p-Bromophenylosazone*: Mp 177-178°. $[\alpha]_D +8$ (CHCl₃).*4-Me: 6-Deoxy-4-O-methyl-D-altrose.**Sordarose*

[3429-96-4]

 $C_7H_{14}O_5$ 178.185Component of Sordarin. Syrup. Bp_{0.001} 140°. $[\alpha]_D^{20} +29$ (c, 0.45 in H₂O). **α -D-Pyranose-form***Me glycoside, 4-Me: Methyl 6-deoxy-4-O-methyl- α -D-altropyranoside*

[33159-51-2]

 $C_8H_{16}O_5$ 192.211Syrup. Bp_{0.01} 155°. $[\alpha]_D^{20} +153$ (c, 1.3 in MeOH).*Me glycoside, 4-Me, di-Ac: Methyl 2,3-di-O-acetyl-6-deoxy-4-O-methyl- α -D-altropyranoside* $C_{12}H_{20}O_7$ 276.286Mp 59-62° Mp 92°. $[\alpha]_D^{20} +106$ (c, 1.05 in MeOH).*Me glycoside, 2,3-di-Me: Methyl 6-deoxy-2,3-di-O-methyl- α -D-altropyranoside* $C_9H_{18}O_5$ 206.238 $[\alpha]_D^{23} +133$ (c, 1.2 in CHCl₃).*Me glycoside, 2,3-di-Me, benzoyl: Methyl 4-O-benzoyl-6-deoxy-2,3-di-O-methyl- α -D-altropyranoside* $C_{16}H_{22}O_6$ 310.346Syrup. $[\alpha]_D^{23} +61$ (c, 1 in CHCl₃). **β -D-Pyranose-form***Me glycoside, 4-Me: Methyl 6-deoxy-4-O-methyl- β -D-altropyranoside*

[33164-14-6]

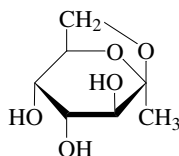
 $C_8H_{16}O_5$ 192.211 $[\alpha]_D^{20} -12$ (c, 1.0 in MeOH).*Me glycoside, 4-Me, di-Ac: Methyl 2,3-di-O-acetyl-4-O-methyl- β -D-altropyranoside* $C_{12}H_{20}O_7$ 276.286Mp 91-92°. $[\alpha]_D^{20} -34$ (c, 0.71 in MeOH). **β -D-Furanose-form***Ph glycoside: Phenyl 6-deoxy- β -D-altro-furanoside* $C_{12}H_{16}O_5$ 240.255

Cryst. (EtOAc/petrol). Mp 114-115°.

 $[\alpha]_D -98.6$ (c, 1.06 in CHCl₃).**L-form** [32738-74-2]Syrup. $[\alpha]_D -17.3$.*p-Bromophenylosazone*: Mp 132°. $[\alpha]_D -1$ (CHCl₃). **α -L-Furanose-form***Me glycoside: Methyl 6-deoxy- α -L-altro-furanoside* $C_7H_{14}O_5$ 178.185Resin. $[\alpha]_D^{20} -89$ (c, 1.2 in CHCl₃).Freudenberg, K. *et al.*, *Ber.*, 1929, **62**, 373Hauser, D. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1178 (*isol*, *struct*, *pmr*, *ms*, 4-Me)Spichtig, A.M. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1191 (4-Me)Hoffman, J. *et al.*, *Carbohydr. Res.*, 1976, **47**, 261 (*occur*)Florent, J.C. *et al.*, *Carbohydr. Res.*, 1980, **85**, 243 (α -L-Me fur)Sato, K.I. *et al.*, *Carbohydr. Res.*, 1982, **103**, 221 (α -D-Me gly derivs)

Iwasaki, M. *et al.*, *Eur. J. Biochem.*, 1987, **168**, 185 (*isol*)
 Buchanan, J.G. *et al.*, *Tetrahedron*, 1995, **51**, 6033 (*Ph furanoside*)
 Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (*equilib*)

1-Deoxy-2,7-anhydroaltroheptulose **D-38**
 2,7-Anhydro-1-deoxy-altro-2-heptulopyranose

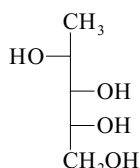


C₇H₁₂O₅ 176.169

D-form [63487-90-1]

Prod. by mutants of *Bacillus pumilus*.
 Cryst. (MeOH/EtOAc). Sol. H₂O, MeOH; fairly sol. EtOH; poorly sol. Me₂CO, hexane.
 Mp 132-133°. [α]_D²⁰ -164 (c, 0.9 in H₂O).
 Koell, P. *et al.*, *Annalen*, 1977, **110**, 1994-2004 (*synth, pmr*)
 Yokota, A. *et al.*, *Agric. Biol. Chem.*, 1978, **42**, 2245-2252 (*isol, synth, pmr*)

1-Deoxyarabinitol **D-39**
 1,2,3,4-Pentanetetrol. 5-Deoxylyxitol.
 Lyxomethylitol
 [61913-77-7]



D-form

C₅H₁₂O₄ 136.147

D-form [13942-77-3]

Mp 132-134°. [α]_D²⁰ +2.46 (c, 1.02 in H₂O).
Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-1-deoxy-D-arabinitol
 C₁₃H₂₀O₈ 304.296
 Cryst. (EtOH). Mp 115-116°. [α]_D³⁰ +27.3 (c, 1.00 in CHCl₃).

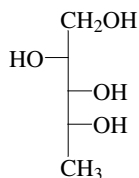
L-form [92622-02-1]

Constit. of the fruit of *Carum ajowan*.
 Cryst. (MeOH/Et₂O).
 Mp 129-131°. [α]_D²⁴ -3 (c, 0.5 in H₂O).
Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-1-deoxy-L-arabinitol
 C₁₃H₂₀O₈ 304.296
 Cryst. (EtOH). Mp 115°. [α]_D³⁰ -26.37 (c, 1.29 in CHCl₃).
 [25289-19-4]
 Bollenback, G.N. *et al.*, *J.A.C.S.*, 1950, **72**, 741
 Williams, J.M. *et al.*, *Carbohydr. Res.*, 1984, **128**, 73
 Enders, D. *et al.*, *Tet. Lett.*, 1993, **34**, 2453-2456 (*synth*)
 Ishikawa, T. *et al.*, *Chem. Pharm. Bull.*, 2001, **49**, 840-844 (*isol, pmr, cmr, ms*)

5-Deoxyarabinitol, 9CI

1-Deoxylyxitol
 [61913-78-8]

[97466-38-1]



D-form

C₅H₁₂O₄ 136.147

D-form [67968-44-9]

Constit. of the fruit of *Glehnia littoralis*.
 Syrup. [α]_D²⁴ -23 (c, 1.1 in MeOH). This is 5-deoxy-D-arabinitol or 1-deoxy-D-lyxitol. The former takes preference acc. to the IUPAC special nomenclature rules for carbohydrates.

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-deoxy-D-arabinitol. 2,3,4,5-Tetra-O-acetyl-1-deoxy-D-lyxitol
 [90129-06-9]
 C₁₃H₂₀O₈ 304.296

Cryst. (CHCl₃/pentane). Mp 58-59°. [α]_D²⁰ +46.1 (c, 1 in CHCl₃).

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl-5-deoxy-D-arabinitol. 2,3,4,5-Tetra-O-benzoyl-1-deoxy-D-lyxitol
 C₃₃H₂₈O₈ 552.579

Needles (EtOH aq.). Mp 106-107°. [α]_D²⁰ +12 (c, 1 in CHCl₃).

1,2,3,4-Dibenzylidene: 1,2:3,4-Di-O-benzylidene-5-deoxy-D-arabinitol
 C₁₉H₂₀O₄ 312.365
 Needles (EtOH). Mp 143-146°. [α]_D²⁰ -45.2 (c, 1.3 in CHCl₃).

DL-form

Bp₃ 176°.

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-deoxy-DL-arabinitol. 2,3,4,5-Tetra-O-acetyl-1-deoxy-DL-lyxitol
 C₁₃H₂₀O₈ 304.296

Cryst. (EtOH aq.). Mp 71°.

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl-5-deoxy-DL-arabinitol. 2,3,4,5-Tetra-O-benzoyl-1-deoxy-DL-lyxitol
 C₃₃H₂₈O₈ 552.579
 Mp 119-120°.

Zissis, E. *et al.*, *J.A.C.S.*, 1954, **76**, 5515-5522 (*synth*)

Takai, K. *et al.*, *J.O.C.*, 1985, **50**, 3247-3251 (*synth*)

Wiesler, W.T. *et al.*, *J.A.C.S.*, 1989, **111**, 9205-9213 (*cd, abs config*)

Andrews, M.A. *et al.*, *J.O.C.*, 1989, **54**, 5257-5264 (*synth, pmr, cmr*)

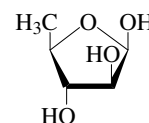
Ishikawa, T. *et al.*, *Chem. Pharm. Bull.*, 2001, **49**, 584-588 (*isol, pmr, cmr*)

D-40

5-Deoxyarabinose, 9CI, 8CI

D-41

Arabomethyllose
 [16777-96-1]



β -D-Furanose-form

C₅H₁₀O₄ 134.132

D-form [67968-47-2]

2,3-Isopropylidene, di-Et acetal: 5-Deoxy-2,3-O-isopropylidene-D-arabinose diethyl acetal
 [23362-26-7]
 C₁₂H₂₄O₅ 248.319

Bp_{0.02} 82-87°. [α]_D²⁰ -30 (c, 1 in CHCl₃).

2,3-O-Isopropylidene, di-Et acetal, 4-tosyl: 5-Deoxy-2,3-O-isopropylidene-4-O-tosyl-D-arabinose diethyl acetal
 [23362-27-8]
 C₁₉H₃₀O₇S 402.508

Cryst. (petrol). Mp 76.5°. [α]_D²⁰ -5.6 (c, 1.5 in CHCl₃).

2,3-O-Isopropylidene, di-Et mercaptal: 5-Deoxy-2,3-O-isopropylidene-D-arabinose diethyl dithioacetal
 [23362-25-6]
 C₁₂H₂₄O₃S₂ 280.452

Bp_{0.01} 134-138°. [α]_D²⁰ +64.9 (c, 1 in CHCl₃).

β -D-Furanose-form

1,2-Isopropylidene: 5-Deoxy-1,2-O-isopropylidene- β -D-arabinofuranoside
 [37105-87-6]
 C₈H₁₄O₄ 174.196

Mp 83-84°. [α]_D²³ -13.2 (c, 1.2 in CHCl₃).

1,2-Isopropylidene, 3-Ac: [37105-88-7]
 C₁₀H₁₆O₅ 216.233
 Syrup. [α]_D²³ -12.9 (c, 3.1 in CHCl₃).

L-form [13039-56-0]

[α]_D²⁵ -25.3 (c, 0.34 in EtOH).

Phenylhydrazone:

Solid. Mp 78-80°.

Benzylphenylhydrazone: Mp 96-97°. [α]_D²⁰ -6.5 (EtOH).

Phenylosazone:

Yellow needles (EtOH). Mp 172-173°. [α]_D²⁰ -30.5 \rightarrow +16.4 (EtOH).

Di-Et mercaptal: 5-Deoxy-L-arabinose diethyl dithioacetal
 C₉H₂₀O₃S₂ 240.387
 Cryst. (C₆H₆). Mp 103.5-105.5°. [α]_D²⁶ +20.5 (c, 0.9 in MeOH).

β -L-Furanose-form

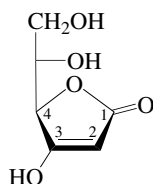
1,2-Isopropylidene: 5-Deoxy-1,2-O-isopropylidene- β -L-arabinofuranoside
 [33156-02-4]
 C₈H₁₄O₄ 174.196

Cryst. (Et₂O/petrol). Mp 78-80°. [α]_D²⁵ -12.6 (c, 0.18 in MeOH).

1,2-Isopropylidene, 3-mesyl: 5-Deoxy-1,2-O-isopropylidene-3-O-mesyl- β -L-arabinofuranoside
 [87614-50-4]
 C₉H₁₆O₆S 252.288
 Syrup. [α]_D²⁰ +2 (c, 0.6 in CHCl₃).

Ruff, O. *et al.*, *Ber.*, 1902, **35**, 2364
 Green, B. *et al.*, *Chem. Ber.*, 1966, **99**, 2162,
 (*L-form, deriv*)
 Paulsen, H. *et al.*, *Chem. Ber.*, 1969, **102**, 469
 (*D-form, deriv*)
 Tronchet, J.M.J. *et al.*, *Helv. Chim. Acta*, 1972,
55, 1141 (*D-furanose deriv*)
 Taylor, E.C. *et al.*, *J.A.C.S.*, 1974, **96**, 6781;
 1976, **98**, 2301 (*L-form*)
 Kiss, J. *et al.*, *Helv. Chim. Acta*, 1975, **58**, 311
 (*synth, L-form*)
 Binkley, R.W. *et al.*, *J. Carbohydr. Chem.*, 1982,
1, 213-227 (β -*L-fur* 1,2-isopropylidene)
 Fleet, G.W.J. *et al.*, *Tet. Lett.*, 1983, **24**, 3657,
 (*L-furanose deriv*)
 Sengupta, D. *et al.*, *Indian J. Chem., Sect. B*,
 1986, **25**, 85 (*synth, D-form*)
 Snyder, J.R. *et al.*, *Carbohydr. Res.*, 1987, **163**,
 169 (*synth, pmr, cmr*)
 Fernandez, A.-M. *et al.*, *J.O.C.*, 1996, **61**, 8698-
 8700 (*synth, pmr*)

2-Deoxyascorbic acid, 9CI D-42 2-Deoxy-threo-hex-2-enono-1,4-lactone

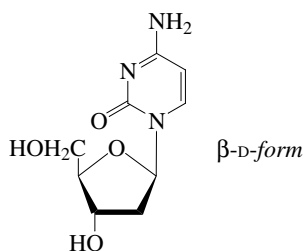


$C_6H_8O_5$ 160.126

L-form [182678-33-7]
 Cryst. Mp 172-174°. $[\alpha]_D^{25} +38.8$
 (c, 0.25 in MeOH).

Ge, P. *et al.*, *J.O.C.*, 1996, **61**, 8671-8673 (*synth*,
pmr, cmr)

2'-Deoxycytidine, 9CI, 8CI D-43 Cytosine deoxyriboside. Cytosine deoxyri- bonucleoside



$C_9H_{13}N_3O_4$ 227.219

β-D-form

1-(2-Deoxy-β-D-erythro-pentofuranosyl)-
 cytosine, 9CI

[951-77-9]
 Mp 207-210°. $[\alpha]_D +57.6$ (H_2O).

► Exp. reprod. effects. HA3800000

Hydrochloride: [3992-42-5]

[25203-63-8] Mp 161-164°. $[\alpha]_D^{24} +54.3$
 (c, 6.4 in H_2O).

Picrate: Mp 188-192° dec.

3'-Phosphate: 2'-Deoxy-3'-cytidylic acid
 [6220-63-9]

$C_9H_{14}N_3O_7P$ 307.199

Needles (EtOH aq.). Mp 196-197° dec.
 $[\alpha]_D^{17} +57$ (c, 1.4 in H_2O).

5'-Phosphate: [1032-65-1]
 $C_9H_{14}N_3O_7P$ 307.199
 Mp 183-184° dec. $[\alpha]_D^{17} +38.5$ (c, 1.2 in
 H_2O).

5'-Diphosphate: [800-73-7]
 $C_9H_{15}N_3O_{10}P_2$ 387.179
 Powder.

5'-Triphosphate: [2056-98-6]
 $C_9H_{16}N_3O_{13}P_3$ 467.159
 RNA polymerase inhibitor. λ_{max} 270
 (H_2O).

3',4N-Di-Ac: [70284-47-8]
 $C_{13}H_{17}N_3O_6$ 311.294
 Needles (H_2O). Mp 171°.

4N-Benzoyl: [4836-13-9]
 $C_{16}H_{17}N_3O_5$ 331.327
 Cryst. (EtOH). Mp 205-207°. $[\alpha]_D^{25} +82$
 (c, 0.6 in EtOH). λ_{max} 258 (ε 20500); 301
 (ε 10900) (H_2O).

3',4N-Dibenzoyl: [51549-49-6]
 $C_{23}H_{21}N_3O_6$ 435.435
 Plates (EtOH). Mp 222-224° dec. $[\alpha]_D^{25}$
 +1 (c, 1.0 in DMF).

4N,5'-Dibenzoyl: [4803-92-3]
 $C_{23}H_{21}N_3O_6$ 435.435
 Cryst. (EtOH). Mp 145-147.5°. $[\alpha]_D^{25}$
 +70 (c, 1.0 in DMF).

3',4N,5'-Tribenzoyl: [31501-22-1]
 $C_{30}H_{25}N_3O_7$ 539.543
 Mp 185-186°.

5'-Tosyl: [27999-55-9]
 $C_{16}H_{19}N_3O_6S$ 381.409
 Amorph. solid. Mp 120-123°. $[\alpha]_D^{25} +70$
 (c, 1.0 in EtOH). λ_{max} 270 nm (ε 8 010)
 (MeOH).

5'-Tosyl, 4N-benzoyl:
 $C_{23}H_{23}N_3O_7S$ 485.517
 Needles (EtOH). Mp 149.5-151° dec.
 $[\alpha]_D^{25} +105$ (c, 0.6 in EtOH).

5'-Trityl: [18531-20-9]
 $C_{28}H_{27}N_3O_4$ 469.539
 Needles (Me₂CO/MeOH). Mp 239°.
 $[\alpha]_D^{25} +56$ (c, 1.0 in EtOH).

5'-Trityl, 3',4N-di-Ac: [70284-43-4]
 $C_{32}H_{31}N_3O_6$ 553.613
 Needles (MeOH). Mp 196°.

5'-Trityl, 3',4N-dibenzoyl:
 $C_{42}H_{35}N_3O_6$ 677.755
 Amorph. solid. Mp 113-115°. $[\alpha]_D^{25} +29$
 (c, 0.7 in EtOH).

5'-(4,4'-Dimethoxytrityl), 4N-benzoyl:
 [67219-55-0]
 $C_{37}H_{35}N_3O_7$ 633.699

Intermed. for synth of oligonucleotides.
 Research tool for antiviral and anticancer
 studies. Mp 119°.

3N-Me: 2'-Deoxy-3-methylcytidine, 9CI
 [5040-21-1]

$C_{10}H_{15}N_3O_4$ 241.246

Isol. from *Geodia baretii*. Cryst. (MeOH)
 (as hydrochloride).
 Mp 160° (hydrochloride).

4N-Me: [22882-02-6]
 $C_{10}H_{15}N_3O_4$ 241.246
 Cryst. (EtOAc). Mp 160-162°.

4N-(4-Methylphenyl): [177949-56-3]
 $C_{16}H_{19}N_3O_4$ 317.344
 Cryst. (EtOAc). Mp 42-44°.

4N-Et: [70465-61-1]
 $C_{11}H_{17}N_3O_4$ 255.273
 Cryst. (EtOAc). Mp 58-60°.

β-L-form Torcitabine, USAN. Epcitabine. NV 02C

[40093-94-5] Polymerase inhibitor. Used
 in the treatment of hepatitis B infection.
 Cryst. (MeOH). $[\alpha]_D^{23} -57.2$ (c, 2.0 in
 H_2O).

Aldrich Library of FT-IR Spectra, 1st edn., 1985,
2, 832B; 838D; 839C (*ir*)

*Aldrich Library of 13C and 1H FT NMR
 Spectra*, 1992, **3**, 396A; 396C (*nmr*)

Michelson, A.M. *et al.*, *J.C.S.*, 1954, 34-40
 (phosphates, 3',4N-di-Ac, 5'-trityl, 5'-trityl
 3',4N-di-Ac)

Maley, F. *et al.*, *J. Biol. Chem.*, 1958, **233**, 1538-
 1543 (5-diphosphate)

Fox, J.J. *et al.*, *Adv. Carbohydr. Chem.*, 1959, **14**,
 283-380 (*rev, derivs*)

Miles, H.T. *et al.*, *J.A.C.S.*, 1963, **85**, 1007-1008
 (*ir, pmr*)

Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3821-3827
 (5'-(4,4'-dimethoxytrityl) 4N-benzoyl)

Ulbricht, T.L.V. *et al.*, *J.C.S.*, 1965, 6134-6135
 (3N-Me)

Benz, E. *et al.*, *J.O.C.*, 1965, **30**, 3067-3071 (4N-
 benzoyl, 5'-tosyl, 3',4N-dibenzoyl, 4N,5'-
 dibenzoyl, 5'-tosyl 4N-benzoyl, 5'-trityl 3',4N-
 dibenzoyl)

Yang, J.T. *et al.*, *CA*, 1966, **65**, 12454 (*ord*)

Jones, A.J. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*,
 1970, **65**, 27-30; *CA*, **72**, 96682j (*cmr*)

Holy, A. *et al.*, *Coll. Czech. Chem. Comm.*,
 1972, **37**, 4072-4087 (*L-form, synth*)

Hruska, F.E. *et al.*, *Can. J. Chem.*, 1974, **52**,
 497-508 (*pmr*)

Young, D.W. *et al.*, *Acta Cryst. B*, 1975, **31**,
 961-965 (*cryst struct*)

Stawinski, J. *et al.*, *Chem. Comm.*, 1976, 243-
 244 (3',4N,5'-tribenzoyl)

Saneyoshi, M. *et al.*, *Nucleic Acids Res.*, 1981,
9, 3129-3138 (5'-triphosphate, *synth, uv*,
biochem)

Charubala, R. *et al.*, *Synthesis*, 1984, 965-968
 (5'-(4,4'-dimethoxytrityl) 4N-benzoyl)

Spadari, S. *et al.*, *J. Med. Chem.*, 1992, **35**,
 4214-4220 (*pharmacol, L-form, synth*)

Fujimori, S. *et al.*, *Nucleosides Nucleotides*,
 1992, **11**, 341-349 (*L-form, synth, activity*)
 Saladino, R. *et al.*, *Tetrahedron*, 1996, **52**, 6759-
 6780 (4N-Me, 4N-Et, 4N-(4-methylphenyl),
synth, pmr, cmr)

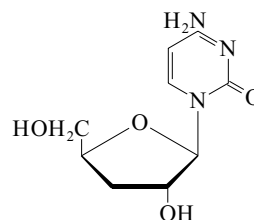
Verri, A. *et al.*, *Mol. Pharmacol.*, 1997, **51**, 132-
 138 (*L-form, pharmacol*)

Wang, Z. *et al.*, *J.O.C.*, 2000, **65**, 5969-5985
 (*synth, ir, pmr, cmr*)

Pat. Coop. Treaty (WIPO), 2000, 00 09 531,
 (Novirio); *CA*, **132**, 166457y (*L-form, synth*,
pharmacol)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of
 Industrial Materials*, 8th edn., Van Nostrand
 Reinhold, 1992, DAQ850

3'-Deoxycytidine, 9CI D-44 [7057-33-2]



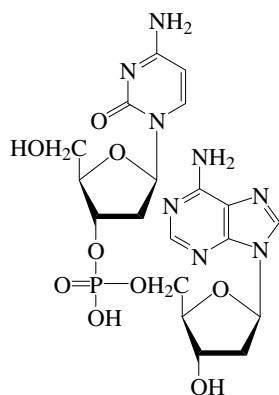
$C_9H_{13}N_3O_4$ 227.219

Cryst. (EtOH). Mp 230-232°. $[\alpha]_D^{23} +50$
 (c, 0.8 in H_2O).

► HA3830000

Walton, E. *et al.*, *J.O.C.*, 1966, **31**, 1163 (*synth*)
 Lin, T.-S. *et al.*, *J. Med. Chem.*, 1991, **34**, 693
 (*synth, uv, pmr*)
 Saneyoshi, M. *et al.*, *Chem. Pharm. Bull.*, 1995,
43, 2005 (*synth, uv, pmr*)
 Miah, A. *et al.*, *J.C.S. Perkin 1*, 1998, 3277-3283
 (*synth, pmr, cmr*)
 Wang, Z. *et al.*, *J.O.C.*, 2000, **65**, 5969-5985
 (*synth, ir, pmr, cmr*)

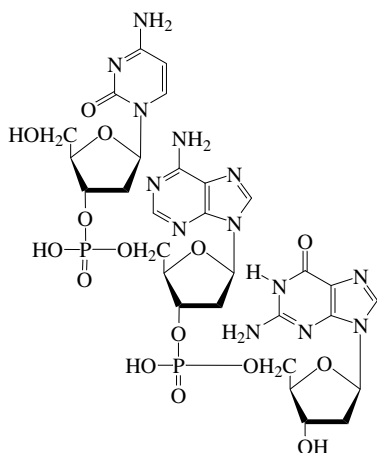
**2'-Deoxycytidylyl-(3' → 5')-2'-
 deoxyadenosine, 9CI, 8CI** **D-45**
 [4624-07-1]



C₁₉H₂₅N₈O₉P 540.429
 No phys. props. reported.

Cheng, D.M. *et al.*, *J.A.C.S.*, 1977, **99**,
 7333-7348 (*pmr, P-31nmr, conformn*)
 Seliger, H. *et al.*, *Nucleosides Nucleotides*, 1985,
41, 153-155 (*synth*)
 Katti, S.B. *et al.*, *Tet. Lett.*, 1985, **26**, 2547-2550
 (*synth*)
 Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**,
 424-435 (*ms*)
 Bauer, C.J. *et al.*, *J. Magn. Reson.*, 1990, **87**,
 144-152 (*pmr*)

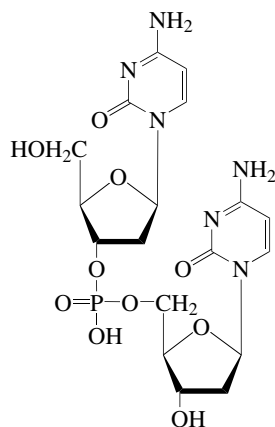
**2'-Deoxycytidylyl-(3' → 5')-2'-
 deoxyadenylyl-(3' → 5')-2'-deoxygua-
 nosine, 9CI** **D-46**
d(CpApG). *d(CAG)*
 [101985-79-9]



C₂₉H₃₇N₁₃O₁₅P₂ 869.637
 DNA fragment, repeats of which occur in
 neurological diseases, e.g. Huntington's
 disease.

Nasir, J. *et al.*, *Hum. Mol. Genet.*, 1996, **5**,
 1431-1435 (*rev, Huntington's disease*)
 Rosenberg, R.N. *et al.*, *N. Engl. J. Med.*, 1996,
335, 1222-1224 (*rev, neurological diseases*)

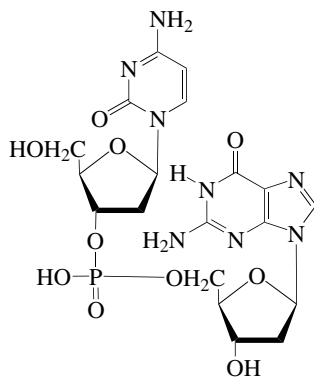
**2'-Deoxycytidylyl-(3' → 5')-2'-
 deoxycytidine, 9CI, 8CI** **D-47**
 [26467-01-6]



C₁₈H₂₅N₆O₁₀P 516.404
 No phys. props. reported. λ_{max} 271 (H₂O).

Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3828-3835
 (*synth, uv*)
 Melby, L.R. *et al.*, *J.O.C.*, 1969, **34**, 427-431
 (*synth*)
 Cantor, C.R. *et al.*, *Biopolymers*, 1970, **9**,
 1059-1077 (*cd*)

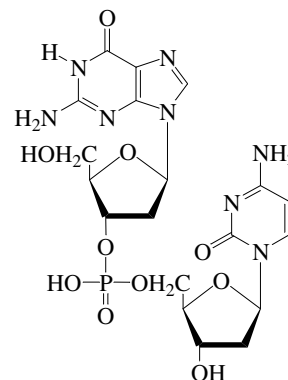
**2'-Deoxycytidylyl-(3' → 5')-2'-
 deoxyguanosine, 9CI** **D-48**
d(CpG)
 [15178-66-2]



C₁₉H₂₅N₈O₁₀P 556.428

Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3828-3835
 (*synth*)
 Melby, L.R. *et al.*, *J.O.C.*, 1969, **34**, 427-431
 (*synth*)
 Cantor, C.R. *et al.*, *Biopolymers*, 1970, **9**,
 1059-1077 (*cd*)
 Uesugi, S. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**,
 3573-3585 (*synth, uv, pmr, cd*)
 Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**,
 424-435 (*ms*)
 Coll, M. *et al.*, *J. Biomol. Struct. Dyn.*, 1987, **4**,
 797-804 (*Na salt, cryst struct*)
 Hashmi, S.A. *et al.*, *Nucleosides Nucleotides*,
 1994, **13**, 1059-1067 (*synth*)

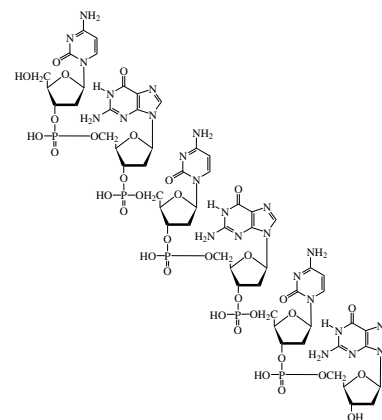
**2'-Deoxycytidylyl-(5' → 3')-2'-
 deoxyguanosine, 9CI** **D-49**
*2'-Deoxyguanylyl-(3' → 5')-2'-deoxycyto-
 sine, d(GpC)*
 [23405-83-6]



C₁₉H₂₅N₈O₁₀P 556.428

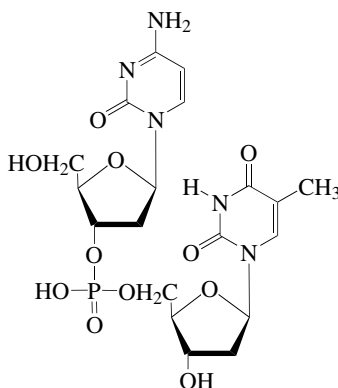
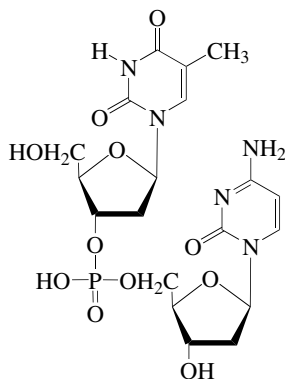
Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3828-3835
 (*synth*)
 Melby, L.R. *et al.*, *J.O.C.*, 1969, **34**, 427-431
 (*synth*)
 Cantor, C.R. *et al.*, *Biopolymers*, 1970, **9**,
 1059-1077 (*cd*)
 Letsinger, R.L. *et al.*, *Tetrahedron*, 1984, **40**,
 137-143 (*synth*)
 Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**,
 424-435 (*ms*)
 Foldesi, A. *et al.*, *J. Biochem. Biophys. Methods*,
 1993, **26**, 1-26 (*pmr*)

**2'-Deoxycytidylyl-(3' → 5')-2'-
 deoxyguanylyl-(3' → 5')-2'-deoxycyti-
 dylyl-(3' → 5')-2'-deoxyguanylyl-(3' →
 5')-2'-deoxycytidylyl-(3' → 5')-2'-deox-
 yguanosine, 9CI** **D-50**
d(CGCGCG). *d(CG)₃*
 [58927-26-7]

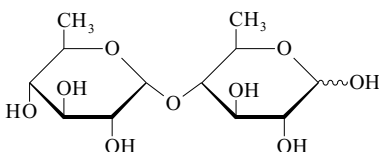


C₅₇H₇₃N₂₄O₃₄P₅ 1793.213

Wang, A.H.J. *et al.*, *Nature (London)*, 1979,
282, 680-686 (*cryst struct*)
 Uesugi, S. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**,
 3573-3585 (*synth, uv, cd, pmr*)
 Senior, M. *et al.*, *Biochemistry*, 1988, **27**,
 3879-3885 (*synth, uv, cd, pmr*)
 Benevides, J.M. *et al.*, *Biochemistry*, 1989, **28**,
 304-310 (*synth, Raman, conformn*)

2'-Deoxycytidylyl-(3' → 5')-thymidine, 9CI*d*(CpT)
[4829-64-5]C₁₉H₂₆N₅O₁₁P 531.415Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3828-3835 (*synth*)Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**, 29-38 (*ord*)Melby, L.R. *et al.*, *J.O.C.*, 1969, **34**, 427-431 (*synth*)Cantor, C.R. *et al.*, *Biopolymers*, 1970, **9**, 1059-1077 (*cd*)Chang, D.M. *et al.*, *J.A.C.S.*, 1977, **99**, 7333-7348 (*pmr, conformn*)Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (*ms*)**2'-Deoxycytidylyl-(5' → 3')-thymidine, 9CI***Thymidylyl*-(3' → 5')-2'-deoxycytidine.
d(TpC)
[5178-19-8]C₁₉H₂₆N₅O₁₁P 531.415Ohtsuka, E. *et al.*, *J.A.C.S.*, 1965, **87**, 2956-2970 (*synth*)Melby, L.R. *et al.*, *J.O.C.*, 1969, **34**, 427-431 (*synth*)Cantor, C.R. *et al.*, *Biopolymers*, 1970, **9**, 1059-1077 (*cd*)Chang, D.M. *et al.*, *J.A.C.S.*, 1977, **99**, 7333-7348 (*pmr, conformn*)Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (*ms*)

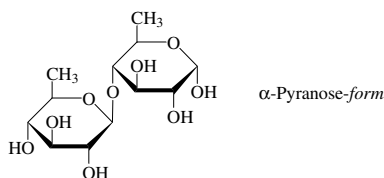
D-51

6-Deoxy-4-O-(6-Deoxy-α-D-glucopyranosyl)-D-glucose, 9CI4-O-α-D-Quinovopyranosyl-D-quinovose.
6-Deoxy-D-glucobiose
[39669-45-9]

Pyranose-form

C₁₂H₂₂O₉ 310.3Reducing disaccharide. Isol. from Asterosaponin A from starfish *Asterias amurensis*. Needles (CHCl₃/MeOH). Mp 192-193.8°. [α]_D²⁵ +29.8 (5 min) → +6.4 (48h) (c, 0.05 in H₂O).Ikegami, S. *et al.*, *Agric. Biol. Chem.*, 1972, **36**, 1843; 2449 (*isol, ms*)Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 2000, **73**, 967-976 (*synth, pmr*)**6-Deoxy-4-O-(6-deoxy-β-D-glucopyranosyl)-D-glucose**

4-O-β-D-Quinovopyranosyl-D-quinovose



α-Pyranose-form

C₁₂H₂₂O₉ 310.3**Pyranose-form***Hexa-Ac*:C₂₄H₃₄O₁₅ 562.524
Mp 236.5-241°. [α]_D²⁰ +55.6 (c, 0.88 in Me₂CO).**α-Pyranose-form***Ph glycoside, penta-Ac*: [69848-46-0]C₂₈H₃₆O₁₄ 596.584
Cryst. (CHCl₃/MeOH). Mp 259-261.5°. [α]_D²⁰ +98 (c, 0.89 in CHCl₃).**β-Pyranose-form***Me glycoside, penta-Ac*: [69848-36-8]C₂₃H₃₄O₁₄ 534.513
Mp 218-222°. [α]_D²⁰ -31.1 (c, 0.85 in Me₂CO).*Benzyl glycoside, penta-Ac*: [69873-80-9]C₂₉H₃₈O₁₄ 610.611
Mp 235-238°. [α]_D²⁰ -50.7 (c, 0.86 in CHCl₃).

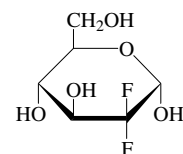
[69848-45-9, 69848-98-2]

Thiem, J. *et al.*, *Carbohydr. Res.*, 1979, **68**, 287 (*deriv, pmr*)

D-53

2-Deoxy-2,2-difluoro-arabi-no-hexose

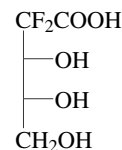
2-Deoxy-2,2-difluoroglucose. 2,2-Difluoroglucose



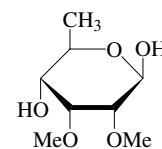
α-D-Pyranose-form

C₆H₁₀F₂O₅ 200.139**D-form** [38440-80-1]Mp 167-168°. [α]_D +29 (4 min) → +57.5 (equilib.) (H₂O).Adamson, J. *et al.*, *Carbohydr. Res.*, 1971, **18**, 345El-Laghdach, A. *et al.*, *Carbohydr. Res.*, 1992, **233**, C1 (*synth*)**2-Deoxy-2,2-difluoro-erythro-pentonic acid**

2,2-Difluoro-3,4,5-trihydroxypentanoic acid

C₅H₈F₂O₅ 186.112**D-form**1,4-Lactone, dibenzoyl: 3,5-Di-O-benzoyl-2-deoxy-2,2-difluoro-D-erythro-1,4-pentonolactone
[122111-01-7]C₁₉H₁₄F₂O₆ 376.313Cryst. (CH₂Cl₂/heptane). Mp 119-120°. [α]_D²⁵ +62 (c, 1 in EtOAc).

[122111-02-8]

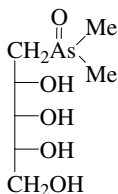
Chou, T.S. *et al.*, *Synthesis*, 1992, **6**, 565, (1,4-lactone dibenzoyl, *synth, pmr, cmr, ir, uv*)**6-Deoxy-2,3-di-O-methylallose***Mycinose*

β-D-Pyranose-form

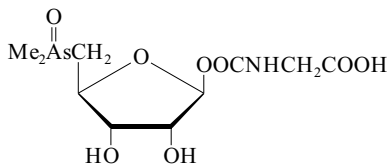
C₈H₁₆O₅ 192.211**D-form** [2457-91-2]Sugar component of Angolamycin also isol. as the Me glycoside by methanolysis of Chalcomycin. Present in Tylosin. Mp 102-106°. [α]_D²⁵ -46 → -29 (c, 1.56 in H₂O).*Di-Ac*: 1,4-Di-O-acetyl-6-deoxy-2,3-di-O-methyl-D-alloseC₁₂H₂₀O₇ 276.286Mp 73-75°. Bp_{0.01} 70°.

β -D-Pyranose-form

Me glycoside: Methyl 6-deoxy-2,3-di-O-methyl- β -D-allopyranoside. Methyl β -D-mycinoside
 $C_9H_{18}O_5$ 206.238
 Mp 88-88.5°. $[\alpha]_D^{27}$ -36 (c, 1.6 in $CHCl_3$).
 Dion, H.W. *et al.*, *J.A.C.S.*, 1962, **84**, 880,
 (D-form, isol, β -D-Me pyr)
 Brufani, M. *et al.*, *Helv. Chim. Acta*, 1966, **49**,
 1962 (D-form, isol, D-di-Ac)
 Martinsson, E. *et al.*, *J. Chromatogr.*, 1970, **50**,
 429 (chromatog)

1-Deoxy-1-(dimethylarsinoyl)-ribose D-58

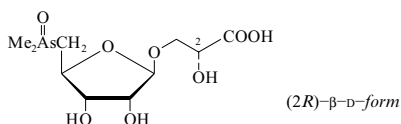
$C_7H_{17}AsO_5$ 256.13
 5-O-Sulfate: [194858-47-4]
 $C_7H_{17}AsO_8S$ 336.194
 Isol. from *Chondria crassicaulis* and other red algae.
 Edmonds, J.S. *et al.*, *Tet. Lett.*, 1997, **38**, 5819
 (synth, struct)

N-[[5-Deoxy-5-(dimethylarsinoyl)ribofuranosyl]oxycarbonyl]glycine D-59

$C_{10}H_{18}AsNO_8$ 355.176

 β -D-form [142732-39-6]

Constit. of the kidney of *Tridacna maxima*.
 Francesconi, K.A. *et al.*, *J.C.S. Perkin 1*, 1992,
 1349 (isol)

3-[[5-Deoxy-5-(dimethylarsinoyl)ribofuranosyl]oxy]-2-hydroxypropanoic acid D-60

(2R)- β -D-form

$C_{10}H_{19}AsO_8$ 342.177

(2R)- β -D-form [142732-41-0]

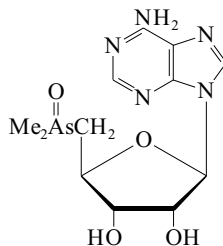
Constit. of the kidney of *Tridacna maxima*.
 Syrup (as NH_4 salt). $[\alpha]_D$ +6.2 (c, 4 in H_2O) (as NH_4 salt).

(2S)- β -D-form [142732-40-9]

Constit. of the kidney of *Tridacna maxima*.
 Syrup (as NH_4 salt).
 [142808-61-5, 142808-62-6]
 Francesconi, K.A. *et al.*, *J.C.S. Perkin 1*, 1992,
 1349 (isol, synth, pmr)

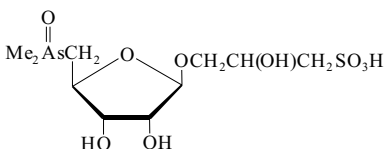
5'-Deoxy-5'-(dimethylarsinoyl)adenosine, 9CI D-61

[137138-03-5]



$C_{12}H_{18}AsN_5O_4$ 371.227
 Isol. from the kidney of the giant clam, *Tridacna maxima*.
 $[\alpha]_D$ +54.2 (c, 3 in MeOH). λ_{max} 260
 (ϵ 10000) (MeOH) (Derep).

Francesconi, K.A. *et al.*, *Chem. Comm.*, 1991,
 928 (isol)

3-[5-Deoxy-5-(dimethylarsinoyl)ribofuranosyloxy]-2-hydroxy-1-propanesulfonic acid D-62

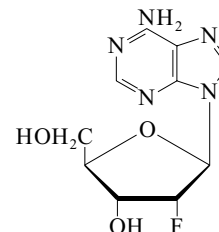
$C_{10}H_{21}AsO_9S$ 392.258

 β -D-form [77939-92-5]

Isol. from brown kelp *Ecklonia radiata* and from the edible brown seaweeds *Sphaerotrichia divaricata*, *Laminaria japonica* and *Hizikia fusiforme*.
 Syrup. Possible metab. in formn. of Arsenobetaine in marine fauna.
 Edmonds, J.S. *et al.*, *Nature (London)*, 1981, **289**, 602 (isol, pmr, ir)
 Edmonds, J.S. *et al.*, *J.C.S. Perkin 1*, 1983, 2375; 1987, 577 (isol, pmr, ir, cmr, struct)
 Shibata, Y. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 391 (isol, pmr, hplc)
 Jin, K. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 1965 (isol, pmr)
 Francesconi, K.A. *et al.*, *J.C.S. Perkin 1*, 1991, 2707; 1992, 1349 (pmr, struct)
 Edmonds, J.S. *et al.*, *Nat. Prod. Rep.*, 1993, **10**, 421 (isol, rev)

2'-Deoxy-2'-fluoroadenosine, 9CI D-63

2'-Fluoro-2'-deoxyadenosine
 [64183-27-3]

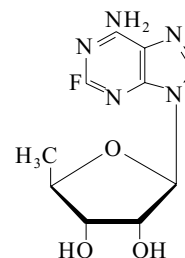


$C_{10}H_{12}FN_5O_3$ 269.235
 Cryst. (EtOH). Mp 232-234°.

Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 2449-2453 (synth, uv, cmr, pmr)
 Morishita, K. *et al.*, *Acta Cryst. C*, 1984, **40**, 434-436 (cryst struct)
 Pankiewicz, K.W. *et al.*, *J.O.C.*, 1992, **57**, 553-559 (synth)
 Kawasaki, A.M. *et al.*, *J. Med. Chem.*, 1993, **36**, 831-841 (synth, pmr, cmr)

5'-Deoxy-2'-fluoroadenosine, 9CI D-64

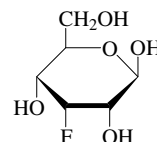
9-(5'-Deoxy- β -D-ribofuranosyl)-2-fluoroadenine
 [37076-78-1]



$C_{10}H_{12}FN_5O_3$ 269.235
 Mp 258°. $[\alpha]_D^{20}$ -50 (c, 0.15 in EtOH). λ_{max} 262 (ϵ 15200) (0.1M NaOH). λ_{max} 264 (ϵ 14000) (0.1M HCl).

2',3'-Di-Ac: [37076-76-9]
 $C_{14}H_{16}FN_5O_5$ 353.309
 Mp 208°.

Montgomery, J.A. *et al.*, *J. Het. Chem.*, 1972, **9**, 445-446 (synth)
 Srivastava, P.C. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1977, **4**, 93-100 (synth)

3-Deoxy-3-fluoroallose D-65

β -D-Pyranose-form

$C_6H_{11}FO_5$ 182.148

 β -D-Pyranose-form

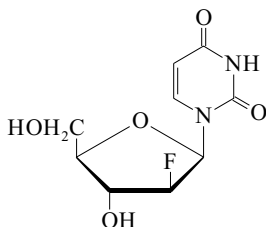
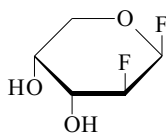
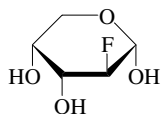
Me glycoside: Methyl 3-deoxy-3-fluoro- β -D-allopyranoside
 [87585-98-6]

C₇H₁₃FO₅ 196.175

Solid. Mp 124-125°.

Me glycoside, 6-pivaloyl: [87586-03-6]Cryst. (Et₂O). Mp 104.5-106°. [α]_D -48.8 (c, 1.0 in CHCl₃).*Me glycoside, 6-trityl*: Methyl 3-deoxy-3-fluoro-6-O-trityl-β-D-allopyranoside [87585-97-5]C₂₆H₂₇FO₅ 438.495

Solid. Mp 84-86°.

Me glycoside, 4,6-O-isopropylidene: Methyl 3-deoxy-3-fluoro-4,6-O-isopropylidene-β-D-allopyranoside [87585-99-7]C₁₀H₁₇FO₅ 236.24Solid (Et₂O/hexane). Mp 84.5-87.5°.Card, P.J. *et al.*, *J.O.C.*, 1983, **48**, 4734 (*Me gly deriv*, *pmr*, *F-19 nmr*)**1-(2-Deoxy-2-fluoro-β-D-ara-binofuranosyl)uracil** D-66*1-(2-Deoxy-2-fluoro-β-D-arabinofuranosyl)-2,4(1H,3H)-pyrimidinedione, 9CI* [69123-94-0]C₉H₁₁FN₂O₅ 246.195Cryst. (2-propanol/Et₂O). Mp 162° (156-157°).Watanabe, K.A. *et al.*, *J. Med. Chem.*, 1979, **22**, 21 (*synth*)Sterzycki, R.Z. *et al.*, *J. Med. Chem.*, 1990, **33**, 2150 (*synth*, *pmr*, *cmr*)**2-Deoxy-2-fluoroarabinopyranosyl fluoride** D-67C₅H₈F₂O₃ 154.113**β-D-form***Di-Ac*: [30591-80-1]C₉H₁₂F₂O₅ 238.188Cryst. (Et₂O/petrol). Mp 75-76°. Bp_{0.5} 72-76° (bath). [α]_D²² -191.6 (c, 1.0 in CHCl₃). [α]_D²³ -176 (c, 0.4 in CHCl₃).Dwek, R.A. *et al.*, *Tet. Lett.*, 1970, 2987 (*synth*)
Albano, E.L. *et al.*, *Carbohydr. Res.*, 1971, **19**, 63 (*di-Ac*, *pmr*)Kent, P.W. *et al.*, *Tetrahedron*, 1971, **27**, 3887 (*di-Ac*, *pmr*, *F-19 nmr*)**2-Deoxy-2-fluoroarabinose, 8CI**

α-D-Pyranose-form

C₅H₉FO₄ 152.122**D-form** [20187-75-1]Syrup. [α]_D²¹ -72.4 (c, 1.0 in H₂O).*5-Benzyl*: 5-O-Benzyl-2-deoxy-2-fluoro-D-arabinoseC₁₂H₁₅FO₄ 242.246Syrup. [α]_D²³ +37.2 (c, 0.6 in EtOH).

α-D-Pyranose-form [97549-81-0]

Syrup.

β-D-Pyranose-form [97549-79-6]

Syrup.

Tri-Ac: 1,3,4-Tri-O-acetyl-2-deoxy-2-fluoro-β-D-arabinopyranose

[89255-27-6]

C₁₁H₁₅FO₇ 278.234Cryst. (MeOH). Mp 129-131°. [α]_D²⁰ -189 (c, 0.4 in CHCl₃).

α-D-Furanose-form

Me glycoside: Methyl 2-deoxy-2-fluoro-α-D-arabinofuranosideC₆H₁₁FO₄ 166.149Syrup. [α]_D²¹ +141 (c, 0.7 in EtOH).

β-D-Furanose-form [125155-51-3]

Syrup.

3-Benzyl, 1-Ac: 1-O-Acetyl-3-O-benzyl-2-deoxy-2-fluoro-β-D-arabinofuranose [112289-58-4]C₁₄H₁₇FO₅ 284.284Syrup. [α]_D²⁰ +14 (c, 0.9 in CHCl₃).

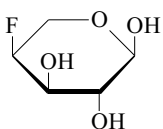
α-L-Furanose-form

1,3,5-Tribenzoyl: [171721-00-9]C₂₆H₂₁FO₇ 464.446

Cryst. (EtOH aq.). Mp 77-78°.

[α]_D²⁵ -4.82 (c, 0.51 in CHCl₃).Wright, J.A. *et al.*, *J.O.C.*, 1969, **34**, 2632, (*D-form*, *synth*, *D-benzyl*, *α-D-Me fur*)Albano, E.L. *et al.*, *Carbohydr. Res.*, 1971, **19**, 63 (*D-form*, *synth*)Adam, M.J. *et al.*, *Carbohydr. Res.*, 1983, **124**, 215 (*β-D-pyr tri-Ac*)Dax, K. *et al.*, *Carbohydr. Res.*, 1987, **162**, 13 (*β-D-pyr tri-Ac*, *β-D-fur benzyl Ac*)Illicheva, I.A. *et al.*, *Bioorg. Khim.*, 1989, **15**, 800; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 428 (*conformn*)Bols, M. *et al.*, *Acta Chem. Scand.*, 1990, **44**, 252 (*α-D-pyr*, *α-D-pyr tri-Ac*, *β-D-pyr*, *β-D-pyr tri-Ac*)Ma, T. *et al.*, *J. Med. Chem.*, 1996, **39**, 2835-2843 (*β-D-pyr tribenzoyl*, *synth*, *pmr*)**4-Deoxy-4-fluoroarabinose**

D-69



α-L-Pyranose-form

C₅H₉FO₄ 152.122

D-68

α-L-Pyranose-form*Me glycoside*: Methyl 4-deoxy-4-fluoro-α-L-arabinopyranoside

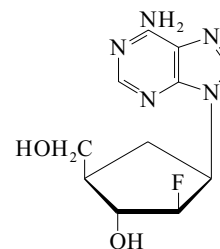
[87586-13-8]

C₆H₁₁FO₄ 166.149Solid (CHCl₃). Mp 139-141°. [α]_D +222.5 (c, 1.03 in H₂O).**β-L-Pyranose-form***Me glycoside*: Methyl 4-deoxy-4-fluoro-β-L-arabinopyranoside

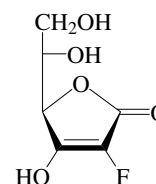
[87586-14-9]

C₆H₁₁FO₄ 166.149Solid (CHCl₃). Mp 120-122°.[α]_D -5.2 (c, 1.0 in CHCl₃).Card, P.J. *et al.*, *J.O.C.*, 1983, **48**, 4734, (*α-L-Me pyr*, *β-L-Me pyr*, *cmr*)**2'-Deoxy-2'-fluoro-ara-risteromycin**

D-70

Carbocyclic 2'-ara-fluoroadenosineC₁₁H₁₄FN₅O₂ 267.262Powerful antiviral agent. Displays potent antiherpes activity *in vitro* and *in vivo*. Mp 109-113°. [α]_D²² +81 (H₂O).Biggadike, K. *et al.*, *Chem. Comm.*, 1988, 898 (*synth*)**2-Deoxy-2-fluoroascorbic acid, 9CI**

D-71

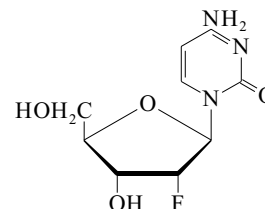
C₆H₇FO₅ 178.117**L-form** [189262-91-7]

Light yellow oil.

Ge, P. *et al.*, *J.O.C.*, 1997, **62**, 3340-3343 (*synth*, *pmr*)**2'-Deoxy-2'-fluorocytidine, 9CI**

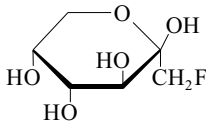
D-72

[10212-20-1]



$C_9H_{12}FN_3O_4$ 245.21
Needles (H_2O). Mp 171-173°. $[\alpha]_D^{26} +87$
(c, 0.1 in H_2O).

Doerr, I.L. *et al.*, *J.O.C.*, 1967, **32**, 1462 (*synth*, *uv*)
Kawasaki, A.M. *et al.*, *J. Med. Chem.*, 1993, **36**,
831 (*synth*, *pmr*, *cmr*)

1-Deoxy-1-fluorofructose**D-73**

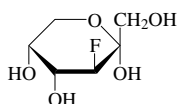
$C_6H_{11}FO_5$ 182.148

D-form

Sucrose synthase will couple the sugar
with UDP-glucose to give 1-fluorosucrose.
 $[\alpha]_D -93.1$ (c, 1.23 in H_2O).

2,3:4,5-Di-O-isopropylidene: 1-Deoxy-
1-fluoro-2,3:4,5-di-O-isopropylidene-D-
fructose
 $C_{12}H_{19}FO_5$ 262.277
Bp_{0.1} 85-95°. $[\alpha]_D -19.2$ (c, 0.63 in
 $CHCl_3$).

Card, P.J. *et al.*, *J.A.C.S.*, 1984, **106**, 5348

3-Deoxy-3-fluorofructose**D-74** α -D-Pyranose-form

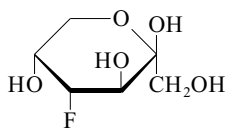
$C_6H_{11}FO_5$ 182.148

D-form [110925-86-5]

Syrup or cryst. (MeOH/EtOAc/pen-
tane). Mp 101-103°. $[\alpha]_D^{20} -55.4$
(c, 0.26 in MeOH). Crystallised only
after standing for several months.

1-Benzyl: 1-O-Benzyl-3-deoxy-3-fluoro-D-
fructose
[141407-07-0]
 $C_{13}H_{17}FO_5$ 272.273
Syrup. $[\alpha]_D^{20} -19.5$ (c, 0.2 in EtOH).

Bols, M. *et al.*, *Carbohydr. Res.*, 1994, **253**, 195
(*synth*, *pmr*, *cmr*, *F-19 nmr*)

4-Deoxy-4-fluorofructose**D-75**

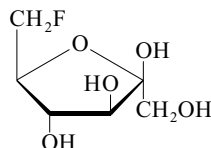
$C_6H_{11}FO_5$ 182.148

 β -D-Pyranose-form [90301-24-9]

Cryst. (EtOH). Mp 123-126°. $[\alpha]_D -116$
(c, 0.45 in H_2O).

[99281-37-5]

Budesinsky, M. *et al.*, *Coll. Czech. Chem.*
Comm., 1984, **49**, 267 (*synth*, *pmr*, *cmr*)

6-Deoxy-6-fluorofructose**D-76** β -D-form

$C_6H_{11}FO_5$ 182.148

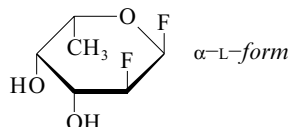
 β -D-Furanose-form [99281-35-3]

Syrup.

2,3-O-Isopropylidene, 1-tosyl: 6-Deoxy-6-
fluoro-2,3-O-isopropylidene-1-O-tosyl- β -
D-fructofuranose
[83031-99-6]
 $C_{16}H_{21}FO_7S$ 376.402
Cryst. (MeOH). Mp 124-125°. $[\alpha]_D^{25}$
+15.5 ($CHCl_3$).

Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, **35**,
1003 (*isopropylidene*, *pmr*)

Card, P.J. *et al.*, *J.A.C.S.*, 1986, **108**, 158 (β -D-fur)

2-Deoxy-2-fluorofucopyranosyl fluoride**D-77** α -L-form

$C_6H_{10}F_2O_3$ 168.14

 α -L-form [84449-12-7]

Cryst. (Et₂O/petrol). Mp 120° dec.
 $[\alpha]_D^{22} -135$ (c, 1.0 in MeOH).

Di-Ac: [74554-10-2]

$C_{10}H_{14}F_2O_5$ 252.214
Cryst. Mp 46.5-49° (46°). $[\alpha]_D^{22} -187.6$
(c, 0.5 in $CHCl_3$) (-182).

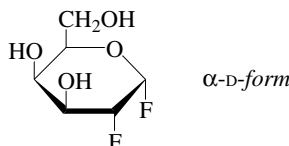
 β -L-form

Di-Ac: [84449-11-6]

Cryst. (Et₂O/petrol). Mp 85-86°.
 $[\alpha]_D^{22} -110$ (c, 0.1 in $CHCl_3$).

Butchard, C.G. *et al.*, *Tet. Lett.*, 1979, **35**, 2551
(*di-Ac*)

Korytnyk, W. *et al.*, *Tetrahedron*, 1982, **38**, 2547
(*synth*, *pmr*, *F-19 nmr*)

2-Deoxy-2-fluorogalactopyranosyl fluoride**D-78** α -D-form

$C_6H_{10}F_2O_4$ 184.139

 α -D-form

Cryst. (Et₂O, 2-propanol). Mp 163°. $[\alpha]_D^{22}$
+105 (c, 1.0 in MeOH).

Tri-Ac: [28876-43-9]

$C_{12}H_{16}F_2O_7$ 310.251
Cryst. (Et₂O/petrol). Mp 71-72°
(68-70°). $[\alpha]_D +148.5$ (c, 1.0 in $CHCl_3$).

Tri-Ac: [75414-44-7]

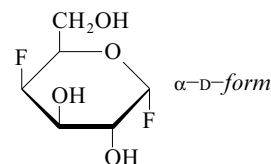
Needles (Et₂O/petrol). Mp 79.5-80°.
 $[\alpha]_D^{22} +84.5$ (c, 1.0 in $CHCl_3$).

Adamson, J. *et al.*, *Carbohydr. Res.*, 1970, **13**,
314; 1972, **22**, 257 (*tri-Ac*, *pmr*)

Dwek, R.A. *et al.*, *Tet. Lett.*, 1970, 2987 (*tri-Ac*,
F-19 nmr)

Korytnyk, W. *et al.*, *Tetrahedron*, 1982, **38**, 2547
(*synth*, *pmr*)

Diksic, M. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**,
265 (*synth*, *F-19 nmr*)

4-Deoxy-4-fluorogalactopyranosyl fluoride**D-79** α -D-form

$C_6H_{10}F_2O_4$ 184.139

 α -D-form

Tri-Ac: [40010-23-9]

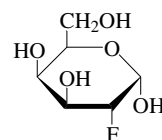
$C_{12}H_{16}F_2O_7$ 310.251
Cryst. (Et₂O/petrol). Mp 92-93°. $[\alpha]_D$
+112 (c, 1.0 in $CHCl_3$).

 β -D-form

Tri-Ac: [40010-24-0]

Cryst. (Et₂O/petrol). Mp 88-89°. $[\alpha]_D$
+11 (c, 1.0 in $CHCl_3$).

Foster, A.B. *et al.*, *Carbohydr. Res.*, 1972, **25**,
228 (*tri-Ac*, *pmr*)

2-Deoxy-2-fluorogalactose**D-80** α -D-Pyranose-form

$C_6H_{11}FO_5$ 182.148

The ¹⁸F labelled form is used in cancer
imaging diagnosis.

D-form [238418-53-6]

[51146-53-3]

Powder (EtOH/EtOAc). Mp 131°.

 α -D-Pyranose-form [98856-44-1]

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-deoxy-
2-fluoro- α -D-galactopyranose
[83697-45-4]

$C_{14}H_{19}FO_9$ 350.297
Cryst. (EtOH). Mp 126-127°. $[\alpha]_D^{24} +150$
(c, 1 in $CHCl_3$).

1-(Dihydrogen phosphate): [118759-95-8]

[303069-93-4]

$C_6H_{12}FO_8P$ 262.128

Characterised by pmr.

Trifluoromethyl glycoside, 3,4,6-tri-Ac:
Trifluoromethyl 3,4,6-tri-O-acetyl-2-
deoxy-2-fluoro- α -D-galactopyranoside
[28876-42-8]

$C_{13}H_{16}F_4O_8$ 376.258
Solid (petrol). Mp 67-68°.

β-D-Pyranose-form [28876-44-0]

Solid (EtOAc/MeOH). Mp 131-135°. $[\alpha]_D^{25} +78.5$ (5 min) $\rightarrow +92$ (c, 2.3 in H₂O) (equilib).

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-deoxy-2-fluoro-β-D-galactopyranose [35526-14-8]

C₁₄H₁₉FO₉ 350.297

Solid (Et₂O/petrol). Mp 141-143°. $[\alpha]_D^{25} +47.6$ (c, 1.5 in CHCl₃).

Me glycoside: Methyl 2-deoxy-2-fluoro-β-D-galactopyranoside [79698-13-8]

C₇H₁₃FO₅ 196.175

Cryst. Mp 151-152°. $[\alpha]_D^{20} +43$ (c, 2.5 in H₂O).

Me glycoside, 3,4,6-tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-deoxy-2-fluoro-β-D-galactopyranoside [89387-92-8]

C₁₃H₁₉FO₈ 322.287

Solid (EtOH/diisopropyl ether). Mp 113-114°. $[\alpha]_D^{25} +27.8$ (c, 1.04 in CHCl₃).

α-D-Furanose-form

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-deoxy-2-fluoro-α-D-galactofuranose [356533-55-6]

C₁₄H₁₉FO₉ 342.234

Characterised spectroscopically.

β-D-Furanose-form

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-deoxy-2-fluoro-β-D-galactofuranose [356533-69-2]

C₁₄H₁₉FO₉ 350.297

Characterised spectroscopically.

Adamson, J. *et al.*, *Carbohydr. Res.*, 1972, **22**, 257-264 (β-D-form, synth, pmr, F-19 nmr, tetra-Ac, α-D-trifluoromethyl glycoside, tri-Ac)

Ittah, Y. *et al.*, *Carbohydr. Res.*, 1981, **95**, 189-194 (β-D-Me glycoside, synth, pmr, F-19 nmr, ms)

Adam, M.J. *et al.*, *Carbohydr. Res.*, 1983, **124**, 215-224 (α-D-tetra-Ac, synth, pmr, F-19 nmr, ms)

Kovac, P. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 313-327 (β-D-Me glycoside, β-D-Me glycoside tri-Ac, synth, cmr)

Diksic, M. *et al.*, *Carbohydr. Res.*, 1986, **153**, 17-24 (synth, F-19 nmr)

Tada, M. *et al.*, *Carbohydr. Res.*, 1987, **161**, 314-317 (synth, pmr, α-D-tetra-Ac)

Kanazawa, Y. *et al.*, *Chem. Pharm. Bull.*, 1988, **36**, 4213-4216 (1-phosphate, synth, biosynth, metab, F-19 nmr)

Srikrishnan, T. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 571-581 (β-D-pyr tetra-Ac, cryst struct)

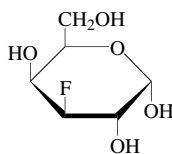
Oberdorfer, F. *et al.*, *J. Labelled Compd. Radiopharm.*, 1988, **25**, 465-481 (synth, hplc, pmr, F-19 nmr)

Hayashi, T. *et al.*, *Bioorg. Med. Chem.*, 1997, **5**, 497-500 (synth, pmr, ms, 1-phosphate)

Albert, M. *et al.*, *Tetrahedron*, 1998, **54**, 4839-4848 (Me glycoside tri-Ac, synth, pmr, cmr, F-19 nmr)

Burkart, M.D. *et al.*, *Bioorg. Med. Chem.*, 2000, **8**, 1937-1946 (1-phosphate, synth, pmr)

Zhang, Q. *et al.*, *J.A.C.S.*, 2001, **123**, 6756-6766 (furanose-form, tetra-Ac, synth, pmr, cmr, F-19 nmr, ms)

3-Deoxy-3-fluorogalactose, 9CI

α-D-Pyranose-form

C₆H₁₁FO₅ 182.148

D-form [52904-86-6]

Solid (EtOAc/EtOH). Mp 114-116°.

$[\alpha]_D^{25} +87 \rightarrow +76$ (c, 0.5 in H₂O).

α-D-Pyranose-form

Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy-3-fluoro-α-D-galactopyranose [22434-92-0]

C₁₄H₁₉FO₉ 350.297

Mp 97-99°. $[\alpha]_D^{25} +126$ (c, 1.1 in CHCl₃).

Tetrabenzoyl: 1,2,4,6-Tetra-O-benzoyl-3-deoxy-3-fluoro-α-D-galactopyranose [100740-80-5]

C₃₄H₂₇FO₉ 598.58

Solid (CH₂Cl₂/MeOH). Mp 158-158.5°. $[\alpha]_D^{25} +122$ (c, 0.7 in CHCl₃).

Me glycoside: Methyl 3-deoxy-3-fluoro-α-D-galactopyranoside [31001-22-6]

C₇H₁₃FO₅ 196.175

Solid (EtOH). Mp 185-186°. $[\alpha]_D^{25} +184$ (c, 1 in H₂O). $[\alpha]_D^{25} +174$ (c, 1 in MeOH).

β-D-Pyranose-form

Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy-3-fluoro-β-D-galactopyranose [22434-91-9]

C₁₄H₁₉FO₉ 350.297

Solid (EtOH/petrol). Mp 126-127°. $[\alpha]_D^{25} +35$ (c, 0.8 in CHCl₃).

Tetrabenzoyl: 1,2,4,6-Tetra-O-benzoyl-3-deoxy-3-fluoro-β-D-galactopyranose [22434-90-5]

C₃₄H₂₇FO₉ 598.58

Solid (CH₂Cl₂/MeOH). Mp 211-212°. $[\alpha]_D^{25} +27$ (c, 2.2 in CHCl₃).

α-D-Furanose-form

1,2:4,6-Diisopropylidene: 3-Deoxy-3-fluoro-1,2:4,6-di-O-isopropylidene-α-D-galactofuranose [22435-76-3]

C₁₂H₁₉FO₅ 262.278

(Et₂O/petrol). Mp 48-49° (47-50°). $[\alpha]_D^{25} -30$ (c, 1 in CHCl₃).

β-D-Furanose-form

Me glycoside: Methyl 3-deoxy-3-fluoro-β-D-galactofuranoside [160529-96-4]

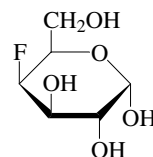
C₇H₁₃FO₅ 196.175

Solid (EtOH). Mp 108-109°. $[\alpha]_D^{25} -84.5$ (c, 1.2 in H₂O).

Brimacombe, J.S. *et al.*, *Can. J. Chem.*, 1970, **48**, 3946-3952 (D-form)

Kovac, P. *et al.*, *Carbohydr. Res.*, 1983, **123**, 326-331 (diisopropylidene)

Mulard, L.A. *et al.*, *Carbohydr. Res.*, 1994, **259**, 21-34 (Me gly)

D-81**4-Deoxy-4-fluorogalactose****D-82**

α-D-Pyranose-form

C₆H₁₁FO₅ 182.148

D-form [40010-20-6]

Cryst. (MeOH/EtOAc). Mp 148-149.5°.

$[\alpha]_D^{25} +104 \rightarrow +68$ (equilib.) (c, 1.32 in H₂O). α:β anomeric ratio =1:2.

Tetra-Ac: 1,2,3,6-Tetra-O-acetyl-4-deoxy-4-fluoro-D-galactopyranoside

C₁₄H₁₉FO₉ 350.297

Oil. $[\alpha]_D^{25} +85.6$ (c, 0.5 in CHCl₃). α:β anomeric ratio 5:1.

α-D-Pyranose-form [32934-09-1]

Me glycoside: Methyl 4-deoxy-4-fluoro-α-D-galactopyranoside [32934-07-9]

C₇H₁₃FO₅ 196.175

Cryst. (MeOH/EtOAc). Mp 99-101° Mp 120-122.5°. $[\alpha]_D^{25} +148$ (c, 1 in MeOH).

Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-deoxy-4-fluoro-α-D-galactopyranoside [32934-08-0]

C₁₃H₁₉FO₈ 322.287

Cryst. (EtOH/petrol). Mp 91-92° (EtOH/petrol). $[\alpha]_D^{25} +150$ (c, 1.2 in CHCl₃).

1-Bromo-1-deoxy, tri-Ac: 2,3,6-Tri-O-acetyl-4-deoxy-4-fluoro-α-D-galactopyranosyl bromide [148123-78-8]

C₁₂H₁₆BrFO₇ 371.157

Oil. $[\alpha]_D^{25} +214.3$ (c, 0.5 in CHCl₃).

β-D-Pyranose-form [32934-10-4]

Tetra-Ac: 1,2,3,6-Tetra-O-acetyl-4-deoxy-4-fluoro-β-D-galactopyranoside [40010-21-7]

C₁₄H₁₉FO₉ 350.297

Cryst. (EtOH/petrol). Mp 119-121°. $[\alpha]_D^{25} +28$.

Me glycoside: Methyl 4-deoxy-4-fluoro-β-D-galactopyranoside [51385-54-7]

C₇H₁₃FO₅ 196.175

Cryst. (EtOAc/EtOH). Mp 155-156°. $[\alpha]_D^{25} -21.3$ (c, 1 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-deoxy-4-fluoro-β-D-galactopyranoside [51996-37-3]

C₁₃H₁₉FO₈ 322.287

Cryst. (EtOH). Mp 95-97°. $[\alpha]_D^{25} -6.2$ (c, 1.7 in CHCl₃).

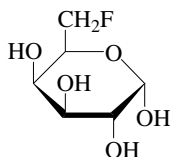
Me glycoside, tribenzoyl: Methyl 2,3,6-tri-O-benzoyl-4-deoxy-4-fluoro-β-D-galactopyranoside [51996-36-2]

C₂₈H₂₅FO₈ 508.499

Cryst. (MeOH). Mp 134-135°. $[\alpha]_D^{25} +63.2$ (c, 2 in CHCl₃).

[40010-22-8]

Marcus, D.M. *et al.*, *Carbohydr. Res.*, 1971, **17**, 269 (*D*-form synth, α -*D*-Me pyr tri-Ac)
 Maradufu, A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 261-277 (β -*D*-Me pyr, β -*D*-Me pyr tri-Ac, β -*D*-Me pyr tribenzoyl)
 Wray, V. *et al.*, *J.C.S. Perkin 2*, 1976, 1598 (*cmr*)
 Card, P.J. *et al.*, *J.O.C.*, 1983, **48**, 4734 (α -*D*-Me pyr, α -*D*-Me pyr tri-Ac)
 Koch, K. *et al.*, *Carbohydr. Res.*, 1993, **241**, 295 (*D*-form, synth, derivs)
 Mulard, L.A. *et al.*, *Carbohydr. Res.*, 1994, **259**, 21 (*Me gly*)

6-Deoxy-6-fluorogalactose**D-83** α -*D*-Pyranose-form $C_6H_{11}FO_5$ 182.148***D*-form** [4536-07-6]

[18961-68-7]

2,5-Dichlorophenylhydrazone:
 Cryst. (MeOH aq.). Mp 182°.

 α -*D*-Pyranose-form [143616-86-8]

[18961-68-7]

Needles (EtOH/Et₂O). Mp 160°. [α]_D²⁰
 +135 \rightarrow +76.5 (c, 1 in H₂O).

1-Phosphate: 6-Deoxy-6-fluoro- α -*D*-galactopyranose 1-(dihydrogen phosphate)
 [35521-87-0]
 $C_6H_{12}FO_8P$ 262.128
 Solid (EtOH aq., as di-K salt). [α]_D¹⁸ +81 (c, 0.2 in H₂O).

Di-O-isopropylidene: 6-Deoxy-6-fluoro-1,2:3,4-di-O-isopropylidene- α -*D*-galactopyranose
 [2021-97-8]
 $C_{12}H_{19}FO_5$ 262.277
 Syrup. Bp_{0.001} 100-120°. [α]_D²⁵ -48.3 (conc. not reported, solvent assumed to be CHCl₃).

Me glycoside: Methyl 6-deoxy-6-fluoro- α -*D*-galactopyranoside, 8CI
 [4536-13-4]
 $C_7H_{13}FO_5$ 196.175
 Needles (Me₂CO/Et₂O). Mp 139°. [α]_D²⁰
 +194 (c, 0.1 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-6-fluoro- α -*D*-galactopyranoside
 [33941-73-0]
 $C_{13}H_{19}FO_8$ 322.287
 Mp 74°. [α]_D²⁰ +152 (c, 1.0 in CHCl₃).

Me glycoside, trimesyl: Methyl 6-deoxy-6-fluoro-2,3,4-tri-O-mesyl- α -*D*-galactopyranoside
 $C_{10}H_{19}FO_{11}S_3$ 430.45
 Needles (EtOH). Mp 185°.

1-Bromo-1-deoxy, tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy-6-fluoro- α -*D*-galactopyranosyl bromide
 [35521-86-9]
 $C_{12}H_{16}BrFO_7$ 371.157
 Cryst. (CHCl₃/petrol). Mp 145-146°. [α]_D²⁰ +231 (c, 1.8 in CHCl₃).

 β -*D*-Pyranose-form

Me glycoside: Methyl 6-deoxy-6-fluoro- β -*D*-galactopyranoside, 9CI
 [35521-88-1]
 $C_7H_{13}FO_5$ 196.175
 Cryst. (Me₂CO/Et₂O). Mp 117-118°. [α]_D²¹ -1.3 (c, 0.9 in H₂O). Error in CAS name in many indexes.

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-6-fluoro- β -*D*-galactopyranoside
 [35521-89-2]
 $C_{13}H_{19}FO_8$ 322.287
 Cryst. (Et₂O/petrol). Mp 108°. [α]_D²² -11 (c, 0.5 in CHCl₃). Error in CAS name in 9CI.

***L*-form** [68539-73-1]

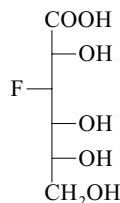
Cryst. (MeOH/Et₂O). Mp 163-164°. [α]_D²² -76.5 (c, 0.2 in H₂O).
Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-6-fluoro-*L*-galactopyranose
 [357611-48-4]
 $C_{14}H_{19}FO_9$ 350.297
 Syrup. Obt. as mixt. of pyranose anomers.

 α -*L*-Pyranose-form

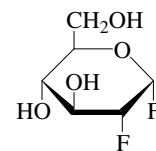
Di-O-isopropylidene: 6-Deoxy-6-fluoro-1,2:3,4-di-O-isopropylidene- α -*L*-galactopyranose
 [70981-54-3]
 $C_{12}H_{19}FO_5$ 262.277
 Syrup. [α]_D²⁵ +44.7 (c, 1.0 in CHCl₃).

[63503-07-1, 118396-36-4, 357611-48-4]

Taylor, N.F. *et al.*, *J.C.S.*, 1958, 872 (α -*D*-Me gly, α -*D*-Me gly trimesyl)
 Petrov, K.A. *et al.*, *Zh. Obshch. Khim.*, 1964, **34**, 1459 (*D*-isopropylidene)
 Barnett, J.E.G. *et al.*, *Biochem. J.*, 1968, **109**, 61 (*biochem, pharmacol*)
 Kent, P.W. *et al.*, *Tetrahedron*, 1971, **27**, 3887 (*nmr*)
 Kent, P.W. *et al.*, *Carbohydr. Res.*, 1972, **22**, 193 (α - and β -Me tri-Ac, β -Me gly, bromodeoxy tri-Ac)
 May, J.A. *et al.*, *J. Med. Chem.*, 1979, **22**, 971 (*L*-isopropylidene)
 Colonna, S. *et al.*, *J.C.S. Perkin 1*, 1979, 2248 (α -*D*-isopropylidene, *D*-diisopropylidene)
 Sufrin, J.R. *et al.*, *J. Med. Chem.*, 1980, **23**, 143 (*L*-form)
 Penglis, A.A.E. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1981, **38**, 195 (*nmr, ms, rev*)
 Kováč, P. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 313-327 (*Me* β -*D*-gly, synth, *cmr*)
 Abraham, R.J. *et al.*, *Carbohydr. Res.*, 1992, **226**, C1 (*pmr, conformn*)
 Brackhagen, M. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 31-43 (*L*-form tetra-Ac)

3-Deoxy-3-fluorogluconic acid**D-84** $C_6H_{11}FO_6$ 198.148***D*-form** [29724-55-8]

Cryst. (1,4-dioxan/Et₂O). Mp 119°. [α]_D²¹ -6 (c, 1.0 in H₂O).
Ca salt (2:1): [28846-15-3]
 Mp 198-200° dec.
 Taylor, N.F. *et al.*, *Carbohydr. Res.*, 1972, **22**, 467

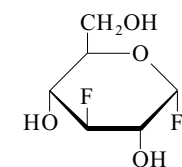
2-Deoxy-2-fluoroglucopyranosyl fluoride**D-85** α -*D*-form $C_6H_{10}F_2O_4$ 184.139 **α -*D*-form** [75414-45-8]

Syrup. [α]_D²⁰ +91.7 (c, 2.0 in MeOH).
Tri-Ac: [24679-90-1]
 $C_{12}H_{16}F_2O_7$ 310.251
 Cryst. (Et₂O/petrol). Mp 91-92° (69-70°). [α]_D²⁰ +135 (c, 1.0 in CHCl₃).

 β -*D*-form [103960-04-9]

Tri-Ac: [29069-93-0]
 Cryst. (Et₂O/petrol). Mp 104-105° (99-101°). [α]_D²⁰ +82 (c, 1.0 in CDCl₃) (+75).

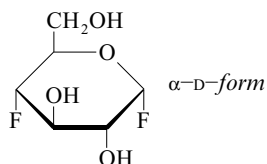
Adamson, J. *et al.*, *Carbohydr. Res.*, 1970, **15**, 351 (α -tri-Ac, *pmr*)
 Hall, L.D. *et al.*, *Can. J. Chem.*, 1971, **49**, 118 (β -tri-Ac, *F*-19 *nmr, pmr*)
 Ido, T. *et al.*, *J.O.C.*, 1977, **42**, 2341 (α -tri-Ac, *pmr*)
 Korytnyk, W. *et al.*, *Tetrahedron*, 1982, **38**, 2547 (*synth, alpha-form*)
 Diksic, M. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 265 (*synth, F*-19 *nmr*)
 Withers, S.G. *et al.*, *J. Biol. Chem.*, 1988, **263**, 7929 (*F*-19 *nmr*)

3-Deoxy-3-fluoroglucopyranosyl fluoride**D-86** α -*D*-form $C_6H_{10}F_2O_4$ 184.139 **α -*D*-form**

Cryst. (MeCN). Mp 232° dec. [α]_D²² +99.8 (c, 2.0 in MeOH).
Tri-Ac: [31505-09-6]
 $C_{12}H_{16}F_2O_7$ 310.251
 Syrup. Bp_{0.1} 155-165° (bath). [α]_D²³ +76 (c, 1.0 in CHCl₃).

 β -*D*-form

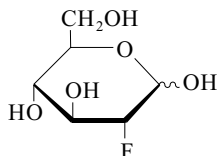
Tri-Ac: [31505-10-9]
 Cryst. (EtOH/petrol). Mp 79.5-80°. [α]_D²⁵ +6 (c, 1.0 in CHCl₃).
 Hall, L.D. *et al.*, *Can. J. Chem.*, 1971, **49**, 236 (*tri-Ac, pmr, F*-19 *nmr*)
 Klemm, G.H. *et al.*, *Tet. Lett.*, 1982, 2927, (*tri-Ac, pmr*)

4-Deoxy-4-fluoroglucofuranosyl fluoride**D-87**C₆H₁₀F₂O₄ 184.139**α-D-form**

Tri-Ac: [33557-16-3]
C₁₂H₁₆F₂O₇ 310.251
Syrup. Bp_{0.15} 145-155° (bath). [α]_D +54 (c, 1.0 in CHCl₃).

β-D-form

Tri-Ac: [33557-17-4]
Cryst. (Et₂O/petrol). [α]_D -26 (c, 1.0 in CHCl₃).
Barford, A.D. *et al.*, *Carbohydr. Res.*, 1971, **19**, 49 (tri-Ac, pmr, F-19 nmr)

2-Deoxy-2-fluoroglucose, 9CI**D-88**

C₆H₁₁FO₅ 182.148
Bp 8.02°. ¹⁸F labelled compd. is used as a diagnostic aid (Fludeoxyglucose F 18, INN, USAN).

D-form [29702-43-0] Inhibitor of the fowl plague virus in chicken embryo cells.
Mp 180-181° (170-176°). [α]_D +37 → +62 (H₂O).

α-D-form

1,3,4,6-Tetra-Ac: [38711-38-5]
C₁₄H₁₉FO₉ 350.297
Mp 78-79°. [α]_D²⁴ +146 (c, 1 in CHCl₃).

β-D-Pyranose-form

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-deoxy-2-fluoro-β-D-glucopyranoside
[39110-57-1]
C₁₃H₁₉FO₈ 322.287
Mp 128-129°.

Me glycoside, 4,6-O-benzylidene, 3-Me:
C₁₅H₁₉FO₅ 298.31
Mp 108°.

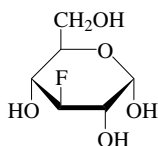
Me glycoside, 4,6-O-benzylidene, 3-benzyl:
C₂₁H₂₃FO₅ 374.408
Mp 155-158°. [α]_D -45.6 (c, 0.55 in CHCl₃).

Benzyl glycoside, 3,4,6-tribenzyl:
C₃₄H₃₅FO₅ 542.646
[α]_D²² -13 (c, 0.85 in CHCl₃).

[63503-12-8, 86783-82-6, 105851-17-0]

Adamson, J. *et al.*, *Chem. Comm.*, 1969, 309 (synth, pmr)
Pacak, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1972, **37**, 2589

Schmidt, M.F.G. *et al.*, *J. Virol.*, 1976, **18**, 819 (biochem)
Levy, S. *et al.*, *Chem. Comm.*, 1982, 972, (β-glycoside)
Adam, M.J. *et al.*, *Carbohydr. Res.*, 1983, **124**, 215 (tetra-Ac)
Tewson, T.J. *et al.*, *J.O.C.*, 1983, **48**, 3507 (synth, glycoside tri-Ac)
Dessing, A. *et al.*, *Carbohydr. Res.*, 1984, **126**, C6 (synth)
Haradahira, T. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 165 (synth)
Kovač, P. *et al.*, *Carbohydr. Res.*, 1986, **153**, 168 (synth, cmr)
Doboszewski, B. *et al.*, *Can. J. Chem.*, 1987, **65**, 412

3-Deoxy-3-fluoroglucose, 9CI,**D-89****8CI**
3FGC₆H₁₁FO₅ 182.148**D-form** [14049-03-7]

Cryst. (EtOH). Mp 114-115°. [α]_D²⁵ +66 (c, 0.7 in H₂O). Approx. equimolar amounts of α- and β-anomers.

2,4-Dichlorophenylhydrazone:

Cryst. (EtOAc/petrol). Mp 135°.

6-Benzoyl: 6-O-Benzoyl-3-deoxy-3-fluoro-D-glucose

[56632-75-8]

C₁₃H₁₅FO₆ 286.256[α]_D²⁷ +40 (c, 0.9 in EtOH).**α-D-Pyranose-form** [31001-27-1]

1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy-3-fluoro-α-D-glucopyranose
[20409-32-9]

C₁₄H₁₉FO₉ 350.297Cryst. (C₆H₆/petrol). Mp 109-111°. [α]_D²⁵ +88 (c, 1.0 in CHCl₃).**β-D-Pyranose-form** [31001-26-0]

1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy-3-fluoro-β-D-glucopyranose

C₁₄H₁₉FO₉ 350.297Cryst. (C₆H₆/petrol). Mp 119-120°. [α]_D²⁰ -12 (c, 0.9 in CHCl₃).**Benzyl glycoside: Benzyl 3-deoxy-3-fluoro-β-D-glucopyranoside**

[33941-77-4]

C₁₃H₁₇FO₅ 272.273Mp 95°. [α]_D²⁰ -58 (c, 1.0 in MeOH).**Benzyl glycoside, 2,4,6-tri-Ac: Benzyl 2,4,6-tri-O-acetyl-3-deoxy-3-fluoro-β-D-glucopyranoside**C₁₉H₂₃FO₈ 398.384Cryst. (MeOH aq.). Mp 104°. [α]_D¹⁹ -62 (c, 1.0 in CHCl₃).**Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-3-fluoro-β-D-glucopyranoside**C₁₄H₁₇FO₅ 284.284

Cryst. (EtOH/petrol). Mp 176-177°.

[α]_D²⁵ -48 (c, 1.0 in CHCl₃).**Me glycoside, 4,6-O-benzylidene, 2-Ac: Methyl 2-O-acetyl-4,6-O-benzylidene-3-**

deoxy-3-fluoro-β-D-glucopyranoside
C₁₆H₁₉FO₆ 326.321
Mp 137-138°. [α]_D²⁵ -57 (c, 1.0 in CHCl₃).

α-D-Furanose-form

1,2-O-Cyclohexylidene: 1,2-O-Cyclohexylidene-3-deoxy-3-fluoro-α-D-glucofuranose
C₁₂H₁₉FO₅ 262.277

Cryst. (EtOH/petrol). Mp 121-122°.
[α]_D²⁵ -12 (c, 0.7 in CHCl₃).

1,2-O-Isopropylidene: 3-Deoxy-3-fluoro-1,2-O-isopropylidene-α-D-glucofuranose
C₉H₁₅FO₅ 222.213

Cryst. (toluene/petrol). Mp 50-52°.
Bp_{0.4} 124-126°. [α]_D -18 (c, 0.8 in CHCl₃).

1,2-O-Isopropylidene, 6-benzoyl: 6-O-Benzoyl-3-deoxy-3-fluoro-1,2-O-isopropylidene-α-D-glucofuranose

C₁₆H₁₉FO₆ 326.321

Cryst. (EtOH). Mp 132-133°.

[α]_D²⁷ -7.8 (c, 0.6 in CHCl₃).

1,2:5,6-Di-O-isopropylidene: 3-Deoxy-3-fluoro-1,2:5,6-di-O-isopropylidene-α-D-glucofuranose

C₁₂H₁₉FO₅ 262.277Bp_{0.03} 66-70°. [α]_D³⁰ -22 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, 5,6-carbonate:

3-Deoxy-3-fluoro-1,2-O-isopropylidene-α-D-glucofuranose 5,6-carbonate
C₁₀H₁₃FO₆ 248.207

Cryst. (EtOH/petrol). Mp 84-85°.

[α]_D²⁵ -27 (c, 1.0 in CHCl₃).

Foster, A.B. *et al.*, *Carbohydr. Res.*, 1967, **5**, 292 (D-form, synth, β-D-pyr tetra-Ac, α-D-fur cyclohexylidene, α-D-fur isopropylidene, derivs)

Foster, A.B. *et al.*, *Can. J. Chem.*, 1970, **48**, 3937 (D-form, α-D-tetra-Ac, β-D-Me pyr benzylidene, β-D-Me pyr benzylidene Ac, nmr)

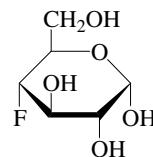
White, F.H. *et al.*, *FEBS Lett.*, 1970, **11**, 268 (metab)

Kent, P.W. *et al.*, *Tetrahedron*, 1971, **27**, 3887 (F-19 nmr)

Taylor, N.F. *et al.*, *Carbohydr. Res.*, 1972, **22**, 467 (D-form, synth, D-dichlorophenylhydrazone)

Wright, J.A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 366 (β-D-benzyl pyr, β-D-benzyl pyr tri-Ac)

Reichman, U. *et al.*, *Carbohydr. Res.*, 1975, **42**, 233 (D-benzoyl, α-D-fur isopropylidene, α-D-fur isopropylidene benzoyl, α-D-fur diisopropylidene)

4-Deoxy-4-fluoroglucose, 9CI**D-90**C₆H₁₁FO₅ 182.148**D-form** [29218-07-3]

Cryst. (EtOH/petrol). Mp 187-189°.

[α]_D +26 → +49 (c, 1.0 in H₂O).**α-D-Pyranose-form**

Me glycoside, tribenzyl: Methyl 2,3,6-tri-O-benzyl-4-deoxy-4-fluoro-α-D-glucopyranoside

C₂₈H₃₁FO₅ 466.548[α]_D +18.8 (c, 3.5 in CHCl₃).

β-D-Pyranose-form

Tetra-Ac: 1,2,3,6-Tetra-O-acetyl-4-deoxy-4-fluoro-β-D-glucopyranose
C₁₄H₁₉FO₉ 350.297
Cryst. (EtOH). Mp 127-129°. [α]_D -32 (c, 0.5 in CHCl₃).

Me glycoside: Methyl 4-deoxy-4-fluoro-β-D-glucopyranoside
C₇H₁₃FO₅ 196.175
Cryst. (MeOH/EtOAc). [α]_D -47 (c, 0.9 in H₂O).

Barford, A.D. *et al.*, *Carbohydr. Res.*, 1969, **11**, 287; 1970, **13**, 189 (*synth*, *pmr*)

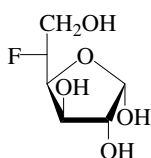
Bessel, E.M. *et al.*, *Biochem. J.*, 1972, **128**, 199 (*biochem*)

Doboszewski, B. *et al.*, *Can. J. Chem.*, 1987, **65**, 412 (*Me pyr*, *pmr*, *cmr*, *F-19 nmr*)

Abraham, R.J. *et al.*, *Carbohydr. Res.*, 1992, **226**, C1 (*pmr*, *conformn*)

Petrakova, E. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 407-412 (*Me β-D-gly*)

Hoffmann, M. *et al.*, *J.A.C.S.*, 2001, **123**, 2308-2316 (*conformn*)

5-Deoxy-5-fluoroglucose**D-91** α -D-Furanose-formC₆H₁₁FO₅ 182.148**D-Furanose-form**

[103357-83-1, 103357-85-3]

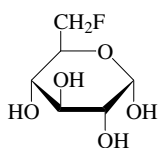
Syrup. Mixt. of anomers.

α-D-Furanose-form

1,2-Isopropylidene: 5-Deoxy-5-fluoro-1,2-O-isopropylidene-α-D-glucofuranose
[103357-82-0]
C₉H₁₅FO₅ 222.213

Mp 108-110°. [α]_D -6.5 (c, 1 in Me₂CO).

Albert, R. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 513-520 (*D-fur*, *1,2-isopropylidene*)

6-Deoxy-6-fluoroglucose, 9CI**D-92** α -D-Pyranose-formC₆H₁₁FO₅ 182.148**D-form** [4536-08-7]

Cryst. (EtOAc/EtOH). Mp 155° (152°). [α]_D +92 → +47 (H₂O, *equilib.*).

α-D-Pyranose-form [62182-12-1]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-6-fluoro-α-D-glucopyranose
[35816-31-0]
C₁₄H₁₉FO₉ 350.297

Cryst. (C₆H₆/petrol). Mp 128-129°. [α]_D +107 (c, 1.0 in CHCl₃).

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl-6-deoxy-6-fluoro-α-D-glucopyranose
[118266-71-0]

C₃₄H₂₇FO₉ 598.58Mp 154-155°. [α]_D +132.5.

Me glycoside: Methyl 6-deoxy-6-fluoro-α-D-glucopyranoside, 9CI, 8CI
[4577-39-3]

C₇H₁₃FO₅ 196.175(CHCl₃/petrol). Mp 109-110°(103-105°). [α]_D +43 (c, 1.8 in H₂O).[α]_D +167 (H₂O).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-6-fluoro-α-D-glucopyranoside
[33557-24-3]

C₁₃H₁₉FO₈ 322.287Syrup. [α]_D +113 (CHCl₃).

Me glycoside, 2,3,4-tribenzoyl: Methyl 2,3,4-tri-O-benzoyl-6-deoxy-6-fluoro-α-D-glucopyranoside
[118266-73-2]

C₂₈H₂₅FO₈ 508.499Mp 145-146°. [α]_D +52.7.

Ph glycoside: Phenyl 6-deoxy-6-fluoro-α-D-glucopyranoside
[87638-52-6]
C₁₂H₁₅FO₅ 258.246

Mp 169.5-171°. [α]_D +191.7 (c, 1.01 in EtOH).

1-Fluoro-1-deoxy: 6-Deoxy-6-fluoro-α-D-glucopyranosyl fluoride, 8CI
[33557-33-4]

C₆H₁₀F₂O₄ 184.139

Cryst. (EtOAc). Mp 130-131°. [α]_D +95 (c, 1.0 in H₂O).

1-Fluoro-1-deoxy, tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy-6-fluoro-α-D-glucopyranosyl fluoride
[33557-30-1]

C₁₂H₁₆F₂O₇ 310.251Cryst. (Et₂O/petrol). Mp 106-106.5°.[α]_D +106 (CHCl₃).**β-D-Pyranose-form** [62182-13-2]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-6-fluoro-β-D-glucopyranose
[33557-29-8]
C₁₄H₁₉FO₉ 350.297

Cryst. (C₆H₆/petrol). Mp 123-124°. [α]_D +21.5 (c, 1 in CHCl₃).

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl-6-deoxy-6-fluoro-β-D-glucopyranose
[118272-29-0]

C₃₄H₂₇FO₉ 598.58Mp 184-186°. [α]_D -16.5.

Me glycoside: Methyl 6-deoxy-6-fluoro-β-D-glucopyranoside
[87585-93-1]

C₇H₁₃FO₅ 196.175Mp 125-127°. [α]_D +35.4 (c, 1 in EtOH).

Ph glycoside: Phenyl 6-deoxy-6-fluoro-β-D-glucopyranoside
[67010-02-0]
C₁₂H₁₅FO₅ 258.246

Solid (CHCl₃). Mp 143-145°. [α]_D -62.3

(c, 1.02 in EtOH).

1-Fluoro-1-deoxy: 6-Deoxy-6-fluoro-β-D-glucopyranosyl fluoride, 8CI
[33557-34-5]

C₆H₁₀F₂O₄ 184.139

Cryst. (EtOAc). Mp 139-140° dec. [α]_D +20 (c, 1.0 in MeOH).

1-Fluoro-1-deoxy, tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy-6-fluoro-β-D-glucopyranosyl fluoride
[33557-31-2]

C₁₂H₁₆F₂O₇ 310.251

Cryst. (C₆H₆/petrol). Mp 141-142°. [α]_D +20 (c, 1.0 in CHCl₃).

α-D-Furanose-form

Di-O-methylene: 6-Deoxy-6-fluoro-1,2,3,5-di-O-methylene-α-D-glucofuranose, 9CI
[32448-02-5]

C₈H₁₁FO₅ 206.17

Cryst. (EtOH/Et₂O). Mp 58°. [α]_D +33 (c, 5.8 in CHCl₃). [α]_D +56 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene: 6-Deoxy-6-fluoro-1,2-O-isopropylidene-α-D-glucofuranose
[87586-05-8]

C₉H₁₅FO₅ 222.213

Syrup. Bp_{0.03} 149-155°. [α]_D -9.8 (c, 1.02 in CHCl₃).

1,2-O-Isopropylidene, 3,5-O-benzylidene: 3,5-O-Benzylidene-6-deoxy-6-fluoro-1,2-O-isopropylidene-α-D-glucofuranose
[391-24-2]

C₁₆H₁₉FO₅ 310.321

Cryst. (MeOH). Mp 104-105°. [α]_D +32.4 (c, 1.9 in MeOH).

Helferich, B. *et al.*, *Ber.*, 1941, **74**, 1035 (*D-form*)

Taylor, N.F. *et al.*, *J.C.S.*, 1958, 872 (3,5-O-benzylidene, α-Me pyr)

Bessell, E.M. *et al.*, *Carbohydr. Res.*, 1971, **19**, 39 (*D-form*, α-Me pyr, α-tetra-Ac, β-tetra-Ac, fluoride derivs)

Phillips, L. *et al.*, *J.C.S. (B)*, 1971, 1618 (*nmr*)

Evelyn, L. *et al.*, *Carbohydr. Res.*, 1976, **47**, 285 (*nmr*, *di-O-methylene*)

Wray, V. *et al.*, *J.C.S. Perkin 2*, 1976, 1598 (*cmr*)

Srivastava, H.C. *et al.*, *Carbohydr. Res.*, 1978, **60**, 210 (*di-O-methylene*)

Penglis, A.A.E. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1981, **38**, 195 (*rev*)

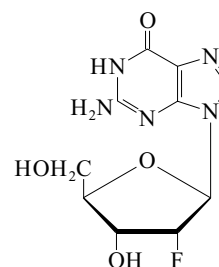
Card, P.J. *et al.*, *J.O.C.*, 1983, **48**, 393 (*synth*, α-Me pyr)

Kovac, P. *et al.*, *J. Coord. Chem.*, 1988, **7**, 317 (*benzoyl derivs*)

Abraham, R.J. *et al.*, *Carbohydr. Res.*, 1992, **226**, C1 (*pmr*, *conformn*)

2'-Deoxy-2'-fluoroguanosine, 9CI**D-93**

[78842-13-4]

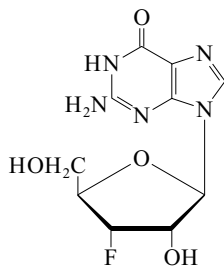
C₁₀H₁₂FN₅O₄ 285.234Needles (H₂O). Mp 240° dec.

Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 3281 (*synth*, *uv*, *pmr*, *cmr*)

Kawasaki, A.M. *et al.*, *J. Med. Chem.*, 1993, **36**, 831 (*synth*, *pmr*, *cmr*)

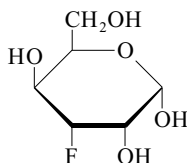
3'-Deoxy-3'-fluoroguanosine, 9CI**D-94**

9-(3-Deoxy-3-fluoro-β-D-ribofuranosyl)-
guanine
[123402-21-1]



C₁₀H₁₂FN₅O₄ 285.234
Potent antiviral agent. Cryst. (H₂O).
Mp 275-277°.

Puech, F. et al., *Chem. Comm.*, 1989, 955
(synth, use)

3-Deoxy-3-fluorogulose**D-95**

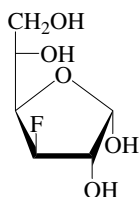
C₆H₁₁FO₅ 182.148

α-D-Pyranose-form

Me glycoside: Methyl 3-deoxy-3-fluoro-α-D-gulopyranoside, 9CI
[32587-58-9]
C₇H₁₃FO₅ 196.175
Cryst. Mp 123°. [α]_D²⁸ +146 (c, 0.3 in MeOH).

Kent, P.W. et al., *Biochem. J.*, 1971, **121**, 10P
(*Me gly*)

Kent, P.W. et al., *Tetrahedron*, 1971, **27**, 3887
(*Me gly*, pmr, F-19 nmr)

3-Deoxy-3-fluoroidose**D-96**

β-L-Furanose-form

C₆H₁₁FO₅ 182.148

L-form [35520-88-8]

Syrup. [α]_D -21 (H₂O).

β-L-Furanose-form

1,2-O-Isopropylidene: 3-Deoxy-3-fluoro-1,2-O-isopropylidene-β-L-idofuranose
[35520-87-7]
C₉H₁₅FO₅ 222.213

Cryst. (Et₂O/hexane). Mp 105-106°.

1,2-O-Isopropylidene, 6-benzoyl: 6-O-Benzoyl-3-deoxy-3-fluoro-1,2-O-

isopropylidene-β-L-idofuranose

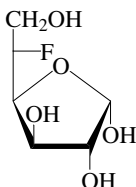
[35521-30-3]

C₁₆H₁₉FO₆ 326.321

Cryst. (Et₂O/hexane). Mp 111-112°.

[α]_D -8.5 (c, 1.0 in CHCl₃).

Brimacombe, J.S. et al., *Carbohydr. Res.*, 1972, **21**, 297 (derivs, pmr, F-19 nmr)

5-Deoxy-5-fluoroidose**D-97**

β-L-Furanose-form

C₆H₁₁FO₅ 182.148

L-form

Syrup. Consists of a mixt. of α- (47%) and β- (53%) anomers.

β-L-form [103357-80-8]

1,2-O-Isopropylidene: 5-Deoxy-5-fluoro-

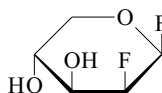
1,2-O-isopropylidene-β-L-idofuranose

[103357-79-5]

C₉H₁₅FO₅ 222.213

Cryst. Mp 104-106°. [α]_D²⁰ -21.5 (c, 1.0 in Me₂CO).

Albert, R. et al., *J. Carbohydr. Chem.*, 1985, **4**, 513 (synth, L-form, β-L-pyr isopropylidene, pmr)

2-Deoxy-2-fluorolixopyranosyl fluoride**D-98**

C₅H₈F₂O₃ 154.113

β-D-form [34050-69-6]

Cryst. (EtOH/Et₂O). Mp 114°.

[α]_D²⁴ -142 (c, 0.22 in EtOH).

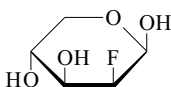
Di-Ac: [30591-78-7]

C₉H₁₂F₂O₅ 238.188

Cryst. Mp 109-111°. [α]_D²⁵ -114 (c, 0.5 in CHCl₃).

Butchard, C.G. et al., *Tetrahedron*, 1971, **27**, 3457 (synth, pmr)

Kent, P.W. et al., *Tetrahedron*, 1971, **27**, 3887 (*di-Ac*, pmr, F-19 nmr)

2-Deoxy-2-fluorolixose**D-99**

β-D-Pyranose-form

C₅H₉FO₄ 152.122

D-Pyranose-form [33983-50-5]

Cryst. (EtOH). Mp 124-126°. [α]_D²⁴ -11.5 (c, 0.56 in H₂O).

β-D-Pyranose-form

Trifluoromethyl glycoside, *di-Ac*:

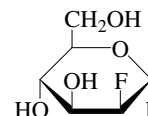
[30591-79-8]

C₁₀H₁₂F₄O₆ 304.195

Syrup. [α]_D²⁴ -120 (c, 0.4 in CHCl₃).

Butchard, C.G. et al., *Tetrahedron*, 1971, **27**, 3457 (synth, pmr, F-19 nmr)

Kent, P.W. et al., *Tetrahedron*, 1971, **27**, 3887 (deriv, pmr, F-19 nmr)

2-Deoxy-2-fluoromannopyranosyl fluoride**D-100**

α-D-form

C₆H₁₀F₂O₄ 184.139

α-D-form

Tri-Ac: [29209-98-1]

C₁₂H₁₆F₂O₇ 310.251

Cryst. (Et₂O/petrol). Mp 89-90°. [α]_D²⁵ +27 (CHCl₃).

β-D-form

Tri-Ac: [24679-92-3]

Mp 114-115° (109-111°). [α]_D -2.5 (CHCl₃).

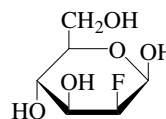
Hall, L.D. et al., *Can. J. Chem.*, 1971, **49**, 118 (α-*tri-Ac*, pmr, F-19 nmr)

Ido, T. et al., *J.O.C.*, 1977, **42**, 2341 (β-*tri-Ac*, pmr)

Korytnyk, W. et al., *Tetrahedron*, 1982, **38**, 2547 (β-*tri-Ac*)

Diksic, M. et al., *J. Carbohydr. Chem.*, 1985, **4**, 265 (synth, F-19 nmr)

Withers, S.G. et al., *Can. J. Chem.*, 1986, **64**, 232 (synth, conformn, pmr, cryst struct)

2-Deoxy-2-fluoromannose**D-101**

β-D-Pyranose-form

C₆H₁₁FO₅ 182.148

D-form

[α]_D +27.7 (H₂O).

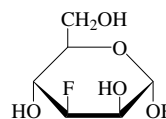
β-D-Pyranose-form

Tetrabenzyl: 1,3,4,6-Tetra-O-benzyl-2-deoxy-2-fluoro-β-D-mannopyranoside

C₃₄H₃₅FO₅ 542.646

Cryst. (diisopropyl ether). Mp 70.5-71°. [α]_D²⁵ -48.4 (CHCl₃).

Ogaura, T. et al., *J. Carbohydr. Chem.*, 1983, **2**, 461-467 (D-form, β-D-pyr tetrabenzyl)

3-Deoxy-3-fluoromannose**D-102**

α-D-Pyranose-form

C₆H₁₁FO₅ 182.148

D-form [87764-46-3]

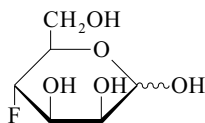
Needles (EtOH). Mp 173-175°. $[\alpha]_D^{+32} \rightarrow +23$ (c, 1.4 in H₂O).

Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy-3-fluoro-D-mannose
[88198-26-9]
C₁₄H₁₉FO₉ 350.297
Cryst. Mp 116-117°. $[\alpha]_D^{+22}$ (c, 1.4 in CHCl₃).

[86258-31-3, 86334-54-5]

Rasmussen, J.R. *et al.*, *Carbohydr. Res.*, 1983, **116**, 21 (*synth, cmr*)

Cerny, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1983, **48**, 2693 (*synth, tetra-Ac, pmr, F-19 nmr*)

4-Deoxy-4-fluoromannose**D-103**

C₆H₁₁FO₅ 182.148

D-form [87764-47-4]

Syrup. $[\alpha]_D^{+20} +3.7$ (c, 3.5 in H₂O).

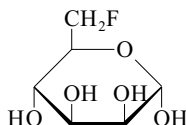
[86258-32-4, 86258-33-5]

Rasmussen, J.R. *et al.*, *Carbohydr. Res.*, 1983, **116**, 21 (*synth, cmr*)

McDowell, W. *et al.*, *Biochem. J.*, 1987, **248**, 523 (*use*)

6-Deoxy-6-fluoromannose**D-104**

6-Fluororhamnose



C₆H₁₁FO₅ 182.148

 α -D-Pyranose-form

Me glycoside: Methyl 6-deoxy-6-fluoro- α -D-mannopyranoside

[87586-10-5]

C₇H₁₃FO₅ 196.175

Solid. Mp 112-114°.

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-6-fluoro-2,3-O-isopropylidene- α -D-mannopyranoside

[87586-08-1]

C₁₀H₁₇FO₅ 236.24

Syrup. Bp_{0.01} 150-155°.

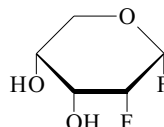
Me glycoside, 2,3-di-Me: Methyl 6-deoxy-6-fluoro-2,3-di-O-methyl- α -D-mannopyranoside

[87586-07-0]

C₉H₁₇FO₅ 224.229

Syrup.

Card, P.J. *et al.*, *J.O.C.*, 1983, **48**, 4734 (α -D-Me pyr derivs, pmr, cmr)

2-Deoxy-2-fluororibopyranosyl fluoride**D-105**

C₅H₈F₂O₃ 154.113

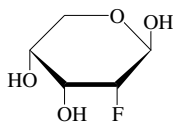
 α -D-form

Di-Ac: [33557-18-5]

C₉H₁₂F₂O₅ 238.188

Cryst. Mp 87-88°. $[\alpha]_D^{+22} +82.8$ (c, 0.9 in CHCl₃).

Albano, E.L. *et al.*, *Carbohydr. Res.*, 1971, **19**, 63 (*di-Ac, pmr, F-19 nmr*)

2-Deoxy-2-fluororibose**D-106** β -D-Pyranose-form

C₅H₉FO₄ 152.122

D-form [79681-18-8]

Fern-like cryst. Mp 106-112°. $[\alpha]_D^{+24} -37$ (H₂O).

D-Pyranose-form [33557-20-9]

Me glycoside, dibenzoyl: Methyl 3,4-di-O-benzoyl-2-deoxy-2-fluoro-D-ribopyranoside

C₂₀H₁₉FO₆ 374.365

Syrup. $[\alpha]_D^{+24} -156$ (c, 0.4 in CHCl₃).

 β -D-Pyranose-form

Tribenzoyl: 1,3,4-Tri-O-benzoyl-2-deoxy-2-fluoro- β -D-ribopyranoside

[7226-34-8]

C₂₆H₂₁FO₇ 464.446

Cryst. Mp 112-116° Mp 144-147°

(dimorph.). $[\alpha]_D^{+25} -146$ (c, 0.1 in CHCl₃).

D-Furanose-form

Me glycoside: Methyl 2-deoxy-2-fluoro-D-ribofuranoside

C₆H₁₁FO₄ 166.149

Cryst. (EtOAc/petrol). Mp 81-83°.

Me glycoside, dibenzoyl: Methyl 3,4-di-O-benzoyl-2-deoxy-2-fluoro-D-ribofuranoside

C₂₀H₁₉FO₆ 374.365

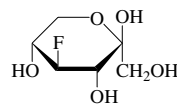
Needles (EtOH). Mp 86-88°.

Codington, J.F. *et al.*, *Carbohydr. Res.*, 1966, **1**, 455; 1967, **5**, 31 (*D-form, D-fur Me gly, D-fur Me gly dibenzoyl, β -D-pyr tribenzoyl, synth, pmr*)

Olson, W.K. *et al.*, *J.A.C.S.*, 1982, **104**, 278, (*D-form, conformn, pmr*)

Welch, J.T. *et al.*, *Chem. Comm.*, 1985, 186, (*D-form, pmr, cmr*)

Sanderson, P.N. *et al.*, *Carbohydr. Res.*, 1996, **284**, 51-60 (*pmr, cmr, F-19 nmr*)

4-Deoxy-4-fluorosorbose**D-107** β -D-Pyranose-form

C₆H₁₁FO₅ 182.148

D-form [55908-25-3]

Cryst. (EtOAc/MeOH). Mp 129-131°.

$[\alpha]_D^{+24} +49$ (c, 2.0 in H₂O).

 β -D-Pyranose-form

1,2-O-Isopropylidene: 4-Deoxy-4-fluoro-1,2-O-isopropylidene- β -D-sorbiopyranose

[41342-43-2]

C₉H₁₅FO₅ 222.213

Cryst. (Et₂O/petrol). Mp 108°.

$[\alpha]_D^{+24} -73.6$ (c, 2.2 in CHCl₃).

1,2-O-Isopropylidene, di-Ac: 3,5-Di-O-acetyl-4-deoxy-4-fluoro-1,2-O-isopropylidene- β -D-sorbiopyranose

[55908-24-2]

C₁₃H₁₉FO₇ 306.287

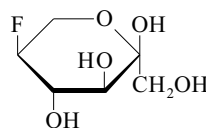
Cryst. (petrol). Mp 91°. $[\alpha]_D^{+24} -38$

(c, 0.8 in EtOH).

Sarel-Imber, M. *et al.*, *Carbohydr. Res.*, 1973, **27**, 73 (*isopropylidene, F-19 nmr*)

Rao, C.V. *et al.*, *Carbohydr. Res.*, 1975, **40**, 311 (*synth, isopropylidene derivs, cmr*)

Budesinsky, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1984, **49**, 267 (*cmr*)

5-Deoxy-5-fluorosorbose**D-108**

C₆H₁₁FO₅ 182.148

 α -L-Pyranose-form [55908-32-2]

Cryst. (EtOAc/MeOH). Mp 122-124°.

$[\alpha]_D^{+24} -36$ (c, 0.9 in H₂O).

1,2-O-Isopropylidene: 5-Deoxy-5-fluoro-1,2-O-isopropylidene- α -L-sorbiopyranose

[55908-29-7]

C₉H₁₅FO₅ 222.213

Cryst. (Et₂O). Mp 112-114°. $[\alpha]_D^{+24} -76$

(c, 2.0 in CHCl₃).

1,2-O-Isopropylidene, di-Ac: 3,4-Di-O-acetyl-5-deoxy-5-fluoro-1,2-O-isopropylidene- α -L-sorbiopyranose

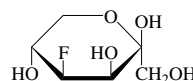
[55908-30-0]

C₁₃H₁₉FO₇ 306.287

Cryst. (petrol). Mp 68-69°. $[\alpha]_D^{+24} -37$

(c, 0.8 in EtOH).

Rao, G.V. *et al.*, *Carbohydr. Res.*, 1975, **40**, 311 (*synth, isopropylidene derivs, cmr*)

4-Deoxy-4-fluorotagatose**D-109** β -D-Pyranose-form

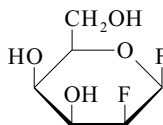
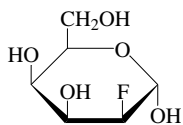
C₆H₁₁FO₅ 182.148

D-form [55908-31-1]Syrup. $[\alpha]_D^{24}$ -1.7 (c, 0.77 in H₂O). **β -D-Pyranose-form***1,2-O-Isopropylidene-4-Deoxy-4-fluoro-1,2-O-isopropylidene- β -D-tagatopyranose*

[55908-27-5]

C₉H₁₅FO₅ 222.213Cryst. (C₆H₆). Mp 153-157°. $[\alpha]_D^{24}$ -83 (c, 2.0 in CHCl₃).*1,2-O-Isopropylidene, di-Ac: 3,5-Di-O-acetyl-4-deoxy-4-fluoro-1,2-O-isopropylidene- β -D-tagatopyranose*

[55908-28-6]

C₁₃H₁₉FO₇ 306.287Cryst. (petrol). Mp 64-66°. $[\alpha]_D^{24}$ -97 (c, 0.8 in EtOH).Rao, G.V. *et al.*, *Carbohydr. Res.*, 1975, **40**, 311 (β -D-pyr isopropylidene derivs, cmr)**2-Deoxy-2-fluorotalopyranosyl fluoride****D-110**C₆H₁₀F₂O₄ 184.139 **β -D-form***Tri-Ac:* [35526-13-7]C₁₂H₁₆F₂O₇ 310.251Syrup. Bp_{0.17} 168-170°. $[\alpha]_D$ +19 (CHCl₃).Adamson, J. *et al.*, *Carbohydr. Res.*, 1972, **22**, 257 (*tri-Ac*)Korytnyk, W. *et al.*, *Tetrahedron*, 1982, **38**, 2547 (*tri-Ac*, pmr)**2-Deoxy-2-fluorotalose****D-111** α -D-Pyranose-formC₆H₁₁FO₅ 182.148 **α -D-Pyranose-form** [98856-45-2]

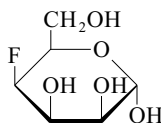
Syrup.

 β -D-Pyranose-form [98856-46-3]

Syrup.

Trifluoromethyl glycoside, tri-Ac:

[35526-12-6]

C₁₃H₁₆F₄O₈ 376.258Bp_{0.15} 148-150°. $[\alpha]_D$ +1.9 (c, 3.0 in CHCl₃).Adamson, J. *et al.*, *Carbohydr. Res.*, 1972, **22**, 257 (*deriv*, pmr, F-19 nmr)Diksic, M. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 265 (*synth*, F-19 nmr)**4-Deoxy-4-fluorotalose****D-112**C₆H₁₁FO₅ 182.148 **α -D-Pyranose-form***Me glycoside: Methyl 4-deoxy-4-fluoro- α -D-talopyranoside*

[87586-12-7]

C₇H₁₃FO₅ 196.175Solid. Mp 91-93°. $[\alpha]_D$ +88.8 (c, 0.99 in H₂O).*Me glycoside, 6-trityl: Methyl 4-deoxy-4-fluoro-6-O-trityl- α -D-talopyranoside*

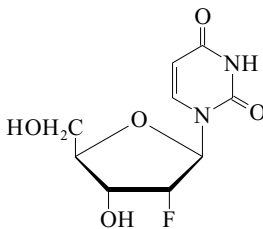
[87586-11-6]

C₂₆H₂₇FO₅ 438.495

Solid foam.

Card, P.J. *et al.*, *J.O.C.*, 1983, **48**, 4734 (α -D-Me pyr derivs, pmr, F-19 nmr)**2'-Deoxy-2'-fluorouridine, 9CI****D-113**

[784-71-4]

C₉H₁₁FN₂O₅ 246.195Cryst. (EtOH). Mp 150-151°. $[\alpha]_D^{20}$ +52 (c, 0.3 in H₂O).*5'-Phosphate: 2-Deoxy-5-fluoro-5'-uridylic acid, 9CI*

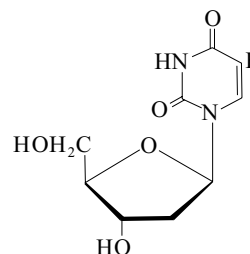
[134-46-3]

C₉H₁₂FN₂O₈P 326.175

Metab. of 5-fluorouracil. Cytotoxic inhibitor of thymidylate synthetase.

Hartmann, K.U. *et al.*, *J. Biol. Chem.*, 1961, **236**, 3006-3013 (*biochem*)Codington, J.F. *et al.*, *J.O.C.*, 1964, **29**, 558 (*synth*)Ludwig, J. *et al.*, *Synthesis*, 1982, 32-34 (*synth*, P-31 nmr, phosphate)Amarnath, V. *et al.*, *Biochim. Biophys. Acta*, 1983, **741**, 224-229 (*synth*, phosphate)Kawasaki, A.M. *et al.*, *J. Med. Chem.*, 1993, **36**, 361 (*synth*, pmr, cmr)**2'-Deoxy-5-fluorouridine, 9CI, 8CI****D-114***1-(2-Deoxy- β -D-ribofuranosyl)-5-fluorouracil. Floxuridine, INN, USAN. Fluoruridinindeoxyribose. FUDR. NSC 27640. WR 138720*

[50-91-9]

C₉H₁₁FN₂O₅ 246.195DNA synthesis inhibitor; antineoplastic agent used in treatment of malignant neoplasms of liver and gastrointestinal tract. Nucleoside transporter substrate. Cryst. (butyl acetate). Mp 150-151° (145°). $[\alpha]_D$ +37 (H₂O). $[\alpha]_D$ +48.6 (DMF). Log P -1.96 (calc). λ_{max} 268 (ε 7 570) (pH 7.2), 270 nm (6 480) (pH 14).► LD₅₀ (rat, orl) 215 mg/kg. Exp. reprod. and teratogenic effects. Human systemic effects when used therapeutically. YU7525000*3'-Ac:*C₁₁H₁₃FN₂O₆ 288.232

Mp 200-201°.

*5'-Ac:*C₁₁H₁₃FN₂O₆ 288.232

Mp 146°.

3'-Ac, 5'-mesyl: [27095-26-7]C₁₂H₁₅FN₂O₈S 366.323

Mp 134-134.5°.

3'-Mesyl: [1549-81-1]C₁₀H₁₃FN₂O₇S 324.286Mp 158° (161-162°) dec. $[\alpha]_D^{25}$ +32 (c, 0.57 in EtOH). λ_{max} 267.5 nm (ε 9 486) (MeOH).*3',5'-Ditosyl:* [7585-89-9]C₂₃H₂₃FN₂O₉S₂ 554.573Mp 229°. $[\alpha]_D$ -17 (Py).*3'-Me:*C₁₀H₁₃FN₂O₅ 260.221

Mp 146°.

*5'-Me:*C₁₀H₁₃FN₂O₅ 260.221

Mp 163°.

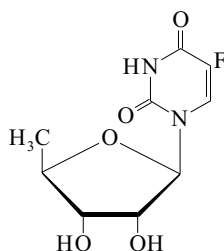
5'-Trityl: [10343-71-2]C₂₈H₂₅FN₂O₅ 488.514Mp 196-197°. $[\alpha]_D^{23}$ +49 (c, 0.6 in EtOH). λ_{max} 257 nm (EtOH).*5'-Phosphate: FUDRP*C₉H₁₂FN₂O₈P 326.174

Inhibitor of DNA synthesis.

*1-Epimer:*C₉H₁₁FN₂O₅ 246.195Mp 150-151°. $[\alpha]_D^{25}$ -21 (c, 2.0 in H₂O).Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 817A (*ir*)Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 375B (*nmr*)Hoffer, M. *et al.*, *J.A.C.S.*, 1959, **81**, 4112

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1961, **39**, 110 (*struct*, *pmr*)
 Sundaralingam, M. *et al.*, *J.A.C.S.*, 1965, **87**, 599 (*conformn*, *cryst struct*)
 Khwaja, T.A. *et al.*, *J. Med. Chem.*, 1967, **10**, 1066; 1970, **13**, 64 (*synth*)
 Robins, M.J. *et al.*, *J.A.C.S.*, 1971, **93**, 5277 (*synth*, *uv*, *ir*, *ms*)
 Brokes, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 439 (*synth*)
 Schwarz, B. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 3217 (*synth*)
 Mercer, J.R. *et al.*, *J. Med. Chem.*, 1987, **30**, 670-675 (*floxuridine*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 479
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAR400

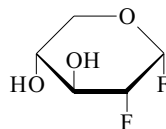
5'-Deoxy-5-fluorouridine, 9CI D-115
Doxifluridine, INN, JAN. Flutron.
Furtulon. 5-DFUR. Ro 21-9738
 [3094-09-5]



$C_9H_{11}FN_2O_5$ 246.195
 Antineoplastic agent. Prodrug of 5-Fluoro-2,4(1*H*,3*H*)-pyrimidinedione. Launched 1987. Needles. Mp 192-193°. $[\alpha]_D^{25} +163.2$ (c, 1 in H_2O). Log P -1.03 (calc).

► LD₅₀ (rat, orl) 3390 mg/kg. Exp. reprod. and teratogenic effects. YU7526000
 Cook, A.F. *et al.*, *J. Med. Chem.*, 1979, **22**, 1330 (*synth*, *pharmacol*)
 Schwarz, B. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 3217 (*synth*)
 Bollag, W. *et al.*, *Eur. J. Cancer*, 1980, **16**, 427 (*pharmacol*)
 Scott, J.W. *et al.*, *J. Carbohydr. Nucleosides*, 1981, **8**, 171 (*synth*)
 Kiss, J. *et al.*, *Helv. Chim. Acta*, 1982, **65**, 1522 (*synth*)
 Sommadossi, J.P. *et al.*, *Cancer Res.*, 1983, **43**, 930 (*metab*)
 Kono, A. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 1666 (*hplc*)
 Sommadossi, J.P. *et al.*, *Int. Congr. Ser. Excerpta Med.*, 1984, **647**, 108 (*pharmacol*, *metab*)
 Meynial, D. *et al.*, *J. Pharm. Pharmacol.*, 1986, **38**, 426 (*metab*)
 Au, J.L.S. *et al.*, *J. Pharm. Sci.*, 1987, **76**, 699 (*metab*)
 Guerrieri, A. *et al.*, *J. Chromatogr.*, 1993, **617**, 71 (*hplc*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 475
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DYE415

2-Deoxy-2-fluoroxypyranosyl fluoride



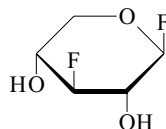
$C_5H_8F_2O_3$ 154.113

α-D-form

Di-Ac: [30591-82-3]
 $C_9H_{12}F_2O_5$ 238.188
 Syrup.

Dwek, R.A. *et al.*, *Tet. Lett.*, 1970, 2987, (*di-Ac*, *F-19 nmr*)
 Kent, P.W. *et al.*, *Tetrahedron*, 1971, **27**, 3887 (*di-Ac*, *config*, *F-19 nmr*)

3-Deoxy-3-fluoroxypyranosyl fluoride



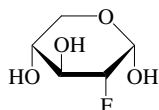
$C_5H_8F_2O_3$ 154.113

β-D-form

Di-Ac: [31505-11-0]
 $C_9H_{12}F_2O_5$ 238.188
 Cryst. ($CHCl_3$ /petrol). Mp 58°. $[\alpha]_D^{20} -67$ (c, 1.0 in $CHCl_3$).
 Hall, L.D. *et al.*, *Can. J. Chem.*, 1971, **49**, 236 (*di-Ac*, *F-19 nmr*, *pmr*)

2-Deoxy-2-fluoroxyllose

D-118



α-D-Pyranose-form

$C_5H_9FO_4$ 152.122

D-form [28867-50-7]
 Syrup. $[\alpha]_D^{23} +69$ (15 min.) → +32 (1h) (c, 0.9 in EtOH).

α-D-Pyranose-form

Trifluoromethyl glycoside, di-Ac:
 [30591-83-4]
 $C_{10}H_{12}F_4O_6$ 304.195
 Cryst. (Et_2O /petrol). Mp 150°. $[\alpha]_D^{24} +130$ (c, 0.37 in $CHCl_3$).

β-D-Pyranose-form

Syrup.

β-D-Furanose-form

Me glycoside: Methyl 2-deoxy-2-fluoro-β-D-xylofuranoside
 [28867-49-4]
 $C_6H_{11}FO_4$ 166.149
 Oil. $[\alpha]_D^{23} -102$ (c, 1.4 in EtOH).
Me glycoside, 3-benzoyl, 5-benzyl: Methyl 3-O-benzoyl-5-O-benzyl-2-deoxy-2-fluoro-β-D-xylofuranoside

D-116

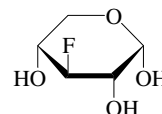
[28867-51-8]
 $C_{20}H_{21}FO_5$ 360.381
 Syrup. $[\alpha]_D^{23} -63$ (c, 1.2 in EtOH).

Me glycoside, 5-benzyl: Methyl 5-O-benzyl-2-deoxy-2-fluoro-β-D-xylofuranoside
 [28867-48-3]
 $C_{13}H_{17}FO_4$ 256.273
 Pale yellow syrup. $[\alpha]_D^{23} -42$ (c, 0.9 in EtOH).

Wright, J.A. *et al.*, *Carbohydr. Res.*, 1970, **13**, 297 (*D-form*, *β-Me fur*, *β-Me fur derivs*, *pmr*)
 Kent, P.W. *et al.*, *Tetrahedron*, 1971, **27**, 3457; 3887 (*α-D-pyr deriv*, *pmr*, *F-19 nmr*)
 Bols, M. *et al.*, *Acta Chem. Scand.*, 1990, **44**, 252 (*synth*, *pmr*)

3-Deoxy-3-fluoroxyllose

D-119



α-D-Pyranose-form

$C_5H_9FO_4$ 152.122

D-form

[14537-01-0]
 Needles (EtOH/butanol). Mp 126-128°. $[\alpha]_D^{25} +75$ → +26 (c, 1.7 in H_2O).
2,5-Dichlorophenylhydrazone: [14537-02-1]
 Cryst. (MeOH aq.). Mp 75°.

α-D-Furanose-form

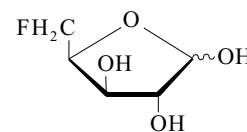
5-Benzoyl, 1,2-di-Ac: 1,2-Di-O-acetyl-5-O-benzoyl-3-deoxy-3-fluoro-α-D-xylofuranose
 [159099-24-8]
 $C_{16}H_{17}FO_7$ 340.304
 Cryst. (heptane/ Et_2O). Mp 63-64°. α:β anomeric ratio =5:1.

1,2-Isopropylidene, 5-benzoyl: 5-O-Benzoyl-3-deoxy-3-fluoro-1,2-O-isopropylidene-α-D-xylofuranose
 [125291-12-5]
 $C_{15}H_{17}FO_5$ 296.295
 Oil.

Wright, J.A. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 201 (*synth*)
 Gosselin, G. *et al.*, *Carbohydr. Res.*, 1993, **249**, 1 (*synth*, *pmr*, *F-19 nmr*)
 Jeong, L.S. *et al.*, *Carbohydr. Res.*, 1994, **262**, 103 (*1,2-Isopropylidene-5-benzoyl*)

5-Deoxy-5-fluoroxyllose, 8CI

D-120



$C_5H_9FO_4$ 152.122

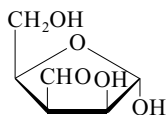
D-Furanose-form

[34147-21-2]
 Cryst. (EtOAc). Mp 77-78°. $[\alpha]_D^{24} +52.7$ (c, 1.7 in H_2O).

α-D-Furanose-form

1,2-O-Isopropylidene: 5-Deoxy-5-fluoro-1,2-O-isopropylidene-α-D-xylofuranose
 $C_8H_{13}FO_4$ 192.187
 Cryst. (EtOH/petrol). Mp 86°. $[\alpha]_D^{23} -20.6$ (c, 1.0 in $CHCl_3$).

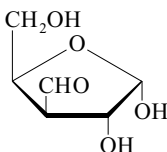
1,2-O-Isopropylidene, 3-O-benzyl:
 $C_{15}H_{19}FO_4$ 282.311
 Syrup. $[\alpha]_D^{22}$ -40.5 (c, 2.5 in EtOH).
 Kent, P.W. *et al.*, *Tetrahedron*, 1971, **27**, 4057
 (synth, pmr)

3-Deoxy-3-C-formyllyxose D-121

$C_6H_{10}O_5$ 162.142

 α -D-Furanose-form

Me glycoside, (5 \rightarrow 3') cyclic hemiacetal:
Methyl 3-deoxy-3-formyl- α -D-lyxofuranoside hemiacetal
 [4144-96-1]
 $C_7H_{12}O_5$ 176.169
 Needles (CHCl₃/petrol). Mp 94°. $[\alpha]_D^{23}$ +32 (c, 1.3 in H₂O).
 Austin, P.W. *et al.*, *J.C.S. (C)*, 1967, 372

3-Deoxy-3-C-formylxylose D-122

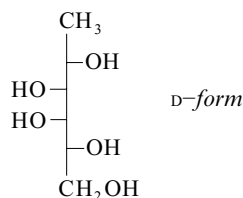
$C_6H_{10}O_5$ 162.142

 α -D-Furanose-form

Me glycoside, (5 \rightarrow 3') cyclic hemiacetal:
Methyl 3-deoxy-3-formyl- α -D-xylofuranoside hemiacetal
 [4144-93-8]
 $C_7H_{12}O_5$ 176.169
 Needles (EtOAc/petrol). Mp 96-98°. $[\alpha]_D$ +68 \rightarrow +78.5 (c, 1.0 in H₂O).
 Austin, P.W. *et al.*, *J.C.S. (C)*, 1967, 372

1-Deoxygalactitol, 9CI, 8CI D-123

Fucitol. Rhodeitol. 6-Deoxygalactitol. Galactomethylitol
 [5328-43-8]



$C_6H_{14}O_5$ 166.174

Care necessary with numbering. 1-Deoxy-D-galactitol is the same as 6-Deoxy-L-galactitol (L-Fucitol).

D-form

1-Deoxy-D-galactitol. 6-Deoxy-L-galactitol. L-Fucitol
 [13074-06-1] Present in urine and blood serum of uraemic patients. Mp 153-

154°. $[\alpha]_D^{20}$ +4.7 (10% borax aq.). $[\alpha]_D$ -1.45 (H₂O).

6-Ac: 6-O-Acetyl-1-deoxy-D-galactitol. 1-O-Acetyl-L-fucitol
 [170452-35-4]
 $C_8H_{16}O_6$ 208.211
 Mp 159-160°. $[\alpha]_D$ +19.5 (c, 0.9 in MeOH).

Penta-Ac: 2,3,4,5,6-Penta-O-acetyl-1-deoxy-D-galactitol
 [7226-60-0]
 $C_{16}H_{24}O_{10}$ 376.36
 Mp 127°. $[\alpha]_D^{25}$ +20.5 (CHCl₃).

6-Benzoyl: 6-O-Benzoyl-1-deoxy-D-galactitol
 $C_{13}H_{18}O_6$ 270.282
 Mp 177-178°. $[\alpha]_D^{20}$ +4.3 (c, 0.82 in Py).

2,3,4,5-Tetrabenzoyl: 2,3,4,5-Tetra-O-benzoyl-1-deoxy-D-galactitol. 2,3,4,5-Tetra-O-benzoyl-L-fucitol
 [170452-37-6]
 $C_{34}H_{30}O_9$ 582.606
 Mp 116-118°. $[\alpha]_D$ -1 (c, 0.8 in CHCl₃).

Pentabenzoyl: 2,3,4,5,6-Penta-O-benzoyl-1-deoxy-D-galactitol
 $C_{41}H_{34}O_{10}$ 686.714
 Mp 149-150°. $[\alpha]_D^{20}$ -5.96 (c, 0.87 in CHCl₃).

2,3:4,5-Di-O-isopropylidene: 1-Deoxy-2,3:4,5-di-O-isopropylidene-D-galactitol
 [42927-35-5]
 $C_{12}H_{22}O_5$ 246.303
 Mp 59-60°. $[\alpha]_D^{20}$ +11.7 (c, 0.94 in EtOH).

2,3-O-Butylidene: 2,3-O-Butylidene-1-deoxy-D-galactitol
 [57090-31-0]
 $C_{10}H_{20}O_5$ 220.265
 Mp 66-68°. $[\alpha]_D^{25}$ -12.8 (c, 1.1 in MeOH).

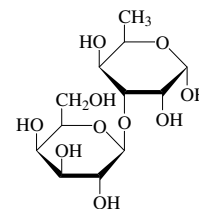
4,6-O-Butylidene: 4,6-O-Butylidene-1-deoxy-D-galactitol
 [57043-13-7]
 $C_{10}H_{20}O_5$ 220.265
 Syrup. $[\alpha]_D^{25}$ -9.6 (c, 0.56 in MeOH).

4,6-O-Butylidene, 2,3,5-tri-Ac: 2,3,5-Tri-O-acetyl-4,6-O-butylidene-1-deoxy-D-galactitol
 [57043-14-8]
 $C_{16}H_{26}O_8$ 346.377
 Mp 153-156°.

L-form

Mp 154-156°. $[\alpha]_D$ +4 (c, 2.0 in satd. borax soln.).
 Votocěk, E. *et al.*, *Chem. Zentralbl.*, 1906, **1**, 1818 (synth)
 Votocěk, E. *et al.*, *Ber.*, 1913, **46**, 3653 (synth)
 Ness, A.T. *et al.*, *J.A.C.S.*, 1942, **64**, 982 (diisopropylidene)
 Bollenback, G.N. *et al.*, *J.A.C.S.*, 1950, **72**, 741 (synth, L-form)
 Bonner, T.G. *et al.*, *J.C.S. Perkin 1*, 1975, 1323 (4,6-butylidene)
 Niwa, T. *et al.*, *J. Chromatogr.*, 1983, **277**, 25 (anal)
 Gillies, D.G. *et al.*, *J.C.S. Perkin 2*, 1985, 1155 (conformn, pmr)
 Wiesler, W.T. *et al.*, *J.A.C.S.*, 1989, **111**, 9205 (cd)
 Kindel, P.K. *et al.*, *Carbohydr. Res.*, 1990, **199**, 55 (glc, ms)
 Lewis, D. *et al.*, *J.C.S. Perkin 2*, 1991, 197 (conformn)

Sarbajna, S. *et al.*, *Carbohydr. Res.*, 1995, **270**, 93-96 (synth, D-form, D-form 6-Ac, D-form tetrabenzoyl)

6-Deoxy-3-O- β -D-galactopyranosyl-D-glucose D-124

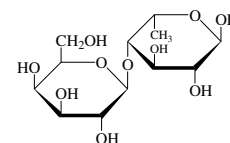
α -Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3

Constit. of the repeating unit of the serologically active O-specific polysaccharide isolated from the LPS of the bacterium *Yersinia enterocolitica*.

 α -Pyranose-form [115218-96-7]

$[\alpha]_D$ +4.4 (H₂O).
 Kalmykova, E.N. *et al.*, *Bioorg. Khim.*, 1988, **14**, 652; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 364

6-Deoxy-4-O- β -D-galactopyranosyl-L-idose D-125

α -Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3

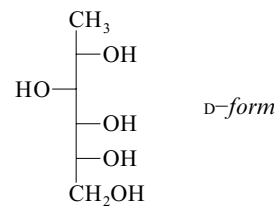
 α -Pyranose-form

Hepta-Ac: [52689-63-1]
 $C_{26}H_{36}O_{17}$ 620.56
 Mp 134-135°. $[\alpha]_D^{13}$ -35 (CHCl₃).

Chiba, T. *et al.*, *Chem. Pharm. Bull.*, 1974, **27**, 398
 Goto, H. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 1926

1-Deoxyglucitol, 9CI D-126

6-Deoxygulitol. Gulomethylitol



$C_6H_{14}O_5$ 166.174

D-form

1-Deoxy-D-glucitol. 6-Deoxy-L-gulitol
 [18545-96-5]
 Constit. of the fruit of *Foeniculum vulgare* (fennel).
 Needles (MeOH).
 Mp 131-132°. $[\alpha]_D^{25}$ +5 (c, 0.5 in H₂O).
3,4:5,6-Diisopropylidene: 1-Deoxy-3,4:5,6-di-O-isopropylidene-D-glucitol. 6-Deoxy-

1,2:3,4-di-O-isopropylidene-L-gulitol
 $C_{12}H_{22}O_5$ 246.303
 Cryst. (EtOH). Mp 134-135° (130-131°).
 $[\alpha]_D^{20} +4$ (c, 4 in H_2O).

L-form 6-Deoxy-D-gulitol. 1-Deoxy-L-glucitol
 3,4:5,6-Diisopropylidene: 1-Deoxy-3,4:5,6-di-O-isopropylidene-L-glucitol. 6-Deoxy-1,2:3,4-di-O-isopropylidene-D-gulitol
 $C_{12}H_{22}O_5$ 246.303
 Light yellow syrup. $[\alpha]_D -1$ (c, 1.00 in MeOH).

Bollenback, G.N. *et al.*, *Carbohydr. Res.*, 1950, **72**, 741

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1964, **68**, 1443-1448 (synth)

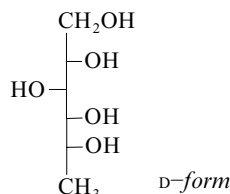
Kuszmarn, J. *et al.*, *Carbohydr. Res.*, 1979, **74**, 187-197 (synth)

Wiesler, W.T. *et al.*, *J.A.C.S.*, 1989, **111**, 9205-9213 (synth)

Lewis, D. *et al.*, *J.C.S. Perkin 2*, 1991, 197-200 (props, conformn)

Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 988-992 (isol, pmr, cmr)

6-Deoxyglucitol D-127
 epi-Rhamnitol. Isorhamnitol. Epirhamnitol.
 1-Deoxygulitol. Quinovitol
 [5624-40-8]



$C_6H_{14}O_5$ 166.174

D-form

6-Deoxy-D-glucitol. 1-Deoxy-L-gulitol
 Constit. of the fruit of *Cnidium monnieri*.
 $[\alpha]_D^{24} -11$ (c, 0.2 in MeOH).

Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-6-deoxy-D-glucitol
 $C_{16}H_{24}O_{10}$ 376.36
 Syrup. $[\alpha]_D^{20} +15.7$ ($CHCl_3$).

2,4-O-Methylene: 6-Deoxy-2,4-O-methylene-D-glucitol
 $C_7H_{14}O_5$ 178.185
 Needles (EtOH). Mp 176-177°.
 $[\alpha]_D^{20} -20.2$ (c, 0.9 in H_2O).

L-form 6-Deoxy-L-glucitol. 1-Deoxy-D-gulitol
 Syrup. $[\alpha]_D^{20} +9.18$ (H_2O).

Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-6-deoxy-L-glucitol
 $C_{16}H_{24}O_{10}$ 376.36
 Syrup. $[\alpha]_D^{20} -10$ (CH_2Cl_2).

2,4-O-Methylene: 6-Deoxy-2,4-O-methylene-L-glucitol
 $C_7H_{14}O_5$ 178.185
 Needles (EtOH). Mp 176-177°. $[\alpha]_D^{20} +19.7$ (c, 1.4 in H_2O).

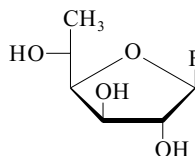
2,4:3,5-Di-O-methylene: 6-Deoxy-2,4:3,5-di-O-methylene-L-glucitol
 $C_8H_{14}O_5$ 190.196
 Mp 178-181°. $[\alpha]_D^{20} +38.5$ (H_2O).

Votoček, E. *et al.*, *Coll. Czech. Chem. Comm.*, 1931, **3**, 499

Ness, A.T. *et al.*, *J.A.C.S.*, 1944, **66**, 1235, (D-methylene, D-di-methylene)

Richtmyer, N.K. *et al.*, *J.A.C.S.*, 1950, **72**, 4934 (L-methylene, L-di-methylene)
 Kitajima, J. *et al.*, *Phytochemistry*, 2001, **58**, 641-644 (isol, pmr, cmr)

6-Deoxyglucofuranosyl fluoride D-128



$C_6H_{11}FO_4$ 166.149

β -D-form

3,5-Dibenzoyl: 3,5-Di-O-benzoyl-6-deoxy- β -D-glucofuranosyl fluoride

[169236-80-0]

$C_{20}H_{19}FO_6$ 374.365

Syrup. $[\alpha]_D -54.3$ (c, 1.01 in $CHCl_3$).

3,5-Dibenzoyl, 2-Ac: 2-O-Acetyl-3,5-di-O-benzoyl-6-deoxy- β -D-glucofuranosyl fluoride

[169236-79-7]

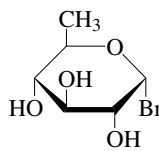
$C_{22}H_{21}FO_7$ 416.402

Needles (EtOH). Mp 140-142°.

$[\alpha]_D -87.8$ (c, 0.98 in $CHCl_3$).

Buchanan, J.G. *et al.*, *Tetrahedron*, 1995, **51**, 6033 (synth, pmr, cmr)

6-Deoxyglucopyranosyl bromide D-129
 Quinovopyranosyl bromide



α -D-form

$C_6H_{11}BrO_4$ 227.055

α -D-form

Tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy- α -D-glucopyranosyl bromide

[24877-07-4]

$C_{12}H_{17}BrO_7$ 353.166

Solid (Et_2O). Mp 141-142° (125-127°).

$[\alpha]_D^{20} +242$ (c, 0.43 in $CHCl_3$).

Tribenzoyl: 2,3,4-Tri-O-benzoyl-6-deoxy- α -D-glucopyranosyl bromide

[67986-91-8]

$C_{27}H_{23}BrO_7$ 539.379

Cryst. (Et_2O). Mp 155-161°. $[\alpha]_D +118$

(c, 1.02 in $CHCl_3$).

α -L-form

Tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy- α -L-glucopyranosyl bromide

[36807-84-8]

$C_{12}H_{17}BrO_7$ 353.166

Needles ($CHCl_3/Et_2O$). Mp 144-145°

dec. $[\alpha]_D^{20} -243.6$ (c, 1.74 in $CHCl_3$).

Tribenzoyl: 2,3,4-Tri-O-benzoyl-6-deoxy- α -L-glucopyranosyl bromide

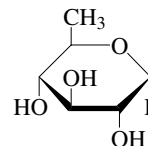
[61198-82-1]

$C_{27}H_{23}BrO_7$ 539.379

Cryst. Mp 160°. $[\alpha]_D^{20} -117.8$ (c, 1.0 in $CHCl_3$).

Kochetkov, N.K. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1969, 1136-1143; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1969, 1037-1043 (α -D-tri-Ac)
 Schüep, W. *et al.*, *Helv. Chim. Acta*, 1970, **53**, 1336-1339 (α -D-tri-Ac)
 Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 273-276 (α -L-tri-Ac)
 Ekborg, G. *et al.*, *Carbohydr. Res.*, 1978, **65**, 301-306 (α -D-tribenzoyl)
 Nakajima, R. *et al.*, *Biosci., Biotechnol., Biochem.*, 1993, **57**, 149-151 (α -L-tribenzoyl)
 Lichtenthaler, F.W. *et al.*, *Eur. J. Org. Chem.*, 2003, 3081-3093 (α -L-tribenzoyl)

6-Deoxyglucopyranosyl fluoride D-130
 Quinovosyl fluoride



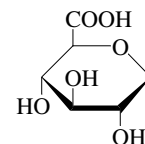
$C_6H_{11}FO_4$ 166.149

α -D-form [80382-72-5]

Cryst. ($EtOAc/Et_2O$). Mp 94°. $[\alpha]_D^{20} +86$ (c, 1.02 in H_2O).

Horneman, A.M. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 1-8 (α -D-form, synth, pmr, cmr)

1-Deoxy- α -D-glucopyranosyl iodide uronic acid D-131
 1-Deoxyglucopyranosyl iodide uronic acid.
 (Glucopyranosyl iodide)uronate



α -D-Pyranose-form

$C_6H_9IO_6$ 304.038

α -D-Pyranose-form

Tri-Ac, Me ester: Methyl 2,3,4-tri-O-acetyl- α -D-glucopyranosyl iodide uronate

[108800-87-9]

$C_{13}H_{17}IO_9$ 444.176

Solid. Mp 108-110° dec. Descr. as β -D-glucopyranuronate by Brown *et al.*, but accompanying structure shows α -D-iodo substituent.

Tripivaloyl, Me ester: Methyl 2,3,4-tri-O-pivaloyl- α -D-glucopyranosyl iodide uronate

[313948-92-4]

$C_{22}H_{35}IO_9$ 570.418

Pale yellow prisms (hexane).

Mp 104-105°.

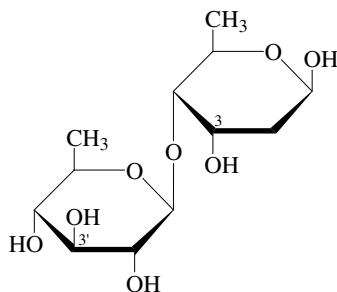
Ernst, B. *et al.*, *Tet. Lett.*, 1989, **30**, 3081-3084 (α -D-tri-Ac Me ester, synth)

Brown, R.T. *et al.*, *J. Chem. Res., Synop.*, 1997, 370-371 (α -D-tri-Ac Me ester, synth, pmr)

Bickley, T. *et al.*, *Chem. Comm.*, 2003, 1266-1267 (α -D-tripivaloyl Me ester, synth, pmr, cmr, cryst struct)

**6-Deoxy- β -D-glucopyranosyl-
(1 \rightarrow 4)-2,6-dideoxy-D-ribo-hexose**

D-132

 $C_{12}H_{22}O_8$ 294.301 **β -D-Pyranose-form**

Me glycoside, 3,3'-di-Me: Methyl 6-deoxy-3-O-methyl- β -D-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-3-O-methyl- β -D-ribo-hexopyranoside. Dresibioside [130855-19-5]

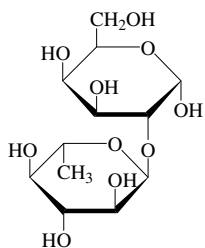
 $C_{15}H_{28}O_8$ 336.381Constit. of the roots of *Dregea sinensis*.

Shen, X. *et al.*, *Huaxue Xuebao*, 1990, **48**, 709; *CA*, **114**, 3446h (*isol, struct*)

2-O-(6-Deoxy- α -L-glucopyranosyl)-D-galactose, 9CI

D-133

2-O- α -L-Quinovopyranosyl-D-galactose [58927-33-6]

 α -Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3
Syrup. $[\alpha]_D^{20}$ -59.3 (c, 1.4 in MeOH).

 α -Pyranose-form*Hepta-Ac*: [58927-29-0] $C_{26}H_{36}O_{17}$ 620.56

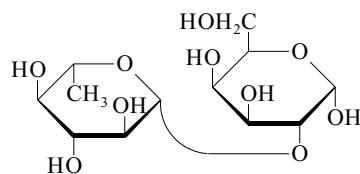
Cryst. (MeOH). Mp 195°. $[\alpha]_D^{20}$ -18 (c, 2.0 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 273 (*synth*)

2-O-(6-Deoxy- β -L-glucopyranosyl)-D-galactose, 9CI

D-134

2-O- β -L-Quinovopyranosyl-D-galactose [58927-34-7]

 α -Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3
Syrup. $[\alpha]_D^{20}$ +71.4 (c, 0.93 in MeOH aq.).

 α -Pyranose-form*Hepta-Ac*: [58927-30-3] $C_{26}H_{36}O_{17}$ 620.56

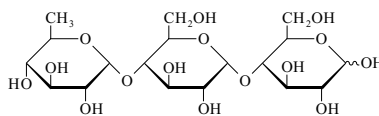
Cryst. (EtOH). Mp 209°. $[\alpha]_D^{20}$ +62.5 (c, 1.6 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 273 (*synth*)

**6-Deoxy- α -D-glucopyranosyl-
(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose**

D-135

[61637-54-5]



Pyranose-form

 $C_{18}H_{32}O_{15}$ 488.442

Prod. formed by the action of bacterial amylase on deoxyamyllose.

$[\alpha]_D^{25}$ +143 (c, 0.9 in H_2O).

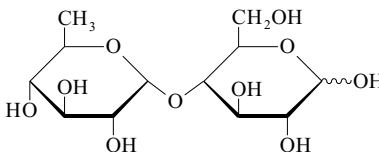
Takeo, K. *et al.*, *Carbohydr. Res.*, 1976, **51**, 73Weill, C.E. *et al.*, *Carbohydr. Res.*, 1979, **73**, 337**4-O-(6-Deoxy- α -D-glucopyranosyl)-D-glucose**

D-136

4-O- α -D-Quinovopyranosyl-D-glucose.

6'-Deoxymaltose

[42496-90-2]



Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3
Reducing disaccharide. $[\alpha]_D^{22}$ +134 (c, 1.04 in H_2O). $[\alpha]_D^{22}$ +113 (c, 2.8 in H_2O).

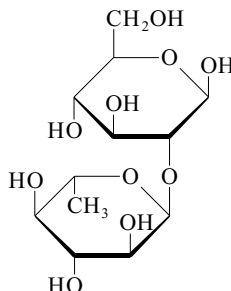
Dutton, G.G.S. *et al.*, *Can. J. Chem.*, 1966, **44**, 1069

Melton, L.D. *et al.*, *Can. J. Chem.*, 1973, **51**, 327 (*synth*)

2-O-(6-Deoxy- α -L-glucopyranosyl)-D-glucose, 9CI

D-137

2-O- α -L-Quinovopyranosyl-D-glucose [58927-31-4]



$C_{12}H_{22}O_{10}$ 326.3
Reducing disaccharide. Syrup. $[\alpha]_D^{20}$ -56.94 (c, 1.44 in MeOH).

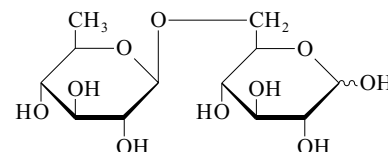
 β -Pyranose-form*Hepta-Ac*: [58927-28-9] $C_{26}H_{36}O_{17}$ 620.56

Cryst. (Et₂O). Mp 168-171°. $[\alpha]_D^{20}$ -87.5 (c, 0.8 in CH_2Cl_2).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 273

6-O-(6-Deoxy- β -D-glucopyranosyl)-D-glucose

D-138

6-O- β -D-Quinovosyl-D-glucose

Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3
Reducing disaccharide. $[\alpha]_D$ -6 (H_2O).

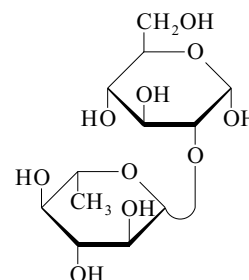
Hepta-Ac: $C_{26}H_{36}O_{17}$ 620.56Mp 175-176°. $[\alpha]_D$ -2 ($CHCl_3$).

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1959, **37**, 1930 (*synth*)

2-O-(6-Deoxy- β -L-glucopyranosyl)-D-glucose

D-139

2-O- β -L-Quinovopyranosyl-D-glucose [58927-32-5]



$C_{12}H_{22}O_{10}$ 326.3
Reducing disaccharide. $[\alpha]_D^{20}$ +79.7 (c, 1.28 in H_2O).

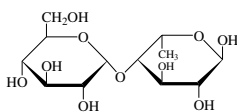
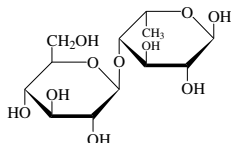
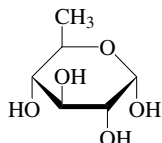
 α -Pyranose-form*Hepta-Ac*: [58927-27-8] $C_{26}H_{36}O_{17}$ 620.56

Needles (Et₂O). Mp 195-196°. $[\alpha]_D^{20}$ +63.7 (c, 0.8 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 273 (*synth*)

6-Deoxy-4-O- α -D-glucopyranosyl-L-idose, 9CI

[67831-18-9]

 α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3Reducing disaccharide. Amorph. powder + 2H₂O. $[\alpha]_D^{25} +91.2$ (c, 0.62 in H₂O). **α -Pyranose-form***Hepta-Ac*: [67890-21-5] $C_{26}H_{36}O_{17}$ 620.56Mp 158-159.5°. $[\alpha]_D^{21} +28.6$ (c, 0.64 in CHCl₃).Goto, H. et al., *Chem. Pharm. Bull.*, 1978, **26**, 1926 (*synth*)**6-Deoxy-4-O- β -D-glucopyranosyl-L-idose, 9CI** β -D-Glucopyranosyl-(1 \rightarrow 4)-6-deoxy-L-idose
[67831-19-0] α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3Reducing disaccharide. Amorph. powder + 2H₂O. $[\alpha]_D^{16} -28.7$ (c, 0.65 in H₂O). **α -Pyranose-form***Hepta-Ac*: [67890-22-6] $C_{26}H_{36}O_{17}$ 620.56Mp 142-144°. $[\alpha]_D^{24} -60.3$ (c, 0.82 in CHCl₃).*Me glycoside, hexa-Ac*: [84094-15-5] $C_{25}H_{36}O_{16}$ 592.55Mp 187-188°. $[\alpha]_D^{20} -68.9$ (c, 0.3 in CHCl₃).Goto, H. et al., *Chem. Pharm. Bull.*, 1978, **26**, 1926Takeo, K. et al., *Carbohydr. Res.*, 1982, **107**, 71 (*deriv*)**6-Deoxyglucose, 9CI, 8CI****D-142***Chinovose, 9CI. Quinovose, 9CI, 8CI. Isorhodeose. Glucomethylose. Isorhamnose. Epirhamnose*
[7658-08-4] α -D-Pyranose-form $C_6H_{12}O_5$ 164.158An aq. soln. at 44° contains 36% α -pyr, 64% β -pyr and 0.002% aldehyde. Present in some plant glycosides, e.g. from *Ipomoea* spp.**D-form**Mp 146°. $[\alpha]_D^{20} +75 \rightarrow +30$ (c, 8.3 in H₂O).*Phenylosazone*: Mp 189-191°. $[\alpha]_D -77$ (Py/EtOH).*3-Me*: 6-Deoxy-3-O-methyl-D-glucose.**Thevetose**

[5675-98-9]

Occurs in.

Mp 116°. $[\alpha]_D^{20} +84 \rightarrow +33$ (H₂O).*3-Me, phenylosazone*: Mp 123-128°. $[\alpha]_D^{16} -117.8 \rightarrow -26.4$ (c, 1.1 in 2:3 Py/EtOH).*Me glycoside, 4-Me*: Methyl 6-deoxy-4-O-methyl- α -D-glucopyranoside $C_8H_{16}O_5$ 192.211Solid. Mp 81°. $[\alpha]_D^{22} +171$ (c, 1.0 in CHCl₃). **α -D-Pyranose-form** [551-63-3]*1,2,3,4-Tetra-Ac*: 1,2,3,4-Tetra-O-acetyl-6-deoxy- α -D-glucopyranose
[7404-35-5] $C_{14}H_{20}O_9$ 332.307Mp 119°. $[\alpha]_D^{25} +122$ (c, 0.47 in CHCl₃).*2,3-Dibenzoyl, 4-tosyl*: 2,3-Di-O-benzoyl-6-deoxy-4-O-tosyl- α -D-glucopyranose $C_{27}H_{26}O_9S$ 526.563Mp 141-142°. $[\alpha]_D^{24} +95.8$ (c, 0.5 in CHCl₃).*Me glycoside*: Methyl 6-deoxy- α -D-glucopyranoside
[5155-43-1] $C_7H_{14}O_5$ 178.185Mp 96-98°. $[\alpha]_D^{25} +158$ (c, 1.0 in H₂O).*Me glycoside, 4-benzoyl, 2,3-di-Ac*: Methyl 2,3-di-O-acetyl-4-O-benzoyl-6-deoxy- α -D-glucopyranoside $C_{18}H_{22}O_8$ 366.367Syrup. $[\alpha]_D^{23} +59.4$ (c, 6.0 in CHCl₃).*Me glycoside, tribenzoyl*: Methyl 2,3,4-tri-O-benzoyl-6-deoxy- α -D-glucopyranoside
 $C_{28}H_{26}O_8$ 490.509Cryst. (MeOH). Mp 142-143°. $[\alpha]_D^{23} +52$ (c, 2.3 in CHCl₃).*Me glycoside, 2,3-di-Me*: Methyl 6-deoxy-2,3-di-O-methyl- α -D-glucopyranoside $C_9H_{18}O_5$ 206.238Syrup. $[\alpha]_D^{23} +143$ (c, 1.1 in CHCl₃).*Me glycoside, 2,3-dibenzoyl*: Methyl 2,3-di-O-benzoyl-6-deoxy- α -D-glucopyranoside
[56750-58-4] $C_{21}H_{26}O_5$ 358.433 $[\alpha]_D^{25} +33.4$ (c, 5.3 in CCl₄).*3-Me, Tri-Ac*: 1,2,4-Tri-O-acetyl-6-deoxy-3-O-methyl- α -D-glucopyranose $C_{13}H_{20}O_8$ 304.296Mp 105°. $[\alpha]_D^{20} +122$ (Me₂CO).*3-Me, Me glycoside*: Methyl 6-deoxy-3-O-methyl- α -D-glucopyranoside $C_8H_{16}O_5$ 192.211Mp 86°. $[\alpha]_D +162$ (MeOH). $[\alpha]_D +148.3$ (H₂O).*3-Me, Me glycoside, di-Ac*: Methyl 2,4-di-O-acetyl-6-deoxy-3-O-methyl- α -D-glucopyranoside $C_{12}H_{20}O_7$ 276.286Mp 98°. $[\alpha]_D +144.6$ (CHCl₃). **β -D-Pyranose-form** [22611-09-2]*1,2,3,4-Tetra-Ac*: 1,2,3,4-Tetra-O-acetyl-6-deoxy- β -D-glucopyranose
[17081-04-8] $C_{14}H_{20}O_9$ 332.307Mp 144-145°. $[\alpha]_D^{25} +22$ (c, 4.0 in CHCl₃).*2,3-Dibenzoyl, 4-tosyl*: 2,3-Di-O-benzoyl-6-deoxy-4-O-tosyl- β -D-glucopyranose
[51236-55-6] $C_{27}H_{26}O_9S$ 526.563Mp 158-159°. $[\alpha]_D^{24} +95.8$ (c, 0.5 in CHCl₃).*Me glycoside*: Methyl 6-deoxy- β -D-glucopyranoside
[6340-52-9] $C_7H_{14}O_5$ 178.185Cryst. (EtOAc). Mp 130-132°. $[\alpha]_D -55$ (H₂O).*Me glycoside, 3,4-ditosyl*: Methyl 6-deoxy-3,4-di-O-tosyl- β -D-glucopyranoside $C_{21}H_{26}O_9S_2$ 486.563Mp 139-140°. $[\alpha]_D -16$ (CHCl₃).*Me glycoside, 2,3,4-tritosyl*: Methyl 6-deoxy-2,3,4-tri-O-tosyl- β -D-glucopyranoside $C_{28}H_{32}O_{11}S_3$ 640.752Mp 174-175°. $[\alpha]_D -23$ (CHCl₃).*3-Me, Tri-Ac*: 1,2,4-Tri-O-acetyl-6-deoxy-3-O-methyl- β -D-glucopyranose $C_{13}H_{20}O_8$ 304.296Mp 121°. $[\alpha]_D +7.8$ (Me₂CO).*3-Me, Me glycoside*: Methyl 6-deoxy-3-O-methyl- β -D-glucopyranoside $C_8H_{16}O_5$ 192.211Mp 116°. $[\alpha]_D -42.1$ (MeOH). $[\alpha]_D -43.9$ (H₂O).*3-Me, Me glycoside, di-Ac*: Methyl 2,4-di-O-acetyl-6-deoxy-3-O-methyl- β -D-glucopyranoside $C_{12}H_{20}O_7$ 276.286Mp 161°. $[\alpha]_D -26.3$ (CHCl₃).**L-form**Mp 142-145°. $[\alpha]_D^{25} -30.2$ (c, 1.53 in H₂O).*3-Me*: Cerberose

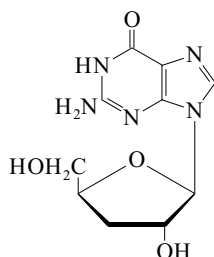
Glycosidic constit. of and others.

Mp 128-130°. $[\alpha]_D^{19} -66 \rightarrow -37$ (H₂O).*3-Me, phenylosazone*: Mp 136-139°. $[\alpha]_D +110.8 \rightarrow +40.3$ (c, 1.0 in 2:3 Py/EtOH). **α -L-Pyranose-form** [35867-45-9]*Tetra-Ac*: 1,2,3,4-Tetra-O-acetyl-6-deoxy- α -L-glucopyranose
[36807-82-6] $C_{14}H_{20}O_9$ 332.307Mp 122-124.5°. $[\alpha]_D^{23} -104$ (c, 1.01 in CHCl₃).*3-Me, tri-Ac*: 1,2,4-Tri-O-acetyl-6-deoxy-3-O-methyl- α -L-glucopyranose $C_{13}H_{20}O_8$ 304.296Mp 103°. $[\alpha]_D -113$ (MeOH). **β -L-Pyranose-form***Tetra-Ac*: 1,2,3,4-Tetra-O-acetyl-6-deoxy- β -L-glucopyranose
[36807-81-5] $C_{14}H_{20}O_9$ 332.307Mp 149°. $[\alpha]_D^{23} -21.6$ (c, 1.15 in CHCl₃).*Tetrabenzoyl*: 1,2,3,4-Tetra-O-benzoyl-6-deoxy- β -L-glucopyranose
[615541-06-5] $C_{34}H_{28}O_9$ 580.59Cryst. (MeOH). Mp 177-179°. $[\alpha]_D^{20} +16$ (c, 0.9 in CHCl₃).

3-Me, tri-Ac: 1,2,4-Tri-O-acetyl-6-deoxy-3-O-methyl- β -L-glucopyranose
 $C_{13}H_{20}O_8$ 304.296
 Mp 118°. $[\alpha]_D^{20}$ -7.3 (Me₂CO).
 3-Me, Et glycoside: Ethyl 6-deoxy-3-O-methyl- β -L-glucopyranoside
 $C_9H_{18}O_5$ 206.238
 Mp 108-109°. $[\alpha]_D^{20}$ +46.1 (c, 1.1 in H₂O).

 α -D-Furanose-form

1,2-O-Isopropylidene: See 6-Deoxy-1,2-O-isopropylidene- α -D-glucopyranose, D-283
 Helfenberger, H. et al., *Helv. Chim. Acta*, 1948, **31**, 1470 (isol, Cerberose)
 Reyle, K. et al., *Helv. Chim. Acta*, 1952, **35**, 195 (3-Me derivs)
 Schmidt, O.T. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 198 (synth, D-form)
 Smith, C.R. et al., *Phytochemistry*, 1964, **3**, 289 (isol, D-form)
 Zorbach, W.W. et al., *Adv. Carbohydr. Chem. Biochem.*, 1966, **21**, 288 (occur, 3-Me)
 Saner, A. et al., *Helv. Chim. Acta*, 1970, **53**, 221 (3-Me)
 Lerner, L.M. et al., *J.O.C.*, 1972, **37**, 4386, (L-form, tetra-Ac, synth)
 Jeppesen, L.M. et al., *Acta Chem. Scand.*, 1973, **27**, 3579 (Me gly tribenzoyl)
 Kondo, Y. et al., *Can. J. Chem.*, 1973, **51**, 3272 (Me glycosides)
 Staněk, J. et al., *Coll. Czech. Chem. Comm.*, 1975, **40**, 3370 (β -D-Me gly, tosyl derivs)
 Simon, P. et al., *Synthesis*, 1979, 951 (Me gly dibenzyl)
 Sato, K.L. et al., *Carbohydr. Res.*, 1982, **103**, 221 (Me α -D-gly 2,3-di-Me)
 Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (equilib)
 Csuk, R. et al., *Carbohydr. Res.*, 1985, **140**, 167 (synth)
 Snyder, J.R. et al., *Carbohydr. Res.*, 1987, **163**, 169 (cmr)
 Heidelberg, T. et al., *J. Prakt. Chem.*, 1998, **340**, 223-232 (α -D-Me pyr 4-Me)
 Lichtenthaler, F.W. et al., *Eur. J. Org. Chem.*, 2003, 3081-3093 (β -L-pyr-tetrazabenzoyl)

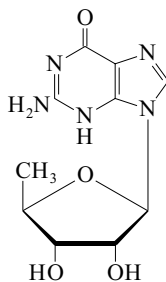
3'-Deoxyguanosine, 9CI, 8CI **D-143**
 [3608-58-0]


$C_{10}H_{13}N_5O_4$ 267.244
 Mp 350°. $[\alpha]_D^{20}$ -41.2 (c, 0.5 in H₂O).

2',5'-Di-Ac: [104706-82-3]
 $C_{14}H_{17}N_5O_6$ 351.318
 Cryst. (EtOH). Mp 226-229°.

Tong, G.L. et al., *J.O.C.*, 1967, **32**, 859-862 (synth, uv)
 Ogilvie, K.K. et al., *Can. J. Chem.*, 1972, **50**, 3276-3279 (synth, uv)
 Mengel, R. et al., *Chem. Ber.*, 1979, **112**, 625-639 (synth, pmr, uv)
 Reimer, M.L.J. et al., *Biomed. Environ. Mass Spectrom.*, 1989, **18**, 533-542 (ms)

Robins, M.J. et al., *Can. J. Chem.*, 1997, **75**, 762-767 (synth, pmr, cmr)

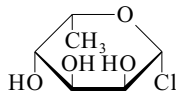
5'-Deoxyguanosine, 9CI **D-144**
 [5151-99-5]


$C_{10}H_{13}N_5O_4$ 267.244

Nucleoside antibiotic. Prod. by *Thermo-actinomyces* sp. A6019. Herbicide.
 Cryst. (H₂O). Sol. H₂O, MeOH.
 Mp 226-228°. $[\alpha]_D^{28}$ -21 (c, 1 in DMF).
 λ_{max} 256 (€ 12700); 280 (sh) (€ 8800) (pH 2) (Derep). λ_{max} 256 (€ 12000); 268 (€ 12100) (pH 12) (Derep). λ_{max} 252 (€ 13900); 275 (sh) (€ 9500) (H₂O at pH 7) (Derep). λ_{max} 251; 273 (H₂O) (Berdy).

2',3'-Di-Ac:
 $C_{14}H_{17}N_5O_6$ 351.318
 Cryst. (H₂O). Mp 262.5-264°. $[\alpha]_D^{27}$ -26 (EtOH aq.).

Reist, E.J. et al., *J.O.C.*, 1961, **26**, 1557 (synth)
 Ikehara, M. et al., *Chem. Pharm. Bull.*, 1965, **13**, 639 (synth)
 Isaac, B.G. et al., *J. Antibiot.*, 1991, **44**, 729 (isol, props)

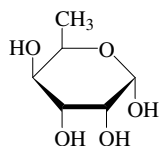
6-Deoxygulopyranosyl chloride **D-145**


$C_6H_{11}ClO_4$ 182.603

 β -L-form

2,3-O-Isopropylidene, 4-Me: 6-Deoxy-2,3-O-isopropylidene-4-O-methyl- β -L-gulopyranosyl chloride
 [65904-40-7]
 $C_{10}H_{17}ClO_4$ 236.695
 Oil. Bp_{0.015} 65°. $[\alpha]_D^{23}$ +45.3 (c, 1.23 in CHCl₃).

Ireland, R.E. et al., *J.O.C.*, 1978, **43**, 786; 1980, **45**, 48 (isopropylidene deriv, pmr)

6-Deoxygulose, 9CI, 8CI **D-146**
Gulomethylose. Antiarose
 [19479-17-5]


$C_6H_{12}O_5$ 164.158

 α -D-Pyranose-form**D-form** [5158-61-2]

Constit. of the cardenolides of *Erysimum altaicum* and present in the seeds of *Ornithogalum magnum* and *Ipomoea parasitica*. Also a component of the O-antigen of *Yersinia enterocolitica* O8 and other bacteria.
 Mp 123-126°. $[\alpha]_D^{19}$ -49.2 → -42.4 (c, 0.5 in H₂O).

4-Bromophenylhydrazone: Mp 133-135°.

Phenylosazone: Mp 182-183°. $[\alpha]_D^{24}$ +17 (Py/EtOH).

3-Me: 6-Deoxy-3-O-methylgulose, 8CI
 [5158-56-5]
 $C_7H_{14}O_5$ 178.185
 Syrup. $[\alpha]_D$ -35 (c, 1.0 in H₂O).

 α -D-Pyranose-form

Me glycoside, 3-Ac: Methyl 3-O-acetyl-6-deoxy- α -D-gulopyranoside
 $C_9H_{16}O_6$ 220.222
 Cryst. (Et₂O). Mp 144-145°. $[\alpha]_D^{26}$ +133.9 (c, 1.32 in MeOH).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy- α -D-gulopyranoside
 [33947-13-6]
 $C_{13}H_{20}O_8$ 304.296
 Cryst. (Et₂O/hexane). Mp 81-82°. $[\alpha]_D^{26}$ +112 (c, 1.24 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -D-gulopyranoside
 [33947-10-3]
 $C_{10}H_{18}O_5$ 218.249
 Mp 48-50°. $[\alpha]_D^{26}$ +67.7 (c, 0.77 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene, 4-Ac: Methyl 4-O-acetyl-6-deoxy-2,3-O-isopropylidene- α -D-gulopyranoside
 [33947-12-5]
 $C_{12}H_{20}O_6$ 260.286
 Cryst. (petrol). Mp 68-69.5°. $[\alpha]_D^{21}$ +64.1 (c, 0.6 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene, 4-mesyl: [33947-11-4]
 $C_{11}H_{20}O_7S$ 296.341
 Cryst. (EtOAc/petrol). Mp 112-114°. $[\alpha]_D^{21}$ +71.7 (c, 0.8 in CHCl₃).

 β -D-Pyranose-form

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy- β -D-gulopyranose
 [33947-15-8]
 $C_{14}H_{20}O_9$ 332.307
 Mp 133-135°. $[\alpha]_D$ +11 (c, 2.0 in CHCl₃).

 α -L-Pyranose-form

Benzyl glycoside, tri-Ac: Benzyl 2,3,4-tri-O-acetyl-6-deoxy- α -L-gulopyranoside
 $C_{19}H_{24}O_8$ 380.394
 $[\alpha]_D^{20}$ -112 (c, 0.7 in CHCl₃).

 α -D-Furanose-form

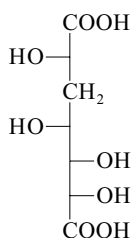
3-Me, 1,2-O-isopropylidene: 6-Deoxy-1,2-O-isopropylidene-3-O-methyl- α -D-gulofuranose
 [29587-05-1]
 $C_{10}H_{18}O_5$ 218.249
 Syrup. Bp₁₅ 65-70° (bath). $[\alpha]_D$ +38 (c, 0.7 in CHCl₃).

Moore, J.A. et al., *Helv. Chim. Acta*, 1954, **37**, 755 (D-form, isol, bromophenylhydrazone)

Smith, C.R. *et al.*, *Phytochemistry*, 1964, **3**, 289 (*isol*)
 Capek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, **36**, 1973 (α -D-pyr Me gly isopropylidene derivs, α -D-pyr Me gly tri-Ac, β -D-pyr tetra-Ac)
 Brimacombe, J.S. *et al.*, *J.C.S.*, 1971, 613, (3-Me, synth, pmr)
 Komissarenko, N.F. *et al.*, *Khim. Priro. Soedin.*, 1972, 397; *CA*, **77**, 149662q (*isol*)
 Stevens, C.L. *et al.*, *J.O.C.*, 1973, **38**, 4311 (synth, α -D-pyr Me gly Ac, α -D-pyr Me gly tri-Ac, α -D-pyr Me gly isopropylidene)
 Collins, P.M. *et al.*, *Carbohydr. Res.*, 1974, **33**, 25 (β -D-pyr tetra-Ac)
 Ireland, R.E. *et al.*, *J.O.C.*, 1980, **45**, 197, (*L-form*)
 Mori, M. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 4037 (synth, *L-form*)
 Banaszek, A. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 285-291 (Benzyl α -L-gly tri-Ac)

3-Deoxy-manno-heptaric acid D-147

Cerheptaric acid



$C_7H_{12}O_8$ 224.167

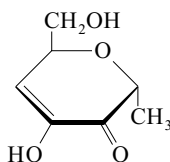
Abs. config. not determined. D-form illus. Isol. from *Cereus peruvianus* (Cactaceae). Widespread in *Cereus* and *Trichocereus* spp.

7 \rightarrow 4 Lactone, Me ester:

$C_8H_{12}O_7$ 220.179
 Needles. Mp 159-160°. $[\alpha]_D^{20}$ +39 (c, 1 in MeOH).

Kringstad, R. *et al.*, *Carbohydr. Res.*, 1980, **80**, 285

5-Deoxy-glycero-hept-4-ene-2,3-diulo-2,6-pyranose D-148



$C_7H_{10}O_4$ 158.154

Unisolated enol.

D-form

Dibenzoyl: 4,7-Di-O-benzoyl-5-deoxy-D-glycero-hept-4-ene-2,3-diulo-2,6-pyranose

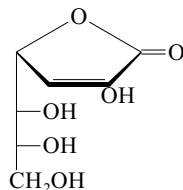
[122409-65-8]

$C_{21}H_{18}O_6$ 366.37

Syrup. $[\alpha]_D^{20}$ -33 (c, 0.6 in $CHCl_3$).

Lichtenthaler, F.W. *et al.*, *Annalen*, 1989, 1163 (pmr, cmr)

3-Deoxy-arabino-hept-2-enono-1,4-lactone



$C_7H_{10}O_6$ 190.152

Unisolated enol.

D-form [29873-82-3]

Cryst. (AcOH aq.). Mp 167°. $[\alpha]_D^{23}$ -5.8 (c, 2.8 in H_2O).

Monosemicarbazone: [29873-86-7]

Cryst. Mp 210° dec. $[\alpha]_D^{23}$ -115 (c, 1.6 in H_2O). The 2-semicarbazone of the 2-oxo tautomer.

Tetrazenyl: 2,5,6,7-Tetra-O-benzoyl-3-deoxy-D-arabino-hept-2-enono-1,4-lactone

[41356-09-6]

$C_{35}H_{26}O_{10}$ 606.584

Cryst. (C_6H_6 or Et_2O). Mp 181-182°. $[\alpha]_D^{16}$ +24.8 (c, 0.9 in $CHCl_3$).

[72921-72-3]

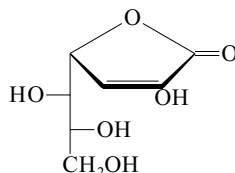
Paerels, G.B. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1970, **89**, 813 (synth, uv, ir, D-form)

Litter, M.I. *et al.*, *Carbohydr. Res.*, 1973, **26**, 431 (synth, uv, pmr, tetrazenyl)

Zhdanov, Y.A. *et al.*, *Zh. Obshch. Khim.*, 1979, **49**, 2618 (*L-form*)

Sala, L.F. *et al.*, *Carbohydr. Res.*, 1980, **78**, 61 (tetrazenyl)

3-Deoxy-lyxo-hept-2-enono-1,4-lactone



$C_7H_{10}O_6$ 190.152

Unisolated enol.

D-form

Tetrazenyl: 2,5,6,7-Tetra-O-benzoyl-3-deoxy-D-lyxo-hept-2-enono-1,4-lactone

[73163-18-5]

$C_{35}H_{26}O_{10}$ 606.584

Syrup. $[\alpha]_D^{25}$ -68 (c, 0.6 in CH_2Cl_2).

Sala, L.F. *et al.*, *Carbohydr. Res.*, 1980, **78**, 61 (synth, pmr)

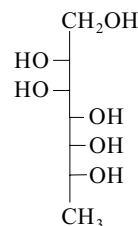
D-149

7-Deoxy-D-glycero-D-manno-heptitol

1-Deoxy-D-glycero-D-talo-heptitol.

Siphulitol

[33904-35-7]



$C_7H_{16}O_6$ 196.2

Constit. of the lichen *Siphula ceratites*.

Mp 122-123°. $[\alpha]_D^{20}$ -8 (c, 1.5 in H_2O).

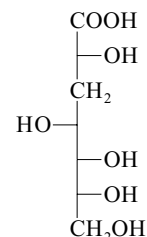
Tri-O-benzylidene:

$C_{28}H_{28}O_6$ 460.526

Mp 239-242°. $[\alpha]_D^{20}$ +9 (c, 1.7 in $CHCl_3$).

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1962, **16**, 543

3-Deoxy-gluco-heptonic acid D-152



$C_7H_{14}O_7$ 210.183

D-form

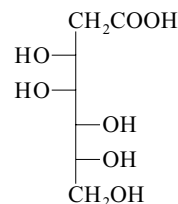
Me ester:

$C_8H_{16}O_7$ 224.21

Cryst. (MeOH). Mp 173-175°. $[\alpha]_D^{20}$ +12 (c, 1.6 in H_2O).

Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **174**, 331 (synth, cmr)

2-Deoxy-manno-heptonic acid D-153



$C_7H_{14}O_7$ 210.183

D-form

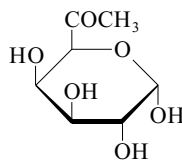
Me ester: Methyl 2-deoxy-D-manno-heptonate

[42320-55-8]

$C_8H_{16}O_7$ 224.21

Mp 173-175°. $[\alpha]_D^{20}$ +12 (c, 1.6 in H_2O).

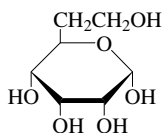
Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **174**, 331 (synth, cmr)

7-Deoxy-galacto-heptopyranos-6-ulose**D-154**C₇H₁₂O₆ 192.168**α-D-form**

1,2:3,4-Di-O-isopropylidene: [78574-39-7]

C₁₃H₂₀O₆ 272.297

Syrup.

Martinez, E. *et al.*, *An. Quim., Ser. C*, 1980, **76**, 230 (diisopropylidene)**6-Deoxy-αllo-heptose****D-155**

α-D-Pyranose-form

C₇H₁₄O₆ 194.184

An aq. soln. at 31° contains 11.6% α-Pyr, 79.6% β-Pyr, 3.3% α-Fur and 5.5% β-Fur.

D-form [168252-83-3]Mp 104-106°. [α]_D²⁰ +29.6 (c, 1.05 in MeOH after 24h).**α-D-Pyranose-form** [335250-91-4]

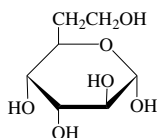
Penta-Ac: 1,2,3,4,7-Penta-O-acetyl-6-deoxy-α-D-αllo-heptopyranose [168102-89-4]

C₁₇H₂₄O₁₁ 404.37[α]_D²⁰ +8.4 (c, 6.2 in CHCl₃).**β-D-Furanose-form** [335250-97-0]

Me glycoside, 2,3-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene-β-D-αllo-heptofuranoside

C₁₁H₂₀O₆ 248.275[α]_D²⁰ -52.3 (c, 8.5 in CHCl₃).

[121846-18-2, 335250-93-6, 335250-95-8]

Pakulski, Z. *et al.*, *Tetrahedron*, 1995, **51**, 871-908 (D-form, α-D-pyr Penta Ac, β-D-fur Me 1,2-isopropylidene)Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (pmr, cmr, equilib)**6-Deoxy-αlto-heptose****D-156**

α-D-Pyranose-form

C₇H₁₄O₆ 194.184

An aq. soln. contains 11.6% α-Pyr, 79.6% β-Pyr, 14.1% α-Fur and 5.5% β-Fur at 30°.

D-form [59401-37-5]Component of the antigenic polysaccharide prod. by *Eubacterium saburreum* and polysaccharide from *Campylobacter jejuni*. Foam. [α]_D²² +20 (c, 1 in H₂O).**α-D-Pyranose-form** [335250-99-2]

Me glycoside: Methyl 6-deoxy-α-D-altro-heptopyranoside [68027-32-7]

C₈H₁₆O₆ 208.211Syrup. [α]_D +105 (c, 0.1 in H₂O).

Me glycoside, tetra-Ac: Methyl 2,3,4,7-tetra-O-acetyl-6-deoxy-α-D-altro-heptopyranoside [155205-40-6]

C₁₆H₂₄O₁₀ 376.36Mp 72-74°. [α]_D +66 (c, 1.4 in CHCl₃).[α]_D +77 (c, 1.01 in CHCl₃).

Me glycoside, 2,3,4-tri-O-benzyl: Methyl 2,3,4-tri-O-benzyl-6-deoxy-α-D-altro-heptopyranoside [68027-31-6]

C₂₉H₃₄O₆ 478.584Syrup. [α]_D +87 (c, 0.8 in CHCl₃).

Me glycoside, 2,4,7-tri-O-benzyl: Methyl 2,4,7-tri-O-benzyl-6-deoxy-α-D-altro-heptopyranoside [171082-81-8]

C₂₉H₃₄O₆ 478.584

Characterised spectroscopically.

β-D-Furanose-form [335251-05-3]

No phys. props. reported.

1,2-Isopropylidene, 3-O-benzyl: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene-β-D-altro-heptofuranose

[168102-92-9]

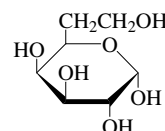
C₁₇H₂₄O₆ 324.373[α]_D²⁰ +10.3 (c, 1.1 in CHCl₃).**β-L-Furanose-form**

1,2-Isopropylidene, 3,5-dibenzyl: 3,5-Di-O-benzyl-6-deoxy-1,2-O-isopropylidene-β-L-altro-heptofuranose

[68354-74-5]

C₂₄H₃₀O₆ 414.497[α]_D²⁶ +4 (c, 1.9 in CHCl₃). [α]₃₆₅²⁶ +14 (c, 1.9 in CHCl₃).

[171082-75-0, 335251-01-9, 335251-03-1]

Hoffman, J. *et al.*, *Carbohydr. Res.*, 1976, **47**, 261-267 (occur)Jarrell, H.C. *et al.*, *Carbohydr. Res.*, 1978, **67**, 43-54 (β-L-Fur 1,2-isopropylidene 3, 5-dibenzyl)Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1978, **67**, 263-266 (α-D-Me pyr)Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1994, **72**, 247-251 (α-D-Me pyr, synth, pmr, bibl)Shin, Y. *et al.*, *Bull. Korean Chem. Soc.*, 1995, **16**, 625-630 (allyl glycoside derivs, α-D-Me-pyr 2,4,7-tribenzyl)Pakulski, Z. *et al.*, *Tetrahedron*, 1995, **51**, 871-908 (β-D-fur 1,2-isopropylidene 3 benzyl)Hanniffy, O.M. *et al.*, *Carbohydr. Res.*, 1999, **319**, 124-132 (occur)Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (synth, pmr, cmr, equilib)**6-Deoxy-galacto-heptose****D-157**

α-D-Pyranose-form

C₇H₁₄O₆ 194.184

An aq. soln. at 31° contains 25.4% α-Pyr, 73.6% β-Pyr,

D-form [52562-77-3][α]_D +75 (c, 0.9 in H₂O).**α-D-Pyranose-form** [335251-29-1]

1,2:3,4-Diisopropylidene: 6-Deoxy-1,2:3,4-di-O-isopropylidene-α-D-galacto-heptopyranose

[52562-76-2]

C₁₃H₂₂O₆ 274.313Syrup. [α]_D -44 (c, 0.6 in CHCl₃).[α]_D²⁰ -38.4 (c, 1.2 in Me₂CO).

1,2:3,4-Diisopropylidene, 7-Ac: 7-O-Acetyl-6-deoxy-1,2:3,4-di-O-isopropylidene-α-D-galacto-heptopyranose

[75251-48-8]

C₁₅H₂₄O₃ 252.353Syrup. [α]_D²⁰ -32 (c, 0.8 in CHCl₃).**α-D-Furanose-form**

3-Benzyl, 1,2-isopropylidene: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene-α-D-galacto-heptofuranose

[168103-03-5]

C₁₇H₂₄O₆ 324.373[α]_D²⁰ -25 (c, 1.1 in CHCl₃).

3-Benzyl, 5,7-di-Me, 1,2-isopropylidene: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene-5,7-di-O-methyl-α-D-galacto-heptofuranose

[161747-28-0]

C₁₉H₂₈O₆ 352.427[α]_D²⁰ -23.6 (c, 4.3 in CHCl₃). [α]_D²⁰ -21.2 (c, 2.2 in CHCl₃).**L-form**Component of *Campylobacter lari* lipopolysaccharide. Identified by degradative techniques.**α-L-Furanose-form**

3-Benzyl, 1,2-isopropylidene: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene-α-L-galacto-α-L-heptofuranose

[168102-93-0]

C₁₇H₂₄O₆ 324.373[α]_D²⁰ +21.8 (c, 3.1 in CHCl₃).

3-Benzyl, 5,7-di-Me, 1,2-isopropylidene: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene-5,7-di-O-methyl-α-L-galacto-heptofuranose

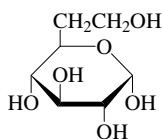
[168102-95-2]

C₁₉H₂₈O₆ 352.427[α]_D²⁰ +22.6 (c, 3.0 in CHCl₃).

[161747-20-2, 335251-31-5]

Eklind, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 260-261 (D-form, α-D-pyr, 1,2:3,4-diisopropylidene)Paulsen, H. *et al.*, *Annalen*, 1980, 825-837, (α-D-pyr 1,2:3,4-diisopropylidene)Pakulski, Z. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1994, **68**, 1109-1114

Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1995, **279**, 227-244; 245-264 (*L*-form, occur)
 Pakulski, Z. *et al.*, *Tetrahedron*, 1995, **51**, 871-908
 Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (*pmr*, *cmr*, *equilib*)

6-Deoxy-gluco-heptose**D-158** α -D-Pyranose-formC₇H₁₄O₆ 194.184An aq. soln. at 27° contains 25.0% α -Pyr and 75.0% β -Pyr.**D-form** [168252-84-4][α]_D²⁰ +62.9 (c, 1.0 in MeOH after 24h). **α -D-Pyranose-form** [335251-07-5]

Me glycoside, 2,3-dibenzyl, 4-methoxy-methyl: *Methyl 2,3-di-O-benzyl-6-deoxy-4-O-methoxymethyl- α -D-gluco-heptopyranoside*

[220050-72-6]

C₂₄H₃₂O₇ 432.513Mp 56°. [α]_D²⁵ +101 (c, 0.25 in CHCl₃).

Me glycoside, 2,3-dibenzyl, 4,7-benzylidene(R-): *Methyl 4,7-O-benzylidene-2,3-di-O-benzyl-6-deoxy- α -D-gluco-heptopyranoside*

[277760-82-4]

[220311-98-8]

C₂₉H₃₂O₆ 476.568

Characterised spectroscopically.

Me glycoside, 2,3,4-tribenzyl: *Methyl 2,3,4-tri-O-benzyl-6-deoxy- α -D-gluco-heptopyranoside*

[133918-92-0]

C₂₉H₃₄O₆ 478.584

Syrup.

Me glycoside, 2,3,4-tribenzyl, 7-methanesulfonyl: [127214-39-5]

C₃₀H₃₆O₈S 556.676

No phys. props. reported.

 β -D-Pyranose-form [335251-09-7]

Me glycoside, 2,3-dibenzyl: *Methyl 2,3-di-O-benzyl-6-deoxy- β -D-gluco-heptopyranoside*

[153118-57-1]

C₂₂H₂₈O₆ 388.46Cryst. ½H₂O (EtOAc/hexane).Mp 104-105°. [α]_D -7 (c, 3 in CHCl₃). **α -D-Furanose-form**

1,2-Isopropylidene: 6-Deoxy-1,2-O-isopropylidene- α -D-gluco-heptofuranose

[34044-58-1]

C₁₀H₁₈O₆ 234.249[α]_D²⁰ -3.5 (c, 1.4 in EtOH). [α]_D²⁴ +16 (c, 2 in EtOH).

3-Me, 1,2-isopropylidene, 5,7-di-Ac: 5,7-Di-O-acetyl-6-deoxy-1,2-O-isopropylidene-3-O-methyl- α -D-gluco-heptofuranose

[75251-59-1]

C₁₅H₂₄O₈ 332.35Syrup. [α]_D²⁰ -19 (c, 2.4 in CHCl₃).

3-Benzyl, 1,2-isopropylidene, 4,7-di-Ac: 4,7-Di-O-acetyl-3-O-benzyl-6-deoxy-1,2-O-isopropylidene- α -D-gluco-heptofuranose

[220051-17-2]

C₂₁H₂₈O₈ 408.447Syrup. [α]_D²⁵ -44 (c, 1 in CHCl₃).

1,2-Isopropylidene, 3-benzyl: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene- α -D-gluco-heptofuranose

[151670-02-9]

C₁₇H₂₄O₆ 324.373Mp 61-62° (51-52°). [α]_D²⁰ -52.5 (c, 1.1 in CHCl₃). [α]_D²⁵ -40 (c, 1 in CHCl₃).

1,2-Isopropylidene, 3,5-benzylidene(R-): 3,5-O-Benzylidene-6-deoxy-1,2-O-isopropylidene- α -D-gluco-heptofuranose

[136839-41-3]

C₁₇H₂₂O₆ 322.357Cryst. (Et₂O/hexane). Mp 75-76°. [α]_D²² +76.7 (c, 1 in CHCl₃).

1,2-Isopropylidene, 3,5-benzylidene(R-), 7-tosyl: [136839-46-8]

C₂₄H₂₈O₈S 476.546Cryst. (C₆H₆/hexane). Mp 99-100°. [α]_D²⁴ +69 (c, 1 in CHCl₃).

[62475-58-5, 75251-58-0, 168103-05-7, 168103-08-0, 194807-86-8]

Paulsen, H. *et al.*, *Annalen*, 1980, 825-857, (α -D-fur 1,2-isopropylidene, 1,2-isopropylidene di-Ac)

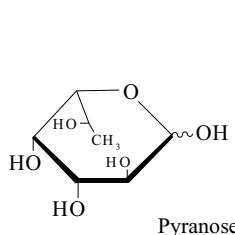
Akerfeldt, K.S. *et al.*, *J.O.C.*, 1991, **56**,7133-7144 (α -D-fur 1,2-isopropylidene, 3,

5-benzylidene, 1,2-isopropylidene 3,

5-benzylidene 7-tosyl)

Pedretti, V. *et al.*, *Carbohydr. Res.*, 1993, **244**,247-257 (β -D-pyr Me 2,3-dibenzyl)Pakulski, Z. *et al.*, *Tetrahedron*, 1995, **51**,871-908 (α -D-fur 1,2-isopropylidene)Dong, W. *et al.*, *Biochemistry*, 1996, **35**,2788-2795 (α -D-pyr Me 2,3,4-tribenzyl)Vargas-Berenguel, A. *et al.*, *Synthesis*, 1998,1778-1786 (α -D-fur 1,2-isopropylidene3-benzyl, α -D-fur 1,2-isopropylidene 3-benzyl

di-Ac)

Madsen, J. *et al.*, *Chem. Eur. J.*, 2000, **6**,1140-1146 (α -D-pyr Me 2,3-dibenzyl 4,7-benzylidene, α -D-Pyr Me 2,3,4-tribenzyl)Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001,**330**, 289-294 (*pmr*, *cmr*, *equilib*)**7-Deoxy-L-glycero-L-galacto-heptose****D-159**

Pyranose

C₇H₁₄O₆ 194.184Mp 186-187°. [α]_D¹ -128.6 → -62.5 (c, 2.5 in H₂O). **α -Pyranose-form**

Penta-Ac:

C₁₇H₂₄O₁₁ 404.37Mp 93-94°. [α]_D²⁰ -135.6 (c, 2.1 in CHCl₃).

Me glycoside: *Methyl 7-deoxy-L-glycero-L-galacto- α -heptopyranoside*

C₈H₁₆O₆ 208.211Mp 132°. [α]_D²⁰ -174 (c, 3 in H₂O). **β -Pyranose-form**

Penta-Ac: Mp 108°. [α]_D²⁰ -31 (c, 3.6 in CHCl₃).

Me glycoside: *Methyl 7-deoxy-L-glycero-L-galacto- β -heptopyranoside*

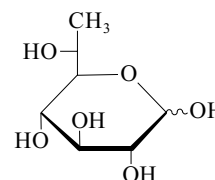
Mp 144°. [α]_D²⁰ +18.5 (c, 1.5 in H₂O). **β -Furanose-form**

Me glycoside: *Methyl 7-deoxy-L-glycero-L-galacto- β -heptofuranoside*

Mp 178-180°. [α]_D²⁰ +117 (c, 3.2 in H₂O).Jackson, E.L. *et al.*, *J.A.C.S.*, 1953, **75**, 3000**7-Deoxy-D-glycero-D-gluco-heptose, 9CI, 8CI****D-160**

SF 666A. Antibiotic SF 666A

[29864-55-9]

C₇H₁₄O₆ 194.184

Monosaccharide antibiotic. Isol. from

Streptomyces setonensis. Effectiveagainst *Glucobacter suboxydans*.

Hygroscopic powder.

Mp 160-170° dec. [α]_D²⁴ +38 (c, 1 in H₂O).

► MJ9870000

Ezaki, N. *et al.*, *Meiji Seika Kenkyu Nenpo*, 1970, **11**, 15; *CA*, **76**, 23796 (*isol*, *ir*, *props*)

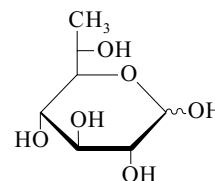
Ezaki, N. *et al.*, *Carbohydr. Res.*, 1971, **17**, 375 (*pmr*)

Ito, T. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 273 (*synth*)

7-Deoxy-L-glycero-D-gluco-heptose**D-161**

MBU 18. Antibiotic MBU 18

[53260-06-3]

C₇H₁₄O₆ 194.184

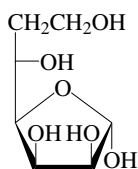
Monosaccharide antibiotic. Isol. from

Streptomyces sp. Antifungal. Hygro-scopic powder. Sol. H₂O; poorly sol.butanol, hexane. [α]_D +41 (H₂O).

Hauser, O. *et al.*, *Antibiotiki (Moscow)*, 1974, **19**, 483 (*isol*, *uv*, *ir*, *pmr*, *ms*)

6-Deoxy-gulo-heptose

D-162

 β -L-Furanose-form $C_7H_{14}O_6$ 194.184An aq. soln. at 22° contains 10.3% α -Pyr, 88.7% β -Pyr,**L-form** [168252-86-6]Component of *Campylobacter lari* lipopolysaccharides. $[\alpha]_D^{20}$ -1.1 (24h) (c, 1.4 in MeOH). **β -L-Furanose-form***Me glycoside, 2,3-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- β -L-gulo-heptofuranoside*

[151670-01-8]

 $C_{11}H_{20}O_6$ 248.275Mp 55-57°. $[\alpha]_D^{20}$ +67.6 (c, 1.4 in $CHCl_3$).*Me glycoside, 2,3-isopropylidene, 5,7-di-Ac: Methyl 5,7-di-O-acetyl-6-deoxy-2,3-O-isopropylidene- β -L-gulo-heptofuranoside*

[220051-46-7]

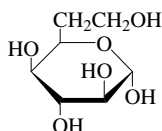
 $C_{15}H_{24}O_8$ 332.35Syrup. $[\alpha]_D^{25}$ +40 (c, 1 in $CHCl_3$).

[168103-07-9, 168103-09-1, 335251-17-7, 335251-19-9]

Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1995, **279**, 227-244; 245-264 (*L-form*, occur)Pakulski, Z. *et al.*, *Tetrahedron*, 1995, **51**, 871-908 (*L-form*, β -L-fur *Me* 1,2-isopropylidene)Vargas-Berenguel, A. *et al.*, *Synthesis*, 1998, 1778-1786 (β -L-fur *Me* 2,3-isopropylidene 5,7-di-Ac)Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (*pmr*, *cmr*, *equilib*)

6-Deoxy-ido-heptose

D-163

 α -D-Pyranose-form $C_7H_{14}O_6$ 194.184An aq. soln. at 30° contains 54.2% α -Pyr, 34.5% β -Pyr, 4.9% α -Fur and 6.4% β -Fur.**L-form** [168252-85-5] $[\alpha]_D^{20}$ -9.2 (c, 1.0 in MeOH) (24h).*Penta-Ac*: [168103-06-8] $C_{17}H_{24}O_{11}$ 404.37

Characterised spectroscopically. Mixt. of pyranose and furanose forms 9.4:5.2. Misnamed in CA.

 β -L-Furanose-form [335251-27-9]*1,2-Isopropylidene: 6-Deoxy-1,2-O-isopropylidene- β -L-ido-heptofuranose*

[151670-08-5]

 $C_{10}H_{18}O_6$ 234.249Mp 98-101°. $[\alpha]_D^{20}$ -32.9 (c, 1.2 in MeOH).*3-Benzyl, 1,2-isopropylidene: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene- β -L-ido-heptofuranose*

[151670-03-0]

 $C_{17}H_{24}O_6$ 324.373Mp 72-76° Mp 68-69°. $[\alpha]_D^{20}$ -62.2 (c, 0.36 in $CHCl_3$). $[\alpha]_D^{25}$ -50 (c, 0.5 in $CHCl_3$).*3-Benzyl, 1,2-isopropylidene, 5,7-di-Ac: 5,7-Di-O-acetyl-3-O-benzyl-6-deoxy-1,2-O-isopropylidene- β -L-ido-heptofuranose*

[220098-13-5]

 $C_{21}H_{28}O_8$ 408.447Syrup. $[\alpha]_D^{25}$ -28 (c, 1 in $CHCl_3$).

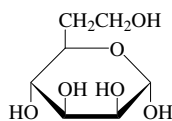
[335251-21-3, 335251-23-5, 335251-25-7]

Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (*pmr*, *cmr*, *equilib*)

6-Deoxy-manno-heptose

D-164

[335251-15-5]

 α -D-Pyranose-form $C_7H_{14}O_6$ 194.184An aq. soln. at 23° contains 45.2% α -Pyr, 52.4% β -Pyr,**D-form** [40653-20-1]Component of the lipopolysaccharides from *Yersinia pseudotuberculosis* type IIA and *Pseudomonas pseudomallei*. $[\alpha]_D$ +25 (c, 0.7 in H_2O). **α -D-Pyranose-form** [335251-11-1]*Me glycoside: Methyl 6-deoxy- α -D-manno-heptopyranoside*

[40653-19-8]

 $C_8H_{16}O_6$ 208.211Syrup. $[\alpha]_D$ +80 (c, 0.5 in H_2O).*Me glycoside, 7-O-tert-butylidiphenylsilyl: [155205-42-8]* $C_{24}H_{34}O_6Si$ 446.615 $[\alpha]_D$ +43 (c, 1.5 in $CHCl_3$).*Me glycoside, tetra-Ac: Methyl 2,3,4,7-tetra-O-acetyl-6-deoxy- α -D-manno-heptopyranoside*

[40653-21-2]

 $C_{16}H_{24}O_{10}$ 376.36Cryst. Mp 77-78°. $[\alpha]_D$ +62 (c, 0.4 in $CHCl_3$).*Me glycoside, 2,3-isopropylidene, 7-O-tert-butylidiphenylsilyl: [155205-43-9]* $C_{27}H_{38}O_6Si$ 486.679 $[\alpha]_D$ +22 (c, 1.05 in $CHCl_3$).*Me glycoside, 2,3,4-tribenzyl: Methyl 2,3,4-tri-O-benzyl-6-deoxy- α -D-manno-heptopyranoside*

[40653-18-7]

 $C_{29}H_{34}O_6$ 478.584Syrup. $[\alpha]_D$ +39 (c, 0.6 in $CHCl_3$).*Me glycoside, 2,4,7-tribenzyl: Methyl 2,4,7-tri-O-benzyl-6-deoxy- α -D-manno-heptopyranoside*

[171082-80-7]

 $C_{29}H_{34}O_6$ 478.584

Characterised spectroscopically.

Penta-Ac: 1,2,3,4,7-Penta-O-acetyl-6-deoxy- α -D-manno-heptopyranose

[139978-87-3]

 $C_{17}H_{24}O_{11}$ 404.37 $[\alpha]_D^{20}$ +49 (c, 1 in $CHCl_3$). **α -D-Furanose-form***Me glycoside, 2,3-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -D-manno-heptofuranoside*

[139978-86-2]

 $C_{11}H_{20}O_6$ 248.275Cryst. ($CHCl_3$). Mp 94-95°. $[\alpha]_D^{20}$ +58.8 (c, 1.1 in $CHCl_3$).*Me glycoside, 2,3-isopropylidene, 5,7-di-Ac: Methyl 5,7-di-O-acetyl-6-deoxy-2,3-isopropylidene- α -D-heptofuranoside*

[220051-21-8]

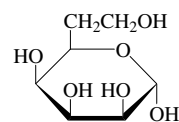
 $C_{15}H_{24}O_8$ 332.35Syrup. $[\alpha]_D^{25}$ -51 (c, 1 in $CHCl_3$).

[144705-40-8, 335251-13-3]

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 1389-1393; 4143-4146 (*isol*, *struct*, *synth*, α -*Me* *Pyr* tribenzyl)Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1992, **233**, 185-193 (*occur*)Aspinall, G.O. *et al.*, *Can. J. Chem.*, 1994, **72**, 247-251 (*Me* α -*Pyr* *derivs*)Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1994, **252**, 97-105 (*synth*, *pmr*, *cryst struct*, α -*D-Me fur* isopropylidene)Pakulski, Z. *et al.*, *Tetrahedron*, 1995, **51**, 871-908 (*synth*)Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (*pmr*, *cmr*, *equilib*)

6-Deoxy-talo-heptose

D-165

 α -D-Pyranose-form $C_7H_{14}O_6$ 194.184An aq. soln. at 28° contains 51.5% α -Pyr, 33.1% β -Pyr, 7.7% α -Fur and 7.7% β -Fur.**D-form**Component of *Campylobacter coli* and *Campylobacter jejuni* lipopolysaccharide. **α -D-Pyranose-form***Me glycoside: Methyl 6-deoxy- α -D-talo-heptopyranoside*

[155205-45-1]

 $C_8H_{16}O_6$ 208.211 $[\alpha]_D^{20}$ +84 (c, 3 in H_2O).*Me glycoside, tetra-Ac: Methyl 2,3,4,7-tetra-O-acetyl-6-deoxy- α -D-talo-heptopyranoside*

[155205-46-2]

 $C_{16}H_{24}O_{10}$ 376.36 $[\alpha]_D^{20}$ +81 (c, 1.02 in $CHCl_3$).*Me glycoside, 2,3-isopropylidene, 7-tert-butylidiphenylsilyl: Methyl 6-deoxy-2,3-O-isopropylidene-7-O-tert-butylidiphenylsilyl- α -D-talo-heptopyranoside*

[155205-44-0]

 $C_{27}H_{38}O_6Si$ 486.679 $[\alpha]_D^{20}$ +27 (c, 0.82 in $CHCl_3$).

L-form [168252-82-2]
[α]_D²⁰ -31.8 (c, 1.1 in MeOH) (after 24h).

α -L-Pyranose-form [335251-33-7]

Penta-Ac: 1,2,3,4,7-Penta-O-acetyl-6-deoxy- α -L-talo-heptopyranose
[168102-87-2]
C₁₇H₂₄O₁₁ 404.37
[α]_D²⁷ -75.3 (c, 7.3 in CHCl₃).

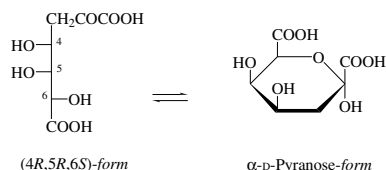
β -L-Pyranose-form [335251-35-9]

Penta-Ac: 1,2,3,4,7-Penta-O-acetyl-6-deoxy- β -L-talo-heptopyranose
[168102-88-3]
C₁₇H₂₄O₁₁ 404.37
[α]_D²⁷ -15.2 (c, 3.8 in CHCl₃).

α -L-Furanose-form [335251-37-1]

Me glycoside, 2,3-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -L-talo-heptofuranoside
[151670-05-2]
C₁₁H₂₀O₆ 248.275
Mp 52-53°. [α]_D²⁴ -43.8 (c, 1.1 in CHCl₃).
Aspinall, G.O. *et al.*, *J. Biol. Chem.*, 1993, **268**, 18321-18329 (*D-form, occur*)
Aspinall, G.O. *et al.*, *Can. J. Chem.*, 1994, **72**, 247-251 (α -D-pyr Me, α -D-pyr 2,3-isopropylidene 7-tert-methyldiphenylsilyl)
Pakulski, Z. *et al.*, *Tetrahedron*, 1995, **51**, 871-908 (*L-form, α -L-fur Me 2,3-isopropylidene, α -L-pyr tetra-Ac, β -L-pyr tetra-Ac*)
Shaskov, A.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 289-294 (*pmr, cmr, equilib*)

3-Deoxy-2-heptulosaric acid **D-166**
2,3,4-Trihydroxy-6-oxoheptanedioic acid



C₇H₁₀O₈ 222.151

(4R,5R,6S)-form

D-lyxo-form. Dha[†]
[117144-05-5]

[138529-66-5] Component of Ghamnogalacturonan II of angiosperms and gymnosperms, cell wall of *Tetraselinius striata* and gram-negative Rhizobiaceae bacteria.

Me α -pyranoside, 1-Me ester: [165399-70-2]
C₉H₁₄O₈ 250.205
Foam. [α]_D²⁰ +6.2 (c, 1.2 in MeOH).

Me α -pyranoside, di-Me ester:
[165399-69-9]
C₁₀H₁₆O₈ 264.232
Syrup. [α]_D²⁰ +60.5 (c, 1.26 in CHCl₃).

Me β -pyranoside, di-Me ester:
[194155-69-6]
C₁₀H₁₆O₈ 264.232
Oil. [α]_D +27.2 (c, 0.48 in CHCl₃).

Me β -pyranoside, di-Ac, di-Me ester:
[194155-70-9]
C₁₄H₂₀O₁₀ 348.306
Oil. [α]_D +91.3 (c, 0.8 in CHCl₃).

(4R,5S,6S)-form *D-arabino-form*

Me α -pyranoside, di-Me ester:
[194155-57-2]
Oil. [α]_D +61.4 (c, 1.26 in CHCl₃).
Me α -pyranoside, di-Ac, di-Me ester:
[194155-59-4]
C₁₄H₂₀O₁₀ 348.306
Oil. [α]_D +44.9 (c, 2.53 in CHCl₃).

Me β -pyranoside, di-Me ester:
[194155-58-3]
Oil. [α]_D +18 (c, 0.78 in CHCl₃).
Me β -pyranoside, di-Ac, di-Me ester:
[194155-60-7]
Oil. [α]_D +24.4 (c, 1.1 in CHCl₃).

(4S,5R,6S)-form *D-xylo-form*

Me α -pyranoside, di-Me ester: [194155-65-2]
Oil. [α]_D +34.9 (c, 0.6 in CHCl₃).
Me α -pyranoside, di-Ac, di-Me ester:
[194155-67-4]
Oil. [α]_D +21.5 (c, 0.6 in CHCl₃).
Me β -pyranoside, di-Me ester:
[194155-66-3]
Oil. [α]_D -0.6 (c, 0.95 in CHCl₃).
Me β -pyranoside, di-Ac, di-Me ester:
[194155-68-5]
Oil. [α]_D +63.7 (c, 0.85 in CHCl₃).

(4S,5S,6S)-form *D-ribo-form*

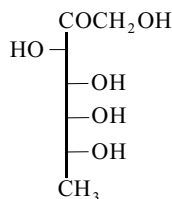
Me α -pyranoside, di-Me ester:
[194155-61-8]
Oil. [α]_D +66.7 (c, 0.8 in CHCl₃).
Me α -pyranoside, di-Ac, di-Me ester:
[194155-63-0]
Oil. [α]_D +96.9 (c, 1.17 in CHCl₃).
Me β -pyranoside, di-Me ester:
[194155-62-9]
Oil. [α]_D +7.7 (c, 0.83 in CHCl₃).
Me β -pyranoside, di-Ac, di-Me ester:
[194155-64-1]
Oil. [α]_D +12.3 (c, 0.75 in CHCl₃).

[186831-57-2, 194155-67-4]

Stevenson, T.T. *et al.*, *Carbohydr. Res.*, 1988, **179**, 269-287 (*occur*)
Banaszek, A. *et al.*, *Tetrahedron*, 1995, **51**, 4231-4238 (*synth, pmr, bibl*)
Doco, T. *et al.*, *Carbohydr. Res.*, 1997, **297**, 181-186 (*occur*)
Mlynarski, J. *et al.*, *Tetrahedron*, 1997, **53**, 10643-10658 (*synth, pmr, cmr*)

7-Deoxy-*altro*-2-heptulose, 9CI, 8CI

SF 666B. Antibiotic SF 666B
[29864-54-8]



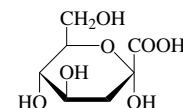
C₇H₁₄O₆ 194.184
Isol. from *Streptomyces setonensis*.
Effective against *Glucobacter suboxydans*.
Hygroscopic powder. Sol. H₂O, MeOH; fairly sol. EtOH; poorly sol. butanol, hexane.

Mp 180-185° dec. [α]_D¹⁷ +4 (c, 1 in H₂O).

► LD₅₀ (mus, ivn) 10000 mg/kg.

Ezaki, N. *et al.*, *Meiji Seika Kenkyu Nenpo*, 1970, **11**, 15; *CA*, **76**, 23796 (*isol, ir, props*)
Ezaki, N. *et al.*, *Carbohydr. Res.*, 1971, **17**, 375 (*pmr*)

3-Deoxy-arabino-heptulosonic acid **D-168**



α -D-Pyranose-form

C₇H₁₂O₇ 208.168

D-form [56742-43-9]

Syrup. [α]_D +42 (c, 1.47 in H₂O).

K salt:

Solid. [α]_D²⁵ +15.7 (c, 3.82 in H₂O).

Ba salt (2:1): [119827-63-3]

Cryst. + 2H₂O. Mp 185° dec. [α]_D²⁰ +33 (c, 1.0 in H₂O).

Me ester: [85464-47-7]

C₈H₁₄O₇ 222.194
Mp 92°. [α]_D²⁰ +43 (c, 2.0 in H₂O).

Tetra-Ac, Me ester: [85464-54-6]

C₁₆H₂₂O₁₁ 390.343
Cryst. (Et₂O/hexane). Mp 117°. [α]_D²⁰ +62 (c, 2.4 in CHCl₃).

7-Phosphate: 3-Deoxy-*D*-arabino-heptulosonic acid 7-phosphate. *DAHP*
[2627-73-8]
C₇H₁₃O₁₀P 288.147

Enzymatically cyclised to 3-dehydroquininate in the aromatic shikimate biosynthetic pathway. [α]_D²² +18 (c, 0.5 in H₂O) (as Ca salt).

4-Me: 3-Deoxy-4-O-methyl-arabino-heptulosonic acid

[114743-14-5]
C₈H₁₄O₇ 222.194
Cryst. (MeOH/Me₂CO) (as ammonium salt). Mp 135-140° dec. (ammonium salt). [α]_D²⁰ +11 (c, 0.4 in H₂O).

α -D-Pyranose-form [61914-15-6]

Me glycoside: Methyl 3-deoxy-arabino-heptulosonic acid
[85464-50-2]

C₈H₁₄O₇ 222.194
Solid + 2H₂O (as Na salt). [α]_D²⁰ +62 (c, 0.6 in H₂O). CAS no. refers to Na salt.

Me glycoside, Me ester: [85549-51-5]
C₉H₁₆O₇ 236.221
Mp 148-149°. [α]_D²⁰ +65 (c, 1.0 in MeOH).

β -D-Pyranose-form [114817-79-7]

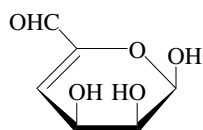
Me glycoside, tri-Me, Me ester: Methyl (methyl 3-deoxy-4,6,7-tri-O-methyl- β -D-arabino-heptulopyranosonate)
[114743-10-1]
C₁₂H₂₂O₇ 278.302
Syrup.

Me glycoside, tribenzyl, Me ester: Methyl (methyl 4,6,7-tri-O-benzyl-3-deoxy-β-D-arabino-heptulopyranosonate)
[119005-66-2]
C₃₀H₃₄O₇ 506.594
Syrup.

β-D-Furanose-form

Me glycoside, Me ester: Methyl (methyl 3-deoxy-β-D-arabino-heptulofuranosonate)
[85464-49-9]
C₉H₁₆O₇ 236.221
Syrup.

Charon, D. *et al.*, *Carbohydr. Res.*, 1974, **34**, 271 (4-Me)
Charon, D. *et al.*, *J.C.S. Perkin 1*, 1982, 3055 (derivs, pmr, cmr, cryst struct, cd)
Garner, C.C. *et al.*, *Carbohydr. Res.*, 1984, **127**, 9; **132**, 317 (synth, pmr, cmr, phosphate)
Adlersberg, M. *et al.*, *Carbohydr. Res.*, 1984, **127**, 9 (synth, phosphate)
Reimer, L.M. *et al.*, *J.A.C.S.*, 1986, **108**, 8010 (synth, phosphate)
Tacken, A. *et al.*, *Carbohydr. Res.*, 1987, **167**, 1 (deriv)
Crich, D. *et al.*, *Chem. Comm.*, 1988, 985, (tri-Me, tribenzyl)
Ramage, R. *et al.*, *Tet. Lett.*, 1988, **29**, 4877 (synth)
Myrvold, S. *et al.*, *J.A.C.S.*, 1989, **111**, 1861 (Me ester deriv)
Draths, K.M. *et al.*, *J.A.C.S.*, 1990, **112**, 9630
Dondoni, A. *et al.*, *J.A.C.S.*, 1994, **116**, 3324
Mlynarski, J. *et al.*, *Carbohydr. Res.*, 1996, **295**, 69-75 (synth, phosphate)

4-Deoxy-erythro-hex-4-enodialdo-1,5-pyranose**D-169** α -L-formC₆H₈O₅ 160.126 **α -L-form**

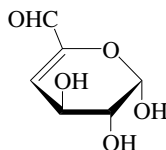
Tri-Ac: 1,2,3-Tri-O-acetyl-4-deoxy- α -L-erythro-hex-4-enodialdo-1,5-pyranose
C₁₂H₁₄O₈ 286.238
Mp 92-93°. [α]_D +49 (c, 1.0 in CHCl₃).

 β -L-form

Tri-Ac: 1,2,3-Tri-O-acetyl-4-deoxy- β -L-erythro-hex-4-enodialdo-1,5-pyranose
[38982-67-1]
C₁₂H₁₄O₈ 286.238
Mp 116-117°. [α]_D +248 (c, 1.0 in CHCl₃).

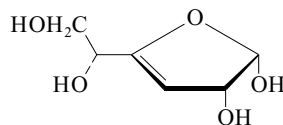
Me glycoside, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-deoxy- β -L-erythro-hex-4-enodialdo-1,5-pyranose
[25654-05-1]
C₁₁H₁₄O₇ 258.227
Mp 57-59°. [α]_D +244 (c, 2.0 in CHCl₃).

Cree, G.M. *et al.*, *Can. J. Chem.*, 1969, **47**, 511
Mackie, D.M. *et al.*, *Carbohydr. Res.*, 1972, **24**, 67

4-Deoxy-threo-hex-4-enodialdo-1,4-pyranose**D-170**C₆H₈O₅ 160.126 **β -L-form**

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-4-deoxy- β -L-threo-hex-4-enodialdo-1,4-pyranose
[116013-32-2]
C₂₁H₂₂O₅ 354.402
Viscous syrup. [α]_D +147.7 (c, 0.63 in CHCl₃).

Giuliano, R.M. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 541-552 (β -L-Me gly 2,3-dibenzyl)

3-Deoxy-erythro-hex-3-enofuranose**D-171**C₆H₁₀O₅ 162.142 **α -D-form**

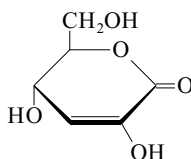
1,2:5,6-Diisopropylidene: 3-Deoxy-1,2:5,6-di-O-isopropylidene-erythro-hex-3-enofuranose, 9CI, 8CI
[2774-28-9]
C₁₂H₁₈O₅ 242.271
Mp 50-51°. [α]_D²⁰ +19.8 (c, 3.0 in EtOH).

3-Acetoxy, 1,2:5,6-diisopropylidene: 3-O-Acetyl-1,2:5,6-di-O-isopropylidene- α -D-erythro-hex-3-enofuranose, 9CI, 8CI
[14686-88-5]
C₁₄H₂₀O₇ 300.308
Mp 62°. [α]_D²⁰ -33 (c, 1.0 in CHCl₃).

Weygand, F. *et al.*, *Chem. Ber.*, 1952, **85**, 256
Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1969, **102**, 1071

Jochims, J.C. *et al.*, *Chem. Ber.*, 1970, **103**, 448 (pmr)

Anderson, R.C. *et al.*, *Tet. Lett.*, 1977, 2865

3-Deoxy-erythro-hex-2-enono-1,5-lactone**D-172**C₆H₈O₅ 160.126

Unisolated enol.

D-form

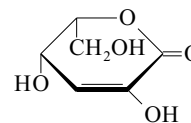
Tri-Ac: 2,4,6-Tri-O-acetyl-3-deoxy-erythro-hex-2-enono-1,5-lactone

C₁₂H₁₄O₈ 286.238
Bp_{0.1} 110°. [α]_D +109 (c, 1.0 in CHCl₃).

Tribenzoyl: 2,4,6-Tri-O-benzoyl-3-deoxy-erythro-hex-2-enono-1,5-lactone
[53942-33-9]
C₂₇H₂₀O₈ 472.45
Mp 110-111°. [α]_D +104 (c, 1.0 in CHCl₃).

[138320-62-4]

De Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1974, **36**, 185 (synth, tribenzoyl)
Ferrier, R.J. *et al.*, *J.C.S. Perkin 1*, 1980, 2762 (synth, pmr, tribenzoyl)
Jarglis, P. *et al.*, *Tet. Lett.*, 1982, **23**, 3781 (synth, tri-Ac, tribenzoyl)

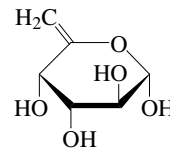
3-Deoxy-threo-hex-2-enono-1,5-lactone**D-173**C₆H₈O₅ 160.126

Unisolated enol.

L-form

Tribenzyl: 2,4,6-Tri-O-benzyl-3-deoxy-threo-hex-2-enono-1,5-lactone
[16134-29-5]
C₂₇H₂₆O₅ 430.499
Cryst. (Et₂O or C₆H₆/hexane). Mp 83-84°. [α]_D²⁰ +112.1 (c, 1.5 in CHCl₃).

Kuzuhara, H. *et al.*, *J.O.C.*, 1968, **33**, 1816 (synth)

6-Deoxy-arabino-hex-5-enopyranose**D-174** α -D-Pyranose-formC₆H₁₀O₅ 162.142 **α -D-Pyranose-form**

Me glycoside, 4-benzoyl, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-O-benzoyl-6-deoxy- α -D-arabino-hex-5-enopyranose
[73139-33-0]
C₁₈H₂₀O₈ 364.351
[α]_D²⁰ -5 (c, 0.1 in CHCl₃).

 β -L-form

1,2:3,4-Di-O-isopropylidene: 6-Deoxy-1,2:3,4-di-O-isopropylidene-arabino-hex-5-enopyranose, 9CI, 8CI
[22618-03-7]
C₁₂H₁₈O₅ 242.271
Mp 86-87°. [α]_D²⁰ -128 (CHCl₃).

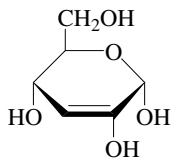
Freudenberg, K. *et al.*, *Ber.*, 1929, **62**, 373, (β -L-diisopropylidene)

Binkley, R.W. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1975, **2**, 465, (β -L-diisopropylidene)

Machado, A.S. *et al.*, *Carbohydr. Res.*, 1985, **135**, 231 (Me α -D-pyr)

3-Deoxy-erythro-hex-2-enopyranose

D-175

 α -D-form α -D-form $C_6H_{10}O_5$ 162.142

Unisolated enol form of 3-Deoxy-erythro-hexos-2-ulose, D-214.

 α -D-form*Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy- α -D-erythro-hex-2-enopyranose*

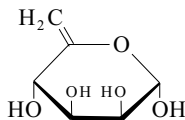
[3366-49-2]

 $C_{14}H_{18}O_9$ 330.291Mp 70-71°. [α]_D²¹ +50 (c, 3.0 in CHCl₃). **β -D-form***Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy- β -D-erythro-hex-2-enopyranose*

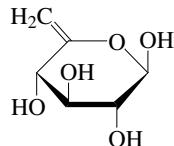
[3366-48-1]

 $C_{14}H_{18}O_9$ 330.291Mp 83-84°. [α]_D²³ +151 (c, 4.8 in CHCl₃).Ferrier, R.J. *et al.*, *J.C.S.*, 1965, 2830; 1968, 974Lemieux, R.U. *et al.*, *J.O.C.*, 1965, **30**, 1092Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1966, **44**, 1855**6-Deoxy-lyxo-hex-5-enopyranose**

D-176

 $C_6H_{10}O_5$ 162.142 **α -D-Pyranose-form***Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -D-lyxo-hex-5-enopyranoside* $C_{10}H_{16}O_5$ 216.233[α]_D²⁴ +51 (c, 0.4 in 67% MeOH aq.).*Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy- α -D-lyxo-hex-5-enopyranoside* $C_{13}H_{18}O_8$ 302.28Mp 73°. [α]_D²⁵ +14.5 (c, 0.5 in H₂O).Lehmann, J. *et al.*, *J.A.C.S.*, 1964, **86**, 4469**6-Deoxy-xylo-hex-5-enopyranose**

D-177

 β -D-form $C_6H_{10}O_5$ 162.142 **α -D-form***Me glycoside, 3,6-di-O-benzoyl: Methyl 3,6-di-O-benzoyl-2-deoxy- α -D-glycero-hex-2-enopyranosid-4-ulose*

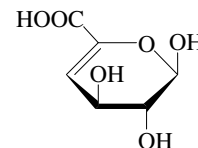
[25552-06-1]

 $C_{21}H_{18}O_7$ 382.369Needles (EtOH). Mp 127-128°. [α]_D²⁵ +70 (c, 1 in CHCl₃).Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1977, **110**, 3324 (synth, pmr, uv)Koh, L.L. *et al.*, *Acta Cryst. C*, 1992, **48**, 585 (cryst struct)**4-Deoxy-threo-hex-4-enopyranosiduronic acid**

D-179

[91447-03-9]

[2706-31-2]

 α -L-form $C_6H_8O_6$ 176.126 **α -L-form***Me glycoside, Me ester: Methyl (methyl 4-deoxy- α -L-threo-hex-4-enopyranosid)uronate*

[24909-33-9]

 $C_8H_{12}O_6$ 204.179Syrup. [α]_D²⁵ -67 (c, 1.2 in MeOH).*Me glycoside, 2,3-di-Ac, Me ester: Methyl (methyl 2,3-di-O-acetyl-4-deoxy- α -L-threo-hex-4-enopyranosid)uronate* $C_{12}H_{16}O_8$ 288.254Prisms (C_6H_6 /heptane). Mp 90.5-91°. [α]_D²⁶ +34 (c, 1.6 in MeOH).*Me glycoside, 2,3-dibenzyl, Me ester: Methyl (methyl 2,3-di-O-benzyl-4-deoxy- α -L-threo-hex-4-enopyranosid)uronate*

[25130-08-9]

 $C_{22}H_{24}O_6$ 384.428

Mp 111°.

Me glycoside, 2,3-di-Me, Me ester: Methyl (methyl 4-deoxy-2,3-di-O-methyl- α -L-threo-hex-4-enopyranosid)uronate

[38709-36-3]

 $C_{10}H_{16}O_6$ 232.233Mp 57.5-58.5° (51-53°). [α]_D²⁵ -34 (c, 2.0 in MeOH). [α]_D¹⁸ +48 (c, 2.0 in MeOH) (lit. gives a temp. range). **β -L-form**

Residue present in xylan Kraft pulp in papermaking.

Me glycoside, Me ester: Methyl (methyl 4-deoxy- β -L-threo-hex-4-enopyranosid)uronate

[1080-00-8]

 $C_8H_{12}O_6$ 204.179Oil. [α]_D²⁵ +207 (c, 1 in MeOH) (+192.5, +165.8).*Me glycoside, 2,3-di-Ac, Me ester: Methyl (methyl 2,3-di-O-acetyl-4-deoxy- β -L-threo-hex-4-enopyranosid)uronate*

[24916-48-1]

 $C_{12}H_{16}O_8$ 288.254Syrup. [α]_D²² +241 (c, 1.0 in CHCl₃). [α]_D²⁹ +259.9 (c, 1.0 in MeOH) (+203.7).*Me glycoside, 2,3-dibenzyl, Me ester: Methyl (methyl 2,3-di-O-benzyl-4-deoxy- β -L-threo-hex-4-enopyranosid)uronate*

[25130-03-4]

 $C_{22}H_{24}O_6$ 384.428Mp 68°. [α]_D²⁵ +133 (c, 1.0 in CHCl₃). λ_{max} 238 nm (EtOH).*Me glycoside, 2-Me, Me ester: Methyl (methyl 4-deoxy-2-O-methyl- β -L-threo-hex-4-enopyranosid)uronate*

[52545-23-0]
 $C_9H_{14}O_6$ 218.206
 Syrup. Bp_{0.02} 140-160° (bath). $[\alpha]_D^{27}$
 +198.5 (c, 2.0 in MeOH). λ_{max} 233 nm,
 (ϵ 7100) (MeOH).

Me glycoside, 2,3-di-Me, Me ester: Methyl (methyl 4-deoxy-2,3-di-O-methyl- β -L-threo-hex-4-enopyranosid)uronate
 [31506-21-5]
 $C_{10}H_{16}O_6$ 232.233
 Bp_{0.02} 89-90° Bp_{0.03} 75-82°. $[\alpha]_D^{23}$ +189
 (c, 1.0 in MeOH). λ_{max} 238 nm (ϵ 8100)
 (MeOH).

Heim, P. et al., *Helv. Chim. Acta*, 1962, **45**, 1735
 (β -L-Me ester)

Kiss, J. et al., *Carbohydr. Res.*, 1969, **10**, 328,
 (α -L-Me ester dibenzyl, β -L-Me ester dibenzyl,
 pmr)

Schmidt, H.W.H. et al., *Carbohydr. Res.*, 1969,
10, 361 (α -L-Me ester, β -L-Me ester)

Schmidt, H.W.H. et al., *Tet. Lett.*, 1969, 2011
 (α -L-Me ester di-Ac, β -L-Me ester di-Ac)

Hashimoto, H. et al., *Bull. Chem. Soc. Jpn.*,
 1971, **44**, 235 (β -L-Me ester, β -L-Me ester
 di-Me)

Llewellyn, J.W. et al., *Carbohydr. Res.*, 1972, **22**,
 221 (β -L-Me ester, β -L-Me ester di-Ac)

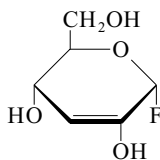
Kováč, P. et al., *Carbohydr. Res.*, 1974, **32**, 360
 (α -L-Me ester, α -L-Me ester di-Me, β -L-Me
 ester, β -L-Me ester 2-Me)

Alfoldi, J. et al., *Carbohydr. Res.*, 1975, **44**, 133
 (conform, pmr)

Teleman, A. et al., *Carbohydr. Res.*, 1995, **272**,
 55-71 (pmr, cmr)

3-Deoxy-erythro-hex-2-enopyranosyl fluoride, 9CI

D-180



$C_6H_9FO_4$ 164.133

α -D-form

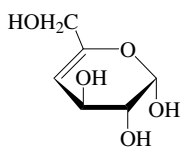
Tri-Ac: [25146-87-6]
 $C_{12}H_{15}FO_7$ 290.245
 Syrup.

Tribenzoyl: [26512-03-8]
 $C_{27}H_{21}FO_7$ 476.457
 Syrup.

Bock, K. et al., *Tet. Lett.*, 1969, 2983,
 (tri-Ac, tribenzoyl, pmr)

4-Deoxy-threo-hex-4-enose

D-181

 α -D-Pyranose-form

$C_6H_{10}O_5$ 162.142

α -D-Pyranose-form

Me glycoside, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-deoxy- α -D-threo-hex-4-enopyranoside
 $C_{11}H_{16}O_7$ 260.243
 Oil. $[\alpha]_D$ +277 (c, 1.0 in CH_2Cl_2).

α -L-Pyranose-form

Me glycoside, 2,6-di-Me: Methyl 4-deoxy-2,6-di-O-methyl- α -L-threo-hex-4-enopyranoside
 [125459-10-1]
 $C_9H_{16}O_5$ 204.222
 Oil. $[\alpha]_D$ -63 (c, 1.05 in $CHCl_3$).

β -L-Pyranose-form

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-4-deoxy- β -L-threo-hex-4-enopyranoside
 [25159-13-1]

$C_{21}H_{24}O_5$ 356.418

Syrup. $[\alpha]_D$ +155.2 (c, 0.4 in C_6H_6).

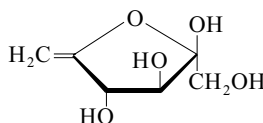
Giuliano, R.H. et al., *J. Carbohydr. Chem.*,
 1987, **6**, 541-552 (β -L-Me pyr 2,3-dibenzyl,
 synth, pmr, cmr)

Barili, P.L. et al., *Carbohydr. Res.*, 1989, **190**, 13
 (α -L-Me pyr 2,6-di-Me, synth, pmr)

Levoirier, E. et al., *Carbohydr. Res.*, 2004, **339**,
 2737-2747 (α -D-Me pyr di-Ac)

6-Deoxy-threo-hex-5-enulofuranose, 8CI

D-182



$C_6H_{10}O_5$ 162.142

β -D-form

2,3-O-Isopropylidene: [6983-51-3]

$C_9H_{14}O_5$ 202.207

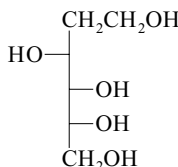
Mp 116°. $[\alpha]_D^{20}$ +89.3 (c, 1 in $CHCl_3$).

Hough, L. et al., *Adv. Chem. Ser.*, 1968, **74**, 120
 (synth, nmr, rev)

Klemer, A. et al., *Chem. Ber.*, 1980, **113**, 1761
 (synth, cmr)

2-Deoxy-arabino-hexitol

D-183



$C_6H_{14}O_5$ 166.174

D-form

Cryst. (EtOH). Mp 104-106°. $[\alpha]_D$ +17.5
 (H_2O).

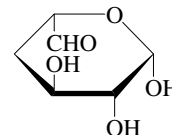
3,4:5,6-Diisopropylidene: 3,4:5,6-Di-O-isopropylidene-D-arabino-hexitol
 $C_{12}H_{22}O_5$ 246.303
 $[\alpha]_D$ +9.6.

Tiwari, K.N. et al., *Carbohydr. Res.*, 1986, **156**,
 19 (synth)

Regeling, H. et al., *Carbohydr. Res.*, 1990, **205**,
 261 (synth, deriv)

4-Deoxy-arabino-hexodialdose

D-184



$C_6H_{10}O_5$ 162.142

β -L-Pyranose-form

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-4-deoxy- β -L-arabino-hexodialdopyranoside
 [116051-71-9]

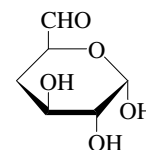
$C_{21}H_{24}O_5$ 356.418

Liq. $[\alpha]_D$ +13.9 (c, 1.84 in $CHCl_3$).

Giuliano, R.M. et al., *J. Carbohydr. Chem.*,
 1987, **6**, 541-552 (β -L-pyr Me gly 2,3-dibenzyl,
 synth, pmr, cmr)

4-Deoxy-xylo-hexodialdose

D-185



$C_6H_{10}O_5$ 162.142

α -D-Pyranose-form

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-4-deoxy- α -D-xylo-hexodialdopyranoside
 [116013-33-3]

$C_{21}H_{24}O_5$ 356.418

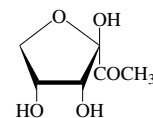
Viscous syrup. $[\alpha]_D$ +23.2 (c, 2.95 in
 $CHCl_3$). $[\alpha]_D^{20}$ +23 (c, 1.2 in CH_2Cl_2)
 (pure). Not obt. completely pure.

Giuliano, R.M. et al., *J. Carbohydr. Chem.*,
 1987, **6**, 541-552 (α -D-pyr Me gly 2,3-dibenzyl,
 synth, pmr, cmr)

Czernecki, S. et al., *J. Carbohydr. Chem.*, 1989,
8, 793-798 (α -D-Me pyr dibenzyl)

1-Deoxy-erythro-hexo-2,3-diulose

D-186

 β -D-3,6-Furanose-form

$C_6H_{10}O_5$ 162.142

D-form

Postulated common intermed. in the formation of sugar-amine products in food browning and related reactions.
 Amorph. solid.

Phenylosazone: Mp 137-141°. $[\alpha]_D^{20}$ -30.6
 (c, 0.75 in Py).

Bis(2,4-dinitrophenylhydrazonone), 4,5,6-tri-Ac: [53928-59-9]

Orange needles (EtOH).
 Mp 177-179° dec.

D-3,6-Furanose-form

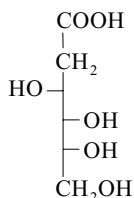
4,5-O-Isopropylidene: 1-Deoxy-4,5-O-isopropylidene-D-erythro-hexo-2,3-diulo-3,6-furanose
 $C_9H_{14}O_5$ 202.207
 Mp 98-100°. $[\alpha]_D^{20}$ -65 (c, 0.79 in MeOH).

Benzyl glycoside, 4,5-O-isopropylidene: Benzyl 1-deoxy-4,5-O-isopropylidene-D-erythro-hexo-2,3-diulo-3,6-furanoside
 $C_{16}H_{20}O_5$ 292.331
 $[\alpha]_D^{20}$ -124 (c, 0.75 in MeOH).

Okuda, T. *et al.*, *Carbohydr. Res.*, 1979, **68**, 1
 Fisher, B.E. *et al.*, *Carbohydr. Res.*, 1983, **116**, 209
 Glomb, M.A. *et al.*, *Carbohydr. Res.*, 2000, **329**, 515-523 (synth, pmr, cmr)

2-Deoxy-arabino-hexonic acid, 9CI, 8CI**D-187**

2-Deoxygluconic acid. Glucodesonic acid. Desonic acid


 $C_6H_{12}O_6$ 180.157
D-form [3442-69-1]

Formed by the oxidising action of *Pseudomonas aeruginosa* and *Saccharomyces cerevisiae* (baker's yeast) on 2-Deoxy-arabino-hexose, D-199.

Mp 145°. $[\alpha]_D^{25}$ +2.4 → +33.2 (H₂O).

Phenylhydrazide: [61244-22-2]

Mp 176°.

Me ester: Methyl 2-deoxy-D-arabino-hexonate. Methyl 2-deoxy-D-gluconate
 [27963-68-4]

$C_7H_{14}O_6$ 194.184

Isol. from ferns *Pteris formosana* and *Pteris inaequalis* var. *aequata*.
 Mp 147-148°. $[\alpha]_D^{20}$ +9.2 (c, 1.1 in MeOH).

Me ester, tetra-Ac: Methyl 3,4,5,6-tetra-O-acetyl-2-deoxy-D-arabino-hexonate
 [35813-17-3]

$C_{15}H_{22}O_{10}$ 362.333

Mp 55-56°. $[\alpha]_D^{20}$ +28.6 (c, 1 in CH₂Cl₂).

Et ester, tetra-Ac: Ethyl 3,4,5,6-tetra-O-acetyl-2-deoxy-D-arabino-hexonate
 [27963-67-3]

$C_{16}H_{24}O_{10}$ 376.36

Mp 119-120°. $[\alpha]_D^{20}$ +38.2 (CHCl₃).

1,4-Lactone: 2-Deoxy-D-arabino-hexono-1,4-lactone
 [42400-32-8]

$C_6H_{10}O_5$ 162.142

Mp 95-97°. $[\alpha]_D^{25}$ +68 (H₂O).

1,4-Lactone, tri-Me: 2-Deoxy-3,5,6-tri-O-methyl-D-arabino-hexono-1,4-lactone
 $C_9H_{16}O_5$ 204.222

Mp 62°. $[\alpha]_D^{20}$ +21.5 (C₆H₆).

1,5-Lactone, tri-Me: 2-Deoxy-3,4,6-tri-O-methyl-D-arabino-hexono-1,5-lactone
 $C_9H_{16}O_5$ 204.222

Bp_{0.04} 120°. $[\alpha]_D^{19}$ +106 → +49 (H₂O).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1930, **88**, 791 (lactone, tri-Me-lactone)

Hirst, E.L. *et al.*, *J.C.S.*, 1931, 1131 (tri-Me 1,5-lactone)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, Leipzig, 1935, 184 (rev)

Danilov, S.N. *et al.*, *CA*, 1937, **31**, 95 (synth)

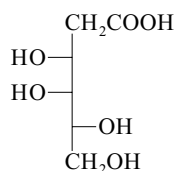
Bauer, S. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 1165 (isol)

Zhdanov, Y.A. *et al.*, *Zh. Obshch. Khim.*, 1969, **39**, 2360; *CA*, **72**, 55803f (Et ester tetra-Ac)

Eagon, R.G. *et al.*, *Can. J. Biochem.*, 1971, **49**, 606 (isol)

Kawakishi, S. *et al.*, *Carbohydr. Res.*, 1973, **26**, 252 (synth, ms, pmr)

Murakami, T. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 643 (isol)

2-Deoxy-lyxo-hexonic acid**D-188**
 $C_6H_{12}O_6$ 180.157
D-form

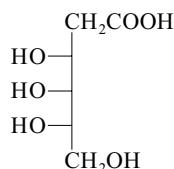
1,4-Lactone, tri-Ac: 3,5,6-Tri-O-acetyl-2-deoxy-D-lyxo-hexono-1,4-lactone
 [69863-81-6]

$C_{12}H_{16}O_8$ 288.254

Syrup. $[\alpha]_D^{20}$ +6.4 (c, 7.6 in CHCl₃).

[61653-41-6]

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1984, **38**, 555 (synth)

2-Deoxy-ribo-hexonic acid**D-189**
 $C_6H_{12}O_6$ 180.157
L-form

1,4-Lactone: 2-Deoxy-ribo-hexono-1,4-lactone
 [95103-67-6]

$C_6H_{10}O_5$ 162.142

Syrup.

1,4-Lactone, tri-Ac: 3,5,6-Tri-O-acetyl-2-deoxy-L-ribo-hexono-1,4-lactone
 [95103-69-8]

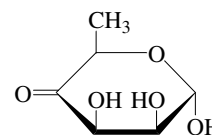
$C_{12}H_{16}O_8$ 288.254

Cryst. (Et₂O/pentane). Mp 74-75°. $[\alpha]_D^{20}$ +8 (c, 5.4 in CHCl₃).

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1984, **38**, 555 (synth)

6-Deoxy-lyxo-hexopyranos-4-ulose**D-190**

4-Ketorhamnose. 6-Deoxy-4-ketomannose

 α -D-form
 $C_6H_{10}O_5$ 162.142
 α -D-form

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -D-lyxo-hexopyranosid-4-ulose
 [15830-63-4]

$C_{10}H_{16}O_5$ 216.233

$[\alpha]_D^{27}$ +105 (c, 0.71 in MeOH).

Me glycoside, 2,3-O-isopropylidene, oxime: [15830-65-6]

$C_{10}H_{17}NO_5$ 231.248

Mp 123-125°.

Me glycoside, 2,3-di-Me: Methyl 6-deoxy-2,3-di-O-methyl- α -D-lyxo-hexopyranosid-4-ulose

$C_9H_{16}O_5$ 204.222

Syrup. $[\alpha]_D^{27}$ +98 (c, 0.8 in CHCl₃).

 α -L-form

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -L-lyxo-hexopyranosid-4-ulose

[2592-53-2]

$C_{10}H_{16}O_5$ 216.233

Bp_{0.45} 78-80°. $[\alpha]_D^{26}$ -105.8 (c, 1.0 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene, oxime: Mp 133-135° (form 1). $[\alpha]_D^{26}$ +42.5 (c, 0.63 in CHCl₃) (form 1). $[\alpha]_D^{26}$ +9.1 (c, 0.72 in CHCl₃) (form 2).

 β -L-form

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- β -L-lyxo-hexopyranosid-4-ulose

$C_{10}H_{16}O_5$ 216.233

$[\alpha]_D^{26}$ +45.1 (c, 0.51 in CHCl₃).

Gunner, S.W. *et al.*, *Carbohydr. Res.*, 1967, **4**, 498 (α -L-isopropylidene)

Stevens, C.L. *et al.*, *J.O.C.*, 1968, **33**, 1586;

1973, **38**, 4311 (α -D-isopropylidene,

α -L-isopropylidene, β -L-isopropylidene)

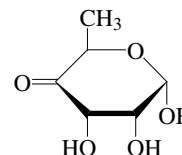
Simon, P. *et al.*, *J. Chem. Res., Synop.*, 1980,

352; *J. Chem. Res., Miniprint*, 4337,

(α -D-isopropylidene)

Sato, K.-I. *et al.*, *Carbohydr. Res.*, 1982, **103**,

221 (α -D-di-Me)

6-Deoxy-ribo-hexopyranos-4-ulose**D-191** α -D-form
 $C_6H_{10}O_5$ 162.142

α -D-form

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -D-ribo-hexopyranosid-4-ulose
[37063-23-3]
 $C_{10}H_{16}O_5$ 216.233
Mp 48° (38°). $[\alpha]_D^{25} +176.2$ (c, 1.1 in $CHCl_3$). $[\alpha]_D^{25} +63$ (c, 1.2 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene, oxime:
 $C_{10}H_{17}NO_5$ 231.248
Cryst. (Et_2O). Mp 117-118°. $[\alpha]_D^{25} +260$ (c, 1.1 in $CHCl_3$).

Me glycoside, 2,3-di-Me: Methyl 6-deoxy-2,3-di-O-methyl- α -D-ribo-hexopyranosid-4-ulose
 $C_9H_{16}O_5$ 204.222
Cryst. (Et_2O /hexane). Mp 94-96°. $[\alpha]_D^{23} +214$ (c, 0.3 in $CHCl_3$).

Me glycoside, 2,3-anhydro: Methyl 2,3-anhydro-6-deoxy- α -D-ribo-hexopyranosid-4-ulose, 9CI
[55533-59-0]
 $C_7H_{10}O_4$ 158.154
Mp 58°. $[\alpha]_D^{20} +206$ (c, 1.0 in $CHCl_3$).

 α -L-form

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- β -D-ribo-hexopyranosid-4-ulose
 $C_{10}H_{16}O_5$ 216.233
Cryst. (pentane). Mp 40-42°. $[\alpha]_D^{26} +36.2$ (c, 0.34 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene, oxime:
 $C_{10}H_{17}NO_5$ 231.248
Cryst. (Et_2O /pentane). Mp 133-135°. $[\alpha]_D^{26} +42.5$ (c, 0.6 in $CHCl_3$).

Me glycoside, 2,3-anhydro: Methyl 2,3-anhydro-6-deoxy- α -L-ribo-hexopyranosid-4-ulose
[59463-87-5]
 $C_7H_{10}O_4$ 158.154
Solid. Mp 58°. $[\alpha]_D^{20} -105$ (c, 1.1 in $CHCl_3$).

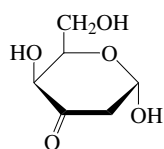
Stevens, C.L. *et al.*, *Carbohydr. Res.*, 1972, **21**, 166 (β -D-Me gly isopropylidene)

Stevens, C.L. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 337 (α -D-Me gly isopropylidene)

Stevens, C.L. *et al.*, *J.O.C.*, 1973, **38**, 4311, (α -D-Me gly isopropylidene, β -D-Me gly isopropylidene)

Paulsen, H. *et al.*, *Chem. Ber.*, 1978, **111**, 869 (*D*-Me pyr anhydro, *L*-Me pyr anhydro, *pmr*, *cmr*)

Sato, K.-I. *et al.*, *Carbohydr. Res.*, 1982, **103**, 221 (*D*-Me pyr di-Me, *pmr*)

2-Deoxy-threo-hexopyranos-3-ulose D-192 α -D-Pyranose-form

$C_6H_{10}O_5$ 162.142

 α -D-Pyranose-form

Me glycoside, (E)-oxime: [22886-99-3]
 $C_7H_{13}NO_5$ 191.183
Mp 221-222°. $[\alpha]_D +238$ (c, 1 in DMSO).

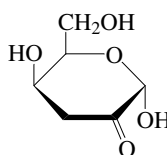
Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-deoxy- α -D-threo-hexopyranosid-3-ulose
[10578-82-2]
 $C_{14}H_{16}O_5$ 264.277
Cryst. (2-propanol). Mp 132-133° (112-113°). $[\alpha]_D +150$ ($CHCl_3$).

 β -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-deoxy- β -D-threo-hexopyranosid-3-ulose
[77481-68-6]
 $C_{14}H_{16}O_5$ 264.277
Mp 155-156° Mp 177-178°. $[\alpha]_D -26$ ($CHCl_3$). $[\alpha]_D -29$ (c, 1.0 in $CHCl_3$).

Beynon, P.J. *et al.*, *J.C.S. (C)*, 1966, 1131, (α -D-Me pyr benzylidene)

Beynon, P.J. *et al.*, *J.C.S. (C)*, 1969, 272, (α -D-Me pyr benzylidene oxime)
Thang, T.T. *et al.*, *Tet. Lett.*, 1980, **21**, 4495, (β -D-Me pyr benzylidene)

3-Deoxy-threo-hexopyranos-2-ulose D-193 α -D-form

$C_6H_{10}O_5$ 162.142

 α -D-form

Me glycoside: Methyl 3-deoxy- α -D-threo-hexopyranosid-2-ulose, 8CI
[24332-90-9]
 $C_7H_{12}O_5$ 176.169
Bp_{0.05} 100-110°. $[\alpha]_D^{20} +52$ (c, 0.1 in MeOH).

 β -D-form

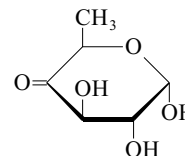
Me glycoside: Methyl 3-deoxy- β -D-threo-hexopyranosid-2-ulose
 $C_7H_{12}O_5$ 176.169
Bp_{0.03} 90-110°. $[\alpha]_D^{20} -105$ (c, 0.1 in MeOH).

Ph glycoside: Phenyl 3-deoxy- β -D-threo-hexopyranosid-2-ulose, 8CI
[24332-86-3]
 $C_{12}H_{14}O_5$ 238.24
 $[\alpha]_D^{20} -45$ (c, 0.1 in MeOH).

 α -L-form

6-Deoxy, Me glycoside: Methyl 3,6-dideoxy- α -L-threo-hexopyranosid-2-ulose, 9CI
[55533-68-1]
 $C_7H_{12}O_4$ 160.169
 $[\alpha]_D^{20} -128$ (c, 1.4 in MeOH).

Antonakis, K. *et al.*, *Bull. Soc. Chim. Fr.*, 1969, 122 (α -D-Me pyr, β -D-Me pyr, β -D-Ph pyr)
Paulsen, H. *et al.*, *Chem. Ber.*, 1976, **109**, 3907 (α -L-Me pyr deoxy)

6-Deoxy-xylo-hexopyranos-4-ulose D-194

$C_6H_{10}O_5$ 162.142

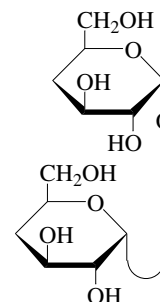
 α -D-form

Me glycoside, 2,3-di-Me: Methyl 6-deoxy-2,3-di-O-methyl- α -D-xylo-hexopyranosid-4-ulose
 $C_9H_{16}O_5$ 204.222
 $[\alpha]_D^{27} +197$ (c, 1.1 in $CHCl_3$).

Me glycoside, 3-bromo-3-deoxy: Methyl 3-bromo-3,6-dideoxy- α -D-xylo-hexopyranosid-4-ulose
 $C_7H_{11}BrO_4$ 239.065
Mp 30-35°. $[\alpha]_D^{20} +163$ (c, 0.9 in $CHCl_3$).
Paulsen, H. *et al.*, *Chem. Ber.*, 1976, **109**, 3907 (α -D-3-bromo-3-deoxy)
Sato, K.-I. *et al.*, *Carbohydr. Res.*, 1982, **103**, 221 (α -D-di-Me)

4-Deoxy- α -D-xylo-hexopyranosyl 4-deoxy- α -D-xylo-hexopyranoside D-195

4,4'-Dideoxy- α , α -trehalose. 4,4'-Dideoxy- α , α -xylo-trehalose
[53684-66-5]

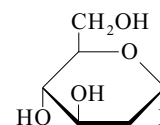


$C_{12}H_{22}O_9$ 310.3
Cryst. ($EtOH$). Mp 185.5-187°. $[\alpha]_D +263.3$ (c, 0.4 in H_2O).

Hexa-Ac: [53684-68-7]
 $C_{24}H_{34}O_{15}$ 562.524
Cryst. ($EtOH$). Mp 131-132.5°. $[\alpha]_D +174.2$ (c, 0.5 in $CHCl_3$).

Birch, G.G. *et al.*, *Carbohydr. Res.*, 1974, **36**, 97-109 (synth, hexa-Ac)

Lee, C.K. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 619-629 (cryst struct)

2-Deoxy-arabino-hexopyranosyl fluoride D-196

$C_6H_{11}FO_4$ 166.149

α -D-form

Tri-Ac: [16488-74-7]
 $C_{12}H_{17}FO_7$ 292.26
 Flat needles ($CHCl_3$ /petrol). Mp 73-74°.
 $[\alpha]_D^{23} +67$ (c, 2.15 in $CHCl_3$).

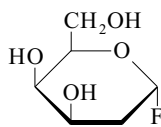
3,6-Dibenzoyl:

$C_{20}H_{19}FO_6$ 374.365
 Syrup. Unstable at 25°.

Tribenzoyl: [16750-05-3]

$C_{27}H_{23}FO_7$ 478.473
 Cryst. (Et_2O /pentane). Mp 112-114°
 (110-112°). $[\alpha]_D^{27} +44.1$ (c, 1.5 in $CHCl_3$)
 (+41.6).

Lundt, I. et al., *Acta Chem. Scand.*, 1967, **21**,
 1239 (benzoyl derivs, pmr)
 Hall, L.D. et al., *Can. J. Chem.*, 1967, **45**, 1299
 (tri-Ac, pmr, F-19 nmr)
 Hall, L.D. et al., *Carbohydr. Res.*, 1969, **9**, 11
 (conform, F-19 nmr)

2-Deoxy-*lyxo*-hexopyranosyl fluoride**D-197** $C_6H_{11}FO_4$ 166.149 **α -D-form**

3,6-Dibenzoyl: [34948-83-9]
 $C_{20}H_{19}FO_6$ 374.365
 Cryst. (Et_2O /pentane). Mp 112-113°
 dec. $[\alpha]_D^{23} +11.5$ (c, 1.5 in $CHCl_3$).

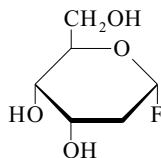
4,6-Dibenzoyl: [34948-82-8]

$C_{20}H_{19}FO_6$ 374.365
 Syrup. $[\alpha]_D^{23} -6.1$ (c, 1.0 in $CHCl_3$).

Tribenzoyl: [34948-81-7]

$C_{27}H_{23}FO_7$ 478.473
 Syrup. $[\alpha]_D^{23} +26.8$ (c, 2.5 in $CHCl_3$).

Lundt, I. et al., *Acta Chem. Scand.*, 1971, **25**,
 2749 (benzoyl derivs, pmr)

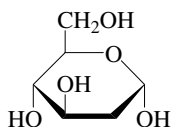
2-Deoxy-*ribo*-hexopyranosyl fluoride**D-198** $C_6H_{11}FO_4$ 166.149 **α -D-form**

3,6-Dibenzoyl: [18424-59-4]
 $C_{20}H_{19}FO_6$ 374.365
 Syrup. Unstable at 25°.

Tribenzoyl: [18424-60-7]

$C_{27}H_{23}FO_7$ 478.473
 Cryst. (Et_2O /pentane). Mp 93-95°. $[\alpha]_D^{26}$
 +167 (c, 0.9 in $CHCl_3$).

Lundt, I. et al., *Acta Chem. Scand.*, 1967, **21**,
 1239 (benzoyl derivs, pmr)

2-Deoxy-*arabino*-hexose, 9CI, 8CI**D-199** α -D-Pyranose-form $C_6H_{12}O_5$ 164.158

An aq. soln. at 44° contains 47.5% α -pyr,
 52.5% β -pyr and 0.008% aldehyde.

 β -form [154-17-6]

Isol. from ferns *Pteris ensiformis*, *Pteris formosana*, *Pteris inaequalis* and *Neurocallis praestantissima*. Exp. antiviral agent.

► Exp. reprod. and teratogenic effects (large dose). LD₅₀ (rat, scu) 250mg/kg.
 MQ3325000

3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl-2-deoxy-

D-arabino-hexose
 [69503-94-2]
 $C_{12}H_{18}O_8$ 290.269
 Oil.

Di-Me acetal:

$C_8H_{18}O_6$ 210.227
 Cryst. ($MeOH/Et_2O$). Mp 110-112°.
 $[\alpha]_D^{18} +19.7$ (c, 1.22 in $MeOH$).

Di-Me acetal, 3,4,5,6-tetra-Ac:

$C_{16}H_{26}O_{10}$ 378.375
 Cryst. (Et_2O /pentane). Mp 56-57°.
 $[\alpha]_D^{18} +34.7$ (c, 1.41 in $MeOH$).

Di-Et dithioacetal: [3650-68-8]

$C_{10}H_{22}O_4S_2$ 270.413
 Cryst. ($MeOH$). Mp 135°. $[\alpha]_D^{18} +13.1$
 (c, 1.6 in $MeOH$) (c, 1 in $MeOH$).

Di-Et dithioacetal, 3,4,5,6-tetra-Ac:

[16885-34-0]
 $C_{18}H_{30}O_8S_2$ 438.562
 Cryst. (Et_2O /pentane). Mp 76-77°. $[\alpha]_D^{19}$
 +28.6 (c, 1.64 in $MeOH$) (c, 0.91 in
 $CHCl_3$).

Dibenzyl dithioacetal:

$C_{20}H_{26}O_4S_2$ 394.555
 Needles ($EtOH$). Mp 154°. $[\alpha]_D^{19} -40$
 (c, 0.6 in $EtOH$).

Dibenzyl dithioacetal, 3,4,5,6-tetra-Ac:

$C_{28}H_{34}O_8S_2$ 562.704
 Needles ($EtOH$). Mp 63°. $[\alpha]_D^{17} +18.2$
 (c, 0.77 in $MeOH$).

3-Me: 2-Deoxy-3-O-methyl-*D*-arabino-

hexose
 [39036-70-9]
 $C_7H_{14}O_5$ 178.185

Isol. from *Pteris inaequalis* var. *aequata*.
 Syrup; cryst. (Me_2CO/Et_2O).
 Mp 110-112°.

$[\alpha]_D^{20} +14.7$ (c, 1.56 in H_2O).

3,4,6-Tri-O-benzyl: 3,4,6-Tri-O-benzyl-

2-deoxy-*D*-arabino-hexose
 [132732-60-6]
 $C_{27}H_{30}O_5$ 434.531
 Oil.

6-Phosphate: 2-Deoxy-*D*-arabino-hexose-

6-phosphate
 [3573-50-0]
 $C_6H_{13}O_8P$ 244.138
 Powder ($EtOH$ aq.) (as Ba salt).

 α -D-Pyranose-form [13299-15-5]

Mp 128-129°. $[\alpha]_D +57.6 \rightarrow +46$ (H_2O).
 $[\alpha]_D +153 \rightarrow +87.6$ (Py).

1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-

2-deoxy- α -*D*-arabino-hexopyranose
 [16750-06-4]
 $C_{14}H_{20}O_9$ 332.307
 Needles (2-propanol). Mp 110-111°.
 $[\alpha]_D^{25} +108$ (c, 1.1 in $CHCl_3$).

6-Benzoyl: 6-O-Benzoyl-2-deoxy- α -*D*-

arabino-hexopyranose
 [108274-08-4]
 $C_{13}H_{16}O_6$ 268.266
 Cryst. (Me_2CO). Mp 116-117°. $[\alpha]_D +60$
 (c, 1 in $CHCl_3$).

Me glycoside: See Methyl 2-deoxy-

4-Pentenyl glycoside: 4-Pentenyl

2-deoxy- α -*D*-arabino-hexopyranoside
 [132871-90-0]
 $C_{11}H_{20}O_5$ 232.276
 Characterised spectroscopically.

 β -D-Pyranose-form [13299-16-6]

Mp 146°. $[\alpha]_D +38 \rightarrow +46$ (H_2O). $[\alpha]_D$
 +15 $\rightarrow +92$ (Py).

Me glycoside: See Methyl 2-deoxy-

1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-

deoxy- β -*D*-arabino-hexopyranose
 [16750-07-5]
 $C_{14}H_{20}O_9$ 332.307
 Prisms (2-propanol). Mp 92-93°.
 $[\alpha]_D^{25} -2.82$ (c, 3.5 in $CHCl_3$).

1,6-Dibenzoyl: 1,6-Di-O-benzoyl-2-deoxy-

β -*D*-arabino-hexopyranose
 [108274-10-8]
 $C_{20}H_{20}O_7$ 372.374
 Foam. $[\alpha]_D -41$ (c, 1 in $CHCl_3$).

1,3,6-Tribenzoyl: 1,3,6-Tri-O-benzoyl-

2-deoxy- β -*D*-arabino-hexopyranose
 [108274-11-9]
 $C_{27}H_{24}O_8$ 476.482
 Foam. $[\alpha]_D +2$ (c, 1 in $CHCl_3$).

1,4,6-Tribenzoyl: 1,4,6-Tri-O-benzoyl-

2-deoxy- β -*D*-arabino-hexopyranose
 [108274-12-0]
 $C_{27}H_{24}O_8$ 476.482
 Cryst. ($EtOAc$ /hexane). Mp 136°. $[\alpha]_D$
 +70 (c, 1 in $CHCl_3$).

Tetrazobenzoyl: 1,3,4,6-Tetra-O-benzoyl-

2-deoxy- β -*D*-arabino-hexopyranose
 [16750-08-6]
 $C_{34}H_{28}O_9$ 580.59
 Mp 145°. $[\alpha]_D +12$ (c, 1 in $CHCl_3$).

3-Benzyl: 3-O-Benzyl-2-deoxy- β -*D*-

arabino-hexopyranose
 [475291-22-6]
 $C_{13}H_{18}O_5$ 254.282
 Cryst. ($EtOH$ /petrol). Mp 120-123.5°.
 $[\alpha]_D^{23.5} +25.4$ (c, 0.86 in $MeOH$).

 α -D-Furanose-form**1,3,5,6-Tetra-Ac:** 1,3,5,6-Tetra-O-acetyl-

2-deoxy- α -*D*-arabino-hexofuranose
 [34980-87-5]
 $C_{14}H_{20}O_9$ 332.307
 Cryst. (Et_2O /petrol). Mp 95°. $[\alpha]_D +64$
 (c, 1 in $CHCl_3$).

Me glycoside: Methyl 2-deoxy- α -*D*-

arabino-hexofuranoside
 [6001-17-8]

C₇H₁₄O₅ 178.185Mp 80°. [α]_D +117 (c, 1 in EtOH).*Me glycoside, 3-benzyl: Methyl 3-O-benzyl-2-deoxy-α-D-arabino-hexofuranoside*

[386765-73-7]

C₁₄H₂₀O₅ 268.309

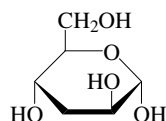
Cryst. (EtOAc/hexane). Mp 93-95.5°.

[α]_D²⁴ +31.9 (c, 0.62 in CHCl₃).

[33068-19-8, 55644-83-2]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 192D (*ir*)*Aldrich Library of 13C and 1H FT NMR Spectra*, 1992, **1**, 296B (*nmr*)Bolliger, H.R. *et al.*, *Helv. Chim. Acta*, 1946, **29**, 1121-1123 (*D*-3-*O*-Me)Overend, W.G. *et al.*, *J.C.S.*, 1949, 2841; 2846 (*α*-*D*-pyr, *D*-dibenzyl dithioacetal, *D*-dibenzyl dithioacetal tetra-Ac, *D*-di-Et dithioacetal)Bolliger, H.R. *et al.*, *Helv. Chim. Acta*, 1951, **34**, 989 (*D*-di-Me acetal, *D*-di-Me acetal tetra-Ac, *D*-di-Et dithioacetal, *D*-di-Et dithioacetal tetra-Ac)Crane, R.K. *et al.*, *J. Biol. Chem.*, 1954, **210**, 597 (*6*-phosphate, enzymatic synth)Bonner, W.A. *et al.*, *J.O.C.*, 1961, **26**, 908 (*α*-*D*-pyr tetra-Ac, *β*-*D*-pyr tetra-Ac)Remisov, A.L. *et al.*, *Zh. Obshch. Khim.*, 1961, **31**, 3769; *J. Gen. Chem. USSR (Engl. Transl.)*, 1961, **31**, 3521 (*6*-phosphate)Bolliger, H.R. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 186 (*D*-form)Shafizadeh, F. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 190 (*synth*, *D*-form)Wells, W.W. *et al.*, *Biochim. Biophys. Acta*, 1964, **82**, 408 (*6*-phosphate, *gc*)Pace, N. *et al.*, *J.A.C.S.*, 1964, **86**, 3160 (*ord*)Casu, B. *et al.*, *Tet. Lett.*, 1964, 2839 (*pmr*)Biely, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1967, **32**, 1588 (*6*-phosphate)Wirz, P. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 2017 (*α*-*D*-Me fur, *α*-*D*-fur tetra-Ac, *α*-*D*-pyr tetra-Ac, *β*-*D*-pyr tetra-Ac)Harvey, D.J. *et al.*, *J. Chromatogr.*, 1973, **76**, 51 (*6*-phosphate, *gc*, *ms*)Bock, K. *et al.*, *J.C.S. Perkin 2*, 1974, 293 (*cmr*)de Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1975, **84**, 1201Murakami, T. *et al.*, *Chem. Pharm. Bull.*, 1975, **23**, 1634; 1978, **26**, 643 (*D*-3-*O*-Me, *isol*)Trigalo, F. *et al.*, *J.C.S. Perkin 1*, 1975, 600 (*6*-phosphate)Shiue, C.Y. *et al.*, *Carbohydr. Res.*, 1979, **74**, 323-326 (*synth*, *D*-form)Sala, L.F. *et al.*, *Carbohydr. Res.*, 1980, **78**, 61 (*synth*)Wong, M.Y.H. *et al.*, *Carbohydr. Res.*, 1980, **80**, 87 (*synth*)Barton, D.H.R. *et al.*, *J.C.S. Perkin 1*, 1980, 2657 (*α*-*D*-pyr tetra-Ac, *β*-*D*-pyr tetra-Ac)Monneret, C. *et al.*, *Carbohydr. Res.*, 1981, **96**, 299 (*synth*)Maluszynska, H. *et al.*, *Carbohydr. Res.*, 1981, **97**, 199 (*cryst struct*)Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (*equilib*)Fiandor, J. *et al.*, *Carbohydr. Res.*, 1986, **153**, 325 (*α*-*D*-6-benzoyl, *β*-*D*-dibenzoyl, *β*-*D*-tribenzoyl, *β*-*D*-tetrabenzoyl)Tiware, K.N. *et al.*, *Carbohydr. Res.*, 1986, **156**, 19 (*synth*)Dornhagen, J. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 115-126 (*3*-Me, *synth*)Puliti, R. *et al.*, *Carbohydr. Res.*, 1988, **182**, 148 (*cryst struct*)Konradsson, P. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1991, **110**, 23 (*α*-*D*-pyr pentenyl gly, *cmr*)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993,Jorgensen, C. *et al.*, *Carbohydr. Res.*, 1997, **299**, 307-310 (*synth*)Betteli, E. *et al.*, *Tetrahedron*, 1998, **54**, 6011-6018 (*3,4,6-tri-Ac, 3,4,6-tribenzyl*)Oishi, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 2002, **75**, 1927-1947 (*β*-*D*-pyr-3-benzyl, *α*-*D*-Me 3-benzyl-fur)Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAR600**3-Deoxy-arabino-hexose****D-200**

3-Deoxymannose. 3-Deoxyaltrose

 α -D-Pyranose-formC₆H₁₂O₅ 164.158Equilibrium mixt. of α -Pyr: β -Pyr: α -Fur: β -Fur. 26:51:6:17 in soln.**D-form** [5517-48-6]Mp 141-142°. [α]_D +53.1 (H₂O).*Phenylhydrazone*: Mp 128-129°. [α]_D -46.7 (MeOH).*Dimethyl dithioacetal*:C₈H₁₈O₄S₂ 242.36Mp 82°. [α]_D -38.6 (MeOH).**D-Pyranose-form***Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy-D-arabino-hexopyranose*

[23655-58-5]

C₁₄H₂₀O₉ 332.307Syrup. Mainly α -Pyr isomer.**α-D-Pyranose-form***Me glycoside: Methyl 3-deoxy-α-D-arabino-hexopyranoside*

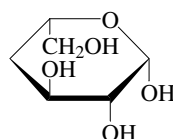
[29073-92-5]

C₇H₁₄O₅ 178.185

Cryst. (EtOH). Mp 123-124°.

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-α-D-arabino-hexopyranoside

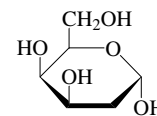
[72904-78-0]

C₁₄H₁₈O₅ 266.293Mp 111-112°. [α]_D +107 (c, 1.1 in CHCl₃).Rembarz, G. *et al.*, *Chem. Ber.*, 1960, **93**, 622(*synth*, dimethyl dithioacetate)Pfeffer, P.E. *et al.*, *Carbohydr. Res.*, 1980, **84**, 13 (*equilib*)Scensny, P.M. *et al.*, *Carbohydr. Res.*, 1983, **112**, 307 (*synth*, *cmr*, *bibl*)Du Mortier, C. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 219-228 (*synth*, *cmr*, *equilib*)Christian, R. *et al.*, *Carbohydr. Res.*, 1989, **194**, 49 (*synth*, *pmr*, *cmr*, *bibl*, *α*-*D*-Me pyr, *D*-tetra-Ac)Lee, E. *et al.*, *Carbohydr. Res.*, 1991, **219**, 229 (*synth*, *pmr*, *cryst struct*, *α*-*D*-Me gly benzylidene)**4-Deoxy-arabino-hexose****D-201**C₆H₁₂O₅ 164.158**β-L-Pyranose-form***Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-4-deoxy-β-L-arabino-hexopyranoside*

[116013-35-5]

C₂₁H₂₆O₅ 358.433Syrup. [α]_D +56.8 (c, 2.46 in CHCl₃).Giuliano, R.M. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 541-552 (*Me β*-L-pyr 2,3-dibenzyl)**2-Deoxy-lyxo-hexose, 9CI,****D-202****8CI**

2-Deoxygalactose. 2-Deoxytalose

 α -D-Pyranose-formC₆H₁₂O₅ 164.158An aq. soln. at 31° contains 40% α -pyr, 44% β -pyr, 8% α -fur, 8% β -fur and 0.03% aldehyde.**D-form** [1949-89-9]Isol. as a cryst. β -form. Mp 120-121°.[α]_D²⁰ +24 → +56 (c, 2 in H₂O).*3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl-D-lyxo-hexose*

[69503-96-4]

C₁₂H₁₈O₈ 290.269

Oil.

Di-Et dithioacetal:C₁₀H₂₂O₄S₂ 270.413

Cryst. (MeOH aq.). Mp 104-105°.

Dibenzyl dithioacetal:C₂₀H₂₆O₄S₂ 394.555Plates (MeOH aq.). Mp 106-107°. [α]_D²⁰ -38 (c, 1.72 in Py).*3,4,6-Tri-O-benzyl: 3,4,6-Tri-O-benzyl-2-deoxy-D-lyxo-hexose*

[94189-64-7]

C₂₇H₃₀O₅ 434.531

Oil.

α-D-Pyranose-form [14215-77-1]*Me glycoside: Methyl 2-deoxy-α-D-lyxo-hexopyranoside*

[3971-45-7]

C₇H₁₄O₅ 178.185Mp 115-116°. [α]_D²⁴ +164 (H₂O).*Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-deoxy-α-D-lyxo-hexopyranoside*

[6087-42-9]

C₁₃H₂₀O₈ 304.296Syrup. [α]_D²⁰ +159 (c, 1 in C₆H₆).*Me glycoside, 3,4-O-isopropylidene: Methyl 2-deoxy-3,4-O-isopropylidene-α-D-lyxo-hexopyranoside*

[19877-02-2]

C₁₄H₁₈O₅ 266.293Needles (MeOH aq.). Mp 184-185°. [α]_D +104 (c, 0.3 in EtOH).

Me glycoside, 6-trityl: Methyl 2-deoxy-6-O-trityl- α -D-lyxo-hexopyranoside
[26291-68-9]
 $C_{26}H_{28}O_5$ 420.504
Mp 111-112°. $[\alpha]_D^{25} +53$ (CH_2Cl_2).

 β -D-Pyranose-form [14215-78-2]

Me glycoside: Methyl 2-deoxy- β -D-lyxo-hexopyranoside
 $C_7H_{14}O_5$ 178.185
Cryst. (MeOH). Mp 125-126°. $[\alpha]_D -16$ (c, 0.5 in H_2O).

Me glycoside, 6-benzoyl: Methyl 6-O-benzoyl-2-deoxy- β -D-lyxo-hexopyranoside
 $C_{14}H_{18}O_6$ 282.293
Cryst. (Me_2CO). Mp 149-151°. $[\alpha]_D -27$ (c, 0.4 in MeOH).

Me glycoside, 6-benzoyl, 3,4-isopropylidene: Methyl 6-O-benzoyl-2-deoxy-3,4-O-isopropylidene- β -D-lyxo-hexopyranoside
 $C_{17}H_{22}O_6$ 322.357
Mp 62.5-63°. $[\alpha]_D^{25} -18$ (c, 0.8 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene- β -D-lyxo-hexopyranoside
[3971-46-8]
 $C_{14}H_{18}O_5$ 266.293
Mp 202°. $[\alpha]_D -40.5$ ($CHCl_3$).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 192C (ir)

Aldrich Library of ^{13}C and 1H FT NMR Spectra, 1992, 1, 296A (nmr)

Foster, A.B. *et al.*, *J.C.S.*, 1951, 974 (*D-form*, synth, *D*-dibenzyl dithioacetal, *D*-di-Et dithioacetal, α -D-Me pyr, α -D-Me pyr derivs)

Howarth, G.B. *et al.*, *Carbohydr. Res.*, 1968, 7, 284 (α -D-Me pyr benzylidene)

Zorbach, W.W. *et al.*, *Methods Carbohydr. Chem.*, 1972, 6, 445 (α -D-Me pyr, α -D-Me pyr trityl)

de Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1975, 84, 1201 (pmr)

Baer, H.M. *et al.*, *Carbohydr. Res.*, 1975, 39, C8 (β -D-Me pyr benzylidene)

Sala, L.F. *et al.*, *Carbohydr. Res.*, 1980, 78, 61 (synth)

Wong, M.Y.H. *et al.*, *Carbohydr. Res.*, 1980, 80, 87 (synth)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, 42, 15 (equilib)

Puliti, R. *et al.*, *Carbohydr. Res.*, 1984, 135, 47 (cryst struct)

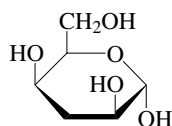
Pin, T.H. *et al.*, *Carbohydr. Res.*, 1989, 188, 228 (β -D-Me pyr derivs)

Jorgensen, C. *et al.*, *Carbohydr. Res.*, 1997, 299, 307-310 (synth)

Betteli, E. *et al.*, *Tetrahedron*, 1998, 54, 6011-6018 (3,4,6-tri-Ac, 3,4,6-tribenzyl)

3-Deoxy-lyxo-hexose**D-203**

3-Deoxyidose. 3-Deoxytalose

 α -D-form $C_6H_{12}O_5$ 164.158**D-form** [14154-19-9]Syrup. $[\alpha]_D -10$ (H_2O).

2,5-Dichlorophenyllosazone: Mp 225-226°. $[\alpha]_D -204$ (Py).

L-form

Dimethyl dithioacetal:

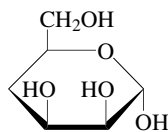
 $C_8H_{18}O_4S_2$ 242.36Mp 46-48°. $[\alpha]_D +48$ ($CHCl_3$).

Ferrier, R.J. *et al.*, *J.C.S. (C)*, 1966, 2339, (*D-form*)

Némec, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, 33, 2097 (*L-form*)

4-Deoxy-lyxo-hexose**D-204**

4-Deoxymannose. 4-Deoxytalose

 α -D-Pyranose-form $C_6H_{12}O_5$ 164.158**D-form** [74164-24-2]Syrup. $[\alpha]_D^{24} +13.2$ (c, 1.61 in MeOH).

$[\alpha]_D^{20} +17.7$ (c, 1.7 in MeOH). Mixt. of anomers α : β 1.5:1 for the sample of lower opt. rotn.

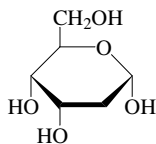
Paulsen, H. *et al.*, *Carbohydr. Res.*, 1987, 165, 229 (synth, pmr)

Matsumoto, K. *et al.*, *Carbohydr. Res.*, 1993, 246, 345 (synth, ir, pmr, cmr)

2-Deoxy-ribo-hexose**D-205**

2-Deoxyallose. 2-Deoxyaltrose

[6605-21-6]

 α -D-Pyranose-form $C_6H_{12}O_5$ 164.158

An aq. soln. at 31° contains 15% α -pyr, 58% β -pyr, 12% α -fur, 15% β -fur.

D-form

Cryst. (EtOH). Mp 140-142°. $[\alpha]_D +57.5$ (c, 1.2 in H_2O).

p-Nitrophenylhydrazone: Mp 61-62°. $[\alpha]_D^{13} -54.6$ (c, 1.1 in MeOH).

Di-Et dithioacetal: [25876-36-2]

 $C_{10}H_{22}O_4S_2$ 270.413

Cryst. (THF/Et₂O). Mp 93-96°. $[\alpha]_D^{25} +0.1$ (c, 0.9 in THF).

3,4,6-Tri-O-benzyl: 3,4,6-Tri-O-benzyl-2-deoxy-D-ribo-hexose

[208925-32-0]

 $C_{27}H_{30}O_5$ 434.531

Oil.

 α -D-Pyranose-form [20789-85-9]

Me glycoside: Methyl 2-deoxy- α -D-ribo-hexopyranoside
[17676-18-5]
 $C_7H_{14}O_5$ 178.185

Hygroscopic needles (THF/Et₂O). Mp 97-99.5°. $[\alpha]_D^{25} +183$ (c, 0.5 in MeOH).

Me glycoside, 4,6-benzylidene, 3-mesyl: Methyl 4,6-O-benzylidene-2-deoxy-3-O-mesyl- α -D-ribo-hexopyranoside
[6600-11-9]

 $C_{15}H_{20}O_7S$ 344.385

Cryst. ($CHCl_3$ /EtOH). Mp 117-119° (110-111°). $[\alpha]_D^{22} +134.7$ ($CHCl_3$).

 β -D-Pyranose-form

Me glycoside: Methyl 2-deoxy- β -D-ribo-hexopyranoside
[20830-65-3]
 $C_7H_{14}O_5$ 178.185
Cryst. (THF/pentane). Mp 99-100.5°. $[\alpha]_D^{25} -20$ (c, 0.52 in MeOH).

 α -D-Furanose-form

Me glycoside: Methyl 2-deoxy- α -D-ribo-hexofuranoside
[25876-37-3]
 $C_7H_{14}O_5$ 178.185
Cryst. (EtOAc). Mp 115-119°. $[\alpha]_D^{25} +146$ (c, 0.6 in MeOH).

 β -D-Furanose-form

Me glycoside: Methyl 2-deoxy- β -D-ribo-hexofuranoside
[25876-40-8]
 $C_7H_{14}O_5$ 178.185
Cryst. (EtOAc). Mp 117-122°. $[\alpha]_D^{25} -46$ (c, 0.2 in MeOH).

Gut, M. *et al.*, *Helv. Chim. Acta*, 1947, 30, 1223 (*D-form*, synth)

Zorbach, W.W. *et al.*, *J.O.C.*, 1964, 29, 1790, (*D-form*, synth)

Richardson, A.C. *et al.*, *Carbohydr. Res.*, 1967, 4, 422 (α -D-Me gly 4,6-benzylidene mesyl, synth)

Kovář, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1967, 32, 2498 (α -D-Me gly 4,6-benzylidene mesyl synth)

Bhat, C.C. *et al.*, *Carbohydr. Res.*, 1969, 10, 197 (*di-Et dithioacetal, Me glycosides*)

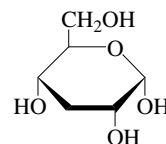
Haga, M. *et al.*, *Carbohydr. Res.*, 1974, 34, 214 (*D-form*, synth)

Angyal, S.T. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, 42, 15 (equilib)

Betteli, E. *et al.*, *Tetrahedron*, 1998, 54, 6011-6018 (3,4,6-tribenzyl)

3-Deoxy-ribo-hexose, 9CI**D-206**

3-Deoxyglucose. 3-Deoxyallose

 α -D-Pyranose-form $C_6H_{12}O_5$ 164.158

An aq. soln. at 31° contains 24.5% α -pyr, 55% β -pyr, 5% α -fur and 15.5% β -fur. Equilib. composition α -pyr: β -pyr: α -fur. 56.6:25.7:17.6 (H_2O).

 α -D-Pyranose-form

Needles (EtOH). Mp 108-111° (105.5-107°). $[\alpha]_D^{20} +102 \rightarrow +32.2$ (c, 1.0 in H_2O).

Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy- α -D-ribo-hexopyranoside
 $C_{14}H_{20}O_9$ 332.307
Cryst. (EtOH). Mp 129-130°. $[\alpha]_D -14$ (c, 1.0 in $CHCl_3$).

Me glycoside: Methyl 3-deoxy- α -D-ribo-hexopyranoside
[26922-85-0]
 $C_7H_{14}O_5$ 178.185
Syrup. Bp_{0.1} 150-170° (bath). $[\alpha]_D +125.1$ (c, 2.3 in H_2O).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy- α -D-ribo-hexopyranoside
[40773-64-6]

$C_{14}H_{18}O_5$ 266.293

Cryst. (EtOH). Mp 187-187.5°. $[\alpha]_D^{19}$ +130.1 (c, 0.84 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene, 2-tosyl: Methyl 4,6-O-benzylidene-2-O-tosyl- α -D-ribo-hexopyranoside

$C_{21}H_{24}O_7S$ 420.482

Cryst. (EtOAc/petrol). Mp 123.5-124°. $[\alpha]_D^{20}$ +60.1 (c, 2.7 in $CHCl_3$).

Ph glycoside: Phenyl 3-deoxy- α -D-ribo-hexopyranoside

$C_{12}H_{16}O_5$ 240.255

Cryst. (EtOH/Et₂O). Mp 136-138°. $[\alpha]_D^{20}$ +172 (H₂O).

β -D-Pyranose-form

Prisms (EtOH). Mp 137°. $[\alpha]_D^{25}$ +30.4 (c, 3.6 in H₂O).

1,2,4-Tri-Ac: 1,2,4-Tri-O-acetyl-3-deoxy- β -D-ribo-hexopyranose
[56946-02-2]

$C_{12}H_{18}O_8$ 290.269

Cryst. (Et₂O/petrol). Mp 86-88°. $[\alpha]_D$ -7.2 (c, 1.0 in $CHCl_3$).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy- β -D-ribo-hexopyranoside
[24921-02-6]

$C_{14}H_{18}O_5$ 266.293

Needles (dioxan/petrol). Mp 165°. $[\alpha]_D^{18}$ +59.5 (c, 4.1 in $CHCl_3$).

Ph glycoside: Phenyl 3-deoxy- β -D-ribo-hexopyranoside

$C_{12}H_{16}O_5$ 240.255

Cryst. (H₂O). Mp 183-185°. $[\alpha]_D^{20}$ -94 (c, 0.27 in H₂O).

α -D-Furanose-form

1,2-Isopropylidene: 3-Deoxy-1,2-O-isopropylidene- α -D-ribo-hexofuranose. Monoacetone 3-deoxyglucose
[4494-96-6]

$C_9H_{16}O_5$ 204.222

Needles ($CHCl_3$ /petrol). Mp 84°. Bp_{0.2} 135-137°. $[\alpha]_D^{24}$ -15.3 (c, 1.5 in EtOH).

1,2-O-Isopropylidene, 6-benzoyl: 6-O-Benzoyl-3-deoxy-1,2-O-isopropylidene- α -D-ribo-hexofuranose
[20720-46-1]

$C_{16}H_{20}O_6$ 308.33

Mp 141.5-142.5°.

1,2-O-Isopropylidene, dibenzoyl: 5,6-Di-O-benzoyl-3-deoxy-1,2-O-isopropylidene- α -D-ribo-hexofuranose
[4613-64-3]

$C_{23}H_{24}O_7$ 412.438

Mp 84.5-86°. $[\alpha]_D^{23}$ +14 (c, 1.4 in $CHCl_3$).

1,2:5,6-Di-O-isopropylidene: 3-Deoxy-1,2:5,6-di-O-isopropylidene- α -D-ribo-hexofuranose
[4613-62-1]

$C_{12}H_{20}O_5$ 244.287

Syrup. Bp_{0.3} 74-78°. $[\alpha]_D^{20}$ -8.5 (c, 1.5 in $CHCl_3$).

6-Trityl, 1,2-O-isopropylidene: 3-Deoxy-1,2-O-isopropylidene-6-O-trityl- α -D-ribo-hexofuranose
[20720-48-3]

$C_{28}H_{30}O_5$ 446.542

Mp 149.5-150.5°. $[\alpha]_D^{23}$ -14.5 (c, 1.4 in $CHCl_3$).

[2490-91-7]

Vis, E. et al., *Helv. Chim. Acta*, 1954, **37**, 378, (α -D-Me pyr benzylidene, α -D-Me pyr benzylidene tosyl)

Pratt, J.W. et al., *J.A.C.S.*, 1957, **79**, 2597 (α -D-form, α -D-tetra-Ac, α -D-Ph pyr, β -D-Ph pyr)
Anet, E.F.L.J. et al., *Chem. Ind. (London)*, 1960, 345 (β -D-form)

Hedgley, E.J. et al., *J.C.S.*, 1963, 4701 (α -D-form, α -D-Me pyr, β -D-Me pyr benzylidene, α -D-fur isopropylidene, α -D-fur diisopropylidene, synth)

Němec, J. et al., *Coll. Czech. Chem. Comm.*, 1968, **33**, 2097 (α -D-fur isopropylidene benzoyl, α -D-fur isopropylidene trityl)

Aspinall, G.O. et al., *Can. J. Chem.*, 1975, **53**, 2178 (β -D-pyr tri-Ac)

Barton, D.H.R. et al., *J.C.S. Perkin 1*, 1975, 1574; 1977, 1718 (synth, α -D-fur diisopropylidene, α -D-Me pyr benzylidene)

Collins, P.M. et al., *Chem. Comm.*, 1977, 927 (synth, α -D-fur diisopropylidene)

Scensny, P.M. et al., *Carbohydr. Res.*, 1983, **112**, 307 (synth, cmr, bibl)

Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (equilib)

Du Mortier, C. et al., *J. Carbohydr. Chem.*, 1984, **3**, 219 (equilib)

Colombo, D. et al., *J. Carbohydr. Chem.*, 1994, **13**, 611-617 (*Me* α -D-Pyr, enzymic synth)

Bolon, P. et al., *Tetrahedron*, 1995, **51**, 10443 (diisopropylidene derivs)

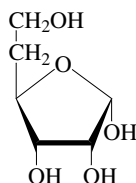
Org. Synth., 2000, **78**, 239-248 (α -D-fur diisopropylidene, synth, ir, pmr, cmr)

Kopper, S. et al., *Helv. Chim. Acta*, 2003, **86**, 827-843 (synth, pmr, cmr)

5-Deoxy-ribo-hexose, 9CI

D-207

5-Deoxyallose. 5-Deoxytalose. Homoribose



α -D-Furanose-form

$C_6H_{12}O_5$ 164.158

D-form [6829-62-5]

Syrup. $[\alpha]_D^{23}$ +19.4 (H₂O).

Phenylosazone: Mp 137-139°. $[\alpha]_D^{23}$ +17.8 (MeOH).

α -D-Furanose-form

1,2-O-Isopropylidene, 3,6-dibenzoyl: 3,6-Di-O-benzoyl-5-deoxy-1,2-O-isopropylidene- α -D-ribo-hexofuranose
[55085-29-5]

$C_{23}H_{24}O_7$ 412.438

Mp 87°.

β -D-Furanose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 5-deoxy-2,3-O-isopropylidene- β -D-ribo-hexofuranoside

$C_{10}H_{18}O_5$ 218.249

Syrup. Bp_{0.2} 84-86°. $[\alpha]_D^{23}$ -54.6 (c, 2.3 in MeOH).

Ryan, K.J. et al., *J.A.C.S.*, 1964, **86**, 2503 (synth)

Montgomery, J.A. et al., *J.O.C.*, 1964, **29**, 3436 (synth)

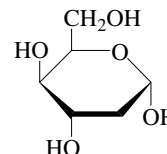
Sepulchre, A.M. et al., *Tet. Lett.*, 1973, 3619 (synth)

David, S. et al., *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1974, **279**, 651 (synth)

2-Deoxy-xylo-hexose

D-208

2-Deoxygulose. 2-Deoxyidose



α -D-form

$C_6H_{12}O_5$ 164.158

D-form [23583-41-7]

Syrup. $[\alpha]_D$ +12 (H₂O).

Phenylhydrazones: Mp 124-126°.

$[\alpha]_D$ -8.1 (MeOH).

p-Toluidide: 2-Deoxy-D-xylo-hexose

p-toluidinimide

$C_{13}H_{19}NO_4$ 253.297

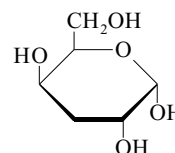
Two forms. Mp 74-76° Mp 141-142°.

Golab, T. et al., *Helv. Chim. Acta*, 1961, **44**, 616

3-Deoxy-xylo-hexose, 9CI, 8CI

D-209

3-Deoxygalactose. 3-Deoxygulose



α -D-Pyranose-form

$C_6H_{12}O_5$ 164.158

An aq. soln. at 31° contains <27% α -pyr, 53.3% β -pyr, <27% α -fur, and 19.5% β -fur.

D-form [4005-35-0]

Syrup. $[\alpha]_D^{22}$ +6.6 (c, 2.4 in H₂O).

2,4-Dinitrophenylhydrazones: Mp 129-130°. $[\alpha]_D$ -15.1 (MeOH).

1,1,2,4,5,6-Hexa-Ac:

$C_{18}H_{26}O_{12}$ 434.396

Mp 107-108°. $[\alpha]_D^{25}$ +43 (c, 2 in $CHCl_3$).

α -D-Pyranose-form

1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy- α -D-xylo-hexopyranose
[28538-18-3]

$C_{14}H_{20}O_9$ 332.307

Mp 104°. $[\alpha]_D^{25}$ +71.6 (c, 0.1 in $CHCl_3$).

Me glycoside: Methyl 3-deoxy- α -D-xylo-hexopyranoside
[29581-42-8]

$C_7H_{14}O_5$ 178.185

Cryst. (MeOH/Et₂O). Mp 162-164°.

p-Nitrophenyl glycoside: [23644-41-9]

$C_{12}H_{15}NO_7$ 285.253

Yellow needles (EtOH/petrol). Mp 164°. $[\alpha]_D^{25}$ +218.8 (c, 0.06 in MeOH).

β -D-Pyranose-form

1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy- β -D-xylo-hexopyranose
[15451-80-6]
 $C_{14}H_{20}O_9$ 332.307
Cryst. (EtOAc/petrol). Mp 102-103°. $[\alpha]_D^{25}$ -25.5 (c, 2.1 in $CHCl_3$).

Me glycoside: Methyl 3-deoxy- β -D-xylo-hexopyranoside
 $C_7H_{14}O_5$ 178.185
Mp 177.5-179° (173-174°). $[\alpha]_D$ -67 (c, 0.5 in H_2O).

Me glycoside, tribenzoyl: Methyl 2,3,6-tri-O-benzoyl-3-deoxy- β -D-xylo-hexopyranoside
 $C_{28}H_{26}O_8$ 490.509
Glass. $[\alpha]_D^{25}$ -17 (c, 0.4 in $CHCl_3$).

D-Furanose-form

1,2,5,6-Tetra-Ac: 1,2,5,6-Tetra-O-acetyl-3-deoxy-D-xylo-hexofuranose
[23655-60-9]
 $C_{14}H_{20}O_9$ 332.307
Syrup. $[\alpha]_D^{25}$ -16 (c, 1.9 in $CHCl_3$).

 α -D-Furanose-form

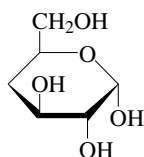
1,2:5,6-Di-O-isopropylidene: 3-Deoxy-1,2:5,6-di-O-isopropylidene- α -D-xylo-hexofuranose
[2774-29-0]
 $C_{12}H_{20}O_5$ 244.287
Mp 81.5°. $[\alpha]_D^{20}$ -52.5 (c, 0.6 in H_2O).

 β -D-Furanose-form

4-Nitrophenyl glycoside: [23644-44-2]
Yellow plates (EtOH/petrol). Mp 128-129°. $[\alpha]_D^{25}$ -202.4 (c, 0.09 in MeOH).
Huber, H. et al., *Helv. Chim. Acta*, 1948, **31**, 1645 (*D*-form, α -D-Me pyr)
Weygand, F. et al., *Chem. Ber.*, 1952, **85**, 256, (*D*-form, α -D-fur diisopropylidene)
Fahrenheit, G. et al., *Annalen*, 1968, **720**, 177 (*D*-form, *D*-hexa-Ac, *D*-fur tetra-Ac, α -D-pyr tetra-Ac, β -D-pyr tetra-Ac, nitrophenyl glycosides)
Angyal, S.J. et al., *Aust. J. Chem.*, 1972, **25**, 1711 (*pmr*, *equilib*)
Kucar, S. et al., *Coll. Czech. Chem. Comm.*, 1975, **40**, 457 (*synth*)
Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (*equilib*)
Lin, T.H. et al., *Carbohydr. Res.*, 1989, **188**, 228 (β -D-Me pyr, β -D-Me pyr tribenzoyl)
Binch, H. et al., *Carbohydr. Res.*, 1998, **306**, 409-419 (*synth*, *L*-form)

4-Deoxy-xylo-hexose, 9CI, 8CI

4-Deoxyglucose. 4-Deoxygalactose



$C_6H_{12}O_5$ 164.158

D-form [7286-46-6]

Cryst. (EtOH). Mp 136-140° (131-132°). $[\alpha]_D$ +44 \rightarrow +60.3 (c, 2.4 in H_2O).

Dibenzyl dithioacetal:

$C_{20}H_{26}O_4S_2$ 394.555
Cryst. (EtOH/Et₂O/petrol).
Mp 106-108°. $[\alpha]_D$ -88 (c, 1.0 in EtOH).

 α -D-Pyranose-form [28434-38-0]

Me glycoside: Methyl 4-deoxy- α -D-xylo-hexopyranoside
[13241-00-4]
 $C_7H_{14}O_5$ 178.185
Prisms (EtOAc). Mp 90°. $[\alpha]_D$ +168.2 (c, 0.86 in MeOH).

Me glycoside, 2,3,6-tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-deoxy- α -D-xylo-hexopyranoside
[13264-03-4]
 $C_{13}H_{20}O_8$ 304.296
Cubes ($CHCl_3$ /petrol). Mp 75-76°. $[\alpha]_D$ +138 (c, 0.5 in $CHCl_3$).

Me glycoside, 2,3-di-Me: Methyl 4-deoxy-2,3-di-O-methyl- α -D-xylo-hexopyranoside
[62853-48-9]
 $C_9H_{18}O_5$ 206.238
Oil. $[\alpha]_D^{22}$ +70 (c, 1.0 in MeOH).

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-4-deoxy- α -D-xylo-hexopyranoside
 $C_{21}H_{26}O_5$ 358.433
Syrup. $[\alpha]_D$ +75.4 (c, 1.425 in CH_2Cl_2).

 β -D-Pyranose-form

1,2,3,6-Tetra-Ac: 1,2,3,6-Tetra-O-acetyl-4-deoxy- β -D-xylo-hexopyranose
[53797-36-7]
 $C_{14}H_{20}O_9$ 332.307
Cryst. (Et₂O/petrol). Mp 112-114°. $[\alpha]_D$ +12 (c, 1.8 in $CHCl_3$).

Me glycoside: Methyl 4-deoxy- β -D-xylo-hexopyranoside
[51385-57-0]
 $C_7H_{14}O_5$ 178.185
Cryst. (EtOAc). Mp 145-146°. $[\alpha]_D$ -35.7 (c, 0.8 in H_2O).

Me glycoside, 2,3,6-tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-deoxy- β -D-xylo-hexopyranoside
[51996-22-6]
 $C_{13}H_{20}O_8$ 304.296
 $[\alpha]_D$ -23.2 (c, 2.2 in $CHCl_3$).

Me glycoside, tribenzoyl: Methyl 2,3,6-tri-O-benzoyl-4-deoxy- β -D-xylo-hexopyranoside
 $C_{28}H_{26}O_8$ 490.509
Amorph. $[\alpha]_D^{25}$ +53 (c, 0.8 in $CHCl_3$).

Ph glycoside: Phenyl 4-deoxy- β -D-xylo-hexopyranoside
 $C_{12}H_{16}O_5$ 240.255
Cryst. Mp 118-120°. $[\alpha]_D^{20}$ -57.9 (c, 1 in H_2O).

 β -L-Pyranose-form

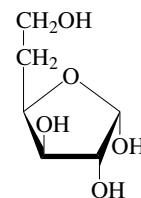
(-)-Menthyl glycoside, 2,3,6-tri-Ac: Menthyl 2,3,6-tri-O-acetyl-4-deoxy- β -L-xylo-hexopyranoside
 $C_{22}H_{36}O_8$ 428.522
Mp 103-105°. $[\alpha]_D^{23}$ -26.6 (c, 0.7 in $CHCl_3$).

Černý, V. et al., *Coll. Czech. Chem. Comm.*, 1962, **27**, 94 (*D*-form, *synth*, β -D-pyr tetra-Ac)
Hedgley, E.J. et al., *J.C.S. (C)*, 1963, 4701 (*D*-form, *synth*, α -D-Me pyr, α -D-Me pyr tri-Ac, β -D-pyr tetra-Ac, β -D-Me pyr)

Cook, A.F. et al., *J.C.S. (C)*, 1966, 1549, (α -D-Me pyr)
Gero, S.D. et al., *J.C.S. (C)*, 1967, 1761, (α -D-Me pyr tri-Ac)
Freemantle, H.H. et al., *J.C.S. (B)*, 1969, 551; 547 (*pmr*)
Vegh, L. et al., *Helv. Chim. Acta*, 1973, **56**, 2079 (β -D-pyr tetra-Ac)
Maradufu, A. et al., *Carbohydr. Res.*, 1974, **32**, 261 (β -D-Me pyr tri-Ac)
Barton, D.H.R. et al., *J.C.S. Perkin 1*, 1977, 1718 (α -D-Me pyr di-Me)
Kiss, L. et al., *Acta Chim. Acad. Sci. Hung.*, 1978, **98**, 349 (β -D-Ph pyr)
Brockhaus, M. et al., *Chem. Ber.*, 1978, **111**, 811 (*D*-form, *synth*)
Sinha, S.K. et al., *Carbohydr. Res.*, 1980, **81**, 239 (*synth*)
Bednarski, M. et al., *J.A.C.S.*, 1983, **105**, 6968 (β -L-menthyl pyr tri-Ac)
Giuliano, R.H. et al., *J. Carbohydr. Chem.*, 1987, **6**, 541-552 (*Me* α -D-pyr 2,3-dibenzyl)
Lin, T.H. et al., *Carbohydr. Res.*, 1989, **188**, 228 (α -D-Me gly tribenzoyl, β -D-Me gly)
Czernecki, S. et al., *J. Carbohydr. Chem.*, 1989, **8**, 793; 1995, **14**, 157-163 (*Me* α -D-pyr 2, 3-dibenzyl)

5-Deoxy-xylo-hexose, 9CI, 8CI

5-Deoxyglucose. 5-Deoxyidose



$C_6H_{12}O_5$ 164.158

D-form [7640-19-9]

Syrup. $[\alpha]_D^{24}$ +38 (c, 2.1 in H_2O). $[\alpha]_D$ +17.3 (c, 5.5 in H_2O).

Phenylosazone:

Cryst. (EtOH aq.). Mp 151°.

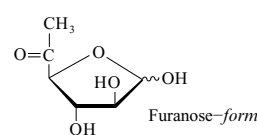
 α -D-Furanose-form

1,2-O-Isopropylidene: 5-Deoxy-1,2-O-isopropylidene- α -D-xylo-hexofuranoside
[7057-09-2]
 $C_9H_{16}O_5$ 204.222
Cryst. (Et₂O/petrol). Mp 94-96°. $[\alpha]_D^{24}$ -10.6 (c, 2.0 in $CHCl_3$).

Wolfrom, M.L. et al., *J.O.C.*, 1963, **28**, 3551 (*synth*, α -D-fur isopropylidene, *pmr*)
Hedgley, E.J. et al., *J.C.S. (C)*, 1967, 888 (*synth*)
de Jongh, D.C. et al., *Adv. Chem. Ser.*, 1968, **74**, 202 (*ms*)
Ritchie, R.G.S. et al., *Can. J. Chem.*, 1972, **50**, 507 (α -D-fur isopropylidene)
Overend, W.G. et al., *Methods Carbohydr. Chem.*, 1972, **6**, 173 (*synth*)

6-Deoxy-arabino-hexos-5-ulose

6-Deoxy-arabino-hexofuranos-5-ulose, 8CI



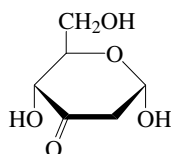
$C_6H_{10}O_5$ 162.142

D-form

Component of Hygromycin A, H-201.
Yellow syrup. $[\alpha]_D^{12}$ -4.3 (c, 1.88 in MeOH).
1,5-Bis-p-nitrophenylhydrazones: Mp 211°
dec. $[\alpha]_D^{15}$ +1.1 (c, 0.55 in Py).

D-Furanose-form [17651-03-5]

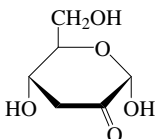
β -1,2-O-Isopropylidene: 6-Deoxy-1,2-O-isopropylidene- β -D-arabino-hexofuranos-5-ulose
C₉H₁₄O₅ 202.207
Needles. Mp 85-86°. $[\alpha]_D^{16}$ -18.2 (c, 1 in CHCl₃).
Takahashi, S. *et al.*, *Tet. Lett.*, 1967, 2285 (synth)

2-Deoxy-erythro-hexos-3-ulose **D-213** α -D-formC₆H₁₀O₅ 162.142**D-form** [23298-58-0]Syrup. $[\alpha]_D^{20}$ +33.9 (c, 0.97 in H₂O). **α -D-Pyranose-form**

2-Deoxy- α -D-erythro-hexopyranos-3-ulose
Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-deoxy- α -D-erythro-hexopyranosid-3-ulose
[6752-49-4]
[63598-31-2]
C₁₄H₁₆O₅ 264.277
Mp 177-178°. $[\alpha]_D$ +159 (c, 1.0 in EtOAc).
Me glycoside, 4,6-O-benzylidene, oxime: [16697-52-2]
C₁₄H₁₇NO₅ 279.292
Mp 207-208°. $[\alpha]_D$ +200 (c, 1.2 in CHCl₃).
Beynon, P.J. *et al.*, *J.C.S. (C)*, 1966, 1131-1136 (glycoside, synth)
Horton, D. *et al.*, *Carbohydr. Res.*, 1975, **43**, 227-235 (glycoside, pmr)
Ingle, T.R. *et al.*, *Indian J. Chem., Sect. B*, 1983, **22**, 69-70 (glycoside, synth, ir, pmr)
Kopper, S. *et al.*, *Chem. Eur. J.*, 1998, **4**, 2442-2455 (synth, pmr, cmr)

3-Deoxy-erythro-hexos-2-ulose, 9CI **D-214**

3-Deoxyglucosone
[30382-30-0]

 α -D-Pyranose-formC₆H₁₀O₅ 162.142**D-form** [4084-27-9]Syrup. $[\alpha]_D$ -2.5 \rightarrow +1.2 (H₂O, equil.).

► MQ3390000

Bis(phenylhydrazones): [32443-72-4]

Yellow needles (EtOH aq.). Mp 190°
dec. $[\alpha]_D^{25}$ -73.1 (c, 0.2 in Py).

Bis(2,4-dinitrophenylhydrazones):

[2595-22-4]
Red needles (EtOAc). Mp 265-266° dec.
 $[\alpha]_D^{25}$ +800 (Py/AcOH).

Bis(thiosemicarbazones): [115494-22-9]

Yellow needles (EtOH aq.). Mp 229°.
 $[\alpha]_D^{24}$ +512 (c, 1 in DMSO).

4,6-O-Benzylidene: 4,6-O-Benzylidene-3-deoxy-D-erythro-hexos-2-ulose

C₁₃H₁₄O₅ 250.251

Cryst. (EtOH). Mp 114-114.5°.

4,6-O-Benzylidene, bis(phenylhydrazones):

[35800-04-5]

Yellow needles (EtOH). Mp 188-189°.

 α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: See Methyl 4,6-O-benzylidene-3-deoxy-erythro-hexopyranosid-2-ulose, M-160

Benzyl glycoside, 4,6-O-benzylidene:

Benzyl 4,6-O-benzylidene-3-deoxy- α -D-erythro-hexopyranosid-2-ulose
[58006-35-2]

C₂₀H₂₀O₅ 340.375

Cryst. (EtOH). Mp 149-150°. $[\alpha]_D^{20}$ +129 (c, 1 in CHCl₃).

Benzyl glycoside, 4,6-O-benzylidene, oxime:

[58006-36-3]

C₂₀H₂₁NO₅ 355.39

Cryst. (EtOH). Mp 160-163°. $[\alpha]_D^{20}$ +120 (c, 1 in CHCl₃).

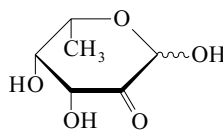
[14686-49-8]

Anet, E.F.L.J. *et al.*, *J.A.C.S.*, 1960, **82**, 1502

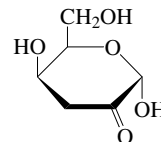
(synth)

Theander, O. *et al.*, *Adv. Carbohydr. Chem.*, 1962, **17**, 223-299 (rev)Kato, H. *et al.*, *Agric. Biol. Chem.*, 1962, **26**, 187-192 (D-form, isol)El Khadem, H. *et al.*, *Carbohydr. Res.*, 1971, **17**, 183-192 (D-form, synth)Collins, P.M. *et al.*, *Carbohydr. Res.*, 1972, **22**, 187-192 (D-benzylidene)Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1975, **108**, 3397-3411 (α -D-benzyl pyr benzylidene oxime)Horton, D. *et al.*, *Carbohydr. Res.*, 1987, **168**, 295-300 (thiosemicarbazone)Weenan, H. *et al.*, *ACS Symp. Ser.*, 1992, **490**, 217-231 (pmr, cmr)Kopper, S. *et al.*, *Chem. Eur. J.*, 1998, **4**, 2442-2455 (synth)Kopper, S. *et al.*, *Helv. Chim. Acta*, 2003, **86**, 827-843 (synth, pmr, cmr)**6-Deoxy-lyxo-hexos-2-ulose****D-215**

2-Ketofucose. Angustose

C₆H₁₀O₅ 162.142**L-form**

Hydrolysis product of Angustmycin A, A-478. Cryst. Mp 116-118° dec. $[\alpha]_D^{20}$ +18 (EtOH).

Yunsten, H. *et al.*, *Bull. Agric. Chem. Soc. Jpn.*, 1957, **21**, 261; *CA*, **51**, 18058h (isol)Yunsten, H. *et al.*, *J. Antibiot., Ser. A*, 1958, **11**, 77; *CA*, **54**, 3427i (struct)**3-Deoxy-threo-hexos-2-ulose** **D-216** α -D-Pyranose-formC₆H₁₀O₄ 146.143 **α -D-Pyranose-form**

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy- α -D-threo-hexopyranosid-2-ulose, 8CI

[20196-82-1]

C₁₄H₁₆O₅ 264.277

Cryst. (2-propanol). Mp 147-148°. $[\alpha]_D^{20}$ +107 (c, 0.1 in MeOH).

 β -D-Pyranose-form

4,6-O-Benzylidene, acetylhydrazones:

[26540-56-7]

C₁₅H₁₈N₂O₅ 306.318

Mp 193-195°. $[\alpha]_D^{20}$ +55 (c, 0.4 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl

4,6-O-benzylidene-3-deoxy- β -D-threo-

hexopyranosid-2-ulose

[24333-06-0]

C₁₄H₁₆O₅ 264.277

Cryst. (EtOH). Mp 189°. $[\alpha]_D^{20}$ -80 (c, 0.1 in MeOH).

Ph glycoside, 4,6-O-benzylidene: Phenyl

4,6-O-benzylidene-3-deoxy- β -D-threo-

hexopyranosid-2-ulose, 8CI

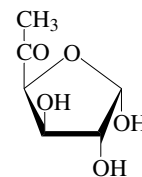
[24332-85-2]

C₁₉H₁₈O₅ 326.348

Cryst. (2-propanol). Mp 155-156°. $[\alpha]_D^{20}$ -60 (c, 0.1 in MeOH).

Butterworth, R.F. *et al.*, *Chem. Ind. (London)*, 1968, 1485 (pmr)Antonakis, K. *et al.*, *Bull. Soc. Chim. Fr.*, 1969, 122 (α -D-Me pyr benzylidene, β -D-Me pyr benzylidene, β -D-Ph pyr benzylidene)Paulsen, H. *et al.*, *Chem. Ber.*, 1969, **102**, 3824

(β -D-pyr benzylidene acetylhydrazones)

6-Deoxy-xylo-hexos-5-ulose, 9CI, 8CI **D-217** α -D-Furanose-formC₆H₁₀O₅ 162.142

A D₂O soln. contains 36% α -fur, 28% β -fur and and 36% β pyr forms.

D-form [22413-26-9]Mp 125-126°. $[\alpha]_D^{20}$ -34 (c, 10 in H₂O).

Also descr. as a gum, representing a mixt. of furanose and pyranose forms.

Bis-4-nitrophenylhydrazones: Mp 120.5°

dec.

C₆H₁₂O₅ 164.158C₁₀H₁₈O₅ 218.249
[α]_D²⁰ -14.4 (c, 5.34 in CHCl₃).**α-D-Furanose-form**

1,2-O-Isopropylidene: 6-Deoxy-1,2-O-isopropylidene-α-D-xylo-hexofuranos-5-ulose
[19189-70-9]
C₉H₁₄O₅ 202.207
Cryst. (C₆H₆/petrol). Mp 99-100°. [α]_D²² -47 (c, 1 in CHCl₃). [α]_D²⁰ -107 (c, 0.69 in CHCl₃).

1,2-O-Isopropylidene, phenylhydrazine:
[20701-59-1]
Mp 200-204°. [α]_D²² -12 (c, 1 in CHCl₃).

1,2-O-Isopropylidene, 4-nitrophenylhydrazine, 3-Me: [57032-40-3]
Mp 142-144°. [α]_D²² -50.8 (c, 1 in EtOH).

1,2-O-Isopropylidene, 3-benzyl: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene-α-D-xylo-hexofuranos-5-ulose
[41670-98-8]
C₁₆H₂₀O₅ 292.331
Cryst. (Et₂O/petrol). Mp 56-57°. [α]_D²² -88 (c, 1 in CHCl₃).

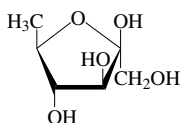
1,2-O-Methylene: 6-Deoxy-1,2-O-methylene-α-D-xylo-hexofuranos-5-ulose
[65827-45-4]
C₇H₁₀O₅ 174.153
Cryst. (EtOH). Mp 102-103°. [α]_D -107 (c, 1 in CHCl₃).

1,2-O-Methylene, 3-tosyl: 6-Deoxy-1,2-O-methylene-3-O-tosyl-α-D-xylo-hexofuranos-5-ulose
[65827-53-4]
C₁₄H₁₆O₇S 328.342
Cryst. (EtOH). Mp 120-121°. [α]_D -62 (c, 2 in CHCl₃).

β-D-Furanose-form

Me glycoside, 2,3-ditosyl: Methyl 6-deoxy-2,3-di-O-tosyl-β-D-xylo-hexofuranosid-5-ulose
[65827-47-6]
Cryst. (EtOH). Mp 131°. [α]_D -99 (c, 1 in CHCl₃).

Helfferich, B. *et al.*, *Ber.*, 1929, **62**, 2136 (*D*-form, *synth*)
Wolfrom, M.L. *et al.*, *J.O.C.*, 1962, **27**, 2107, (*α*-D-fur isopropylidene benzyl)
Blair, M.G. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 415 (*α*-D-fur isopropylidene)
Rosenthal, A. *et al.*, *Carbohydr. Res.*, 1971, **19**, 145 (*α*-D-fur isopropylidene)
Arrick, R.E. *et al.*, *Carbohydr. Res.*, 1973, **26**, 441 (*α*-D-fur isopropylidene benzyl)
Kiely, D.E. *et al.*, *Carbohydr. Res.*, 1973, **31**, 387 (*D*-form, *α*-D-fur isopropylidene, *α*-D-fur isopropylidene benzyl)
Ferrier, R.J. *et al.*, *Carbohydr. Res.*, 1977, **59**, 333 (*α*-D-fur methylene, *α*-D-fur methylene tosyl, *β*-D-Me fur ditosyl)
Yamashita, M. *et al.*, *Carbohydr. Res.*, 1979, **70**, 247 (*α*-D-fur isopropylidene)
Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 427-438 (*pmr*, *cmr*, *equilib*)

6-Deoxy-arabino-2-hexulose D-218
6-Deoxyfructose. Fructomethyllose. Rhamnulose

β-D-Furanose-form

D-form [148409-42-1]Syrup. [α]_D -6 (c, 2.07 in H₂O).

2-Nitrophenylhydrazine:
Orange-yellow needles. Mp 136-137°. [α]_D²⁰ +40 (c, 1 in EtOH).

β-D-Furanose-form

2,3-Isopropylidene: 6-Deoxy-2,3-O-isopropylidene-β-D-arabino-2-hexulofuranose
[20853-36-5]
C₉H₁₆O₅ 204.222
Needles (Me₂CO/Et₂O/pentane). Mp 80-81°.

2,3-Isopropylidene, ditosyl: 6-Deoxy-2,3-O-isopropylidene-1,6-di-O-tosyl-β-D-arabino-2-hexulofuranose
C₂₃H₂₈O₉S₂ 512.601
Needles (Et₂O/pentane). Mp 132-133°. [α]_D²⁰ +15.2 (c, 0.3 in EtOH).

L-form [14807-05-7]Syrup. [α]_D²² +7.3 (c, 5.0 in H₂O). 95-97 % pure.

2-Nitrophenylhydrazine: [72774-23-3]
Yellow needles (EtOH/Et₂O). Mp 135-137°. [α]_D²⁰ -39 (c, 1 in H₂O).

1-Phosphate:
C₆H₁₃O₈P 244.138
[α]_D +8.7 (c, 0.56 in AcOH) (as Ba salt).

[144382-86-5, 144382-87-6]

Morgan, W.T.J. *et al.*, *Helv. Chim. Acta*, 1938, **21**, 1023 (*D*-form)
Kučár, S. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 3119 (*L*-form)

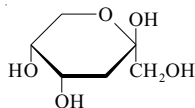
Ennifar, S. *et al.*, *Carbohydr. Res.*, 1989, **193**, 303 (*L*-form)
Zhou, P. *et al.*, *Carbohydr. Res.*, 1992, **232**, 177 (*L*-phosphate)

Hecquet, L. *et al.*, *Tetrahedron*, 1994, **50**, 8677-8684 (*D*-form, *enzymic synth*)
Freimund, S. *et al.*, *Chem. Eur. J.*, 1998, **4**, 2442-2455 (*D*-form, *synth*, *pmr*, *cmr*, *ms*)
Kopper, S. *et al.*, *Helv. Chim. Acta*, 2003, **86**, 827-843 (*D*-form, *synth*, *pmr*, *cmr*)

3-Deoxy-erythro-2-hexulose

D-219

3-Deoxyfructose
[4746-12-7]



β-D-Pyranose-form

C₆H₁₂O₅ 164.158

In aq. soln. exists as a mixt. of 5 tautomeric forms in which the β-pyranose form is preponderant (52.5% at 22°).

D-form [6196-57-2]

Needles (H₂O). Mp 113-114°. [α]_D -117 → -43.4 (24h) (c, 1 in H₂O). [α]_D²³ -44 (c, 1.0 in H₂O).

p-Nitrophenylazone:
Red solid. Mp 246-247° dec. [α]_D²¹ +455 (c, 0.2 in Py).

1-Me, 5,6-isopropylidene: 3-Deoxy-5,6-O-isopropylidene-1-O-methyl-D-erythro-2-hexulose
[68622-51-5]

β-D-Pyranose-form

Tetrabenzoyl: 1,2,4,5-Tetra-O-benzoyl-3-deoxy-β-D-erythro-hex-2-ulopyranose
C₃₄H₂₈O₉ 580.59
Cryst. (CCl₄ or EtOH). [α]_D²¹ +5.4 (c, 2 in CHCl₃).

Kuhn, R. *et al.*, *Chem. Ber.*, 1961, **94**, 2534 (*synth*, *tetrabenzoyl*)

Thiem, J. *et al.*, *Chem. Ber.*, 1976, **109**, 3588 (*synth*)

Kucar, S. *et al.*, *Coll. Czech. Chem. Comm.*, 1976, **41**, 2592 (*synth*)

Aparicio, F.J.L. *et al.*, *An. Quim.*, 1977, **73**, 1168 (*isopropylidene*)

Bystricky, S. *et al.*, *Coll. Czech. Chem. Comm.*, 1984, **49**, 828 (*cd*, *conformm*)

Bystricky, S. *et al.*, *Biochim. Biophys. Acta*, 1990, **1035**, 71 (*cmr*)

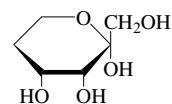
Dills, W.L. *et al.*, *Carbohydr. Res.*, 1990, **208**, 276 (*synth*)

Szarek, W.A. *et al.*, *Can. J. Chem.*, 1995, **73**, 1639-1644 (*synth*, *ir*, *pmr*, *cmr*)

Szarek, W.A. *et al.*, *Acta Cryst. C*, 1997, **53**, 1921-1923 (*β*-D-pyr form, *cryst struct*)

5-Deoxy-erythro-2-hexulose

D-220



α-D-Pyranose-form

C₆H₁₂O₅ 164.158**D-Pyranose-form**

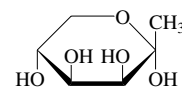
Characterised spectroscopically. Mixt. of anomers.

Fechter, M.H. *et al.*, *Carbohydr. Res.*, 1999, **319**, 55-62

1-Deoxy-lyxo-2-hexulose

D-221

1-Deoxytagatose



α-D-Pyranose-form

C₆H₁₂O₅ 164.158

In soln. prob. consists of a mixt. of cyclic forms plus appreciable amounts of open-chain form.

D-form

Cryst. (Me₂CO). Mp 128-130° (121-123°). [α]_D -14.3 (c, 1.7 in H₂O).

5,6-Isopropylidene: 1-Deoxy-5,6-O-isopropylidene-D-lyxo-hexose
C₉H₁₆O₅ 204.222

Syrup. [α]_D +71 (c, 0.9 in CHCl₃).

D-Furanose-form

3,4-Isopropylidene: 1-Deoxy-3,4-O-isopropylidene-D-lyxo-2-hexulofuranose
C₉H₁₆O₅ 204.222

Cryst. (CHCl₃). Mp 123-125°. [α]_D +16 (c, 1.24 in CHCl₃).

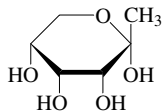
3,4-Isopropylidene, Ac: 6-O-Acetyl-1-deoxy-3,4-O-isopropylidene-D-lyxo-2-hexulofuranose
C₁₁H₁₈O₆ 246.26

Mp 78-79°. [α]_D +26.3 (c, 0.8 in CHCl₃).

Wolfson, M.L. *et al.*, *J.O.C.*, 1965, **30**, 1284, (D-form, synth)
 Dills, W.L. *et al.*, *Carbohydr. Res.*, 1981, **89**, 338 (synth, pmr)
 Cubero, I.I. *et al.*, *Carbohydr. Res.*, 1985, **138**, 139 (synth, pmr)

1-Deoxy-ribo-2-hexulose 1-Deoxyxypsicose

D-222

 α -D-Pyranose-formC₆H₁₂O₅ 164.158**D-form**

Syrup. $[\alpha]_D^{20} +2.3$ (c, 1.3 in H₂O) (+1.5, -0.1).

5,6-Isopropylidene: 1-Deoxy-5,6-O-isopropylidene-D-ribo-2-hexulose

C₉H₁₆O₅ 204.222

Cryst. (hexane). Mp 59-61°. $[\alpha]_D^{25} -52.5$ (c, 1 in CHCl₃).

D-Pyranose-form

Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-1-deoxy-D-ribo-2-hexulopyranoside

C₁₄H₂₀O₉ 332.307

Cryst. (MeOH/Et₂O/petrol). Mp 75-77°. $[\alpha]_D^{28} -47$ (c, 3 in CHCl₃).

Me glycoside: Methyl 1-deoxy-D-ribo-2-hexulopyranoside

C₇H₁₄O₅ 178.185

Cryst. Mp 107°. $[\alpha]_D^{20} -105.3$ (c, 0.225 in H₂O). $[\alpha]_D^{20} -132.1$ (c, 0.170 in MeOH).

L-form

Viscous oil. $[\alpha]_D^{22} -0.25$ (c, 2.5 in H₂O).

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1945, **67**, 1793 (synth, tetra-Ac)

Šmejkal, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1963, **28**, 1345 (D-form, D-Me gly)

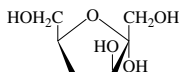
James, K. *et al.*, *Aust. J. Chem.*, 1972, **25**, 1967 (L-form)

Cubero, I.I. *et al.*, *Carbohydr. Res.*, 1985, **138**, 139 (synth, pmr)

4-Deoxy-threo-2-hexulose

D-223

4-Deoxyfructose. 4-Deoxytagatose

 α -D-Furanose-formC₆H₁₂O₅ 164.158**D-form** [50439-30-0]

$[\alpha]_D^{24} -3.9$ (c, 1.12 in H₂O).

6-Phosphate:

C₆H₁₃O₈P 244.138

Yellow solid. $[\alpha]_D^{25} +5.9$ (c, 7.8 in H₂O). Occurs in soln. as 40:60 mixt. of α - and β -anomers. Crystallises as β -furanose.

 α -D-Furanose-form

Me glycoside: Methyl 4-deoxy- α -D-threo-2-hexulofuranoside

[121686-40-6]

C₇H₁₄O₅ 178.185Syrup. $[\alpha]_D^{26} +94.5$ (c, 1.6 in MeOH). **β -D-Furanose-form**

Me glycoside: Methyl 4-deoxy- β -D-threo-2-hexulofuranoside

[82064-01-5]

C₇H₁₄O₅ 178.185

Hygroscopic syrup. $[\alpha]_D -45$ (c, 1 in MeOH).

Haylock, C.R. *et al.*, *Can. J. Biochem.*, 1973, **51**, 969-972 (synth)

Guthrie, R.D. *et al.*, *Carbohydr. Res.*, 1982, **103**, 1-6 (β -D-Me fur)

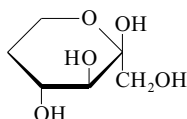
Martin, O.R. *et al.*, *Carbohydr. Res.*, 1989, **185**, 77-89 (α -D-Me fur)

Guerard, C. *et al.*, *Eur. J. Org. Chem.*, 1999, 3399-3402 (6-phosphate)

5-Deoxy-threo-2-hexulose

D-224

5-Deoxyfructose. 5-Deoxysorbose

 β -D-Pyranose-formC₆H₁₂O₅ 164.158**D-form** [92574-10-2]

Cryst. (MeOH/Me₂CO). Mp 109-111°.

$[\alpha]_D -67.3$ (c, 0.7 in H₂O). V. sweet; sweetness comparable to that of fructose. Exists in soln. mainly as β -D-pyranose-form.

 β -D-Pyranose-form [82945-01-5]

Et glycoside, tri-Ac: Ethyl 1,3,4-tri-O-acetyl-5-deoxy- β -D-threo-hex-2-ulopyranoside

[82945-03-7]

C₁₄H₂₂O₈ 318.323

$[\alpha]_D^{23} -75.6$ (c, 1.11 in CHCl₃).

Martin, O.R. *et al.*, *Can. J. Chem.*, 1982, **60**, 1857-1862 (synth, deriv)

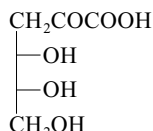
Tiwari, K.N. *et al.*, *Carbohydr. Res.*, 1986, **156**, 19-24 (synth)

Liu, K.K. *et al.*, *J.C.S. Perkin 1*, 1991, 2669-2673 (D-form, enzymic synth, pmr, cmr)

3-Deoxy-erythro-2-hexulonic acid

D-225

2-Keto-3-deoxygluconic acid. KDG

C₆H₁₀O₆ 178.141

Prob. shows complex equilib. between pyranose, furanose and lactones in soln. (cf. 3-Deoxy-threo-2-hexulonic acid, D-226).

D-form [17510-99-5]

Important prod. of degradation of polysaccharides by bacteria. $[\alpha]_D^{25} -33.1$ (c, 1.3 in H₂O).

2,4-Dinitrophenylhydrazones:

Yellow cryst. (EtOAc). Mp 206° dec. (rapid melt).

4,6-Isopropylidene, Me ester: [135253-55-3]

C₁₀H₁₆O₆ 232.233

Mp 55-56°. $[\alpha]_D^{25} -30.9$ (c, 3.75 in CHCl₃).

 α -D-Furanose-form

Tribenzoyl, Me ester: Methyl 2,4,6-tri-O-benzoyl-3-deoxy- α -D-erythro-hex-2-ulofuranosonate

[314058-80-5]

C₂₈H₂₄O₉ 504.492

Cryst. (hexane/EtOAc). Mp 117-118°.

$[\alpha]_D +28$ (c, 0.9 in CHCl₃). β -Anomer also obt. but identified only in admixture with the α -isomer.

Madson, M.A. *et al.*, *Carbohydr. Res.*, 1983, **115**, 288 (synth, pmr)

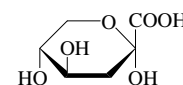
Plantier-Royon, R. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 239-249; 787-811 (synth, cmr)

Di Nardo, C. *et al.*, *Carbohydr. Res.*, 2000, **328**, 605-610 (α -D-fur tribenzoyl Me ester)

3-Deoxy-threo-2-hexulonic acid

D-226

3-Deoxy-2-oxogalactonic acid

 α -D-Pyranose-formC₆H₁₀O₆ 178.141

Prob. shows equilib. between pyranose, furanose and lactone forms in aq. soln.

D-form [56742-44-0]

Component of the lipopolysaccharide of *Vibrio parahaemolyticus* serotypes 07 and 012. Also in *Azobacter vinelandii* strain 1484.

Mp 159-163° (as K salt). $[\alpha]_D^{19} +15$ (c, 0.7 in H₂O).

Phenylhydrazones, phenylhydrazide:

Yellow needles. Mp 204-205°. $[\alpha]_D +13.9$ (c, 0.57 in Py).

1,4-Lactone: 3-Deoxy-threo-hex-2-

ulosono-1,4-lactone

C₆H₈O₅ 160.126

Mp 213-214° (as phenylhydrazones).

$[\alpha]_D^{18} -270$ (c, 0.45 in Py) (phenylhydrazones).

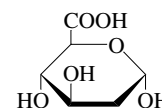
Kuhn, R. *et al.*, *Annalen*, 1959, **628**, 207 (synth, derivs)

Kondo, S. *et al.*, *Carbohydr. Res.*, 1989, **188**, 97 (isol)

Ferriera, F. *et al.*, *Carbohydr. Res.*, 1991, **210**, 255 (isol)

2-Deoxy-arabino-hexuronic acid

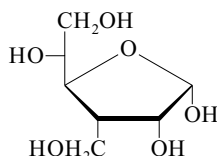
D-227

 α -D-Pyranose-formC₆H₁₀O₆ 178.141**D-form**

Found in exopolysaccharides of *Sphingomonas paucimobilis* strain I886, *Azotobacter indicus* var. *myxogenes* and a *Rhizobium* sp. CAS no. not found 8-14Cl.

Falk, C. *et al.*, *Carbohydr. Res.*, 1996, **285**, 69-79 (occur)
 Gulin, S. *et al.*, *Carbohydr. Res.*, 2001, **331**, 285-290 (occur)
 Guentas, L. *et al.*, *Carbohydr. Res.*, 2001, **332**, 167-173 (occur)

3-Deoxy-3-C-hydroxymethylallose D-228



C₇H₁₄O₆ 194.184

α-D-Furanose-form

1,2-Isopropylidene: 3-Deoxy-3-C-hydroxymethyl-1,2-O-isopropylidene-α-D-allofuranose
 [26277-33-8]
 C₁₀H₁₈O₆ 234.249
 [α]_D²² +75 (c, 1 in CHCl₃).

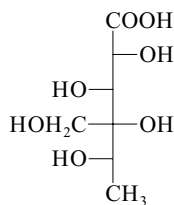
1,2:5,6-Diisopropylidene: 3-Deoxy-3-C-hydroxymethyl-1,2:5,6-di-O-isopropylidene-α-D-allofuranose
 [69832-48-0]
 C₁₃H₂₂O₆ 274.313
 Syrup or cryst. Mp 49-50°. [α]_D²² +103 (c, 2 in CHCl₃).

Rosenthal, A. *et al.*, *Can. J. Chem.*, 1969, **47**, 4477 (diisopropylidene, isopropylidene, synth, pmr)

Acton, E.M. *et al.*, *J. Med. Chem.*, 1979, **22**, 518 (synth)

Ariatti, M. *et al.*, *J.O.C.*, 1981, **46**, 5204 (synth)
 Mazur, A. *et al.*, *Tetrahedron*, 1984, **40**, 3949 (synth, pmr)

6-Deoxy-4-C-(hydroxymethyl)idonic acid D-229



C₇H₁₄O₇ 210.183

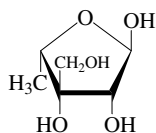
L-form

5-Me, 2,3-methylene, Me ester: Methyl 6-deoxy-4-C-hydroxymethyl-5-O-methyl-2,3-O-methylene-L-idonate
 C₁₀H₁₈O₇ 250.248
 Residue present in Olgose, O-30. Syrup.
 [α]_D²³ -26 (c, 0.8 in CHCl₃).

Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 283 (synth, deriv)

5-Deoxy-3-C-hydroxymethyl-lyxose, 9CI D-230

Dihydrostreptose
 [20399-13-7]



α-L-Furanose-form

C₆H₁₂O₅ 164.158

Occurs in antibiotic compds. derived from microorganisms, mainly strains of *Streptomyces*. Constit. of Bluensomycin, Glebomycin and dihydrostreptobiosamine. Amorph. glass. [α]_D²⁰ -23 (c, 1.3 in H₂O). Formation of α-form favoured over β in aq. soln.

α-L-Furanose-form

Me glycoside: Methyl 5-deoxy-3-C-(hydroxymethyl)-α-L-lyxofuranoside, 9CI.
 Methyl α-dihydrostreptoside
 [55628-12-1]

C₇H₁₄O₅ 178.185
 Syrup. [α]_D²⁵ -111 (c, 2.0 in CHCl₃).

Benzyl glycoside: Benzyl 5-deoxy-3-C-(hydroxymethyl)-α-L-lyxofuranoside.
 Benzyl α-dihydrostreptoside
 [55628-11-0]

C₁₃H₁₈O₅ 254.282
 Syrup. [α]_D²⁵ -100 (c, 1.0 in CHCl₃).

Benzyl glycoside, 3,3'-O-isopropylidene:
 [51884-87-8]

C₁₆H₂₂O₅ 294.347
 Syrup. [α]_D¹⁸ -85 (c, 1.0 in CHCl₃).

Benzyl glycoside, 3,3'-O-isopropylidene, 2-O-Ac: [55628-17-6]

C₁₈H₂₄O₆ 336.384
 Syrup. [α]_D²⁵ -110 (c, 2.0 in CHCl₃).

Benzyl glycoside, 2,3'-di-O-Ac: [55628-16-5]
 C₁₇H₂₂O₇ 338.357
 Syrup. [α]_D¹⁸ -107 (c, 2.0 in CHCl₃).

β-L-Furanose-form

1,2-O-Isopropylidene:

C₉H₁₆O₅ 204.222
 Cryst. (CHCl₃/hexane). Mp 104-106°. [α]_D²⁰ +1.3 (c, 0.8 in dioxan).

Me glycoside: Methyl 5-deoxy-3-C-(hydroxymethyl)-β-L-lyxofuranoside.
 Methyl β-dihydrostreptoside
 [55628-13-2]

C₇H₁₄O₅ 178.185
 Syrup. [α]_D²⁰ +100 (c, 2 in CHCl₃).

Bannister, A. *et al.*, *J.A.C.S.*, 1963, **85**, 234 (occur)

Ortmann, R. *et al.*, *Eur. J. Biochem.*, 1974, **43**, 265 (synth, pmr)

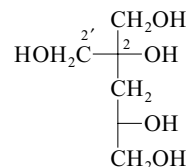
Wahl, H.P. *et al.*, *Biochem. Soc. Trans.*, 1975, **3**, 1089; *CA*, **84**, 132347n (rev)

Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1975, **48**, 556 (synth, pmr, derivs)

Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 1896

3-Deoxy-2-C-(hydroxymethyl)-erythro-pentitol D-231

2-(Hydroxymethyl)-1,2,4,5-pentanetetrol



C₆H₁₄O₅ 166.174

C-2 is not a chiral centre in the parent compd.

D-form

(R)-form
 [93662-50-1]

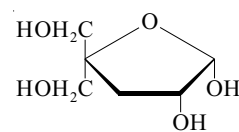
2,2'-Isopropylidene, tri-Ac: 1,4,5-Tri-O-acetyl-3-deoxy-2-C-(hydroxymethyl)-2,2'-O-isopropylidene-D-erythro-pentitol
 [95335-01-6]

C₁₅H₂₄O₈ 332.35

Chiral synthon. Syrup. [α]_D -16 (c, 1 in CHCl₃). Two chiral centres.

Bennani, F. *et al.*, *Tetrahedron*, 1984, **40**, 4669 (synth)

3-Deoxy-4-C-hydroxymethyl-glycero-pentofuranose D-232



C₆H₁₂O₅ 164.158

β-L-form

1,2-Isopropylidene: 3-Deoxy-4-C-hydroxymethyl-1,2-O-isopropylidene-β-L-glycero-pentofuranose
 [75082-05-2]

C₉H₁₆O₅ 204.222
 Syrup.

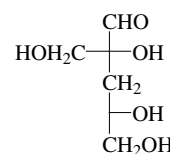
1,2-Isopropylidene, ditosyl: 3-Deoxy-1,2-O-isopropylidene-5-O-tosyl-4-C-(tosyloxy-methyl)-α-L-glycero-pentofuranose
 [74996-07-9]

C₂₃H₂₈O₉S₂ 512.601

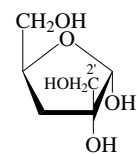
Cryst. (EtOH). Mp 161-163°.

Brunner, H. *et al.*, *J. Chem. Res., Synop.*, 1980, 74; *J. Chem. Res., Miniprint*, 1980, 1251 (synth, pmr)

3-Deoxy-2-C-(hydroxymethyl)-erythro-pentose D-233



D-form



α-D-Furanose-form

C₆H₁₂O₅ 164.158

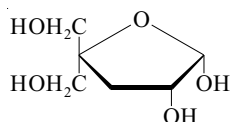
D-form

2,2':4,5-Diisopropylidene: 3-Deoxy-2-C-(hydroxymethyl)-2,2':4,5-di-O-isopropylidene-D-erythro-pentose
[93662-54-5]
C₁₂H₂₀O₅ 244.287
Syrup. [α]_D -53 (c, 1 in CHCl₃).

Bennani, F. *et al.*, *Tetrahedron*, 1984, **40**, 4669 (synth, pmr)
Genot, A. *et al.*, *J.O.C.*, 1987, **52**, 1057 (synth)

3-Deoxy-4-hydroxymethyl-glycero-pentose
[55797-66-5]

D-234

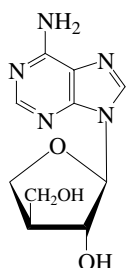
C₆H₁₂O₅ 164.158**α-D-form**

1,2-Isopropylidene: 3-Deoxy-4-hydroxymethyl-1,2-O-isopropylidene-α-D-glycero-pentose
C₉H₁₆O₅ 204.222
Mp 91-93°.

Leland, D.L. *et al.*, *Carbohydr. Res.*, 1974, **38**, C9 (synth)

9-(3-Deoxy-3-C-hydroxymethylthreofuranosyl)adenine

D-235



α-form

C₁₀H₁₃N₅O₃ 251.244**α-L-form** [19200-56-7]

Mp 122-123.5°. [α]_D²⁰ +88 (c, 0.3 in Py).
λ_{max} 259 (ε 14400) (pH 7 and 13). λ_{max} 257 (ε 14200) (pH 1).

β-L-form [20789-72-4]

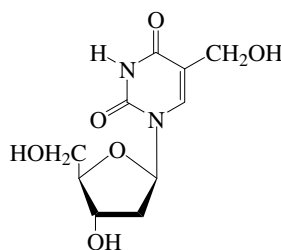
Mp 212-213°. [α]_D²⁴ -72 (c, 0.5 in Py).
The original paper refers to these as D-erythro-forms. λ_{max} 259 (ε 14150) (pH 7). λ_{max} 257 (ε 14000) (pH 1).
λ_{max} 260 (14400) (pH 13).

Reist, E.J. *et al.*, *J.A.C.S.*, 1968, **90**, 3852

2'-Deoxy-5-hydroxymethyluridine, 8CI

D-236

α-Hydroxythymidine, 9CI. 1-(β-D-erythro-2-Deoxypentofuranosyl)-5-hydroxymethyl-1H-pyrimidine-2,4-dione
[5116-24-5]

C₁₀H₁₄N₂O₆ 258.23Prisms (CHCl₃/EtOH). Mp 179-180°.

Cline, R.E. *et al.*, *J.A.C.S.*, 1959, **81**, 2521-2527 (synth)

Emerson, J.R. *et al.*, *Biochemistry*, 1967, **6**, 843-850 (conform, ord)

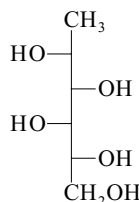
Shiau, G.T. *et al.*, *J. Med. Chem.*, 1980, **23**, 127-133 (synth, uv, pmr)

Shaw, A.A. *et al.*, *J.C.S. Perkin 2*, 1990, 2063-2070 (synth)

1-Deoxyiditol

D-237

Idomethylitol. 6-Deoxyiditol



D-form

C₆H₁₄O₅ 166.174

6-Deoxy-D-iditol ≡ 1-deoxy-D-iditol.

D-form

Light yellow syrup. [α]_D²⁸ +1.43 (c, 1.00 in H₂O).

Penta-Ac:

C₁₆H₂₄O₁₀ 376.36Mp 100°. [α]_D²⁸ +10.5 (c, 1.00 in CHCl₃).**L-form**[α]_D¹⁷ -2.6 (H₂O).

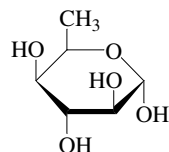
Penta-Ac: Mp 102-103°. [α]_D -13.1 (CHCl₃).

Bollenback, G.N. *et al.*, *Carbohydr. Res.*, 1980, **72**, 741

6-Deoxyidose

D-238

Idomethyllose



α-D-Pyranose-form

C₆H₁₂O₅ 164.158**D-form** [18546-05-9]Syrup. [α]_D +14.7 (c, 0.7 in H₂O).

Phenylosazone: Mp 175-177°.

α-D-Pyranose-form

Me glycoside: Methyl 6-deoxy-α-D-idopyranoside

C₇H₁₄O₅ 178.185

Prisms (CH₂Cl₂/hexane). Mp 96-97.5°. [α]_D²⁵ +105.2 (Me₂CO).

L-form [7658-09-5]

Occurs in some natural glycosides, e.g.

Mp 98-100°. [α]_D¹⁵ +2.2 → -26 (H₂O). [α]_D²⁵ -1.9 (c, 2.5 in H₂O).

Phenylosazone: Mp 184-185°.

α-L-Pyranose-form

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-α-L-idopyranose

C₁₄H₂₀O₉ 332.307[α]_D²⁵ -61.3 (c, 1.0 in CHCl₃).**β-L-Pyranose-form**

Me glycoside: Methyl 6-deoxy-β-L-idopyranoside, 9CI

[34299-65-5]

C₇H₁₄O₅ 178.185

Cryst. (EtOAc). Mp 81.5°. [α]_D²⁵ +74 (c, 1.0 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-1,2-O-isopropylidene-β-L-idopyranoside

C₁₃H₂₀O₈ 304.296

Cryst. (EtOH). Mp 93.5-94°. [α]_D²⁰ +46 (c, 1.0 in CHCl₃).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-β-L-idopyranose

C₁₄H₂₀O₉ 332.307[α]_D +16.9 (c, 1.0 in CHCl₃).**β-L-Furanose-form**

1,2-O-Isopropylidene: 6-Deoxy-1,2-O-isopropylidene-β-L-idofuranose

C₉H₁₆O₅ 204.222Mp 90-91°. [α]_D²¹ -12.9 (CHCl₃).

1,2-O-Isopropylidene, di-Ac: 3,4-Di-O-acetyl-6-deoxy-1,2-O-isopropylidene-β-L-idofuranose

C₁₃H₂₀O₇ 288.297Mp 122-123°. [α]_D²³ -27 (c, 2.0 in CHCl₃).

Meyer, A.S. *et al.*, *Helv. Chim. Acta*, 1946, **29**, 139 (L-form, synth)

Wolfson, M.L. *et al.*, *J.O.C.*, 1962, **27**, 1800, (β-L-fur isopropylidene, β-L-fur isopropylidene di-Ac)

Ikeda, D. *et al.*, *Bull. Chem. Soc. Jpn.*, 1971, **44**, 2529 (β-L-pyr Me gly, β-L-pyr Me gly tri-Ac)

Perry, M.B. *et al.*, *Can. J. Chem.*, 1973, **51**, 3039 (D-form, synth)

Giuliano, R.M. *et al.*, *Carbohydr. Res.*, 1989, **191**, 1 (synth, pmr, cmr, cryst struct, α-D-Me pyr)

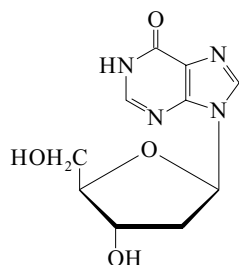
Hung, S.C. *et al.*, *Carbohydr. Res.*, 2001, **331**, 369-374 (α-L-Pyr tetra-Ac, β-L-Pyr tetra-Ac)

2'-Deoxyinosine

D-239

9-(2-Deoxyribofuranosyl)hypoxanthine. Hypoxanthine 2-deoxyriboside
[29868-32-4]

[890-38-0]



$C_{10}H_{12}N_4O_4$ 252.229

Isol. from herring sperm DNA, from *Phaseolus vulgaris* (kidney bean), *Laminaria saccharina*, *Furcellaria fastigiata*, *Lactobacillus* spp. etc. Ambiguous nucleoside forming base pairs with all four conventional nucleosides. Needles (MeOH), cryst. (H_2O).

Mp 218° dec. $[\alpha]_D^{27} +7.92$ (c, 0.53 in 0.1M NaOH). $[\alpha]_D^{30} -21$ (c, 1 in H_2O).

Oxime: [51385-49-0]

Mp 139-140°. $[\alpha]_D -21.8$ (c, 1 in MeOH). Softens at 110-115° and 130-135°.

3'-Ac: [229326-13-0]

$C_{12}H_{14}N_4O_5$ 294.266

Mp 116°. $[\alpha]_D^{25} -22.5$ (c, 1 in MeOH).

Brown, D.M. *et al.*, *J.C.S.*, 1950, 1990 (struct)
Manson, L.A. *et al.*, *J. Biol. Chem.*, 1951, **191**, 87 (isol)

Banhidi, Z.G. *et al.*, *Acta Chem. Scand.*, 1953, **7**, 713 (isol)

Venner, H. *et al.*, *Chem. Ber.*, 1960, **93**, 140 (synth)

Robins, M.J. *et al.*, *J.A.C.S.*, 1965, **87**, 4934 (pmr)

Rousseau, R.J. *et al.*, *J. Het. Chem.*, 1970, **7**, 367 (synth, uv)

Robins, M.J. *et al.*, *Can. J. Chem.*, 1973, **51**, 3161 (synth)

Yamazaki, A. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 1143 (synth)

Mengel, R. *et al.*, *Annalen*, 1977, 1585 (synth)

Ciuffreda, P. *et al.*, *Tetrahedron*, 2000, **56**, 3239-3243 (3'-Ac, synth, pmr)

3'-Deoxyinosine, 9CI

D-240

9-(3-Deoxy-β-D-erythro-pentofuranosyl)-1,9-dihydro-6H-purin-6-one. Hypoxanthine 3'-deoxyriboside
[13146-72-0]

$C_{10}H_{12}N_4O_4$ 252.229

Needles (EtOH aq.). Mp 202-203°.

$[\alpha]_D^{30} -87.9$ (c, 1 in Py).

2'-Ac: [287966-14-7]

$C_{12}H_{14}N_4O_5$ 294.266

Mp 143°. $[\alpha]_D^{25} -26.8$ (c, 1 in MeOH).

Haga, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1970, **43**, 3922 (synth, pmr)

Yamazaki, A. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 1143 (synth)

Montgomery, J.A. *et al.*, *J. Med. Chem.*, 1975, **18**, 564 (synth)

Mengel, R. *et al.*, *Annalen*, 1977, 1585 (synth)

Ciuffreda, P. *et al.*, *Tetrahedron*, 2000, **56**, 3239-3243 (2'-Ac, synth, pmr)

5'-Deoxyinosine, 9CI

D-241

[69655-07-8]

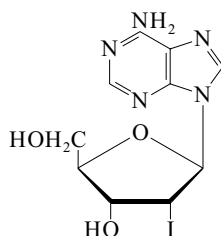
$C_{10}H_{12}N_4O_4$ 252.229

Solid (MeOH). Mp 188-190°.

Ciuffreda, P. *et al.*, *Eur. J. Org. Chem.*, 2003, 4748-4751 (synth, pmr)

2'-Deoxy-2'-iodoadenosine, 9CI

[68775-04-2]



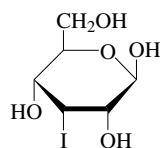
$C_{10}H_{12}IN_5O_3$ 377.141

Cryst. (MeOH). Mp 202-203°.

Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 2449 (synth, uv, pmr, cmr)

3-Deoxy-3-iodoallose

D-243



β-D-Pyranose-form

$C_6H_{11}IO_5$ 290.054

β-D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-3-iodo-β-D-allopyranoside
[117605-32-0]

$C_{14}H_{17}IO_5$ 392.19

Cryst. Mp 151-152°. $[\alpha]_D^{22} +1.62$ (c, 2.22 in $CHCl_3$).

Me glycoside, 4,6-O-(4-methoxybenzylidene): [117605-33-1]
Syrup. $[\alpha]_D^{22} -27$ (c, 0.89 in $CHCl_3$).

α-D-Furanose-form

1,2-O-Isopropylidene: 3-Deoxy-3-iodo-1,2-O-isopropylidene-α-D-allofuranose
[114192-72-2]

$C_9H_{15}IO_5$ 330.119

Oil.

1,2-O-Isopropylidene, 5,6-dimesyl:

3-Deoxy-3-iodo-1,2-O-isopropylidene-5,6-di-O-mesyl-α-D-allofuranose
[114192-73-3]

$C_{11}H_{19}IO_9S_2$ 486.302

Cryst. (EtOAc/petrol). Mp 146°. $[\alpha]_D +69$ (c, 0.7 in $CHCl_3$).

1,2:5,6-Di-O-isopropylidene: 3-Deoxy-3-iodo-1,2:5,6-di-O-isopropylidene-α-D-allofuranose
[67337-61-5]

$C_{12}H_{19}IO_5$ 370.184

Mp 55-56°. $[\alpha]_D^{22} +64$ (c, 2.0 in $CHCl_3$). $[\alpha]_D +79.5$ (c, 0.6 in C_6H_6).

Kunz, H. *et al.*, *Annalen*, 1982, 1245

(diisopropylidene)

Gurjar, M.K. *et al.*, *Carbohydr. Res.*, 1987, **165**, 313 (dimesyl)

Classon, B. *et al.*, *J.O.C.*, 1988, **53**, 6126,

(β-Me gly deriv, pmr, cmr)

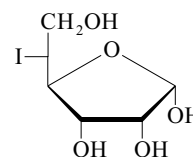
Russell, R.N. *et al.*, *Carbohydr. Res.*, 1990, **201**, 95 (diisopropylidene, pmr, cmr)

Marco-Contelles, J.L. *et al.*, *Synlett*, 1990, 167 (isopropylidene)

D-242

5-Deoxy-5-iodoallose

D-244



$C_6H_{11}IO_5$ 290.054

α-D-Furanose-form

1,2-O-Isopropylidene, 3,6-dibenzoyl: 3,6-Di-O-benzoyl-5-deoxy-5-iodo-1,2-O-isopropylidene-α-D-allofuranose
[55085-26-2]

$C_{23}H_{23}IO_7$ 538.335

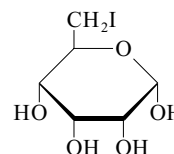
Cryst. (EtOH). Mp 65-67°. $[\alpha]_D^{20} +60$ (c, 0.3 in CH_2Cl_2).

Serge, D. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1974, **279**, 651 (isopropylidene deriv)

Serge, D. *et al.*, *Carbohydr. Res.*, 1979, **77**, 79 (isopropylidene deriv)

6-Deoxy-6-iodoallose

D-245



α-D-Pyranose-form

$C_6H_{11}IO_5$ 290.054

α-D-Pyranose-form

Me glycoside: Methyl 6-deoxy-6-iodo-α-D-allopyranoside
[56571-02-9]

$C_7H_{13}IO_5$ 304.081

Cryst. (EtOAc/hexane). Mp 81°. $[\alpha]_D^{22} +85.3$ (c, 1.75 in $CHCl_3$).

Me glycoside, tri-Ac: [56570-98-0]

$C_{13}H_{19}IO_8$ 430.193

Cryst. (Et₂O/hexane). Mp 75°. $[\alpha]_D^{22} +72.2$ (c, 1.4 in $CHCl_3$).

Me glycoside, 2,3-dibenzoyl, 4-Ac:

[109681-64-3]

$C_{23}H_{23}IO_8$ 554.334

Amorph. powder. $[\alpha]_D^{22} +46.3$ (c, 1.31 in $CHCl_3$).

Me glycoside, 3-(tetrahydropyran-2-yl),

2-Ac: [107599-43-9]

Oil. $[\alpha]_D^{30} +34.7$ (c, 3.0 in $CHCl_3$).

β-D-Pyranose-form

Me glycoside: Methyl 6-deoxy-6-iodo-β-D-allopyranoside
[56571-03-0]

$C_7H_{13}IO_5$ 304.081

Cryst. (EtOAc/MeOH). Mp 72°. $[\alpha]_D^{22} -38.8$ (c, 2.0 in CH_3OH).

Me glycoside, tri-Ac: [56570-99-1]

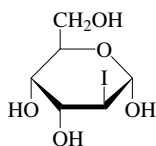
Cryst. (hexane). Mp 85°. $[\alpha]_D^{22} -33.8$ (c, 1.0 in $CHCl_3$).

[114925-88-1, 114925-89-2]

Lehmann, J. *et al.*, *Carbohydr. Res.*, 1975, **42**, 275 (α-Me gly, β-Me gly, tri-Ac)

Mori, M. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 4037 (4-Ac deriv, ir, pmr)

Nicolaou, K.C. *et al.*, *J.A.C.S.*, 1987, **109**, 2821; 1988, **110**, 4696 (tetrahydropyranyl, *ir*, *pmr*)

2-Deoxy-2-iodoaltrose**D-246** α -D-Pyranose-formC₆H₁₁IO₅ 290.054 **α -D-Pyranose-form**

Me glycoside: Methyl 2-deoxy-2-iodo- α -D-altropyranoside
[71019-18-6]

C₇H₁₃IO₅ 304.081

Needles (Me₂CO). Mp 134° dec. [α]_D²² +44 (c, 1.0 in H₂O). Unstable to heat and light.

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-deoxy-2-iodo- α -D-altropyranoside
[106023-34-1]

C₁₃H₁₉IO₈ 430.193Oil. [α]_D²⁰ +21.7 (c, 2.0 in CHCl₃).

Me glycoside, 3,4-O-benzylidene (R-): Methyl 3,4-O-(R)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside
[35775-00-9]

C₁₄H₁₇IO₅ 392.19

Syrup.

Me glycoside, 3,4-O-benzylidene (S-): Methyl 3,4-O-(S)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside
[35775-04-3]

C₁₄H₁₇IO₅ 392.19Cryst. (petrol). Mp 100°. [α]_D²⁰ +35 (c, 1.0 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside
[14125-73-6]

C₁₄H₁₇IO₅ 392.19Cryst. (Et₂O/hexane or EtOH).Mp 105-106°. [α]_D²⁰ +41 (c, 1.5 in CHCl₃). [α]_D²⁵ +35 (c, 2.0 in CHCl₃). **β -D-Pyranose-form**

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside
[18968-73-5]

C₁₄H₁₇IO₅ 392.19Cryst. (EtOH). Mp 175-176°. [α]_D²⁵ -91 (c, 2.8 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, 3-Ac: Methyl 3-O-acetyl-4,6-O-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside
[18968-74-6]

C₁₆H₁₉IO₆ 434.227Needles. Mp 123-123.5°. [α]_D²⁵ -109 (c, 3.0 in CHCl₃).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**, 61 (α -Me gly deriv, β -Me gly deriv)

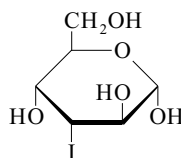
Inch, T.D. *et al.*, *Carbohydr. Res.*, 1972, **21**, 37 (3,4-benzylidene)

Guthrie, R.D. *et al.*, *Carbohydr. Res.*, 1979, **72**, 285 (α -Me gly)

Furstner, A. *et al.*, *J.O.C.*, 1989, **54**, 2307, (4,6-benzylidene, *pmr*)

3-Deoxy-3-iodoaltrose**D-247**

3-Deoxy-3-iodo-1,2:5,6-di-O-isopropylidene- α -D-allofuranose

C₆H₁₁IO₅ 290.054 **α -D-Pyranose-form**

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-3-iodo- α -D-altropyranoside
[56981-10-3]

C₁₄H₁₇IO₅ 392.19Rods (EtOAc). Mp 163.5-164.5°. [α]_D²³ +117 (c, 4.0 in CHCl₃) (+111).

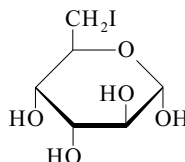
Me glycoside, 4,6-O-benzylidene, 2-tosyl: Methyl 4,6-O-benzylidene-3-deoxy-3-iodo-2-O-tosyl- α -D-altropyranoside
C₂₁H₂₃IO₇S 546.379

Cryst. (EtOH). Mp 128-129°. [α]_D²³ +46.4 (CHCl₃) (+37.5). Unstable at r.t., dec. to a dark tar.

Richards, G.N. *et al.*, *J.C.S.*, 1954, 4511; 1956, 496 (benzylidene)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**, 61 (2-tosyl)

Hicks, D.R. *et al.*, *Can. J. Chem.*, 1975, **53**, 2017 (benzylidene)

6-Deoxy-6-iodoaltrose**D-248**C₆H₁₁IO₅ 290.054 **α -D-Pyranose-form**

Me glycoside: C₇H₁₃IO₅ 304.081

Cryst. Mp 105-106°. [α]_D +91.4 (CHCl₃).

Me glycoside, tribenzoyl: C₂₈H₂₅IO₈ 616.405

Cryst. Mp 143-145°.

[α]_D +2.5 (CHCl₃).

Me glycoside, 2,3-dibenzyl: [118068-39-6]

C₂₁H₂₅IO₅ 484.33Syrup. [α]_D²⁷ +51 (c, 1.0 in CHCl₃).

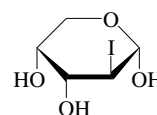
Me glycoside, 2,3-dibenzyl, 4-Ac: [127213-05-2]

C₂₃H₂₇IO₆ 526.367Syrup. [α]_D²⁷ +21 (c, 0.25 in CHCl₃).

Rosenfeld, D.A. *et al.*, *J.A.C.S.*, 1948, **70**, 2204 (*Me gly*)

Noritaka, C. *et al.*, *Bull. Chem. Soc. Jpn.*, 1991, **64**, 2118 (4-Ac, *pmr*, *ir*)

Chida, N. *et al.*, *J.O.C.*, 1991, **56**, 2976 (dibenzyl, *ir*, *pmr*)

2-Deoxy-2-iodoarabinose**D-249** α -D-Pyranose-formC₅H₉IO₄ 260.028 **α -D-Pyranose-form**

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-deoxy-2-iodo- α -D-arabinopyranoside
[131337-13-8]

C₁₀H₁₅IO₆ 358.129Cryst. (Et₂O/hexane). Mp 100-101°.[α]_D²⁰ -51.2 (c, 1.0 in CHCl₃). **α -L-Pyranose-form**

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-deoxy-2-iodo- α -L-arabinopyranoside
[26528-48-3]

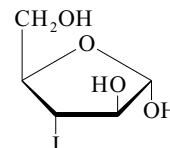
C₁₀H₁₅IO₆ 358.129Cryst. (Et₂O/petrol). Mp 100-101.5°. **β -L-Pyranose-form**

Me glycoside, 4-benzoyl: Methyl 4-O-benzoyl-2-deoxy-2-iodo- β -L-arabinopyranoside
[26528-17-6]

C₁₃H₁₅IO₅ 378.163Cryst. (EtOH). Mp 96-97°. [α]_D²⁵ +144 (c, 2.32 in CHCl₃).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, **47**, 4413; 4427 (α -L-Me gly deriv, β -L-Me gly deriv, *pmr*)

Horton, D. *et al.*, *Carbohydr. Res.*, 1990, **205**, 71 (α -D-Me gly deriv, *pmr*)

3-Deoxy-3-iodoarabinose**D-250**C₅H₉IO₄ 260.028 **α -D-Furanose-form**

Me glycoside, 5-benzoyl: Methyl 5-O-benzoyl-3-deoxy-3-iodo- α -D-arabinofuranoside
[26532-12-7]

C₁₃H₁₅IO₅ 378.163Syrup. [α]_D²⁵ +73.1 (c, 1.58 in CHCl₃).

Me glycoside, 5-(4-nitrobenzoyl): [53081-37-1]

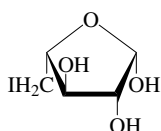
Pale yellow needles (Et₂O/petrol). Mp 101-102°. [α]_D²² +79.5 (c, 1.0 in CHCl₃).

Me glycoside, 2,5-bis-(4-nitrobenzoyl): [53081-38-2]

Pale yellow needles (CH₂Cl₂/hexane). Mp 185°. [α]_D²² -1.09 (c, 1.0 in CH₂Cl₂).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, **47**, 4413 (benzoyl)

El Khadem, H.S. *et al.*, *Carbohydr. Res.*, 1974, **33**, 329 (nitrobenzoyl, *ir*, *pmr*)

5-Deoxy-5-iodoarabinose**D-251** β -L-Furanose-form $C_5H_9IO_4$ 260.028**L-form**

Ethylene dithioacetal, 2,3,4-tri-Ac:

[17073-62-0]

 $C_{13}H_{19}IO_6S_2$ 462.326

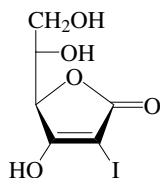
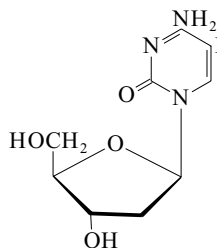
Cryst. (EtOH). Mp 110-110.5°.

 β -L-Furanose-form1,2-O-Isopropylidene: 5-Deoxy-5-iodo-1,2-O-isopropylidene- β -L-arabinofuranose [84936-06-1] $C_8H_{13}IO_4$ 300.093

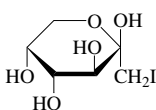
Needles (EtOAc/petrol). Mp 66-67°.

 $[\alpha]_D^{27} +6.86$ (CHCl₃).1,2-O-Isopropylidene, 3-Ac: 3-O-Acetyl-5-deoxy-5-iodo-1,2-O-isopropylidene- β -L-arabinofuranose [20853-30-9] $C_{10}H_{15}IO_5$ 342.13

Syrup.

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1936, **116**, 189 (β -L-fur deriv)Fernandez-Bolanos, J. *et al.*, *An. R. Soc. Esp. Fis. Quim., Ser. B*, 1966, **62**, 1069; *CA*, **67**, 82339n (dithioacetal)Hough, L. *et al.*, *Adv. Chem. Ser.*, 1968, 120; *CA*, **69**, 97035a (β -L-fur deriv)Binkley, R.W. *et al.*, *J. Carbohydr. Chem.*, 1982, **1**, 213 (β -L-fur deriv)**2-Deoxy-2-iodoascorbic acid, 9CI****D-252** $C_6H_7IO_5$ 286.023**L-form** [189262-86-0]Cryst. Mp 173-175°. $[\alpha]_D^{25} +76.4$ (c, 0.25 in MeOH).Ge, P. *et al.*, *J.O.C.*, 1997, **62**, 3340-3343 (*synth*, *pmr*)**2'-Deoxy-5-iodocytidine, 9CI, 8CI****D-253****Ibicitabine, INN.** Iododesoxycytidine. Cebevair. Cebe-Viran. Cuterpes. Marenil. I.D.C. NSC 527083 [611-53-0] $C_9H_{12}IN_3O_4$ 353.116

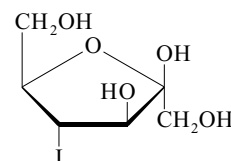
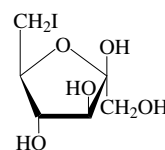
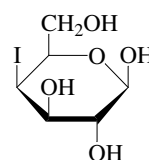
Antiviral (antiherpetic) agent. Cryst. Mp 175-178° dec.

Chang, P.K. *et al.*, *Biochem. Pharmacol.*, 1961, **8**, 327 (*synth*)Chang, P.K. *et al.*, *J. Med. Chem.*, 1963, **6**, 428 (*synth*, *pharmacol*)Miles, D.W. *et al.*, *J.A.C.S.*, 1969, **91**, 831 (*cd*)
Fritzsch, H. *et al.*, *Z. Chem.*, 1971, **11**, 69 (*pmr*, *ir*)Prusoff, W.H. *et al.*, *Pharmacol. Ther.*, 1979, **7**, 1 (*rev*, *pharmacol*)Ghiassy, F. *et al.*, *Acta Cryst. B*, 1981, **37**, 1921 (*cryst struct*)De Clercq, E. *et al.*, *Mol. Pharmacol.*, 1982, **21**, 217 (*pharmacol*)Prusoff, W.H. *et al.*, *Int. Encycl. Pharmacol. Ther.*, 1984, **111**, 341 (*rev*)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 548**1-Deoxy-1-iodofructose****D-254** β -D-Pyranose-form $C_6H_{11}IO_5$ 290.054**D-form**

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-deoxy-1-iodo-D-fructose

 $C_{14}H_{19}IO_9$ 458.203Mp 55-56°. $[\alpha]_D +63$ (CHCl₃). **β -D-Pyranose-form**3,4,5-Tribenzoyl: 3,4,5-Tri-O-benzoyl-1-deoxy-1-iodo- β -D-fructopyranose [134136-51-9] $C_{27}H_{23}IO_8$ 602.378

Syrup.

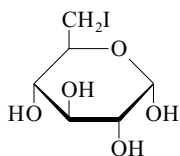
2,3:4,5-Di-O-isopropylidene: 1-Deoxy-1-iodo-2,3:4,5-di-O-isopropylidene- β -D-fructopyranose [38084-03-6] $C_{12}H_{19}IO_5$ 370.184Oil. $[\alpha]_D^{24} -21.4$ (c, 4.5 in CHCl₃).Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1943, **65**, 1516 (*D-tetra-Ac*)James, K. *et al.*, *Aust. J. Chem.*, 1972, **25**, 1967 (*diisopropylidene*, *pmr*)Campbell, M.H. *et al.*, *Tet. Lett.*, 1991, **32**, 1237 (*tribenzoyl*)**4-Deoxy-4-iodofructose****D-255** $C_6H_{11}IO_5$ 290.054 **β -D-Furanose-form**Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-deoxy-4-iodo- β -D-fructofuranoside [82078-04-4] $C_{13}H_{19}IO_8$ 430.193Syrup. $[\alpha]_D -52$ (c, 1.0 in CHCl₃).Guthrie, R.D. *et al.*, *Carbohydr. Res.*, 1982, **103**, 1 (*tri-Ac*, *cmr*)**6-Deoxy-6-iodofructose****D-256** β -D-Furanose-form $C_6H_{11}IO_5$ 290.054**D-form**Oil. $[\alpha]_D^{20} +20$ (10min) $\rightarrow +7$ (24h) (c, 1.0 in EtOH). **β -D-Furanose-form**2,3-O-Isopropylidene, 1-tosyl: 6-Deoxy-6-iodo-2,3-O-isopropylidene-1-O-tosyl- β -D-fructofuranose [83032-12-6] $C_{16}H_{21}IO_7S$ 484.308Cryst. (CHCl₃/hexane). Mp 124-125°. $[\alpha]_D^{25} +5.6$ (CHCl₃). $[\alpha]_D +7.5$ (c, 3.2 in MeOH).Morgan, W.T.J. *et al.*, *Helv. Chim. Acta*, 1938, **21**, 1023 (*deriv*)Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, **35**, 1003 (*deriv*, *pmr*)Page, P. *et al.*, *Tetrahedron*, 1996, **52**, 1557-1572 (*synth*)Fellahi, M. *et al.*, *Carbohydr. Res.*, 1999, **322**, 142-146 (*synth*, *pmr*, *cmr*)**4-Deoxy-4-iodogalactose****D-257** β -D-Pyranose-form $C_6H_{11}IO_5$ 290.054 **β -D-Pyranose-form**Me glycoside: Methyl 4-deoxy-4-iodo- β -D-galactopyranoside [51385-59-2] $C_7H_{13}IO_5$ 304.081

Cryst. (MeOH). Mp 200° dec. $[\alpha]_D^{25} +25.5$ (c, 1.0 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-deoxy-4-iodo-β-D-galactopyranoside
[51996-27-1]
C₁₃H₁₉IO₈ 430.193
Cryst. (EtOH aq.). Mp 87-88°. $[\alpha]_D^{25} +76$ (c, 1 in CHCl₃).

Me glycoside, 2,3,6-tribenzoyl: Methyl 2,3,6-tri-O-benzoyl-4-deoxy-4-iodo-β-D-galactopyranoside
C₂₈H₂₅IO₈ 616.405
Cryst. (MeOH). Mp 163-164°. $[\alpha]_D^{25} +47.7$ (c, 2 in CHCl₃).

Maradufu, A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 261-267 (β-D-Me pyr, β-D-Me pyr tri-Ac, β-D-Me pyr tribenzoyl)

6-Deoxy-6-iodoglucose**D-258** α -D-Pyranose-formC₆H₁₁IO₅ 290.054**D-form** [6304-86-5]

Cryst. (MeOH aq.). Mp 114.3-115.6°. $[\alpha]_D^{25} +70.5$ (c, 1 in H₂O).

 α -D-Pyranose-form [174955-12-5]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-6-iodo-α-D-glucopyranose
[24871-54-3]
C₁₄H₁₉IO₉ 458.203

Cryst. (MeOH). Mp 178-179°. $[\alpha]_D^{20} +101$ (c, 0.8 in CHCl₃).

Me glycoside: Methyl 6-deoxy-6-iodo-α-D-glucopyranoside
[5155-46-4]
C₇H₁₃IO₅ 304.081

Cryst. (CHCl₃/hexane). Mp 148°. $[\alpha]_D^{25} +107.8$ (c, 1 in MeOH).

[174955-11-4]

Hardegger, E. *et al.*, *Helv. Chim. Acta*, 1946, **29**, 1199 (D-tetra-Ac)

Kochetkov, N.K. *et al.*, *Dokl. Akad. Nauk SSSR*, 1960, **133**, 1094 (D-form, D-tetra-Ac)

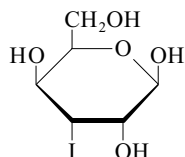
Anisuzzaman, A.K.M. *et al.*, *Carbohydr. Res.*, 1978, **61**, 511 (α-D-Me pyr, synth)

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1980, **8**, 227 (α-D-Me pyr, synth)

Ishii, T. *et al.*, *Carbohydr. Res.*, 1986, **154**, 63, (D-form, synth)

Desseaux, C. *et al.*, *Bioorg. Med. Chem. Lett.*, 1993, **3**, 1547 (synth)

Fr. Pat., 1993, 2 680 788, (Beghin-Say); *CA*, **119**, 271615c (D-form, synth)

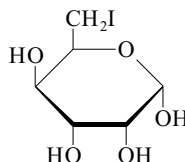
3-Deoxy-3-iodoglucose**D-259**C₆H₁₁IO₅ 290.054**β-D-Pyranose-form**

Me glycoside, tribenzoyl: Methyl 2,4,6-tri-O-benzoyl-3-deoxy-3-iodo-β-D-gulopyranoside
[124314-31-4]

C₂₈H₂₅IO₈ 616.405

Glass. $[\alpha]_D^{25} +61$ (c, 0.6 in CHCl₃).

Lin, T.-H. *et al.*, *Carbohydr. Res.*, 1989, **188**, 228 (tribenzoyl, cmr)

6-Deoxy-6-iodoglucose**D-260**C₆H₁₁IO₅ 290.054 **α -D-Pyranose-form**

Me glycoside, 3-benzyl, 2-tosyl:

[96691-86-0]

C₂₁H₂₅IO₇S 548.395

Syrup. $[\alpha]_D^{25} +143$ (c, 1.0 in CHCl₃).

Me glycoside, 3-benzyl, 4-benzoyl, 2-tosyl:
[96691-87-1]

C₂₈H₂₉IO₈S 652.503

Syrup. $[\alpha]_D^{25} +54$ (c, 1.0 in CHCl₃).

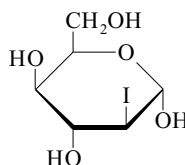
Me glycoside, 3,4-dibenzyl, 2-tosyl: [96691-88-2]

C₂₈H₃₁IO₇S 638.519

Syrup. $[\alpha]_D^{25} +25$ (CHCl₃).

Ferrier, R.J. *et al.*, *J.C.S. Perkin 1*, 1985, 301

(Me gly deriv, pmr)

2-Deoxy-2-iododiose**D-261**C₆H₁₁IO₅ 290.054 **α -D-Pyranose-form**

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-deoxy-2-iodo-α-D-idopyranoside
[18968-77-9]

C₁₄H₁₇IO₅ 392.19

Needles (EtOH). Mp 162-163°. $[\alpha]_D^{25} +28$ (c, 1.2 in CHCl₃).

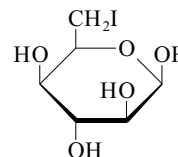
Me glycoside, 4,6-O-benzylidene, 3-Ac:

Methyl 3-O-acetyl-4,6-O-benzylidene-2-deoxy-2-iodo-α-D-idopyranoside
[18968-82-6]

C₁₆H₁₉IO₆ 434.227

Cubes. Mp 174-175°. $[\alpha]_D^{25} -28$ (c, 2.4 in CHCl₃).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**, 61 (Me gly derivs)

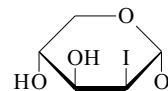
6-Deoxy-6-iododiose**D-262**C₆H₁₁IO₅ 290.054**β-D-Pyranose-form**

Me glycoside, 3-Me, 2,4-ditosyl:

C₂₂H₂₇IO₉S₂ 626.486

Syrup.

Fischer, R. *et al.*, *Helv. Chim. Acta*, 1954, **37**, 6 (Me gly deriv)

2-Deoxy-2-iodolixose**D-263** α -D-Pyranose-formC₅H₉IO₄ 260.028 **α -D-Pyranose-form**

Me glycoside, di-Ac: Methyl 3,4-di-O-acetyl-2-deoxy-2-iodo-α-D-lyxopyranoside
[51385-07-0]

C₁₀H₁₅IO₆ 358.129

Cryst. Mp 116°. $[\alpha]_D^{25} -17$ (c, 1.65 in CHCl₃). Dec. when stored at r.t.

 α -L-Pyranose-form

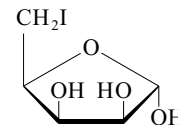
Me glycoside, di-Ac: Methyl 3,4-di-O-acetyl-2-deoxy-2-iodo-α-L-lyxopyranoside
[131267-50-0]

C₁₀H₁₅IO₆ 358.129

Cryst. (Et₂O/hexane). Mp 115-117°. $[\alpha]_D^{20} +14.9$ (c, 1.0 in CHCl₃).

Van Es, T. *et al.*, *J. S. Afr. Chem. Inst.*, 1973, **26**, 152 (D-Me gly deriv, pmr)

Horton, D. *et al.*, *Carbohydr. Res.*, 1990, **205**, 71 (L-Me gly deriv, pmr)

5-Deoxy-5-iodolixose**D-264**C₅H₉IO₄ 260.028 **α -D-Furanose-form**

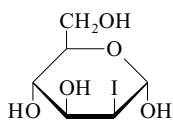
Me glycoside, 2,3-O-isopropylidene:

[63087-96-7]

C₉H₁₅IO₄ 314.12

Oil. $[\alpha]_D^{20} +75.4$ (c, 9.0 in CH₂Cl₂). $[\alpha]_D^{24} +72.6$ (c, 2.88 in MeOH).

Fuersther, A. *et al.*, *J.O.C.*, 1991, **56**, 2213, (Me gly deriv, pmr)

2-Deoxy-2-iodomannose**D-265** α -D-Pyranose-form $C_6H_{11}IO_5$ 290.054**D-form**

Syrup.

 α -D-Pyranose-form

3,4,6-Tri-Ac: [53008-86-9]

 $C_{12}H_{17}IO_8$ 416.166Syrup. $[\alpha]_D^{35}$ -18.8 (c, 1.4 in $CHCl_3$).

1-Benzoyl, 3,4,6-tri-Ac: [20846-99-5]

 $C_{19}H_{21}IO_9$ 520.274Cryst. Mp 160-161°. $[\alpha]_D$ +45.3 (c, 2.0 in $CHCl_3$).*Me glycoside: Methyl 2-deoxy-2-iodo- α -D-mannopyranoside*

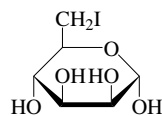
[10226-88-7]

 $C_7H_{13}IO_5$ 304.081Cryst. Mp 145-146°. $[\alpha]_D$ +49.2 (c, 1.0 in MeOH).*Me glycoside, tri-Ac: [20701-50-2]* $C_{13}H_{19}IO_8$ 430.193Syrup. $[\alpha]_D$ +44.9 ($CHCl_3$). **β -D-Pyranose-form***Me glycoside: Methyl 2-deoxy-2-iodo- β -D-mannopyranoside*

[53008-76-7]

 $C_7H_{13}IO_5$ 304.081Needles (MeOH/Et₂O). Mp 147-148°. $[\alpha]_D^{28}$ -6.3 (c, 0.7 in MeOH).*Me glycoside, tri-Ac: [53008-74-5]*Cryst. (Et₂O/hexane). Mp 118-118.5°. $[\alpha]_D^{27}$ -97.8 (c, 1.9 in $CHCl_3$).Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1962, **40**, 1926 (α -Me gly)Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **47**, 361 (*I*-benzoyl)Honda, S. *et al.*, *Carbohydr. Res.*, 1974, **34**, 45 (*D*-form, α -tri-Ac, α -Me gly, β -Me gly)Horton, D. *et al.*, *Carbohydr. Res.*, 1990, **205**, 71 (α -tri-Ac)**6-Deoxy-6-iodomannose****D-266**

6-Iodorhamnose

 α -D-Pyranose-form $C_6H_{11}IO_5$ 290.054 **α -D-Pyranose-form***Me glycoside: Methyl 6-deoxy-6-iodo- α -D-mannopyranoside*

[52290-43-4]

 $C_7H_{13}IO_5$ 304.081Cryst. Mp 120-122°. $[\alpha]_D$ +55 (H₂O).*Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-6-iodo- α -D-mannopyranoside*

[50692-55-2]

 $C_{13}H_{19}IO_8$ 430.193Cryst. (EtOH). Mp 91-92°. $[\alpha]_D^{22}$ +48 (c, 1.2 in $CHCl_3$).*Me glycoside, 2,3-dimesyl: Methyl 6-deoxy-6-iodo-2,3-di-O-mesyl- α -D-mannopyranoside*

[118360-72-8]

 $C_9H_{17}IO_9S_2$ 460.264Amorph. solid. $[\alpha]_D^{31}$ +29 (c, 0.6 in $CHCl_3$).*Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-6-iodo-2,3-O-isopropylidene- α -D-mannopyranoside*

[22932-34-9]

 $C_{10}H_{17}IO_5$ 344.146Cryst. Mp 111-112° (109-110°). $[\alpha]_D^{24}$ +44.2 (c, 1.0 in MeOH). $[\alpha]_D^{20}$ +46 (c, 1.3 in $CHCl_3$).*Me glycoside, 2,3-O-isopropylidene, 4-benzoyl: Methyl 4-O-benzoyl-6-deoxy-6-iodo-2,3-O-isopropylidene- α -D-mannopyranoside*

[122805-35-0]

 $C_{17}H_{21}IO_6$ 448.254Cryst. (EtOH). Mp 159-161°. $[\alpha]_D^{22}$ +10.5 (c, 1.85 in $CHCl_3$).*Me glycoside, 2,3-O-isopropylidene, 4-mesyl: Methyl 6-deoxy-6-iodo-2,3-O-isopropylidene-4-O-mesyl- α -D-mannopyranoside*

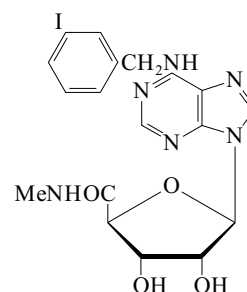
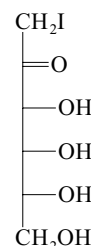
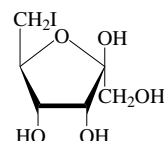
[22932-31-6]

 $C_{11}H_{19}IO_7S$ 422.237Cryst. Mp 84.5-85°. Subl._{0.0005} 80° (bath). $[\alpha]_D^{28}$ +23.9 (c, 1.03 in $CHCl_3$).*Me glycoside, 2,3-O-isopropylidene, 4-O-(p-bromobenzenesulfonyl): [22932-33-8]* $C_{16}H_{20}BrIO_7S$ 563.204Needles (EtOH/Et₂O). Mp 86-87.5°. $[\alpha]_D^{24}$ +2.4 (c, 1.0 in MeOH).*Me glycoside, tribenzyl:* $C_{28}H_{31}IO_5$ 574.454Oil. $[\alpha]_D^{20}$ +22 (c, 0.95 in $CHCl_3$). **β -D-Pyranose-form***Me glycoside: Methyl 6-deoxy-6-iodo- β -D-mannopyranoside*

[56571-01-8]

 $C_7H_{13}IO_5$ 304.081Cryst. (EtOAc). Mp 127°. $[\alpha]_D^{22}$ -26.2 (c, 1.9 in MeOH).*Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-6-iodo- β -D-mannopyranoside*

[56570-97-9]

 $C_{13}H_{19}IO_8$ 430.193Cryst. (Et₂O/hexane). Mp 120°. $[\alpha]_D^{22}$ -16 (c, 1.0 in $CHCl_3$).Lehmann, J. *et al.*, *J.A.C.S.*, 1964, **86**, 4496, (α -Me pyr)Stevens, C.L. *et al.*, *J.O.C.*, 1970, **35**, 592 (*isopropylidene, 4-mesyl, 4-brosyl*)Lehmann, J. *et al.*, *Carbohydr. Res.*, 1975, **42**, 275 (β -Me pyr deriv)Tatsuta, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1988, **61**, 2525 (*dimesyl*)Bundle, D.R. *et al.*, *Carbohydr. Res.*, 1988, **174**, 239 (*isopropylidene, pmr*)Classon, B. *et al.*, *J.O.C.*, 1988, **53**, 6126 (*tri-Ac*)
Tsvetkov, Y.E. *et al.*, *Bioorg. Khim.*, 1989, **15**, 231; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 126 (*4-benzoyl, pmr*)Kleban, M. *et al.*, *Synthesis*, 2000, 1027-1033 (*tribenzyl- α -D-Me pyr*)**1-Deoxy-1-[6-[(3-iodophenyl)-methyl]amino]-9H-purin-9-yl]-N-methyl- β -D-ribofuranuronamide, 9CI****D-267**N⁶-(3-Iodobenzyl)-5'-N-methylcarboxamidoadenosine. *1B-MECA*
[152918-18-8] $C_{18}H_{19}IN_6O_4$ 510.29Adenosine A₃ receptor agonist. Shows cerebral antiischaemic activity in an animal model. Induces apoptosis in a human leukaemic cell line. Mp 174-177°.Jacobson, K.A. *et al.*, *EUBS Lett.*, 1993, **336**, 57 (*pharmacol*)Carter, M.F. *et al.*, *Eur. J. Pharmacol.*, 1994, **263**, 59 (*pharmacol*)Von Lubitz, D.K.J.E. *et al.*, *Eur. J. Pharmacol.*, 1994, **263**, 59 (*pharmacol*)Gallo-Rodriguez, C. *et al.*, *J. Med. Chem.*, 1994, **37**, 636 (*synth, pmr, pharmacol*)Pat. Coop. Treaty (WIPO), 1995, 95 02 604, (*United States Dept. of Health and Human Services*); *CA*, **123**, 257265q (*synth, pharmacol*)Kohno, Y. *et al.*, *Biochem. Biophys. Res. Commun.*, 1996, **219**, 904 (*pharmacol*)**1-Deoxy-1-iodopsicose****D-268** $C_6H_{11}IO_5$ 290.054**D-form***Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1-deoxy-1-iodo-D-psicose* $C_{14}H_{19}IO_9$ 458.203Cryst. Mp 64-65°. $[\alpha]_D$ +6.8 ($CHCl_3$).Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1945, **67**, 1793 (*tetra-Ac*)Vanek, T. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 1339 (*tetra-Ac*)**6-Deoxy-6-iodopsicose****D-269** β -D-Furanose-form $C_6H_{11}IO_5$ 290.054

D-Furanose-form [58463-06-2]

Cryst. (Me₂CO/CHCl₃). Mp 80.5-81°. [α]_D²³ +14.6 (c, 1 in H₂O).

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl-6-deoxy-6-iodo-D-psicofuranose [58463-07-3]
C₃₄H₂₇IO₉ 706.486
Foam.

Tetrakis(p-nitrobenzoyl): [58463-08-4]
Cryst. (CHCl₃/hexane). Mp 173-174°.

β-D-Furanose-form

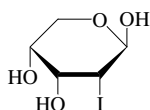
1,2:3,4-Di-O-isopropylidene: 6-Deoxy-6-iodo-1,2:3,4-di-O-isopropylidene-β-D-psicofuranose [38084-06-9]
C₁₂H₁₉IO₅ 370.184
Cryst. (MeOH aq. or hexane). Mp 46-47° (44-44.5°). [α]_D²³ -74.3 (c, 0.5 in CHCl₃).

James, K. *et al.*, *Aust. J. Chem.*, 1972, **25**, 1967 (*diisopropylidene, pmr*)

Prisbe, E.J. *et al.*, *J.O.C.*, 1976, **41**, 1836 (*synth, deriv, pmr, cmr*)

2-Deoxy-2-iodoribose

D-270



β-D-Pyranose-form

C₅H₉IO₄ 260.028**β-D-Pyranose-form**

Me glycoside, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-deoxy-2-iodo-β-D-ribofuranoside [131267-52-2]
C₁₀H₁₅IO₆ 358.129
Syrup. Bp_{0.04} 90°. [α]_D²⁰ +10.7 (c, 1 in CHCl₃).

Me glycoside, 1-benzoyl, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-1-O-benzoyl-2-deoxy-2-iodo-β-D-ribofuranoside [22854-36-0]
C₁₆H₁₇IO₇ 448.211
Cryst. Mp 129-130° (EtOH aq.). [α]_D²⁷ -26.5 (c, 1.46 in CHCl₃).

β-D-Furanose-form [125155-50-2]

Syrup.

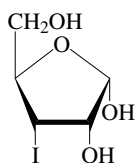
Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **47**, 361 (*β-pyr deriv*)

Ilicheva, I.A. *et al.*, *Bioorg. Khim.*, 1989, **15**, 800; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 428 (*conformn, anal*)

Horton, D. *et al.*, *Carbohydr. Res.*, 1990, **205**, 71 (*β-pyr deriv, pmr*)

3-Deoxy-3-iodoribose

D-271



α-D-Furanose-form

C₅H₉IO₄ 260.028**α-D-Furanose-form**

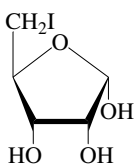
1,2-O-Isopropylidene, 5-methoxycarbonyl: [136317-52-7]
C₁₀H₁₅IO₆ 358.129
Cryst. (hexane). Mp 106-106.5°.

β-L-Pyranose-form

Me glycoside, 2,4-dibenzoyl: Methyl 2,4-di-O-benzoyl-3-deoxy-3-iodo-β-L-ribofuranoside C₂₀H₁₉IO₆ 482.271
Leaflets (EtOH). Mp 143-144°. [α]_D²⁵ +55 (c, 1.64 in CHCl₃).
Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, **47**, 4413 (*β-pyr deriv*)
Japan. Pat., 1987, 62 149 697; *CA*, **108**, 6351k (*deriv*)
Branchaud, B.P. *et al.*, *Organometallics*, 1991, **10**, 3795 (*α-fur deriv*)

5-Deoxy-5-iodoribose

D-272



α-D-Furanose-form

C₅H₉IO₄ 260.028**α-D-Furanose-form**

1,2-O-Isopropylidene: 5-Deoxy-5-iodo-1,2-O-isopropylidene-α-D-ribofuranose [84258-15-1]
C₈H₁₃IO₄ 300.093
Cryst. (EtOAc/hexane). Mp 84-85°. [α]_D²⁵ +20.6 (c, 0.5 in CHCl₃).

1,2-O-Isopropylidene, 3-benzyl: 3-O-Benzyl-5-deoxy-5-iodo-1,2-O-isopropylidene-α-D-ribofuranose [89702-28-3]
C₁₅H₁₉IO₄ 390.217
Oil. [α]_D²⁰ +84.9 (c, 4.7 in CH₂Cl₂).

1-(Dihydrogen phosphate): [100752-90-7]
C₅H₁₀IO₇P 340.008
Syrup.

β-D-Furanose-form

Tri-Ac: 1,2,3-Tri-O-acetyl-5-deoxy-5-iodo-β-D-ribofuranose C₁₁H₁₅IO₇ 386.14
Cryst. Mp 86-88°. [α]_D -39 (EtOH).

2,3-Dibenzoyl, 1-Ac: 1-O-Acetyl-2,3-di-O-benzoyl-5-deoxy-5-iodo-β-D-ribofuranose [19945-76-7]
C₂₁H₁₉IO₇ 510.281
Cryst. Mp 112-113°. [α]_D²¹ +20.4 (c, 2.0 in CHCl₃).

2,3-O-Isopropylidene, 1-Ac: 1-O-Acetyl-5-deoxy-5-iodo-2,3-O-isopropylidene-β-D-ribofuranose [111570-90-2]
C₁₀H₁₅IO₅ 342.13
Cryst. Mp 38°. [α]_D²² -65.8 (c, 0.3 in MeOH).

Me glycoside, 2,3-O-isopropylidene: Methyl 5-deoxy-5-iodo-2,3-O-isopropylidene-β-D-ribofuranoside [38838-06-1]
C₉H₁₅IO₄ 314.12

Syrup. Bp_{0.1} 75-80° (78-79°). [α]_D²² -71 (c, 1.0 in CHCl₃). [α]_D²⁵ -68 (CHCl₃).

Me glycoside, 2,3-O-benzylidene: Methyl 2,3-O-benzylidene-5-deoxy-5-iodo-β-D-ribofuranoside [33208-38-7]
C₁₃H₁₅IO₄ 362.164
Syrup. [α]_D²⁵ -42.5 (c, 0.8 in CHCl₃).

Pischel, H. *et al.*, *Z. Chem.*, 1968, **8**, 178 (*β-dibenzoyl*)

Prystas, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, **36**, 1448 (*β-D-Me fur deriv*)
Hanessian, S. *et al.*, *Carbohydr. Res.*, 1972, **24**, 45 (*β-D-Me fur deriv*)

Kiss, J. *et al.*, *Helv. Chim. Acta*, 1982, **65**, 1522 (*α-isopropylidene*)

Ohrui, H. *et al.*, *Agric. Biol. Chem.*, 1987, **51**, 625 (*β-isopropylidene*)

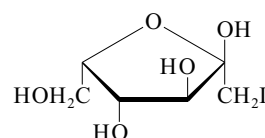
Choi, H.S. *et al.*, *CA*, 1991, **114**, 177971r (*phosphate, synth, metab*)

Furstner, A. *et al.*, *J.O.C.*, 1991, **56**, 2213 (*α-isopropylidene*)

Palmer, A.M. *et al.*, *Eur. J. Org. Chem.*, 2001, 1293-1308 (*α-D-Me fur isopropylidene*)

1-Deoxy-1-iodosorbose

D-273

C₆H₁₁IO₅ 290.054**α-L-Furanose-form**

2,3-O-Isopropylidene: 1-Deoxy-1-iodo-2,3-O-isopropylidene-α-L-sorbofuranose [38084-09-2]
C₉H₁₅IO₅ 330.119
Cryst. (Et₂O/pentane). Mp 112-113°. [α]_D¹⁸ -3.1 (c, 1 in CHCl₃).

2,3:4,6-Di-O-isopropylidene: 1-Deoxy-1-iodo-2,3:4,6-di-O-isopropylidene-α-L-sorbofuranose [38084-00-3]
C₁₂H₁₉IO₅ 370.184
Cryst. (heptane). Mp 82-83°. [α]_D²² -24.5 (c, 1 in CHCl₃).

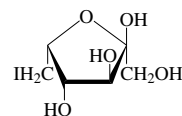
Gardner, T.S. *et al.*, *J.O.C.*, 1947, **12**, 733 (*diisopropylidene*)

James, K. *et al.*, *Aust. J. Chem.*, 1972, **25**, 1967 (*α-L-fur derivs, pmr*)

Fuerstner, A. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 561 (*props, use*)

6-Deoxy-6-iodosorbose

D-274



α-L-Furanose-form

C₆H₁₁IO₅ 290.054**1-Furanose-form**

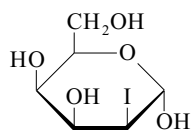
2,3-O-Isopropylidene, 1-tosyl: 6-Deoxy-6-iodo-2,3-O-isopropylidene-1-O-tosyl-L-sorbofuranose C₁₆H₂₁IO₇S 484.308
Mp 130-140°. [α]_D +25 (EtOH).

α -L-Furanose-form

2,3-O-Isopropylidene, 1-Ac: 1-O-Acetyl-6-deoxy-6-iodo-2,3-O-isopropylidene- α -L-sorbofuranose
[58238-55-4]
 $C_{11}H_{17}IO_6$ 372.156
Cryst. (Et₂O/petrol). Mp 106°. [α]_D²⁰ +35.8 (c, 1 in CHCl₃).

Muller, H. *et al.*, *Helv. Chim. Acta*, 1938, **21**, 263 (tosyl)

Heyns, K. *et al.*, *Chem. Ber.*, 1975, **108**, 3619 (Ac)

2-Deoxy-2-iodotalose**D-275**

$C_6H_{11}IO_5$ 290.054

 α -D-Pyranose-form

Me glycoside: Methyl 2-deoxy-2-iodo- α -D-talopyranoside
[53008-83-6]
 $C_7H_{13}IO_5$ 304.081
Syrup.

Me glycoside, tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-deoxy-2-iodo- α -D-talopyranoside
[53008-81-4]
 $C_{13}H_{19}IO_8$ 430.193
Syrup.

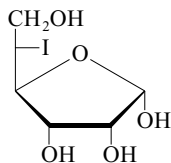
Benzyl glycoside, 4,6-O-benzylidene (S-): Benzyl 4,6-O-(S)-benzylidene-2-deoxy-2-iodo- α -D-talopyranoside
[75810-26-3]
 $C_{20}H_{21}IO_5$ 468.287
Cryst. (EtOAc/hexane). Mp 138.8°. [α]_D²⁰ +110.7 (c, 1 in CHCl₃).

Honda, S. *et al.*, *Carbohydr. Res.*, 1974, **34**, 45 (α -Me gly, pmr)

Thiem, J. *et al.*, *Chem. Ber.*, 1980, **113**, 3067 (benzyl gly deriv)

Korth, H.G. *et al.*, *J.C.S. Perkin 2*, 1986, 1461 (conform)

Chen, S.H. *et al.*, *J.O.C.*, 1991, **56**, 5834 (α -Me gly tri-Ac, ir, pmr, ms)

5-Deoxy-5-iodotalose**D-276**

$C_6H_{11}IO_5$ 290.054

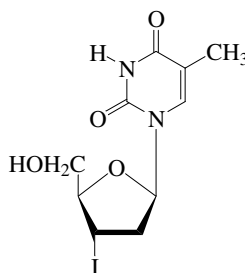
 β -L-Furanose-form

1,2-O-Isopropylidene, 3,5-dibenzoyl: 3,5-Di-O-benzoyl-5-deoxy-5-iodo-1,2-O-isopropylidene- β -L-talofuranose
[55085-27-3]
 $C_{23}H_{23}IO_7$ 538.335
Cryst. (EtOH). Mp 122-124°. [α]_D²⁰ +70 (c, 0.6 in CH₂Cl₂).

Serge, D. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1974, **279**, 651 (isopropylidene deriv)
Serge, D. *et al.*, *Chem. Ber.*, 1979, **77**, 79 (isopropylidene deriv, pmr)

3'-Deoxy-3'-iodothymidine, 9CI**D-277**

[14260-82-3]



$C_{10}H_{13}IN_2O_4$ 352.128
Needles (H₂O). Mp 166-167° (dec.).

5'-Trityl: [25442-44-8]
 $C_{29}H_{27}IN_2O_4$ 594.448
Cubes (Me₂CO/MeOH). Mp 147-148°.

[14259-59-7, 14260-81-2]

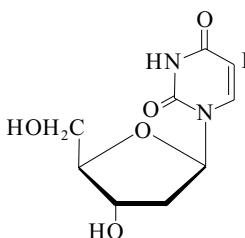
Michelson, A.M. *et al.*, *J.C.S.*, 1955, 816-823 (synth)

Pfützner, K.E. *et al.*, *J.O.C.*, 1964, **29**, 1508-1511 (5'-trityl)

Zemlicka, J. *et al.*, *J.A.C.S.*, 1975, **97**, 4089-4095 (derivs, pmr)

2'-Deoxy-5-iodouridine, 9CI, 8CI**D-278**

Idoxuridine, BAN, INN, JAN, USAN. Dendrid. Herpid. Herplex. Idoxene. Iduridin. Kerecid. Virudox. IDU. NSC 39661. Many other names
[54-42-2]



$C_9H_{11}IN_2O_5$ 354.101
Used in the treatment of ocular herpetic infections. Cryst. (H₂O). Mp 160° (190-195°, 240°) dec. [α]_D²⁰ +29 (c, 1 in 1M NaOH). Log P -0.98 (calc).

► Skin and eye irritant. Other adverse effects on eye and systemic effects when used therapeutically. Exp. reprod. and teratogenic effects. YU7700000

3'-Ac: [15384-26-6]
 $C_{11}H_{13}IN_2O_6$ 396.138
Mp 196-198°.

3',5'-Di-Ac: [1956-30-5]
 $C_{13}H_{15}IN_2O_7$ 438.175
Mp 161-163°.

5'-Tosyl: [58349-27-2]
 $C_{16}H_{17}IN_2O_8S$ 508.29
Mp 164-165° dec.

5'-Trityl: [15414-61-6]
 $C_{28}H_{25}IN_2O_5$ 596.42
Mp 220°. λ_{max} 286 (ε 6 610) (0.1M HCl), 278 nm (4 840) (0.1M NaOH).

5'-Trityl, 3'-Ac:
 $C_{30}H_{27}IN_2O_6$ 638.458
Mp 132-145°.

[13104-59-1]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 816D (ir)

Aldrich Library of NMR Spectra, 2nd edn., 1983, **2**, 695C (nmr)

Cheong, L. *et al.*, *J. Biol. Chem.*, 1960, **235**, 1441 (synth)

Fr. Pat., 1963, 1 336 866; *CA*, **60**, 3082 (synth)

Chang, P.K. *et al.*, *J. Med. Chem.*, 1963, **6**, 428 (synth)

Camerman, N. *et al.*, *Acta Cryst.*, 1965, **18**, 203 (cryst struct)

U.S. Pat., 1967, 3 324 110; *CA*, **67**, 108960k, (3'-Ac 5'-trityl)

Lin, T. *et al.*, *J. Med. Chem.*, 1976, **19**, 495, (5'-tosyl)

Prusoff, W.H. *et al.*, *Antibiotics (N.Y.)*, 1979, **5**, 236 (rev, pharmacol)

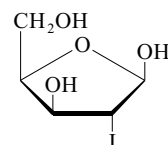
Prusoff, W.H. *et al.*, *Int. Encycl. Pharmacol. Ther.*, 1984, **111**, 341 (rev, pharmacol)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 1205 (synonyms)

Asakura, J. *et al.*, *J.O.C.*, 1990, **55**, 4928 (synth, pmr, uv)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 548

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAS000

2-Deoxy-2-iodoxylose**D-279** β -D-Furanose-form

$C_5H_9IO_4$ 260.028

 β -D-Furanose-form

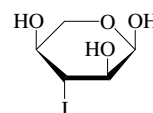
Me glycoside, 3-tosyl, 5-Ac: [26528-13-2]
 $C_{15}H_{19}IO_7S$ 470.281
Cryst. (EtOH). Mp 118-119°. [α]_D²⁵ -80.7 (c, 3.4 in CHCl₃).

 β -L-Pyranose-form

Me glycoside, di-Ac: [131267-51-1]
 $C_{10}H_{15}IO_6$ 358.129
Cryst. (Et₂O/hexane). Mp 110-112°.
[α]_D²⁰ -49.2 (c, 1.0 in CHCl₃).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, **47**, 4413 (*Me fur deriv*)

Horton, D. *et al.*, *Carbohydr. Res.*, 1990, **205**, 71 (*Me pyr deriv, pmr*)

3-Deoxy-3-iodoxylose**D-280** α -L-Pyranose-form

$C_5H_9IO_4$ 260.028

α -L-Pyranose-form

Me glycoside, 4-Ac: Methyl 4-O-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside
[26528-31-4]
 $C_8H_{13}IO_5$ 316.092
Cryst. (EtOH). Mp 125-126°. $[\alpha]_D^{25}$ -109 (c, 2.2 in $CHCl_3$).

Me glycoside, 4-Ac, 2-tosyl: Methyl 4-O-acetyl-3-deoxy-3-iodo-2-O-tosyl- α -L-xylopyranoside
[26532-18-3]
 $C_{15}H_{19}IO_7S$ 470.281
Cryst. (EtOH). Mp 116-117°. $[\alpha]_D^{25}$ -60 (c, 2.5 in $CHCl_3$).

Me glycoside, di-Ac: Methyl 2,4-di-O-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside
[26528-32-5]
 $C_{10}H_{15}IO_6$ 358.129
Cryst. Mp 89.5-90.5°.

 β -L-Pyranose-form

Me glycoside, 4-Ac: Methyl 4-O-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside
[26528-20-1]
 $C_8H_{13}IO_5$ 316.092
Cryst. (EtOH). Mp 145-145.5°. $[\alpha]_D^{25}$ +10.7 (c, 3.28 in $CHCl_3$).

Me glycoside, 4-Ac, 2-tosyl: Methyl 4-O-acetyl-3-deoxy-3-iodo-2-O-tosyl- β -L-xylopyranoside
[26532-15-0]
 $C_{15}H_{19}IO_7S$ 470.281
Cryst. (EtOH). Mp 131-132.5°. $[\alpha]_D^{25}$ -60 (c, 2.51 in $CHCl_3$).

Me glycoside, di-Ac: Methyl 2,4-di-O-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside
[26528-21-2]
 $C_{10}H_{15}IO_6$ 358.129
Leaflets. Mp 141-141.5°. $[\alpha]_D^{25}$ +39.4 (c, 3.2 in $CHCl_3$).

Me glycoside, 4-benzoyl: Methyl 4-O-benzoyl-3-deoxy-3-iodo- β -L-xylopyranoside
[26528-16-5]
 $C_{13}H_{15}IO_5$ 378.163
Needles (EtOH). Mp 158-159°. $[\alpha]_D^{25}$ +113 (c, 1.44 in $CHCl_3$).

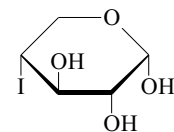
Me glycoside, 4-Me: Methyl 3-deoxy-3-iodo-4-O-methyl- β -L-xylopyranoside
[26528-25-6]
 $C_7H_{13}IO_4$ 288.082
Cryst. (EtOH). Mp 94.5-95.5°.

Me glycoside, 4-Me, 2-Ac: Methyl 2-O-acetyl-3-deoxy-3-iodo-4-O-methyl- β -L-xylopyranoside
[26528-26-7]
 $C_9H_{15}IO_5$ 330.119
Cryst. (EtOH). Mp 125.5-126.5°.

Benzyl glycoside: Benzyl 3-deoxy-3-iodo- β -L-xylopyranoside
[128843-81-2]
 $C_{12}H_{15}IO_4$ 350.153
Cryst. (EtOAc/heptane or $CHCl_3$ /heptane). Mp 67-70°. $[\alpha]_D^{25}$ -7.6 (c, 1.1 in $CHCl_3$).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, **47**, 4413 (*Me gly derivs*)

Rehnberg, N. *et al.*, *J.O.C.*, 1990, **55**, 5467 (*benzyl gly*)

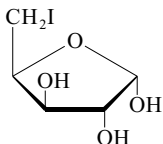
4-Deoxy-4-iodoxylose

$C_5H_9IO_4$ 260.028

 α -D-Pyranose-form

Benzyl glycoside, 2-benzyl: Benzyl 2-O-benzyl-4-deoxy-4-iodo- α -D-xylopyranoside
[50908-55-9]
 $C_{19}H_{21}IO_4$ 440.277
Cryst. Mp 89-91°. $[\alpha]_D$ +130 (c, 1.34 in $CHCl_3$).

Ritchie, R. *et al.*, *Chem. Comm.*, 1973, 686 (*benzyl gly deriv, pmr*)

5-Deoxy-5-iodoxylose

$C_5H_9IO_4$ 260.028

 α -D-Furanose-form

1,2-O-Isopropylidene: [50600-39-0]
 $C_8H_{13}IO_4$ 300.093
Powder. $[\alpha]_D^{20}$ -38 (c, 1.07 in $CHCl_3$).

1,2-O-Isopropylidene, 3-Ac: [20853-29-6]
 $C_{10}H_{15}IO_5$ 342.13
Syrup.

1,2-O-Isopropylidene, 3-benzoyl: [41164-24-3]
 $C_{15}H_{17}IO_5$ 404.201
Syrup. $[\alpha]_D^{25}$ -50.8 (c, 1.02 in $CHCl_3$).

1,2-O-Isopropylidene, 3-tosyl: [29873-56-1]
 $C_{15}H_{19}IO_6S$ 454.282
Pale yellow syrup. $[\alpha]_D^{23}$ -65.5 (c, 2.0 in $CHCl_3$).

1,2-O-Isopropylidene, 3-benzyl: [29580-99-2]
 $C_{15}H_{19}IO_4$ 390.217
Needles (EtOH). Mp 74-75°. $[\alpha]_D^{23}$ -81.5 (c, 0.68 in $CHCl_3$).

1,2-O-Isopropylidene, 3-trimethylsilyl: [16749-52-3]
 $C_{11}H_{21}IO_4Si$ 372.275
Oil. Bp_{0.006} 72-74°. n_D^{25} 1.4861.

Hedgeley, E.J. *et al.*, *J.C.S. (C)*, 1967, 888 (*trimethylsilyl*)

Ando, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 1970, **43**, 2966 (*tosyl*)

Young, R.C. *et al.*, *Tetrahedron*, 1970, **26**, 3983 (*benzyl*)

Culbertson, T.P. *et al.*, *J.O.C.*, 1973, **38**, 3624 (*benzoyl, pmr*)

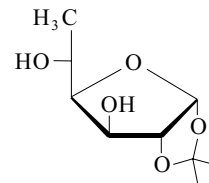
Rahman, A.U. *et al.*, *J. Chem. Soc. Pak.*, 1986, **8**, 397 (*Ac, pmr*)

Achab, S. *et al.*, *J.C.S. Perkin I*, 1990, 2863 (*isopropylidene, pmr*)

D-281

6-Deoxy-1,2-*O*-isopropylidene-glucufuranose, 9CI, 8CI

D-283



$C_9H_{16}O_5$ 204.222

 α -D-form [17668-66-5]

Cryst. Mp 90-91°. $[\alpha]_D$ -24.2 (c, 1.53 in $CHCl_3$).

Dimesyl: 6-Deoxy-1,2-O-isopropylidene-3,5-di-O-mesyl- α -D-glucufuranose
[30595-47-2]
 $C_{11}H_{20}O_9S_2$ 360.406

Cryst. (C_6H_6 /cyclohexane). Mp 101°. $[\alpha]_D^{20}$ -30.9 (c, 2.0 in $CHCl_3$).

3,5-O-Isopropylidene: 6-Deoxy-1,2:3,5-di-O-isopropylidene- α -D-glucufuranose
[32785-99-2]
 $C_{12}H_{20}O_5$ 244.287
Syrup. Bp_{0.07} 58°. $[\alpha]_D^{19}$ +38.9 (c, 1.95 in $CHCl_3$).

3-Benzyl: 3-O-Benzyl-6-deoxy-1,2-O-isopropylidene- α -D-glucufuranose
[18439-44-6]
 $C_{16}H_{22}O_5$ 294.347
Syrup. $[\alpha]_D^{22}$ -64 (c, 4.2 in $CHCl_3$).

3-Benzyl, 5-benzoyl: 5-O-Benzoyl-3-O-benzyl-6-deoxy-1,2-O-isopropylidene- α -D-glucufuranose
 $C_{23}H_{26}O_6$ 398.455
Cryst. (EtOH). Mp 101-102°. $[\alpha]_D^{22}$ -55 (c, 0.9 in $CHCl_3$).

5-Benzyl, 3-mesyl: 5-O-Benzyl-6-deoxy-1,2-O-isopropylidene-3-O-mesyl- α -D-glucufuranose
[39686-87-8]
 $C_{17}H_{24}O_7S$ 372.438
Cryst. (MeOH). Mp 99.5°. $[\alpha]_D$ -47 (c, 1.0 in $CHCl_3$).

Dibenzyl: 3,5-Di-O-benzyl-6-deoxy-1,2-O-isopropylidene- α -D-glucufuranose
[54522-22-4]
 $C_{23}H_{28}O_5$ 384.471
Mp 53°. $[\alpha]_D^{20}$ -56 ($CHCl_3$).

Inch, T.D. *et al.*, *Carbohydr. Res.*, 1967, **5**, 45, (α -D-benzoyl benzyl, α -D-benzyl)

Haylock, C.R. *et al.*, *Carbohydr. Res.*, 1971, **16**, 375 (α -D-isopropylidene)

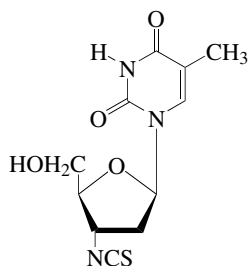
Weidmann, H. *et al.*, *Carbohydr. Res.*, 1972, **24**, 184 (α -D-benzyl mesyl, α -D-dimesyl)

Kiely, D.E. *et al.*, *Carbohydr. Res.*, 1973, **31**, 387 (α -D-form, synth, α -D-benzyl)

Zobáčová, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1975, **40**, 3505 (α -D-form)

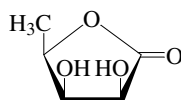
3'-Deoxy-3'-isothiocyanatothymidine, 9CI

[130945-07-2]

 $C_{11}H_{13}N_3O_4S$ 283.307

Used for fluorescent labelling of nucleotides. Hygroscopic cryst. (hexane). Mp 113°.

Hydrochloride: Mp 248°.

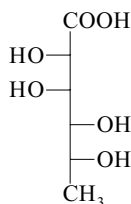
Matsuda, A. *et al.*, *Nucleosides Nucleotides*, 1990, **9**, 587-597 (synth, pmr)Zehl, A. *et al.*, *Liebigs Ann./Recl.*, 1997, 595-600 (synth, pmr)**5-Deoxy-1,4-lyxonolactone Capillilactone** $C_5H_8O_4$ 132.116**L-form** [248256-29-3]Constit. of *Lysimachia capillipes*.

Needles.

Mp 110-112°. $[\alpha]_D^{20}$ -43 (c, 0.07 in MeOH).Xie, C. *et al.*, *Chin. Chem. Lett.*, 1998, **9**, 1095-1096**6-Deoxymannonic acid, 9CI, 8CI**

Rhammonic acid

[28223-46-3]



D-form

 $C_6H_{12}O_6$ 180.157**D-form**

1,4-Lactone: 6-Deoxy-D-mannono-1,4-lactone. D-Rhamnono-1,4-lactone [106293-98-5]

 $C_6H_{10}O_5$ 162.142Constit. of *Coronilla varia*.**L-form** [6422-34-0]

Prod. by strains of yeast utilising L-rhamnose.

 $[\alpha]_D$ -7.7 \rightarrow +29.8 (+11 \rightarrow -34.3) (H₂O).**D-284**

Amide: L-Rhamnonamide

 $C_6H_{13}NO_5$ 179.172Mp 134-134.5°. $[\alpha]_D^{20}$ +27.7 (H₂O).

1,4-Lactone: L-Rhamnono-1,4-lactone.

6-Deoxy-L-mannono-1,4-lactone

 $C_6H_{10}O_5$ 162.142Mp 149-151°. $[\alpha]_D^{20}$ -39.2 (H₂O).

1,4-Lactone, 2,5-dibenzoyl: 2,5-Di-O-

benzoyl-L-rhamnono-1,4-lactone

 $C_{20}H_{18}O_7$ 370.358Mp 195-197°. $[\alpha]_D^{20}$ +13.5 (c, 1.0 in CHCl₃).

1,4-Lactone, 2-tosyl: 2-O-Tosyl-L-1,

4-rhamnonolactone

[146820-61-3]

 $C_{13}H_{16}O_7S$ 316.331Cryst. (CHCl₃). Mp 183-185°. $[\alpha]_D^{20}$ -57 (c, 1.0 in Me₂CO).

1,5-Lactone: L-Rhamnono-1,5-lactone

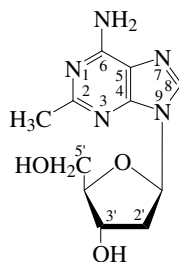
 $C_6H_{10}O_5$ 162.142Mp 172-182°. $[\alpha]_D^{23}$ -98.4 (H₂O).

1,5-Lactone, tribenzoyl: 2,3,4-Tri-O-

benzoyl-L-rhamnono-1,5-lactone

 $C_{27}H_{22}O_8$ 474.466Amorph. solid. $[\alpha]_D^{20}$ -15.3 (c, 0.9 in CHCl₃). Could not be crystallised.Rehorst, K. *et al.*, *Annalen*, 1933, **503**, 143Brackenbury, J.M. *et al.*, *J.A.C.S.*, 1933, **55**, 2514 (synth)Suzuki, T. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 888 (isol)Peterson, G. *et al.*, *Tetrahedron*, 1970, **26**, 3413 (ms)Peterson, G. *et al.*, *Carbohydr. Res.*, 1974, **33**, 47 (glc)Varela, O.J. *et al.*, *Carbohydr. Res.*, 1980, **79**, 219 (lactone tribenzoyl)Fernández Cirelli, A. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 167-176 (L-1,4-lactone 2,5-dibenzoyl)Opletal, L. *et al.*, *Pharmazie*, 1986, **41**, 605, (6-Deoxy-D-mannono-1,4-lactone)Bols, M. *et al.*, *Carbohydr. Res.*, 1991, **222**, 141 (lactone anhydride)Lundt, I. *et al.*, *Synthesis*, 1992, 1129 (lactone 2-tosyl)Shalaby, M.A. *et al.*, *Carbohydr. Res.*, 1994, **264**, 181 (cryst struct, 1,4-lactone)**2'-Deoxy-2-methyladenosine, 9CI**

[110952-90-4]

 $C_{11}H_{15}N_5O_3$ 265.271Solid (EtOH/Et₂O).

N-Me: [402750-83-8]

 $C_{12}H_{17}N_5O_3$ 279.298

Solid (EtOH). Mp 150°.

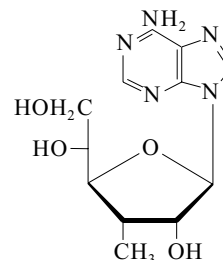
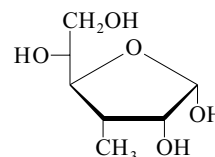
N-Me, 3'-phosphate:

 $C_{12}H_{18}N_5O_6P$ 359.278Solid (MeOH/Et₂O). Mp 167°.

N-Me, 3',5'-diphosphate: [402750-80-5]

 $C_{12}H_{19}N_5O_9P_2$ 439.258

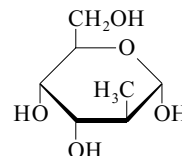
Solid (MeOH). Mp 146°.

Raboison, P. *et al.*, *J. Med. Chem.*, 2002, **45**, 962-972 (synth, N-Me, pmr)**9-(3'-Deoxy-3'-C-methylallofuranosyl)adenine, 8CI****D-288** $C_{12}H_{17}N_5O_4$ 295.297**β-D-form** [26291-78-1]Mp 227-228°. $[\alpha]_D^{22}$ -25 (c, 1.0 in H₂O). λ_{max} 261 nm (ϵ 18 250) (H₂O).Rosenthal, A. *et al.*, *Can. J. Chem.*, 1969, **47**, 3941 (synth, pmr)**3-Deoxy-3-C-methylallose****D-289** $C_7H_{14}O_5$ 178.185**α-D-Furanose-form**

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-3-deoxy-3-C-methyl-α-D-allofuranose [26291-75-8]

 $C_{10}H_{18}O_5$ 218.249Syrup. $[\alpha]_D^{22}$ +35 (c, 1 in CHCl₃).

1,2:5,6-Di-O-isopropylidene: 3-Deoxy-1,2:5,6-di-O-isopropylidene-3-C-methyl-α-D-allofuranose [26293-58-3]

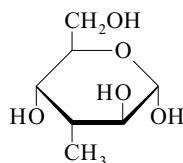
 $C_{13}H_{22}O_5$ 258.314Oil. Bp_{0.05} 77-80°. $[\alpha]_D^{22}$ +37 (c, 1 in CHCl₃).Rosenthal, A. *et al.*, *Can. J. Chem.*, 1969, **47**, 3941 (isopropylidene, diisopropylidene)**2-Deoxy-2-C-methylaltrose****D-290** $C_7H_{14}O_5$ 178.185

α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-deoxy-2-C-methyl- α -D-altropyranoside
[19465-06-6]
 $C_{15}H_{20}O_5$ 280.32
Cryst. (Et₂O/hexane). Mp 111-113°.
[α]_D²³ +122.5 (c, 1 in CHCl₃).

Me glycoside, 6-benzyl: Methyl 6-O-benzyl-2-deoxy-2-C-methyl- α -D-altropyranoside
 $C_{15}H_{22}O_5$ 282.336
Oil. [α]_D¹⁸ +91.3 (c, 2.63 in CHCl₃).

Sepulchre, A.-M. *et al.*, *Bull. Soc. Chim. Fr.*, 1972, 4000 (α -D-Me pyr benzylidene)
Hicks, D.R. *et al.*, *Can. J. Chem.*, 1975, **53**, 2017 (α -D-Me pyr benzylidene)
Paquette, L.A. *et al.*, *Synthesis*, 2002, 2105-2109 (α -D-Me pyr 6-benzyl)

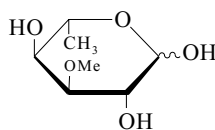
3-Deoxy-3-C-methylaltrose**D-291** $C_7H_{14}O_5$ 178.185 **α -D-Pyranose-form**

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-3-C-methyl- α -D-altropyranoside
[5987-36-0]
 $C_{15}H_{20}O_5$ 280.32
Chiron used in synthesis. Cryst. (Et₂O/hexane). Mp 115-115.5°. [α]_D +120 (c, 1.7 in CHCl₃).

Pouigny, J.-R. *et al.*, *J. Chem. Res., Synop.*, 1982, 1; *J. Chem. Res., Miniprint*, 1982, 0186, (α -D-Me pyr benzylidene)

6-Deoxy-3-O-methylaltrose, 9CI, 8CI**D-292**

Vallarosa

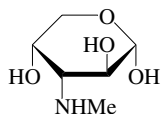
 $C_7H_{14}O_5$ 178.185**L-form** [18546-08-2]

Component of cardiac glycosides, e.g. Vallarosa; isol. from the seeds of *Vallis solanacea*.
Mp 113-114°. [α]_D -22 (c, 1.1 in H₂O).

 α -L-Pyranose-form

Tri-Ac: 1,2,4-Tri-O-acetyl-6-deoxy-3-O-methyl- α -L-altropyranoside
 $C_{13}H_{20}O_8$ 304.296
Mp 112-113° (sinters) Mp 122-123°.

Kaufmann, H. *et al.*, *Helv. Chim. Acta*, 1965, **48**, 83 (isol)
Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1971, 3762 (synth)

3-Deoxy-3-(methylamino) arabinose**D-293** α -D-Pyranose-form $C_6H_{13}NO_4$ 163.173 **α -D-Pyranose-form**

Me glycoside: Methyl 3-deoxy-3-(methylamino)- α -D-arabinopyranoside
 $C_7H_{15}NO_4$ 177.2
Syrup. [α]_D²⁶ -21.3 (c, 0.3 in MeOH).

 α -D-Furanose-form

Me glycoside: Methyl 3-deoxy-3-(methylamino)- α -D-arabinofuranoside
[25787-44-4]
 $C_7H_{15}NO_4$ 177.2
Cryst. (MeCN)(as hydrochloride).
Mp 126-127° (hydrochloride). [α]_D²⁰ +99 (c, 1.0 in H₂O).

Me glycoside, N-Ac: Methyl 3-deoxy-3-(N-methylacetamido)- α -D-arabinofuranoside
[25787-46-6]
 $C_9H_{17}NO_5$ 219.237
Cryst. (EtOH). Mp 155-156°. [α]_D²³ +89 (c, 1.0 in H₂O).

Me glycoside, N,2,5-tri-Ac: Methyl 2,5-di-O-acetyl-3-deoxy-3-(N-methylacetamido)- α -D-arabinofuranoside
[25787-45-5]
 $C_{13}H_{21}NO_7$ 303.311
Syrup. [α]_D²⁴ +89 (c, 0.87 in CHCl₃).

L-form

Component of antibiotic 66-40D from *Micromonospora inyoensis*.

N-Ac: 3-Deoxy-3-(N-methylacetamido)-L-arabinose
 $C_8H_{15}NO_5$ 205.21
Needles (MeOH). Mp 167-168.5°. [α]_D²⁶ +110.7 (c, 1.0 in MeOH).

 α -L-Pyranose-form

Me glycoside: Methyl 3-deoxy-3-(methylamino)- α -L-arabinopyranoside
[56153-84-5]
 $C_7H_{15}NO_4$ 177.2
Mp 81-84°. [α]_D²⁶ +35.2 (c, 0.3 in H₂O).

 β -L-Pyranose-form

Me glycoside: Methyl 3-deoxy-3-(methylamino)- β -L-arabinopyranoside, 9CI
 $C_7H_{15}NO_4$ 177.2
Mp 97-99°. [α]_D²⁶ +235.1 (c, 0.3 in H₂O).

 β -L-Furanose-form

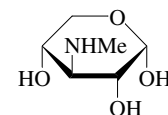
N-Ac, 1,2-O-isopropylidene: 3-Deoxy-1,2-O-isopropylidene-3-(N-methylacetamido)- β -L-arabinofuranose
 $C_{11}H_{19}NO_5$ 245.275
Gum. [α]_D²⁶ +24.1 (c, 1.0 in MeOH).

Lee, W.W. *et al.*, *J.O.C.*, 1970, **35**, 3808 (α -D-fur Me gly, α -D-fur Me gly Ac derivs)
Reimann, H. *et al.*, *J.O.C.*, 1974, **39**, 1451, (β -L-pyr 4-C-Me, occur)
Egan, R.S. *et al.*, *J. Antibiot.*, 1975, **28**, 29 (occur)

Cooper, D.J. *et al.*, *J.C.S. Perkin 1*, 1975, 785, (α -L-pyr, β -L-pyr Me gly, pmr)
Davies, D.H. *et al.*, *J.C.S. Perkin 1*, 1975, 814 (β -L-form, occur)

3-Deoxy-3-(methylamino)xylose**D-294**

Gentosamine

 α -D-Pyranose-form $C_6H_{13}NO_4$ 163.173**D-form**

Constit. of the antibiotics Gentamicin A, G-224 and Sisomicin B, S-46.

Hydrochloride: [28251-69-6]
Cryst. (EtOH aq. or MeOH/EtOH/Me₂CO). Mp 172-173° dec. [α]_D²⁰ 0 → 0 (c, 1 in H₂O).

 α -D-Pyranose-form

1,2-O-Isopropylidene, N-benzoyl: 3-Deoxy-1,2-O-isopropylidene-3-(N-methylbenzamido)- α -D-xylopyranose, 8CI
[29914-66-7]
 $C_{16}H_{21}NO_5$ 307.346
Cryst. (Et₂O/petrol). Mp 179-180°. [α]_D²⁰ +72.5 (c, 1 in CHCl₃).

Me glycoside: Methyl 3-deoxy-3-(methylamino)- α -D-xylopyranoside, 9CI, 8CI.
Methyl α -gentosaminide
 $C_7H_{15}NO_4$ 177.2
Cryst. (EtOH). Mp 110-120°. [α]_D²⁶ +122.9 (c, 0.3 in H₂O).

 β -D-Pyranose-form

Me glycoside: Methyl 3-deoxy-3-(methylamino)- β -D-xylopyranoside, 8CI. Methyl β -gentosaminide
[28251-70-9]
 $C_7H_{15}NO_4$ 177.2
Rhombohedral cryst. (EtOH/C₆H₆). Mp 144-145° (139°). [α]_D²⁶ -62.1 (c, 0.3 in H₂O).

Me glycoside, N-Ac: Methyl 3-deoxy-3-(N-methylacetamido)- β -D-xylopyranoside, 8CI
[28251-72-1]
 $C_9H_{17}NO_5$ 219.237
Needles (EtOH/Et₂O). Mp 183°. [α]_D²⁵ -59.5 (c, 0.8 in H₂O).

 α -D-Furanose-form

1,2-O-Isopropylidene, N-Ac: 3-Deoxy-1,2-O-isopropylidene-3-(N-methylacetamido)- α -D-xylofuranose
[38711-54-5]
 $C_{11}H_{19}NO_5$ 245.275
Cryst. (EtOH/Et₂O/petrol). Mp 117-120°. [α]_D²⁰ +95 (c, 1 in CHCl₃).

1,2-O-Isopropylidene, N-benzoyl: 3-Deoxy-1,2-O-isopropylidene-3-(N-methylbenzamido)- α -D-xylofuranose, 8CI
[29914-64-5]
 $C_{16}H_{21}NO_5$ 307.346
Mp 126-128°. [α]_D²⁰ +72 (c, 1 in CHCl₃).

1,2-O-Isopropylidene, 5-benzyl, N-Ac: 5-O-Benzyl-3-deoxy-1,2-O-isopropylidene-3-(N-methylacetamido)- α -D-xylofuranose [79249-06-2]
 $C_{18}H_{25}NO_5$ 335.399
 Syrup. $[\alpha]_D^{25} +26.7$ ($CHCl_3$).

Me glycoside, 5-benzyl: Methyl 5-O-benzyl-3-deoxy-3-(methylamino)- α -D-xylofuranoside [79249-07-3]
 $C_{14}H_{21}NO_4$ 267.324
 Syrup. $[\alpha]_D^{25} +107.5$ ($CHCl_3$).

Me glycoside, 5-benzyl, N-Ac: Methyl 5-O-benzyl-3-deoxy-3-(N-methylacetamido)- α -D-xylofuranoside [79249-09-5]
 $C_{16}H_{23}NO_5$ 309.361
 Syrup. $[\alpha]_D^{25} +192.5$ ($CHCl_3$).

Me glycoside, 2,5-dibenzyl, N-Ac: Methyl 2,5-di-O-benzyl-3-deoxy-3-(N-methylacetamido)- α -D-xylofuranoside [79249-11-9]
 $C_{23}H_{29}NO_5$ 399.486
 Syrup. $[\alpha]_D^{25} +7$ ($CHCl_3$).

β -D-Furanose-form

Me glycoside, 5-benzyl: Methyl 5-O-benzyl-3-deoxy-3-(methylamino)- β -D-xylofuranoside [79249-08-4]
 $C_{14}H_{21}NO_4$ 267.324
 Syrup. $[\alpha]_D^{25} -37.6$ ($CHCl_3$).

Me glycoside, 5-benzyl, N-Ac: Methyl 5-O-benzyl-3-deoxy-3-(N-methylacetamido)- β -D-xylofuranoside [79249-10-8]
 $C_{16}H_{23}NO_5$ 309.361
 Syrup. $[\alpha]_D^{25} +21.7$ ($CHCl_3$).

Me glycoside, 2,5-dibenzyl, N-Ac: Methyl 2,5-di-O-benzyl-3-deoxy-3-(N-methylacetamido)- β -D-xylofuranoside [79249-12-0]
 $C_{23}H_{29}NO_5$ 399.486
 Syrup. $[\alpha]_D^{25} +81$ ($CHCl_3$).

β -L-Pyranose-form

Me glycoside: Methyl 3-deoxy-3-(methylamino)- β -L-xylopyranoside
 $C_7H_{15}NO_4$ 177.2
 Needles (EtOH). Mp 141-142°. $[\alpha]_D^{26} +60.6$ (c, 1 in H_2O).

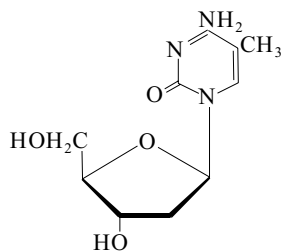
Maehr, H. et al., J.A.C.S., 1970, **92**, 1697, (isol, β -D-pyr Me gly, β -D-pyr Me gly N-Ac)
 Meyer zu Reckendorf, W. et al., Chem. Ber., 1972, **105**, 2546 (synth, α -D-pyr isopropylidene N-benzoyl, α -D-fur isopropylidene N-benzoyl, α -D-fur-isopropylidene N-Ac)

Cooper, D.J. et al., J.C.S. Perkin 1, 1975, 785, (α -D-pyr Me gly, β -D-pyr Me gly, β -L-pyr Me gly)

Davies, D.H. et al., J.C.S. Perkin 1, 1975, 814; 1981, 2151 (isol, α -D-pyr Me gly, β -D-pyr Me gly, α -D-fur isopropylidene N-Ac derivs)

2'-Deoxy-5-methylcytidine, 9CI, 8CI

1-(2-Deoxy- β -D-erythro-pentofuranosyl)-5-methylcytosine. 5-Methylcytosine deoxyriboside [838-07-3]



$C_{10}H_{15}N_3O_4$ 241.246
 Isol. from wheat-germ deoxyribonucleic acid.
 Mp 211-212°. $[\alpha]_D^{22} +43$ (c, 1.4 in H_2O).
 λ_{max} 286.5 (ϵ 12 400), 212 (ϵ 11 800) (0.1N HCl); 279 nm (8 770) (0.1N NaOH).

► HA3860000

Hydrochloride: Mp 148-150° (156°). $[\alpha]_D^{23} +54$ (c, 1.0 in 0.1N HCl).

Picrate: Mp 175-178° dec.

N^4 -Me: [25406-44-4]
 $C_{11}H_{17}N_3O_4$ 255.273
 Cryst. (EtOAc). Mp 188-190°.

N^4 -Et: [25406-43-3]
 $C_{12}H_{19}N_3O_4$ 269.3
 Cryst. (EtOAc). Mp 100-102°.

N^4 -(4-Methylphenyl): [177949-57-4]
 $C_{17}H_{21}N_3O_4$ 331.371
 Cryst. (EtOAc). Mp 80-82°.

Dekker, C.A. et al., J.C.S., 1951, 2864 (isol)
 Fox, J.J. et al., J.A.C.S., 1959, **81**, 178 (synth)

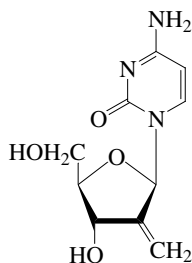
Biochem. Prep., 1963, **10**, 98 (synth)
 Becker, E.D. et al., J.A.C.S., 1965, **87**, 5575 (pmr)

Vorbrueggen, H. et al., Annalen, 1975, 988 (synth, pmr)

Saladino, R. et al., Tetrahedron, 1996, **52**, 6759-6780 (N^4 -derivs, synth, pmr, cmr)

2'-Deoxy-2'-methylenecytidine D-296

2'-Deoxy-2'-methylenecytidine, 9CI [119804-96-5]



$C_{10}H_{13}N_3O_4$ 239.23
 Yellowish foam.

Hydrochloride: [113648-25-2]

Cryst. (MeOH/Me₂CO). Mp >300°.

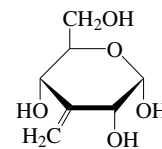
Yamagami, K. et al., Cancer Res., 1991, **51**, 2319-2323 (pharmacol)

Matsuda, A. et al., J. Med. Chem., 1991, **34**, 812-819 (synth, pharmacol)

Lin, T.S. et al., J. Med. Chem., 1991, **34**, 2607-2615 (cryst struct)
 Brindley, C.J. et al., Clin. Pharmacokinet., 2000, **38**, 475-491 (rev)
 Niitsu, N. et al., Cancer Res., 2001, **61**, 178-185 (pharmacol)

3-Deoxy-3-C-methylene-ribo-hexose D-297

3-Deoxy-3-C-methyleneglucose



α -D-Pyranose-form

$C_7H_{12}O_5$ 176.169

α -D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-3-C-methylene- α -D-ribo-hexopyranoside
 $C_{15}H_{18}O_5$ 278.304
 Mp 194-195°. $[\alpha]_D^{23} +159$.

α -D-Furanose-form

1,2:5,6-Di-O-isopropylidene: 3-Deoxy-1,2:5,6-di-O-isopropylidene-3-C-methylene- α -D-ribo-hexofuranose [21665-16-7]
 $C_{13}H_{20}O_5$ 256.298
 $[\alpha]_D^{22} +104$ (c, 2 in $CHCl_3$).

α -D-Furanose-form

1,2:5,6-Di-O-isopropylidene: 3-Deoxy-1,2:5,6-di-O-isopropylidene-3-C-methylene- α -D-ribo-hexofuranose
 $C_{13}H_{20}O_5$ 256.298
 Pale yellow liq. Not fully purified.

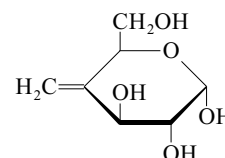
Rosenthal, A. et al., Can. J. Chem., 1969, **47**, 3941 (diisopropylidene)

Carey, F.A. et al., J.O.C., 1982, **47**, 3548 (benzylidene)

Mazur, A. et al., Tetrahedron, 1984, **40**, 3949 (diisopropylidene)

Lankin, D.C. et al., Carbohydr. Res., 1993, **244**, 49 (α -D-fur diisopropylidene)

4-Deoxy-4-C-methylene-xylo-hexose D-298

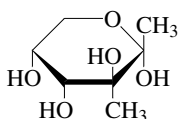
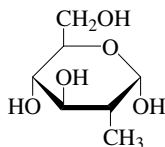
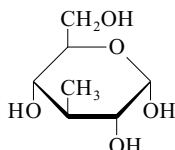


$C_7H_{12}O_5$ 176.169

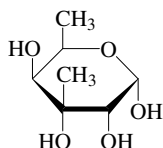
α -D-Pyranose-form

Me glycoside, tribenzyl: Methyl 2,3,6-tri-O-benzyl-4-deoxy-4-C-methylene- α -D-xylo-hexopyranoside [139070-96-5]
 $C_{29}H_{32}O_5$ 460.569
 Syrup. $[\alpha]_D^{22} +59.2$ (c, 1 in $CHCl_3$).

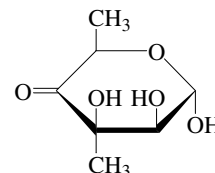
Preuss, R. et al., Annalen, 1992, 377 (tribenzyl, pmr, cmr)

1-Deoxy-3-C-methylfructose **D-299**
1-Deoxy-3-C-methyl-arabino-hexulose α -D-Pyranose-form $C_7H_{14}O_5$ 178.185**D-form** [94048-23-4]
Syrup. $[\alpha]_D^{20} +20$ (c, 2 in H_2O).*3,4:5,6-Diisopropylidene: 1-Deoxy-3,4:5,6-di-O-isopropylidene-3-C-methyl-D-arabino-hex-2-ulose* [94048-20-1]
 $C_{13}H_{22}O_5$ 258.314
Syrup. $[\alpha]_D^{20} +14$ ($CHCl_3$). **β -D-Pyranose-form***2,3:4,5-Diisopropylidene: 1-Deoxy-2,3:4,5-di-O-isopropylidene-3-C-methyl- β -D-arabino-hexulopyranose. 1-Deoxy-2,3:4,5-di-O-isopropylidene-3-C-methyl- β -D-fructopyranose* [94096-73-8]
 $C_{13}H_{22}O_5$ 258.314
Cryst. (hexane). Mp 39.5-40.5°. $[\alpha]_D^{20} +12$ (c, 1.5 in $CHCl_3$).Lopez Aparicio, F.J. *et al.*, *Carbohydr. Res.*, 1984, **134**, 39 (*synth*)**2-Deoxy-2-C-methylglucose** **D-300** α -D-Pyranose-form $C_7H_{14}O_5$ 178.185**D-form** [115945-70-5]
 $[\alpha]_D^{20} +39.5$ (c, 1.12 in H_2O) (5 min).Faghih, R. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 619-624 (*D-form*)**3-Deoxy-3-C-methylglucose** **D-301** α -D-Pyranose-form $C_7H_{14}O_5$ 178.185**D-form** [81755-88-6]
Hygroscopic syrup. $[\alpha]_D^{20} +43$ (c, 0.82 in H_2O) (2h). **α -D-Pyranose-form***Me glycoside: Methyl 3-deoxy-3-C-methyl- α -D-glucopyranoside* [84247-05-2]
 $C_8H_{16}O_5$ 192.211
Needles (Me_2CO /hexane). Mp 131-132°. $[\alpha]_D^{20} +147$ (c, 0.89 in $MeOH$). **α -D-Furanose-form***1,2-Isopropylidene: 3-Deoxy-1,2-O-isopropylidene-3-C-methyl- α -D-glucofuranose* [81114-49-0] $C_{10}H_{18}O_5$ 218.249Syrup. $[\alpha]_D^{15} -23$ (c, 1.14 in $CHCl_3$).Kinoshita, M. *et al.*, *Carbohydr. Res.*, 1982, **109**, 5 (*synth*, *pmr*, *derivs*)Pouigny, J.-R. *et al.*, *J. Chem. Res., Synop.*, 1982, **1**; *J. Chem. Res., Miniprint*, 1982, 0186, (*D-form*, *synth*)Kim, S. *et al.*, *Tet. Lett.*, 1989, **30**, 6279, (*D-form*, *synth*)**6-Deoxy-3-C-methylgulose, 9CI** **D-302***Virenose*

[69351-79-7]

 α -D-Pyranose-form $C_7H_{14}O_5$ 178.185

Constit. of Chrysomycin A, C-131 and Chrysomycin B.

D-formIsol. from *Coxiella burnettii* phase I lipopolysaccharide. $[\alpha]_D^{20} -9.8$ (H_2O). The claimed isol. of both enantiomers with equal and opposite opt. rotns. from the same source is currently unexplained. The D-form isol. is the most recent work and is probably correct. **α -D-Pyranose-form***Me glycoside: Methyl 6-deoxy-3-C-methyl- α -D-gulopyranoside* $C_8H_{16}O_5$ 192.211Cryst. ($CHCl_3$ /hexane). Mp 138-139.5°. $[\alpha]_D^{20} +143$ (c, 0.5 in $CHCl_3$). **β -D-Pyranose-form***Me glycoside: Methyl 6-deoxy-3-C-methyl- β -D-gulopyranoside* [69400-72-2] $C_8H_{16}O_5$ 192.211Cryst. ($CHCl_3$ /hexane). Mp 131°. $[\alpha]_D^{20} -39$ (c, 0.35 in $CHCl_3$).*Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-3-C-methyl- β -D-gulopyranoside* $C_{14}H_{22}O_8$ 318.323Cryst. (Et_2O /hexane). Mp 164°. $[\alpha]_D^{20} -15$ (c, 0.1 in $CHCl_3$).**L-form** [99247-34-4]Reported from acid hydrol. of lipopolysaccharides from *Coxiella burnettii* phase I cells. Involved in serological activity of *C. burnettii* LPS. $[\alpha]_D^{15} +8.1$ (H_2O).Kulyaeva, V.V. *et al.*, *Bioorg. Khim.*, 1978, **4**, 1087; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1978 (*isol*)Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1983, **112**, 320 (*synth*, *pmr*)Schramek, S. *et al.*, *Eur. J. Biochem.*, 1985, **148**, 455 (*isol*)Amano, K. *et al.*, *J. Biol. Chem.*, 1987, **262**, 4740Mayer, H. *et al.*, *Adv. Exp. Med. Biol.*, 1988, **228**, 577; *CA*, **110**, 228219dToman, R. *et al.*, *Carbohydr. Res.*, 1998, **306**, 291-296 (*isol*, *synth*)**6-Deoxy-3-C-methyl-lyxo-hexopyranos-4-ulose** **D-303** α -D-form $C_7H_{12}O_5$ 176.169 **α -D-form***Me glycoside: Methyl 6-deoxy-3-C-methyl- α -D-lyxo-hexopyranosid-4-ulose*

[104846-16-4]

 $C_8H_{14}O_5$ 190.196Syrup. $[\alpha]_D^{20} +93.7$ (c, 0.93 in $CHCl_3$).*Me glycoside, di-Ac: Methyl 2,3-di-O-acetyl-6-deoxy-3-C-methyl- α -D-lyxo-hexopyranosid-4-ulose*

[104846-18-6]

 $C_{12}H_{18}O_7$ 274.27Syrup. $[\alpha]_D^{20} +97.3$ (c, 1.02 in $CHCl_3$).*Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene-3-C-methyl- α -D-lyxo-hexopyranosid-4-ulose*

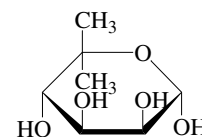
[104846-15-3]

 $C_{11}H_{18}O_5$ 230.26Syrup. $[\alpha]_D^{20} +101.1$ (c, 1.2 in $CHCl_3$). **α -L-form***Me glycoside: Methyl 6-deoxy-3-C-methyl- α -L-lyxo-hexopyranosid-4-ulose*

[104846-14-2]

 $C_8H_{14}O_5$ 190.196Syrup. $[\alpha]_D^{20} -99.8$ (c, 1.05 in Me_2CO).*Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene-3-C-methyl- α -L-lyxo-hexopyranosid-4-ulose*

[90329-14-9]

 $C_{11}H_{18}O_5$ 230.26Syrup. $[\alpha]_D^{20} -110.8$ (c, 0.85 in $CHCl_3$).Klemer, A. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 457; 1985, **4**, 205; 1986, **5**, 67 (α -D-Me gly *derivs*, α -L-Me gly *derivs*, *pmr*)**6-Deoxy-5-C-methyl-lyxo-hexose** **D-304** α -D-Pyranose-form $C_7H_{14}O_5$ 178.185**D-form***4-Me: 6-Deoxy-5-C-methyl-4-O-methyl-D-lyxo-hexose*

[206185-18-4]

 $C_8H_{16}O_5$ 192.211

Cryst. (cyclohexane/EtOAc). Mp 128°. $[\alpha]_D^{20}$ -29.2 (c, 1 in 50% EtOH aq.). Exists mainly in β -pyranose form.

L-form

4-Me: 6-Deoxy-5-C-methyl-4-O-methyl-L-lyxo-hexose. *Noviose* [114129-09-8]

[470-31-5]

C₈H₁₆O₅ 192.211

Degradn. prod. of Novobiocin. Needles (EtOAc).

Mp 128-130°. $[\alpha]_D^{24}$ +19.9 (c, 0.1 in EtOH aq.).

4-Me, 3-carbamoyl: *Novobiose*

C₉H₁₇NO₆ 235.236

Sugar component of Novobiocin.

Mp 124-126°. $[\alpha]_D^{24}$ +45.3 (c, 1 in EtOH).

 α -L-Pyranose-form

Me glycoside, 4-Me: Methyl 6-deoxy-5-C-methyl-4-O-methyl- α -L-lyxo-hexopyranoside

[6893-45-4]

C₉H₁₈O₅ 206.238

Plates. Mp 61-68°. $[\alpha]_D^{25}$ +113.8 (c, 1 in H₂O).

 β -L-Pyranose-form

Me glycoside, 4-Me: Methyl 6-deoxy-5-C-methyl-4-O-methyl- β -L-lyxo-hexopyranoside

[60660-91-5]

C₉H₁₈O₅ 206.238

Rods. Mp 69-70°. $[\alpha]_D^{22}$ -66.8 (c, 1.0 in EtOH).

 β -DL-Pyranose-form

Me glycoside, 4-Me: Methyl 6-deoxy-5-C-methyl-4-O-methyl- β -DL-lyxo-hexopyranoside

[60660-90-4]

C₉H₁₈O₅ 206.238

Cryst. (Et₂O). Mp 99-100°.

Me glycoside, 4-Me, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-6-deoxy-5-C-methyl-4-O-methyl- β -DL-lyxo-hexopyranoside

[60617-94-9]

C₁₃H₂₂O₇ 290.313

Cryst. (petrol). Mp 68-70°.

Hinman, J.W. *et al.*, *J.A.C.S.*, 1957, **79**,

3789-3800 (*isol, struct, Noviose, Novobiocin*)

Walton, E. *et al.*, *J.A.C.S.*, 1958, **80**, 5168 (*struct, Noviose*)

Vaterlaus, B.P. *et al.*, *Helv. Chim. Acta*, 1964, **47**, 381-390 (*Noviose*)

Achmatowicz, O. *et al.*, *Tetrahedron*, 1976, **32**, 1051-1054 (*DL-Noviose*)

Klemer, A. *et al.*, *Annalen*, 1986, 221-225 (*Noviose, synth*)

Pankau, W.M. *et al.*, *Helv. Chim. Acta*, 1998, **81**, 1997-2004 (*synth, pmr, cmr, bibl, derivs*)

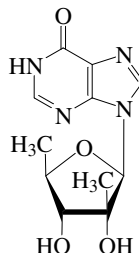
Takeuchi, M. *et al.*, *Tet. Lett.*, 2000, **41**, 2609-2611 (*synth*)

Gammon, D.W. *et al.*, *Tet. Lett.*, 2002, **43**, 3141-3144 (*synth*)

Yu, X.M. *et al.*, *J.O.C.*, 2004, **69**, 7375-7378 (*Noviose, synth*)

5'-Deoxy-2'-C-methylinosine, 9CI**Trachycladine B**

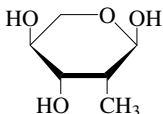
[164803-17-2]



C₁₁H₁₄N₄O₄ 266.256

Isol. from the marine sponge *Trachycladus laevispirulifer*. Amorph. solid. Sol. MeOH, butanol; fairly sol. H₂O; poorly sol. hexane. λ_{\max} 249 (ε 15000) (MeOH).

Searle, P.A. *et al.*, *J.O.C.*, 1995, **60**, 4296-4298 (*isol, uv, pmr, ms*)

2-Deoxy-2-C-methyllyxose**D-306** α -L-Pyranose-form

C₆H₁₂O₄ 148.158

L-form

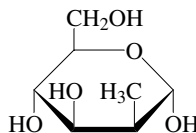
4,5-Dibenzyl: 4,5-Di-O-benzyl-2-deoxy-2-C-methyl-L-lyxose

[109200-13-7]

C₂₀H₂₄O₄ 328.407

Syrup. $[\alpha]_D^{21}$ +8.2 (c, 1.19 in MeOH).

Tadano, K.I. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 411-422 (*dibenzyl*)

2-Deoxy-2-C-methylmannose**D-307**

C₇H₁₄O₅ 178.185

 α -D-Pyranose-form

Allyl glycoside, 3,4,6-tribenzyl: Allyl 3,4,6-tri-O-benzyl-2-deoxy-2-C-methyl- α -D-mannopyranoside

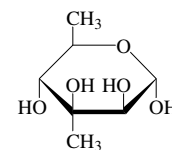
[218445-37-5]

C₃₁H₃₆O₅ 488.622

$[\alpha]_D^{25}$ +51.5 (c, 1.0 in CHCl₃).

Beyer, J. *et al.*, *J.A.C.S.*, 2000, **122**, 9575-9783

(α -D-allyl pyr tribenyl)

6-Deoxy-3-C-methylmannose, 9CI**D-308****Evalose** α -Pyranose-form

C₇H₁₄O₅ 178.185

D-form [50886-66-3]

A component of Flambamycin, F-8 and Everninomicin B, E-33. Also a component of bacterial lipopolysaccharides.

Oil. $[\alpha]_D$ -4.7 → -5.2 (H₂O). $[\alpha]_D$ -7 (EtOH) (-4.9).

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-3-C-methyl- α -D-mannopyranoside

C₁₅H₂₂O₉ 346.333

Mp 131-132°.

2-Me: 6-Deoxy-2-O,3-C-dimethylmannose

C₈H₁₆O₅ 192.211

Sugar component of Callipeltoside C. Abs. config. not yet certain (1998).

2,3,4-Tri-Me: 6-Deoxy-3-C-methyl-2,3,4-tri-O-methyl-D-mannose

[50929-68-5]

C₁₀H₂₀O₅ 220.265

Mp 115-120°. $[\alpha]_D$ +16 → +3 (c, 0.3 in MeOH). $[\alpha]_D$ +18.3 → +6.3 (c, 1.0 in MeOH).

 α -D-Pyranose-form

Me glycoside: Methyl 6-deoxy-3-C-methyl- α -D-mannopyranoside. Methyl α -D-evaloside

[78148-16-0]

C₈H₁₆O₅ 192.211

Mp 130-131° (122°). $[\alpha]_D$ +88.9

(MeOH) (+39.5). $[\alpha]_D$ +54 (CHCl₃).

Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-3-C-methyl- α -D-mannopyranoside

C₁₄H₂₂O₈ 318.323

Mp 157°.

L-form

2,3,4-Tri-Me: 6-Deoxy-3-C-methyl-2,3,4-tri-O-methyl-L-mannose. **Nogalose**

[30319-19-8]

C₁₀H₂₀O₅ 220.265

Sugar portion of Nogalamycin. Cryst.

(EtOAc). Mp 115-121°. $[\alpha]_D^{25}$ -10.6 (c, 1.0 in MeOH).

 α -L-Pyranose-form

Me glycoside: Methyl 6-deoxy-3-C-methyl- α -L-mannopyranoside. Methyl α -L-evalopyranoside

C₈H₁₆O₅ 192.211

Mp 128-131°. $[\alpha]_D^{20}$ -76.6 (c, 1 in MeOH). Formerly assigned β -config.

Me glycoside, 2,3,4-tri-Me: Methyl 6-deoxy-3-C-methyl-2,3,4-tri-O-methyl-L-mannopyranoside. Methyl α -L-nogaloside

C₁₁H₂₂O₅ 234.292

Mp 41-43°. $[\alpha]_D$ -48.4 (MeOH).

$[\alpha]_D^{20}$ -51.6 (c, 0.83 in CHCl₃).

α -L-Furanose-form

Me glycoside: Methyl 6-deoxy-3-C-methyl- α -L-mannofuranoside
 $C_8H_{16}O_5$ 192.211
 Syrup. $[\alpha]_D^{20}$ -98.6 (c, 1 in $CHCl_3$).

Wiley, P.F. *et al.*, *J.O.C.*, 1971, **36**, 2670

(*Nogalose*, *cryst struct*, *abs config*)

Ganguly, A.K. *et al.*, *Chem. Comm.*, 1973, 531 (*isol*, *struct*)

Ollis, W.D. *et al.*, *Chem. Comm.*, 1974, 881,

(*isol*, *struct*, α -D-Me pyr tri-Ac)

Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1974, 1568 (*Nogalose*, *synth*)

Yoshimura, J. *et al.*, *Chem. Lett.*, 1979, 1263 (*synth*, *bibl*)

Valente, L. *et al.*, *Carbohydr. Res.*, 1981, **90**, 329 (*synth*)

Hong, N. *et al.*, *Carbohydr. Res.*, 1981, **96**, 21 (*Nogalose*, *synth*)

Giuliano, R.M. *et al.*, *Carbohydr. Res.*, 1986, **155**, 252; 1989, **185**, 61 (*synth*, *cryst struct*, *Nogalose*, α -L-Me pyr, α -L-Me fur)

Klemer, A. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 67-76 (α -L-pyr Me gly tri-Me)

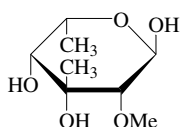
Parker, K.A. *et al.*, *Carbohydr. Res.*, 1988, **172**, 319 (*Nogalose*, *synth*)

Zagar, C. *et al.*, *Annalen*, 1992, 693 (α -D-Me pyr)

6-Deoxy-3-C-methyl-2-O-methyltalose, 9CI

D-309

Vineloze

 α -L-Pyranose-form

$C_8H_{16}O_5$ 192.211

L-form [27208-98-6]

A constit. of *Acetobacter vinelandii*.

Syrup. $[\alpha]_D$ +13 (c, 0.7 in H_2O).

 α -L-Pyranose-form

1,4-Di-Ac: 1,4-Di-O-acetyl-6-deoxy-3-C-methyl-2-O-methyl- α -L-talopyranose
 [57865-96-0]

$C_{12}H_{20}O_7$ 276.286

Syrup. $[\alpha]_D^{23}$ -53.9 (c, 1.05 in MeOH).

 β -L-Pyranose-form

1,4-Di-Ac: 1,4-Di-O-acetyl-6-deoxy-3-C-methyl-2-O-methyl- β -L-talopyranose
 [57865-97-1]

$C_{12}H_{20}O_7$ 276.286

Needles. Mp 119-120°. $[\alpha]_D^{23}$ +9.8 (c, 0.55 in MeOH).

Me glycoside: Methyl 6-deoxy-3-C-methyl-2-O-methyl- β -L-talopyranoside
 [78148-17-1]

$C_9H_{18}O_5$ 206.238

$[\alpha]_D$ +86 ($CHCl_3$).

 α -L-Furanose-form

1,5-Di-Ac: 1,5-Di-O-acetyl-6-deoxy-3-C-methyl-2-O-methyl- α -L-talofuranose
 $C_{12}H_{20}O_7$ 276.286

Syrup. $[\alpha]_D^{23}$ -25.4 (c, 1.05 in MeOH).

Me glycoside: Methyl 6-deoxy-3-C-methyl-2-O-methyl- α -L-talofuranoside
 [55533-96-5]

$C_9H_{18}O_5$ 206.238

Syrup. $[\alpha]_D^{24}$ -15 (c, 1.34 in MeOH).

Me glycoside, 3,5-dibenzyl: Methyl 3,5-di-O-benzyl-6-deoxy-3-C-methyl-2-O-methyl- α -L-talofuranoside
 [55533-94-3]
 $C_{23}H_{30}O_5$ 386.487
 $[\alpha]_D^{24}$ -3.4 (c, 1.34 in MeOH).

 β -L-Furanose-form

Me glycoside, 3,5-dibenzyl: Methyl 3,5-di-O-benzyl-6-deoxy-3-C-methyl-2-O-methyl- β -L-talofuranoside
 [55533-95-4]

$C_{23}H_{30}O_5$ 386.487

Syrup. $[\alpha]_D^{24}$ +66 (c, 1.11 in MeOH).

Funabashi, M. *et al.*, *Carbohydr. Res.*, 1975, **44**, 275 (*L-form*, *config*, *synth*, β -L-pyr 1,4-di-Ac,

α -L-Me fur dibenzyl, β -L-Me fur dibenzyl, α -L-Me fur, α -L-fur 1,5-di-Ac, α -L-pyr 1,4-di-Ac)

Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1975, 1292 (*L-form*, *synth*, α , β -L-Me fur)

Eguchi, Y. *et al.*, *J. Biol. Chem.*, 1977, **248**, 3341 (*biosynth*)

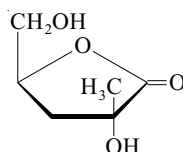
Barata, L.E.S. *et al.*, *Carbohydr. Res.*, 1981, **90**, 326 (*L-form*, *synth*, β -L-Me pyr)

Klemer, A. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 205-213 (*synth*)

Giuliano, R.M. *et al.*, *Carbohydr. Res.*, 1988, **183**, 277 (*synth*)

3-Deoxy-2-C-methyl-erythro-1,4-pentonolactone

D-310



$C_6H_{10}O_4$ 146.143

D-form [134639-11-5]

Cryst. Mp 107-108°. $[\alpha]_D^{25}$ +49 (c, 1.1 in MeOH).

Di-Ac: 2,5-Di-O-acetyl-3-deoxy-2-C-methyl-D-erythro-1,4-pentonolactone
 [111507-12-1]

$C_{10}H_{14}O_6$ 230.217

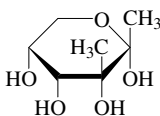
Syrup. $[\alpha]_D^{20}$ +64.2 (c, 1.4 in $CHCl_3$).

Bock, K. *et al.*, *Acta Chem. Scand.*, Ser. B, 1987, **41**, 13 (*D-di-Ac*, *pmr*, *cmr*)

Bertounesque, E. *et al.*, *Synthesis*, 1991, 270, (*D-form*, *synth*)

1-Deoxy-3-C-methylpsicose

D-311

 α -D-Pyranose-form

$C_7H_{14}O_5$ 178.185

D-form [95015-56-8]

Syrup. $[\alpha]_D$ -12.5 (c, 1.5 in MeOH).

 α -D-Furanose-form

2,3-Isopropylidene: 1-Deoxy-2,3-O-isopropylidene-3-C-methyl- α -D-psicofuranose
 [95015-55-7]

$C_{10}H_{18}O_5$ 218.249

Syrup, *cryst*, on storage. Mp 88-89°.

$[\alpha]_D$ +12 (c, 1.4 in $CHCl_3$).

2,3-Isopropylidene, 6-benzoyl: 6-O-Benzoyl-1-deoxy-2,3-O-isopropylidene-3-C-methyl- α -D-psicofuranose
 [95015-54-6]

$C_{17}H_{22}O_6$ 322.357

Syrup. $[\alpha]_D$ +9 (c, 1.1 in $CHCl_3$).

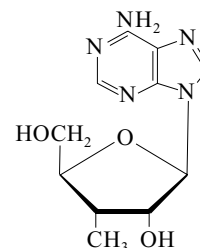
David, S. *et al.*, *Chem. Comm.*, 1976, 747 (*synth*)

Cubero, I.I. *et al.*, *Carbohydr. Res.*, 1984, **134**, 327 (*synth*, *pmr*, *cmr*, *derivs*)

9-(3-Deoxy-3-C-methylribofuranosyl)adenine

D-312

3'-Deoxy-3'-methyladenosine, 9CI, 8CI



$C_{11}H_{15}N_5O_3$ 265.271

β -D-form [26383-05-1]

Mp 231-232°. $[\alpha]_D^{22}$ -36 (c, 1.0 in H_2O).

λ_{max} 261 nm (ϵ 13 400) (H_2O).

Rosenthal, A. *et al.*, *Can. J. Chem.*, 1969, **47**,

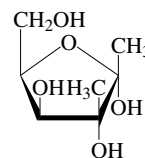
3941 (*synth*, *pmr*)

Cass, C.E. *et al.*, *Biochim. Biophys. Acta*, 1973, **291**, 734

Rosowsky, A. *et al.*, *J. Med. Chem.*, 1976, **19**, 1265 (*synth*)

1-Deoxy-3-C-methylsorbse

D-313

 α -D-Furanose-form

$C_7H_{14}O_5$ 178.185

D-form [94048-24-5]

Syrup. $[\alpha]_D$ +0.62 (c, 1.6 in H_2O).

 α -D-Furanose-form

2,3,4,6-Diisopropylidene: 1-Deoxy-2,3,4,6-di-O-isopropylidene-3-C-methyl- α -D-sorbofuranose
 [94048-21-2]

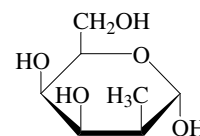
$C_{13}H_{22}O_5$ 258.314

Cryst. (hexane). Mp 54.5-55°. $[\alpha]_D$ -1.3 (c, 1.24 in $CHCl_3$).

Lopez Aparicio, F.J. *et al.*, *Carbohydr. Res.*, 1984, **134**, 39 (*synth*)

2-Deoxy-2-C-methyltalose

D-314

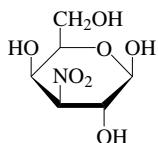


$C_7H_{14}O_5$ 178.185

α -D-Pyranose-form

Me glycoside, tribenzyl: Methyl 3,4,6-tri-O-benzyl-2-deoxy-2-C-methyl- α -D-talopyranoside
[218445-42-2]
 $C_{29}H_{34}O_5$ 462.585
[α]_D²⁵ +26.2 (c, 1.7 in $CHCl_3$).

Beyer, J. *et al.*, *J.A.C.S.*, 2000, **122**, 9575-9583 (α -D-Me pyr tribenzyl)

3-Deoxy-3-nitrogalactose**D-315** β -D-Pyranose-form $C_6H_{11}NO_7$ 209.155 **β -D-Pyranose-form**

Me glycoside: Methyl 3-deoxy-3-nitro- β -D-galactopyranoside
[14218-25-8]
 $C_7H_{13}NO_7$ 223.182
Needles ($Me_2CO/CHCl_3$). Mp 87-90°
Mp 131-132°. [α]_D +33 (c, 1 in H_2O).
Mp dependent on rate of heating or drying stage.

Me glycoside, 4,6-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-3-nitro- β -D-galactopyranoside
[3767-29-1]
 $C_{14}H_{17}NO_7$ 311.291
Needles (EtOH). Mp 230-231° dec. [α]_D²³ +24.8 (c, 1 in DMF).

 β -L-Pyranose-form

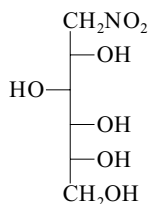
Me glycoside, 4,6-benzylidene: Methyl 4,6-O-benzylidene-3-deoxy-3-nitro- β -L-galactopyranoside
 $C_{14}H_{17}NO_7$ 311.291
Mp 231° dec. [α]_D²³ -26.2 (c, 1 in DMF).

Baer, H.H. *et al.*, *Can. J. Chem.*, 1965, **43**, 1829; 3074 (*D*-Me gly benzylidene, *L*-Me gly benzylidene)

Baer, H.H. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 245 (*synth*)

1-Deoxy-1-nitroglucitol**D-316**

6-Deoxy-6-nitroglutitol

*D*-form $C_6H_{13}NO_7$ 211.171***D*-form**

1-Deoxy-1-nitro-D-glucitol. 6-Deoxy-6-nitro-L-gulitol
[14199-88-3]
Cryst. (EtOH). Mp 107-108°. [α]_D²⁵ -9.7 (c, 6.6 in H_2O).

***L*-form**

1-Deoxy-1-nitro-L-glucitol. 6-Deoxy-6-nitro-D-gulitol
[69257-51-8]
Cryst. (EtOH). Mp 107-108°. [α]_D²⁵ +9.5 (c, 6.7 in H_2O).

Sowden, J.C. *et al.*, *J.A.C.S.*, 1947, **69**, 1963

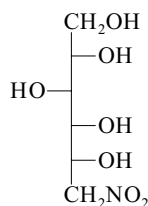
Sowden, J.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 132 (*synth*)

Sato, C. *et al.*, *Carbohydr. Res.*, 1967, **5**, 140 (*D*-form, *cd, ord*)

Köll, P. *et al.*, *Annalen*, 1991, 207 (*pmr*)

6-Deoxy-6-nitroglucitol**D-317**

1-Deoxy-1-nitroglutitol

*D*-form $C_6H_{13}NO_7$ 211.171***D*-form**

6-Deoxy-6-nitro-D-glucitol. 1-Deoxy-1-nitro-L-gulitol
[74183-68-9]
Needles and prisms (EtOAc).
Mp 81-83° Mp 89-91° (dimorph).

2,4-Benzylidene: 2,4-O-Benzylidene-6-deoxy-6-nitro-D-glucitol
[78124-22-8]
 $C_{13}H_{17}NO_7$ 299.28
Cryst. (EtOAc). Mp 192-194°. [α]_D²⁵ +2.5 (c, 3.5 in EtOH).

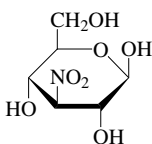
***L*-form 6-Deoxy-6-nitro-L-glucitol. 1-Deoxy-1-nitro-D-gulitol**

[114612-66-7] No phys. props. reported.

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 137 (*benzylidene, synth*)

U.S. Pat., 1981, 4 262 032, (*Biospherics*); *CA*, **95**, 78771h (*synth*)

Köll, P. *et al.*, *Annalen*, 1988, 685 (*L*-form)

3-Deoxy-3-nitroglucose**D-318** β -D-Pyranose-form $C_6H_{11}NO_7$ 209.155***D*-form**

[42776-33-0]
Cryst. ($Me_2CO/CHCl_3$). Mp 176-177° dec. [α]_D²⁵ +99.6 \rightarrow +73.9 (equilib.) (c, 1.3 in H_2O).

Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-deoxy-3-nitro- α -D-glucopyranose
[28538-29-6]
 $C_{14}H_{19}NO_{11}$ 377.304
Cryst. (EtOAc/petrol). Mp 112-113°. [α]_D²⁵ +95.5 (c, 0.7 in 1,2-dichloroethane).

 β -D-Pyranose-form

2,4,6-Tri-Ac: 2,4,6-Tri-O-acetyl-3-deoxy-3-nitro- β -D-glucopyranose
[28538-31-0]
 $C_{12}H_{17}NO_{10}$ 335.267
Needles ($CHCl_3$ /petrol). Mp 165°. [α]_D²⁵ +9.6 \rightarrow +70.5 (equilib.) (c, 1 in MeOH).

Me glycoside: Methyl 3-deoxy-3-nitro- β -D-glucopyranoside
 $C_7H_{13}NO_7$ 223.182
Needle-shaped prisms (EtOAc/MeOH). Mp 204-205° dec. [α]_D -12 (c, 2 in H_2O).

Me glycoside, 2,6-di-Ac: Methyl 2,6-di-O-acetyl-3-deoxy-3-nitro- β -D-glucopyranoside
[28538-33-2]
 $C_{11}H_{17}NO_9$ 307.257
Cryst. (H_2O). Mp 107-108°. [α]_D²⁵ -45 (c, 1.0 in $CHCl_3$).

Me glycoside, 2,4,6-tri-Ac: Methyl 2,4,6-tri-O-acetyl-3-deoxy-3-nitro- β -D-glucopyranoside
[18604-35-8]
 $C_{13}H_{19}NO_{10}$ 349.294
Cryst. (EtOH aq.). Mp 152-153°. [α]_D²³ -23.5 (c, 1 in $CHCl_3$).

 α -D-Furanose-form

1,2-Isopropylidene, 5,6-di-Ac: 5,6-Di-O-acetyl-3-deoxy-1,2-O-isopropylidene-3-nitro- α -D-glucofuranose
[42776-35-2]
 $C_{13}H_{19}NO_9$ 333.294
Cryst. (Et_2O /petrol). Mp 79-80°. [α]_D²⁰ +17 (c, 1.1 in $CHCl_3$).

Diisopropylidene: 3-Deoxy-1,2:5,6-di-O-isopropylidene-3-nitro- α -D-glucofuranose
[34379-42-5]
 $C_{12}H_{19}NO_7$ 289.285
Cryst. Mp 61-62°. [α]_D²⁰ +7.3 (c, 1 in $CHCl_3$).

 β -L-Pyranose-form

Me glycoside: Methyl 3-deoxy-3-nitro- β -L-glucopyranoside
[4631-20-3]
 $C_7H_{13}NO_7$ 223.182
Cryst. (EtOAc/EtOH). Mp 204-205° dec. [α]_D²³ +12.1 (c, 1 in H_2O).

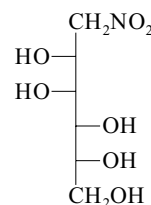
[4631-21-4, 28538-28-5]

Baer, H.H. *et al.*, *Can. J. Chem.*, 1965, **43**, 3074 (*Me β -L-gly*)

Baer, H.H. *et al.*, *Can. J. Chem.*, 1970, **48**, 1302 (*α -D-pyr-form, α -D-pyr tetra-Ac, β -D-tri-Ac, β -D-Me pyr di-Ac, β -D-Me pyr tri-Ac*)

Baer, H.H. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 245 (*Me β -D-gly*)

Takamoto, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1973, **46**, 1532 (*α -D-fur diisopropylidene, α -D-fur isopropylidene di-Ac*)

1-Deoxy-1-nitromannitol**D-319***D*-form $C_6H_{13}NO_7$ 211.171

L-form

6-Deoxy-6-nitro-D-mannitol. 1-Deoxy-1-nitro-L-mannitol
[6027-42-5]

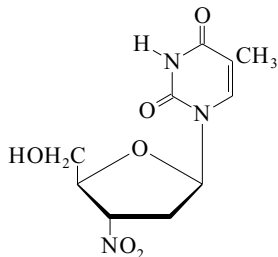
Cryst. (EtOH). Mp 133-134°. $[\alpha]_D^{25} +7$ (c, 6.2 in H₂O). The name 6-deoxy-6-nitro-D-mannitol is preferred for this enantiomer according to the IUPAC special rules for carbohydrates.

Sowden, J.C. *et al.*, *J.A.C.S.*, 1947, **69**, 1963 (synth)

Sowden, J.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 132 (synth)

3'-Deoxy-3'-nitrothymidine**D-320**

[151753-97-8]

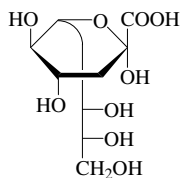


C₁₀H₁₃N₃O₆ 271.229
Mp 152-154°.

Huang, J.J. *et al.*, *J. Het. Chem.*, 1995, **32**, 691 (synth, pmr, cmr, uv)

3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid, 9CI**D-321**

Deaminated neuraminic acid. KDN
[22594-61-2]

 α -Pyranose-form

C₉H₁₆O₉ 268.22

Isol. from polysialoglycoproteins of rainbow trout eggs. Constit. of *Klebsiella ozaenae* capsular polysaccharide antigen K4. Plays an important role in egg function by protecting the non reducing termini of polysialoglycoproteins from enzymatic attack.

 α -Pyranose-form [124233-95-0]

Me glycoside, benzyl ester: [121409-15-2]

C₁₇H₂₄O₉ 372.371

Needles + 1H₂O (MeOH/Et₂O). Mp 97-99°. $[\alpha]_D^{27} -38.4$ (c, 0.17 in MeOH).

Me glycoside, 4,5,7,8,9-penta-Ac, benzyl ester: [121409-14-1]

C₂₇H₃₄O₁₄ 582.557

Amorph. solid. $[\alpha]_D^{25} -24$ (c, 1.0 in H₂O).

 β -Pyranose-form [120104-31-6]

NH₄ salt: [112543-66-5]

Solid. $[\alpha]_D -42$ (c, 0.8 in H₂O).

2,4,5,7,8,9-Hexa-Ac, Me ester: [123843-50-5]

C₂₂H₃₀O₁₅ 534.47

Needles (Et₂O/hexane). $[\alpha]_D^{19} -20.4$ (c, 0.71 in CHCl₃).

2,4,5,7,8,9-Hexa-Ac, benzyl ester:

[121409-12-9]

C₂₈H₃₄O₁₅ 610.568

Amorph. solid. $[\alpha]_D^{25} -17.4$ (c, 1.0 in CHCl₃).

Me glycoside, Me ester: [78082-67-4]

C₁₁H₂₀O₉ 296.274

Oil. $[\alpha]_D -53$ (H₂O).

Me glycoside, benzyl ester: [121409-16-3]

Amorph. solid + H₂O. $[\alpha]_D^{26} -37.9$

(c, 0.33 in MeOH).

Inoue, Y. *et al.*, *J. Biol. Chem.*, 1986, **261**, 11550 (isol, glc, ms, pmr)

Auge, C. *et al.*, *Chem. Comm.*, 1987, 859 (synth, cmr, pmr)

Nakamura, M. *et al.*, *Chem. Pharm. Bull.*, 1988, **36**, 4807; 1989, **37**, 2204 (isol, hplc, pmr, deriv)

Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1989, **188**, 145 (constit, pmr, cmr, deriv)

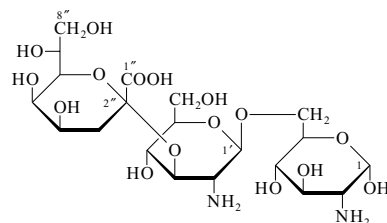
Schreiner, E. *et al.*, *Annalen*, 1990, 581, (β -pyr hexa-Ac Me ester)

Iwasaki, M. *et al.*, *J. Biol. Chem.*, 1990, **265**, 2596 (isol)

Song, Yu. *et al.*, *J. Biol. Chem.*, 1991, 21929 (isol, struct)

Banwell, M. *et al.*, *Chem. Comm.*, 1999, 1189-1190 (synth)

Banwell, M.G. *et al.*, *Org. Lett.*, 2004, **6**, 2737-2740 (synth)

3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose, 9CI**D-322**

C₂₀H₃₆N₂O₁₆ 560.508

 α -Pyranose-form

N,N'-Di-Ac: [92052-26-1]

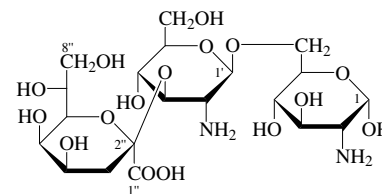
C₂₄H₄₀N₂O₁₈ 644.583

Amorph. solid (as ammonium salt).

$[\alpha]_D^{20} +16$ (c, 0.5 in H₂O). CAS no. refers to ammonium salt.

[92052-28-3]

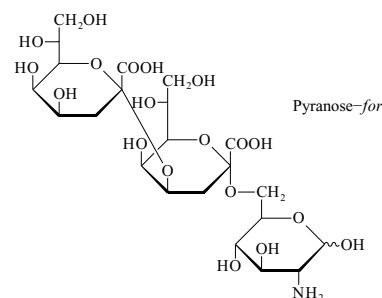
Paulsen, H. *et al.*, *Annalen*, 1984, 1288, (di-N-Ac, pmr)

3-Deoxy- β -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose, 9CI**D-323** α -Pyranose-form

C₂₀H₃₆N₂O₁₆ 560.508

Obt. as a complex deriv.

Paulsen, H. *et al.*, *Annalen*, 1984, 1288 (synth, pmr)

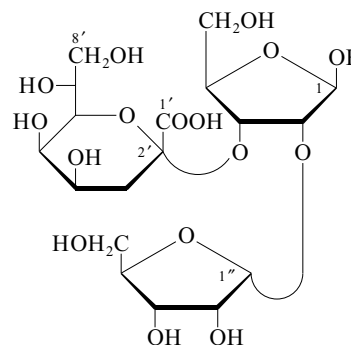
3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 4)-3-deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 6)-2-amino-2-deoxy-D-glucose, 9CI**D-324**

Pyranose-form

C₂₂H₃₇NO₁₉ 619.53

Constit. of the tetrasaccharide isol. from the R-mutant of *Salmonella minnesota*. Syrup. $[\alpha]_D +82$ (c, 1.3 in H₂O).

Paulsen, H. *et al.*, *Tet. Lett.*, 1986, **27**, 1135 (synth, pmr, cmr)

3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[α -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose, 9CI**D-325**

C₁₈H₃₀O₁₆ 502.425

 β -Furanose-form

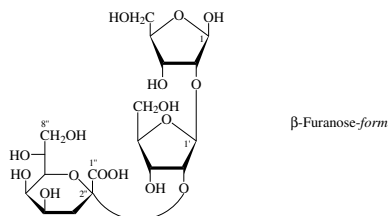
Me glycoside, 2'',3'',5,5''-tetraabenzoyl, 4',5',7',8'-tetra-Ac, Me ester:

[101142-00-1]

$C_{56}H_{58}O_{24}$ 1115.06
Syrup. $[\alpha]_D^{20} +91.1$ (c, 1.3 in $CHCl_3$).

Kosma, P. et al., *Carbohydr. Res.*, 1985, **141**, 239
(β -Me fur Me ester deriv, pmr)

**3-Deoxy- α -D-manno-2-octulo-
pyranosonosyl-(2 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose** **D-326**



$C_{18}H_{30}O_{16}$ 502.425
Repeating unit of linear and branched structures of the capsular polysaccharide from *Escherichia coli* LP 1092.

β -Furanose-form

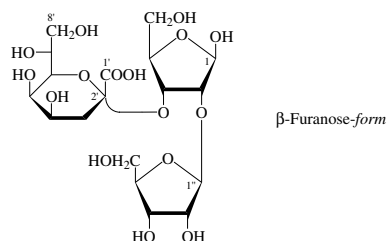
Me glycoside: [101024-44-6]
 $C_{19}H_{32}O_{16}$ 516.452
Glass (as Na salt). $[\alpha]_D^{20} +16.1$ (c, 1.08 in H_2O). CAS no. refers to Na salt.

Me glycoside, 3-benzyl, 5,5'-dibenzoyl, 4'',5'',7'',8''-tetra-Ac, *Me ester*:
[101024-41-3]
 $C_{49}H_{56}O_{22}$ 996.968
Syrup. $[\alpha]_D^{20} +92.7$ (c, 0.85 in $CHCl_3$).

Me glycoside, 5,5'-dibenzoyl, 3',4'',5'',7'',8''-penta-Ac, *Me ester*:
[101024-43-5]
 $C_{44}H_{52}O_{23}$ 948.881
Syrup. $[\alpha]_D^{20} +14.3$ (c, 0.8 in $CHCl_3$).

Kosma, P. et al., *Carbohydr. Res.*, 1985, **141**, 239
(β -Me fur, β -Me fur Me esters)

**3-Deoxy- α -D-manno-2-octulo-
pyranosonosyl-(2 \rightarrow 3)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose, 9CI** **D-327**



$C_{18}H_{30}O_{16}$ 502.425
Constit. of lipopolysaccharide of gram negative bacteria, e.g. capsular polysaccharide of *E. coli* strain LP 1092.

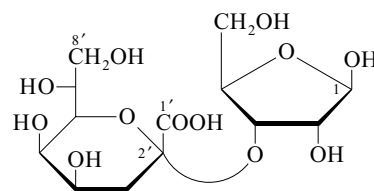
β -Furanose-form

Me glycoside: [101024-36-6]
 $C_{19}H_{32}O_{16}$ 516.452
Glass (as Na salt). $[\alpha]_D^{20} +27.5$ (c, 0.99 in H_2O). CAS no. refers to Na salt.

Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, *Me ester*:
[101024-35-5]
 $C_{56}H_{58}O_{24}$ 1115.06
Syrup. $[\alpha]_D^{20} +46$ (c, 0.7 in $CHCl_3$).

Jennings, H.J. et al., *Carbohydr. Res.*, 1982, **105**, 45 (occur)
Neszmelyi, A. et al., *Chem. Comm.*, 1982, 1017 (cmr)
Kosma, P. et al., *Carbohydr. Res.*, 1985, **141**, 239
(β -Me fur derivs, pmr, occur)

**3-Deoxy- α -D-manno-2-octulo-
pyranosonosyl-(2 \rightarrow 3)-D-ribose, 9CI** **D-328**



$C_{13}H_{22}O_{12}$ 370.31

β -Pyranose-form

Me glycoside: [101024-33-3]
 $C_{14}H_{24}O_{12}$ 384.336
Glass (as Na salt). $[\alpha]_D^{20} +35.8$ (c, 1.7 in H_2O). CAS no. refers to Na salt.

Me glycoside, 5-benzoyl, 4',5',7',8'-tetra-Ac, *Me ester*: [101024-32-2]
 $C_{30}H_{38}O_{17}$ 670.62
Syrup. $[\alpha]_D^{20} +47.9$ (c, 1.1 in $CHCl_3$).

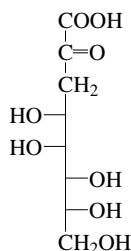
Me glycoside, 2-benzyl, 5-benzoyl, 4',5',7',8'-tetra-Ac, *Me ester*:
[101024-31-1]
 $C_{37}H_{44}O_{17}$ 760.744
Syrup. $[\alpha]_D^{20} +59.2$ (c, 0.94 in $CHCl_3$).

Kosma, P. et al., *Carbohydr. Res.*, 1985, **141**, 239
(β -Me pyr, β -Me pyr Me esters, pmr)

3-Deoxy-manno-oct-2-ulosonic acid, 9CI **D-329**

KDO
[10149-14-1]

[1069-03-0]



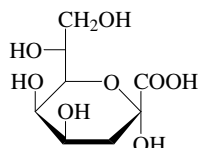
d-form

$C_8H_{14}O_8$ 238.194

d-form [20595-77-1]

Component of the polysaccharides of gram-negative bacteria. Also found in the cell wall polysaccharides of higher plants. Mp 125-126° (as NH_4 salt). $[\alpha]_D^{27} +41.3$ (c, 1.9 in H_2O). CAS no. refers to NH_4 salt.

8-Phosphate: [61302-28-1]
 $C_8H_{15}O_{11}P$ 318.174
 $[\alpha]_D^{20} +28$ (c, 1 in H_2O) (as tri-Li salt).



α -D-Pyranose-form

1,4-Lactone: 3-Deoxy-D-manno-oct-2-enono-1,4-lactone. Methyl 3-deoxy-D-manno-oct-2-ulono-1,4-lactone
[130948-52-6]

[20603-29-6]
 $C_8H_{12}O_7$ 220.179
Mp 192-194°. $[\alpha]_D^{24} +31.8$ (c, 1.4 in H_2O).

Penta-Ac, Me ester: Methyl 4,5,6,7,8-penta-O-acetyl-3-deoxy-D-manno-oct-2-ulopyranosonate
[66053-62-1]
 $C_{19}H_{26}O_{13}$ 462.407
Cryst. (EtOAc/hexane). Mp 152-153°. $[\alpha]_D^{23} +97$ (c, 0.9 in MeOH).

Me glycoside, 4,5,7,8-tetrabenzoyl, *Me ester*: Methyl (methyl 4,5,7,8-tetra-O-benzoyl-3-deoxy-D-manno-oct-2-ulopyranosid)onate
[73154-90-2]
 $C_{38}H_{34}O_{12}$ 682.679
Cryst. (EtOAc/hexane). Mp 169°. $[\alpha]_D^{20} -36$ (c, 1.0 in CH_2Cl_2).

α -D-Pyranose-form

2,4,5,7,8-Penta-Ac: 2,4,5,7,8-Penta-O-acetyl-3-deoxy- α -D-manno-oct-2-ulosonic acid
[73508-80-2]
 $C_{18}H_{24}O_{13}$ 448.38
Mp 155-160°. $[\alpha]_D^{20} +114$ (c, 0.8 in $CHCl_3$). Incorr. descr. in CAS as tetra-Ac.

2,4,5,7,8-Penta-Ac, Me ester: Methyl 2,4,5,7,8-penta-O-acetyl-3-deoxy- α -D-manno-2-octulopyranosonate
[73650-00-7]
 $C_{19}H_{26}O_{13}$ 462.407
Cryst. (EtOH). Mp 155-158°. $[\alpha]_D^{20} +87.1$ (c, 0.81 in $CHCl_3$).

Me glycoside: Methyl 3-deoxy- α -D-manno-oct-2-ulopyranosidonic acid
[66053-65-4]
 $C_9H_{16}O_8$ 252.221
 $[\alpha]_D^{23} +79$ (c, 0.5 in H_2O).

Me glycoside, 4,5,7,8-tetra-Ac, *Me ester*: Methyl (methyl 4,5,7,8-tetra-O-acetyl-3-deoxy- α -D-manno-oct-2-ulopyranosid)onate
[73650-02-9]

[73177-02-3]
 $C_{18}H_{26}O_{12}$ 434.396
Cryst. (Et₃O/petrol). Mp 110°. $[\alpha]_D^{20} +76.8$ (c, 0.6 in $CHCl_3$).

β -D-Pyranose-form

Me glycoside: Methyl 3-deoxy- β -D-manno-oct-2-ulopyranosidonic acid
[73610-18-1]
 $C_9H_{16}O_8$ 252.221
Mp 143-145° (as NH_4 salt). $[\alpha]_D^{23} +47$ (c, 2 in H_2O). CAS no. refers to NH_4 salt.

Me glycoside, 4,5,7,8-tetra-Ac, *Me ester*: Methyl (methyl 4,5,7,8-tetra-O-acetyl-3-deoxy- β -D-manno-oct-2-ulopyranosid)onate
[73650-01-8]
 $C_{18}H_{26}O_{12}$ 434.396
 $[\alpha]_D^{20} +67.8$ (c, 1.1 in $CHCl_3$).

D-Furanose-form

2,4,6,7,8-Penta-Ac, Me ester: Methyl (2,4,6,7,8-penta-O-acetyl-3-deoxy-D-manno-oct-2-ulofuranosid)onate [73154-87-7]
 $C_{19}H_{26}O_{13}$ 462.407
 Cryst. (Et₂O/hexane). Mp 123-125°. $[\alpha]_D^{20} +4$ (c, 1 in MeOH).

Me glycoside, 4,6,7,8-tetrabenzoyl, Me ester: Methyl (methyl 4,6,7,8-tetra-O-benzoyl-3-deoxy-D-manno-oct-2-ulofuranosid)onate [73154-89-9]
 $C_{38}H_{34}O_{12}$ 682.679
 Syrup. $[\alpha]_D^{20} +13$ (c, 1 in CH₂Cl₂).

Hershberger, C. et al., *J. Biol. Chem.*, 1968, **243**, 1578; 1585 (synth)

Charon, D. et al., *J.C.S. Perkin 1*, 1976, 1628 (phosphate)

Perry, M.B. et al., *Methods Carbohydr. Chem.*, 1976, **7**, 44 (synth)

Bhattacharjee, A.K. et al., *Biochemistry*, 1978, **17**, 645 (pmr)

Cherniak, R. et al., *Carbohydr. Res.*, 1979, **75**, 39-49 (cmr, equilib)

Charon, D. et al., *J.C.S. Perkin 1*, 1979, 2369 (Me ester pyr penta-Ac, Me ester fur penta-Ac, Me ester Me-pyr tetrabenzoyl, Me ester Me-fur tetrabenzoyl)

Unger, F.M. et al., *Carbohydr. Res.*, 1980, **80**, 191 (synth, α -D-penta-Ac derivs, β -D-Me pyr penta-Ac Me ester, β -D-Me pyr)

Unger, F.M. et al., *Adv. Carbohydr. Chem. Biochem.*, 1981, **38**, 324 (rev)

Kratky, C. et al., *Carbohydr. Res.*, 1981, **92**, 299 (cryst struct)

Collins, P.M. et al., *Chem. Comm.*, 1981, 1139 (synth)

Schmidt, R.R. et al., *Angew. Chem., Int. Ed.*, 1984, **23**, 430 (synth)

York, S. et al., *Carbohydr. Res.*, 1985, **138**, 109 (occur)

Danishefsky, S.J. et al., *J.A.C.S.*, 1985, **107**, 1280 (\pm -form)

Fesik, S.W. et al., *Carbohydr. Res.*, 1986, **153**, 136 (equilib)

Birnbaum, G. et al., *J. Carbohydr. Chem.*, 1987, **6**, 17-39 (cryst struct, pmr, glycoside)

Itoh, H. et al., *Bull. Chem. Soc. Jpn.*, 1988, **61**, 3356 (synth, lactone)

Horito, S. et al., *J. Carbohydr. Chem.*, 1989, **8**, (synth)

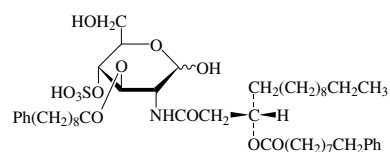
Brauer, N. et al., *Eur. J. Org. Chem.*, 1998, 2729-2732 (synth, bibl)

Burke, S.D. et al., *Org. Lett.*, 1999, **1**, 71-74 (synth)

Mlynarski, J. et al., *Org. Lett.*, 1999, **1**, 1709-1711 (synth)

Barco, A. et al., *Tetrahedron*, 2002, **58**, 8553-8558 (synth)

2-Deoxy-2-[[1-oxo-3-[(1-oxo-9-phenylonyl)oxy]tetradecyl]amino]-D-glucose, 3-benzenonanoate 4-(hydrogen sulfate), 9CI
 ONO 4007



$C_{50}H_{79}NO_{12}S$ 918.24
 Antineoplastic agent. Immunomodulator. Analogue of Lipid A. Used as the Na salt.

(S)-form [111250-67-0]

Na salt: [152646-95-2]
 Cryst. (EtOH). Mp 149-150°.

[111250-71-6]

Eur. Pat., 1987, 226 381, (Ono); *CA*, **107**, 237216r (synth, isomers, pharmacol)

Eur. Pat., 1993, 553 786, (Ono); *CA*, **120**, 116838e (Na salt, synth, pharmacol)

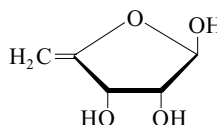
Hattori, Y. et al., *Eur. J. Pharmacol.*, 1995, **291**, 83-90 (pharmacol)

Matsumoto, N. et al., *J. Pharmacol. Exp. Ther.*, 1998, **284**, 189-195 (pharmacol)

de Bono, J.S. et al., *Clin. Cancer Res.*, 2000, **6**, 397-405 (pharmacol)

5-Deoxy-erythro-pent-4-enofuranose

D-331



$C_6H_{10}O_4$ 146.143

 β -D-form

Me glycoside, 2,3-O-isopropylidene: Methyl 5-deoxy-2,3-O-isopropylidene- β -D-erythro-pent-4-enofuranoside, 8CI [6991-65-7]

$C_9H_{14}O_4$ 186.207
 Syrup. Bp₈ 53-60°.

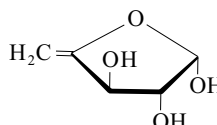
Hough, L. et al., *Chem. Comm.*, 1966, 173 (synth)

Hough, L. et al., *Adv. Chem. Ser.*, 1968, **74**, 120 (rev)

Inokawa, S. et al., *Carbohydr. Res.*, 1973, **30**, 127 (synth, pmr)

5-Deoxy-threo-pent-4-enofuranose

D-332



$C_5H_8O_4$ 132.116

 β -L-form

1,2-O-Isopropylidene, 3-Ac: 3-O-Acetyl-5-deoxy-1,2-O-isopropylidene- β -L-threo-pent-4-enofuranose [6983-39-7]

$C_{10}H_{14}O_5$ 214.218
 Mp 31-33°.

1,2-O-Isopropylidene, 3-benzoyl: 3-O-Benzoyl-5-deoxy-1,2-O-isopropylidene- β -L-threo-pent-4-enofuranose [6983-41-1]

$C_{15}H_{16}O_5$ 276.288
 Mp 52-54°.

1,2-O-Isopropylidene, 3-O-tetrahydropyranyl: 5-Deoxy-1,2-O-isopropylidene-3-O-tetrahydropyranyl- β -L-threo-pent-4-enofuranose [33156-06-8]

$[\alpha]_D^{25} +18.3$ (c, 0.54 in CHCl₃).

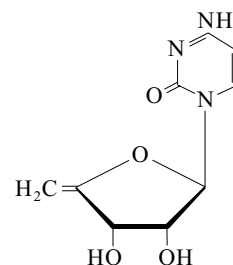
Hough, L. et al., *Chem. Comm.*, 1966, 173

Kiss, J. et al., *Helv. Chim. Acta*, 1975, **58**, 311

1-(5-Deoxy-erythro-pent-4-enofuranosyl)cytosine

D-333

4',5'-Didehydro-5'-deoxycytidine, 9CI



$C_9H_{11}N_3O_4$ 225.204

 β -D-form [52523-42-9]

Mp 108-109.5° (pyridine solvate). λ_{max} 270, 263, 257, 251 nm (ϵ 9 300, 10 500, 11 000, 10 700) (alkaline MeOH).

exo-2',3'-O-Anisylidene: (R)-4',5'-Didehydro-5'-deoxy-2',3'-O-[(methoxyphenyl)-methylene]cytidine, 9CI [53166-60-2]

Mp 206-208°.

exo-2',3'-O-Anisylidene, N-Ac: Mp 233-235°.

exo-2',3'-O-Anisylidene, N-benzoyl: Mp 237-238.5°.

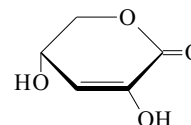
endo-2',3'-O-Anisylidene, N-benzoyl: Mp 222-223.5°.

Verheyden, J.P.H. et al., *J.O.C.*, 1974, **39**, 3573 (synth)

Sasaki, T. et al., *J.O.C.*, 1975, **40**, 106 (synth, pmr)

3-Deoxy-glycero-pent-2-enono-1,5-lactone

D-334



$C_5H_6O_4$ 130.1

Unisolated enol.

D-form**(S)-form**

Dibenzoyl: 2,4-Di-O-benzoylpent-2-enono-1,5-lactone [84679-46-9]

$C_{19}H_{14}O_6$ 338.316

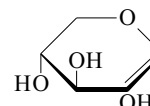
Cryst. (EtOH). Mp 134-135°. $[\alpha]_D^{20} +79$ (c, 1 in CHCl₃).

Lichtenthaler, F.W. et al., *Annalen*, 1989, 1153 (synth, pmr)

1-Deoxy-threo-pent-1-enopyranose

D-335

1,5-Anhydro-threo-pent-1-enitol. 2-Hydroxyxylal



C₅H₈O₄ 132.116

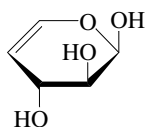
Unisolated enol.

D-form

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl-1-deoxy-2-hydroxy-D-threo-pent-1-enopyranose

C₁₁H₁₄O₇ 258.227Mp 81-82°. [α]_D -280 (CHCl₃).

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl-1-deoxy-2-hydroxy-D-threo-pent-1-enopyranose

C₂₆H₂₀O₇ 444.44Mp 128-130°. [α]_D -290 (CHCl₃).Ferrier, R.J. *et al.*, *J.C.S. (C)*, 1966, 2339, (tri-Ac)**4-Deoxy-threo-pent-4-enopyranose****D-336**

β-D-form

C₅H₈O₄ 132.116**β-D-form**

1,2-O-Isopropylidene: [60885-01-0]

C₈H₁₂O₄ 172.18Syrup. Bp_{0.1} 130° (bath). [α]_D²⁰ -176.7 (c, 0.5 in CHCl₃).

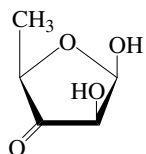
1,2-O-Isopropylidene, 3-Ac:

C₁₀H₁₄O₅ 214.218Syrup. Bp_{0.08} 110° (bath). [α]_D²⁰ -166.5 (c, 0.23 in CHCl₃).

1,2-O-Isopropylidene, 3-(4-nitrobenzoyl):

Cryst. (Et₂O). Mp 152-153°. [α]_D²⁰ -340.4 (c, 1.1 in CHCl₃).**β-L-form**

1,2-O-Isopropylidene: [77852-81-4]

Syrup. [α]_D²⁰ +183 (c, 1.1 in CHCl₃).Klemer, A. *et al.*, *Chem. Ber.*, 1976, **109**, 2849; 1981, **114**, 1192 (*synth*, *pmr*, *ms*)**5-Deoxy-threo-pentofuranos-3-ulose****D-337**

β-D-form

C₅H₈O₄ 132.116**β-D-form**

1,2-O-Isopropylidene: 5-Deoxy-1,2-O-isopropylidene-β-D-threo-pentofuranos-3-ulose

[35827-71-5]

C₈H₁₂O₄ 172.18[α]_D²⁴ -26.3 (c, 1.8 in CHCl₃).

1,2-O-Isopropylidene, oxime:

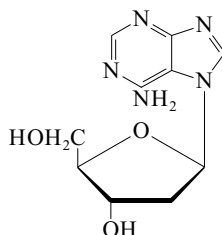
C₈H₁₃NO₄ 187.195Cryst. (Et₂O). Mp 98-102°. [α]_D¹⁸ +20.9 (c, 2.0 in EtOH).**β-L-form**

1,2-O-Isopropylidene: 5-Deoxy-1,2-O-isopropylidene-β-L-threo-pentofuranos-3-ulose

[37111-48-1]

C₈H₁₂O₄ 172.18[α]_D +76 (c, 1 in CHCl₃).1,2-O-Isopropylidene, oxime: Mp 104-106°. [α]_D -10.Dyer, J.R. *et al.*, *J.A.C.S.*, 1965, **87**, 654, (β-L-deoxy isopropylidene)Paulsen, H. *et al.*, *Chem. Ber.*, 1972, **105**, 1978 (β-L-deoxy isopropylidene)Tronchet, J.M.J. *et al.*, *Helv. Chim. Acta*, 1972, **55**, 613; 2286 (β-D-deoxy isopropylidene, β-D-deoxy isopropylidene oxime)**7-(2-Deoxy-erythro-pentofuranosyl)adenine****D-338**

7-(2-Deoxy-erythro-pentofuranosyl)-7H-purin-6-amine. 6-Amino-7-(2-deoxy-erythro-pentofuranosyl)purine

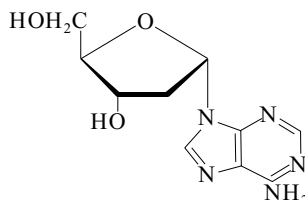
C₁₀H₁₃N₅O₃ 251.244**β-D-form** [148171-35-1]

Shows reverse Watson-Crick base pairing behaviour.

Cryst. (MeOH). Mp 187°. Labile.

Seela, F. *et al.*, *Helv. Chim. Acta*, 1994, **77**, 597 (*synth*, *uv*, *pmr*, *cmr*)**9-(2-Deoxy-erythro-pentofuranosyl)adenine****D-339**

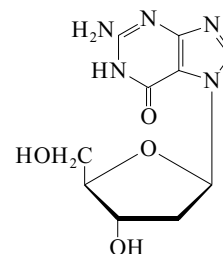
9-(2-Deoxypentofuranosyl)-9H-purin-6-amine, 9CI

C₁₀H₁₃N₅O₃ 251.244

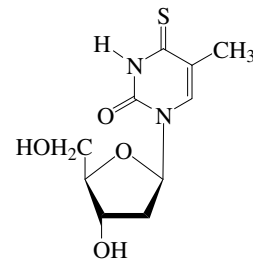
α-D-form shown.

α-D-formMp 209-211°. [α]_D²⁰ +71 (c, 0.54 in H₂O). λ_{max} 260 nm (ε 16 290) (H₂O).**α-L-form** [14426-54-1]Mp 204-205°. [α]_D²¹ -70.8 (c, 1 in H₂O).

For β-D-form see 2'-Deoxyadenosine, D-28.

Pedersen, C. *et al.*, *J.A.C.S.*, 1960, **82**, 5210 (*synth*)Kuszmarn, J. *et al.*, *Chem. Ber.*, 1963, **96**, 2327 (*synth*)Robins, M.J. *et al.*, *J.O.C.*, 1970, **35**, 636; 1974, **39**, 113 (*synth*, *pmr*)Schmidt, R.R. *et al.*, *Chem. Ber.*, 1973, **106**, 1256 (*synth*)Wilson, M.S. *et al.*, *J.A.C.S.*, 1975, **97**, 3436 (*ms*)**N⁷-(2-Deoxy-erythro-pentofuranosyl)guanine****D-340**C₁₀H₁₃N₅O₄ 267.244**β-D-form**

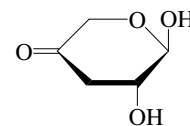
Regioisomer of 2'-Deoxyribofuranosyl-guanine, D-360. Forms oligonucleotides capable of base-pairing with cytosine. Pale yellow solid.

Seela, F. *et al.*, *Helv. Chim. Acta*, 1996, **79**, 477 (*synth*, *uv*, *pmr*)**1-(2-Deoxypentofuranosyl)-4-thiothymidine****D-341**C₁₀H₁₄N₂O₄S 258.298**β-D-erythro-form**

2-Deoxy-4-thiothymine

[7236-57-9]

Cryst. Mp 125-127°.

Fox, J.J. *et al.*, *J.A.C.S.*, 1959, **81**, 178 (*synth*)Scheit, K.-H. *et al.*, *Chem. Ber.*, 1968, **101**, 1141 (*synth*)Palamino, E. *et al.*, *J. Med. Chem.*, 1990, **33**, 258 (*synth*, *pmr*)**3-Deoxy-glycero-pentopyranos-4-ulose****D-342**

β-D-form

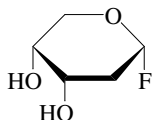
C₅H₈O₄ 132.116**β-D-form***Me* glycoside: Methyl 3-deoxy-β-D-glycero-pentopyranosid-4-ulose. Dihydro-5-hydroxy-6-methoxy-2H-pyran-3(4H)-one [55533-73-8]

C₆H₁₀O₄ 146.143[α]_D -152.1(c, 0.6 in CHCl₃).**β-L-form**

Me glycoside: Methyl 3-deoxy-β-L-glycero-pentopyranosid-4-ulose
[60894-72-6]

C₆H₁₀O₄ 146.143[α]_D +153 (c, 0.6 in CHCl₃).

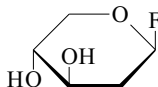
Cossy, J. et al., *Carbohydr. Res.*, 1994, **259**, 141
(β-D-Me pyr, β-L-Me pyr, pmr, cmr)

2-Deoxy-erythro-pentopyranosyl fluoride**D-343**

α-D-form

C₅H₉FO₃ 136.123**α-D-form***Dibenzoyl*: [34992-93-3]C₁₉H₁₇FO₅ 344.339Cryst. (Et₂O/pentane). Mp 112° dec.[α]_D²³ +59.2 (c, 0.8 in CHCl₃).**β-D-form***Dibenzoyl*: [34992-94-4]Cryst. (Et₂O/pentane). Mp 77-78.5°.[α]_D²³ -199 (c, 1.7 in CHCl₃).

Bock, K. et al., *Acta Chem. Scand.*, 1971, **25**,
2757 (α-D-dibenzoyl, β-D-dibenzoyl, pmr)

2-Deoxy-threo-pentopyranosyl fluoride**D-344**C₅H₉FO₃ 136.123**β-D-form***Dibenzoyl*: [34992-95-5]C₁₉H₁₇FO₅ 344.339Cryst. Mp 126-127° dec. [α]_D²³ -146(c, 1.8 in CHCl₃).

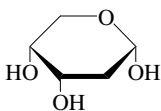
Bock, K. et al., *Acta Chem. Scand.*, 1971, **25**,
2757 (dibenzoyl, pmr)

2-Deoxy-erythro-pentose**D-345**

2-Deoxyribose, 9CI, 8CI. 2-Deoxyarabinose. Desoxyribose. Ribodesose.

Thymine. de-Rib

[1724-14-7]



α-D-Pyranose-form

C₅H₁₀O₄ 134.132

An aq. soln. at 31° contains 40% α-pyr,
35% β-pyr, 13% α-fur, 12% β-fur.

D-form [533-67-5]

Constit. of many nucleic acids. Present in all animal and plant tissues as component of Deoxyribonucleic acid, D-361.

Cryst. (EtOAc).

Mp 91° Mp 96-98°. [α]_D -57 (c, 1.1 in H₂O) (-53.8). pK_{a1} 12.61 (25°). Crystallises as β-anomer.

► SB7230000

4-Nitrophenylhydrazon: Mp 160°.[α]_D¹⁴ -11.1 (c, 0.09 in EtOH).

1,3,4-Tri-Ac: 1,3,4-Tri-O-acetyl-2-deoxy-D-erythro-pentose

C₁₁H₁₆O₇ 260.243

Needles (MeOH). Mp 98°. [α]_D²³ -171.8
(c, 0.56 in CHCl₃).

3,4,5-Tri-Ac: 3,4,5-Tri-O-acetyl-2-deoxy-D-erythro-pentose

C₁₁H₁₆O₇ 260.243

Bp_{0.0001} 105° (bath). [α]_D²¹ +3.4
(c, 4.57 in Py).

1,3,4-Tribenzoyl: 1,3,4-Tri-O-benzoyl-2-deoxy-D-ribo-pentose

C₂₆H₂₂O₇ 446.456

Nodules (EtOH). Mp 127°. [α]_D²³ -65
(c, 1.02 in CHCl₃).

3,4,5-Tribenzoyl: 3,4,5-Tri-O-benzoyl-2-deoxy-D-erythro-pentose

C₂₆H₂₂O₇ 446.456

Needles (EtOAc/petrol). Mp 118-119°.
[α]_D¹⁸ -2.8 (c, 1.44 in Py).

Di-Et dithioacetal:C₉H₂₀O₃S₂ 240.387Oil. [α]_D -15 (c, 1.4 in EtOH).*3,5-O-Benzylidene, di-Et dithioacetal*:C₁₆H₂₄O₃S₂ 328.496

Sl. yellow syrup. [α]_D²⁵ -52 (c, 3.5 in
EtOH).

5-Trityl: 2-Deoxy-5-O-trityl-D-erythro-pentose

Cryst. (C₆H₆/pentane). Mp 108-110°.
[α]_D²⁰ +39.6 → +12.4 (15h, c, 3.9 in Py).

5-Phosphate:C₅H₁₁O₇P 214.111Isol. from *E. coli* extracts.[α]_D²⁰ +16.51 (H₂O) (as Ba salt).**α-D-Pyranose-form** [36792-85-5]

1,3,4-Tribenzoyl: 1,3,4-Tri-O-benzoyl-2-deoxy-α-D-erythro-pentopyranose

[17685-01-7]

C₂₆H₂₂O₇ 446.456

Cryst. (MeOH). Mp 151-152°. [α]_D²⁰
+41.6 (c, 0.83 in CHCl₃).

Me glycoside: Methyl 2-deoxy-α-D-erythro-pentopyranoside

C₆H₁₂O₄ 148.158Mp 95°. [α]_D²⁰ +40.1 (H₂O).

Me glycoside, 3,4-bis(4-nitrobenzoyl):
[20535-31-3]

Cryst. (MeOH). Mp 112-114°.

[α]_D -12.8 (c, 1.13 in CHCl₃).**β-D-Pyranose-form** [22900-10-3]

1,3,4-Tribenzoyl: 1,3,4-Tri-O-benzoyl-2-deoxy-β-D-erythro-pentopyranose

[17685-02-8]

C₂₆H₂₂O₇ 446.456

Cryst. (MeOH). Mp 159-161°. [α]_D²⁰ -195
(c, 0.96 in CHCl₃).

Me glycoside: Methyl 2-deoxy-β-D-erythro-pentopyranoside

C₆H₁₂O₄ 148.158

Cryst. (C₆H₆). Mp 83-84°. [α]_D¹⁶ -200
(c, 1.01 in CHCl₃).

Me glycoside, 3,4-O-isopropylidene: Methyl 2-deoxy-3,4-O-isopropylidene-β-D-erythro-pentopyranoside

C₉H₁₆O₄ 188.223Syrup. [α]_D¹⁶ -105 (c, 1.07 in H₂O).*Me glycoside, 3,4-O-cyclohexylidene:*

Methyl 3,4-O-cyclohexylidene-2-deoxy-β-D-erythro-pentopyranoside

[30545-66-5]

C₁₂H₂₀O₄ 228.288[α]_D²² -97 (CHCl₃).*Me glycoside, 3,4-bis(4-nitrobenzoyl):*

[20535-30-2]

Cryst. (MeOH). Mp 141-143°. [α]_D -230
(c, 1.78 in CHCl₃).

Me glycoside, 3-Me, 4-benzoyl: Methyl 4-O-benzoyl-2-deoxy-3-O-methyl-β-D-erythro-pentopyranoside

[34385-24-5]

C₁₄H₁₈O₅ 266.293

Cryst. (Et₂O/pentane). Mp 53-54°. [α]_D²³
-142 (c, 1 in CHCl₃).

α-D-Furanose-form

1,3,5-Tribenzoyl: 1,3,5-Tri-O-benzoyl-2-deoxy-α-D-erythro-pentofuranose

C₂₆H₂₂O₇ 446.456

Needles (Et₂O/pentane). Mp 110-112°.
[α]_D +75.3 (c, 0.38 in CHCl₃).

Me glycoside: Methyl 2-deoxy-α-D-erythro-pentofuranoside

[60134-26-1]

C₆H₁₂O₄ 148.158Syrup. [α]_D +70 (c, 2 in H₂O).

Me glycoside, 3,5-di-Ac: Methyl 3,5-di-O-acetyl-2-deoxy-α-D-erythro-pentofuranoside

[23701-40-8]

C₁₀H₁₆O₆ 232.233Syrup. [α]_D²⁵ +56 (c, 0.87 in CHCl₃).

Me glycoside, 3,5-bis(4-methylbenzoyl):
[22837-36-1]

Mp 83-84°. [α]_D²⁷ -135.2 (c, 0.9 in
CHCl₃).

Me glycoside, 5-tosyl: Methyl 2-deoxy-5-O-tosyl-α-D-erythro-pentofuranoside

[10437-39-5]

C₁₃H₁₈O₆S 302.348Mp 81°. [α]_D²⁶ -43.7 (c, 1.13 in CHCl₃).*Me glycoside, 5-(4-nitrophenyl):*

[33275-29-5]

Mp 70°. [α]_D²⁶ -47.5 (c, 1.4 in CHCl₃).

Me glycoside, 5-trityl: Methyl 2-deoxy-5-O-trityl-α-D-erythro-pentofuranoside

[16801-99-3]

C₂₅H₂₆O₄ 390.478Gum. [α]_D²⁶ +64.4 (c, 1.3 in CHCl₃).**β-D-Furanose-form**

1,3,5-Tribenzoyl: 1,3,5-Tri-O-benzoyl-2-deoxy-β-D-erythro-pentofuranose

C₂₆H₂₂O₇ 446.456Needles (Et₂O/pentane). Mp 84-87°.[α]_D²⁰ -19.8 (c, 1.15 in CHCl₃).

Me glycoside, 3,5-bis(4-methylbenzoyl):
[22837-37-2]

Mp 78-78.5°. [α]_D²⁷ +77 (c, 1.7 in CHCl₃).

Me glycoside, 5-trityl: Methyl 2-deoxy-5-O-trityl-β-D-erythro-pentofuranoside [16802-00-9]
Syrup. $[\alpha]_D^{25}$ -43.8 (c, 1.2 in CHCl₃).
Benzyl glycoside: Benzyl 2-deoxy-β-D-erythro-pentofuranoside
C₁₂H₁₆O₄ 224.256
Oil + 1H₂O.

L-form [29780-54-9]
Cryst. (EtOAc). Mp 80° Mp 92-95°. $[\alpha]_D^{16.5}$ +59 (equilib., c, 1.14 in H₂O).

Benzylphenylhydrazone: Mp 125-126°. $[\alpha]_D^{25}$ +17.5 (Py).

α-L-Pyranose-form

Me glycoside: Methyl 2-deoxy-α-L-erythro-pentopyranoside [26528-46-1]
C₆H₁₂O₄ 148.158
Mp 101-102° subl. $[\alpha]_D^{25}$ -169 (c, 1.03 in CHCl₃). $[\alpha]_D^{25}$ -50 (c, 1.15 in H₂O).

Me glycoside, di-Ac: Methyl 3,4-di-O-acetyl-2-deoxy-α-L-erythro-pentopyranoside [26528-45-0]
C₁₀H₁₆O₆ 232.233
Cryst. (Et₂O/petrol). Mp 73.5-74°. $[\alpha]_D^{25}$ -22.7 (c, 0.9 in CHCl₃). $[\alpha]_D^{25}$ +4.7 (c, 0.9 in H₂O).

Me glycoside, dimesyl: Methyl 2-deoxy-3,4-di-O-mesyl-α-L-erythro-pentopyranoside C₈H₁₆O₈S₂ 304.342
Cryst. (EtOH). Mp 199°.

β-L-Pyranose-form

Me glycoside: Methyl 2-deoxy-β-L-erythro-pentopyranoside [26528-67-6]
Cryst. (Et₂O/petrol). Mp 85.5-86.5°. $[\alpha]_D^{25}$ +197 (c, 1.25 in H₂O). $[\alpha]_D^{25}$ +201 (c, 1.36 in CHCl₃).

Me glycoside, ditosyl: Methyl 2-deoxy-3,4-di-O-tosyl-β-L-erythro-pentopyranoside [26528-69-8]
C₂₀H₂₄O₈S₂ 456.537
Mp 110-111°. $[\alpha]_D^{25}$ +117 (c, 1.8 in CHCl₃).

L-Furanose-form

Me glycoside: Methyl 2-deoxy-L-erythro-pentofuranoside [446251-73-6]
C₆H₁₂O₄ 148.158
Solid. $[\alpha]_D^{20}$ -48 (c, 0.8 in MeOH).

α-L-Furanose-form

Me glycoside, 3,5-dibenzyl: Methyl 3,5-di-O-benzyl-2-deoxy-α-L-erythro-pentofuranoside [161594-28-1]
C₂₀H₂₄O₄ 328.407
 $[\alpha]_D^{20}$ -58 (c, 0.8 in MeOH).

β-L-Furanose-form

Me glycoside, 3,5-dibenzyl: Methyl 3,5-di-O-benzyl-2-deoxy-β-L-erythro-pentofuranoside [161594-35-0]
 $[\alpha]_D^{20}$ -14.3 (c, 0.8 in MeOH).

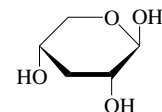
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 189B (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 292C (nmr)

Deriaz, R.E. *et al.*, *J.C.S.*, 1949, 1879; 2836 (*D-form, L-form, α-L-Me pyr, β-L-Me pyr*)
Allerton, R. *et al.*, *J.C.S.*, 1951, 1480 (*D-1,3,4-tri-Ac, D-1,3,4-tribenzoyl*)
Zinner, H. *et al.*, *Chem. Ber.*, 1957, **90**, 2696; 1958, **91**, 148 (*D-3,4,5-tri-Ac, D-3,4,5-tribenzoyl*)
Ukita, C. *et al.*, *Chem. Pharm. Bull.*, 1959, **7**, 655 (*5-phosphate*)
Pedersen, C. *et al.*, *J.A.C.S.*, 1960, **82**, 3425 (*α-D-pyr tribenzoyl, β-D-pyr tribenzoyl, β-D-fur tribenzoyl*)
Ness, R.K. *et al.*, *J.A.C.S.*, 1960, **82**, 3434 (*D-trityl*)
Hardegger, E. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 177 (*synth, D-form*)
Richards, G.N. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 180 (*synth, D-form*)
Šmejkal, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1966, **31**, 291 (*α-D-Me pyr*)
Nakaminami, G. *et al.*, *Tet. Lett.*, 1967, 3983 (*L-form, L-N-phenylglycosylamine, DL-form, DL-N-phenylglycosylamine*)
Wittenburg, E. *et al.*, *Chem. Ber.*, 1968, **101**, 1614 (*α-D-Me pyr bisnitrobenzoyl, β-D-Me pyr bisnitrobenzoyl*)
Leonard, N.J. *et al.*, *J.O.C.*, 1968, **33**, 3169 (*α-D-Me fur trityl, β-D-Me fur trityl*)
Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, **47**, 4427 (*α-L-Me pyr, α-L-Me pyr di-Ac, α-L-Me pyr dimesyl, β-L-Me pyr*)
Reist, E.J. *et al.*, *Carbohydr. Res.*, 1969, **9**, 71 (*α-D-Me fur di-Ac*)
David, S. *et al.*, *Carbohydr. Res.*, 1971, **18**, 39 (*α,β-D-Me fur tosyl, α,β-D-Me fur nitrophenyl*)
Lemieux, R.U. *et al.*, *Carbohydr. Res.*, 1971, **20**, 59 (*equilib*)
Bock, K. *et al.*, *Carbohydr. Res.*, 1971, **20**, 73 (*β-D-Me pyr benzoyl Me*)
Ryan, K.J. *et al.*, *J.O.C.*, 1971, **36**, 2646 (*β-D-Me pyr cyclohexylidene*)
Breitmaier, E. *et al.*, *Chimia*, 1972, **26**, 136 (*cmr*)
Rosenthal, A. *et al.*, *Carbohydr. Res.*, 1974, **32**, 67 (*α-D-Me fur trityl, β-D-Me fur trityl*)
Wong, M.Y.H. *et al.*, *J.A.C.S.*, 1978, **100**, 3548 (*D-form, synth*)
Hauske, J.R. *et al.*, *J.O.C.*, 1979, **44**, 2472 (*D-form, synth*)
Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (*cmr*)
Mathlouthi, M. *et al.*, *Carbohydr. Res.*, 1983, **122**, 31 (*ir, Raman*)
Hoffmann, R.W. *et al.*, *Carbohydr. Res.*, 1983, **123**, 320 (*synth*)
Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (*equilib*)
Inokawa, S. *et al.*, *Carbohydr. Res.*, 1985, **142**, 321 (*β-D-Me pyr, β-D-Me pyr isopropylidene*)
Nawrot, B. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 95-114 (*benzyl β-D-fur*)
Dyson, M.R. *et al.*, *Carbohydr. Res.*, 1991, **216**, 237 (*di-Et dithioacetal*)
Jorgensen, C. *et al.*, *Carbohydr. Res.*, 1997, **299**, 307-310 (*synth*)
Fazio, F. *et al.*, *Tetrahedron: Asymmetry*, 2000, **11**, 1869-1876; 2001, **12**, 2143-2145 (*L-form, synth*)
Merck Index, 13th edn., 2001, No. 2925 (*D-form, bibl, props*)
Chong, Y. *et al.*, *Carbohydr. Res.*, 2002, **337**, 397-402 (*synth*)
Shi, Z.-D. *et al.*, *Tetrahedron*, 2002, **58**, 3287-3296 (*L-form, synth, α:β-L-Me fur, α:β-L-Me fur dibenzyl*)
Noda, H. *et al.*, *Tetrahedron: Asymmetry*, 2002, **13**, 2667-2672 (*L-form, synth*)

3-Deoxy-erythro-pentose, 9CI, 8CI

3-Deoxyxylose. 3-Xylodesose. 3-Deoxyribose. 3-Ribodesose. Cordycepose [3396-73-4]



β-D-Pyranose-form

C₅H₁₀O₄ 134.132

Erroneous (branched-chain) struct. originally assigned to Cordycepose. Bp_{0.06} 128-130°. $[\alpha]_D^{20}$ +10 (c, 1.2 in DMSO).

D-form

Present in Cordycepin, C-152. Syrup. $[\alpha]_D^{24}$ -6.3 (c, 1.3 in H₂O).

β-D-Pyranose-form

Me glycoside: Methyl 3-deoxy-β-D-erythro-pentopyranoside [51785-69-4]
C₆H₁₂O₄ 148.158
Syrup. Bp_{0.01} 110-112° (bath). $[\alpha]_D^{19}$ -13.3 (c, 3.0 in H₂O).

α-D-Furanose-form

1,2-O-Isopropylidene: 3-Deoxy-1,2-O-isopropylidene-α-D-erythro-pentofuranoside [3396-71-2]
C₈H₁₄O₄ 174.196
Cryst. (Et₂O). Mp 73-75°. $[\alpha]_D^{24}$ -6 (c, 0.5 in MeOH).

Me glycoside: Methyl 3-deoxy-α-D-erythro-pentofuranoside [42890-91-5]
C₆H₁₂O₄ 148.158
Syrup. $[\alpha]_D^{20}$ +14.4 (c, 0.6 in H₂O).

β-D-Furanose-form

Benzyl glycoside: Benzyl 3-deoxy-β-D-erythro-pentofuranoside C₁₂H₁₆O₄ 224.256
Syrup.

L-form

Syrup. $[\alpha]_D^{18}$ +8.7 (CHCl₃).

5-Benzoyl, 1,2-di-Ac: 1,2-Di-O-acetyl-5-O-benzoyl-3-deoxy-L-erythro-pentofuranose C₁₆H₁₈O₇ 322.314
Cryst. (petrol). Mp 54-56°. Mixt. of anomers.

α-L-Pyranose-form

Me glycoside: Methyl 3-deoxy-α-L-erythro-pentopyranoside [26532-17-2]
C₆H₁₂O₄ 148.158
Mp 96°. $[\alpha]_D^{25}$ -157 (c, 0.9 in H₂O).

β-L-Pyranose-form

Me glycoside: Methyl 3-deoxy-β-L-erythro-pentopyranoside [19773-91-2]
C₆H₁₂O₄ 148.158
Syrup. Bp_{0.05} 70-80° (bath). $[\alpha]_D^{25}$ +94.5 (c, 10.5 in H₂O).

Me glycoside, 2,4-di-Ac: Methyl 2,4-di-O-acetyl-3-deoxy-β-L-erythro-pentopyranoside
[26528-22-3]
C₁₀H₁₆O₆ 232.233
Syrup. [α]_D²⁵ +117 (c, 1.78 in CHCl₃).

α-L-Furanose-form

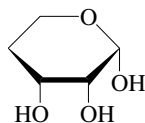
1,2-Isopropylidene: 3-Deoxy-1,2-O-isopropylidene-α-L-ribofuranose
[114861-23-3]
C₈H₁₄O₄ 174.196
Solid. Mp 77-78°. [α]_D²⁰ +15.6 (c, 1.3 in CHCl₃).

1,2-Isopropylidene, 5-benzoyl: 5-O-Benzoyl-3-deoxy-1,2-O-isopropylidene-α-L-erythro-pentofuranose
C₁₅H₁₈O₅ 278.304
Bp_{0.06} 128-130°. [α]_D²⁰ +10 (c, 1.2 in DMSO).

Mukherjee, S. *et al.*, *J.C.S.*, 1947, 969 (*L-form, L-nitrophenylsazone*)
Kent, P.W. *et al.*, *J.C.S.*, 1949, 1232 (*D-form, β-D-Me pyr*)
Defaye, J. *et al.*, *Carbohydr. Res.*, 1967, **4**, 145 (*α-D-fur isopropylidene*)
Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1969, **47**, 4413 (*α-L-Me pyr, β-L-Me pyr, β-L-Me pyr di-Ac*)
Novak, J.J. *et al.*, *Coll. Czech. Chem. Comm.*, 1973, **38**, 1173 (*α-D-Me fur*)
Witczak, Z.J. *et al.*, *Carbohydr. Res.*, 1982, **110**, 326 (*synth, bibl, D-form*)
Nawrot, B. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 95-114 (*benzyl β-D-fur*)
Mathé, C. *et al.*, *Carbohydr. Res.*, 2000, **323**, 226-229 (*L-form 5-benzoyl 1,2-di-Ac, α-L-fur 1,2-isopropylidene 5-benzoyl*)
Jiang, B. *et al.*, *J.O.C.*, 2003, **68**, 2376-2384, (*α-L-fur, 1,2-isopropylidene*)

4-Deoxy-erythro-pentose D-347

4-Deoxyribose. 4-Deoxylyxose. Mentzelose

**β-D-Pyranose-form**C₅H₁₀O₄ 134.132

4-Deoxy-D-lyxose corresponds to the L-form. An aq. soln. at 30° contains 30% α-pyr, and 70% β-pyr. Constit. of glycosides isol. from *Mentzelia* spp.

D-form

Syrup. [α]_D¹⁵ -27.6 (c, 0.5 in H₂O).

α-D-Pyranose-form

Me glycoside: Methyl 4-deoxy-α-D-erythro-pentopyranoside
C₆H₁₂O₄ 148.158
[α]_D¹⁵ +80.3 (c, 1.1 in H₂O).

Me glycoside, bis(4-nitrobenzoyl):
Mp 184-185°.

β-D-Pyranose-form

Me glycoside: Methyl 4-deoxy-β-D-erythro-pentopyranoside
C₆H₁₂O₄ 148.158
Syrup. [α]_D¹⁵ -95.9 (c, 1.0 in H₂O).

Me glycoside, di-Ac: Methyl 2,3-di-O-acetyl-4-deoxy-β-D-erythro-pentopyranoside
C₁₀H₁₆O₆ 232.233
[α]_D¹⁵ -88.8 (c, 0.93 in CHCl₃).

L-form [20072-97-3]

Syrup. [α]_D²¹ +28.5 (c, 0.2 in H₂O).

β-L-Pyranose-form

Me glycoside: Methyl 4-deoxy-β-L-erythro-pentopyranoside
C₆H₁₂O₄ 148.158
[α]_D²¹ +39.2 (c, 0.2 in H₂O).

Et glycoside: Ethyl 4-deoxy-β-L-erythro-pentopyranoside
C₇H₁₄O₄ 162.185
Bp_{0.001} 90°. [α]_D²¹ +104 (MeOH).

DL-form [33428-78-3]

Semisolid. Bp_{0.09} 74-76° (oil-bath).

β-DL-Pyranose-form

Me glycoside: Methyl 4-deoxy-β-DL-erythro-pentopyranoside
C₆H₁₂O₄ 148.158
Mp 49-51.5°. Bp_{1.5} 72°.

Me glycoside, di-Ac: Methyl 2,3-di-O-acetyl-4-deoxy-β-DL-erythro-pentopyranoside
C₁₀H₁₆O₆ 232.233
Cryst. (CH₂Cl₂/hexane). Mp 82-83.5°.

Verheyden, J.P.H. *et al.*, *J.O.C.*, 1969, **34**, 2643 (*L-form, β-L-Et pyr, pmr*)

Srivastava, R.M. *et al.*, *Can. J. Chem.*, 1971, **49**, 1339 (*DL-form, DL-Me pyr, DL-Me pyr di-Ac, pmr*)

Jensen, S.R. *et al.*, *Phytochemistry*, 1981, **20**, 71 (*occur*)

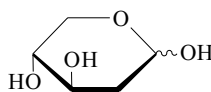
Kinoshita, T. *et al.*, *Carbohydr. Res.*, 1982, **102**, 298 (*synth, D-form, D-form derivs*)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 12 (*equilib*)

2-Deoxy-threo-pentose, 9CI, D-348

8CI

2-Deoxyxylose. 2-Deoxylyxose

**Pyranose-form**C₅H₁₀O₄ 134.132**D-form** [5284-18-4]

Cryst. (MeOH/Et₂O). Mp 82-86°. [α]_D¹⁹ -25.5 → -2 (25 min.) (c, 0.5 in H₂O) (+2).

Benzylphenylhydrazone: Mp 116-118°. [α]_D²⁵ +13.5 (Py).

α-D-Furanose-form

3,5-O-Benzylidene: 3,5-O-Benzylidene-2-deoxy-D-threo-pentose
C₁₂H₁₄O₄ 222.24
Cryst. Mp 135-136°. [α]_D²⁰ +7 (c, 1.0 in CHCl₃).

β-D-Furanose-form

Benzyl glycoside: Benzyl 2-deoxy-β-D-threo-pentofuranoside
C₁₂H₁₆O₄ 224.256
No phys. props. reported.

L-form

Benzylphenylhydrazone:

Cryst. (EtOH aq.). Mp 122-124°. [α]_D²⁰ -12 (c, 1.7 in Py).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1929, **83**, 803 (*D-benzylphenylhydrazone*)

Weygand, F. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 182 (*synth, D-form*)

Kuzuhara, H. *et al.*, *J.O.C.*, 1968, **33**, 1816, (*L-benzylphenylhydrazone*)

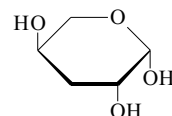
Schimmel, S.D. *et al.*, *Anal. Biochem.*, 1970, **37**, 385 (*D-form*)

Havlicek, J. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 2205 (*chromatog. ms*)

Wong, M.Y.H. *et al.*, *J.A.C.S.*, 1978, **100**, 3548 (*D-form, synth*)

Nawrot, B. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 95-114 (*benzyl β-D-fur*)

Ulven, T. *et al.*, *Eur. J. Org. Chem.*, 2001, 3367-3374 (*α-D-fur-benzylidene*)

3-Deoxy-threo-pentose**D-349****α-D-Pyranose-form**C₅H₁₀O₄ 134.132**D-form** [55658-87-2]

Oil. [α]_D²⁵ -3.3 (c, 1 in H₂O).

Benzylphenylhydrazone:

Cryst. (Et₂O). Mp 85-86°. [α]_D²⁴ +16.2 (c, 1 in CHCl₃).

α-D-Furanose-form

Me glycoside: Methyl 3-deoxy-α-D-threo-pentofuranoside

[53081-35-9]

C₆H₁₂O₄ 148.158

Cryst. (EtOH). Mp 47°. [α]_D²² +134.8 (c, 1 in MeOH).

Me glycoside, dibenzoyl: Methyl 2,5-di-O-benzoyl-3-deoxy-α-D-threo-pentofuranoside

[26532-13-8]

C₂₀H₂₀O₆ 356.374

Cryst. (Et₂O/petrol). Mp 89-89.5°. [α]_D²⁵ +36.7 (c, 1.05 in CHCl₃).

Me glycoside, bis-O-(4-nitrobenzoyl):

[53081-36-0]

Light-yellow needles. Mp 135-136°. [α]_D²² +49.8 (c, 1 in CHCl₃).

β-D-Furanose-form

Me glycoside: Methyl 3-deoxy-β-D-threo-pentofuranoside

[53081-41-7]

Cryst. Mp 35°. [α]_D²² -117.7 (c, 1.1 in MeOH).

Me glycoside, di-Ac: Methyl 2,5-di-O-acetyl-3-deoxy-β-D-threo-pentofuranoside

[35780-01-9]

C₁₀H₁₆O₆ 232.233

Cryst. (petrol). Mp 63-64°. [α]_D²⁵ -111.4 (c, 1.85 in CHCl₃). [α]_D²⁵ -85.2 (c, 0.51 in CHCl₃).

Me glycoside, bis-O-4-(nitrobenzoyl):

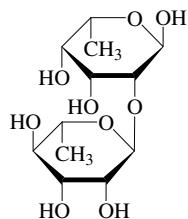
[18930-04-6]

Light-yellow needles (C₆H₆). Mp 115°. [α]_D²² -83 (c, 1 in CHCl₃).

Matsuda, A. *et al.*, *J.O.C.*, 1981, **46**, 3603
(*synth*, *uv*)
Pankiewicz, K. *et al.*, *J.O.C.*, 1982, **47**, 485
(*synth*, *pmr*)
Zhang, H.-C. *et al.*, *J.O.C.*, 1992, **57**, 4690
(*synth*)

6-Deoxy-2-O- α -L-rhamnopyranosyl-L-talose

6-Deoxy-2-O-(6-deoxy- α -L-mannopyranosyl)-L-talose



α -Pyranose-form

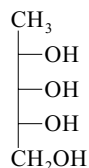
$C_{12}H_{22}O_9$ 310.3
Occurs as the inner unit of oligosaccharide chains in the polar glycopeptidolipid antigens in the *Mycobacterium avium* – *Mycobacterium intracellulase* – *Mycobacterium scrofulaceum* (MAIS) serocomplex. Serves as a common aglycone for attachment of serovar-specific external sugar residues. Hygroscopic solid. $[\alpha]_D^{20}$ -48.2 (c, 1.4 in H_2O).

α -Pyranose-form

Benzyl glycoside: [88819-12-9]
 $C_{19}H_{28}O_9$ 400.425
Mp 176-178°. $[\alpha]_D^{20}$ -123.8 (c, 1.5 in H_2O).
Benzyl glycoside, 3,4-O-isopropylidene: [88819-10-7]
 $C_{22}H_{32}O_9$ 440.489
Syrup. $[\alpha]_D^{20}$ -92.5 (c, 1.6 in $CHCl_3$).
Benzyl glycoside, 2',3',4'-tri-Ac, dibenzyl: [88819-16-3]
 $C_{39}H_{46}O_{12}$ 706.785
Syrup. $[\alpha]_D^{20}$ -54.8 (c, 0.8 in $CHCl_3$).
Benzyl glycoside, 3,4-dibenzyl: [88819-15-2]
 $C_{33}H_{40}O_9$ 580.674
Syrup. $[\alpha]_D^{20}$ -76.2 (c, 2.1 in $CHCl_3$).
Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1983, **121**, 61

1-Deoxyribose

5-Deoxyribose
[62137-55-7]



D-form

$C_5H_{12}O_4$ 136.147

D-form

1-Deoxy-D-ribose. 5-Deoxy-L-ribose
[13046-76-9]
Constit. of the fruit of *Foeniculum vulgare* (fennel).
Cryst. (MeCN).
Mp 69°. $[\alpha]_D^{21}$ +15 (c, 0.9 in H_2O). The

CAS no. was originally applied erroneously to the L-enantiomer.

Tetra-Ac: Tetra-O-acetyl-1-deoxy-D-ribose
[7260-90-4]
 $C_{13}H_{20}O_8$ 304.296
No phys. props. reported.

L-form

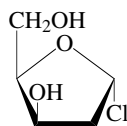
1-Deoxy-L-ribose. 5-Deoxy-D-ribose
[67968-45-0]
Cryst. (EtOAc/MeOH). Mp 80-85°. $[\alpha]_D^{23}$ -11.2 (c, 1.4 in MeOH).
3,4-Isopropylidene: 5-Deoxy-2,3-O-isopropylidene-D-ribose. 1-Deoxy-3,4-O-isopropylidene-L-ribose
 $C_8H_{16}O_4$ 176.212
Syrup. $[\alpha]_D^{27}$ -15.5 (c, 2.7 in EtOH). n_D^{20} 1.4510.

[25289-19-4]

Hough, L. *et al.*, *Can. J. Chem.*, 1958, **36**, 1720
(*synth*, L-form)
Buck, K.W. *et al.*, *Carbohydr. Res.*, 1966, **2**, 115
(*synth*)
Sepulchre, A.-M. *et al.*, *Carbohydr. Res.*, 1972, **24**, 311 (*synth*, D-form)
Fischer, J.-C. *et al.*, *Can. J. Chem.*, 1977, **55**, 4078 (*synth*, ms)
Takai, K. *et al.*, *J.O.C.*, 1985, **50**, 3247 (*synth*, *pmr*, *cmr*, *tetra-Ac*)
Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 988-992 (*isol*, *pmr*, *cmr*)

2-Deoxyribofuranosyl chloride

2-Deoxy-erythro-pentofuranosyl chloride, 9CI



α -D-form

$C_5H_9ClO_3$ 152.577

α -D-form [73793-20-1]

3,5-Bis(4-methylbenzoyl): 2-Deoxy-3,5-di-O-toluoyl- α -D-erythro-pentofuranosyl chloride
[4330-21-6]

[3601-89-6]
 $C_{21}H_{21}ClO_5$ 388.847
Widely used precursor for synth. of deoxyribonucleosides. Cryst. (toluene or CCl_4). Mp 109° (dec.). $[\alpha]_D^{20}$ +110.1 (c, 2.04 in DMF). Dec. in moist air. Anomerises to β -form in polar solvs.

3,5-Bis(4-chlorobenzoyl): [21740-23-8]
 $C_{19}H_{15}Cl_3O_5$ 429.683
Fluffy cryst. (CCl_4). Mp 131-132°. $[\alpha]_D^{25}$ +109 (c, 1 in $CHCl_3$). Resolidifies with final melting and dec. at 238-241°.

β -D-form

3,5-Bis(4-methylbenzoyl): 2-Deoxy-3,5-di-O-toluoyl- β -D-erythro-pentofuranosyl chloride
[52304-86-6]
 $C_{21}H_{21}ClO_5$ 388.847
No phys. props. reported.

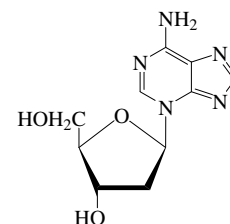
α -L-form

3,5-Bis(4-methylbenzoyl): [141846-57-3]
[3056-12-0] Mp 118-121°. $[\alpha]_D^{25}$ -125.7 (c, 0.811 in DMF).

Hoffer, M. *et al.*, *Chem. Ber.*, 1960, **93**, 2777-2781 (*ditoluoyl*)
Zinner, H. *et al.*, *Chem. Ber.*, 1961, **94**, 2792-2797 (*ditoluoyl*)
Kotick, M.P. *et al.*, *J.O.C.*, 1969, **34**, 3806-3813 (α -D-bischlorobenzoyl)
Takashita, M. *et al.*, *J. Biol. Chem.*, 1987, **262**, 10171-10179 (α -D-ditoluoyl, *synth*, *pmr*)
Shinozuka, K. *et al.*, *Chem. Lett.*, 1991, 1941-1944 (β -D-ditoluoyl)
Urata, H. *et al.*, *Nucleic Acids Res.*, 1992, **20**, 3325-3332 (α -L-ditoluoyl, *synth*, *pmr*)
Chin, T.-M. *et al.*, *J. Chin. Chem. Soc. (Taipei)*, 1997, **44**, 413-416 (*ditoluoyl*, *synth*, *ir*, *pmr*, *cmr*, *ms*)
Pat. Coop. Treaty (WIPO), 1997, 97 31 008; *CA*, **127**, 248359d (*ditoluoyl*, *synth*, *pmr*, *cmr*)
Rolland, V. *et al.*, *Synth. Commun.*, 1997, **27**, 3505-3511 (*ditoluoyl*, *synth*, *pmr*, *cmr*)

3-(2-Deoxyribofuranosyl) adenine

3-(2-Deoxy-erythro-pentofuranosyl) adenine



β -D-form

$C_{10}H_{13}N_5O_3$ 251.244

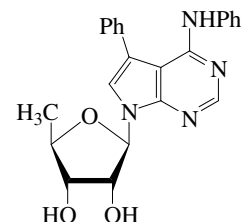
α -D-form [19046-81-2]
Mp 184-185°. $[\alpha]_D^{25}$ +11 (H_2O). λ_{max} 271 (13900) (pH 1). λ_{max} 276 (13200) (pH 13). λ_{max} 214 (17800); 277 (12800) (EtOH).

β -D-form [19046-84-5]
Mp 188-191°. $[\alpha]_D^{25}$ +19 (H_2O). λ_{max} 214 (ϵ 18000); 278 (ϵ 12900) (EtOH). λ_{max} 271 (ϵ 14300) (pH 1). λ_{max} 277 (ϵ 13100) (pH 13).

Rasmussen, M. *et al.*, *J.A.C.S.*, 1967, **89**, 5439
(*synth*, *pmr*, *ord*)

7-(5-Deoxyribofuranosyl)-N,5-diphenyl-7H-pyrrolo[2,3-d]pyrimidin-4-amine, 9CI

4-(N-Phenylamino)-5-phenyl-7-(5'-deoxyribofuranosyl)pyrrolo[2,3-d]pyrimidine. GP 683



$C_{23}H_{22}N_4O_3$ 402.452
Adenosine kinase inhibitor.
Anticonvulsant.

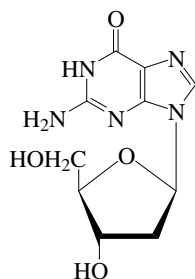
β-D-form [144928-17-6]

Mp 207-208°.

- Eur. Pat.*, 1992, 496 617, (*Gensia*); *CA*, **118**, 234420u (*synth. pharmacol*)
 Wang, B. *et al.*, *Anaesth. Analg.*, 1997, **85**, 675-680 (*pharmacol*)
 Tatlisumak, T. *et al.*, *Stroke (Dallas)*, 1998, **29**, 1952-1958 (*pharmacol*)
 Wiesner, J.B. *et al.*, *J. Pharmacol. Exp. Ther.*, 1999, **289**, 1669-1677 (*pharmacol*)

2'-Deoxyribofuranosylguanine D-360

2-Amino-9-(2-deoxy-erythro-pentofuranosyl)-6-purine



β-D-form

C₁₀H₁₃N₅O₄ 267.244**α-D-form**

Hemihydrate. [α]_D²⁶ +102.4 (c, 0.99 in DMF). λ_{max} 255 (ε 10700); 274 (ε 7710) (pH 1). λ_{max} 263 (ε 9960 br) (pH 11).

β-D-form

2'-Deoxyguanosine. Guanine deoxyriboside [961-07-9]
 Component of all deoxyribonucleic acids. Isol. from plants, e.g. *Phaseolus vulgaris* (kidney bean). Cryst. + 1H₂O. Mp 300° (also said to be indefinite). [α]_D²⁶ -20.3 (c, 1.2 in DMF). [α]_D¹⁹ -47.7 (0.1M NaOH). [α]_D²⁴ -30.2 (H₂O). λ_{max} 254 (ε 10700); 274 (ε 7710) (HCl) (Berdy). λ_{max} 259 (ε 9960) (NaOH) (Berdy). λ_{max} 252 (ε 13700) (H₂O) (pH 7). λ_{max} 255 (ε 12100); 272 (sh) (ε 8460) (H₂O) (pH 1). λ_{max} 262 (ε 12000) (H₂O) (pH 11).

► MF8760000

3'-Ac: [51549-58-7]
 C₁₂H₁₅N₅O₅ 309.281
 Mp 240° dec. [α]_D^{19.5} -12.5 (10% EtOH aq.).

5'-Ac: C₁₂H₁₅N₅O₅ 309.281
 [α]_D^{18.5} -33 (c, 0.4 in 10% EtOH aq.).

3',5'-Di-Ac: C₁₄H₁₇N₅O₆ 351.318
 Mp 222° dec. [α]_D^{19.5} -38 (c, 0.3 in 10% EtOH aq.).

2N,3'-Di-Ac: [51549-57-6]
 C₁₄H₁₇N₅O₆ 351.318
 Mp 130-132°. λ_{max} 255; 260; 280 (EtOH).

2N-Me: C₁₁H₁₅N₅O₄ 281.271
 [α]_D²⁶ -15.2 (c, 1.64 in DMF). λ_{max} 258 (ε 13400); 281 (sh) (ε 7370) (pH 1). λ_{max} 258 (ε 11200); 270 (sh) (ε 10200) (pH 11).

5'-Phosphate: 2'-Deoxyguanosine 5'-(dihydrogen phosphate), 9CI. 2'-Deoxy-5'-guanylic acid [902-04-5]

[33430-61-4, 52558-16-4, 133342-19-5]

C₁₀H₁₄N₅O₇P 347.224

Solid + 4H₂O (as Ba salt); cryst. + 4H₂O (as Na salt). [α]_D^{19.5} -18.6 (c, 0.37 in H₂O) (as Ba salt). λ_{max} 253 (ε 15680) (H₂O). λ_{max} 255 (ε 13650) (0.01M HCl). λ_{max} 264 (ε 12870) (0.01M NaOH).

2N-(2-Methylpropanoyl): 2'-Deoxy-N-(2-methyl-1-oxopropyl)guanosine, 9CI [68892-42-2]

C₁₄H₁₉N₅O₅ 337.335
 Cryst. (MeOH aq.). Mp >300°.

2N-(2-Methylpropanoyl), 5'-(4,4'-dimethoxytrityl): [68892-41-1]
 C₃₅H₃₇N₅O₇ 639.707

Comly. available synthon. Intermed. for synth. of oligonucleotides. Powder. Mp 154-155° dec.

6-Me: 2'-Deoxy-6-O-methylguanosine, 12CI [964-21-6]
 C₁₁H₁₅N₅O₄ 281.271

Intermed. for solid phase synth of oligonucleotides. Mp 121-123°.

6-Et: [50704-46-6]
 C₁₂H₁₇N₅O₄ 295.297
 Needles (H₂O). Mp 79-82°.

6-Propyl: [142738-57-6]
 C₁₃H₁₉N₅O₄ 309.324
 Solid.

3'-Phosphate: 2'-Deoxy-3'-guanylic acid, 9CI [6220-62-8]

C₁₀H₁₄N₅O₇P 347.224
 Powder + 2H₂O (EtOH aq.) (as Ba salt). [α]_D^{19.5} -8.5 (c, 0.5 in H₂O). λ_{max} 255 (HCl aq.).

5'-Diphosphate: [3493-09-2]
 C₁₀H₁₅N₅O₁₀P₂ 427.204
 No phys. props. reported.

5'-Triphosphate: [2564-35-4]
 C₁₀H₁₆N₅O₁₃P₃ 507.184
 No phys. props. reported.

α-L-form

Hemihydrate. [α]_D²⁶ -103 (c, 1.1 in DMF). λ_{max} 254 (ε 12900); 272 (sh) (ε 8900) (pH 1). λ_{max} 262 (ε 12000 Br) (pH 11).

β-L-form

Monohydrate. [α]_D²⁶ +20.5 (c, 1 in DMF). λ_{max} 254 (ε 12900); 272 (sh) (ε 8900) (pH 1). λ_{max} 263 (ε 12000 br) (pH 11).

[102783-74-4]

Hayes, D.H. *et al.*, *J.C.S.*, 1955, 808-815 (β-D-3'-Ac, β-D-5'-Ac, β-D-3',5'-di-Ac, β-D-5'-phosphates)

Hay, D.H. *et al.*, *J.C.S.*, 1955, 808-815 (3'-phosphate)
 U.S. Pat., 1955, 2795580; *CA*, **51**, 18015 (5'-diphosphate)

Lehman, I.R. *et al.*, *J. Biol. Chem.*, 1958, **233**, 163-170 (5'-triphosphate)

Smith, M. *et al.*, *J.A.C.S.*, 1958, **80**, 1141 (5'-diphosphate)

Keir, H.M. *et al.*, *Biochim. Biophys. Acta*, 1959, **35**, 405-412 (5'-triphosphate)

Mantsavinos, R. *et al.*, *J. Biol. Chem.*, 1959, **234**, 628 (5'-diphosphate)

Canellakis, E.M. *et al.*, *J. Biol. Chem.*, 1959, **234**, 2096 (5'-diphosphate)

Montgomery, J.A. *et al.*, *Adv. Carbohydr. Chem.*, 1962, **17**, 301 (rev)

Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3821 (β-D-3',5'-di-Ac)

Moffatt, J.G. *et al.*, *Can. J. Chem.*, 1964, **42**, 599-604 (5'-triphosphate, *synth*)

Ulbricht, T.L.V. *et al.*, *Tet. Lett.*, 1964, 695 (*ord*)
 Robins, M.J. *et al.*, *J.O.C.*, 1969, **34**, 2160; 1970, **35**, 636 (α-D-form, β-D-form, α-D-2N-Me, α-L-form, β-L-form)

Dorman, D.E. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1970, **65**, 19-26 (*cmr*, 5'-phosphate)

Jones, A.J. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1970, **65**, 27; *CA*, **72**, 96682j (*cmr*)

Ogilvie, K.K. *et al.*, *Can. J. Chem.*, 1973, **51**, 3799 (β-D-2N 3'-di-Ac, β-D-3'-Ac)

Young, D.Y. *et al.*, *Acta Cryst. B*, 1974, **30**, 2012-2018 (*cryst struct*, 5'-phosphate)

Davies, D.B. *et al.*, *J.C.S. Perkin 2*, 1975, 1703 (*pmr*)

Jankowska, J. *et al.*, *Bull. Pol. Acad. Sci., Chem.*, 1983, **31**, 17 (5'-diphosphate)

Den Hartog, J.O.J. *et al.*, *Eur. J. Biochem.*, 1983, **134**, 485-495 (3'-phosphate, *pmr*, *cmr*)

McGee, D.P.C. *et al.*, *Synthesis*, 1983, 540 (β-D-2N-(2-methylpropanoyl))

Danny, P.C. *et al.*, *Synthesis*, 1983, 540-541 (β-D-N-(2-methylpropanoyl), 5'-(4,4'-dimethoxytrityl), *synth*)

Renich, G.G. *et al.*, *J. Chromatogr.*, 1984, **317**, 283-300 (5'-triphosphate, *purifi*)

Ip, C. *et al.*, *Anal. Biochem.*, 1985, **147**, 180 (5'-diphosphate, *hplc*)

Hayakawa, Y. *et al.*, *Tet. Lett.*, 1987, **28**, 2259-2262 (3'-phosphate)

Koole, L.H. *et al.*, *Can. J. Chem.*, 1988, **66**, 2634 (β-D-3',5'-di-Ac, *pmr*, *cryst struct*)

Roelen, H.C.P.F. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1992, **111**, 227-234 (β-D-6-O-alkyl, *synth*, *use*, *uv*, *pmr*, *cmr*)

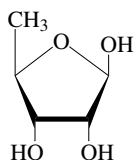
Hernandez, H. *et al.*, *Rapid Commun. Mass Spectrom.*, 1996, **10**, 1543-1550 (3'-phosphate, *ms*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAR800

Deoxyribonucleic acid, 9CI, D-361 8CI**DNA. Thymus nucleic acid**

A polynucleotide constructed from chains of 2-deoxy-D-ribose purine and pyrimidine units linked by phosphate diester bonds between the 3'- and 5'-hydroxyls of adjacent sugars. DNA from viruses have molecular weights ca. 1-130 × 10⁶ whereas bacterial and animal DNA has much higher molecular weights with chains easily severed during isoln. The adenine and thymine contents are equal and the guanine and cytosine contents also equal, regardless of source. In the secondary structure two polymer chains form right-handed helices about a common axis, with the sequence of atoms running in opposite directions in each strand. The bases are inside the helix and the adenine of one chain is hydrogen bonded to the thymine of the other and similarly with the guanine and cytosine. Present in all life forms except some viruses. An essential component of chromosomes in cell nuclei which carries genetic information by containing a chemical code in its structure, which is exactly reproducible. The linear sequence of bases in one strand determines the sequence in the other. Thus each strand can serve as a template for replication of the original DNA molecule. DNA also serves as a template for the formation of ribonucleic acids.

Watson, J.D. *et al.*, *Nature (London)*, 1953, **171**, 737; 964 (*struct*)
 Chargaff, E. *et al.*, *The Nucleic Acids*, Academic Press, Vol. 1, 1955, (rev)
 Brown, D.M. *et al.*, *Compr. Biochem.*, (Florkin, M. *et al.*, Ed.), 1963, **8**, 157 (rev)
 Crick, F. *et al.*, *Nature (London)*, 1970, **227**, 561
 Davidson, J.N. *et al.*, *The Biochemistry of Nucleic Acids*, Academic Press, 7th Ed., 1972,
 Narang, S.A. *et al.*, *Tetrahedron*, 1983, **39**, 3 (rev)
 Jankowski, K. *et al.*, *Adv. Heterocycl. Chem.*, 1986, **39**, 79 (rev, *ms*)
 Taillandier, E. *et al.*, *J. Mol. Struct.*, 1989, **214**, 185 (rev, *ir*, *Raman*)
 Wemmer, D.E. *et al.*, *Biol. Magn. Reson.*, 1992, **10**, 195 (rev, *nmr*)

5-Deoxyribose**D-362** β -D-Furanose-form $C_5H_{10}O_4$ 134.132**D-form** [13039-75-3]Oil. $[\alpha]_D^{23} +11$ (c, 4 in H_2O).Phenylosazone: Mp 175-177° (172-174°).
 $[\alpha]_D$ -65 (c, 0.65 in EtOH/Py 3:2).**D-Furanose-form***Me glycoside*: Methyl 5-deoxy-D-ribofuranoside $C_6H_{12}O_4$ 148.158Low-melting hygroscopic cryst. Bp_{0.3} 83-88°. $[\alpha]_D^{25} -76$ (c, 2 in EtOH).

Anomeric composition not determined.

 β -D-Furanose-form*Tri-Ac*: 1,2,3-Tri-O-acetyl-5-deoxy- β -D-ribofuranose

[62211-93-2]

 $C_{11}H_{16}O_7$ 260.243Cryst. (diisopropyl ether). Mp 66-67°.
 $[\alpha]_D^{25} -27.7$ (c, 1 in $CHCl_3$).*Me glycoside*, 2,3-isopropylidene: Methyl 5-deoxy-2,3-O-isopropylidene- β -D-ribofuranoside

[23202-81-5]

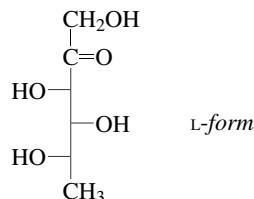
 $C_9H_{16}O_4$ 188.223Liq. Bp_{0.05} 29-30°. $[\alpha]_D^{26} -116$ (c, 2.57 in EtOH) (-109).**L-form** [18555-65-2]Syrup. $[\alpha]_D^{23} -11.9$ (c, 2 in H_2O).*Phenylhydrazone*: [123168-30-9]

Cryst. (diisopropyl ether/hexane). Mp 115-117°.

[79083-45-7, 79120-55-1]

Shunk, C.H. *et al.*, *J.A.C.S.*, 1955, **77**, 2210 (*synth*, *D-Me-fur*)Horton, D. *et al.*, *Carbohydr. Res.*, 1976, **47**, 326 (*D-form*, *synth*)Bilik, V. *et al.*, *Chem. Zvesti.*, 1978, **32**, 372, (*L-form*, *synth*)Lerner, L.M. *et al.*, *J.O.C.*, 1978, **43**, 161 (*synth*, β -D-Me-fur isopropylidene)Mori, K. *et al.*, *Annalen*, 1989, 1267, (*L-form*, *synth*)Escandar, G.M. *et al.*, *Org. Prep. Proced. Int.*, 1990, **22**, 623 (*D-form*, *synth*)Wang, G. *et al.*, *J. Med. Chem.*, 2000, **43**, 2566-2574 (*deriv*, *synth*, *pmr*)Sairam, P. *et al.*, *Carbohydr. Res.*, 2003, **338**, 303-306 (*D-form tri-Ac*, *Me glycoside isopropylidene*)**6-Deoxysorbose****D-363**

6-Deoxy-xylo-2-hexulose

 $C_6H_{12}O_5$ 164.158Equilib. composition 83% α -fur, 17% β -fur in H_2O . The crystals contain 95% α -fur, 5% β -fur.**L-form** [18545-94-3]Mp 86-89°. $[\alpha]_D^{25} -27.7$ (c, 0.01 in H_2O).

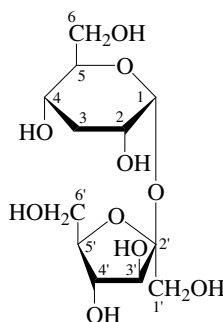
The only crystalline ketohexose unable to form a pyranoid ring structure.

Tetra-Ac: 1,3,4,5-Tetra-O-acetyl-6-deoxy-L-sorbose

[158227-01-1]

 $C_{14}H_{20}O_9$ 332.307

Yellow oil.

Muller, H. *et al.*, *Helv. Chim. Acta*, 1938, **21**, 263-272 (*synth*)Kaufman, H. *et al.*, *Helv. Chim. Acta*, 1967, **50**, 2280-2287 (*synth*)Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1976, **29**, 1249-1265 (*equilib*)Swaminathan, P. *et al.*, *Carbohydr. Res.*, 1979, **75**, 1-10; 1981, **89**, 151 (*cryst struct*)Wong, C.-H. *et al.*, *J.O.C.*, 1983, **48**, 3493-3497 (*synth*, *cmr*)Lerner, L.M. *et al.*, *J. Med. Chem.*, 1987, **30**, 1521-1525 (*synth*)Peters, J. *et al.*, *Tetrahedron: Asymmetry*, 1993, **4**, 1173-1182 (*L-form*, *synth*, *pmr*, *cmr*)Hecquet, L. *et al.*, *Tetrahedron*, 1994, **50**, 8677-8684; 1996, **52**, 8223-8232 (*L-form*, *synth*, *pmr*, *cmr*, *tetra-Ac*)**3-Deoxysucrose****D-364** β -D-Fructofuranosyl 3-deoxy- α -D-ribo-hexopyranoside, 9CI
 [102039-75-8] $C_{12}H_{22}O_{10}$ 326.3Cryst. (EtOH). Mp 145-150° Mp 185° (dec.). $[\alpha]_D +56$ (c, 1 in H_2O).Binder, T.P. *et al.*, *Carbohydr. Res.*, 1986, **147**, 149-154 (*synth*, *cmr*)Descotes, G. *et al.*, *Carbohydr. Res.*, 1989, **188**, 63-70 (*synth*, *pmr*)**4-Deoxysucrose****D-365** β -D-Fructofuranosyl 4-deoxy- α -D-xylo-hexopyranoside, 9CI

[103949-81-1]

 $C_{12}H_{22}O_{10}$ 326.3Cryst. (EtOH). Mp 190-195° (181-182°).
 $[\alpha]_D +64.4$ (c, 1 in H_2O).Choudhary, M.S. *et al.*, *Carbohydr. Res.*, 1986, **147**, 49-58 (*synth*, *ms*)Descotes, G. *et al.*, *Carbohydr. Res.*, 1989, **188**, 63-70 (*synth*, *pmr*)**6-Deoxysucrose****D-366** β -D-Fructofuranosyl 6-deoxy- α -D-glucopyranoside, 9CI

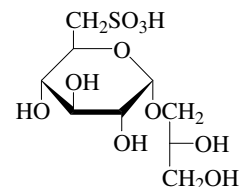
[92596-12-8]

 $C_{12}H_{22}O_{10}$ 326.3Cryst. (EtOH). Mp 172-180° (170-175°).
 $[\alpha]_D +54.8$ (c, 1.03 in H_2O).Binder, T.P. *et al.*, *Carbohydr. Res.*, 1984, **132**, 173-177 (*synth*, *cmr*)Descotes, G. *et al.*, *Carbohydr. Res.*, 1989, **188**, 63-70 (*synth*, *pmr*)**6'-Deoxysucrose****D-367**6-Deoxy- β -D-fructofuranosyl α -D-glucopyranoside, 9CI

[99281-34-2]

 $C_{12}H_{22}O_{10}$ 326.3

Cryst. Mp 175-178°.

Card, P.J. *et al.*, *J.A.C.S.*, 1986, **108**, 158-161 (*synth*, *cmr*)**1-*O*-(6-Deoxy-6-sulfoglucopyranosyl)glycerol****D-368**2,3-Dihydroxypropyl 6-deoxy-6-sulfoglucopyranoside, 9CI. 6-Sulfoquinovopyranosyl-(1 \rightarrow 1)-glycerol $C_9H_{18}O_{10}S$ 318.301 **α -D-form** [2308-53-4]Isol. from nitrogen-fixing *Rhizobium* bacteria. Biosynth. intermediate for 1, 2-Diacylglycerol 6-sulfoquinovosides, D-395. $[\alpha]_D^{22} +55$ (c, 0.5 in H_2O).*Na salt*: [84271-27-2] $[\alpha]_D^{25} +58$ (c, 0.6 in H_2O).*Cyclohexylamine salt*:

Cryst. (EtOH/EtOAc). Mp 151.5-153°.

 $[\alpha]_D^{25} +74.5$ (c, 1.8 in H_2O , pH 4). No CAS no found 8-14 CI.

3-Tetradecanoyl: [71932-07-5]

 $C_{23}H_{44}O_{11}S$ 528.66Isol. from shell of the sea urchin *Anthocidaris crassispina* and *Tetragoma expansa*. Isol. as mixt. with 1-hexadecanoyl (4:96).

3-Hexadecanoyl: [71963-28-5]

C₂₅H₄₈O₁₁S 556.714

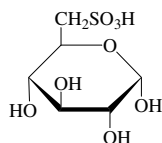
Isol. from shell of the sea urchin

Anthocidaris crassispina and brown alga *Sargassum thunbergii*. Isol. as mixt. with 1-tetradecanoyl (96:4).

3-Octadecanoyl:

C₂₇H₅₂O₁₁S 584.767Isol. from brown alga *Sargassum thunbergii*. Isol. as a mixt. with 1-hexadecanoyl (4:96). No CAS no. found 8-14CI.*Diacyl derivs*: See 1,2-Diacylglycerol 6-sulfoquinovosides, D-395Lepage, M. *et al.*, *J.A.C.S.*, 1961, **83**, 157-159 (isol)Miyano, M. *et al.*, *J.A.C.S.*, 1962, **84**, 59-62 (synth)Okaya, Y. *et al.*, *Acta Cryst.*, 1964, 1276-1282 (cryst struct)Anderson, R. *et al.*, *Biochim. Biophys. Acta*, 1978, **528**, 89-106 (*Nitzschia alba*)Sato, N. *et al.*, *Biochim. Biophys. Acta*, 1979, **572**, 19-28 (*Anabaena variabilis* *Anacystis viduolus*)Kitagawa, I. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 1934-1937 (3-hexadecanoyl, 3-tetradecanoyl)Harwood, J.L. *et al.*, *Biochem. Plants.*, 1980, **4**, 1-55 (rev)Mudd, J.B. *et al.*, *Chemistry*, 1981, **94**, 61720 (biosynth, rev)Son, B.W. *et al.*, *Phytochemistry*, 1990, **29**, 307-309 (*Gracilaria verucosa*)Son, B.W. *et al.*, *Bull. Korean Chem. Soc.*, 1992, **13**, 584-586 (3-octadecanoyl, 3-hexadecanoyl)Sahara, H. *et al.*, *Br. J. Cancer*, 1997, **75**, 324-332 (*Strongylocentrus intermedius*)Wang, J. *et al.*, *Carbohydr. Res.*, 1998, **307**, 347-350 (isol, pmr)**6-Deoxy-6-C-sulfoglucose****D-369**

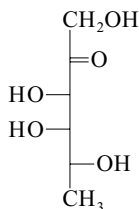
Sulfoquinovose

 α -D-Pyranose-formC₆H₁₂O₈S 244.222**D-form**

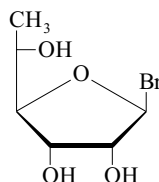
Present in sulfoquinovosyldiacylglycerol, the lipid associated with photosynthesis. Important component of the biological sulfur cycle.

Powder + 1H₂O (as K salt). $[\alpha]_{\text{Hg}}^{20} +71.7 \rightarrow +49.7$ (c, 1.5 in H₂O) (K salt).Roy, A.B. *et al.*, *Carbohydr. Res.*, 1997, **302**, 113-117 (synth, bibl)**6-Deoxytagatose****D-370**

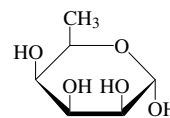
6-Deoxy-lyxo-2-hexulose. Tagatomethyllose



D-form

C₆H₁₂O₅ 164.158**D-form** [18546-17-3]Syrup. $[\alpha]_{\text{D}}^{18} -2$ (c, 2.0 in H₂O).**4-Nitrophenylhydrazones**:Cryst. (EtOH). Mp 160-161°. $[\alpha]_{\text{D}}^{17} +72.5$ (c, 0.6 in MeOH).**o-Nitrophenylosazones**: Mp 160-168°. $[\alpha]_{\text{D}} +72.5$ (MeOH).**D-Furanose-form**1,2:3,4-Di-O-isopropylidene: 6-Deoxy-1,2:3,4-di-O-isopropylidene-D-tagatofuranose
C₁₂H₂₀O₅ 244.287
Mp 8-9°. Bp_{0.4} 73-75°. $[\alpha]_{\text{D}}^{17} +79.7$ (c, 14 in Me₂CO).**L-form**Mp 68-69°. $[\alpha]_{\text{D}} +3$ (c, 2 in H₂O).**4-Nitrophenylhydrazones**: Mp 161-162°. $[\alpha]_{\text{D}}^{20} -69$ (c, 0.6 in MeOH).**4-Nitrophenylosazones**: Mp 161-162°. $[\alpha]_{\text{D}} -69.5$ (MeOH).Barnett, J. *et al.*, *Helv. Chim. Acta*, 1937, **20**, 1529 (D-form, L-form, D-diisopropylidene, D-nitrophenylhydrazones, L-nitrophenylhydrazones)Barnett, J. *et al.*, *Helv. Chim. Acta*, 1938, **21**, 913 (L-form)Butterworth, R.F. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1971, **26**, 279 (rev)**6-Deoxytalofuranosyl bromide****D-371**C₆H₁₁BrO₄ 227.054 **α -L-form***Tris*(4-nitrobenzoyl): [80851-32-7]Yellowish-white cryst. (CH₂Cl₂/hexane). Mp 149° dec.El Khadem, H.S. *et al.*, *Carbohydr. Res.*, 1981, **98**, 195 (nitrobenzoyl, ir)**6-Deoxytalose, 9CI****D-372**

Talomethyllose. Epifucose. Pneumose [7420-19-1]

 α -D-Pyranose-formC₆H₁₂O₅ 164.158An aq. soln. at 30° contains 44% α -pyr, 28% β -pyr, 16% α -fur, 11% β -fur.**D-form**Component of the extracellular polysaccharide from *Butyrivibrio fibrisolvens* strain X6C61, in *Mycobacterium glycolipids* and other bacterial sources. Mp 129-131°. $[\alpha]_{\text{D}} +20.6$ (H₂O).*Phenylhydrazones*: Mp 140-141°.**3-Me: 6-Deoxy-3-O-methyl-D-talose**C₇H₁₄O₅ 178.185Constit. of the lipopolysaccharide of *Rhodospseudomonas palustris*. Syrup. $[\alpha]_{\text{D}}^{25} +16.5$ (H₂O). **α -D-Pyranose-form***Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy- α -D-talopyranoside* [15830-76-9]C₁₃H₂₀O₈ 304.296Cryst. (CHCl₃/hexane). Mp 91-92°. $[\alpha]_{\text{D}}^{26} +76$ (c, 1.13 in MeOH).*Me glycoside, 2,3-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -D-talopyranoside*C₁₀H₁₈O₅ 218.249Syrup. $[\alpha]_{\text{D}} +48.9$ (c, 1.3 in MeOH).*Me glycoside, 4-mesyl: Methyl 6-deoxy-4-O-mesyl- α -D-talopyranoside*C₈H₁₆O₇S 256.276Cryst. (Et₂O/pentane). Mp 102-104°. $[\alpha]_{\text{D}} -95.7$ (c, 1.0 in MeOH).*Me glycoside, 2,3-O-isopropylidene, 4-mesyl: Methyl 6-deoxy-2,3-O-isopropylidene-4-O-mesyl- α -D-talopyranoside* [15830-64-5]C₁₁H₂₀O₇S 296.341Needles (EtOH aq.). Mp 112-114°. $[\alpha]_{\text{D}}^{27} +20.2$ (c, 0.8 in MeOH).**L-form** [7658-10-8]Constit. of the cardiac glycoside Sarmenoside A (see 3,5,11,14-Tetrahydroxy-19-oxocard-20(22)-enolide) and of glycolipids of *Mycobacterium avium* and *Pseudomonas pseudomallei*. Constit. of the antigenic glycan from *Salmonella bovis* and the virulent strains of *Actinomyces viscosus* and *Actinomyces naeslundii*.Cryst. (EtOH/Me₂CO).Mp 126-127°. $[\alpha]_{\text{D}} -20.5$ (H₂O).**4-Bromophenylhydrazones**: Mp 145-147°.**2-Me: 6-Deoxy-2-O-methyl-L-talose**C₇H₁₄O₅ 178.185 $[\alpha]_{\text{D}}^{20} -6$ (c, 2.0 in H₂O).**3-Me: 6-Deoxy-3-O-methyl-L-talose.***Acovenose*

[642-33-1]

C₇H₁₄O₅ 178.185Occurs in *Mycobacterium avium* polysaccharides and in plant glycosides (see

Acovenosides in 1,3,14-Trihydroxycard-20(22)-enolide). Syrup. Bp_{0.01} 85°. [α]_D¹⁸ -29.6 (c, 1.1 in H₂O) (-14.2).

 α -L-Pyranose-form

Me glycoside: Methyl 6-deoxy- α -L-talopyranoside
C₇H₁₄O₅ 178.185
Mp 63-65°. [α]_D²⁰ -104 (c, 2.1 in H₂O).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy- α -L-talopyranoside [2592-54-3]
C₁₃H₂₀O₈ 304.296
Needles (petrol). Mp 90-91°. [α]_D -77 (c, 0.6 in MeOH). [α]_D²⁰ -129 (c, 0.7 in H₂O).

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -L-talopyranoside [24562-43-4]
C₁₀H₁₈O₅ 218.249
Syrup. [α]_D -49 (c, 1.3 in MeOH).

Me glycoside, 2,3-O-isopropylidene, 4-Ac: Methyl 4-O-acetyl-6-deoxy-2,3-O-isopropylidene- α -L-talopyranoside C₁₂H₂₀O₆ 260.286
Mp 118-119°. [α]_D -38 (c, 1.0 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene, 4-mesyl: Methyl 6-deoxy-2,3-O-isopropylidene-4-O-mesyl- α -L-talopyranoside [22594-25-8]
C₁₁H₂₀O₇S 296.341
Cryst. (Et₂O/petrol). Mp 116-117°. [α]_D -19 (c, 0.6 in CHCl₃).

Benzyl glycoside: Benzyl 6-deoxy- α -L-talopyranoside C₁₃H₁₈O₅ 254.282
Cryst. (hexane). Mp 87-88°. [α]_D²⁰ -94.4 (c, 1.7 in H₂O).

Benzyl glycoside, tri-Ac: Benzyl 2,3,4-tri-O-acetyl-6-deoxy- α -L-talopyranoside C₁₉H₂₄O₈ 380.394
Syrup. [α]_D²⁶ -90.4 (c, 2.0 in CHCl₃).

Benzyl glucoside, 2,3-isopropylidene: Benzyl 6-deoxy-2,3-O-isopropylidene- α -L-talopyranoside C₁₆H₂₂O₅ 294.347
Cryst. (cyclohexane). Mp 41-42°. [α]_D²⁷ -68.2 (c, 2.0 in CHCl₃).

Benzyl glycoside, 3,4-isopropylidene: Benzyl 6-deoxy-3,4-O-isopropylidene- α -L-talopyranoside C₁₆H₂₂O₅ 294.347
Cryst. (petrol). Mp 75-76°. [α]_D²⁰ -97.7 (c, 2.7 in CHCl₃).

 β -L-Pyranose-form

Me glycoside: Methyl 6-deoxy- β -L-talopyranoside [109718-81-2]
C₇H₁₄O₅ 178.185
Prisms (Et₂O/hexane). Mp 105-106°. [α]_D¹⁸ +68.2 (c, 0.47 in MeOH).

 α -L-Furanose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 6-deoxy-2,3-O-isopropylidene- α -L-talofuranoside [28538-26-3]
C₁₀H₁₈O₅ 218.249
Bp₁ 90-95°. [α]_D²⁷ -54 (c, 1.58 in MeOH).

Schmutz, J. et al., *Helv. Chim. Acta*, 1948, **31**, 1719 (*L-form*, *isol*, *synth*)

Euw, J.V. et al., *Helv. Chim. Acta*, 1950, **33**, 485 (*isol*, *3-Me*)

Reist, E.J. et al., *J.A.C.S.*, 1958, **80**, 5775, (*α -L-Me fur isopropylidene*)

Reichstein, T. et al., *Adv. Carbohydr. Chem.*, 1962, **17**, 65 (*occur*, *rev*, *3-Me*)

MacLennan, A.P. et al., *Biochem. J.*, 1962, **82**, 394 (*isol*)

Collins, P.M. et al., *J.C.S.*, 1965, 1912 (*L-form*, *synth*, *α -L-Me pyr*, *α -L-Me pyr tri-Ac*)

Kapur, B.M. et al., *Helv. Chim. Acta*, 1968, **51**, 89 (*L-form*, *3-Me*)

Stevens, C.L. et al., *J.O.C.*, 1968, **33**, 1586, (*α -D-Me pyr tri-Ac*, *α -D-Me pyr isopropylidene mesyl*)

King, R.D. et al., *Carbohydr. Res.*, 1969, **9**, 423 (*pmr*)

Brimacombe, J.S. et al., *J.C.S.(C)*, 1969, 1270 (*α -L-Me pyr isopropylidene*, *α -L-Me pyr isopropylidene mesyl*, *α -L-Me pyr tri-Ac*)

Butterworth, R.F. et al., *Adv. Carbohydr. Chem. Biochem.*, 1971, **26**, 279 (*rev*)

Al-Radhi, A.K. et al., *J.C.S. Perkin 1*, 1972, 315 (*α -L-Me pyr isopropylidene Ac*)

Weckesser, J. et al., *Biochem. J.*, 1973, **135**, 293 (*D-form*, *3-Me*, *isol*, *synth*)

Gaugler, R.W. et al., *CA*, 1974, **81**, 73 545p (*biosynth*)

Aspinall, G.O. et al., *Carbohydr. Res.*, 1983, **121**, 61 (*synth*, *2-Me*, *3-Me*, *benzyl gly derivs*)

Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (*equilib*)

Mori, M. et al., *Chem. Pharm. Bull.*, 1986, **34**, 4037 (*L-form*, *synth*, *β -L-Me pyr*)

Zsoldos-Mády, V. et al., *Monatsh. Chem.*, 1986, **117**, 1325 (*synth*, *L-form*)

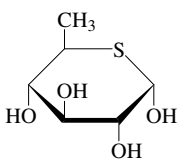
Eis, M.J. et al., *Carbohydr. Res.*, 1988, **176**, 316 (*α -D-Me gly isopropylidene*, *Me gly 4-mesyl*)

Stack, R.J. et al., *Carbohydr. Res.*, 1989, **189**, 281 (*occur*, *bibl*)

Hung, S.C. et al., *Carbohydr. Res.*, 2001, **331**, 369-374 (*L-Acovenose*, *synth*)

6-Deoxy-5-thioglucose, 9CI

D-373

 α -D-Pyranose-formC₆H₁₂O₄S 180.224***D-form*** [185802-10-2]Syrup. [α]_D +157 (c, 1.0 in Py).***D-Pyranose-form***

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy-5-thio-D-glucopyranose [185802-54-4]

C₁₄H₂₀O₈S 348.373Obt. as a 4:1 α : β anomeric mixt. **α -D-Pyranose-form**

Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-deoxy-5-thio- α -D-glucopyranoside [185802-82-8]

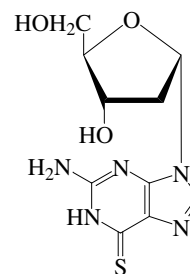
C₁₃H₂₀O₇S 320.363Mp 92-95°. [α]_D +236 (c, 0.5 in CHCl₃).

Bozó, E. et al., *Carbohydr. Res.*, 1996, **290**, 159-173

2'-Deoxythioguanosine

D-374

2-Amino-9-(2-deoxy-erythro-pentofurano-syl)-1,9-dihydro-6H-purine-6-thione, 9CI

 α -formC₁₀H₁₃N₅O₃S 283.31

Immunosuppressant. Log P -3.71 (calc).

 α -D-form [2133-81-5]

Cryst. (H₂O). Mp 170° dec. [α]_D²⁴ +65 (0.1N NaOH).

► UP0745000

 β -D-form [789-61-7]

Cryst. (H₂O). Mp 190° dec. [α]_D²⁵ -32 (c, 0.1N NaOH).

► UP0750000

Iwamoto, R.H. et al., *J. Med. Chem.*, 1963, **6**, 684 (*α -D-form*, *β -D-form*, *synth*)

Iwamoto, R.H. et al., *Nature (London)*, 1963, **198**, 285 (*synth*)

Kimball, A.P. et al., *Proc. Soc. Exp. Biol. Med.*, 1967, **126**, 181; *CA*, **68**, 11584y (*pharmacol*)

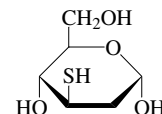
Henry, M.C. et al., *Cancer Chemother. Rep., Part 3*, 1974, **5**, 9; *CA*, **82**, 25808a (*tox*)

Roark, D.N. et al., *Nucleic Acid Chem.*, 1978, **2**, 583 (*synth*)

Acton, E.M. et al., *J. Med. Chem.*, 1979, **22**, 518 (*sar*)

2-Deoxy-3-thio-arabino-hexose

D-375

 α -D-Pyranose-formC₆H₁₂O₃S 164.225***D-form***

S-Et, 4,6-di-Ac: 4,6-Di-O-acetyl-2-deoxy-3-S-ethyl-3-thio-D-arabino-hexopyranose. 4,6-Di-O-acetyl-2,3-dideoxy-3-(ethylthio)-D-arabino-hexopyranose [131853-24-2]

C₁₂H₂₀O₆S 292.352Oil. α : β -anomeric ratio 3:1.

S-tert-Butyl, 4,6-di-Ac: 4,6-Di-O-acetyl-S-tert-butyl-2-deoxy-3-thio-D-arabino-hexopyranose. 4,6-Di-O-acetyl-3-(tert-butylthio)-2,3-dideoxy-D-arabino-hexopyranose

C₁₄H₂₄O₆S 320.406

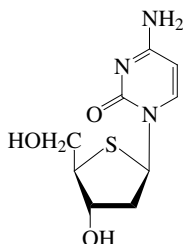
Mp 138-140°.

Lau, J. et al., *Acta Chem. Scand.*, 1990, **44**, 1046 (*synth*, *pmr*, *cmr*)

1-(2-Deoxy-4-thiopentofuranosyl)cytosine

D-376

4-Amino-1-(2-deoxy-4-thiopentofuranosyl)-2(1H)-pyrimidinone, 9CI

 β -D-erythro-form $C_9H_{13}N_3O_3S$ 243.286 **β -D-erythro-form**

2'-Deoxy-4'-thiocytidine

[134111-30-1]

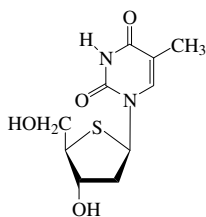
Amorph. hygroscopic powder (EtOH).
Mp 129-132°. **α -L-erythro-form** [219662-11-0]Mp 210-212°. $[\alpha]_D^{24}$ -54.5 (c, 0.11 in MeOH). **β -L-erythro-form** [160452-69-7]Cryst. (Et₂O). Mp 212-214°. $[\alpha]_D^{24}$ +31.2 (c, 0.1 in MeOH). **α -L-threo-form** [338742-39-5]Solid. Mp 185°. $[\alpha]_D^{20}$ -61.5 (c, 1.0 in MeOH).

Secrist, J.A. *et al.*, *J. Med. Chem.*, 1991, **34**, 2361 (synth, pmr, cmr)
 Uenishi, J. *et al.*, *Nucleosides Nucleotides*, 1994, **13**, 1347-1361 (synth, pmr, cmr, ms)
 De Valette, F. *et al.*, *Nucleosides Nucleotides*, 1998, **17**, 2289-2310 (synth, pmr)
 Wirsching, J. *et al.*, *Eur. J. Org. Chem.*, 2001, 1077-1087 (synth, pmr, cmr)

1-(2-Deoxy-4-thiopentofuranosyl)thymine, 9CI

D-377

1-(2-Deoxy-4-thiopentofuranosyl)-5-methyl-2,4(1H,3H)-pyrimidinedione, 9CI

 β -D-erythro-form $C_{10}H_{14}N_2O_4S$ 258.298Shows antiviral activity. $[\alpha]_D^{24}$ -32.7 (c, 1.0 in MeOH). **α -D-erythro-form** [134111-35-6]

Cryst. (EtOH). Mp 205-207° (194-196°).

 β -D-erythro-form

4'-Thiothymidine, 9CI

[134111-33-4]

Cryst. (EtOH). Mp 213-215°.

5'-Ac: [160452-63-1]

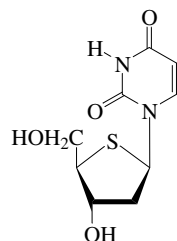
 $C_{12}H_{16}N_2O_5S$ 300.335Cryst. (EtOH). Mp 170-172°. $[\alpha]_D^{24}$ -26.7 (c, 0.5 in EtOH). **α -L-threo-form** [153439-73-7]Solid (EtOH). Mp 180° (165-167°). $[\alpha]_D^{20}$ -79.2 (c, 1.0 in MeOH). **β -L-threo-form** [153439-74-8]Solid (EtOH). Mp 220° (208-209°). $[\alpha]_D^{25}$ +28.3 (c, 1.0 in MeOH).

Secrist, J.A. *et al.*, *J. Med. Chem.*, 1991, **34**, 2361-2366 (synth, uv, pmr, cmr)
 Dyson, M.R. *et al.*, *J. Med. Chem.*, 1991, **34**, 2782-2786 (synth, uv, pmr)
 Tiwari, K.N. *et al.*, *Nucleosides Nucleotides*, 1993, **12**, 841-846 (synth, pmr)
 Uenishi, J. *et al.*, *Nucleosides Nucleotides*, 1994, **13**, 1347-1361 (synth, pmr, cmr, ms, 5'-Ac)
 Hancox, E.L. *et al.*, *Nucleosides Nucleotides*, 1996, **15**, 135-148 (synth, pmr)
 Wirsching, J. *et al.*, *Eur. J. Org. Chem.*, 2001, 1077-1087 (synth, ir, pmr, cmr)

1-(2-Deoxy-4-thiopentofuranosyl)uracil, 9CI

D-378

1-(2-Deoxy-4-thiopentofuranosyl)-2,4-(1H,3H)-pyrimidinedione, 9CI

 β -D-erythro-form $C_9H_{12}N_2O_4S$ 244.271 $[\alpha]_D^{24}$ -30.7 (c, 0.5 in MeOH). **α -D-erythro-form** [134111-34-5]

Cryst. (EtOH). Mp 190-192° (184-187°).

5'-Ac: [160452-62-0]

 $C_{11}H_{14}N_2O_5S$ 286.308Cryst. (EtOH). Mp 139-142°. $[\alpha]_D^{24}$ -23.5 (c, 0.13 in EtOH). **β -D-erythro-form** 2'-Deoxy-4'-thiouridine

[134111-32-3]

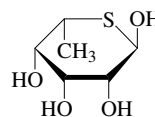
Cryst. (EtOH). Mp 186-188°.

 α -L-erythro-form [219662-10-9] $[\alpha]_D^{24}$ -46 (c, 0.69 in MeOH). **β -L-erythro-form** [160452-67-5]Mp 190-192°. $[\alpha]_D^{24}$ +28 (c, 0.25 in MeOH). **α -L-threo-form** [338742-30-6]Cryst. (H₂O). Mp 180°. $[\alpha]_D^{20}$ +91 (c, 1.0 in MeOH). **β -L-threo-form** [338742-44-2]Cryst. (H₂O). Mp 220°. $[\alpha]_D^{20}$ -2.2 (c, 1.0 in MeOH).

Secrist, J.A. *et al.*, *J. Med. Chem.*, 1991, **34**, 2361-2366 (synth, uv, pmr, cmr)
 Uenishi, J. *et al.*, *Nucleosides Nucleotides*, 1994, **13**, 1347-1361 (synth, pmr, cmr)
 Otter, G.P. *et al.*, *J.C.S. Perkin 2*, 1998, 2343-2349 (synth, pmr, cmr)
 De Valette, F. *et al.*, *Nucleosides Nucleotides*, 1998, **17**, 2289-2310 (synth, pmr)
 Wirsching, J. *et al.*, *Eur. J. Org. Chem.*, 2001, 1077-1087 (synth, cryst struct, pmr)

6-Deoxy-5-thiotalose

D-379

 α -L-Pyranose-form $C_6H_{12}O_4S$ 180.224**L-Pyranose-form** [14620-59-8]Mp 111-114°. $[\alpha]_D^{26}$ -130 (c, 1.0 in MeOH).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-thio-L-talopyranose

 $C_{14}H_{20}O_8S$ 348.373

Cryst. (MeOH). Mp 131-132°.

 α -L-Furanose-form

Me glycoside, 2,3-isopropylidene, S-benzoyl: Methyl 6-deoxy-2,3-O-isopropylidene-5-thiobenzoyl- α -L-talofuranoside [14990-72-8]

 $C_{17}H_{22}O_5S$ 338.424Cryst. Mp 104-105°. $[\alpha]_D^{27}$ -3.4 (c, 1.0 in MeOH).

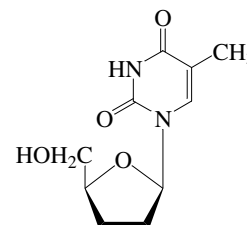
Owen, L.N. *et al.*, *J.C.S. (C)*, 1966, 1291 (synth)
 Stevens, C.L. *et al.*, *Tet. Lett.*, 1967, 649 (synth, struct)

3'-Deoxythymidine, 9CI

D-380

2',3'-Dideoxy-5-methyluridine

[3416-05-5]

 $C_{10}H_{14}N_2O_4$ 226.232

Cryst. (MeOH), or needles (EtOAc). Mp 150-152°.

5'-Phosphate: 3'-Deoxy-5'-thymidylic acid, 9CI

[3715-64-8]

 $C_{10}H_{15}N_2O_7P$ 306.212Solid +8H₂O (as Ba salt).

5'-Triphosphate: [611-60-9]

 $C_{10}H_{17}N_2O_{13}P_3$ 466.171

Solid (as Li salt).

Michelson, A.M. *et al.*, *J.C.S.*, 1955, 816-823 (synth, props)

Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1963, **11**, 961-967 (triphosphate, synth, uv)

Pfützner, K.E. *et al.*, *J.O.C.*, 1964, **29**, 1508-1511 (synth, prop, monophosphate)

Horwitz, J.P. *et al.*, *J.O.C.*, 1966, **31**, 205-211 (synth)

Zemlicka, J. *et al.*, *J.A.C.S.*, 1975, **97**, 4089-4095 (pmr)

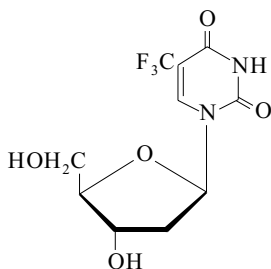
Prisbe, E.J. *et al.*, *Synth. Commun.*, 1985, **15**, 401-409 (synth, uv, pmr)

Sekine, M. *et al.*, *J.O.C.*, 1990, **55**, 924-928 (synth, pmr)

Filichev, V.V. *et al.*, *Bioorg. Med. Chem.*, 2004, **12**, 2843-2851 (synth)

2'-Deoxy-5-(trifluoromethyl)uridine, 8CI**D-381**

α,α,α -Trifluorothymidine, 9CI. **Trifluridine**, INN, USAN. Bephen. Thilol. Triherpine. Viromidin. Viroptic. F₃T. NSC 75520 [70-00-8]



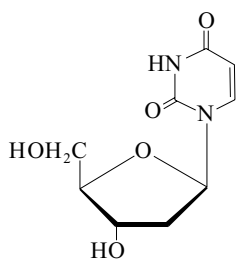
C₁₀H₁₁F₃N₂O₅ 296.203

Ophthalmic antiviral agent. Used in treatment of herpetic keratitis. Cryst. (EtOAc). Mp 186-189°. [α]_D²⁰ +46.9 (H₂O). Log P -0.97 (calc).

- Mutagenic props. LD₅₀ (mus, ipr) 1931 mg/kg. XP2087500
- Aldrich Library of 13C and 1H FT NMR Spectra*, 1992, **3**, 376A (nmr)
- Heidelberger, C. et al., *J.A.C.S.*, 1962, **84**, 3597 (synth)
- Ryan, K.J. et al., *J.O.C.*, 1966, **31**, 1181 (synth)
- Cushley, R.J. et al., *J.A.C.S.*, 1968, **90**, 709 (nmr)
- Heidelberger, C. et al., *Pharmacol. Ther.*, 1979, **6**, 427 (rev, pharmacol)
- Kobayashi, Y. et al., *J.C.S. Perkin 1*, 1980, 2755 (synth)
- Carmine, A.A. et al., *Drugs*, 1982, **23**, 329 (rev, pharmacol)
- Schwarz, B. et al., *J. Prakt. Chem.*, 1984, **326**, 985 (synth)
- Riegel, M.R. et al., *J. Chromatogr.*, 1991, **568**, 467 (hplc)
- Tandon, M. et al., *Biochem. Pharmacol.*, 1992, **44**, 2223; 1994, **48**, 1033 (metab)
- Harris, D.J. et al., *N. Engl. J. Med.*, 1994, **331**, 481 (use)
- Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 662
- Komatsu, H. et al., *Org. Process Res. Dev.*, 2002, **6**, 847-850 (synth)
- Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, TKH325

2'-Deoxyuridine, 9CI**D-382**

1-(2-Deoxy- β -D-erythro-pentofuranosyl)uracil. 1-(2-Deoxy- β -D-ribofuranosyl)uracil [951-78-0]



C₉H₁₂N₂O₅ 228.204

Isol. from *Acanthaster planci*, *Acanthaster pauci*, *Aplidium pantherinum*, *Chara*

globularis and *Ptychodera flava*. Cryst. (MeOH). Mp 167° (163.5°). [α]_D +30 (H₂O). [α]_D +50 (1M NaOH). λ_{max} 262 (ε 10200).

► YU7490000

5'-Phosphate: 2'-Deoxy-5'-uridylic acid, 9CI

[964-26-1]

C₉H₁₃N₂O₈P 308.184

5'-Ac:

C₁₁H₁₄N₂O₆ 270.241

Mp 96°.

5'-Trityl: [14270-73-6]

C₂₈H₂₆N₂O₅ 470.524

Mp 204-205°.

N-Me: 2'-Deoxy-3-methyluridine, 9CI

[24514-32-7]

C₁₀H₁₄N₂O₅ 242.231

Isol. from the marine sponge *Geodia baretii*. Plates (EtOAc).

Mp 98-100°.

5'-Carboxylic acid: 2'-Deoxyuridine-5'-carboxylic acid

[3180-30-1]

C₉H₁₀N₂O₆ 242.188

Constit. of the ascidian *Aplidium fuscum*. Plates (H₂O).

Mp 226-227° dec. (222-223°).

5'-Carboxylic acid amide: 2'-Deoxyuridine-5'-carboxamide

[68382-10-5]

C₉H₁₁N₃O₅ 241.203

Mp 257-258° dec.

5-Fluoro: See 2'-Deoxy-5-fluorouridine, D-114

5-Bromo: See 5-Bromo-2'-deoxyuridine, B-101

5'-Triphosphate: [1173-82-6]

C₉H₁₅N₂O₁₄P₃ 468.144

Cell nucleic acid constit.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 816A (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 374B (nmr)

Dekker, C.A. et al., *Nature (London)*, 1950, **166**, 557 (synth)

Brown, D.M. et al., *J.C.S.*, 1958, 3035 (synth)

Fox, J.J. et al., *Adv. Carbohydr. Chem.*, 1959, **14**, 283 (rev)

U.S. Pat., 1966, 3 280 104; CA, **66**, 38207y

Kikugawa, K. et al., *Chem. Pharm. Bull.*, 1969, **17**, 785 (synth, deriv)

Rahman, A. et al., *Acta Cryst. B*, 1972, **28**, 2260 (cryst struct)

Hruska, F.E. et al., *Can. J. Chem.*, 1974, **52**, 497 (conformn, pmr)

Sprecher, C.A. et al., *Biopolymers*, 1977, **16**, 2243 (cd)

Schinazi, R.F. et al., *J. Med. Chem.*, 1978, **21**, 1141 (synth, acid)

Brokes, J. et al., *Coll. Czech. Chem. Comm.*, 1979, **44**, 439 (synth)

Akhrem, A.A. et al., *Org. Magn. Reson.*, 1979, **12**, 247 (cmr)

Komori, T. et al., *Annalen*, 1980, 653-668 (isol)

Barr, P.J. et al., *Tetrahedron*, 1980, **36**, 1269 (cryst struct)

Ludwig, J. et al., *Synthesis*, 1982, 32-34, (5'-phosphate)

Sakema, S. et al., *Comp. Biochem. Physiol., B: Comp. Biochem.*, 1985, **82**, 107-109 (isol)

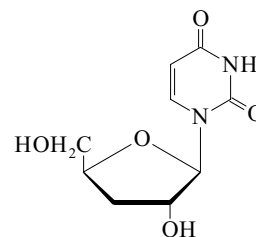
Dematte, N. et al., *Comp. Biochem. Physiol., B: Comp. Biochem.*, 1986, **84**, 11 (isol, acid)

Lidgren, G. et al., *J. Nat. Prod.*, 1988, **51**, 1277-1280 (2'-Deoxy-3-methyluridine)

Rimerman, R.A. et al., *J. Chromatogr., B: Biomed. Appl.*, 1993, **619**, 29-35, (5'-triphosphate)

3'-Deoxyuridine, 9CI**D-383**

[7057-27-4]



C₉H₁₂N₂O₅ 228.204

Needles (MeOH). Mp 181-182° (178°).

Brown, D.M. et al., *J.C.S.*, 1958, 3028 (synth)

Walton, E. et al., *J.O.C.*, 1966, **31**, 1163 (synth)

Johnston, G.A.R. et al., *Aust. J. Chem.*, 1968, **21**, 513 (synth)

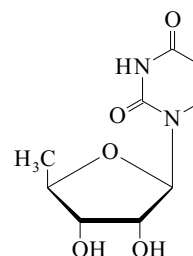
Lin, T.-S. et al., *J. Med. Chem.*, 1991, **34**, 693 (synth, uv, pmr)

Saneyoshi, M. et al., *Chem. Pharm. Bull.*, 1995, **43**, 2005 (synth, uv, pmr)

Miah, A. et al., *J.C.S. Perkin 1*, 1998, 3277-3283 (synth, pmr, cmr)

5'-Deoxyuridine, 9CI**D-384**

[15958-99-3]



C₉H₁₂N₂O₅ 228.204

Cryst. (MeCN). Mp 187-189° (183-185°). [α]_D²⁵ +9.5 (c, 1 in H₂O).

Codington, J.F. et al., *J.A.C.S.*, 1960, **82**, 2794 (synth)

Hein, L. et al., *Nucleic Acids Res.*, 1976, **3**, 1125 (synth)

Kimura, J. et al., *Bull. Chem. Soc. Jpn.*, 1984, **57**, 2017 (synth, uv)

Mayer, J.D. et al., *Mol. Pharmacol.*, 1985, **28**, 454 (pharmacol)

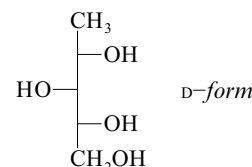
Mikhailov, S.N. et al., *Khim. Geterotsikl.*

Soedin., 1988, 91; CA, **109**, 70787 (synth)

1-Deoxyxylitol**D-385**

5-Deoxyxylitol

[62137-56-8]



C₅H₁₂O₄ 136.147

D-form

1-Deoxy-D-xylitol, *5-Deoxy-L-xylitol*
[68832-17-7]
Constit. of the fruit of *Foeniculum vulgare* (fennel).
Cryst. (EtOH aq).
Mp 77-78°. [α]_D 0 (H₂O).

Tetra-Ac: Tetra-O-acetyl-1-deoxy-D-xylitol
C₁₃H₂₀O₈ 304.296
Prisms (CHCl₃/pentane). Mp 62-63°. [α]_D²⁰ +10.4 (c, 1.0 in CHCl₃).

2,4-Methylene: 1-Deoxy-2,4-methylene-D-xylitol
C₆H₁₂O₄ 148.158
Cryst. (Et₂O). Mp 70-72°. [α]_D²⁰ +5.9 (c, 0.5 in CHCl₃).

2,4-Methylene, 5-tosyl: 1-Deoxy-2,4-O-methylene-5-O-tosyl-D-xylitol
C₁₃H₁₈O₆S 302.348
Prisms ¹/₃H₂O (Et₂O/pentane). Mp 62-68°. [α]_D²⁰ -2.1 (c, 0.85 in CHCl₃).

2,4-Methylene, 3,5-ditosyl: 1-Deoxy-2,4-O-methylene-3,5-di-O-tosyl-D-xylitol
C₂₀H₂₄O₈S₂ 456.537
Long needles (EtOH). Mp 99-100°. [α]_D²⁰ -18.7 (c, 1 in CHCl₃).

2,4:3,5-Dimethylene: 1-Deoxy-2,4:3,5-di-O-methylene-D-xylitol
C₇H₁₂O₄ 160.169
Mp 154-155°. [α]_D²⁰ +33.3 (c, 1 in H₂O).

2,3:4,5-Dibenzylidene: 2,3:4,5-Di-O-benzylidene-1-deoxy-D-xylitol
C₁₉H₂₀O₄ 312.365
Silky needles (C₆H₆). Mp 175-176°. [α]_D²⁰ -34.5 (C, 0.4 in CHCl₃).

L-form

2,4:3,5-Dimethylene: 1-Deoxy-2,4:3,5-di-O-methylene-L-xylitol
C₇H₁₂O₄ 160.169
Prismatic needles (EtOH). Mp 154-155°. [α]_D²⁰ -33.1 (c, 0.8 in H₂O).

DL-form

2,4:3,5-Dimethylene: 1-Deoxy-2,4:3,5-di-O-methylene-DL-xylitol
Mp 155-156°.

2,3:4,5-Dibenzylidene: 2,3:4,5-Di-O-benzylidene-1-deoxy-DL-xylitol
C₁₉H₂₀O₄ 312.365
Fine needles (EtOH). Mp 173-174°.

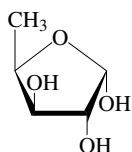
[25289-19-4]

Zissis, E. *et al.*, *J.A.C.S.*, 1953, **75**, 129 (*D-form*)
Ness, A.T. *et al.*, *J.A.C.S.*, 1953, **75**, 132, (*L-form*, *DL-form*)

David, S. *et al.*, *J.C.S. Perkin 1*, 1982, 2131-2137 (*synth*)

Lewis, D. *et al.*, *J.C.S. Perkin 2*, 1991, 197-200 (*conformm*)

Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 988-992 (*isol*, *pmr*, *cmr*)

5-Deoxyxylose**D-386**C₅H₁₀O₄ 134.132 α -D-Furanose-form**D-form** [13039-77-5]

Syrup. [α]_D²⁵ +13.3 (H₂O). May oligomerise on isol. Earlier (1935) report may need reinvestigation.

 α -D-Furanose-form

Me glycoside: Methyl 5-deoxy- α -D-xylofuranoside
[197011-66-8]
C₆H₁₂O₄ 148.158
Mp 83-84°. [α]_D²¹ +141.3 (c, 0.5 in CHCl₃).

Me glycoside, di-Ac: Methyl 2,3-di-O-acetyl-5-deoxy- α -D-xylofuranoside
[56570-76-4]
C₁₀H₁₆O₆ 232.233
Syrup. [α]_D²² +169.5 (c, 1.6 in CHCl₃).

1,2-Isopropylidene: 5-Deoxy-1,2-O-isopropylidene- α -D-xylofuranoside
[4152-79-8]
C₈H₁₄O₄ 174.196
Oil, crystallising to needles. Mp 66-67°. [α]_D²³ -20.7 (c, 1.9 in CHCl₃).

1,2-Isopropylidene, 3-mesyl: 5-Deoxy-1,2-O-isopropylidene-3-O-mesyl- α -D-xylofuranoside
[95141-91-6]
C₉H₁₆O₆S 252.288
Oil. [α]_D²⁷ -10.2 (c, 2.10 in CHCl₃).

 β -D-Furanose-form

Me glycoside: Methyl 5-deoxy- β -D-xylofuranoside
[21090-81-3]
Syrup, crystallising on standing at -70°. [α]_D²⁴ -99.8 (c, 1.9 in H₂O).

Me glycoside, di-Ac: Methyl 2,3-di-O-acetyl-5-deoxy- β -D-xylofuranoside
[56570-77-5]
Syrup. [α]_D²⁵ -22.2 (c, 1.7 in CHCl₃).

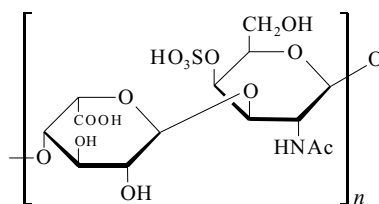
Levene, P.A. *et al.*, *J. Biol. Chem.*, 1935, **111**, 325 (*D-form*, *synth*)

Sakakibara, T. *et al.*, *Carbohydr. Res.*, 1981, **95**, 291 (*D-form*)

Snyder, J.R. *et al.*, *Carbohydr. Res.*, 1987, **163**, 169 (*D-form*, *synth*)

Hildebrandt, B. *et al.*, *Carbohydr. Res.*, 1991, **214**, 87 (*synth*, *pmr*, α -D-fur isopropylidene, α -D-fur isopropylidene mesyl)

Moravcová, J. *et al.*, *J. Carbohydr. Chem.*, 1997, **16**, 1061-1073 (*Me* α -D-fur, *Me* β -D-fur, *Me* α -D-fur di-Ac, *Me* β -D-fur di-Ac)

Dermatan sulfate, 9CI**D-387**Chondroitinsulfuric acid type B. β -HeparinC₁₄H₂₁NO₁₄S 459.384

A mucopolysaccharide composed of L-Iduronic acid, N-Acetylgalactosamine 4-sulfate linked(1→3) and (1→4) plus small amounts of D-Glucuronic acid. Polymeric. Minimum formula given. Found in skin, blood vessels, heart valves, tendons, aorta, spleen and

brain. Usually isol. from pig skin or beef lung tissue. Large amounts are stored in tissue of subjects with Hurler's syndrome and are excreted in the urine. Anticoagulant and antithrombotic agent. [α]_D -55 (H₂O). MW = 2-5 \times 10⁴.

Desmin 370 [24967-94-0]

Low MW dermatan sulfate (5500D \pm 500D). Anticoagulant and antithrombotic agent. Prepared by controlled depolymerisation using H₂O₂/Fe²⁺ or other metal ions.

Brimacombe, J.S. *et al.*, *Mucopolysaccharides*, Elsevier, 1964, 138

Jeanloz, R.W. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 114 (*isol*)

Handb. Biochem. Mol. Biol., CRC Press, 3rd Ed., 1975, 356

Hamer, G. *et al.*, *Carbohydr. Res.*, 1976, **49**, 37 (*pmr*)

Lindahl, U. *et al.*, *Int. Rev. Sci.: Org. Chem., Ser. Two*, 1976, **7**, 283

Lindahl, U. *et al.*, *Annu. Rev. Biochem.*, 1978, **47**, 385-417 (*biochem*, *rev*)

Agnelli, G. *et al.*, *Thromb. Haemostasis*, 1992, **67**, 203-208 (*pharmacol*)

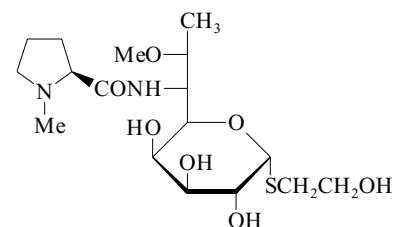
Tamagnone, G. *et al.*, *Drugs of the Future*, 1994, **19**, 638-640 (*Desmin 370*, *rev*)

Onaya, J. *et al.*, *Cardiovasc. Drug Rev.*, 1999, **17**, 225-236 (*rev*)

Yeung, B.K.S. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 799-865 (*rev*, *synth*)

Desalicytin**D-388**

[19246-70-9]

C₁₇H₃₂N₂O₇S 408.515

Isol. from *Streptomyces caelestis*. Shows antibiotic props. Structurally related to Lincomycin.

► LW5436500

Hydrochloride:

Cryst. [α]_D²⁵ +150 (c, 1 in H₂O).

2'-(4-Amino-2-hydroxybenzoyl): Desalicytin 2'-(4-aminosalicylate)
[55051-88-2]

C₂₄H₃₇N₃O₉S 543.637

From *Streptomyces caelestis* with 4-Aminosalicylic acid. Active against gram-positive bacteria. Sol. H₂O, EtOH, MeOH. λ_{max} 208 (ϵ 13500); 240 (ϵ 4550); 288 (ϵ 7300); 306 (ϵ 9200) (MeOH) (Berdy).

2'-Butanoyl: Isocelesticetin B. Desalicytin 2'-butyrate

[54202-70-9]

C₂₁H₃₈N₂O₈S 478.606From *Streptomyces caelestis*.

N-De-Me, 2'-(4-amino-2-hydroxybenzoyl): N-Demethyl-desalicytin-2-(4'-aminosalicylate)
 $C_{23}H_{35}N_3O_9S$ 529.61
 From *Streptomyces caelestis* with 4-Aminosalicylic acid. Active against gram-positive bacteria.

7-O-De-Me, 2'-(4-amino-2-hydroxybenzoyl): 7-O-Demethyl-desalicytin 2-(4'-aminosalicylate)
 $C_{23}H_{35}N_3O_9S$ 529.61
 From *Streptomyces caelestis* with 4-Aminosalicylic acid. Active against gram-positive bacteria. Sol. H_2O .

N,O'-Di-de-Me, 2'-(4-amino-2-hydroxybenzoyl): N-Demethyl-7-O-demethyl-desalicytin 2-(4'-aminosalicylate)
 $C_{22}H_{33}N_3O_9S$ 515.583
 From *Streptomyces caelestis* with 4-Aminosalicylic acid. Active against gram-positive bacteria. Sol. H_2O .

2'-Ac: Celesticetin D. Desalicytin 2'-acetate
 $C_{19}H_{34}N_2O_8S$ 450.552
 Isol. from *Streptomyces caelestis*. Shows antibiotic props. Sol. MeOH.

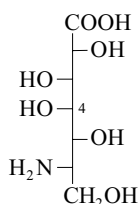
Argoudelis, A.D. et al., *J. Antibiot.*, 1972, **25**, 194; 1974, **27**, 642; 674; 738 (isol, struct, nmr, synth, derivs)

U.S. Pat., 1975, 3 907 774; 3 923 602; CA, **84**, 41976; 72641 (derivs)

Destomic acid

D-389

6-Amino-6-deoxy-L-glycero-D-galacto-heptonic acid
 [14307-79-0]



$C_7H_{15}NO_7$ 225.198

Component of destomycin antibiotics (see Destomycin A, D-390).

Mp 200-210°. $[\alpha]_D^{25} +4.7$ (c, 2 in H_2O).

4-Epimer: **Epidestomic acid**. 6-Amino-6-deoxy-L-glycero-D-gluco-heptonic acid
 $C_7H_{15}NO_7$ 225.198

Component of destomycins.

Mp 210-215°. $[\alpha]_D^{25} +17.8$ (c, 1 in H_2O) (synthetic).

Hashimoto, H. et al., *Carbohydr. Res.*, 1982, **104**, 87 (synth)

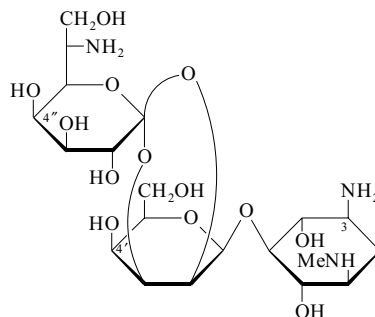
Dondoni, A. et al., *Synlett*, 1993, 78 (synth)

Destomycin A

XK 33FI. Antibiotic XK 33FI. Anthelmin.

Destonate 20

[14918-35-5]



$C_{20}H_{37}N_3O_{13}$ 527.525

Aminoglycoside antibiotics. Isol. from *Streptomyces rifamaciens*. Broad spectrum antibiotic, veterinary anthelmintic. Powder. Sol. H_2O , MeOH; poorly sol. butanol, hexane.

Mp 180-190° dec. $[\alpha]_D^{22} +7$ (c, 2 in H_2O).
 ▶ LD₅₀ (mus, orl) 50 mg/kg. LD₅₀ (mus, ivn) 5 mg/kg. WK2129900

N³-Me: **Destomycin C**. N-Methylhygromycin A. AB 74. Antibiotic AB 74
 [55651-94-0]

$C_{21}H_{39}N_3O_{13}$ 541.551

From *Streptomyces rifamaciens* and *Streptomyces aquacanus*. Broad spectrum antibiotic, anthelmintic. Hygroscopic powder.

Mp 182-190° dec. $[\alpha]_D^{22} +9$ (c, 1 in H_2O).
 Log P -7.68 (uncertain value) (calc).

▶ LD₅₀ (mus, ivn) 6.25 mg/kg. WK2129000

N-De-Me: **Antibiotic SS 56D**. A 396I. SS 56D. Antibiotic A 396I

[31357-30-9]

$C_{19}H_{35}N_3O_{13}$ 513.498

Isol. from *Streptomyces eurocidicus*. Active against gram-positive and -negative bacteria. Amorph. powder. Sol. H_2O , MeOH; fairly sol. EtOH, butanol; poorly sol. Me₂CO, hexane.

Mp 185-190° dec. $[\alpha]_D^{25} +12.7$ (c, 1.08 in H_2O).

▶ LD₅₀ (mus, ivn) 12.5 mg/kg. CB9198000

N-De-Me, N³-Me: **Hygromycin B**.

Hygrosetine. Hyanthelmix

[31282-04-9]

$C_{20}H_{37}N_3O_{13}$ 527.525

Prod. by *Streptomyces hygroscopicus*. FDA approved food additive for swine and poultry. Shows broad-spectrum antibiotic activity. Of practical importance against helminths including ascarids. Amorph.

Mp 160-180° dec. $[\alpha]_D^{26} +20.2$ (c, 1 in H_2O).
 pK_{a1} 7.1; pK_{a2} 8.8.

▶ WK2130000

2S-Hydroxy, N-de-Me: **Antibiotic SS 56C**. SS 56C

[39471-55-1]

[40980-50-5]

$C_{19}H_{35}N_3O_{14}$ 529.497

Isol. from *Streptomyces eurocidicus*.

Active against gram-positive and gram-negative bacteria. Amorph. powder.

D-390

Sol. H_2O ; poorly sol. butanol, hexane.
 Mp 201-203° dec. $[\alpha]_D^{25} +12$ (c, 1.08 in H_2O).

2S-Hydroxy, N-de-Me, N¹-amidino: **1-N-Amidino-1-N-demethyl-2-hydroxydestomycin A**
 [96479-74-2]

$C_{20}H_{37}N_5O_{14}$ 571.537

Isol. from *Saccharopolyspora hirsuta*.

Weak antibacterial and antifungal agent.

Powder + H_2O (as trihydrochloride). Sol.

H_2O ; fairly sol. MeOH; poorly sol.

Me₂CO, hexane. $[\alpha]_D^{25} +7.7$ (c, 1 in H_2O).

Hydrochloride dec. at 172-183°.

▶ LD₅₀ (mus, ivn) 6.25 - 12.5 mg/kg.
 WK2128700

4'-Epimer, N-de-Me, N³-Me: **Antibiotic RH 5012C**. RH 5012C

[83378-70-5]

$C_{20}H_{37}N_3O_{13}$ 527.525

Prod. by *Streptovercillium eurocidicum*.

Active against gram-positive and -negative

bacteria and *Candida albicans*. Powder +

2 H_2O . Sol. H_2O ; poorly sol. EtOH,

hexane, Et₂O.

Mp 191-194° dec. $[\alpha]_D^{20} +12.9$ (c, 1 in H_2O).

▶ LD₅₀ (mus, orl) 100 - 300 mg/kg, LD₅₀ (mus, ipr) 6.5 - 11.5 mg/kg. WK2128350

4',4''-Diepimer, N³-Me: **Destomycin B**. A 16316C. Antibiotic A 16316C

[11005-98-4]

$C_{21}H_{39}N_3O_{13}$ 541.551

Isol. from *Streptomyces rifamaciens*,

Streptovercillium eurocidicum and

Micromonospora cyaneogranulata. Broad

spectrum antibiotic. Powder.

Mp 140-200° dec., 175-185° dec. $[\alpha]_D^{21} +6$ (c, 1 in H_2O). Log P -7.68 (uncertain value) (calc).

▶ LD₅₀ (mus, orl) 50 mg/kg. LD₅₀ (mus, ivn) 5 mg/kg. HH1330000

[59794-19-3]

Mann, R.L. et al., *J.A.C.S.*, 1958, **80**, 2714-2716 (*Hygromycin B*, isol)

Wiley, P.F. et al., *J.O.C.*, 1962, **27**, 2793-2796 (*Hygromycin B*)

Kondo, S. et al., *J. Antibiot.*, Ser. A, 1965, **18**, 38-42; 1966, **19**, 139-140 (isol, struct, ir, ms, pmr)

Neuss, N. et al., *Helv. Chim. Acta*, 1970, **53**, 2314-2319 (struct)

Shoji, J. et al., *J. Antibiot.*, 1970, **23**, 391 (SS56, isol)

Inouye, S. et al., *J. Antibiot.*, 1973, **26**, 374-385 (SS 56C, SS 56D)

Shimura, M. et al., *J. Antibiot.*, 1975, **28**, 83-84 (*Destomycins A-C*)

Shimura, M. et al., *Agric. Biol. Chem.*, 1976, **40**, 611-618 (*Destomycin B*)

Tamura, A. et al., *J. Antibiot.*, 1976, **29**,

590-591; 592-594 (*Destomycin A*, AB 74, isol)

Japan. Pat., 1976, 76 82 793, (*Dainippon*); CA, **86**, 15201n (*Destomycin B*)

Wright, D.E. et al., *Tetrahedron*, 1979, **35**, 1207 (*Hygromycin B*, *Destomycins*, rev)

Horito, S. et al., *Bull. Chem. Soc. Jpn.*, 1981, **54**, 2147-2150 (crist struct)

Yoshimura, J. et al., CA, 1981, **96**, 181549; 1986, **105**, 97853 (rev, synth)

Japan. Pat., 1982, 82 95 995; CA, **97**, 198514 (RH 5012C)

Ikeda, Y. et al., *J. Antibiot.*, 1985, **38**, 436,

(1-Amidino-1-demethyl-2-hydroxydestomycin A)

Tamura, J. et al., *Carbohydr. Res.*, 1988, **174**,

181-199 (*Destomycin C*, synth, pmr)

[8063-26-1] Used in the treatment of iron-deficiency anaemia.

[9004-51-7, 9005-84-9, 337376-15-5]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 199C (ir)

Satterthwaite, R.W. *et al.*, *Ind. Gums*, 2nd Ed., Academic Press, New York, 1973, 577 (rev)

Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425 (cmr)
Umeki, K. *et al.*, *J. Biochem. (Tokyo)*, 1975, 78, 897 (struct)

Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, DBD800

Biotechnol. Amylodextrin Oligosaccharides, Friedman, R.B. (ed.), Amer. Chem. Soc., 1991, (book)

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. *et al.*), American Pharmaceutical Association/Pharmaceutical Press, 1994, 151-153

Martindale, The Extra Pharmacopoeia, 31st edn., Pharmaceutical Press, 1996, 1359

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 793-796 (use)

Peers, E. *et al.*, *Artif. Organs*, 1998, 22, 8-12 (icodextrin, rev)

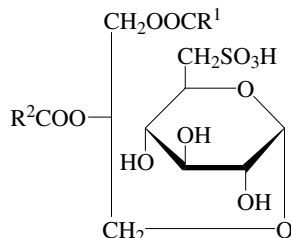
Tintillier, M. *et al.*, *Am. J. Kidney Dis.*, 2002, 40, 435 (icodextrin, use)

Frampton, J.E. *et al.*, *Drugs*, 2003, 63, 2079-2105 (icodextrin, rev)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DBD800; IGT000

1,2-Diacylglycerol 6-sulfoquinovosides D-395

1,2-Diacylglycerol 3-(6-deoxy-6-sulfo- α -D-glucopyranosides). 6-Sulfoquinovose diacylglycerides



All examples so far characterised have R² = hexadecanoyl, with 2S-(≡1,2-diacyl-*sn*-glycerol) abs. config. Isol. from cultured cyanobacteria (blue-green algae) *Lyngbya lagerheimii* and *Phormidium tenue* and from *Rhizobium* nitrogen-fixing bacteria. Incompletely characterised diacyl mixtures have also been isol. from the non-photosynthetic diatom *Nitzschia alba*, blue-green algae *Anabaena variabilis* and *Anacystis nidulans*, red alga *Gracilaria verrucosa*, marine sponge *Phyllospongia foliascens* and the sea urchin *Strongylocentrotus intermedius*. Occur in the organelle membranes involved in CO₂ fixation. Show anti-HIV-1 activity *in vitro*.

2-O-Hexadecanoyl-1-O-(9-hexadecenoyl) glycerol 3-(6-deoxy-6-sulfo- α -D-glucopyranoside) [122991-49-5]

C₄₁H₇₆O₁₂S 793.11

2-O-Hexadecanoyl-1-O-(9-octadecenoyl) glycerol 3-(6-deoxy-6-sulfo- α -D-glucopyranoside) [123016-84-2]

C₄₃H₈₀O₁₂S 821.164

2-O-Hexadecanoyl-1-O-(9Z,12Z-octadecadienyl)glycerol 3-(6-deoxy-6-sulfo- α -D-glucopyranoside) [123016-83-1]

C₄₃H₇₈O₁₂S 819.148

[α]_D +62.8 (c, 0.83 in MeOH).

2-O-Hexadecanoyl-1-O-(9Z,12Z,15Z-octadecatrienyl)glycerol 3-(6-deoxy-6-sulfo- α -D-glucopyranoside) [123036-44-2]

[130193-67-8] [α]_D²² +42.8 (c, 1 in MeOH) (as Na salt).

Gustafson, K.R. *et al.*, *J. Natl. Cancer Inst.*, 1989, 81, 1254-1258 (isol, pmr, cmr, activity)

Adebodun, F. *et al.*, *Biochemistry*, 1992, 31, 4502-4509 (pmr, cmr)

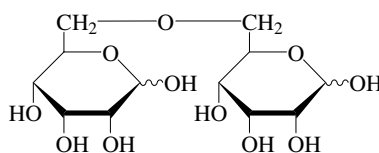
Gordon, D.M. *et al.*, *J.A.C.S.*, 1992, 114, 659-663 (isol, struct)

Kim, Y.H. *et al.*, *J. Mass Spectrom.*, 1997, 32, 968-977 (ms)

Di-6-allosyl ether

Coylosa

D-396



C₁₂H₂₂O₁₁ 342.299

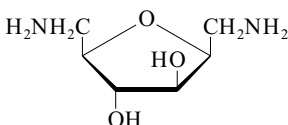
Evidence for the proposed struct. and stereochem. of the nat prod. Coylosa was highly defective and has been shown to be incorrect by synthesis. Claimed constit. of the roots of *Acrocomia mexicana*. Hypoglycaemic agent (nat. prod.). Cryst. solid (MeOH). Mp 170-172°.

Pérez, S. *et al.*, *Pharm. Acta Helv.*, 1997, 72, 105-111 (isol, pmr, cmr, ir, ms, activity)

Haines, A.H. *et al.*, *Tet. Lett.*, 2004, 45, 835-837 (synth, struct)

1,6-Diamino-2,5-anhydro-1,6-dideoxyglucitol

D-397



C₆H₁₄N₂O₃ 162.188

D-form [88777-24-6]

Solid. Mp 173° dec. (as dihydrochloride). [α]_D²⁰ +29 (H₂O) (as dihydrochloride). CAS no. refers to hydrochloride (incorrectly as monohydrochloride).

4-Mesyl: 1,6-Diamino-2,5-anhydro-1,6-dideoxy-4-O-mesyl-D-glucitol [84415-95-2]

C₇H₁₆N₂O₅S 240.28

Mp 198° dec. (as dihydrochloride). [α]_D²⁰ +20 (H₂O). CAS no. refers to dihydrochloride.

3,4-Dimesyl: 1,6-Diamino-2,5-anhydro-1,6-dideoxy-3,4-di-O-mesyl-D-glucitol [84379-83-9]

C₈H₁₈N₂O₇S₂ 318.371

Mp 219-220° dec. (as dihydrochloride). [α]_D²⁰ +9.5 (H₂O). CAS no. refers to dihydrochloride.

N,N,N',N'-Tetra-Me: 2,5-Anhydro-1,6-dideoxy-1,6-bis(dimethylamino)-D-glucitol [88777-25-7]

C₁₀H₂₂N₂O₃ 218.295

Foam (as dihydrochloride). [α]_D²⁰ +33 (H₂O). CAS no. refers to hydrochloride (erroneously as monohydrochloride).

N,N,N',N'-Tetra-Me, dimesyl: 2,5-Anhydro-1,6-dideoxy-1,6-bis(dimethylamino)-3,4-di-O-mesyl-D-glucitol [84379-87-3]

C₁₂H₂₆N₂O₇S₂ 374.479

Mp 205° dec. (as dihydrochloride). [α]_D²⁰ +12.3 (H₂O). CAS no. refers to dihydrochloride.

DL-form [84379-93-1]

Mp 226-227° dec. (as dihydrochloride). CAS no. refers to dihydrochloride.

N,N,N',N'-Tetra-Me: 2,5-Anhydro-1,6-dideoxy-1,6-bis(dimethylamino)-DL-glucitol [84379-94-2]

C₁₀H₂₂N₂O₃ 218.295

Semisolid foam (as dihydrochloride).

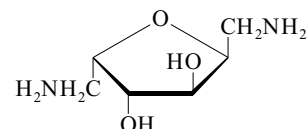
N-Hexa-Me: 2,5-Anhydro-1,6-dideoxy-1,6-bis(trimethylammonio)-DL-glucitol [84379-95-3]

C₁₂H₂₈N₂O₃⁺ 248.365

Cryst. (MeOH aq.) (as diiodide). Mp 210-213° dec. (diiodide). CAS no. refers to diiodide.

Kuszmarn, J. *et al.*, *Carbohydr. Res.*, 1982, 108, 247; 1983, 123, 209

1,6-Diamino-2,5-anhydro-1,6-dideoxyiditol D-398



C₆H₁₄N₂O₃ 162.188

L-form [78135-97-4]

Mp 231-233° (219-225°) (as dihydrochloride). [α]_D²⁰ +3 (-0.7) (H₂O). CAS no. refers to dihydrochloride.

N,N'-Di-Ac: 1,6-Diacetamido-2,5-anhydro-1,6-dideoxy-L-iditol [78135-95-2]

C₁₀H₁₈N₂O₅ 246.263

Cryst. Mp 174-176°. [α]_D²⁰ -43.3 (H₂O).

IN,3,4,6N-Tetra-Ac: 1,6-Diacetamido-3,4-di-O-acetyl-2,5-anhydro-1,6-dideoxy-L-iditol [78135-96-3]

C₁₄H₂₂N₂O₇ 330.337

Cryst. (EtOH). Mp 158-159°. [α]_D²⁰ -24 (H₂O).

3,4-Dimesyl, 1*N*,6*N*-di-Ac: 1,6-Diacetamido-2,5-anhydro-1,6-dideoxy-3,4-di-O-mesyl-L-itol

[78135-84-9]

C₁₂H₂₂N₂O₉S₂ 402.446

Cryst. Mp 144-146°. [α]_D²⁰ -26.5 (H₂O).

N,N,N',N'-Tetra-Me: [78136-00-2]

C₁₀H₂₂N₂O₃ 218.295

Cryst. (as dihydrochloride). Mp 150° dec. (dihydrochloride). [α]_D²⁰ -9.4 (H₂O). CAS no. refers to dihydrochloride.

N,N,N',N'-Tetra-Me, 3,4-dimesyl:

[78135-85-0]

C₁₂H₂₆N₂O₇S₂ 374.479

Cryst. (EtOH). Mp 225° dec. [α]_D²⁰ -27 (H₂O).

N,N,N',N',N',N'-Hexa-Me: [78136-01-3]

C₁₂H₂₈N₂O₃[⊕] 248.365

Exhibits muscarine like activity. Cryst. (MeOH aq.) (as diiodide). Mp 260° (diiodide). [α]_D²⁰ -1 (H₂O).

N,N,N',N',N',N'-Hexa-Me, 3,4-dimesyl:

[78135-87-2]

C₁₄H₃₂N₂O₇S₂[⊕] 404.548

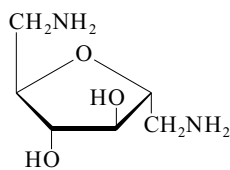
Cryst. (as diiodide). Mp 300° (diiodide). [α]_D²⁰ -11 (H₂O). CAS no. refers to diiodide.

Kuszmanski, J. *et al.*, *Carbohydr. Res.*, 1981, **89**, 103 (dimesyl di-Ac, tetra-Me dimesyl, di-Ac, tetra-Ac, L-form)

Koell, P. *et al.*, *Annalen*, 1987, 205, (L-form, synth)

1,6-Diamino-2,5-anhydro-1,6-dideoxymannitol

D-399



C₆H₁₄N₂O₃ 162.188

D-form

3,4-Di-Me: 1,6-Diamino-2,5-anhydro-1,6-dideoxy-3,4-di-O-methyl-D-mannitol [114809-90-4]

C₈H₁₈N₂O₃ 190.242

Cryst. (MeOH/MeCN) (as dihydrochloride). Mp 260° (dihydrochloride). [α]_D²⁰ +69.2 (c, 0.2 in H₂O). CAS no. refers to dihydrochloride.

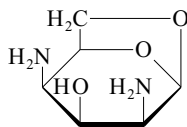
3,4-Di-Me, N,N'-bis(benzoyloxycarbonyl): [114809-84-6]

C₂₄H₃₀N₂O₇ 458.51

Cryst. Mp 69-71°. [α]_D²⁰ +37.8 (CHCl₃). Lehn, J.M. *et al.*, *Can. J. Chem.*, 1988, **66**, 195 (di-Me derivs, ir, pmr, cmr)

2,4-Diamino-1,6-anhydro-2,4-dideoxytalose

D-400



C₆H₁₂N₂O₃ 160.172

β-D-Pyranose-form [30004-05-8]

Cryst. (EtOH aq.) (as hydrochloride).

Mp 350° (hydrochloride). [α]_D²⁰ -58.5 (c, 1.0 in H₂O). CAS no. refers to hydrochloride.

N,N'-Dibenzoyl: 1,6-Anhydro-2,4-dibenzamido-2,4-dideoxy-D-talopyranose [29914-63-4]

C₂₀H₂₀N₂O₅ 368.388

Cryst. Mp 225-227°. [α]_D²⁰ -86 (c, 1.0 in DMSO).

N,N'-Dibenzoyl, 3-Ac: 3-O-Acetyl-1,6-anhydro-2,4-dibenzamido-2,4-dideoxy-D-talopyranose [29914-62-3]

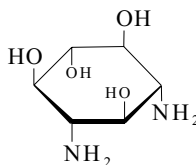
C₂₂H₂₂N₂O₆ 410.426

Cryst. Mp 234-235°. [α]_D²⁰ -46.5 (c, 1.0 in CHCl₃).

Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1970, **103**, 2424 (synth, dibenzoyl derivs, pmr)

4,6-Diamino-1,2,3,5-cyclohexanetetrol

D-401



C₆H₁₄N₂O₄ 178.188

(1α,2β,3α,4β,5α,6β)-form

1,3-Diamino-1,3-dideoxy-scylo-inositol.

Streptomycin

[488-52-8]

Degradn. prod. of Streptomycin, S-83.

Mp 290°. Opt. inactive (meso-).

Hydrochloride (1:2): Mp 280° (245-255°) dec.

Dipicrate: Mp 300° dec.

O-Tetra-Ac:

C₁₄H₂₂N₂O₈ 346.336

Mp 260° (as hydrochloride).

Hexa-Ac:

C₁₈H₂₆N₂O₁₀ 430.411

Mp 245-248° dec. Also reported to have

Mp 342-343° with a phase transition at 240-250°.

N,N'-Diamidino: See Streptidine, S-79

Peck, R.L. *et al.*, *J.A.C.S.*, 1946, **68**, 776 (struct)

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1950, **72**, 1727 (struct)

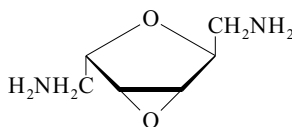
Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1967, **100**, 2383 (synth)

Schwesinger, R. *et al.*, *Angew. Chem., Int. Ed.*, 1975, **14**, 630 (synth)

1,6-Diamino-2,5:3,4-dianhydro-1,6-dideoxyaltritol, 9CI

D-402

1,6-Diamino-2,5:3,4-dianhydro-1,6-dideoxyaltritol



C₆H₁₂N₂O₂ 144.173

L-form [78136-03-5]

Pale yellow syrup. Erroneously descr. as L-ido in the ref.

N,N'-Di-Ac: [78135-94-1]

C₁₀H₁₆N₂O₄ 228.247

Cryst. (Me₂CO). Mp 163-165°. [α]_D²⁰ +36.6 (H₂O).

N,N,N',N',N',N'-Hexa-Me: [78135-92-9]

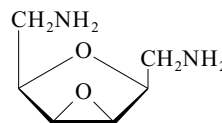
C₁₂H₂₆N₂O₃[⊕] 230.35

Exhibits muscarine-like activity. Cryst. (MeOH) (as diiodide). Mp 260° (diiodide). [α]_D²⁰ -6 (H₂O).

Kuszmanski, J. *et al.*, *Carbohydr. Res.*, 1981, **89**, 103 (di-Ac, hexa-Me)

1,6-Diamino-2,5:3,4-dianhydro-1,6-dideoxygalactitol

D-403



C₆H₁₂N₂O₂ 144.173

Meso-.

N,N'-Di-Ac: 1,6-Diacetamido-2,5:3,4-dianhydro-1,6-dideoxygalactitol [84416-00-2]

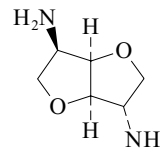
C₁₀H₁₆N₂O₄ 228.247

Mp 183-185° dec.

Kuszmanski, J. *et al.*, *Carbohydr. Res.*, 1982, **108**, 247 (N,N'-di-Ac, synth, pmr)

2,5-Diamino-1,4:3,6-dianhydro-2,5-dideoxyglucitol

D-404



C₆H₁₂N₂O₂ 144.173

D-form [92418-32-1]

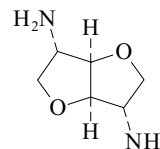
Cryst. Mp 320° dec. (300°) (as dihydrochloride). CAS no. refers to dihydrochloride.

Montgomery, R. *et al.*, *J.C.S.*, 1946, 393 (synth)

Thiem, J. *et al.*, *Makromol. Chem.*, 1991, **192**, 2163 (synth, pmr)

2,5-Diamino-1,4:3,6-dianhydro-2,5-dideoxyiditol

D-405



C₆H₁₂N₂O₂ 144.173

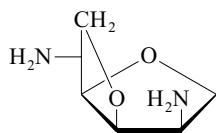
L-form [125335-70-8]

Syrup.

Hydrochloride (1:2): [92418-36-5]

Cryst. Mp 280-300° (260-280°) dec.

Archibald, T.G. *et al.*, *Synth. Commun.*, 1989, **19**, 1493 (synth)
Thiem, J. *et al.*, *Makromol. Chem.*, 1991, **192**, 2163 (synth)

2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxymannitol**D-406**C₆H₁₂N₂O₂ 144.173**D-form** [106182-72-3]

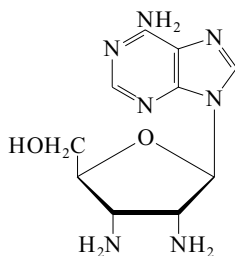
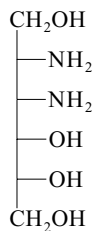
Solid.

Hydrochloride (1:2): [92418-34-3]

Cryst. Mp 255° (250-260°) dec.

Montgomery, R. *et al.*, *J.C.S.*, 1946, 393 (synth)Thiem, J. *et al.*, *Makromol. Chem.*, 1986, **187**,2775; 1991, **192**, 2163 (synth, pmr)**2',3'-Diamino-2',3'-dideoxyadenosine, 9CI****D-407**

9-(2,3-Diamino-2,3-dideoxy-β-D-ribofuranosyl)adenine
[90362-10-0]

C₁₀H₁₅N₇O₂ 265.274Needles (MeOH/Et₂O). Mp ca. 175° (softens at ca. 155°).Chen, Y.-C.J. *et al.*, *J.O.C.*, 1991, **56**, 3410 (synth, pmr, ms)**2,3-Diamino-2,3-dideoxyallitol, 9CI****D-408**C₆H₁₆N₂O₄ 180.203**D-form**

5,6-O-Isopropylidene, 4-benzyl:

[65023-56-5]

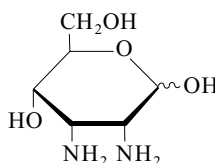
C₁₆H₂₆N₂O₄ 310.392

Intermed. in synthesis of Biotin. Cryst.

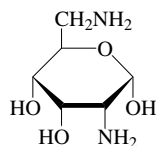
Mp 116-117°. [α]_D²⁰ +45.7 (CHCl₃).Ogawa, T. *et al.*, *Carbohydr. Res.*, 1977, **57**, C31 (benzyl isopropylidene)

Japan. Pat., 1978, 78 73 562; *CA*, **89**, 215717n (benzyl isopropylidene)

Japan. Pat., 1978, 78 73 588; *CA*, **89**, 180013a (use)

2,3-Diamino-2,3-dideoxyllose**D-409**C₆H₁₄N₂O₄ 178.188**D-form***Hydrochloride* (1:2):Hygroscopic powder. [α]_D²³ +50 (c, 1.2 in H₂O).

2,3-Di-N-(2,4-dinitrophenyl): Mp 137°.

[α]_D²⁸ -225.5 (c, 0.51 in MeOH).Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1964, **97**, 1275 (synth)**2,6-Diamino-2,6-dideoxyllose, 8CI****D-410**

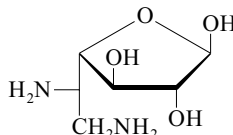
α-D-Pyranose-form

C₆H₁₄N₂O₄ 178.188**α-D-Pyranose-form***Hydrochloride* (1:2): [19949-67-8]Mp 180°. [α]_D¹⁶ +118.3 → +39.4 (c, 1.07 in H₂O).

N,N'-Di-Ac: 2,6-Diacetamido-2,6-dideoxy-α-D-allopyranoside

C₁₀H₁₈N₂O₆ 262.262Mp 150-151°. [α]_D²⁷ -112.1 → +71 (c, 1.07 in H₂O).**β-D-Pyranose-form**

Me glycoside, N,N'-dibenzoyl: *Methyl* 2,6-dibenzamido-2,6-dideoxy-α-D-allopyranoside

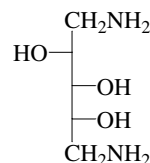
C₂₁H₂₄N₂O₆ 400.43Mp 221-222°. [α]_D²⁷ -28 (c, 1.0 in DMSO).Gross, P.H. *et al.*, *Naturwissenschaften*, 1964, **51**, 509Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1968, **101**, 2289 (synth)**5,6-Diamino-5,6-dideoxyltrose****D-411**C₆H₁₄N₂O₄ 178.188**α-L-Furanose-form**

Me glycoside, 2,3-dibenzyl, 5N,6N-di-Ac: *Methyl* 5,6-diacetamido-2,3-di-O-benzyl-5,6-dideoxy-α-L-altrofuranside

[20398-97-4]

C₂₅H₃₂N₂O₆ 456.538

Needles (2-propanol). Mp 187-188°.

[α]_D²⁰ -55.1 (c, 2.3 in CHCl₃).Saeki, H. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 188; 2471 (α-L-Me fur deriv, pmr)**1,5-Diamino-1,5-dideoxyarabinitol****D-412****D-form**C₅H₁₄N₂O₃ 150.177**D-form** [173009-07-9]*Dihydrobromide*: [173009-04-6]

Cryst. Mp 189-191°.

Bis(4-methylbenzenesulfonate) salt:

[173009-08-0]

[α]_D +6.8 (c, 0.57 in H₂O).**L-form***Dihydrobromide*: [173009-05-7]

Cryst. Mp 197°.

Bis(4-methylbenzenesulfonate) salt:

[173009-10-4]

[α]_D -7 (c, 0.5 in H₂O).

2,3,4-Tri-Me: 1,5-Diamino-1,5-dideoxy-2,3,4-tri-O-methyl-L-arabinitol

[362513-00-6]

C₈H₂₀N₂O₃ 192.258

Solid (as dihydrochloride). Mp 268-270° dec. (dihydrochloride). [α]_D -25 (c, 0.5 in H₂O) (dihydrochloride). CAS no. refers to dihydrochloride.

2,3,4-Tris-(4-chlorobenzyl): 1,5-Diamino-2,3,4-tris-(O-4-chlorobenzyl)-D-arabinitol. ZM 240304

C₂₆H₂₉Cl₃N₂O₃ 523.885

Antibacterial agent active against experimental infections in animals. Active against broad spectrum of pathogenic bacteria. Incorrectly indexed in CAS.

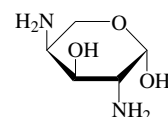
Zajackowski, I. *et al.*, *Z. Naturforsch., B*, 1995, **50**, 1329-1334 (D-form, L-form, salts, synth)

Barrett-Bee, K. *et al.*, *J. Antimicrob.*

Chemother., 1996, **38**, 605-614 (L-form, 2,3,4-tri-4-chlorobenzyl)

Glacon, V. *et al.*, *Tet. Lett.*, 1996, **37**, 3683-3686 (D-form, synth)

Garcia-Martin, M.G. *et al.*, *Carbohydr. Res.*, 2001, **333**, 95-103 (L-form, 2,3,4-tri-Me)

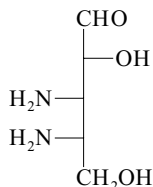
2,4-Diamino-2,4-dideoxyarabinose**D-413**

α-L-Pyranose-form

C₅H₁₂N₂O₃ 148.161

L-form [135221-06-6] Pt complexes used as antitumour agents. Inhibit mice leukaemia (L-1210). Syrup.
Japan. Pat., 1990, 90 223 591; *CA*, **115**, 84232f (activity)

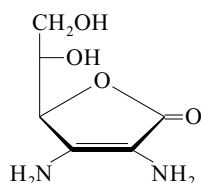
3,4-Diamino-3,4-dideoxyarabinose D-414



$C_5H_{12}N_2O_3$ 148.161

L-form [135221-07-7] Pt complexes used as antineoplastic agents. Inhibits mice leukaemia (L-1210). Syrup.
Japan. Pat., 1990, 02 223 591; *CA*, **115**, 84232 (activity)

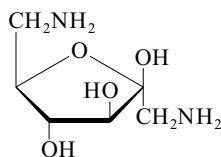
2,3-Diamino-2,3-dideoxyascorbic acid D-415
2,3-Diamino-2,3-dideoxy-threo-hex-2-enono-1,4-lactone



$C_6H_{10}N_2O_4$ 174.156

L-form
Faintly coloured prisms (EtOH). Sol. H_2O . Mp 138-140°.
N,N'-Diformyl:
 $C_8H_{10}N_2O_6$ 230.177
Prisms (EtOH). Mp 201-203°.
N²-Ac:
 $C_8H_{12}N_2O_5$ 216.193
Prisms (EtOH). Mp 208-209°.
Micheel, F. *et al.*, *Ber.*, 1937, **70**, 1862 (*synth*)
Gross, B. *et al.*, *Carbohydr. Res.*, 1974, **37**, 384 (*synth*, *N-Ac*)
El Sekily, M.A. *et al.*, *Carbohydr. Res.*, 1982, **108**, 315 (*synth*, *derivs*)

1,6-Diamino-1,6-dideoxyfructose D-416

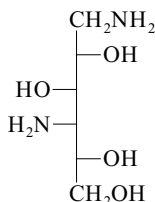


$C_6H_{14}N_2O_4$ 178.188

β-D-Furanose-form

2,3-O-Isopropylidene: 1,6-Diamino-1,6-dideoxy-2,3-O-isopropylidene-β-D-fructofuranose
 $C_9H_{18}N_2O_4$ 218.252
Syrup (as dihydrochloride). $[\alpha]_D^{20} +26$ (c, 1.02 in H_2O).
Paulsen, H. *et al.*, *Chem. Ber.*, 1967, **100**, 802 (*isopropylidene*)

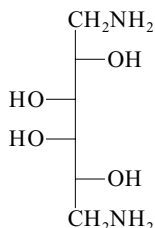
1,4-Diamino-1,4-dideoxygalactitol D-417



$C_6H_{16}N_2O_4$ 180.203

D-form [109958-73-8]
Cryst. (EtOH). Mp 192-194° (as dihydrochloride). $[\alpha]_D^{20} +3$ (H_2O).
IN,2,3,4N,5,6-Hexa-Ac: [109958-74-9]
 $C_{18}H_{28}N_2O_{10}$ 432.427
Cryst. (Et_2O). Mp 166-168°. $[\alpha]_D^{20} +17$ ($CHCl_3$).
Kuszmann, J. *et al.*, *Carbohydr. Res.*, 1986, **156**, 25 (*synth*)

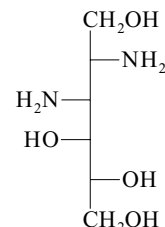
1,6-Diamino-1,6-dideoxygalactitol D-418



$C_6H_{16}N_2O_4$ 180.203
Meso-.

2,3:4,5-Di-O-benzylidene: [22527-35-1]
 $C_{20}H_{24}N_2O_4$ 356.421
Liq. Bp_{0.01} 250-280° (bath).
2,3:4,5-Di-O-isopropylidene: [22527-37-3]
 $C_{12}H_{24}N_2O_4$ 260.333
Solid. Mp 69-71°. Bp_{0.05} 96-98°.
[6613-80-5, 6613-81-6, 28260-04-0]
Belg. Pat., 1965, 65 149; *CA*, **64**, 11348e (*dibenzylidene*, *diisopropylidene*)
U.S. Pat., 1965, 3 404 136; *CA*, **70**, 20498s (*dibenzylidene*, *diisopropylidene*)

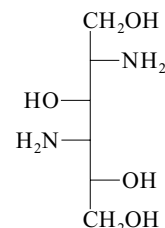
2,3-Diamino-2,3-dideoxygalactitol D-419



$C_6H_{16}N_2O_4$ 180.203

D-form
N,N'-Di-Ac: [27299-24-7]
 $C_{10}H_{20}N_2O_6$ 264.278
Cryst. (MeOH). Mp 193-194°. $[\alpha]_D^{20} -96$ (c, 1.0 in DMSO).
Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1970, **103**, 37; 995 (*di-Ac*)

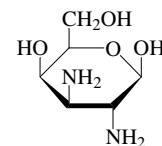
2,4-Diamino-2,4-dideoxygalactitol D-420



$C_6H_{16}N_2O_4$ 180.203

D-form
N,N'-Di-Ac: [38420-50-7]
 $C_{10}H_{20}N_2O_6$ 264.278
Cryst. (EtOH/MeOH). Mp 199-200°.
 $[\alpha]_D^{20} -15$ (c, 1.0 in MeOH/ H_2O 3:1).
Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1972, **105**, 2998 (*di-Ac*)

2,3-Diamino-2,3-dideoxygalactose D-421



β-D-Pyranose-form

$C_6H_{14}N_2O_4$ 178.188

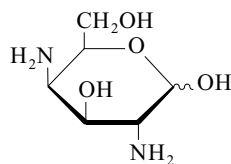
D-form
Hydrochloride (1:2): [28234-67-5]
Hygroscopic powder. $[\alpha]_D^{20} +45 \rightarrow +55$ (c, 1.0 in H_2O).

β-D-Pyranose-form
Me glycoside, N,N'-dibenzoyl: Methyl 2,3-dibenzamido-2,3-dideoxy-β-D-galactopyranoside
 $C_{21}H_{24}N_2O_6$ 400.43
Mp 275-280°. $[\alpha]_D^{20} +72$ (c, 0.5 in 1:1 $CHCl_3$ /MeOH).

Me glycoside, N,N'-dibenzoyl, 4,6-di-Ac:
Methyl 4,6-di-O-acetyl-2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside
 $C_{25}H_{28}N_2O_8$ 484.505
Mp 270°. $[\alpha]_D^{20} +56$ (c, 0.5 in $CHCl_3$).
Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1970, **103**, 37; 995 (*synth*)

2,4-Diamino-2,4-dideoxygalactose, 9CI

D-422



$C_6H_{14}N_2O_4$ 178.188

α -D-Pyranose-form [53372-90-0]

Hydrochloride (1:2): [38420-51-8]
Amorph. hygroscopic powder. $[\alpha]_D^{20} -8$ (c, 2.5 in MeOH). $[\alpha]_D^{20} +62$ (c, 1.0 in MeOH).

Penta-Ac:

$C_{16}H_{24}N_2O_9$ 388.374
Syrup. $[\alpha]_D^{20} +55$ (c, 3.0 in $CHCl_3$).

α -D-Pyranose-form

Benzyl glycoside: Benzyl 2,4-diamino-2,4-dideoxy- α -D-galactopyranoside
 $C_{13}H_{20}N_2O_4$ 268.312
 $[\alpha]_D^{20} +115$ (c, 1.0 in MeOH, as hydrochloride).

Benzyl glycoside, 2,4-di-N-Ac: Benzyl 2,4-diacetamido-2,4-dideoxy- α -D-galactopyranoside

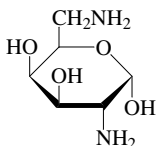
$C_{17}H_{24}N_2O_6$ 352.386
Mp 239-241°. $[\alpha]_D^{20} +200$ (c, 1.0 in MeOH).

Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1972, **105**, 2998 (*synth*)

Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 2016 (*synth*)

2,6-Diamino-2,6-dideoxygalactose, 8CI

D-423



α -D-Pyranose-form

$C_6H_{14}N_2O_4$ 178.188

α -D-Pyranose-form [37699-10-8]

Hydrochloride (1:2): Mp 175° dec. $[\alpha]_D^{23} +104 \rightarrow +94$ (c, 2.0 in H_2O).

N,N'-Di-Ac: 2,6-Diacetamido-2,6-dideoxy- α -D-galactopyranose

$C_{10}H_{18}N_2O_6$ 262.262
Cryst. (MeOH/ $CHCl_3$ /Et $_2$ O). Mp 192-193°. $[\alpha]_D^{25} +113 \rightarrow +95$ (c, 0.5 in H_2O).

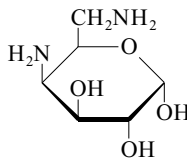
Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1963, **96**, 2019 (*synth*)

Meyer zu Reckendorf, W. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 270 (*synth*)

4,6-Diamino-4,6-dideoxygalactose

D-424

D-form



$C_6H_{14}N_2O_4$ 178.188

α -D-Pyranose-form

Me glycoside, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,6-diamino-4,6-dideoxy- α -D-galactopyranoside

[23792-17-8]
 $C_{11}H_{20}N_2O_6$ 276.289
Syrup.

Me glycoside, 4N,6N-di-Ac: Methyl 4,6-diacetamido-4,6-dideoxy- α -D-galactopyranoside

[22435-44-5]
 $C_{11}H_{20}N_2O_6$ 276.289
Cryst. (Me $_2$ CO/petrol). Mp 215-216° (212-213°). $[\alpha]_D^{20} +153$ (c, 0.5 in MeOH). $[\alpha]_D^{20} +151$ (c, 1.0 in H_2O).

Me glycoside, 2,3,4N,6N-tetra-Ac: Methyl 4,6-diacetamido-2,3-di-O-acetyl-4,6-dideoxy- α -D-galactopyranoside

[22435-43-4]
 $C_{15}H_{24}N_2O_8$ 360.363
Cryst. Mp 218-219°. $[\alpha]_D +123$ (c, 1.0 in H_2O).

Me glycoside, 2,3-dibenzyl, 4N,6N-di-Ac: Methyl 4,6-diacetamido-2,3-di-O-benzyl-4,6-dideoxy- α -D-galactopyranoside

[26532-01-4]
 $C_{25}H_{32}N_2O_6$ 456.538
Cryst. (EtOH/petrol). Mp 193-194.5°. $[\alpha]_D^{20} -23.6$ (c, 0.8 in $CHCl_3$).

Me glycoside, 2,3,4N,6N-tetrabenzoyl: Methyl 4,6-dibenzamido-2,3-di-O-benzoyl-4,6-dideoxy- α -D-galactopyranoside

[22435-45-6]
 $C_{35}H_{32}N_2O_8$ 608.646
Cryst. ($CHCl_3$ /petrol). Mp 284-286°. $[\alpha]_D +52$ (c, 0.35 in $CHCl_3$).

Hill, J. *et al.*, *Carbohydr. Res.*, 1968, **8**, 7, (α -D-Me pyr tetrabenzoyl)

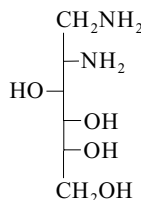
Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1969, **102**, 994 (α -D-Me pyr di-Ac derivs, pmr, conformn)

Paulsen, H. *et al.*, *Chem. Ber.*, 1969, **102**, 3833 (α -D-Me pyr di-Ac, α -D-Me pyr dibenzyl di-Ac)

1,2-Diamino-1,2-dideoxyglucitol

D-425

1,2-Diamino-1,2-dideoxysorbitol

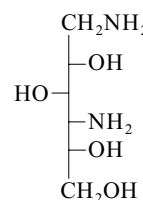


$C_6H_{16}N_2O_4$ 180.203

1,4-Diamino-1,4-dideoxyglucitol, 9CI

D-426

1,4-Diamino-1,4-dideoxysorbitol



$C_6H_{16}N_2O_4$ 180.203

D-form [61566-48-1]

Aglycone of the aminoglycoside sorbistin antibiotics produced by a *Pseudomonas* strain and of the LL-AM31 antibiotics produced by *Streptovercillium* spp.

Sulfate: Mp 261-265°. $[\alpha]_D^{28} -10.3$ (c, 0.38 in H_2O).

Di-N-Ac: 1,4-Diacetamido-1,4-dideoxy-D-glucitol

$C_{10}H_{20}N_2O_6$ 264.278
Cryst. (MeOH/Me $_2$ CO). Mp 154-156°.

Hexa-Ac: 1,4-Diacetamido-2,3,5,6-tetra-O-acetyl-1,4-dideoxy-D-glucitol

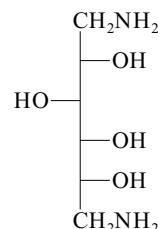
$C_{18}H_{28}N_2O_{10}$ 432.427
Cryst. ($CHCl_3$ /hexane). Mp 116-117°.

Konishi, M. *et al.*, *J. Antibiot.*, 1976, **29**, 1152 (*synth, struct, pmr, ms*)

Kirby, J.P. *et al.*, *J. Antibiot.*, 1977, **30**, 344 (*abs config, isol, glc, ms*)

1,6-Diamino-1,6-dideoxyglucitol

D-427



$C_6H_{16}N_2O_4$ 180.203

D-form [7194-83-4]

Patented for use in hyperacidity treatment.

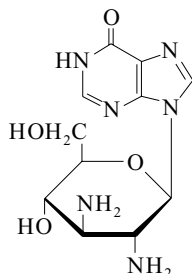
Hydrochloride (1:2): [104769-32-6]
Cryst. Mp 185°.

Picrate (1:2): [104769-33-7]

Yellow cryst. + 0.5 H_2O . Mp 201-202°.

Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 183 (*synth*)

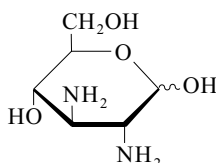
Eur. Pat., 1987, 275 998; *CA*, **109**, 204928n (*use*)

9-(2,3-Diamino-2,3-dideoxyglucopyranosyl)hypoxanthine**D-428** $C_{11}H_{16}N_6O_4$ 296.285 **β -D-form**

2,3-Di-N-Ac: [24660-02-4]

 $C_{15}H_{20}N_6O_6$ 380.36Mp 230° dec. $[\alpha]_D^{20}$ -39 (CHCl₃).

2,3-Di-N-Ac, 4,6-di-Ac: [24660-03-5]

 $C_{19}H_{24}N_6O_8$ 464.434Mp 195-199° dec. $[\alpha]_D^{20}$ -11 (CHCl₃).Lichtenthaler, F.W. et al., *Tet. Lett.*, 1969, 1213**2,3-Diamino-2,3-dideoxyglucose, 9CI****D-429** $C_6H_{14}N_2O_4$ 178.188 **α -D-Pyranose-form** [7687-95-8]Occurs in lipopolysaccharides of *Rhodopseudomonas viridis*. Constit. of lipid A prod. by 25 spp. of bacteria from 12 genera.

Hydrochloride (1:2): [7695-34-3]

Mp 196° dec. $[\alpha]_D^{20}$ +66.5 \rightarrow +50 (c, 1.0 in H₂O). $[\alpha]_D^{20}$ +112 \rightarrow +103.6 (H₂O).2,3-Di-N-Ac: 2,3-Diacetamido-2,3-dideoxy- α -D-glucopyranose

[7703-49-3]

 $C_{10}H_{18}N_2O_6$ 262.262

Cryst. (EtOH/EtOAc). Mp 249-250°.

 $[\alpha]_D^{20}$ -19 \rightarrow -46 (c, 1.0 in H₂O). $[\alpha]_D^{26}$ -50 \rightarrow -96 (c, 1 in H₂O).Benzyl glycoside, 2,3-di-N-Ac: Benzyl 2,3-diacetamido-2,3-dideoxy- α -D-glucopyranoside

[27539-64-6]

 $C_{17}H_{24}N_2O_6$ 352.386Cryst. (EtOH). Mp 267-268°. $[\alpha]_D^{20}$ +146.5 (c, 1.0 in DMSO).

Benzyl glycoside, 2,3-bis-N-(2,4-dinitrophenyl): [53910-46-6]

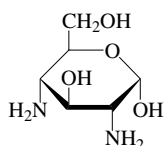
Cryst. (EtOAc/petrol). Mp 226-228°.

 $[\alpha]_D^{20}$ +655 (c, 1.0 in Me₂CO). **β -D-Pyranose-form**

Me glycoside, 2,3-bis-N-(2,4-dinitrophenyl): [53910-50-2]

Mp 145-148°. $[\alpha]_D^{20}$ +406 (c, 1.0 in Me₂CO).

Meyer zu Reckendorf, W. et al., *Chem. Ber.*, 1964, **97**, 1275 (synth. α -D-pyr di-N-Ac)
 Meyer zu Reckendorf, W. et al., *Methods Carbohydr. Chem.*, 1972, **6**, 266 (synth. α -D-benzyl pyr di-N-Ac, α -D-pyr di-N-Ac)
 Meyer zu Reckendorf, W. et al., *Chem. Ber.*, 1974, **107**, 2585 (α -D-benzyl pyr di-N-dinitrophenyl, β -D-Me pyr di-N-dinitrophenyl)
 Roppel, J. et al., *Carbohydr. Res.*, **40**, 31 (ms)
 Keilich, G. et al., *Carbohydr. Res.*, 1976, **51**, 129 (isol, cd)
 Moran, A.P. et al., *Carbohydr. Res.*, 1992, **231**, 309 (occur, bibl)
 Agrawal, P.K. et al., *J. Carbohydr. Chem.*, 1992, **11**, 945-950 (di-N-Ac, pmr, cmr)

2,4-Diamino-2,4-dideoxyglucose**D-430** α -D-Pyranose-form $C_6H_{14}N_2O_4$ 178.188 **β -form**

Hydrochloride (1:2): [38416-37-4]

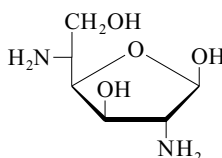
 $[\alpha]_D^{20}$ +42 (c, 1.0 in H₂O).

N,N'-Di-Ac: 2,4-Diacetamido-2,6-dideoxy-D-glucose

 $C_{10}H_{18}N_2O_6$ 262.262Mp 232°. $[\alpha]_D^{20}$ +88 \rightarrow +61 (c, 1.2 in H₂O).

2,4-Bis-N-(2,4-dinitrophenyl):

Mp 178-185°.

 α -D-Pyranose-formBenzyl glycoside: Benzyl 2,4-diamino-2,4-dideoxy- α -D-glucopyranoside $C_{13}H_{20}N_2O_4$ 268.312Mp 149-159° (as hydrochloride). $[\alpha]_D^{20}$ +100 (c, 1.0 in MeOH).2,4-Dinitrophenyl glycoside, 2,4-bis-N-(2,4-dinitrophenyl): Mp 170-177°. $[\alpha]_D^{20}$ +138 (c, 1.0 in 2:1 Me₂CO/MeOH).Meyer zu Reckendorf, W. et al., *Chem. Ber.*, 1972, **105**, 2998 (synth)Paulsen, H. et al., *Chem. Ber.*, 1976, **109**, 104 (synth)**2,5-Diamino-2,5-dideoxyglucose****D-431** $C_6H_{14}N_2O_4$ 178.188 **β -D-Furanose-form**Me glycoside, 2N-Ac: Methyl 2-acetamido-5-amino-2,5-dideoxy- β -D-glucopyranoside

[125305-13-7]

 $C_9H_{18}N_2O_5$ 234.252Cryst. (EtOH/CHCl₃). Mp 90-91°. $[\alpha]_D^{20}$ -52 (MeOH).Me glycoside, 3-benzyl, 2N-Ac: Methyl 2-acetamido-5-amino-3-O-benzyl-2,5-dideoxy- β -D-glucopyranoside

[125289-30-7]

 $C_{16}H_{24}N_2O_5$ 324.376Cryst. (CHCl₃). Mp 115-116°. $[\alpha]_D^{20}$ -92 (MeOH).

Me glycoside, 3-benzyl, 6-trityl, 2N-Ac:

Methyl 2-acetamido-5-amino-3-O-benzyl-2,5-dideoxy-6-O-trityl- β -D-glucopyranoside

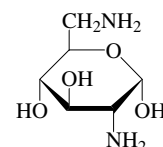
[125289-28-3]

 $C_{35}H_{38}N_2O_5$ 566.696Cryst. (CHCl₃/petrol). Mp 176°. $[\alpha]_D^{20}$ -79 (CHCl₃).Benzyl glycoside, 3-benzyl, 2N-Ac: Benzyl 2-acetamido-5-amino-3-O-benzyl-2,5-dideoxy- β -D-glucopyranoside

[125289-38-5]

 $C_{22}H_{28}N_2O_5$ 400.474Cryst. (CHCl₃). Mp 182°. $[\alpha]_D^{20}$ -92 (MeOH).Benzyl glycoside, 3-benzyl, 6-trityl, 2N-Ac: Benzyl 2-acetamido-5-amino-3-O-benzyl-2,5-dideoxy-6-O-trityl- β -D-glucopyranoside

[125289-36-3]

 $C_{41}H_{42}N_2O_5$ 642.793Cryst. (toluene). Mp 158°. $[\alpha]_D^{20}$ -66 (MeOH).Kappes, E. et al., *J. Carbohydr. Chem.*, 1989, **8**, 371 (β -D-Me fur 2N-Ac derivs, β -D-benzyl fur 2N-Ac derivs)**2,6-Diamino-2,6-dideoxyglucose, 9CI****D-432** α -D-Pyranose-form $C_6H_{14}N_2O_4$ 178.188 **β -form****Neosamine C**A constit. of Neomycin C, N-24, Kanamycin B, K-4, Ribostamycin, R-143, Butirosin A, B-138, Hybrimycins A and B, and Paromomycin, P-13. Pt complex exhibits anticancer activity. $[\alpha]_D$ +67.1 (H₂O).

2,6-Bis-N-(2,4-dinitrophenyl): Mp 100°.

 $[\alpha]_D^{20}$ +8 (c, 1.0 in 1:1 CHCl₃/MeOH). **α -D-Pyranose-form** [84056-78-0]Cryst. EtOH (as dihydrochloride). Mp 150° dec. (hydrochloride). $[\alpha]_D$ +20 \rightarrow +68 (c, 1.0 in H₂O). CAS No. refers to hydrochloride.Me glycoside: Methyl 2,6-diamino-2,6-dideoxy- α -D-glucopyranoside

[41110-60-5]

 $C_7H_{16}N_2O_4$ 192.214Hygroscopic cryst. (EtOH/MeOH) (as dihydrochloride). Mp 198-201° dec. (dihydrochloride). $[\alpha]_D^{21}$ +125 (c, 1.28 in H₂O). CAS No. refers to dihydrochloride.

Benzyl glycoside: Benzyl 2,6-diamino-2,6-dideoxy- α -D-glucopyranoside
[58902-24-2]
C₁₃H₂₀N₂O₄ 268.312
Syrup. [α]_D +130 (c, 1.0 in CHCl₃).

Benzyl glycoside, hydrochloride (1:2):
[4781-36-6]
Hygroscopic cryst. + $\frac{1}{2}$ H₂O (EtOH/Et₂O). Mp 223-230° dec. [α]_D +117 (c, 1.0 in MeOH).

Benzyl glycoside, 2N,6N-di-Ac: Benzyl 2,6-diacetamido-2,6-dideoxy- α -D-glucopyranoside
[58902-22-0]
C₁₇H₂₄N₂O₆ 352.386
Cryst. (CHCl₃/MeOH/Et₂O). Mp 232-235°. [α]_D +150 (c, 1.0 in CHCl₃/MeOH 1:1).

Benzyl glycoside, 2N,3,4,6N-tetra-Ac: Benzyl 2,6-diacetamido-3,4-di-O-acetyl-2,6-dideoxy- α -D-glucopyranoside
[58902-23-1]
C₂₁H₂₈N₂O₈ 436.461
Cryst. (CHCl₃/MeOH/Et₂O). Mp 95-97°. [α]_D +122 (c, 1.0 in MeOH).

Benzyl glycoside, 2N,6N-bis(trifluoroacetyl): [58902-26-4]
C₁₇H₁₈F₆N₂O₆ 460.329
Cryst. (EtOH). Mp 253-254°. [α]_D +166 (c, 1.0 in MeOH).

Benzyl glycoside, 2N,3,4,6N-tetrakis(trifluoroacetyl): [58902-25-3]
C₂₁H₁₆F₁₂N₂O₈ 652.347
Cryst. (CHCl₃/Et₂O). Mp 194-196°. [α]_D +125 (c, 1.0 in MeOH).

Benzyl glycoside, 2N,6N-bis(trifluoroacetyl), 3,4-di-Ac: [58902-27-5]
C₂₁H₂₂F₆N₂O₈ 544.404
Cryst. (EtOH). Mp 224-225°. [α]_D +100 (c, 1.0 in CHCl₃).

2,4-Dinitrophenyl glycoside:
Amorph. Mp 140°. [α]_D +106 (c, 1.0 in CHCl₃/MeOH).

 β -D-Pyranose-form

Mp 150° dec. (as dihydrochloride). [α]_D²³ +68.9 (c, 2.6 in H₂O).
[10536-74-0]

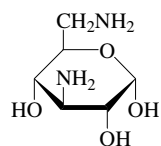
Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1963, **96**, 2017 (β -D-pyr)

Machinami, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1973, **46**, 1013 (α -D-Me pyr)

Meyer zu Reckendorf, W. *et al.*, *Carbohydr. Res.*, 1975, **45**, 307 (α -D-pyr, α -D-benzyl pyr, α -D-benzyl pyr derivs, α -D-dinitrophenyl pyr)
Eur. Pat., 1986, 186 085, (*American Cyanamid*); *CA*, **106**, 50470f (use)

3,6-Diamino-3,6-dideoxyglucose

D-433

 α -D-Pyranose-formC₆H₁₄N₂O₄ 178.188**D-Pyranose-form** [22169-80-8]

Cryst. (EtOH aq.) (as dihydrochloride). Mp 160° (dihydrochloride). [α]_D²⁰ +16 → +46 (c, 1.0 in H₂O). CAS no. refers to dihydrochloride.

 α -D-Pyranose-form

1,2,3N,4,6N-Penta-Ac: 3,6-Diacetamido-1,2,4-tri-O-acetyl-3,6-dideoxy- α -D-glucopyranoside
[22169-82-0]

C₁₆H₂₄N₂O₉ 388.374

Cryst. (2-propanol). Mp 260-261°. [α]_D²⁰ +75 (c, 1.0 in CHCl₃).

Me glycoside: Methyl 3,6-diamino-3,6-dideoxy- α -D-glucopyranoside
[14133-33-6]

C₇H₁₆N₂O₄ 192.214

Cryst. (EtOH). Mp 148-150°. [α]_D²³ +128 (H₂O).

Me glycoside; hydrochloride (1:2):

[14257-75-1]

Cryst. (EtOAc/MeOH). Mp 244-247° dec. [α]_D²⁰ +108 (H₂O).

Me glycoside, 2,3N,4,6N-tetra-Ac: Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- α -D-glucopyranoside
[14133-44-9]

C₁₅H₂₄N₂O₈ 360.363

Cryst. (EtOH/Et₂O). Mp 249-250°. [α]_D²⁰ +81.5 (H₂O). [α]_D²⁰ +64.8 (CHCl₃).

 β -D-Pyranose-form

1,2,3N,4,6N-Penta-Ac: 3,6-Diacetamido-1,2,4-tri-O-acetyl-3,6-dideoxy- β -D-glucopyranoside
[22169-81-9]

C₁₆H₂₄N₂O₉ 388.374

Cryst. (EtOH). Mp 281-282° dec. [α]_D²² -29.8 (H₂O).

Me glycoside: Methyl 3,6-diamino-3,6-dideoxy- β -D-glucopyranoside
[25531-82-2]

C₇H₁₆N₂O₄ 192.214

Cryst. Mp 178-183° dec. [α]_D²¹ -28 (H₂O).

Me glycoside; hydrochloride (1:2): [25532-15-4]

Cryst. Mp 350°. [α]_D²⁰ -20.2 (H₂O).

Me glycoside, 2,3N,4,6N-tetra-Ac: Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- β -D-glucopyranoside
[25531-83-3]

C₁₅H₂₄N₂O₈ 360.363

Cryst. (EtOH/petrol). Mp 242-243°. [α]_D²³ -44.5 (H₂O). [α]_D²³ -57 (CHCl₃).

 α -D-Furanose-form

1,2-O-Isopropylidene: 3,6-Diamino-3,6-dideoxy-1,2-O-isopropylidene- α -D-glucufuranose
[25531-81-1]

C₉H₁₈N₂O₄ 218.252

Cryst. (EtOAc/Et₂O). Mp 90-92°. [α]_D²⁰ -15 (H₂O).

1,2-O-Isopropylidene; hydrochloride (1:2): [25572-87-6]

Cryst. (MeOH/Et₂O). Mp 228-229°.

1,2-O-Isopropylidene, 3N,6N-di-Ac: 3,6-Diacetamido-3,6-dideoxy-1,2-O-isopropylidene- α -D-glucufuranose
[22169-79-5]

C₁₃H₂₂N₂O₆ 302.327

Cryst. Mp 116-118°. [α]_D²⁰ +70 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, 3N,6N-dibenzoyl: 3,6-Dibenzamido-3,6-dideoxy-1,2-O-isopropylidene- α -D-glucufuranose
[22169-78-4]

C₂₃H₂₆N₂O₆ 426.468

Cryst. (Et₂O/EtOH). Mp 231-232°. [α]_D²⁰ -15 (c, 1.0 in DMSO).

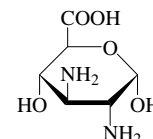
Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1968, **101**, 3802 (α -D-pyr penta-Ac, β -D-pyr penta-Ac, α -D-fur isopropylidene derivs)

Kovar, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 2619 (α -D-pyr penta-Ac, β -D-pyr penta-Ac)

Inouye, S. *et al.*, *Chem. Pharm. Bull.*, 1972, **20**, 2320 (α -D-Me pyr derivs, ms)

2,3-Diamino-2,3-dideoxyglucuronic acid

D-434

 α -D-Pyranose-formC₆H₁₂N₂O₅ 192.171**D-form**

2N,3N-Di-Ac: 2,3-Diacetamido-2,3-dideoxy-D-glucuronic acid
[79319-92-9]

C₁₀H₁₆N₂O₇ 276.246

Constit. of the O-specific polysaccharide of *Pseudomonas aeruginosa* strain 170014 (serotype O6). Also from *Haloferax denitrificans* and *Vibrio cholerae* polysaccharides.

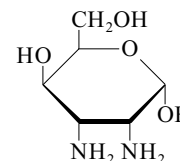
Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1981, **93**, C12

Parolis, L.A.S. *et al.*, *Carbohydr. Res.*, 1999, **319**, 133-140 (occur)

Kocharova, N.A. *et al.*, *Carbohydr. Res.*, 2001, **330**, 83-92 (occur)

2,3-Diamino-2,3-dideoxygulose

D-435

C₆H₁₄N₂O₄ 178.188 **α -D-Pyranose-form**

Me glycoside, N,N'-di-Ac: Methyl 2,3-diacetamido-2,3-dideoxy- α -D-gulopyranoside
[25531-81-1]

C₁₁H₂₀N₂O₆ 276.289

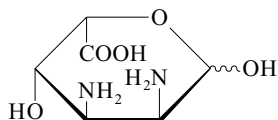
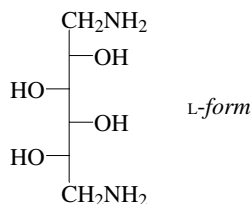
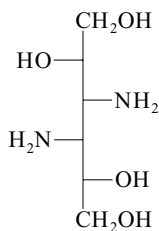
Mp 165-165.5°. [α]_D +30 (c, 0.5 in H₂O).

Me glycoside, 4,6-benzylidene, N,N'-di-Ac: Methyl 2,3-diacetamido-4,6-O-benzylidene-2,3-dideoxy- α -D-gulopyranoside
[25531-81-1]

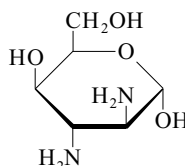
C₁₈H₂₄N₂O₆ 364.397

Mp 231-235°. [α]_D +72 (c, 0.5 in CHCl₃).

Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1983, **122**, 181 (synth, pmr, cmr)

2,3-Diamino-2,3-dideoxyguluronic acid**D-436** $C_6H_{12}N_2O_5$ 192.171**L-form**2,3-N-Di-Ac: 2,3-Diacetamido-2,3-dideoxy-L-guluronic acid
[85357-14-8] $C_{10}H_{16}N_2O_7$ 276.246Constit. of the O-specific polysaccharide of *Pseudomonas aeruginosa* and in *Vibrio cholerae* polysaccharides. Not isol. in the free state.Knirel, Yu.A. *et al.*, *Carbohydr. Res.*, 1983, **112**, C4Knirel, Yu.A. *et al.*, *Eur. J. Biochem.*, 1983, **134**, 289 (isol, cmr, struct)Kocharova, N.A. *et al.*, *Carbohydr. Res.*, 2001, **330**, 83-92 (occur)**1,6-Diamino-1,6-dideoxyiditol****D-437** $C_6H_{16}N_2O_4$ 180.203**L-form**2,3,4,5-Tetra-Me: 1,6-Diamino-1,6-dideoxy-2,3,4,5-tetra-O-methyl-L-iditol
[439937-92-5] $C_{10}H_{24}N_2O_4$ 236.311Syrup. $[\alpha]_D$ -25 (c, 1 in $CHCl_3$).2,3,4,5-Tetra-Me, dihydrochloride:
[440094-52-0]Hygroscopic syrup. $[\alpha]_D$ -9 (c, 1 in Py).Mancera, M. *et al.*, *Carbohydr. Res.*, 2002, **337**, 607-611 (2,3,4,5-tetra-Me)**3,4-Diamino-3,4-dideoxyiditol****D-438** $C_6H_{16}N_2O_4$ 180.203**D-form**[130970-23-9]
Cryst. (EtOH aq.). Mp 160-161°. $[\alpha]_D^{25}$ -104 (c, 1.0 in H_2O).

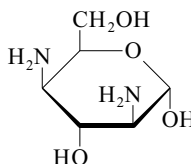
1,2:5,6-Di-O-isopropylidene, 3N,4N-dibenzoyl: [29709-61-3]

 $C_{26}H_{32}N_2O_6$ 468.549
Cryst. (EtOAc/petrol). Mp 182-183°. $[\alpha]_D$ +129 (c, 0.3 in $CHCl_3$).Barford, A.D. *et al.*, *Carbohydr. Res.*, 1970, **14**, 231 (diisopropylidene dibenzoyl)
Canadian Pat., 1990, 1 265 811; CA, **114**, 94142v (synth)**2,3-Diamino-2,3-dideoxyidose****D-439** $C_6H_{14}N_2O_4$ 178.188**α-D-Pyranose-form**

Me glycoside, 2N,3N-di-Ac: [88261-56-7]

 $C_{11}H_{20}N_2O_6$ 276.289Cryst. (EtOH). Mp 220-221°. $[\alpha]_D^{20}$ +74 (c, 1 in H_2O).

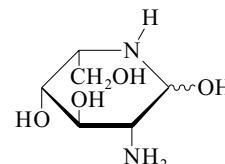
Me glycoside, 4,6-O-benzylidene, 2N,3N-di-Ac: [52885-53-7]

 $C_{18}H_{24}N_2O_6$ 364.397Cryst. Mp 304-305°. $[\alpha]_D$ +39 (c, 0.7 in $CHCl_3$).Guthrie, R.D. *et al.*, *J.C.S. Perkin I*, 1974, 650 (α-Me pyr benzylidene)Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1983, **122**, 181 (α-Me pyr, di-Ac, cmr)**2,4-Diamino-2,4-dideoxyidose****D-440** $C_6H_{14}N_2O_4$ 178.188**α-D-Pyranose-form**Me glycoside: Methyl 2,4-diamino-2,4-dideoxy-α-D-idopyranoside
[58645-30-0] $C_7H_{16}N_2O_4$ 192.214Syrup. $[\alpha]_D^{20}$ +74 (c, 5.4 in H_2O).Me glycoside, 2N,4N-di-Ac: Methyl 2,4-diacetamido-2,4-dideoxy-α-D-idopyranoside
[29788-86-1] $C_{11}H_{20}N_2O_6$ 276.289Cryst. (EtOH). Mp 242-244°. $[\alpha]_D^{22}$ +61 (c, 0.2 in H_2O).Me glycoside, 2N,3,4N,6-tetra-Ac: Methyl 2,4-diacetamido-3,6-di-O-acetyl-2,4-dideoxy-α-D-idopyranoside
[29788-85-0] $C_{15}H_{24}N_2O_8$ 360.363Cryst. (EtOH). Mp 245-247°. $[\alpha]_D^{22}$ +80 (c, 1 in H_2O).Me glycoside, 2N,3,4N,4N,6-penta-Ac: Methyl 2-acetamido-3,6-di-O-acetyl-4-(diacetylamino)-2,4-dideoxy-α-D-idopyranoside
[58645-26-4] $C_{17}H_{26}N_2O_9$ 402.4
Syrup. $[\alpha]_D^{20}$ +24 (c, 2 in MeOH).Me glycoside, 3,6-dibenzoyl, 2N,4N-di-Ac: Methyl 2,4-diacetamido-3,6-di-O-benzoyl-2,4-dideoxy-α-D-idopyranoside
[58645-24-2] $C_{25}H_{28}N_2O_8$ 484.505Cryst. (EtOH). Mp 263-265°. $[\alpha]_D^{20}$ +52 (c, 2 in $CHCl_3$).

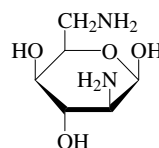
Me glycoside, 2N,3,4N,6-tetrabenzoyl, 2N,4N-di-Ac:

 $C_{39}H_{36}N_2O_{10}$ 692.721

Cryst.

Me glycoside, 3,6-di-Me, 2N,4N-di-Ac: Methyl 2,4-diacetamido-2,4-dideoxy-3,6-di-O-methyl-α-D-idopyranoside
[58645-32-2] $C_{13}H_{24}N_2O_6$ 304.342Cryst. (EtOH). Mp 248-250°. $[\alpha]_D^{20}$ +91 (c, 4 in MeOH).Suami, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1970, **43**, 2948 (Me gly derivs)Paulsen, H. *et al.*, *Carbohydr. Res.*, 1975, **45**, 205 (Me gly derivs, pmr, conformn)Luger, P. *et al.*, *Acta Cryst. B*, 1978, **34**, 1254 (tetrabenzoyl, cryst struct)**2,5-Diamino-2,5-dideoxyidose****D-441** $C_6H_{14}N_2O_4$ 178.188**α-D-Pyranose-form**

2-N-Ac: 2-Acetamido-5-amino-2,5-dideoxy-L-idopyranose

 $C_8H_{16}N_2O_5$ 220.225Cryst. (Me₂CO aq.) (as hydrogen sulfite). Mp 138-142° dec. (hydrogen sulfite). $[\alpha]_D^{20}$ +27 (c, 0.3 in MeOH).Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1980, **81**, 249**2,6-Diamino-2,6-dideoxyidose****D-442****β-D-Pyranose-form** $C_6H_{14}N_2O_4$ 178.188**D-form**

Hydrochloride: [51250-07-8]

Syrup.

β-D-Pyranose-formMe glycoside, 2N-Ac: Methyl 2-acetamido-6-amino-2,6-dideoxy-β-D-idopyranoside
[59150-47-9] $C_9H_{18}N_2O_5$ 234.252Cryst. (EtOAc/petrol). Mp 149-153°. $[\alpha]_D^{20}$ -108 (c, 1.0 in H_2O).

Me glycoside, 2N,3,4-tri-Ac: Methyl 6-amino-2-acetamido-3,4-di-O-acetyl-β-D-idopyranoside
[59150-46-8]
 $C_{13}H_{22}N_2O_7$ 318.326
Cryst. (EtOAc/petrol). Mp 140-144°. $[\alpha]_D^{20}$ -37 (c, 1.0 in $CHCl_3$).

L-form Neosamine B. Paromose

[527-10-6]
A constit. of Neomycin B, Paromomycin, Hybrimycins A and B, Lividomycins A and B, Zygomycin and Framycetin.

Hydrochloride (1:2): [49810-58-4]
Mp 135-150° dec. $[\alpha]_D^{24}$ +17.8 (c, 1.18 in H_2O).

2,6-Di-N-Ac: 2,6-Diacetamido-2,6-dideoxy-L-idose

$C_{10}H_{18}N_2O_6$ 262.262
 $[\alpha]_D^{25}$ +7 (c, 1.9 in H_2O).

p-Nitrophenylhydrazone, 2,6-di-N-Ac:

Yellow needles. Mp 211-215° Mp 229-231°. $[\alpha]_D^{25}$ +5.9 (c, 0.4 in MeOH).

Dibenzyl dithioacetal:

$C_{20}H_{28}N_2O_3S_2$ 408.585
Mp 225-230° (as hydrochloride). $[\alpha]_D^{28}$ -126 (c, 2.5 in MeOH).

Dibenzyl dithioacetal, 2,6-di-N-Ac:

$C_{24}H_{32}N_2O_5S_2$ 492.659
Mp 82-84°. $[\alpha]_D^{23}$ -12.5 (c, 1.0 in MeOH).

α-L-Pyranose-form

Me glycoside: Methyl 2,6-diamino-2,6-dideoxy-α-L-idopyranoside

$C_7H_{16}N_2O_4$ 192.214
Hygroscopic solid (as carbamate). $[\alpha]_D^{25}$ -89 (c, 1.7 in H_2O).

Meyer zu Reckendorf, W. *et al.*, *Angew. Chem., Int. Ed.*, 1963, **2**, 398 (*synth, struct, L-form*)
Haskell, T.H. *et al.*, *J.O.C.*, 1963, **28**, 2599 (*config*)

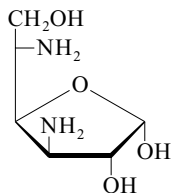
Perry, M.B. *et al.*, *Can. J. Biochem.*, 1973, **51**, 1335 (*D-form, chromatogr*)

Ogawa, S. *et al.*, *J.O.C.*, 1974, **39**, 812 (*synth, L-form*)

Jaroslavi, S. *et al.*, *Coll. Czech. Chem. Comm.*, 1975, **40**, 3698 (*β-D-form, β-Me pyr deriv, pmr*)

Lodhi, S. *et al.*, *Biochim. Biophys. Acta*, 1976, **426**, 781 (*Me α-L-pyr*)

Usui, T. *et al.*, *Carbohydr. Res.*, 1984, **130**, 165 (*Me α-L-pyr*)

3,5-Diamino-3,5-dideoxyidose D-443

$C_6H_{14}N_2O_4$ 178.188

β-L-Furanose-form

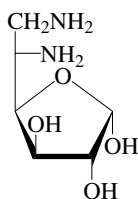
6-Trityl, 1,2-O-isopropylidene, 3N,5N-di-Ac: 3,5-Diacetamido-3,5-dideoxy-1,2-O-isopropylidene-6-O-trityl-β-L-idofuranose

[26532-03-6]
 $C_{32}H_{36}N_2O_6$ 544.646

Cryst. (EtOH/Et₂O). Mp 238-239°.

$[\alpha]_D^{20}$ -15 (c, 1.4 in $CHCl_3$).

Paulsen, H. *et al.*, *Chem. Ber.*, 1969, **102**, 3833 (*isopropylidene deriv*)

5,6-Diamino-5,6-dideoxyidose D-444

β-L-Furanose-form

$C_6H_{14}N_2O_4$ 178.188

L-Furanose-form

5N,6N-Di-Ac: 5,6-Diacetamido-5,6-dideoxy-L-idofuranose

[14685-96-2]

$C_{10}H_{18}N_2O_6$ 262.262

Cryst. Mp 170-174°. $[\alpha]_D$ +11.6 (H_2O).

β-L-Furanose-form

1,2-O-Cyclohexylidene, 5N-Ac: 6-Amino-5-acetamido-1,2-O-cyclohexylidene-5,6-dideoxy-β-L-idofuranose

$C_{14}H_{24}N_2O_5$ 300.354

Cryst. (as hydrochloride). Mp 194-199° (hydrochloride). $[\alpha]_D$ -41.2 (MeOH).

1,2-O-Cyclohexylidene, 5N,6N-Di-Ac: 5,6-Diacetamido-1,2-O-cyclohexylidene-5,6-dideoxy-β-L-idofuranose

$C_{16}H_{26}N_2O_6$ 342.391

Cryst. + 2H₂O. Mp 110-114°. $[\alpha]_D$ -11.6 (MeOH).

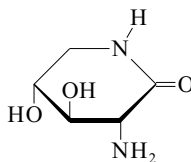
1,2-Isopropylidene, 5N-benzyl: [26277-20-3]

$C_{16}H_{24}N_2O_4$ 308.377

Syrup.

Paulsen, H. *et al.*, *Annalen*, 1963, **665**, 166, (*di-Ac, cyclohexylidene derivs*)

Paulsen, H. *et al.*, *Chem. Ber.*, 1969, **102**, 3844 (*isopropylidene benzyl*)

2,5-Diamino-2,5-dideoxy-xy-lono-1,5-lactam D-445

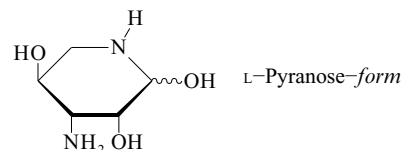
$C_5H_{10}N_2O_3$ 146.146

D-form [135030-05-6]

Cryst. (MeOH/EtOAc). Mp 169-171°.

$[\alpha]_D^{20}$ +15 (c, 0.4 in H_2O).

Bols, M. *et al.*, *Acta Chem. Scand.*, 1991, **45**, 280 (*synth, pmr, cmr*)

3,5-Diamino-3,5-dideoxyxylose D-446

$C_5H_{12}N_2O_3$ 148.161

L-Pyranose-form

1,2,3N,4,5N-Penta-Ac: 3,5-Diacetamido-1,2,4-tri-O-acetyl-3,5-dideoxy-L-lyxopyranose

[32778-88-4]

$C_{15}H_{22}N_2O_8$ 358.347

Cryst. (MeOH/Et₂O). Mp 205-206°.

$[\alpha]_D$ +57 (c, 1.0 in $CHCl_3$).

β-L-Furanose-form

1,2-O-Isopropylidene, 3N,5N-di-Ac: 3,5-Diacetamido-3,5-dideoxy-1,2-O-isopropylidene-β-L-lyxofuranose

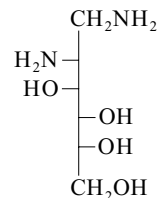
[32778-87-3]

$C_{12}H_{20}N_2O_5$ 272.3

Cryst. (Me₂CO/Et₂O). Mp 175-177°.

$[\alpha]_D$ -62 (c, 1.0 in MeOH).

Brimacombe, J.S. *et al.*, *J.C.S.(C)*, 1971, 1634 (*L-pyr penta-Ac, β-L-fur di-N-Ac*)

1,2-Diamino-1,2-dideoxymannitol D-447

$C_6H_{16}N_2O_4$ 180.203

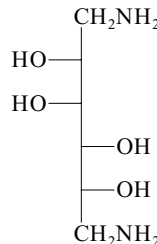
D-form

Hydrochloride (1:2): Mp 184°. $[\alpha]_D^{21}$ -5 (c, 4.8 in H_2O).

1,2-Di-N-salicylidene: Mp 220-221°. $[\alpha]_D^{20}$ +125 (c, 2.0 in Py).

Henseke, G. *et al.*, *Chem. Ber.*, 1964, **97**, 733 (*synth*)

Wolfrom, M.L. *et al.*, *J.O.C.*, 1965, **30**, 841 (*synth*)

1,6-Diamino-1,6-dideoxymannitol D-448

$C_6H_{16}N_2O_4$ 180.203

D-form [41111-65-3]Syrup. Bp₂₂ 78-82°. n_D^{20} 1.4572.*Hydrochloride* (1:2): [15543-77-8]Cryst. Mp 238-241° (220°) dec. $[\alpha]_D^{25} +61$ (c, 0.24 in H₂O).*Picrate* (1:2): [104769-34-8]Yellow cryst. + H₂O (H₂O). Mp 199-200°.*2,3,4,5-Tetra-Me: 1,6-Diamino-1,6-dideoxy-2,3,4,5-tetra-O-methyl-D-mannitol*

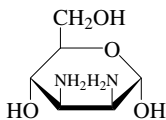
[439937-88-9]

C₁₀H₂₄N₂O₄ 236.311Oil. $[\alpha]_D^{25} +20$ (c, 1 in CHCl₃).*2,3,4,5-Tetra-Me, dihydrochloride:*

[440094-51-9]

Amorph. solid. $[\alpha]_D -13$ (c, 1 in Py).*2,4:3,5-Di-O-methylene:* [35827-60-2]C₈H₁₆N₂O₄ 204.225

Solid (as hydrochloride). CAS no. refers to hydrochloride.

1N,6N-Bis(2-chloroethyl): See Mannomustine, M-35Haworth, W.N. *et al.*, *J.C.S.*, 1944, 155 (*synth*)
Samoilova, O.I. *et al.*, *Zh. Obshch. Khim.*, 1973, 43, 365; *J. Gen. Chem. USSR (Engl. Transl.)*, 1973, 43, 363 (*dimethylene*)Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1986, 5, 183 (*synth*)Mancera, M. *et al.*, *Carbohydr. Res.*, 2002, 337, 607-611 (*2,3,4,5-tetra-Me*)**2,3-Diamino-2,3-dideoxymannose** **D-449** α -D-Pyranose-formC₆H₁₄N₂O₄ 178.188

Pt complexes exhibit antitumour activity.

D-Pyranose-form*Hydrochloride:* [21871-07-8]Cryst. (EtOH/EtOAc). $[\alpha]_D +1$ (2 min.)
→ -3 (1h) (c, 0.6 in H₂O). **α -D-Pyranose-form***Me glycoside, 2N,3N-di-Ac: Methyl 2,3-diacetamido-2,3-dideoxy- α -D-mannopyranoside*

[53840-71-4]

C₁₁H₂₀N₂O₆ 276.289Cryst. Mp 248-250°. $[\alpha]_D +4.8$ (c, 0.4 in H₂O).*Me glycoside, 2N,3N,4,6-tetra-Ac: Methyl 2,3-diacetamido-4,6-di-O-acetyl-2,3-dideoxy- α -D-mannopyranoside*

[6386-22-7]

C₁₅H₂₄N₂O₈ 360.363Cryst. (C₆H₆/petrol). Mp 200-202°. $[\alpha]_D +89.2$ (CHCl₃).*Me glycoside, 4,6-O-benzylidene, 2N,3N-di-Ac: Methyl 2,3-diacetamido-4,6-O-benzylidene-2,3-dideoxy- α -D-mannopyranoside*

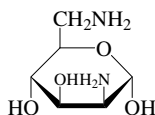
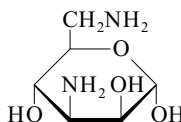
[3150-18-3]

C₁₈H₂₄N₂O₆ 364.397Cryst. Mp 310-311°. $[\alpha]_D -36.2$ (DMF). **β -D-Pyranose-form***Me glycoside: Methyl 2,3-diamino-2,3-dideoxy- β -D-mannopyranoside*

[21871-05-6]

C₇H₁₆N₂O₄ 192.214Cryst. + 0.66 2-propanol (MeOH/2-propanol) (as dihydrochloride). Mp 180° dec. (browns) (dihydrochloride). $[\alpha]_D -46.7$ (c, 1 in H₂O). CAS no. refers to dihydrochloride.*Me glycoside, 2N,3N-di-Ac: Methyl 2,3-diacetamido-2,3-dideoxy- β -D-mannopyranoside*

[21871-06-7]

C₁₁H₂₀N₂O₆ 276.289Cryst. Mp 116-135°. $[\alpha]_D -108$ (c, 0.6 in H₂O).Guthrie, R.D. *et al.*, *Chem. Ind. (London)*, 1962, 1473 (*α -Me pyr benzylidene di-Ac*)Baer, H.H. *et al.*, *J.O.C.*, 1969, 34, 3848 (*synth, β -Me pyr derivs, ir*)Baer, H.H. *et al.*, *Can. J. Chem.*, 1974, 52, 2257 (*α -Me pyr acetates, ir*)Tsubomura, T. *et al.*, *Chem. Comm.*, 1986, 459 (*Pt complexes, pharmacol*)**2,6-Diamino-2,6-dideoxymannose, 8Cl** **D-450** α -D-Pyranose-formC₆H₁₄N₂O₄ 178.188 **α -D-Pyranose-form***N,N'-Di-Ac: 2,6-Diacetamido-2,6-dideoxy- α -D-mannopyranose*C₁₀H₁₈N₂O₆ 262.262Mp 211-212°. $[\alpha]_D^{26} +47 \rightarrow +33$ (c, 1.0 in H₂O). **β -D-Pyranose-form***Hydrochloride* (1:2): Mp 155° dec. $[\alpha]_D^{26} -8 \rightarrow -1$ (c, 1.0 in H₂O).Meyer zu Reckendorf, W. *et al.*, *Chem. Ber.*, 1965, 98, 93 (*synth*)Wolfrom, M.L. *et al.*, *Chem. Comm.*, 1965, 143 (*synth*)Meyer zu Reckendorf, W. *et al.*, *Methods Carbohydr. Chem.*, 1972, 6, 274 (*synth, struct*)**3,6-Diamino-3,6-dideoxymannose** **D-451**C₆H₁₄N₂O₄ 178.188 **α -D-Pyranose-form***Me glycoside: Methyl 3,6-diamino-3,6-dideoxy- α -D-mannopyranoside*

[14133-34-7]

C₇H₁₆N₂O₄ 192.214

Syrup.

Me glycoside, hydrochloride (1:2):

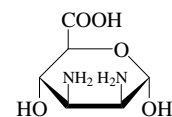
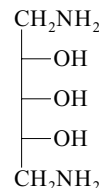
[14257-76-2]

Amorph. solid (Me₂CO/EtOH). $[\alpha]_D^{22} +43$ (c, 1.07 in H₂O).*Me glycoside, 3N,6N-di-Ac: Methyl 3,6-diacetamido-3,6-dideoxy- α -D-mannopyranoside*

[14133-48-3]

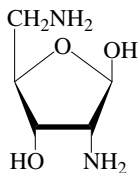
C₁₁H₂₀N₂O₆ 276.289Cryst. (EtOH). Mp 211° dec. $[\alpha]_D^{22} +46$ (c, 0.91 in H₂O).*Me glycoside, 2,3N,4,6N-tetra-Ac: Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- α -D-mannopyranoside*

[14133-49-4]

C₁₅H₂₄N₂O₈ 360.363Cryst. (EtOAc). Mp 189-190°. $[\alpha]_D^{22} 0$ (c, 0.91 in CHCl₃).Shigeharu, I. *et al.*, *Chem. Pharm. Bull.*, 1966, 14, 902; 1210 (*α -D-Me pyr, α -D-Me pyr derivs*)**2,3-Diamino-2,3-dideoxymannuronic acid** **D-452** α -D-Pyranose-formC₆H₁₂N₂O₅ 192.171**D-form***N,N'-Di-Ac: 2,3-Diacetamido-2,3-dideoxy-D-mannuronic acid*C₁₀H₁₆N₂O₇ 276.246Aminosugar present in *Pseudomonas aeruginosa* lipopolysaccharide and *Vibrio cholerae* polysaccharide. Characterised as di- and trisaccharide residues.Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1982, 104, C4Kocharova, N.A. *et al.*, *Carbohydr. Res.*, 2001, 330, 83-92 (*occur*)**1,5-Diamino-1,5-dideoxyribose** **D-453**C₅H₁₄N₂O₃ 150.177*meso* -.*Hydrochloride* (1:2): [104769-36-0]

Hygroscopic solid.

Picrate: [104769-80-4]Cryst. (H₂O). Mp 205-208°.Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1986, 5, 183 (*synth*)

2,5-Diamino-2,5-dideoxyribose**D-454** β -D-Furanose-form $C_5H_{12}N_2O_3$ 148.161 **β -D-Furanose-form**

2N,5N-Di-Ac: 2,5-Diacetamido-2,5-dideoxy-D-ribofuranose
[86258-84-6]
 $C_9H_{16}N_2O_5$ 232.236
Needles. Mp 151-153°. $[\alpha]_D^{20}$ -16 (c, 0.5 in MeOH).

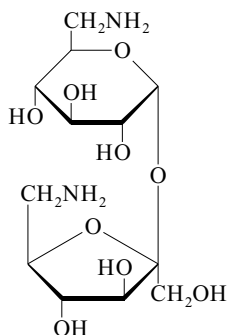
 β -D-Furanose-form

Benzyl glycoside, 2N,5N-di-Ac: Benzyl 2,5-diacetamido-2,5-dideoxy- β -D-ribofuranoside
[74593-06-9]
 $C_{16}H_{22}N_2O_5$ 322.36
Cryst. Mp 135°. $[\alpha]_D^{20}$ -52 (c, 0.5 in MeOH).

Benzyl glycoside, 2N,3,5N-tri-Ac: Benzyl 2,5-diacetamido-3-O-acetyl-2,5-dideoxy- β -D-ribofuranoside
[74593-07-0]
 $C_{18}H_{24}N_2O_6$ 364.397
Needles. Mp 160°. $[\alpha]_D^{20}$ -48 (c, 0.2 in MeOH).

[86258-85-7]

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1980, **81**, 23 (D-fur deriv, β -D-fur deriv, ir, pmr)

6,6'-Diamino-6,6'-dideoxysucrose**D-455**

$C_{12}H_{24}N_2O_9$ 340.33
Mp 105-110°. $[\alpha]_D$ +51.6 (c, 1.5 in H_2O).

N,N'-Di-Ac:

$C_{16}H_{28}N_2O_{11}$ 424.404
Mp 85-88°. $[\alpha]_D$ +44.5 (c, 0.86 in MeOH).

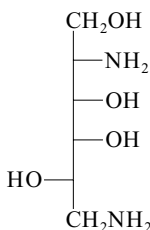
I',2,2',3,3',4,6N,6'N-Octa-Ac:

$C_{28}H_{40}N_2O_{17}$ 676.627
Cryst. (Et₂O). Mp 86-89°. $[\alpha]_D$ +70.5 (c, 1.1 in $CHCl_3$).

Khan, R. *et al.*, *Carbohydr. Res.*, 1970, **78**, 185 (synth, pmr)

2,6-Diamino-2,6-dideoxytalitol

1,5-Diamino-1,5-dideoxyaltritol, 9CI

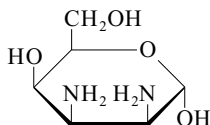
D-456 $C_6H_{16}N_2O_4$ 180.203**L-form** [109958-76-1]

Cryst. (EtOH) (as hydrochloride). Mp 166-168° (hydrochloride). $[\alpha]_D^{20}$ -19 (c, 1.0 in H_2O). CAS no. refers to hydrochloride.

1,2N,3,4,5,6N-Hexa-Ac: [109968-42-5]

$C_{18}H_{28}N_2O_{10}$ 432.427
Cryst. (Et₂O). Mp 164-166°. $[\alpha]_D^{20}$ -31 (c, 1.0 in $CHCl_3$).

Kuszmann, J. *et al.*, *Carbohydr. Res.*, 1986, **156**, 25 (synth, L-form, hexa-Ac, pmr)

2,3-Diamino-2,3-dideoxytalose**D-457** $C_6H_{14}N_2O_4$ 178.188 **α -D-Pyranose-form**

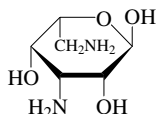
Me glycoside, N,N'-di-Ac: Methyl 2,3-diacetamido-2,3-dideoxy- α -D-talopyranoside
[53840-74-7]
 $C_{11}H_{20}N_2O_6$ 276.289
Cryst. Mp 220-221°. $[\alpha]_D$ +11.8 (c, 0.8 in H_2O).

Me glycoside, 2N,3N,4,6-tetra-Ac: Methyl 2,3-diacetamido-4,6-di-O-acetyl-2,3-dideoxy- α -D-talopyranoside
[53840-75-8]
 $C_{15}H_{24}N_2O_8$ 360.363

Cryst. + 0.5 C_6H_6 (C_6H_6 /petrol). Mp 85-89°. $[\alpha]_D$ +107.5 (c, 1.0 in $CHCl_3$).

Baer, H.H. *et al.*, *Can. J. Chem.*, 1974, **52**, 2257 (α -D-Me pyr derivs)

Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1983, **122**, 181 (α -D-Me pyr derivs, cmr)

3,6-Diamino-3,6-dideoxytalose**D-458** α -L-Pyranose-form $C_6H_{14}N_2O_4$ 178.188 **α -L-Pyranose-form**

Me glycoside: Methyl 3,6-diamino-3,6-dideoxy- α -L-talopyranoside
[19286-10-3]
 $C_7H_{16}N_2O_4$ 192.214
Cryst. + $\frac{1}{2}H_2O$ (MeOH/ C_6H_6) (as dihydrochloride). Mp 233-234° (dihydrochloride). $[\alpha]_D^{22}$ -62 (c, 0.75 in H_2O). CAS no. refers to dihydrochloride.

Me glycoside, 3N,6N-di-Ac: Methyl 3,6-diacetamido-3,6-dideoxy- α -L-talopyranoside

[19286-13-6]

 $C_{11}H_{20}N_2O_6$ 276.289

Cryst. (EtOAc/EtOH). Mp 182-189°. $[\alpha]_D$ -115 ($CHCl_3$).

Me glycoside, 2,3N,4,6N-tetra-Ac: Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- α -L-talopyranoside

[19286-12-5]

 $C_{15}H_{24}N_2O_8$ 360.363

Cryst. + $\frac{1}{2}H_2O$ (EtOAc). Mp 106-108°. $[\alpha]_D^{19}$ -33.8 ($CHCl_3$).

 β -L-Pyranose-form

Me glycoside: Methyl 3,6-diamino-3,6-dideoxy- β -L-talopyranoside
[19286-11-4]

 $C_7H_{16}N_2O_4$ 192.214

Syrup. $[\alpha]_D^{22}$ +75.5 (c, 0.75 in H_2O).

Me glycoside; hydrochloride (1:2): Hygroscopic needles. $[\alpha]_D^{22}$ +36.4 (c, 0.75 in H_2O).

Me glycoside, 2,3N,4,6N-tetra-Ac: Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- β -L-talopyranoside

[19286-14-7]

 $C_{15}H_{24}N_2O_8$ 360.363

Cryst. (EtOAc/Et₂O). Mp 134-136°. $[\alpha]_D^{20}$ +66.2 ($CHCl_3$).

L-Furanose-form

Me glycoside, 2,3N,5,6N-tetra-Ac: Methyl 3,6-diacetamido-2,5-di-O-acetyl-3,6-dideoxy-L-talofuranoside

[19286-15-8]

 $C_{15}H_{24}N_2O_8$ 360.363

Cryst. (EtOAc/Et₂O). Mp 178-180°. $[\alpha]_D^{22}$ +27 ($CHCl_3$).

 β -L-Furanose-form

1,2-O-Isopropylidene: 3,6-Diamino-3,6-dideoxy-1,2-O-isopropylidene- β -L-talofuranose

[19286-08-9]

 $C_9H_{18}N_2O_4$ 218.252

Foam. $[\alpha]_D^{20}$ +23 (H_2O).

1,2-O-Isopropylidene, 3N,5,6N-tri-Ac: 3,6-Diacetamido-5-O-acetyl-3,6-dideoxy-1,2-O-isopropylidene- β -L-talofuranose

[19286-09-0]

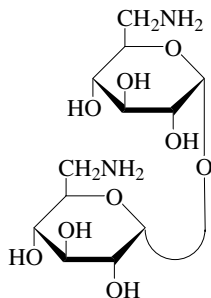
 $C_{15}H_{24}N_2O_7$ 344.364

Cryst. (EtOAc). Mp 175-176°. $[\alpha]_D^{22}$ +39 ($CHCl_3$).

Kovar, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 549 (α -L-Me pyr derivs, β -L-Me pyr derivs, L-Me fur tetra-Ac, β -L-fur isopropylidene derivs, fur pyr deriv)

6,6'-Diamino-6,6'-dideoxy- α -trehalose

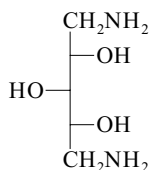
6-Amino-6-deoxy- α -D-glucopyranosyl
6-amino-6-deoxy- α -D-glucopyranoside
[30923-00-3]



$C_{12}H_{24}N_2O_9$ 340.33
Solid + 0.6 MeOH. Mp ca. 218° (sinters and chars).

N,N',2,2',3,3'-Hexa-O-benzoyl: [428509-03-9]
 $C_{54}H_{48}N_2O_{15}$ 964.978
Cryst. (EtOH). Mp 201-202°. CAS no. refers to dihydrochloride.

Rose, J.D. *et al.*, *Carbohydr. Res.*, 2002, **337**, 105-120 (synth, pmr, hexabenzoyl)

1,5-Diamino-1,5-dideoxyxylitol

$C_5H_{14}N_2O_3$ 150.177
Opt. inactive (*meso*-).

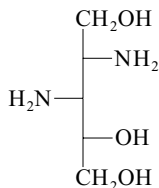
Hydrochloride (1:2): [104769-35-9]
Hygroscopic solid.

Picrate (1:2): [104769-28-0]
Cryst. + H_2O . Mp 235-236°.

2,3,4-Tri-Me: 1,5-Diamino-1,5-dideoxy-2,3,4-tri-O-methylxylitol
[362513-09-5]
 $C_8H_{20}N_2O_3$ 192.258
Mp 103-106° (as dihydrochloride). CAS no. refers to dihydrochloride.

Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 183 (synth)

Garcia-Martin, M.G. *et al.*, *Carbohydr. Res.*, 2001, **333**, 95-103 (2,3,4-tri-Me)

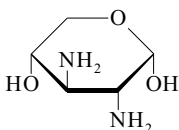
2,3-Diamino-2,3-dideoxyxylitol

$C_5H_{14}N_2O_3$ 150.177

D-459 d-form [131097-19-3]

Liq.
1,4,5-Tri-Me: [130970-26-2]
 $C_8H_{20}N_2O_3$ 192.258
Liq.

Canadian Pat., 1990, 1 265 811; CA, **114**, 94142v (synth)

2,3-Diamino-2,3-dideoxyxylose

$C_5H_{12}N_2O_3$ 148.161

 α -D-Pyranose-form

2N,3N-Di-Ac: 2,3-Diacetamido-2,3-dideoxy-D-xylopyranose
[79974-86-0]
 $C_9H_{16}N_2O_5$ 232.236
Syrup. $[\alpha]_D^{20}$ -81.22 (c, 0.25 in H_2O).

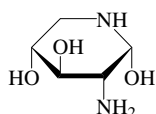
1,2N,3N,4-Tetra-Ac: 2,3-Diacetamido-1,4-di-O-acetyl-2,3-dideoxy-D-xylopyranose
[79974-87-1]
 $C_{13}H_{20}N_2O_7$ 316.31
Syrup. $[\alpha]_D^{20}$ +20 (c, 0.1 in $CHCl_3$).

 α -D-Pyranose-form

Benzyl glycoside, 4-benzyl, 2N,3N-di-Ac: Benzyl 2,3-diacetamido-4-O-benzyl-2,3-dideoxy- α -D-xylopyranoside
[79974-85-9]
 $C_{23}H_{28}N_2O_5$ 412.485
Cryst. ($CHCl_3$ /petrol). Mp 256.5°. $[\alpha]_D^{20}$ +62.5 (c, 0.5 in $CHCl_3$).

[79974-96-2, 79974-97-3]

Paulsen, H. *et al.*, *Annalen*, 1981, 1633 (D-pyr deriv, α -D-pyr deriv, pmr)

2,5-Diamino-2,5-dideoxyxylose

$C_5H_{12}N_2O_3$ 148.161

 α -D-Pyranose-form

2N,5N-Di-Ac: 2,5-Diacetamido-2,5-dideoxy- α -D-xylopyranose
[86204-37-7]
 $C_9H_{16}N_2O_5$ 232.236
Needles (MeOH). Mp 190-192° dec. $[\alpha]_D^{20}$ +17 (c, 0.38 in MeOH).
1,2N,3,4,5N-Penta-Ac: 2,5-Diacetamido-1,3,4-tri-O-acetyl-2,5-dideoxy- α -D-xylopyranose
[86204-38-8]
 $C_{15}H_{22}N_2O_8$ 358.347
Prisms. Mp 178-179°. $[\alpha]_D^{20}$ +30 (c, 0.25 in $CHCl_3$).

D-Furanose-form

2N,5N-Di-Ac: 2,5-Diacetamido-2,5-dideoxy-D-xylofuranose
[86258-82-4]
 $C_9H_{16}N_2O_5$ 232.236
Needles (EtOH/Et₂O). Mp 171°. $[\alpha]_D^{26}$ +64 (c, 0.5 in MeOH).

 α -D-Furanose-form

1,2N,3,5N-Tetra-Ac: 2,5-Diacetamido-1,3-di-O-acetyl-2,5-dideoxy- α -D-xylofuranose
 $C_{13}H_{20}N_2O_7$ 316.31
Needles. Mp 198-200° dec. $[\alpha]_D^{20}$ +108 (c, 0.3 in MeOH).

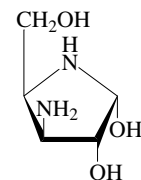
 β -D-Furanose-form

Benzyl glycoside, 2N,5N-di-Ac: Benzyl 2,5-diacetamido-2,5-dideoxy- β -D-xylofuranoside
[74593-38-7]
 $C_{16}H_{22}N_2O_5$ 322.36
Needles (EtOH). Mp 249° dec. $[\alpha]_D^{20}$ -62 (c, 0.3 in MeOH).

Benzyl glycoside, 2N,3,5N-tri-Ac: Benzyl 2,5-diacetamido-3-O-acetyl-2,5-dideoxy- β -D-xylofuranoside
 $C_{18}H_{24}N_2O_6$ 364.397
Cryst. (Et₂O). Mp 182-183°. $[\alpha]_D^{20}$ -43 (c, 0.3 in MeOH).

[86286-44-4]

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1980, **81**, 23 (α -D-fur deriv, benzyl β -D-fur deriv, ir, pmr)
Okumura, H. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 839 (D-fur deriv, α -D-pyr deriv, ir, pmr)

3,4-Diamino-3,4-dideoxyxylose

$C_5H_{12}N_2O_3$ 148.161

 α -D-Furanose-form

1,2-O-Isopropylidene, 5-benzoyl, 3N,4N-di-Ac: $C_{19}H_{24}N_2O_6$ 376.408
Foam. $[\alpha]_D$ -28 (c, 1.2 in $CHCl_3$).

L-form [135221-05-5]

Pt complexes used as antitumour agents. Active against L-1210 leukaemic cells of mice.
Syrup.

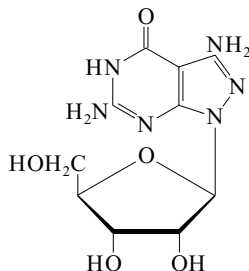
 β -L-Pyranose-form

Me glycoside: Methyl 3,4-diamino-3,4-dideoxy- β -L-xylopyranoside
[81905-70-6]
 $C_6H_{14}N_2O_3$ 162.188
Needles (EtOH). Mp 190-192° dec.
Me glycoside, 2,3N,4N-tribenzoyl: [81905-71-7]
 $C_{27}H_{26}N_2O_6$ 474.512
Cryst. (EtOH). Mp 269°.

Hajivarnava, G.S. *et al.*, *J.C.S. Perkin I*, 1982, 205 (β -L-Me pyr, pmr, ir)

Coetzee, I. *et al.*, *S. Afr. J. Chem.*, 1984, **37**, 11
(α -D-fur isopropylidene deriv, pmr, ir)
Japan. Pat., 1990, 02 134 395; *CA*, **115**, 149108s
(pharmacol)

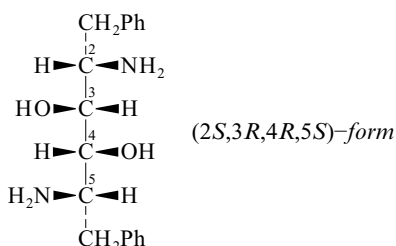
3,6-Diamino-1,5-dihydro-1- β -D-ribofuranosyl-4H-pyrazolo[3,4-d]pyrimidin-4-one, 9CI **D-465**
[127820-69-3]



$C_{10}H_{14}N_6O_5$ 298.258
Solid. Mp 180° dec.

Bontems, R.J. *et al.*, *J. Med. Chem.*, 1990, **33**,
2174 (synth, uv, pmr)

2,5-Diamino-1,6-diphenyl-3,4-hexanediol **D-466**
2,5-Diamino-1,2,5,6-tetra-deoxy-1,6-diphenylhexitol



$C_{18}H_{24}N_2O_2$ 300.4

(2S,3R,4R,5S)-form
L-ido-form
[134805-49-5] Shows retroviral protease
inhibitory activity.
Solid + $\frac{1}{4}H_2O$. Mp 86-89°.

3,4-O-Isopropylidene: [136740-99-3]
 $C_{21}H_{28}N_2O_2$ 340.464
Syrup.

N,N'-Bis(tert-butyloxycarbonyl):
[129491-63-0]
Cryst. + 0.5H₂O. Mp 200-202°.

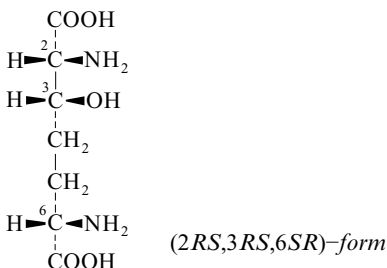
(2S,3S,4S,5S)-form *L*-manno-form
[134878-06-1] Shows retroviral protease
inhibitory activity.

N,N'-Bis(tert-butyloxycarbonyl):
[129491-64-1]
 $C_{28}H_{40}N_2O_6$ 500.634
Cryst. Mp 216-218°.

Eur. Pat., 1990, 402 646, (Abbott); *CA*, **115**,
50304r (synth, pmr)

Chenera, B. *et al.*, *Bioorg. Med. Chem. Lett.*,
1991, **1**, 219 (synth)

2,6-Diamino-3-hydroxyhepta-nedioic acid, 9CI, 8CI **D-467**
2,6-Diamino-3-hydroxypimelic acid
[535-24-0]



$C_7H_{14}N_2O_5$ 206.198

(2RS,3SR,6SR)-form
2,6-Diamino-2,4,5,6-tetra-deoxy-xylo-heptaric acid
[10575-46-9]
Present in the microbial cell walls of
certain members of the Actinomycetales,
e.g. *Ampullariella regularis* (presumably in
an enantiomeric form).
Mp 237° dec.

(2RS,3RS,6RS)-form
2,6-Diamino-2,4,5,6-tetra-deoxy-lyxo-heptaric acid
[10575-50-5]
Present in small quantities in microbial
cell walls of certain members of the
Actinomycetales, presumably in an enan-
tiomeric form.
Mp 244° dec. Other stereoisomers are
known synthetically.

1,7-Di-Me ester, 2N-benzoyl, 6N-
phthaloyl: Mp 149.5°.

Stewart, J.M. *et al.*, *J.A.C.S.*, 1956, **78**, 5336;
1961, **83**, 435 (config)

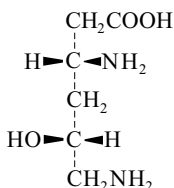
Perkins, H.R. *et al.*, *Nature (London)*, 1965, **27**,
872 (isol)

Sundharadas, G. *et al.*, *CA*, 1967, **67**, 938v
(synth)

Perkins, H.R. *et al.*, *Biochem. J.*, 1969, **115**, 797
(occur)

Gelb, M.H. *et al.*, *J.A.C.S.*, 1990, **112**, 4932
(synth, ir, pmr, cmr)

3,6-Diamino-5-hydroxyhexa-noic acid, 9CI **D-468**
 δ -Hydroxy- β -lysine. 3,6-Diamino-2,3,4,6-tetra-deoxyhexonic acid



$C_6H_{14}N_2O_3$ 162.188

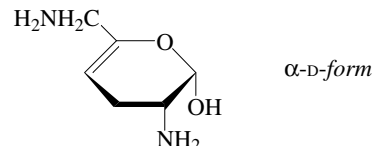
(3R,5R)-form
L-threo-form
Component of Negamycin.
Di-N-Ac, lactone:
 $C_{10}H_{16}N_2O_4$ 228.247

Mp 190-192° (183-185°). $[\alpha]_D^{21}$ -5.8
(c, 1 in H₂O).

Shibahara, S. *et al.*, *J.A.C.S.*, 1972, **94**, 4353
(synth, bibl)

Uehara, Y. *et al.*, *J. Antibiot.*, 1976, **29**, 937

2,6-Diamino-2,3,4,6-tetra-deoxy-glycero-hex-4-enopyranose **D-469**
Sisosamine



$C_6H_{12}N_2O_2$ 144.173

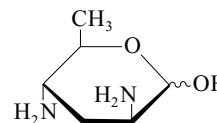
D-form
Component residue of Sisomicin, S-45.

α -D-form
Et glycoside, 2,6-di-N-Ac: Ethyl 2,6-diacetamido-2,3,4,6-tetra-deoxy- α -D-glycero-hex-4-enopyranoside
[55713-19-4]
 $C_{12}H_{20}N_2O_4$ 256.301
Mp 159-160°. $[\alpha]_D$ +115 (c, 1.0 in
CHCl₃).

Cooper, D.J. *et al.*, *Chem. Comm.*, 1971, 285;
924

Cleophax, J. *et al.*, *Chem. Comm.*, 1975, 11
(synth)

2,4-Diamino-2,3,4,6-tetra-deoxy-arabino-hexose, 9CI, 8CI **D-470**
Kasugamine



$C_6H_{14}N_2O_2$ 146.189

D-form [19477-25-9]
Residue present in Kasugamycin, K-6 and
Minosaminomycin, M-313.

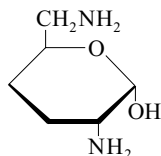
α -D-Pyranose-form
Me glycoside, N,N'-di-Ac: Methyl 2,4-diacetamido-2,3,4,6-tetra-deoxy- α -D-arabino-hexopyranoside, 8CI. Methyl N,N'-diacetyl- α -kasugaminide
[20590-62-9]
 $C_{11}H_{20}N_2O_4$ 244.29
Needles (EtOAc). Mp 195-196°. $[\alpha]_D^{24}$
+98 (c, 1.0 in H₂O). $[\alpha]_D^{22}$ +107 (c, 1.0 in
MeOH).

β -D-Pyranose-form
Me glycoside, N,N'-di-Ac: Methyl 2,4-diacetamido-2,3,4,6-tetra-deoxy- β -D-arabino-hexopyranoside, 8CI. Methyl N,N'-diacetyl- β -kasugaminide
 $C_{11}H_{20}N_2O_4$ 244.29
Mp 226-229°. $[\alpha]_D^{25}$ +82 (c, 1.0 in EtOH).
Et glycoside, N,N'-di-Ac: Ethyl 2,4-diacetamido-2,3,4,6-tetra-deoxy- β -D-arabino-hexopyranoside
 $C_{12}H_{22}N_2O_4$ 258.317

Cryst. (EtOAc). Mp 227-229°. [α]_D²¹ +171 (c, 1.0 in MeOH). Named apparently incorrectly as the α -D-pyr epimer in the experimental section of the paper (Yasuda *et al.*).

Suhara, Y. *et al.*, *Tet. Lett.*, 1966, 1239 (*struct*)
 Kitahara, K. *et al.*, *Agric. Biol. Chem.*, 1969, 33, 748 (α -D-pyr Me gly di-Ac, β -D-pyr Me gly di-Ac, *pmr*)
 Yasuda, S. *et al.*, *Tetrahedron*, 1973, 29, 3141, (α -D-pyr Me gly di-Ac, β -D-pyr Me gly di-Ac)
 Iinuma, K. *et al.*, *J. Antibiot.*, 1975, 28, 613 (*occur*)

2,6-Diamino-2,3,4,6-tetra-deoxy-erythro-hexose, 9CI, 8CI **D-471**
Purpurosamine C



α -D-Pyranose-form

C₆H₁₄N₂O₂ 146.189

D-form [34323-18-7]

Constit. of Gentamicin C_{1a}.

Di-Et dithioacetal, 2,6-di-N-Ac: 2,6-Diacetamido-2,3,4,6-tetra-deoxy-D-erythro-hexose diethyl dithioacetal [55385-23-4]
 C₁₄H₂₈N₂O₃S₂ 336.519
 Cryst. Mp 110-112°. [α]_D +27 (c, 0.5 in MeOH).

6-N-Me: 2-Amino-2,3,4,6-tetra-deoxy-6-methylamino-D-erythro-hexose
 C₇H₁₆N₂O₂ 160.216
 Component of Sannamycin C, S-9.

α -D-Pyranose-form

Me glycoside: Methyl 2,6-diamino-2,3,4,6-tetra-deoxy- α -D-erythro-hexopyranoside, 9CI [35012-80-7]
 C₇H₁₆N₂O₂ 160.216
 Mp 180° (as sulfate salt monohydrate). [α]_D²² +128 (c, 1.0 in H₂O). Sl. premelting transition at 135°.

Me glycoside, 2,6-di-N-Ac: Methyl 2,6-diacetamido-2,3,4,6-tetra-deoxy- α -D-erythro-hexopyranoside [52485-48-0]
 C₁₁H₂₀N₂O₄ 244.29
 Cryst. (EtOAc). Mp 195-197°. [α]_D +166 (c, 0.8 in MeOH).

Me glycoside, 6-N-Me, 2,6-di-N-Ac: [72509-59-2]
 C₁₂H₂₂N₂O₄ 258.317
 Syrup. [α]_D²³ +172 (c, 1.0 in MeOH).

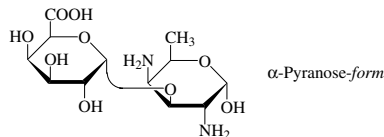
Me glycoside, 2,6-bis-N-methoxycarbonyl: Syrup. [α]_D¹⁹ +126 (c, 0.7 in MeOH).

Et glycoside, 2,6-di-N-Ac: Ethyl 2,6-diacetamido-2,3,4,6-tetra-deoxy- α -D-erythro-hexopyranoside [55385-22-3]
 C₁₂H₂₂N₂O₄ 258.317
 Mp 201-202°. [α]_D +159 (c, 1.1 in EtOH).

Cooper, D.J. *et al.*, *J.C.S.(C)*, 1971, 2876, (*D-di-Et dithioacetal di-Ac*, *pmr*)

Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, 45, 3619 (α -D-pyr Me gly, *pmr*)
 Guthrie, R.D. *et al.*, *J.C.S. Perkin 1*, 1972, 2619 (*struct*, *stereochem*)
 Cleophax, J. *et al.*, *Chem. Comm.*, 1975, 11 (α -D-pyr Et gly di-Ac, *D-di-Et dithioacetal di-Ac*)
 Rakhit, S. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1975, 2, 153 (α -D-pyr Me gly)
 Deushi, T. *et al.*, *J. Antibiot.*, 1980, 33, 1274 (*occur*, α -D-pyr Me gly di-N-Ac N-Me, *pmr*)

2,4-Diamino-2,4,6-trideoxy-3-(α -D-galactopyranuronosyl)-D-galactose **D-472**
 α -D-Galactopyranuronosyl-(1 \rightarrow 3)-2,4-diamino-2,4,6-trideoxy-D-galactose



α -Pyranose-form

C₁₂H₂₂N₂O₉ 338.314

N²-Ac:

C₁₄H₂₄N₂O₁₀ 380.351
 Structural element of the capsular polysaccharide antigen of *Streptococcus pneumoniae* type 1.

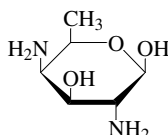
α -Pyranose-form

Me glycoside, N²-Ac:

C₁₅H₂₆N₂O₁₀ 394.378
 Amorph. powder. [α]_D²² +164 (c, 0.4 in H₂O).

Lönn, H. *et al.*, *Carbohydr. Res.*, 1984, 132, 39 (*synth*, *pmr*, *cmr*, *deriv*)

2,4-Diamino-2,4,6-trideoxygalactose **D-473**
 2,4-Diamino-2,4-dideoxyfucose



β -D-Pyranose-form

C₆H₁₄N₂O₃ 162.188

D-form

N²-Ac: 2-Acetamido-4-amino-2,4,6-trideoxy-D-galactose [72690-13-2]
 C₈H₁₆N₂O₄ 204.225

Occurs in the cell wall polysaccharide (C-substance) of *Streptococcus pneumoniae*.

N,N'-Di-Ac: 2,4-Diacetamido-2,4,6-trideoxy-D-galactose [68567-47-5]

C₁₀H₁₈N₂O₅ 246.263
 Cryst. (MeOH/Et₂O). Mp 177-178°. [α]_D²² +3 (c, 0.6 in MeOH aq.).

α -D-Pyranose-form

Benzyl glycoside, N,N'-di-Ac: Benzyl 2,4-diacetamido-2,4,6-trideoxy- α -D-galactopyranoside [68536-13-0]
 C₁₇H₂₄N₂O₅ 336.387

Cryst. (EtOH). Mp 230°. [α]_D²² +146 (c, 0.7 in CHCl₃).

Benzyl glycoside, N,N,3-tri-Ac: Benzyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy- α -D-galactopyranoside [68536-14-1]
 C₁₉H₂₆N₂O₆ 378.424
 Cryst. (Et₂O/petrol). Mp 106-108°. [α]_D²² +124 (c, 0.6 in CHCl₃).

Benzyl glycoside, 3-benzyl, 2-Ac: Benzyl 2-acetamido-4-amino-3-O-benzyl-2,4,6-trideoxy- α -D-galactopyranoside [81997-64-0]
 C₂₂H₂₈N₂O₄ 384.474
 Mp 150° (remelts at 180°). [α]_D²² +166.6 (c, 0.5 in CHCl₃).

Benzyl glycoside, 3-benzyl, N,N'-di-Ac: Benzyl 2,4-diacetamido-3-O-benzyl-2,4,6-trideoxy- α -D-galactopyranoside [68536-12-9]
 C₂₄H₃₀N₂O₅ 426.511
 Cryst. (C₆H₆/petrol). Mp 85-90°. [α]_D²² +182 (c, 0.85 in CHCl₃).

Benzyl glycoside, N,N'-di-Ac, 3-mesyl: Benzyl 2,4-diacetamido-2,4,6-trideoxy-3-O-mesyl- α -D-galactopyranoside [81997-67-3]
 C₁₈H₂₆N₂O₇S 414.479
 Mp 120°. [α]_D²² +116.5 (c, 0.5 in CHCl₃).

Liav, A. *et al.*, *Carbohydr. Res.*, 1978, 66, 95, (*D-N,N'-di-Ac*, α -D-benzyl gly di-Ac, α -D-benzyl gly tri-Ac, α -D-benzyl gly 3-benzyl di-Ac)

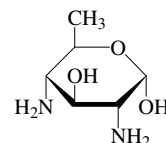
Jennings, H.J. *et al.*, *Biochemistry*, 1980, 19, 4712 (*D-2-N-Ac*, *occur*)

Lindberg, B. *et al.*, *Carbohydr. Res.*, 1980, 78, 111 (*D-2-N-Ac*, *occur*)

Sheinblatt, M. *et al.*, *Carbohydr. Res.*, 1982, 103, (α -D-benzyl gly 3-benzyl 2-Ac, α -D-benzyl gly di-Ac 3-mesyl)

Hermans, J.P.G. *et al.*, *J. Carbohydr. Chem.*, 1987, 6, 451-462 (*benzyl gly di-N-Ac*)

2,4-Diamino-2,4,6-trideoxyglucose, 9CI **D-474**
Bacillosamine [7013-45-8]



α -D-Pyranose-form

C₆H₁₄N₂O₃ 162.188

D-form

Isol. from *Bacillus licheniformis* ATCC 9945 (formerly *Bacillus subtilis*).

Component of a lipopolysaccharide from *Pseudomonas aeruginosa* NCTC 805.

4-N-Ac: 4-Acetamido-2-amino-2,4,6-trideoxy-D-glucose. N-Acetylbacillosamine
 C₈H₁₆N₂O₄ 204.225
 Isol. from hydrol. of *Bacillus subtilis* polysaccharides.
 Mp 220° dec. (as hydrochloride). [α]_D²⁶ +115 (5 min) \rightarrow +94 (23 h) (c, 0.05 in H₂O).

2,4-Di-N-Ac: 2,4-Diacetamido-2,4,6-trideoxy-D-glucose. Di-N-acetyl bacillosamine
[40838-02-6]
C₁₀H₁₈N₂O₅ 246.263
Needles (EtOH/petrol or EtOH/EtOAc). Mp 263-265° dec. [α]_D²⁴ +76 (5 min) → +63 (2.5 h) (c, 0.5 in 50% EtOH aq.). [α]_D²⁴ +105 → +83 (equilib.) (c, 0.8 in 50% EtOH aq.).

1,3-Di-Ac, 2,4-di-N-Ac: 2,4-Diacetamido-1,3-di-O-acetyl-2,4,6-trideoxy-D-glucopyranose. Tetraacetyl bacillosamine
C₁₄H₂₂N₂O₇ 330.337
Needles (MeOH/EtOAc/hexane). Mp 224° dec. [α]_D²⁴ +117 (c, 0.6 in CHCl₃).

4-N-(3S-Hydroxybutanoyl), 2-N-Ac: 2-Acetamido-2,4,6-trideoxy-4-(3-hydroxybutyramido)-D-glucose
C₁₂H₂₂N₂O₆ 290.316
Component of the O-specific polysaccharide of *Pseudomonas fluorescens* biovar B strain IMV 247.

α-D-Pyranose-form

Benzyl glycoside, 2,4-di-N-Ac: Benzyl 2,4-diacetamido-2,4,6-trideoxy-α-D-glucopyranoside
[68536-15-2]
C₁₇H₂₄N₂O₅ 336.387
Cryst. (CHCl₃/petrol). Mp 222-223°. [α]_D²² +163 (c, 0.6 in MeOH).

Benzyl glycoside, 2,4-di-N-Ac, 3-Ac: Benzyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy-α-D-glucopyranoside
[68536-16-3]
C₁₉H₂₆N₂O₆ 378.424
Cryst. (MeOH/Et₂O). Mp 232°. [α]_D²² +99 (c, 0.6 in CHCl₃).

Benzyl glycoside, 2,4-di-N-Ac, 3-benzyl: Benzyl 2,4-diacetamido-3-O-benzyl-2,4,6-trideoxy-α-D-glucopyranoside
[50908-21-9]
C₂₄H₃₀N₂O₅ 426.511
Cryst. (Me₂CO/Et₂O). Mp 244-245°. [α]_D²² +106 (c, 1.0 in CHCl₃).

Benzyl glycoside, 2,4-di-N-Ac, 3-mesyl: Benzyl 2,4-diacetamido-2,4,6-trideoxy-3-O-mesyl-α-D-glucopyranoside
C₁₈H₂₆N₂O₇S 414.479
Mp 195-196°. [α]_D²² +121 (c, 0.5 in CHCl₃).

Sharon, N. *et al.*, *J. Biol. Chem.*, 1960, **235**, 1 (isol)

Zehavi, U. *et al.*, *J. Biol. Chem.*, 1973, **248**, 433 (struct, pmr)

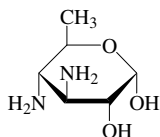
Liav, A. *et al.*, *Carbohydr. Res.*, 1974, **33**, 217; 1978, **66**, 95 (D-di-N-Ac, α-D-benzyl pyr di-N-Ac benzyl, α-D-benzyl pyr di-N-Ac, α-D-benzyl pyr di-N-Ac 3-Ac, synth)

Wilkinson, S.G. *et al.*, *Biochem. J.*, 1977, **161**, 103

Sheinblatt, M. *et al.*, *Carbohydr. Res.*, 1982, **103**, 146 (α-D-benzyl pyr di-N-Ac mesyl, pmr)

Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 1998, **306**, 297-303 (N-3-hydroxybutanoyl-N-Ac)

3,4-Diamino-3,4,6-trideoxyglucose



α-D-Pyranose-form

C₆H₁₄N₂O₃ 162.188

α-D-Pyranose-form

Me glycoside, 3N,4N-di-Ac: Methyl 3,4-diacetamido-3,4,6-trideoxy-α-D-glucopyranoside
[114949-87-0]
C₁₁H₂₀N₂O₅ 260.289
Cryst. (EtOH/petrol). Mp 286-288°. [α]_D²⁰ +255 (MeOH).

α-L-Pyranose-form

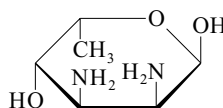
Me glycoside, 2-Me: Methyl 3,4-diamino-3,4,6-trideoxy-2-O-methyl-α-L-glucopyranoside
[51296-09-4]
C₈H₁₈N₂O₃ 190.242
Cryst. (EtOH/EtOAc) (as dihydrochloride). Mp 188-190° dec. (dihydrochloride). [α]_D -111 (c, 0.7 in MeOH). CAS no. incorr. assigned to the α-isomer.

Me glycoside, 2-Me, 3N,4N-di-Ac: Methyl 3,4-diacetamido-3,4,6-trideoxy-2-O-methyl-α-L-glucopyranoside
[51296-10-7]
C₁₂H₂₂N₂O₅ 274.316
Cryst. (EtOH/EtOAc). Mp 298-300°. [α]_D -201 (c, 0.6 in MeOH).

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1973, **31**, 347 (α-L-Me pyr derivs, pmr, ir)

Capek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1987, **52**, 2248 (α-D-Me pyr di-Ac, pmr)

2,3-Diamino-2,3,6-trideoxygulose



C₆H₁₄N₂O₃ 162.188

α-L-Pyranose-form

Me glycoside: Methyl 2,3-diamino-2,3,6-trideoxy-α-L-gulopyranoside
[81905-75-1]
C₇H₁₆N₂O₃ 176.215
Cryst. Mp 221-222°. [α]_D -97 (c, 1.2 in MeOH).

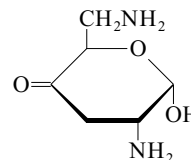
Me glycoside, 3N-benzyl: Methyl 2-amino-3-benzylamino-2,3,6-trideoxy-α-L-gulopyranoside
[81905-73-9]
C₁₄H₂₂N₂O₃ 266.339
Needles (EtOAc/petrol). Mp 130-131°. [α]_D -93 (c, 1.75 in CHCl₃).

Hajivarnava, G.S. *et al.*, *J.C.S. Perkin I*, 1982, 205 (α-Me pyr deriv, ir, pmr)

D-475

2,6-Diamino-2,3,6-trideoxy-erythro-hexopyranos-4-ulose

D-477



C₆H₁₂N₂O₃ 160.172

α-D-form

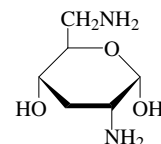
Me glycoside, 2N,6N-di-Ac: [68115-57-1]
C₁₁H₁₈N₂O₅ 258.274
Cryst. (EtOH). Mp 230-250° dec. [α]_D +116 (EtOH). [α]_D +132 (c, 1.0 in MeOH).

Florent, J.C. *et al.*, *Tetrahedron*, 1978, **34**, 909 (α-D-Me gly di-Ac, ir, pmr, ms)

2,6-Diamino-2,3,6-trideoxy-ribo-hexose

D-478

Nebrosamine. Tobrosamine



α-D-Pyranose-form

C₆H₁₄N₂O₃ 162.188

D-form

Constit. of Tobramycin, T-117.

α-D-Pyranose-form [52850-89-2]

Me glycoside, N,N'-di-Ac: Methyl 2,6-diacetamido-2,3,6-trideoxy-α-D-ribo-hexopyranoside
[68115-58-2]
C₁₁H₂₀N₂O₅ 260.289
Cryst. (Me₂CO/MeOH). Mp 207°. [α]_D²⁰ +90 (CHCl₃).

Me glycoside, N,N'-di-Ac, 4-mesyl: Methyl 2,6-diacetamido-2,3,6-trideoxy-4-O-mesyl-α-D-ribo-hexopyranoside
[52850-87-0]
C₁₂H₂₂N₂O₇S 338.381
Cryst. (EtOH). Mp 164-165.5°. [α]_D +118 (c, 0.65 in EtOH abs.).

Et glycoside, N,N'-di-Ac: Ethyl 2,6-diacetamido-2,3,6-trideoxy-α-D-ribo-hexopyranoside
[50991-68-9]
C₁₂H₂₂N₂O₅ 274.316
Mp 181-183°. [α]_D²⁵ +129 (c, 1.6 in MeOH).

α-D-Furanose-form

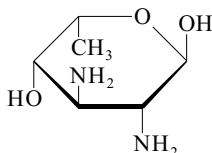
Me glycoside, N,N'-di-Ac: Methyl 2,6-diacetamido-2,3,6-trideoxy-α-D-ribo-hexofuranoside
C₁₁H₂₀N₂O₅ 260.289
Cryst. (Me₂CO). Mp 176-177°. [α]_D²⁰ +120 (c, 2.0 in MeOH).

Cleophax, J. *et al.*, *Chem. Comm.*, 1973, 710, (α-D-pyr Et gly di-N-Ac)

Brewer, C.L. *et al.*, *J.C.S. Perkin I*, 1974, 657 (struct, α-D-pyr Me gly di-N-Ac mesyl, pmr)

Leboul, J. *et al.*, *Tetrahedron*, 1977, **33**, 965 (synth)
 Florent, J.C. *et al.*, *Tetrahedron*, 1978, **34**, 909 (α -D-pyr Me gly di-N-Ac)
 Florent, J.C. *et al.*, *Tetrahedron, Suppl.* 9, 1981, 37, 9 (α -D-pyr Me gly di-N-Ac, α -D-fur Me gly di-N-Ac)
 Abuaan, M.M. *et al.*, *Carbohydr. Res.*, 1984, 132, 51 (synth, deriv)

2,3-Diamino-2,3,6-trideoxyidose D-479



$C_6H_{14}N_2O_3$ 162.188

α -L-Pyranose-form

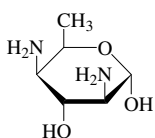
Me glycoside: Methyl 2,3-diamino-2,3,6-trideoxy- α -L-idopyranoside [81905-74-0]
 $C_7H_{16}N_2O_3$ 176.215
 Needles. Mp 199-200°. [α]_D -96 (c, 0.9 in MeOH).

Me glycoside, 3N-benzyl: Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-idopyranoside [81905-72-8]
 $C_{14}H_{22}N_2O_3$ 266.339
 Syrup. [α]_D -87 (c, 1.15 in $CHCl_3$).

Me glycoside, 3N-Me: Methyl 2-amino-2,3,6-trideoxy-3-methylamino- α -L-idopyranoside [81905-77-3]
 $C_8H_{18}N_2O_3$ 190.242
 Syrup. [α]_D -100 (c, 1.5 in $CHCl_3$).

Hajivarnava, G.S. *et al.*, *J.C.S. Perkin 1*, 1982, 205 (α -Me pyr deriv, in, pmr)

2,4-Diamino-2,4,6-trideoxyidose D-480



α -D-Pyranose-form

$C_6H_{14}N_2O_3$ 162.188

α -D-Pyranose-form

Me glycoside: Methyl 2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside [58394-13-1]
 $C_7H_{16}N_2O_3$ 176.215
 Syrup. [α]_D +91 (c, 2.4 in MeOH).

Me glycoside, hydrochloride (1:2): [58394-17-5]
 Amorph. solid. [α]_D +65 (c, 2 in H_2O).

Me glycoside, 3-Ac: Methyl 3-O-acetyl-2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside [58394-19-7]
 $C_9H_{18}N_2O_4$ 218.252
 Syrup (as dihydrochloride). [α]_D +49 (c, 2 in H_2O). CAS no. refers to dihydrochloride.

Me glycoside, 2N,4N-di-Ac: Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-idopyranoside [58394-14-2]
 $C_{11}H_{20}N_2O_5$ 260.289
 Cryst. (EtOH). Mp 251°. [α]_D +65 (c, 2 in MeOH).

Me glycoside, 2N,3,4N-tri-Ac: Methyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy- α -D-idopyranoside [58394-10-8]
 $C_{13}H_{22}N_2O_6$ 302.327
 Cryst. (EtOH). Mp 246-248°. [α]_D +38 (c, 2 in MeOH).

L-Pyranose-form

2N,4N-Di-Ac: 2,4-Diacetamido-2,4,6-trideoxy-L-idopyranose [50611-21-7]
 $C_{10}H_{18}N_2O_5$ 246.263
 Cryst. (EtOH/petrol). Mp 172-174°. [α]_D -45 (c, 0.87 in H_2O).

α -L-Pyranose-form

Me glycoside, 2N,3,4N-tri-Ac: Methyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy- α -L-idopyranoside [34388-74-4]
 $C_{13}H_{22}N_2O_6$ 302.327
 Needles (EtOAc). Mp 261° dec. [α]_D -60 (c, 0.38 in $CHCl_3$).

β -L-Pyranose-form

Benzyl glycoside, 2N,4N-di-Ac: Benzyl 2,4-diacetamido-2,4,6-trideoxy- β -L-idopyranoside [50611-17-1]
 $C_{17}H_{24}N_2O_5$ 336.387
 Cryst. (Me₂CO/petrol). Mp 232-233°. [α]_D +105 (c, 1.1 in MeOH).

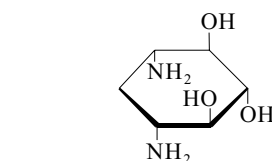
Benzyl glycoside, 2N,3,4N-tri-Ac: Benzyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy- β -L-idopyranoside [50611-15-9]
 $C_{19}H_{26}N_2O_6$ 378.424
 Cryst. (Me₂CO/petrol). Mp 193-194°. [α]_D +70 (c, 1.1 in $CHCl_3$).

Benzyl glycoside, 3-mesyl, 2N,4N-di-Ac: Benzyl 2,4-diacetamido-2,4,6-trideoxy-3-O-mesyl- β -L-idopyranoside [50611-18-2]
 $C_{18}H_{26}N_2O_7S$ 414.479
 Cryst. (EtOH/petrol). Mp 248°. [α]_D +28 (c, 0.7 in $CHCl_3$).

Zehavi, U. *et al.*, *J.O.C.*, 1972, **37**, 2145 (α -L-pyr deriv)

Liav, A. *et al.*, *Carbohydr. Res.*, 1973, **30**, 109, (L-pyr deriv, β -L-pyr deriv, pmr)
 Paulsen, H. *et al.*, *Chem. Ber.*, 1976, **109**, 90, (α -D-pyr deriv)
 Capek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1987, **52**, 2248 (α -D-Me pyr di-Ac, pmr)

1,3-Diamino-1,2,3-trideoxy-myoinositol D-481



$C_6H_{14}N_2O_3$ 162.188

The most frequently encountered natural inosamine, present in several antibiotics, e.g. Kanamycin, Neomycin and Paromomycin.
 Mp 255-258° (221-223°). Opt. inactive (*meso*-).

Hydrochloride (1:2): Mp 280° Mp 325° dec. (part subl. >300°).

Dipicrate: Mp 260°.

Hydrobromide (1:2): Mp 283-286° dec. (263-267°).

N,N'-Di-Ac:

$C_{10}H_{18}N_2O_5$ 246.263
 Mp 340-350° (297-300° dec.).

Tri-O-Ac:

$C_{12}H_{20}N_2O_6$ 288.3
 Mp 250° (as hydrochloride).

Penta-Ac:

$C_{16}H_{24}N_2O_8$ 372.374
 Prisms (MeOH). Mp 340-350°.

N,N'-Dibenzoyl: [85880-39-3]

$C_{20}H_{22}N_2O_5$ 370.404
 Mp 212-213°.

N-Me: N-Methyl-2-deoxystreptamine.

Hyosamine

[4226-17-9]
 $C_7H_{16}N_2O_3$ 176.215

Isol. from Hygromycin B and destomycins. The former yields the dextrorotatory form. Mp 160-162° Mp 183-186°. [α]_D -31.1 (H_2O). Asym. by mono N-substitution.

N-Tetra-Me:

$C_{10}H_{22}N_2O_3$ 218.295
 Mp 158-159°.

N-Tetra-Me; hydrochloride (1:2): Mp 277°.

N-Tetra-Me, dipicrate: Mp 257-258°.

N-Tetra-Me; methiodide (1:2): Mp 258°.

Daly, J. *et al.*, *J.A.C.S.*, 1960, **82**, 5928
 Wiley, P.F. *et al.*, *J.O.C.*, 1962, **27**, 2793
 Nakajima, M. *et al.*, *Annalen*, 1965, **689**, 235
 Kondo, S. *et al.*, *J. Antibiot., Ser. A*, 1965, **18**, 192 (Hyosamine)

Suami, T. *et al.*, *Tet. Lett.*, 1967, 2671
 Hasegawa, A. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 1123

Neuss, N. *et al.*, *Helv. Chim. Acta*, 1970, **53**, 2314 (Hyosamine)

Omoto, S. *et al.*, *J. Antibiot.*, 1973, **26**, 717, (di-Ac, cmr)

Morton, J.B. *et al.*, *J.A.C.S.*, 1973, **95**, 7464 (cmr)

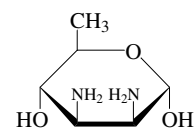
Suami, T. *et al.*, *J.A.C.S.*, 1973, **95**, 8734

Koch, K.F. *et al.*, *J.A.C.S.*, 1974, **96**, 3300
 Prinzbach, H. *et al.*, *Angew. Chem., Int. Ed.*, 1975, **14**, 632

Cox, D.A. *et al.*, *Top. Antibiot. Chem.*, (Ed., Sammes, P.G.), Ellis Horwood, 1977, **1**, 1
 Baer, H.H. *et al.*, *Can. J. Chem.*, 1987, **65**, 1443 (synth)

2,3-Diamino-2,3,6-trideoxymannose D-482

2,3-Diamino-2,3-dideoxyrhamnose



α -D-Pyranose-form

$C_6H_{14}N_2O_3$ 162.188

D-form

N²-Ac, N³-formyl: 2-Acetamido-2,3,6-trideoxy-3-formamido-D-mannose
C₉H₁₆N₂O₅ 232.236
Component of the O-antigen of *E. coli* 0119.

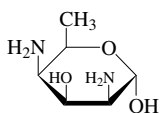
β-L-Pyranose-form

2,3-Di-Ac: 2,3-Diacetamido-2,3,6-trideoxy-β-L-mannopyranose
C₁₀H₁₈N₂O₅ 246.263
Component of the exocellular capsular polysaccharide of *E. coli* 08:K48:H9. Probable abs. config.

Anderson, A.N. *et al.*, *Carbohydr. Res.*, 1992, **237**, 249 (2-Ac, occur, 3-formyl)
Whittaker, D.V. *et al.*, *Carbohydr. Res.*, 1994, **256**, 289 (di-Ac, occur)

5,7-Diamino-5,7,9-trideoxy-non-2-ulonic acid D-483

5,7-Diamino-3,4,6,8-tetrahydroxy-2-oxononanoic acid
[452962-46-8]
H₃CCH(OH)CH(NH₂)CH(OH)CH(NH₂)CH(OH)CO₂H
C₉H₁₈N₂O₇ 266.25
Component of lipopolysaccharides of a phytopathogenic *Pseudomonas* sp.
Corsaro, M.M. *et al.*, *Carbohydr. Res.*, 2002, **337**, 955-959 (isol, struct, pmr, cmr)

2,4-Diamino-2,4,6-trideoxytalose D-484

α-D-Pyranose-form

C₆H₁₄N₂O₃ 162.188

α-D-Pyranose-form

Me glycoside, 2N,4N-di-Ac: Methyl 2,4-diacetamido-2,4,6-trideoxy-α-D-talopyranoside
[114949-79-0]
C₁₁H₂₀N₂O₅ 260.289
Cryst. (EtOAc). Mp 194-196°. [α]_D²⁰ +66 (c, 1.0 in MeOH).

L-form

2N,4N-Di-Ac: 2,4-Diacetamido-2,4,6-trideoxy-L-talose
[50611-22-8]
C₁₀H₁₈N₂O₅ 246.263
Syrup. [α]_D²⁵ -89 (c, 1.0 in H₂O).

β-L-Pyranose-form

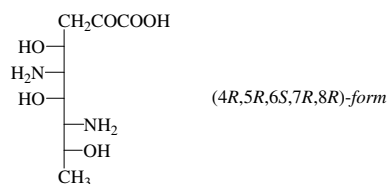
Benzyl glycoside, 2N,4N-di-Ac: Benzyl 2,4-diacetamido-2,4,6-trideoxy-β-L-talopyranoside
[50611-19-3]
C₁₇H₂₄N₂O₅ 336.387
Cryst. + 0.5H₂O (Me₂CO/petrol). Mp 228-229°. [α]_D²⁵ +54 (c, 0.95 in MeOH).
Benzyl glycoside, 2N,3,4N-tri-Ac: Benzyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy-β-L-talopyranoside
[50611-20-6]
C₁₉H₂₆N₂O₆ 378.424

Cryst. (Me₂CO/petrol). Mp 216-217°. [α]_D²⁵ +33 (c, 1.07 in CHCl₃).

Liav, A. *et al.*, *Carbohydr. Res.*, 1973, **30**, 109, (L-di-Ac, β-L-benzyl gly Ac derivs, pmr, ms)
Capek, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1987, **52**, 2248 (α-D-Me pyr di-Ac, pmr)

5,7-Diamino-4,6,8-trihydroxy-2-oxononanoic acid D-485

5,7-Diamino-3,5,7,9-tetradexynon-2-ulonic acid



(4R,5R,6S,7R,8R)-form

C₉H₁₈N₂O₆ 250.251
Exists mainly in pyranose forms.

(4R,5R,6S,7R,8R)-form

D-glycero-D-talo-form. 4-Epilegionamic acid
Obt. by mild hydrol. of *Legionella pneumophila* lipopolysaccharides. Formerly assigned as the L-glycero-D-talo- isomer.
N,N'-Di-Ac: [α]_D -3.9 (c, 0.2 in H₂O).

(4S,5R,6S,7R,8R)-form D-glycero-D-galacto-form. *Legionamic acid*
Isol. from lipopolysaccharides of *Legionella pneumophila*, *Pseudomonas fluorescens*, *Vibrio salmonicida*, *Vibrio alginolyticus* and *Acinetobacter baumannii*. Formerly assigned to either the L-glycero-D-galacto- or D-glycero-L-galacto- stereochem.

N,N'-Di-Ac: [α]_D +25.2 (c, 0.5 in H₂O).

(4S,5R,6S,7R,8S)-form L-glycero-D-galacto-form. 8-Epilegionamic acid
Isol. from lipopolysaccharides of *Pseudomonas aeruginosa*, *Salmonella arizonae* and *Yersinia ruckeri*. Formerly assigned as the enantiomeric D-glycero-L-galacto-form.

N³-(1-Iminoethyl), N⁷-Ac: 5-Acetamidino-7-acetamido-3,5,7,9-tetradexy-L-glycero-D-galacto-non-2-ulonic acid
C₁₃H₂₃N₃O₇ 333.341
Component of the lipopolysaccharides of *Morganella morganii*.

(4S,5S,6S,7S,8S)-form L-glycero-L-manno-form. *Pseudaminic acid*
[93973-64-9]

Residue present in some O-specific polysaccharides of *Shigella boydii* and *Pseudomonas aeruginosa*.

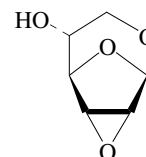
N⁵-Ac, N⁷-formyl: 5-Acetamido-3,5,7,9-tetradexy-7-formamido-L-glycero-L-manno-nonulosonic acid
C₁₂H₂₀N₂O₈ 320.299
Isol. from polysaccharides of the marine *Pseudoalteromonas distincta* KMM 638. Residue present in O-specific side chain of *Pseudomonas aeruginosa* type 6 lipopolysaccharides.

N⁵,N⁷-Di-Ac: C₁₃H₂₂N₂O₈ 334.325

Residue present in *Pseudomonas aeruginosa* O13 and *Proteus vulgaris* O39 polysaccharides.

N⁷-(3-Hydroxybutanoyl), N⁵-Ac: C₁₅H₂₆N₂O₉ 378.378
Larger fragment present in *Shigella boydii* and *Pseudomonas aeruginosa* polysaccharides.

Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1985, **141**, C1; 1986, **145**, C1; 2001, **333**, 241-249 (*Pseudaminic acid* derivs)
Muldoon, J. *et al.*, *Carbohydr. Res.*, 2001, **330**, 231-239 (*N-Ac-N-formyl, isol*)
Tsvetkov, Y.E. *et al.*, *Carbohydr. Res.*, 2001, **331**, 233-237; **335**, 221-243 (synth, abs config, bibl)
Kilcoyne, M. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1697-1702 (iminoethyl Ac)

1,6:2,3-Dianhydrolofuranose D-486

C₆H₈O₄ 144.127

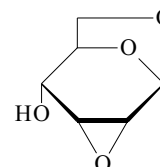
β-D-Furanose-form

Benzoyl: 1,6:2,3-Dianhydro-5-O-benzoyl-β-D-allofuranose
[120288-28-0]
C₁₃H₁₂O₅ 248.235
Mp 109-109.5°. [α]_D²⁰ +4.6 (c, 0.4 in CHCl₃).

Köll, P. *et al.*, *J. Carbohydr. Chem.*, 1988, **3**, 757-771 (β-D-fur benzoyl)

1,6:2,3-Dianhydroallopyranose D-487

allo-Cerny epoxide



C₆H₈O₄ 144.127

The name Cerny epoxide is a generic one for the parent diepoxide, its derivs. and stereoisomers.

β-D-Pyranose-form [26423-96-1] Derivs. are important conformationally fixed chiral synthons.

Cryst. (EtOAc/petrol). Mp 93-96°. [α]_D +41 (Me₂CO). [α]_D +55 (H₂O).

Tosyl: 1,6:2,3-Dianhydro-4-O-tosyl-β-D-allopyranose
[26423-97-2]
C₁₃H₁₄O₆S 298.316
Cryst. (EtOH). Mp 146-147°. [α]_D +52 (CHCl₃).

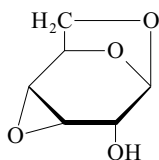
Benzyl: 1,6:2,3-Dianhydro-4-O-benzyl-β-D-allopyranose
[26540-44-3]
C₁₃H₁₄O₄ 234.251

Cryst. (EtOAc/petrol). Mp 74-76°. [α]_D +127 (CHCl₃).

Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 3377 (*synth*)

Trnka, T. *et al.*, *Carbohydr. Res.*, 1979, **76**, 39-44 (*cmr*)

Lauer, G. *et al.*, *Angew. Chem., Int. Ed.*, 1993, **32**, 272 (*synth, rev*)

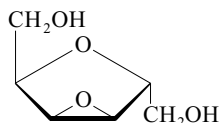
1,6:3,4-Dianhydroallose**D-488**C₆H₈O₄ 144.127**D-form** [26423-98-3]

Cryst. (EtOAc/petrol). Mp 104-106° (subl. at 80°). [α]_D -134 (c, 0.7 in H₂O).

Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 3377 (*synth*)

2,5:3,4-Dianhydroaltritol**D-489**

2,5:3,4-Dianhydrotalitol

*D-form*C₆H₁₀O₄ 146.143**D-form** [84518-62-7]

Cryst. (EtOH/Et₂O). Mp 91.5-93°. [α]_D²⁴ -76.3 (c, 2.73 in MeOH).

1,6-Di-Ac: 1,6-Di-O-acetyl-2,5:3,4-dianhydro-*D*-altritol [84447-11-0]

C₁₀H₁₄O₆ 230.217

Oil. [α]_D²⁵ -53.5 (in CHCl₃). Incorrectly named as a *D*-allitol deriv. in the lit.

1,6-Dibenzoyl: 2,5:3,4-Dianhydro-1,6-di-O-benzoyl-*D*-altritol [91318-12-6]

C₂₀H₁₈O₆ 354.359

Cryst. (pentane). Mp 73-74°. [α]_D²⁴ -70.9 (c, 1.92 in CHCl₃).

L-form

Syrup. [α]_D²⁰ +85.6 (c, 0.9 in EtOH).

DL-form [128899-69-4]

Syrup.

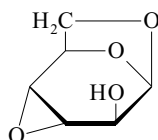
Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1982, **35**, 2169 (*di-Ac, cmr*)

Otero, D.A. *et al.*, *Carbohydr. Res.*, 1984, **128**, 79 (*synth, D-form, dibenzyl*)

Bock, K. *et al.*, *Acta Chem. Scand.*, 1989, **43**, 264 (*synth, L-form, pmr*)

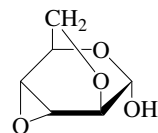
Kammerer, J. *et al.*, *Angew. Chem., Int. Ed.*, 1990, **29**, 1038 (*DL-form*)

Gabriel Garcia, J. *et al.*, *Acta Cryst. C*, 1992, **48**, 1692 (*cryst struct*)

1,6:3,4-Dianhydroaltrose**D-490**C₆H₈O₄ 144.127**D-form** [3868-04-0]

Cryst. Mp 161-162° (subl. >120°). [α]_D¹⁸ -121 (c, 0.5 in H₂O).

Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1965, **30**, 1151 (*synth*)

2,6:3,4-Dianhydroaltrose, 9CI**D-491**C₆H₈O₄ 144.127 **α -D-Pyranose-form**

Me glycoside: Methyl 2,6:3,4-dianhydro- α -D-altropyranoside

[70941-14-9]

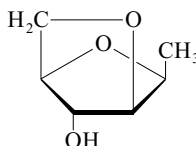
C₇H₁₀O₄ 158.154

Cryst. (EtOH or Et₂O). Mp 80.7-81.4° (78-80°).

[71109-93-8]

Sinclair, H.B. *et al.*, *J.O.C.*, 1979, **44**, 3361-3368 (*Me α -gly, synth*)

Coxon, B. *et al.*, *Carbohydr. Res.*, 2000, **329**, 131-139 (*Me α -gly, synth, pmr*)

2,5:3,6-Dianhydro-1-deoxy-glucitol**D-492**C₆H₁₀O₃ 130.143**D-form**

Cryst. (EtOAc/petrol). Mp 79-81°. [α]_D²⁰ +107.9 (H₂O).

Mesyl: 2,5:3,6-Dianhydro-1-deoxy-4-O-mesyl-D-glucitol

C₇H₁₂O₅S 208.235

Needles. Mp 58-60° Mp 92-93° (after drying). [α]_D²⁰ +69.3 (c, 1 in CHCl₃).

p-Nitrobenzoyl: Mp 114-116°. [α]_D²⁰ +13.4.

Tosyl: 2,5:3,6-Dianhydro-1-deoxy-4-O-tosyl-D-glucitol

C₁₃H₁₆O₅S 284.332

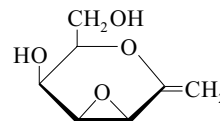
Cryst. (Et₂O/petrol). Mp 83-85°. [α]_D²⁰ +62 (c, 1 in CHCl₃).

Vargha, L. *et al.*, *Carbohydr. Res.*, 1968, **8**, 157 (*D-form, mesyl, tosyl*)

Kuszmanski, J. *et al.*, *Carbohydr. Res.*, 1983, **123**, 209; 1985, **142**, 71 (*synth, tosyl*)

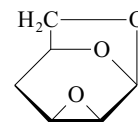
2,6:3,4-Dianhydro-1-deoxy-talo-hept-1-enitol**D-493**

2,6:4,5-Dianhydro-7-deoxy-altro-hept-6-enitol, 9CI

C₇H₁₀O₄ 158.154

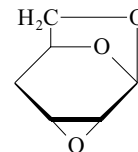
D-form [69165-03-3] Irreversible inhibitor of β -galactosidase. Mp 119°. [α]_D²² +55.5 (c, 0.5 in Me₂CO).

Lehmann, J. *et al.*, *Chem. Ber.*, 1978, **111**, 3961 (*synth, pmr*)

1,6:2,3-Dianhydro-4-deoxy-lyxo-hexopyranose**D-494**C₆H₈O₃ 128.127 **β -D-form** [50767-54-9]

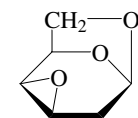
Cryst. Mp 69-70° (previous subl.). Bp_{0.1} 140-160° (bath). [α]_D -35 (c, 1.0 in H₂O).

Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1962, **27**, 94 (*synth*)

1,6:2,3-Dianhydro-4-deoxy-ribo-hexopyranose**D-495**C₆H₈O₃ 128.127 **β -D-form** [40838-15-1]

Cryst. (Et₂O/petrol). Mp 66-67°. [α]_D +30 (c, 1.8 in H₂O).

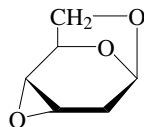
Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1962, **27**, 94 (*synth*)

1,6:3,4-Dianhydro-2-deoxy-lyxo-hexose, 9CI**D-496**C₆H₈O₃ 128.127 **β -D-Pyranose-form** [50767-53-8]

Oil. Bp_{0.01} 80° (bath). [α]_D²⁴ -105 (c, 0.6 in H₂O) (lit gives a temp. range).

Halbych, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1973, **38**, 2151-2166 (*synth, glc*)

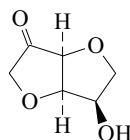
Trnka, T. *et al.*, *Carbohydr. Res.*, 1979, **76**, 39-44 (*cmr*)

1,6:3,4-Dianhydro-2-deoxy-ribo-hexose, 9CI**D-497**C₆H₈O₃ 128.127

β-D-Pyranose-form [50767-52-7] Bp_{0.1} 80° (bath). [α]_D²⁴ -136 (c, 0.75 in H₂O) (lit. gives a temp. range).

Halbych, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1973, **38**, 2151-2166 (*synth, glc*).

Trnka, T. *et al.*, *Carbohydr. Res.*, 1979, **76**, 39-44 (*cmr*).

1,4:3,6-Dianhydrofructose**D-498**C₆H₈O₄ 144.127**D-form** [13241-40-2]Viscous liq. [α]_D²⁷ +91.9 (H₂O).**Nitrate:** [110627-22-0]C₆H₇NO₆ 189.124

Solid (diisopropyl ether). Mp 59-62°.

[α]_D²⁰ +212.6 (c, 0.89 in Me₂CO).**Nitrate, oxime:** [110627-24-2]C₆H₈N₂O₆ 204.139

Solid (diisobutyl ether). Mp 111-115°.

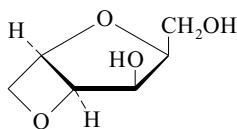
[α]_D²⁰ +280.4 (c, 0.93 in MeOH).

Heyns, K. *et al.*, *Chem. Ber.*, 1963, **96**, 3195 (*synth*).

Ger. Pat., 1987, 3 602 067; *CA*, **107**, 176017c, (*D-nitrate, D-nitrate oxime*).

Limberg, G. *et al.*, *Synthesis*, 1994, 317-321, (*D-form, synth, pmr, cmr*).

Tokic-Vujosevic, Z. *et al.*, *Synthesis*, 2001, 2028-2034 (*D-nitrate oxime*).

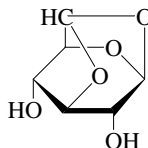
2,5:4,6-Dianhydrogalactitol**D-499**C₆H₁₀O₄ 146.143**D-form** [106248-76-4]Syrup. [α]_D²⁰ +14.5 (c, 1.4 in CHCl₃).

1-Tosyl: 2,5:4,6-Dianhydro-1-O-tosyl-D-galactitol

[106248-77-5]

C₁₃H₁₆O₆S 300.332Cryst. (Et₂O/hexane). Mp 73-74°.[α]_D²⁰ -3.9 (c, 0.7 in CHCl₃).

Köll, P. *et al.*, *Annalen*, 1987, 205 (*synth, pmr, cmr*).

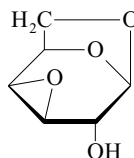
1,6:3,6-Dianhydrogalactodial-dopyranose**D-500**C₆H₈O₅ 160.126**D-form**

Di-Ac: 2,4-Di-O-acetyl-1,6:3,6-dianhydro-D-galactohexodialdopyranose

[141990-00-3]

C₁₀H₁₂O₇ 244.201Cryst. (EtOH). Mp 93°. [α]_D²¹ -27.9(c, 1.0 in CHCl₃).

Vogel, C. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 287-303 (*D-form, di-Ac, synth, pmr, cmr, cryst struct*).

1,6:3,4-Dianhydrogalactose**D-501**C₆H₈O₄ 144.127**D-Pyranose-form** [16939-77-8]

Cryst. (EtOH/petrol). Mp 67-69°.

[α]_D -80 (Me₂CO).

Tosyl: 1,6:3,4-Dianhydro-2-O-tosyl-β-D-galactopyranose

[6167-32-4]

C₁₃H₁₄O₆S 298.316Cryst. (CHCl₃/EtOH). Mp 148-151°.[α]_D -42 (c, 2.0 in CHCl₃).

2-Me: 1,6:3,4-Dianhydro-2-O-methyl-β-D-galactopyranose

C₇H₁₀O₄ 158.154Mp 91-93°. [α]_D -77 (CHCl₃).

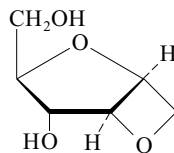
2-Benzyl: 1,6:3,4-Dianhydro-2-O-benzyl-β-D-galactopyranose

[33208-46-7]

C₁₃H₁₄O₄ 234.251Mp 47-48°. [α]_D -55 (CHCl₃).

Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1963, **28**, 1569

Szeja, W. *et al.*, *Carbohydr. Res.*, 1986, **183**, 135 (*synth, tosyl*).

1,3:2,5-Dianhydroglucitol**D-502**C₆H₁₀O₄ 146.143**D-form** [106248-70-8]Syrup. [α]_D²⁰ +7.7 (c, 2.3 in CHCl₃).

Di-Ac: 4,6-Di-O-acetyl-1,3:2,5-dianhydro-D-glucitol

[106248-71-9]

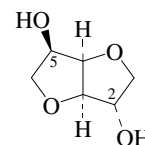
C₁₀H₁₄O₆ 230.217Syrup. [α]_D²⁰ -13.9 (c, 1.4 in CHCl₃).

Köll, P. *et al.*, *Annalen*, 1987, 205 (*synth, pmr*).

1,4:3,6-Dianhydroglucitol, 9CI, 8CI**D-503**

1,4:3,6-Dianhydrosorbitol. Isosorbide,

BAN, INN, JAN, USAN. Devicoran. Hydronol. Ismotin. Isobide. Isorgen G. Sorbide (*obsol.*). NSC 40725. AT 101



(D)-form

C₆H₁₀O₄ 146.143

Approved 1981. Log P -1.58 (calc).

D-form [652-67-5]

Readily obt. from glucose. By-prod. of the starch industry obt. by dehydration of Glucitol, G-247. Inexpensive starting material for synthesis. Osmotic diuretic. Used in the treatment of hydrocephalus. Also a chiral modifying agent for asymmetric redn. of ketones. Mp 62-64°. Bp₂ 160-175°. [α]_D²⁰ +44.8 (H₂O).

► LD₅₀ (rat, orl) 24000 mg/kg. LZ4380000

2-Ac: 2-O-Acetyl-1,4:3,6-dianhydro-D-glucitol

[13042-39-2]

C₈H₁₂O₅ 188.18Cryst. (Me₂CO). Mp 80°. [α]_D²⁰ +78.8

(c, 1 in MeOH).

5-Ac: 5-O-Acetyl-1,4:3,6-dianhydro-D-glucitol

[65940-93-4]

C₈H₁₂O₅ 188.18

Oil. Bp_{0.2} 110-114°. [α]_D²⁰ +120.8 (c, 1 in MeOH).

5-Benzoyl: 1,4:3,6-Dianhydro-5-O-benzyl-D-glucitol

[24332-67-0]

C₁₃H₁₄O₅ 250.251

Mp 117-118°. [α]_D²⁰ +44.8 (c, 1.0 in MeOH).

2-Tosyl, 5-Ac: [111554-46-2]

C₁₅H₁₈O₇S 342.369[α]_D +83.6 (CHCl₃).

5-Tosyl, 2-Ac: [111443-17-5]

C₁₅H₁₈O₇S 342.369Mp 65-66°. [α]_D +79.2 (CHCl₃).

2,5-Ditosyl: [66966-12-9]

C₂₀H₂₂O₈S₂ 454.521

Mp 100-101°. [α]_D²³ +57.4 (c, 1 in CHCl₃).

2-Nitrate: [16106-20-0]

C₆H₉NO₆ 191.14

Cryst. Mp 52-53°.

2-Nitrate, 5-tosyl: [18978-12-6]

C₁₃H₁₅NO₈S 345.329

Cryst. Mp 74.5-75.5°.

5-Nitrate: Isosorbide mononitrate, BAN,

INN, USAN.

Corangin. Elantan. Imdur.

Ismo. Isotrate. Monosorb. Nitrosorbide.

AHR 4698. BM 22145

[16051-77-7]

C₆H₉NO₆ 191.14

Approved 1993

Used for treatment of angina pectoris.
Mp 52-53°. Log P -0.71 (calc). Metab. of
Isosorbide dinitrate.

- LD₅₀ (rat, orl) 2000 mg/kg. Exp. reprod.
effects (large dose). LZ4386500

5-Nitrate, 2-tosyl: Mp 81-83°.

2,5-Dinitrate: **Isosorbide dinitrate, BAN, INN, USAN. Cedocard. Dinitrosorbide. Cardopax. Frandol. Imtack. Isoket. Isordil. Sorbangil. Sorbitrate. Vascardin. Nitrol-R** [87-33-2]

C₆H₈N₂O₈ 236.138

Cardiac stimulant, coronary vasodila-
tor; used in the management of angina.
Mp 51-52° Mp 71°. [α]_D²⁰ +135 (EtOH).
Log P 0.16 (calc). Disadvantaged by low
bioavailability, first-pass effect and
tolerance development.

- LD₅₀ (rat, orl) 747 mg/kg. Exp. reprod.
effects. Skin irritant. LZ4385000

2,5-Di-Me ether: [5306-85-4]

C₈H₁₄O₄ 174.196

Bp₁ 60°.

2,5-Dibenzyl: [24332-66-9]

C₂₀H₂₂O₄ 326.391

[α]_D +75.7 (CHCl₃).

L-form [124508-14-1]

Cryst. (EtOAc/pentene). Mp 62-63°.
[α]_D²⁰ -47 (c, 1.2 in H₂O).

Aldrich Library of 13C and 1H FT NMR
Spectra, 1992, **1**, 406C (nmr)

Hockett, R.C. et al., J.A.C.S., 1946, **68**, 927

Wiggins, L.F. et al., Adv. Carbohydr. Chem.,
1950, **5**, 191 (rev. props)

Cope, A.C. et al., J.A.C.S., 1956, **78**, 3177
(stereochem)

Jackson, M. et al., Can. J. Chem., 1959, **37**,
1048

Buck, K.W. et al., Carbohydr. Res., 1966, **2**, 122
(2-Ac)

Hayward, L.D. et al., Can. J. Chem., 1967, **45**,
2191-2194 (2-nitrate, synth, ir)

Hopton, F.J. et al., Can. J. Chem., 1969, **47**,
2395 (pmr)

Soltzberg, S. et al., Adv. Carbohydr. Chem.
Biochem., 1970, **25**, 229 (rev)

Anteunis, M. et al., Org. Magn. Reson., 1971, **3**,
693-701 (2-nitrate, synth, pmr, ir)

Barton, R.E. et al., Can. J. Chem., 1972, **50**,
1719-1728 (2-nitrate, uv, ord, cd)

Silvieri, L.A. et al., Anal. Profiles Drug Subst.,
1975, **4**, 225 (deriv)

Hirao, A. et al., J.O.C., 1979, **44**, 1720 (use)

Bogaert, M.G. et al., Clin. Pharmacokinet.,
1983, **8**, 410 (dinitrate, rev)

van Koningsveld, H. et al., Acta Cryst. C, 1984,
40, 519 (cryst struct)

Abshagen, U. et al., Mononitrates, [Int.
Symp.], 1984, 53 (nitrates, rev)

Jelleff, C.C. et al., Am. Heart J., 1985, **110**, 197
(dinitrate, rev)

Fleche, G. et al., Starch/Staerke, 1986, **38**, 26
(rev, synth, chem)

Achet, D. et al., Synthesis, 1986, 642-643 (di-Me
ether)

de Lucchi, O. et al., Gazz. Chim. Ital., 1987,
117, 173 (nitrates, synth, ir, pmr)

Ger. Pat., 1987, 3 521 809; CA, **106**, 120177s (di-
Me ether, synth)

Negwer, M. et al., Organic-Chemical Drugs and
their Synonyms, 6th edn., Akademie-Verlag,
1987, 453; 474

Stoss, P. et al., Synthesis, 1987, 174 (5-Ac, 2-Ac)

Bock, K. et al., Acta Chem. Scand., 1989, **43**,
264 (L-form)

Defraye, J. et al., Carbohydr. Res., 1990, **205**,
191 (synth)

Stoss, P. et al., Adv. Carbohydr. Chem. Biochem.,
1991, **49**, 93 (rev)

Martindale, The Extra Pharmacopoeia, 30th
edn., Pharmaceutical Press, 1993, 823; 1023;
1024

Abenhaim, D. et al., Carbohydr. Res., 1994, **261**,
255 (alkyl derivs)

Chandrasekaran, S. et al., Synthesis, 1994, 1032
(nitrates, synth)

Duclos, A. et al., Synthesis, 1994, 1087 (synth,
cmr)

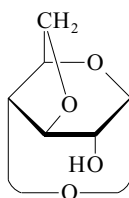
Prakash, A. et al., Drugs, 1999, **57**, 93-99; 261-
277 (5-nitrate, rev)

Kurszewski, M. et al., Carbohydr. Res., 2002,
337, 1261-1268 (synth)

Lewis, R.J. et al., Sax's Dangerous Properties of
Industrial Materials, 8th edn., Van Nostrand
Reinhold, 1992, CCK125; HID350; ISC500

1,4:3,6-Dianhydroglucose

D-504



C₆H₈O₄ 144.127

α-D-Pyranose-form

Prod. by gasification of wood and by vac.
pyrol. of amylose. Mp 122-123°.

Tischenko, D. et al., Zh. Obshch. Khim., 1948,
18, 1193

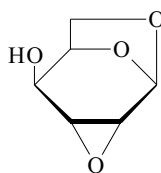
Bedford, G.R. et al., Chem. Comm., 1965, 287
(synth, pmr)

Ohnishi, A. et al., Carbohydr. Res., 1981, **96**,
161 (cryst struct, nmr)

1,6:2,3-Dianhydrogulose

D-505

gulo-Cerny epoxide



C₆H₈O₄ 144.127

The name Cerny epoxide is a generic one
for the parent diepoxide, its derivs. and
stereoisomers.

β-D-Pyranose-form [34147-05-2]

Derivs. are important conformationally
fixed chiral synthons. Mp 135-137°. [α]_D
+30 (H₂O).

4-Ac: 4-O-Acetyl-1,6:2,3-dianhydro-β-D-
gulopyranose

[65359-91-3]

C₈H₁₀O₅ 186.164

Mp 83-85°. [α]_D +47 (CHCl₃).

4-Tosyl: 1,6:2,3-Dianhydro-4-O-tosyl-β-D-
gulopyranose

C₁₃H₁₄O₆S 298.316

Syrup. [α]_D +26 (CHCl₃).

4-Me: 1,6:2,3-Dianhydro-4-O-methyl-β-D-
gulopyranose

C₇H₁₀O₄ 158.154

Mp 36-38°. [α]_D -4.4 (CHCl₃).

Černý, M. et al., Coll. Czech. Chem. Comm.,
1963, **28**, 1659 (synth)

Berking, B. et al., Acta Cryst. B, 1971, **27**, 1752
(cryst struct)

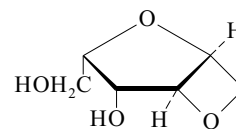
Shashkov, A.S. et al., Bioorg. Khim., 1977, **3**,
1503 (cmr)

Trnka, T. et al., Carbohydr. Res., 1979, **76**, 39-44
(cmr)

Sinclair, H.B. et al., J.O.C., 1979, **44**, 3361
(synth, pmr)

1,3:2,5-Dianhydroiditol

D-506



C₆H₁₀O₄ 146.143

L-form [106192-89-6]

Syrup. [α]_D²⁰ +3.8 (c, 2.6 in CHCl₃).

6-Tosyl: 1,3:2,5-Dianhydro-6-O-tosyl-L-
iditol

[106192-94-3]

C₁₃H₁₆O₆S 300.332

Cryst. (Et₂O). Mp 114-115°. [α]_D²⁰ +6.9
(c, 0.4 in CHCl₃).

6-Tosyl, 4-Ac: 4-O-Acetyl-1,3:2,5-
dianhydro-6-O-tosyl-L-iditol

[106192-95-4]

C₁₅H₁₈O₇S 342.369

Cryst. (Et₂O/hexane). Mp 90-91°. [α]_D²⁰
+13 (c, 1.9 in CHCl₃).

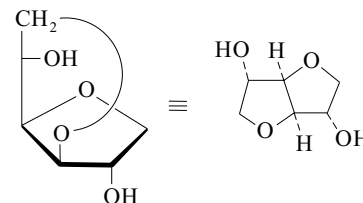
Köll, P. et al., Annalen, 1987, 205 (synth, pmr)

1,4:3,6-Dianhydroiditol, 9CI, 8CI

D-507

Isoidide

[5627-19-0]



L-form

C₆H₁₀O₄ 146.143

D-form [28948-16-5]

Di-Ac: 2,5-Di-O-acetyl-1,4:3,6-dianhydro-
D-iditol

[54522-25-7]

C₁₀H₁₄O₆ 230.217

Mp 55-56°. [α]_D²³ -89 (c, 4.2 in CHCl₃).

Dibenzoyl: 1,4:3,6-Dianhydro-2,5-di-O-
benzoyl-D-iditol

[54522-26-8]

C₂₀H₁₈O₆ 354.359

Mp 110-111.5°. [α]_D²³ -132 (c, 2.17 in
CHCl₃).

Dimesyl: 1,4:3,6-Dianhydro-2,5-di-O-mesyl-D-iditol
[54522-27-9]
 $C_8H_{14}O_8S_2$ 302.326
Mp 159-160°. $[\alpha]_D^{23}$ -31.6 (c, 1.77 in Me_2CO).

Ditosyl: 1,4:3,6-Dianhydro-2,5-di-O-tosyl-D-iditol
 $C_{20}H_{22}O_8S_2$ 454.521
Mp 105-106°. $[\alpha]_D^{23}$ -31.1 (c, 2.66 in $CHCl_3$).

L-form [24332-71-6]
Mp 63.8-64.4°. Bp_{0.2} 160°. $[\alpha]_D^{24.5}$ +20.8 ($CHCl_3$).

Hemihydrate: Mp 43-45°. $[\alpha]_D^{17}$ +18.4 (c, 2.4 in H_2O).

Di-Ac: 2,5-Di-O-acetyl-1,4:3,6-dianhydro-L-iditol
 $C_{10}H_{14}O_6$ 230.217
Mp 57-58°. Bp_{0.5} 110-115° (bath). $[\alpha]_D^{25}$ +89.6 (c, 1.5 in $CHCl_3$).

Dibenzoyl: 1,4:3,6-Dianhydro-2,5-di-O-benzoyl-L-iditol
 $C_{20}H_{18}O_6$ 354.359
Mp 111-112°. $[\alpha]_D^{23}$ +140.3 ($CHCl_3$).

Dimesyl: 1,4:3,6-Dianhydro-2,5-di-O-mesyl-L-iditol
 $C_8H_{14}O_8S_2$ 302.326
Mp 155-156°. $[\alpha]_D^{17}$ +41.9 (c, 1.2 in Me_2CO).

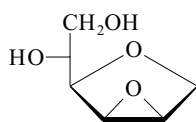
Ditosyl: 1,4:3,6-Dianhydro-2,5-di-O-tosyl-L-iditol
 $C_{20}H_{22}O_8S_2$ 454.521
Mp 105.5-106°. $[\alpha]_D$ +33.2 ($CHCl_3$).

DL-form
Mp 84-85° (73-77°). Bp_{0.15} 158-160°.

Di-Ac: Cryst. (EtOH). Mp 69-71°.

Dibenzoyl: 1,4:3,6-Dianhydro-2,5-di-O-benzoyl-DL-iditol
 $C_{20}H_{18}O_6$ 354.359
Mp 122-124°.

Fletcher, H.G. *et al.*, *J.A.C.S.*, 1945, **67**, 1042
Wiggins, L.F. *et al.*, *J.C.S.*, 1947, 1403 (synth)
Vul'fson, N.S. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1969, 768; *CA*, **71**, 25 794r (ms)
Hartmann, L.A. *et al.*, *CA*, 1970, **73**, 35 703r
Hicks, D.R. *et al.*, *Can. J. Chem.*, 1974, **52**, 3367 (synth, pmr)
Stoss, P. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1991, **49**, 93 (rev)
Kurszewska, M. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1261-1268 (DL-form, synth, pmr, cmr, di-Ac, cryst struct)

1,4:2,3-Dianhydromannitol**D-508** $C_6H_{10}O_4$ 146.143

D-form [101069-54-9]
Mp 101.5-102.5°. $[\alpha]_D$ -49.5 (c, 1 in EtOH).

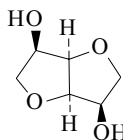
5,6-Isopropylidene: 1,4:2,3-Dianhydro-5,6-O-isopropylidene-D-mannitol
[55730-76-2]

 $C_9H_{14}O_4$ 186.207Syrup. Bp_{0.015} 53-54°.

Hanessian, S. *et al.*, *Tet. Lett.*, 1974, 3983
Hanessian, S. *et al.*, *Carbohydr. Res.*, 1985, **141**, 221

1,4:3,6-Dianhydromannitol, 9CI, 8CI**D-509**

Isomannide
[28218-68-0]

 $C_6H_{10}O_4$ 146.143**D-form** [641-74-7]

Isol. from the fruit of *Cotoneaster microphylla*.

Cryst. (EtOAc/EtOH).

Mp 86.5-89°. $[\alpha]_D^{25}$ +62.2 ($CHCl_3$). $[\alpha]_D^{26}$ +139.4 (Py). $[\alpha]_D^{26}$ +91 (H_2O).

2,5-Di-Ac: 2,5-Di-O-acetyl-1,4:3,6-dianhydro-D-mannitol

[24808-22-8]

 $C_{10}H_{14}O_6$ 230.217

Syrup. Bp_{0.5} 118°. $[\alpha]_D$ +194.5 (c, 6.7 in $CHCl_3$).

2,5-Dibenzoyl: 1,4:3,6-Dianhydro-2,5-di-O-benzoyl-D-mannitol

[24332-64-7]

 $C_{20}H_{18}O_6$ 354.359

Needles (EtOH aq.). Mp 132-133° Mp 142°. $[\alpha]_D$ +226 (c, 1.3 in $CHCl_3$).

2,5-Ditosyl: 1,4:3,6-Dianhydro-2,5-di-O-tosyl-D-mannitol

[67890-26-0]

 $C_{20}H_{22}O_8S_2$ 454.521

Mp 93-94°. $[\alpha]_D^{20}$ +92.2 (c, 2.5 in $CHCl_3$).

2,5-Dibenzoyl: [287945-50-0]

 $C_{20}H_{22}O_4$ 326.391

Solid (MTBE). Mp 41°. $[\alpha]_D^{21}$ +83 (c, 0.99 in $CHCl_3$).

2,5-Ditrityl: 1,4:3,6-Dianhydro-2,5-di-O-tritryl-D-mannitol

 $C_{44}H_{38}O_4$ 630.782

Cryst. (EtOH aq.). Mp 92-94°. $[\alpha]_D^{27}$ +44.3.

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **1**, 406B (nmr)

Fletcher, H.G. *et al.*, *J.A.C.S.*, 1945, **67**, 1042 (*D-form, D-dibenzoyl*)

Wiggins, L.F. *et al.*, *J.C.S.*, 1945, 4 (synth)

Hockett, R.C. *et al.*, *J.A.C.S.*, 1946, **68**, 931; 935; 939 (*D-form, struct, synth, D-dibenzoyl, D-ditosyl, D-ditrityl*)

Montgomery, R. *et al.*, *J.C.S.*, 1946, 393 (*D-ditosyl*)

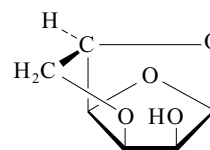
Dirlikov, S.K. *et al.*, *ACS Symp. Ser.*, 1990, **433**, 176 (synth)

Defaye, J. *et al.*, *Carbohydr. Res.*, 1990, **205**, 191 (synth)

Stoss, P. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1991, **49**, 93 (rev)

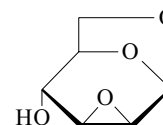
Bisht, G. *et al.*, *Asian J. Chem.*, 1995, **7**, 455; *CA*, **122**, 261131q (isol)

Vogler, M. *et al.*, *Synthesis*, 2004, 1211-1228 (*2,5-dibenzoyl*)

1,4:3,6-Dianhydromannose**D-510** $C_6H_8O_4$ 144.127 **α -D-Pyranose-form**

Pyrolysis product from D-mannose. Mp 105-110°.

Bedford, G.R. *et al.*, *Chem. Comm.*, 1965, 287 (synth, pmr)

1,6:2,3-Dianhydromannose, 9CI, 8CI**D-511** $C_6H_8O_4$ 144.127 **β -D-Pyranose-form**

manno-Cerny epoxide

[3868-03-9]

Derivs. are important conformationally fixed chiral synthons.

Cryst. (Me_2CO /petrol). Mp 68-70°. $[\alpha]_D^{18}$ -35 ($CHCl_3$). The name Cerny epoxide is a generic one for the parent diepoxide, its derivs. and stereoisomers.

4-Tosyl: 1,6:2,3-Dianhydro-4-O-tosyl- β -D-mannopyranose

[3868-08-4]

 $C_{13}H_{14}O_6S$ 298.316

Needles (EtOH). Mp 137-139°. $[\alpha]_D^{20}$ -37 (c, 1.0 in $CHCl_3$).

4-Me: 1,6:2,3-Dianhydro-4-O-methyl- β -D-mannopyranose

 $C_7H_{10}O_4$ 158.154

Cryst. (MeOH). Mp 56-58°. $[\alpha]_D$ -48 (c, 1.2 in MeOH).

4-Benzyl: 1,6:2,3-Dianhydro-4-O-benzyl- β -D-mannopyranose

[33208-47-8]

 $C_{13}H_{14}O_4$ 234.251

Cryst. (Et_2O /petrol). Mp 64°. $[\alpha]_D$ -27 ($CHCl_3$).

4-Trityl: 1,6:2,3-Dianhydro-4-O-trityl- β -D-mannopyranose

 $C_{25}H_{22}O_4$ 386.446

Mp 138-140°. $[\alpha]_D^{20}$ -17 ($CHCl_3$).

Černý, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1965, **30**, 1151 (β -D-form, synth, β -D-tosyl, β -D-trityl)

Seib, P.A. *et al.*, *J.C.S. (C)*, 1969, 2552, (β -D-tosyl, β -D-benzyl)

Trnka, T. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, **36**, 2216 (β -D-form, synth, β -D-benzyl)

Bochkov, A.F. *et al.*, *Carbohydr. Res.*, 1974, **32**, 1 (synth, β -D-Me)

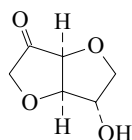
Černý, M. *et al.*, *Adv. Carbohydr. Chem.*, 1977, **34**, 23 (rev)

Shashkov, A.S. *et al.*, *Bioorg. Khim.*, 1977, **3**, 1503 (cmr)

Lauer, G. *et al.*, *Angew. Chem., Int. Ed.*, 1993, **32**, 272 (synth, pmr, cmr, bibl, deriv)

1,4:3,6-Dianhydrosorbose

D-512

C₆H₈O₄ 144.127**L-form** [13241-38-8]Viscous liq. [α]_D²⁷ +64.2 (H₂O).**Nitrate**: [110627-23-1]C₆H₇NO₆ 189.124

Solid (diisopropyl ether). Mp 69-72°.

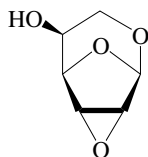
[α]_D²⁰ +80.3 (c, 0.69 in Me₂CO).**Nitrate, oxime**: [110627-25-3]C₆H₈N₂O₆ 204.139

Solid (toluene). Mp 121° (113-115°).

[α]_D²⁰ +114.6 (c, 0.82 in MeOH).Heyns, K. *et al.*, *Chem. Ber.*, 1963, **96**, 3195 (*synth*)*Ger. Pat.*, 1987, 3 602 067; *CA*, **107**, 176017c, (*L-nitrate, L-nitrate oxime*)Limberg, G. *et al.*, *Synthesis*, 1994, 317-321, (*L-form, synth, pmr, cmr*)Tokic-Vujosevic, Z. *et al.*, *Synthesis*, 2001, 2028-2034 (*L-nitrate oxime*)

1,6:2,3-Dianhydrotalofuranose

D-513

C₆H₈O₄ 144.127 **α -L-Furanose-form****Benzoyl**: 1,6:2,3-Dianhydro-5-O-benzoyl- α -L-talofuranose

[120288-29-1]

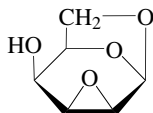
C₁₃H₁₂O₅ 248.235

Mp 102-106°.

Köll, P. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 757-771 (α -L-fur benzoyl)

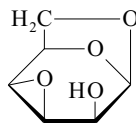
1,6:2,3-Dianhydrotalopyranose

D-514

C₆H₈O₄ 144.127 **β -D-form** [6893-59-0]Cryst. (Me₂CO/Et₂O). Mp 132°. [α]_D²⁰ -88 (c, 0.76 in H₂O).James, S.P. *et al.*, *J.C.S.*, 1946, 625-628 (*synth*)
Stanek, J. *et al.*, *Synthesis*, 1972, 698-699 (*synth*)
Trnka, T. *et al.*, *Carbohydr. Res.*, 1979, **76**, 39-44 (*cmr*)Budesinsky, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 1965-1983 (*pmr*)

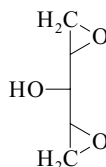
1,6:3,4-Dianhydrotalose

D-515

C₆H₈O₄ 144.127**D-form** [34147-09-6]Mp 74-75°. [α]_D²⁴ -49.7 (c, 1.44 in H₂O) (+50). The positive opt. rotn. (Staněk) appears to be an error.Hann, A.E. *et al.*, *J.A.C.S.*, 1942, **64**, 925(*synth*)Staněk, J. *et al.*, *Synthesis*, 1972, 698 (*synth*)Matsumoto, K. *et al.*, *Carbohydr. Res.*, 1993, **246**, 345 (*synth, ir, pmr, cmr*)Jung, M.E. *et al.*, *J.O.C.*, 1998, **63**, 8133-8144 (*synth, pmr*)

1,2:4,5-Dianhydroxylitol

D-516

C₅H₈O₃ 116.116Bp_{0.3} 60-62°. Opt. inactive (*meso*-).**Ac**: 3-O-Acetyl-1,2:4,5-dianhydroxylitolC₇H₁₀O₄ 158.154

Cryst. (EtOAc/hexane). Mp 36-38°.

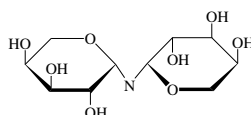
Benzoyl: 1,2:4,5-Dianhydro-3-O-benzoyloxylitolC₁₂H₁₂O₄ 220.224

Cryst. (EtOAc/hexane). Mp 39-40°.

Me ether: 1,2:4,5-Dianhydro-3-O-methylxylitolC₆H₁₀O₃ 130.143Bp_{0.2} 43°.Vidra, I. *et al.*, *Carbohydr. Res.*, 1983, **111**, 215 (*synth, pmr, cryst struct, deriv*)

Diarabinopyranosylamine

D-517

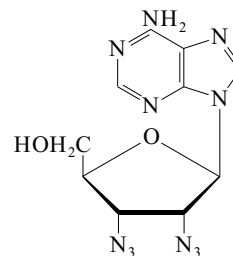
D-D- α , α -formC₁₀H₁₉NO₈ 281.262**D,D- α , α -form****N- α -D-Arabinopyranosyl- α -D-arabinopyranosylamine**

[152612-55-0]

Mp 143-144°. [α]_D²⁵ -52 (c, 2.0 in H₂O).**L,L- α , α -form****N- α -L-Arabinopyranosyl- α -L-arabinopyranosylamine**Mp 145°. [α]_D +50.6 (c, 1.6 in H₂O).Isbell, H.S. *et al.*, *J.O.C.*, 1958, **23**, 1309, (*di- α -L-pyr*)Linek, K. *et al.*, *Carbohydr. Res.*, 1993, **247**, 329 (*di- α -D-pyr*)

2',3'-Diazido-2',3'-dideoxyadenosine, 9CI

D-518

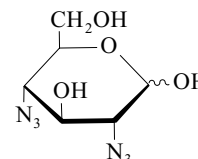
9-(2,3-Diazido-2,3-dideoxy- β -D-ribofuranosyl)adenine
[119644-21-2]C₁₀H₁₁N₁₁O₂ 317.269

Granular solid. Mp 171-172° dec.

Chen, Y.-C.J. *et al.*, *J.O.C.*, 1991, **56**, 3410 (*synth, uv, pmr, ms*)

2,4-Diazido-2,4-dideoxyglucose, 9CI

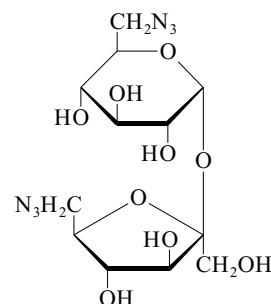
D-519

C₆H₁₀N₆O₄ 230.183**D-form** [56883-40-0]Syrup. [α]_D²⁰ +132 (c, 2.7 in MeOH). **α -D-Pyranose-form****Tri-Ac**: 1,3,6-Tri-O-acetyl-2,4-diazido-2,4-dideoxy- α -D-glucopyranoseC₁₂H₁₆N₆O₇ 356.294Syrup. [α]_D²⁰ +193 (c, 2.0 in CHCl₃). **β -D-Pyranose-form****1,6-Anhydro**: 1,6-Anhydro-2,4-diazido-2,4-dideoxy- β -D-glucopyranoseC₆H₈N₆O₃ 212.168Mp 49.5°. [α]_D²⁰ -72 (c, 2 in CHCl₃).Paulsen, H. *et al.*, *Tet. Lett.*, 1975, 1493 (*synth*)
Paulsen, H. *et al.*, *Chem. Ber.*, 1976, **109**, 104 (*synth, conformn, pmr*)

6,6'-Diazido-6,6'-dideoxysucrose

D-520

[33585-16-9]

C₁₂H₂₀N₆O₉ 392.325

Cryst. Mp 163-164°. $[\alpha]_D^{20} +78.8$ (c, 0.98 in H₂O).

Hough, L. *et al.*, *Carbohydr. Res.*, 1972, **25**, 497

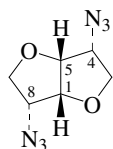
(*synth*)

Almquist, R.G. *et al.*, *J. Med. Chem.*, 1977, **20**, 1246 (*synth*)

Khan, R. *et al.*, *Carbohydr. Res.*, 1980, **78**, 185 (*synth*)

4,8-Diazo-2,6-dioxabicyclo[3.3.0]octane

D-521



(1*R*,4*R*,5*R*,8*R*)-form

C₆H₈N₆O₂ 196.168

(1*R*,4*R*,5*R*,8*R*)-form

1,4:3,6-Dianhydro-2,5-diazo-2,5-dideoxy-*D*-mannitol, 9CI

[76753-19-0]

$[\alpha]_D^{20} +338$.

(1*R*,4*R*,5*R*,8*S*)-form

1,4:3,6-Dianhydro-2,5-diazo-2,5-dideoxy-*D*-glucitol, 9CI

[76753-08-7]

Pale yellow liq. $[\alpha]_D^{20} +170$ (c, 1 in CHCl₃).

(1*R*,4*S*,5*R*,8*S*)-form

1,4:3,6-Dianhydro-2,5-diazo-2,5-dideoxy-*L*-iditol

[76753-09-8]

Pale yellow liq. Bp_{0.3} 92-94°. $[\alpha]_D^{20} +111$ (c, 1 in CHCl₃).

► Dec. explosively during combustion anal.

(1*S*,4*S*,5*S*,8*S*)-form

1,4:3,6-Dianhydro-2,5-diazo-2,5-dideoxy-*L*-mannitol

[76756-16-6]

Highly effective hypnotic agent.

Pale yellow liq. $[\alpha]_D^{20} -343$ (c, 0.5 in CHCl₃). The only stereoisomer exhibiting pharmacol. activity.

[76753-08-7, 76753-19-0]

Kuszmarn, J. *et al.*, *Carbohydr. Res.*, 1980, **85**, 259 (*synth*, *pharmacol*)

Hungarian Pat., 1980, 178 152,

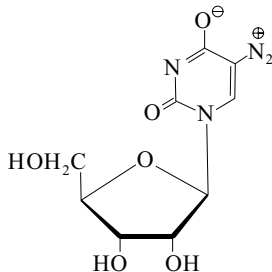
(Gyógyszerkutató Intézet); CA, **96**, 200099h (*synth*, *pharmacol*)

Archibald, T.G. *et al.*, *Synth. Commun.*, 1989, **19**, 1493 (*synth*, *ir*, *pmr*)

5-Diazouridine

D-522

β -*D*-Ribofuranosyl-5-diazouracil



C₉H₁₀N₄O₆ 270.201

Mp 178-182° dec. λ_{\max} 262 nm (ϵ 12 400) (MeOH); ν 2150 cm⁻¹ (N₂).

2'-Deoxy: 2'-Deoxy-5-diazouridine

C₉H₁₀N₄O₅ 254.202

Mp 163.5° dec. λ_{\max} 261 nm (ϵ 12600) (MeOH).

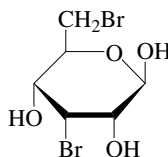
Roberts, M. *et al.*, *J.A.C.S.*, 1952, **74**, 668 (*synth*)

Paolini, J.P. *et al.*, *Biochim. Biophys. Acta*, 1963, **72**, 114 (*synth*)

3,6-Dibromo-3,6-dideoxyllose, 9CI

D-523

[162856-76-0]



C₆H₁₀Br₂O₄ 305.951

β -*D*-Pyranose-form

Me glycoside: Methyl 3,6-dibromo-3,6-dideoxy- β -*D*-allopyranoside, 9CI

[172471-31-7]

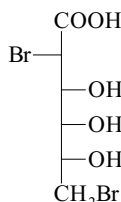
C₇H₁₂Br₂O₄ 319.977

Cryst. (CHCl₃/EtOAc). Mp 138° (dec.). $[\alpha]_D^{25} -38$ (c, 0.52 in EtOH).

Furuhata, K. *et al.*, *Carbohydr. Res.*, 1995, **275**, 17-24

2,6-Dibromo-2,6-dideoxyaltronic acid

D-524



C₆H₁₀Br₂O₅ 321.95

D-form

1,4-Lactone: 2,6-Dibromo-2,6-dideoxy-*D*-altrono-1,4-lactone

[109986-29-0]

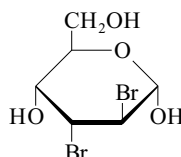
C₆H₈Br₂O₄ 303.935

Syrup. $[\alpha]_D^{20} +13.8$ (c, 2.1 in CHCl₃).

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1986, **40**, 740 (*synth*, *pmr*, *cmr*)

2,3-Dibromo-2,3-dideoxyaltrose

D-525



C₆H₁₀Br₂O₃ 289.951

α -*D*-Pyranose-form

Me glycoside, 4,6-benzylidene: Methyl 4,6-O-benzylidene-2,3-dibromo-2,3-dideoxy- α -*D*-altropyranoside

[20853-45-6]

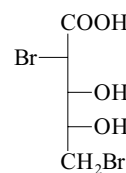
C₁₄H₁₆Br₂O₄ 408.086

Cryst. Mp 79-81°. $[\alpha]_D^{20} +72.5$ (c, 0.7 in CHCl₃).

Albano, E.L. *et al.*, *Carbohydr. Res.*, 1969, **9**, 149 (α -*D*-Me pyr benzylidene)

2,5-Dibromo-2,5-dideoxyarabinonic acid

D-526



C₅H₈Br₂O₄ 291.924

D-form

1,4-Lactone: 2,5-Dibromo-2,5-dideoxy-*D*-arabino-1,4-lactone

[78138-88-2]

Cryst. (CHCl₃ at -78°). Mp 46-47°. $[\alpha]_D^{25} +62$ (c, 6 in EtOAc).

1,4-Lactone, benzoyl: 3-O-Benzoyl-2,5-dibromo-2,5-dideoxy-*D*-arabinono-1,4-lactone

[90108-50-2]

C₁₂H₁₀Br₂O₄ 378.017

Syrup. $[\alpha]_D -49.5$ (c, 3.1 in CHCl₃).

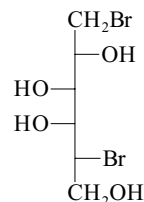
Bock, K. *et al.*, *Carbohydr. Res.*, 1981, **90**, 17 (*D*-form, *pmr*, *cmr*)

Chen, S.-Y. *et al.*, *J.O.C.*, 1984, **49**, 2168 (*benzoyl*)

1,5-Dibromo-1,5-dideoxygalactitol

D-527

2,6-Dibromo-2,6-dideoxygalactitol



D-form

C₆H₁₂Br₂O₄ 307.966

D-form

1,5-Dibromo-1,5-dideoxy-*D*-galactitol. 2,6-Dibromo-2,6-dideoxy-*L*-galactitol

[152884-06-5]

Cryst. (MeOH). Mp 150-151°. $[\alpha]_D^{20} +0.6$ (c, 3 in MeOH).

L-form

1,5-Dibromo-1,5-dideoxy-*L*-galactitol. 2,6-Dibromo-2,6-dideoxy-*D*-galactitol

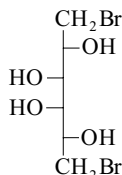
[152884-05-4]

Cryst. (MeOH). Mp 154-155° dec. $[\alpha]_D^{20} -0.6$ (c, 3 in MeOH).

Lundt, I. *et al.*, *Synthesis*, 1993, 720 (*synth*, *pmr*, *cmr*)

1,6-Dibromo-1,6-dideoxygalactitol, 8CI**D-528**

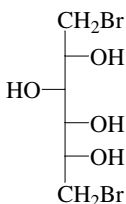
Mitolactol, INN. *Dibromidulcitol*. *Elobromol*. *DBD*. NSC 104800
[10318-26-0]



$C_6H_{12}Br_2O_4$ 307.966
Antineoplastic agent. Mp 187-188°. Log P -2 (calc).

▶ LW5425000

Netherlands Pat., 1966, 6 600 395; *CA*, **65**, 20205f (*synth, pharmacol*)
Kellner, B. *et al.*, *Arzneim.-Forsch.*, 1967, **216**, 669 (*pharmacol*)
Kellner, B. *et al.*, *Nature (London)*, 1967, **213**, 402 (*synth, pharmacol*)
Simon, K. *et al.*, *Acta Cryst. B*, 1971, **27**, 806 (*cryst struct*)
Martindale, *The Extra Pharmacopoeia*, 28th/29th edn., Pharmaceutical Press, 1982, 1849
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DDJ000

1,6-Dibromo-1,6-dideoxyglucitol**D-529**

$C_6H_{12}Br_2O_4$ 307.966

D-form [32452-75-8]

No phys. props. reported.

Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-1,6-dibromo-1,6-dideoxy-D-glucitol
[150822-91-6]
 $C_{14}H_{20}Br_2O_8$ 476.115
Brown oil.

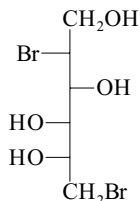
Hungarian Pat., 1971, 2357; *CA*, **75**, 141111x (*synth*)

El Anzi, A. *et al.*, *Tet. Lett.*, 1993, **34**, 3741-3744 (*synth*)

Crombez-Robert, C. *et al.*, *Carbohydr. Res.*, 1997, **303**, 359-365 (*synth*)

2,6-Dibromo-2,6-dideoxyglucitol**D-530**

1,5-Dibromo-1,5-dideoxygulitol



$C_6H_{12}Br_2O_4$ 307.966

Acc. to IUPAC special rules for carbohydrates, the name 2,6-dibromo-2,6-dideoxyglucitol has priority.

L-form

2,6-Dibromo-2,6-dideoxy-L-glucitol, *1,5-Dibromo-1,5-dideoxy-D-glucitol*

[124379-09-5]

Syrup. $[\alpha]_D^{20} +15.3$ (c, 0.4 in MeOH).

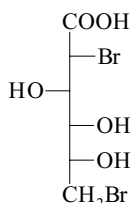
Tetra-Ac: 1,3,4,5-Tetra-O-acetyl-2,6-dibromo-2,6-dideoxy-L-glucitol

$C_{14}H_{20}Br_2O_8$ 476.115

Cryst. (Et₂O/pentane). Mp 66-67°. $[\alpha]_D^{20} +21.1$ (c, 2 in CHCl₃).

Bock, K. *et al.*, *Acta Chem. Scand.*, 1989, **43**, 264 (*synth, cmr*)

Lundt, I. *et al.*, *Synthesis*, 1993, 714 (*cmr*)

2,6-Dibromo-2,6-dideoxygluconic acid**D-531**

$C_6H_{10}Br_2O_5$ 321.95

D-form

1,4-Lactone: 2,6-Dibromo-2,6-dideoxy-D-glucono-1,4-lactone

[78138-23-5]

$C_6H_8Br_2O_4$ 303.935

Cryst. (Et₂O/pentane). Mp 90-92°. $[\alpha]_D^{20} +29$ (c, 2 in EtOAc).

1,4-Lactone, di-Ac: 3,5-Di-O-acetyl-2,6-dibromo-2,6-dideoxy-D-glucono-1,4-lactone

[69617-71-6]

$C_{10}H_{12}Br_2O_6$ 388.009

Cryst. (Et₂O). Mp 93-95°. $[\alpha]_D^{20} +51.4$ (c, 2.3 in CHCl₃).

L-form

1,4-Lactone: 2,6-Dibromo-2,6-dideoxy-L-glucono-1,4-lactone

[152786-43-1]

$C_6H_8Br_2O_4$ 303.935

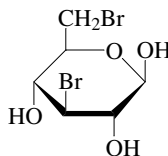
Cryst. (Et₂O/hexane). Mp 91-92°. $[\alpha]_D^{20} -30$ (c, 2 in EtOAc).

Bock, K. *et al.*, *Carbohydr. Res.*, 1979, **68**, 313; 1981, **90**, 7 (*D-lactone, lactone di-Ac, pmr, cmr*)

Lundt, I. *et al.*, *Synthesis*, 1993, 714 (*synth, cmr, L-form lactone*)

3,6-Dibromo-3,6-dideoxyglucose, 9CI**D-532**

[162856-75-9]



$C_6H_{10}Br_2O_4$ 305.951

β-D-Pyranose-form

Me glycoside: Methyl 3,6-dibromo-3,6-dideoxy-β-D-glucopyranoside, 9CI
[172471-32-8]

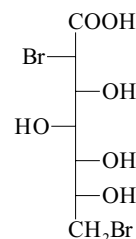
$C_7H_{12}Br_2O_4$ 319.977

Hygroscopic cryst. (CHCl₃/EtOAc). Mp 117-118°. $[\alpha]_D^{25} +12$ (c, 0.30 in EtOAc).

Me glycoside di-Ac: Methyl 2,4-di-O-acetyl-3,6-dibromo-3,6-dideoxy-β-D-glucopyranoside

$C_{11}H_{16}Br_2O_6$ 404.052

Mp 146-147°. $[\alpha]_D^{25} -6$ (c, 0.25 in EtOAc).
Furuhata, K. *et al.*, *Carbohydr. Res.*, 1995, **275**, 17-24

2,7-Dibromo-2,7-dideoxy-D-glycero-D-ido-heptonic acid**D-533**

$C_7H_{12}Br_2O_6$ 351.976

1,4-Lactone: 2,7-Dibromo-2,7-dideoxy-D-glycero-D-ido-heptono-1,4-lactone
[116386-12-0]

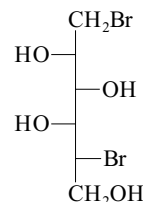
$C_7H_{10}Br_2O_5$ 333.961

Cryst. (EtOAc). Mp 146-147°. $[\alpha]_D^{20} -38$ (c, 2.1 in H₂O).

Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **174**, 331 (*lactone, pmr, cmr*)

1,5-Dibromo-1,5-dideoxyiditol**D-534**

2,6-Dibromo-2,6-dideoxyiditol

*D-form*

$C_6H_{12}Br_2O_4$ 307.966

D-form [152884-03-2]

Cryst. (EtOH). Mp 110-111°. $[\alpha]_D^{20} -17$ (c, 4 in MeOH).

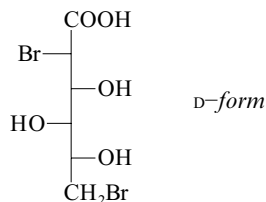
L-form [152884-04-3]

Cryst. (EtOH). Mp 111-112°. $[\alpha]_D^{20} +17$ (c, 4 in MeOH).

Lundt, I. *et al.*, *Synthesis*, 1993, 720 (*synth, pmr, cmr*)

2,6-Dibromo-2,6-dideoxyidonic acid

D-535

 $C_6H_{10}Br_2O_5$ 321.95**D-form***1,4-Lactone: 2,6-Dibromo-2,6-dideoxy-D-idono-1,4-lactone*

[109986-31-4]

 $C_6H_8Br_2O_4$ 303.935

Syrup.

1,4-Lactone, di-Ac: 3,5-Di-O-acetyl-2,6-dibromo-2,6-dideoxy-D-idono-1,4-lactone

[109986-32-5]

 $C_{10}H_{12}Br_2O_6$ 388.009Cryst. (Et₂O/hexane). Mp 118-119°.[α]_D¹⁸ -38.8 (c, 2.1 in CHCl₃).**L-form***1,4-Lactone: 2,6-Dibromo-2,6-dideoxy-L-idono-1,4-lactone*

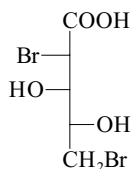
[129151-32-2]

 $C_6H_8Br_2O_4$ 303.935

Syrup.

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1986, **40**, 740 (*D-form*, *synth*, *D-di-Ac*, *pmr*, *cmr*)Vekemans, J.A.J.M. *et al.*, *J.O.C.*, 1990, **55**, 5336 (*L-form*, *synth*)**2,5-Dibromo-2,5-dideoxyxyloxylic acid**

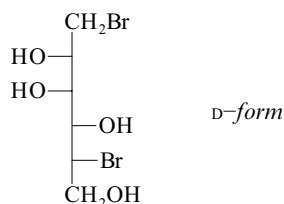
D-536

 $C_5H_8Br_2O_4$ 291.924**D-form***1,4-Lactone: 2,5-Dibromo-2,5-dideoxy-D-lyxono-1,4-lactone*

[82805-10-5]

 $C_5H_6Br_2O_3$ 273.909Cryst. (Et₂O/pentane). Mp 92-93°. [α]_D²⁰ +17 (c, 2.7 in EtOAc).Bock, K. *et al.*, *Carbohydr. Res.*, 1982, **104**, 79 (*D-lactone*, *pmr*, *cmr*)**1,5-Dibromo-1,5-dideoxymannitol**

D-537

2,6-Dibromo-2,6-dideoxymannitol $C_6H_{12}Br_2O_4$ 307.966**D-form** [71672-05-4]

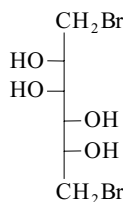
Cryst. (EtOAc/pentane). Mp 92-93°.

[α]_D²⁰ -9 (c, 1.6 in EtOAc).**L-form** [152884-15-6]Cryst. (EtOAc/hexane). Mp 91-92°. [α]_D²⁰ +8.9 (c, 1.8 in EtOAc).Bock, K. *et al.*, *Carbohydr. Res.*, 1981, **90**, 7, (*D-form*, *synth*)Lundt, I. *et al.*, *Synthesis*, 1993, 714 (*L-form*, *synth*)**1,6-Dibromo-1,6-dideoxymannitol, 9CI, 8CI**

D-538

*Mitobronitol, BAN, INN, JAN. Myebrol.**Myelobromol. DBM. NSC 94100. WR*

220057

 $C_6H_{12}Br_2O_4$ 307.966

Alkylating agent; antineoplastic agent. Log P -2 (calc).

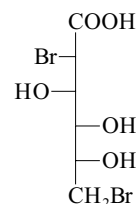
D-form [488-41-5]

Cryst. (MeOH/dichloroethane). Mp

176-178°.

► Human systemic effects when used therapeutically. Exp. reprod. and teratogenic effects. LD₅₀ (rat, orl) 1500 mg/kg. OP2800000*3,4-O-Isopropylidene: 1,6-Dibromo-1,6-dideoxy-3,4-O-isopropylidene-D-mannitol* $C_9H_{16}Br_2O_4$ 348.031Mp 71-72°. [α]_D²⁰ +32.8 (Me₂CO).*3,4-O-Isopropylidene, 2,5-di-Ac:* $C_{13}H_{20}Br_2O_6$ 432.105Mp 49-50°. [α]_D²⁰ +13.4 (CHCl₃).*3,4-O-Isopropylidene, 2,5-dimesyl:* Mp 112-113°. [α]_D²⁰ -1.9 (dioxan).*Tetramesyl:* Mp 105-107°. [α]_D²⁰ +29.1 (c, 1.0 in CHCl₃).Kuszmanski, J. *et al.*, *Carbohydr. Res.*, 1969, **11**, 165 (*synth*)Horvath, T. *et al.*, *CA*, 1970, **73**, 56 370v (*synth*)Simon, K. *et al.*, *Cryst. Struct. Commun.*, 1973, **2**, 481 (*cryst struct*)Eckhardt, S. *et al.*, *Haematologica*, 1973, **57**, 722 (*rev*)Jarman, M. *et al.*, *Org. Mass Spectrom.*, 1974, **8**, 377 (*ms*)Weisburger, J.H. *et al.*, *CA*, 1976, **84**, 84 368w (*tox*)Ota, K. *et al.*, *CA*, 1979, **90**, 33653 (*rev*)Chiuten, D.F. *et al.*, *Cancer (Philadelphia)*, 1981, **47**, 442 (*props*)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 492Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DDP600**2,6-Dibromo-2,6-dideoxymannonic acid**

D-539

 $C_6H_{10}Br_2O_5$ 321.95**D-form***1,4-Lactone: 2,6-Dibromo-2,6-dideoxy-D-mannono-1,4-lactone*

[69617-72-7]

 $C_6H_8Br_2O_4$ 303.935

Cryst. (EtOAc/pentane). Mp 131-133°.

[α]_D²⁰ +52.2 (c, 0.7 in EtOAc).*1,4-Lactone, di-Ac: 3,5-Di-O-acetyl-2,6-dibromo-2,6-dideoxy-D-mannono-1,4-lactone*

[69617-82-9]

 $C_{10}H_{12}Br_2O_6$ 388.009Cryst. (Et₂O/pentane). Mp 103-105°.[α]_D²⁰ +11.7 (c, 3.2 in CHCl₃).**L-form***1,4-Lactone: 2,6-Dibromo-2,6-dideoxy-L-mannono-1,4-lactone*

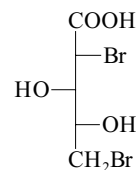
[152772-67-3]

 $C_6H_8Br_2O_4$ 303.935

Cryst. (EtOAc/hexane). Mp 131-133°.

[α]_D²⁰ -53 (c, 0.7 in EtOAc).Bock, K. *et al.*, *Carbohydr. Res.*, 1979, **68**, 313 (*D-form*, *synth*, *pmr*, *cmr*, *deriv*)Lundt, I. *et al.*, *Synthesis*, 1993, 714 (*L-form*, *cmr*)**2,5-Dibromo-2,5-dideoxyxyloxylic acid**

D-540

 $C_5H_8Br_2O_4$ 291.924**D-form***1,4-Lactone: 2,5-Dibromo-2,5-dideoxy-D-xyloxylo-1,4-lactone*

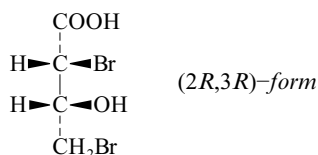
[78138-86-0]

 $C_5H_6Br_2O_3$ 273.909

Cryst. (CHCl₃). Mp 63-64.5°. [α]_D²⁵ +12 (c, 9.6 in EtOAc).

Bock, K. *et al.*, *Carbohydr. Res.*, 1981, **90**, 17 (*D*-lactone, synth, pmr, cmr)

2,4-Dibromo-3-hydroxybutanoic acid D-541



C₄H₆Br₂O₃ 261.898

(2*R*,3*R*)-form *D*-threo-form

Me ester: Methyl 2,4-dibromo-2,4-dideoxy-*D*-threonate
[88824-09-3]
C₅H₈Br₂O₃ 275.924
Cryst. (Et₂O/pentane). Mp 76-77°. [α]_D²⁰ -44.4 (c, 3.4 in CHCl₃).

(2*R*,3*S*)-form

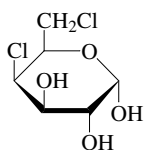
Me ester: Methyl 2,4-dibromo-2,4-dideoxy-*L*-erythronate
[88824-10-6]
C₅H₈Br₂O₃ 275.924
Syrup. Bp₂ 115-116°. [α]_D²⁰ -26 (c, 17 in CHCl₃).

(2*S*,3*S*)-form

Me ester: Methyl 2,4-dibromo-2,4-dideoxy-*L*-threonate
[88824-11-7]
C₅H₈Br₂O₃ 275.924
Cryst. (Et₂O/pentane). Mp 75-76.5°. [α]_D²⁰ +43.8 (c, 3.5 in CHCl₃).

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1983, **37**, 341 (synth, cmr)

4,6-Dichloro-4,6-dideoxygalactose D-542



C₆H₁₀Cl₂O₄ 217.048

D-form

Cryst. (MeOH aq.). Mp 184-186°.

α -D-Pyranose-form

1,2-*Di-O-Ac*, 3-*O-Me*: [69848-55-1]
C₁₁H₁₆Cl₂O₆ 315.149
Mp 168-172°. [α]_D²⁰ +127.5 (c, 1.0 in MeOH).

Me glycoside: Methyl 4,6-dichloro-4,6-dideoxy- α -D-galactopyranoside, 9*Cl*, 8*Cl*
[4990-82-3]
C₇H₁₂Cl₂O₄ 231.075
Needles (CHCl₃/petrol). Mp 158°. [α]_D²¹ +179 (c, 2.0 in H₂O).

Me glycoside, 2-*Ac*: [33428-84-1]

C₉H₁₄Cl₂O₅ 273.112

Syrup. [α]_D +174.7 (c, 1.0 in CHCl₃).

Me glycoside, 2-*Ac*, 3-chlorosulfate:

[33501-34-7]

[α]_D +142.2 (c, 1.1 in CHCl₃).

Me glycoside, di-*Ac*: Methyl 2,3-di-*O*-acetyl-4,6-dichloro-4,6-dideoxy- α -D-galactopyranoside

[35521-81-4]

C₁₁H₁₆Cl₂O₆ 315.149

Cryst. (2-propanol). Mp 103.5-105°.

[α]_D +190 (c, 1.0 in CHCl₃).

Me glycoside, 3-*Ac*: [33423-28-8]

C₉H₁₄Cl₂O₅ 273.112

Cryst. (Et₂O/petrol). Mp 117-118°. [α]_D +209 (c, 1.0 in CHCl₃).

Me glycoside, 3-*Ac*, 2-*Me*: [33423-29-9]

C₁₀H₁₆Cl₂O₅ 287.139

Bp_{0.3} 110-115°. [α]_D +194.6 (c, 1.8 in CHCl₃).

Me glycoside, 3-chlorosulfate: [33501-29-0]

Needles (CHCl₃/petrol). Mp 132-133°

dec. [α]_D +180 (c, 0.3 in CHCl₃).

Me glycoside, 2,3-dichlorosulfate:

[33513-33-6]

[α]_D²¹ +115 (c, 1.2 in CHCl₃).

Me glycoside, 2,3-cyclic sulfate:

Needles (Et₂O/petrol). Mp 103-104°.

[α]_D²¹ +139 (c, 1.8 in MeOH).

Me glycoside, ditosyl: Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-*O*-tosyl- α -D-galactopyranoside

[20550-17-8]

Mp 119-120°. [α]_D¹⁹ +97.2 (Py). [α]_D¹⁸ +102.5 (CHCl₃). These phys. constants were originally (1935) erroneously assigned to the corresponding glucose deriv.

β -D-Pyranose-form

Me glycoside: Methyl 4,6-dichloro-4,6-dideoxy- β -D-galactopyranoside

[4990-85-6]

C₇H₁₂Cl₂O₄ 231.075

Needles. Mp 152-153.5° (cryst. change at 120°). [α]_D²⁰ +7 (c, 1.4 in H₂O) (lit. gives a temp. range). [α]_D²⁰ -14 (c, 0.5 in CHCl₃) (lit. gives a temp. range).

Benzyl glycoside, 2-*Ac*, 3-*Me*: [69848-96-0]

C₁₆H₂₀Cl₂O₅ 363.236

Mp 95°. [α]_D²⁰ +10.5 (c, 1.0 in MeOH).

Cyclohexyl glycoside, 2-*Ac*, 3-*Me*: [69848-95-9]

Mp 102°. [α]_D²⁰ +37.2 (c, 1.0 in MeOH).

Me glycoside, 2-*Ac*, 3-*Me*: [69848-57-3]

C₁₀H₁₆Cl₂O₅ 287.139

Mp 85°. [α]_D²⁰ +42.9 (c, 1.0 in MeOH).

Me glycoside, ditosyl: Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-*O*-tosyl- β -D-galactopyranoside

[20550-18-9]

Mp 147.5-148°. [α]_D¹⁹ +23.3 (CHCl₃).

[α]_D¹⁸ +19.2 (Py). These constants originally (1935) erroneously assigned to the corresponding glucose deriv.

Bragg, P.D. *et al.*, *Can. J. Chem.*, 1959, **37**, 1412 (*D*-form)

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1962, **40**, 1408; 1963, **41**, 1151; 1965, **43**, 2372 (synth)

Parrish, F.W. *et al.*, *Carbohydr. Res.*, 1968, **6**, 503 (α - and β -, *Me* pyr, ditosyl)

Hoge, R. *et al.*, *J.C.S. (A)*, 1969, **14**, 2165 (cryst struct, α -*Me* pyr)

Parolis, H. *et al.*, *Carbohydr. Res.*, 1971, **19**, 97

Szarek, W. *et al.*, *Adv. Carbohydr. Chem.*

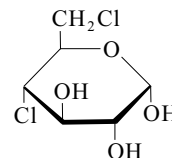
Biochem., 1973, **28**, 225 (rev)

Szarek, W.A. *et al.*, *Can. J. Chem.*, 1974, **52**, 3394; 1976, **54**, 3783 (cmr)

Edwards, R.G. *et al.*, *Carbohydr. Res.*, 1974, **35**, 111 (β -*Me* pyr; α - and β -*Me* pyr, di-*Ac*)

Redlich, H. *et al.*, *Carbohydr. Res.*, 1979, **68**, 275 (β -benzyl, β -cyclohexyl pyr)

4,6-Dichloro-4,6-dideoxyglucose D-543



C₆H₁₀Cl₂O₄ 217.048

α -D-Pyranose-form

Me glycoside: Methyl 4,6-dichloro-4,6-dideoxy- α -D-glucopyranoside

C₇H₁₂Cl₂O₄ 231.075

Needles (CHCl₃/petrol). Mp 119-121°.

[α]_D²¹ +122 (c, 1.9 in H₂O).

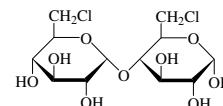
Jones, J.K.N. *et al.*, *Can. J. Chem.*, 1960, **38**, 1122 (synth)

Hoge, R. *et al.*, *J.C.S. (A)*, 1968, 267 (cryst struct)

Szarek, W. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1973, **28**, 225 (rev)

6,6'-Dichloro-6,6'-dideoxy-maltose D-544

6-Chloro-4-*O*-(6-chloro-6-deoxy- α -D-glucopyranosyl)-6-deoxy-D-glucose
[56665-80-6]

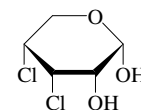


C₁₂H₂₀Cl₂O₉ 379.19

Syrup. [α]_D +99.6 (c, 2.0 in H₂O).

Colson, P. *et al.*, *Can. J. Chem.*, 1975, **53**, 1030 (synth)

3,4-Dichloro-3,4-dideoxyribose D-545



C₅H₈Cl₂O₃ 187.022

D-form

Needles (CHCl₃/petrol). Mp 107-108°.

[α]_D²¹ -3.2 (c, 0.6 in MeOH) (equilib.).

Crystallises as β -anomer.

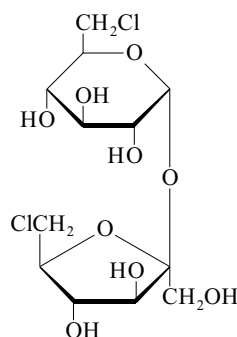
α -D-Pyranose-form

1,2-O-Isopropylidene: 3,4-Dichloro-3,4-dideoxy-1,2-O-isopropylidene- α -D-ribofuranose
 $C_8H_{12}Cl_2O_3$ 227.086
 Needles (CHCl₃/petrol). Mp 171°. [α]_D²¹ -52 (c, 0.7 in CHCl₃).

 β -D-Pyranose-form

Me glycoside: Methyl 3,4-dichloro-3,4-dideoxy- β -D-ribofuranoside
 $C_6H_{10}Cl_2O_3$ 201.049
 Syrup. [α]_D²¹ -55 (c, 0.8 in MeOH).
 Jennings, H.J. *et al.*, *Can. J. Chem.*, 1965, **43**, 3018 (β -D-form, β -D-Me pyr, β -D-isopropylidene)
 Coxon, B. *et al.*, *Tetrahedron*, 1967, **23**, 2395 (*synth*)

6,6'-Dichloro-6,6'-dideoxysucrose D-546
 [40984-16-5]



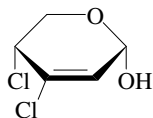
$C_{12}H_{20}Cl_2O_9$ 379.19
 Cryst. (butanone) or hygroscopic amorph. powder. Mp 84-88°. [α]_D²⁵ +60 (c, 1 in H₂O).

Hexa-Ac:
 $C_{24}H_{32}Cl_2O_{15}$ 631.413
 Syrup.

Hexabenzoyl: [35903-09-4]
 $C_{54}H_{44}Cl_2O_{15}$ 1003.838
 Cryst. (EtOH). Mp 88-89°. [α]_D²⁵ +5.7 (c, 1 in CHCl₃).

Anisuzzaman, A.K.M. *et al.*, *Carbohydr. Res.*, 1978, **61**, 511 (*synth*)
 Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1980, **8**, 227 (*synth*)
 Chen, C.C. *et al.*, *Carbohydr. Res.*, 1983, **117**, 318 (*synth*)

3,4-Dichloro-2,3,4-trideoxy-glycero-pent-2-enopyranose, 8CI D-547

 α -D-form

$C_5H_6Cl_2O_2$ 169.007

 α -D-form

Me glycoside: Methyl 3,4-dichloro-2,3,4-trideoxy- α -D-glycero-pent-2-enopyranoside
 [16609-00-0]

$C_6H_8Cl_2O_2$ 183.033
 Syrup. [α]_D +55 (c, 0.8 in MeOH).

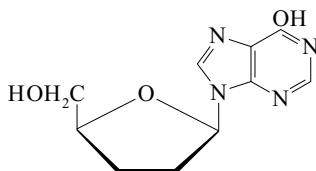
β -D-form [16609-01-1]
 Needles (CHCl₃/petrol). Mp 130-132°
 Mp 205-210° (double Mp). [α]_D +108 (c, 0.7 in MeOH) (24h).

Me glycoside: Methyl 3,4-dichloro-2,3,4-trideoxy- β -D-glycero-pent-2-enopyranoside, 8CI
 $C_6H_8Cl_2O_2$ 183.033
 Plates (MeOH aq.). Mp 72-73°. [α]_D²¹ +53 (c, 0.8 in MeOH).

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1965, **43**, 3018 (*synth*)
 Coxon, B. *et al.*, *Tetrahedron*, 1967, **23**, 2395, (α -D-Me pyr, β -D-pyr form, *synth*, *pmr*)

Didanosine, BAN, INN, USAN D-548

2',3'-Dideoxy-1,9-dihydro-9- β -D-ribofuranosyl-6H-purin-6-one. 2',3'-Dideoxyinosine. DDI. NSC 612049. BMY 40900.
Videx
 [69655-05-6]



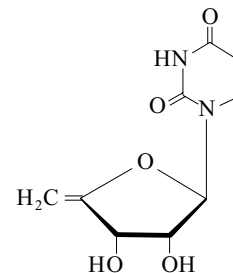
$C_{10}H_{12}N_4O_3$ 236.23
 Antiviral agent. Potentially of use against HIV infection. Nucleoside transporter substrate. Launched 1991 (US). Cryst. (EtOH aq. or CH₂Cl₂/Me₂CO). Log P -0.24 (calc). Softens at 184-186°, does not melt

► NM7460700

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 215B (*nmr*)
 Mitsuya, H. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1986, **83**, 1911 (*pharmacol*)
 Ray, G. *et al.*, *Anal. Lett.*, 1987, **20**, 1815 (*hplc*)
 Ahluwalia, G. *et al.*, *Biochem. Pharmacol.*, 1987, **36**, 3797
 Hao, Z. *et al.*, *Mol. Pharmacol.*, 1988, **34**, 431 (*pharmacol*)
 Chu, C.K. *et al.*, *J.O.C.*, 1989, **54**, 2217 (*synth*, *pmr*)
 McGowan, J.J. *et al.*, *Rev. Infect. Dis.*, 1990, **12**, S513 (*rev*, *antiretroviral props*)
 Shelton, M.J. *et al.*, *Ann. Pharmacother.*, 1992, **26**, 660 (*rev*)
 Wu, X. *et al.*, *J. Biol. Chem.*, 1992, **267**, 8813-8818 (*pharmacol*)
 Bhat, V. *et al.*, *Synth. Commun.*, 1992, **22**, 1481 (*synth*, *pmr*, *uv*)
 Nassar, M.N. *et al.*, *Anal. Profiles Drug Subst.*, 1993, **22**, 185 (*rev*)
 De Clercq, E. *et al.*, *J. Clin. Virol.*, 2004, **30**, 115-133 (*rev*)

4',5'-Didehydro-5'-deoxyuridine, 9CI D-549

1-(5-Deoxy-erythro-pent-4-enofuranosyl)uracil, 8CI



$C_9H_{10}N_2O_5$ 226.188

β -D-form [14365-63-0]
 Cryst. (Me₂CO). Mp 169-170°. λ_{max} 261 nm (ϵ 9 600) (MeOH).
 2',3'-Di-Ac: [14365-62-9]
 $C_{13}H_{14}N_2O_7$ 310.263
 Foam.

2',3'-O-Isopropylidene: [17331-67-8]

$C_{12}H_{14}N_2O_5$ 266.253
 Cryst. (2-propanol). Mp 50-60° (2-propanol solvate).

2',3'-Cyclic carbonate: [57209-49-1]
 Cryst. (Me₂CO/hexane). Mp 143-146°.

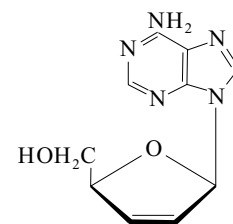
2',3'-O-Anisylidene (R-): [53166-54-4]
 Cryst. (EtOH/Me₂CO). Mp 195-196°.

2',3'-O-Anisylidene (S-): [53166-53-3]
 Foam.

Robins, M.J. *et al.*, *J. Het. Chem.*, 1967, **4**, 313 (β -D-isopropylidene)
 Verheyden, J.P.H. *et al.*, *J.O.C.*, 1974, **39**, 3573 (β -D-form, *synth*, β -D-di-Ac)
 Verheyden, J.P.H. *et al.*, *J.A.C.S.*, 1975, **97**, 4386 (*synth*, *pmr*, β -D-cyclic carbonate)
 Sasaki, T. *et al.*, *J.O.C.*, 1975, **40**, 106, (β -D-anisylidene derivs)

2',3'-Didehydro-2',3'-dideoxyadenosine, 9CI D-550

9-(2,3-Dideoxy- β -D-glycero-pent-2-enofuranosyl)adenine, 8CI. 2',3'-Dideoxy-2',3'-didehydroadenosine
 [7057-48-9]



$C_{10}H_{11}N_5O_2$ 233.229
 Mp 194-199°. [α]_D²³ +22.8 (c, 0.25 in MeOH). λ_{max} 260 nm (ϵ 15 200) (MeOH).

5'-Deoxy: 2',3'-Didehydro-2',3',5'-trideoxyadenosine

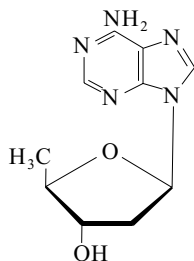
$C_{10}H_{11}N_5O$ 217.23
 Mp 175-177° dec. λ_{max} 259 nm (ϵ 14 800) (MeOH).

McCarthy, J.R. *et al.*, *J.A.C.S.*, 1966, **88**, 1549 (5'-deoxy)
 Horwitz, J.P. *et al.*, *Tet. Lett.*, 1966, 1343 (*synth*)

Chu, C.K. *et al.*, *J.O.C.*, 1989, **54**, 2217 (*synth, cryst struct*)
 Carr, R.L.K. *et al.*, *Org. Prep. Proced. Int.*, 1990, **22**, 245 (*synth, uv, pmr*)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DHA325

2',5'-Dideoxyadenosine, 9CI, 8CI **D-557**

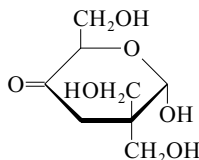
9-(2,5-Dideoxy-β-D-erythro-pentofuranosyl)adenine
 [6698-26-6]



C₁₀H₁₃N₅O₂ 235.245
 Inhibits intracellular 5-phosphoribosyl 1-pyrophosphate synth. Antagonist of cholera toxin. Mp 186-188°. [α]_D²² -38 (c, 0.7 in H₂O). λ_{max} 259.5 nm (ε 14 400) (MeOH).

Robins, M.J. *et al.*, *Biochemistry*, 1966, **5**, 224 (*synth*)
 Tyrsted, G. *et al.*, *Biochim. Biophys. Acta*, 1968, **155**, 619
 Shaw, S.J. *et al.*, *J.A.C.S.*, 1970, **92**, 2510 (*ms*)
 Zenser, T.V. *et al.*, *Proc. Soc. Exp. Biol. Med.*, 1976, **152**, 126 (*biochem*)

2,3-Dideoxy-2,2-bis(hydroxy-methyl)-glycero-hexopyranos-4-ulose **D-558**



α-D-form

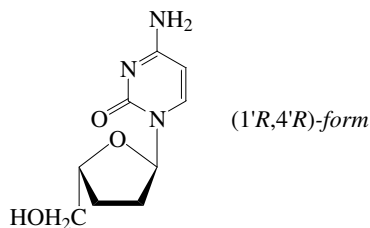
Et glycoside, tri-Ac, 2,4-dinitrophenylhydrazonate: [66176-62-3]
 Mp 146-148°.

[55941-69-0]

Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1977, **55**, 3978 (*synth, pmr*)

2',3'-Dideoxycytidine, BAN, INN, USAN **D-559**

4-Amino-1-[tetrahydro-5-(hydroxymethyl)-2-furanyl]-2(1H)-pyrimidinone, 9CI. DDC



C₉H₁₃N₃O₃ 211.22

(1'R,4'R)-form

α-L-form

[121154-52-7]

Powder. Mp 184°. [α]_D²⁰ +69.8 (c, 0.5 in DMF).

(1'R,4'S)-form

β-D-form. *Zalcitabine, BAN, INN, USAN. Hivid. Ro 24-2027. NSC 606170*

[7481-89-2] Antiviral agent. Reverse transcriptase inhibitor. Orally active dideoxynucleoside used in combination with Zidovudine, Z-4 for treatment of HIV infection. Nucleoside transporter substrate. Launched 1992 (Austria). Mp 231-232° (214-217°). [α]_D²⁰ +90 (c, 0.5 in H₂O). [α]_D +105.9 (c, 0.53 in MeOH). Log P -1.32 (calc).

► Possible human carcinogen (IARC 2B).

5'-Triphosphate: [66004-77-1]

C₉H₁₆N₃O₁₂P₃ 451.16

Metab. of parent compd.

N-Benzoyl: N⁴-Benzoyl-2',3'-dideoxycytidine

C₁₆H₁₇N₃O₄ 315.328

Anti-HIV agent. Cryst. (EtOAc/MeOH).

(1'S,4'R)-form

β-L-form

[121154-51-6]

Potent antiviral agent active against hepatitis B and HIV.

Cryst. (EtOAc). Mp 220-222° (194-196°). [α]_D -90.3 (c, 0.14 in MeOH).

(1'S,4'S)-form

α-D-form

[116561-09-2]

Solid (2-propanol). Mp 170-172°. [α]_D -83.4 (c, 0.56 in MeOH).

Horwitz, J.P. *et al.*, *J.O.C.*, 1967, **32**, 817 (*synth*)
 Sanger, F. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1977, **74**, 5463-5467 (*Zalcitabine 5'-triphosphate*)

Mitsuya, H. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, (London), 1986, **83**, 1911 (*Zalcitabine, pharmacol*)

Starnes, M.C. *et al.*, *J. Biol. Chem.*, 1987, **262**, 988-991 (*Zalcitabine 5'-triphosphate*)

Mitsuya, H. *et al.*, *Nature (London)*, 1987, **325**, 773

Okabe, M. *et al.*, *J.O.C.*, 1988, **53**, 4780-4786 (*α-D-form, synth, ir, uv, pmr*)

Plagemann, P.G. *et al.*, *Biochem. Pharmacol.*, 1989, **38**, 3469-3475 (*Zalcitabine, pharmacol*)

Kaskar, B. *et al.*, *J. Het. Chem.*, 1989, **26**, 1531 (*synth*)

Chu, C.K. *et al.*, *J.O.C.*, 1989, **54**, 2217 (*synth*)
 Montauria, M.S. *et al.*, *Annalen*, 1990, 599 (*synth*)

Johansen, O. *et al.*, *Aust. J. Chem.*, 1991, **44**, 37 (*synth*)

Whittington, R. *et al.*, *Drugs*, 1992, **44**, 656 (*rev*)
 Manchand, P.S. *et al.*, *J.O.C.*, 1992, **57**, 3473 (*synth, uv, ir, pmr, cmr*)

Gulbis, J.M. *et al.*, *Acta Cryst. C*, 1993, **49**, 1095 (*cryst struct, deriv*)

Drugs of Today (Barcelona), 1993, **29**, 19 (*rev*)
 Lipsky, J.J. *et al.*, *Lancet*, 1993, **341**, 30

Lin, T.-S. *et al.*, *J. Med. Chem.*, 1994, **37**, 798-803 (*β-L-form, α-L-form, synth, props, uv, pmr*)

Van Draanen, N.A. *et al.*, *Nucleosides Nucleotides*, 1994, **13**, 1679-1693 (*α-L-form, synth, uv, pmr*)

Pat. Coop. Treaty (WIPO), 1995, 95 07 287; *CA*, **123**, 286530c (*β-L-form, synth, uv, pmr*)

Adkins, J.C. *et al.*, *Drugs*, 1997, **53**, 1054-1080 (*rev*)

Rassu, G. *et al.*, *J. Med. Chem.*, 1997, **40**, 168-180 (*α-L-form, β-L-form, synth, pmr, cmr*)

U.S. Pat., 1998, 5 756 706; *CA*, **129**, 41380z (*β-L-form, synth, pmr*)

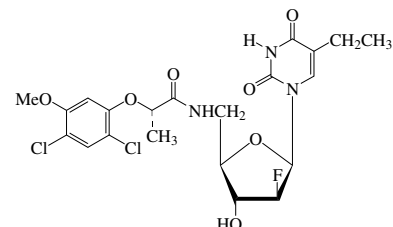
Sivets, G.G. *et al.*, *Synthesis*, 2002, 253-259 (*β-L-form, synth, cd, uv, pmr*)

IARC Monog. (Web), (*Zalcitabine*)

1-[2,5-Dideoxy-5-[[2-(2,4-dichloro-5-methoxyphenoxy)-1-oxopropyl]amino]-2-fluoro-β-D-arabinofuranosyl]-5-ethyl-2,4(1H,3H)-pyrimidinedione, 9CI **D-560**

Ro 32-2313

[187588-73-4]



C₂₁H₂₄Cl₂FN₃O₇ 520.34

Inhibitor of herpes simplex virus thymidine kinase. Potentially useful in the treatment of herpes simplex. Cryst. (MeOH). Poorly sol. H₂O (0.006mg/ml). Mp 195-196°.

L-Valine ester: Ro 32-4397

[187589-41-9]

C₂₆H₃₃Cl₂FN₄O₈ 619.473

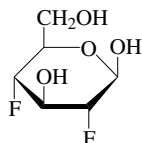
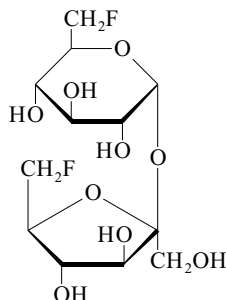
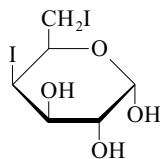
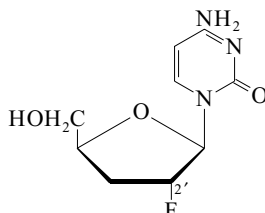
Cryst. (2-propanol) (as hydrochloride).

Sol. H₂O (>200mg/ml). Mp 132-157° dec. (hydrochloride). Prodrug of Ro 32-2313. CAS no. refers to hydrochloride.

[187589-49-7, 187589-58-8]

Pat. Coop. Treaty (WIPO), 1997, 97 03 082, (*Hoffmann-La Roche*); *CA*, **126**, 186326j (*synth, ester, pharmacol*)

Watkins, A.M. *et al.*, *Antiviral Chem. Chemother.*, 1998, **9**, 9-18 (*pharmacol*)

2,4-Dideoxy-2,4-difluoro-glucose, 9CI**D-561** β -D-Pyranose-form $C_6H_{10}F_2O_4$ 184.139**D-form** [38711-44-3]Cryst. Mp 58-64°. $[\alpha]_D^{20} +51$ (c, 0.8 in H_2O). **β -D-Pyranose-form** [29332-86-3]*1,6-Anhydro*: 1,6-Anhydro-2,4-dideoxy-2,4-difluoro- β -D-glucopyranose [29332-85-2] $C_6H_8F_2O_3$ 166.124Mp 99-100°. $[\alpha]_D^{20} -62$ (c, 0.8 in H_2O).Pacák, J. *et al.*, *Chem. Ind. (London)*, 1970, 929 (*D-form*, *synth*, β -D-anhydro)Barford, A.D. *et al.*, *Carbohydr. Res.*, 1971, **19**, 49 (*anhydro*)Pacák, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1972, **37**, 2589 (*D-form*, *synth*, β -D-anhydro)**6,6'-Dideoxy-6,6'-difluoro-sucrose****D-562** $C_{12}H_{20}F_2O_9$ 346.281 $[\alpha]_D +53.7$ (c, 2.45 in H_2O).Zikopoulos, J.N. *et al.*, *Carbohydr. Res.*, 1982, **104**, 245 (*synth*, *cmr*)**4,6-Dideoxy-4,6-diiodo-galactose****D-563** $C_6H_{10}I_2O_4$ 399.952 **α -D-Pyranose-form***Me glycoside*: Methyl 4,6-dideoxy-4,6-diiodo- α -D-galactopyranoside [82224-99-5] $C_7H_{12}I_2O_4$ 413.978 $[\alpha]_D^{22} +102.5$ (c, 1 in $CHCl_3$).Garregg, P.J. *et al.*, *J.C.S. Perkin I*, 1982, 681 (α -D-Me pyr)**2',3'-Dideoxy-2'-fluorocytidine, 9CI****D-564***4-Amino-1-(2,3-dideoxy-2-fluoro- β -D-erythro-pentofuranosyl)-2(1H)-pyrimidinone, 9CI*. 1-(2,3-Dideoxy-2-fluoro- β -D-erythro-pentofuranosyl)cytosine $C_9H_{12}FN_3O_3$ 229.21

Cryst. (EtOH) (as hydrochloride). Mp 219-220°.

2'-Epimer: F-DDC

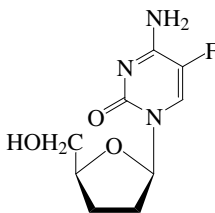
[119555-47-4]

 $C_9H_{12}FN_3O_3$ 229.21

Shows activity against HIV. Cryst.

(EtOH). Mp 205-208°. $[\alpha]_{365} +710.15$ (c, 1.027 in H_2O). $[\alpha]_D^{20} +168.7$ (c, 0.5 in H_2O).*2'-Epimer, di-Ac*: [128115-08-2] $C_{13}H_{16}FN_3O_5$ 313.285

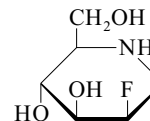
Cryst. (MeOH). Mp 223-224°.

Martin, J.A. *et al.*, *J. Med. Chem.*, 1990, **33**, 2137 (*synth*, *pmr*, *ms*)Watanabe, K.A. *et al.*, *J. Med. Chem.*, 1990, **33**, 2145 (*synth*, *pmr*)Sterzycki, R.Z. *et al.*, *J. Med. Chem.*, 1990, **33**, 2150 (*synth*, *pmr*, *cmr*, *uv*, *ir*)Okabe, M. *et al.*, *J.O.C.*, 1991, **56**, 4392 (*synth*, *pmr*, *ir*)**2',3'-Dideoxy-5-fluorocytidine D-565***4-Amino-5-fluoro-1-[tetrahydro-5-(hydroxymethyl)-2-furanyl]-2(1H)-pyrimidinone, 9CI*. 1-(2,3-Dideoxyribofuranosyl)-5-fluorocytosine. FddC**(+)-form** $C_9H_{12}FN_3O_3$ 229.21**(+)-form** [107036-62-4]

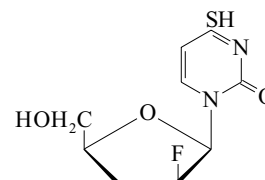
Solid. Mp 155-160° (softens at 100°).

(-)-form [147058-39-7]

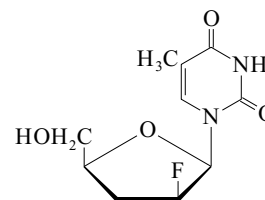
Potent antiviral agent against hepatitis B and HIV.

Cryst. (EtOAc). Mp 158-160° (147-149°). $[\alpha]_D -108$ (c, 0.13 in MeOH).Kim, C.H. *et al.*, *J. Med. Chem.*, 1987, **30**, 862 (*synth*)Lin, T.S. *et al.*, *J. Med. Chem.*, 1994, **37**, 798-803 (*synth*, *uv*, *pmr*)*Pat. Coop. Treaty (WIPO)*, 1995, 95 07 287; CA, **123**, 286530c (*synth*, *uv*, *pmr*)Chen, S.H. *et al.*, *J.O.C.*, 1997, **62**, 3449-3452 (*synth*, *pmr*)U.S. Pat., 1998, 5 756 706; CA, **129**, 41380z (*synth*, *uv*, *pmr*)**1,2-Dideoxy-2-fluoro-1,5-iminomannitol****D-566***2-Deoxy-2-fluoromannojirimycin* $C_6H_{12}FNO_3$ 165.164**D-form** $[\alpha]_D^{23} -125$ (c, 0.8 in H_2O).Kajimoto, T. *et al.*, *J.A.C.S.*, 1991, **113**, 6187 (*synth*, *pmr*, *cmr*)**1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)-4-thiouracil****D-567***1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)-3,4-dihydro-4-thioxo-2(1H)-pyrimidinone, 9CI*

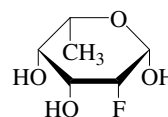
[128632-07-5]

 $C_9H_{11}FN_2O_3S$ 246.262Cryst. (EtOH/Et₂O). Mp 134-137°.Sterzycki, R.Z. *et al.*, *J. Med. Chem.*, 1990, **33**, 2150 (*synth*, *pmr*, *cmr*, *ms*)**1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)thymine****D-568***1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)-5-methyl-2,4(1H,3H)-pyrimidinone, 9CI*

[121353-89-7]

 $C_{10}H_{13}FN_2O_4$ 244.222Cryst. (CH_2Cl_2 /Et₂O/hexane).

Mp 162-164°.

Sterzycki, R.Z. *et al.*, *J. Med. Chem.*, 1990, **33**, 2150 (*synth*, *pmr*, *cmr*, *ms*)**2,6-Dideoxy-2-fluorotalose****D-569** $C_6H_{11}FO_4$ 166.149

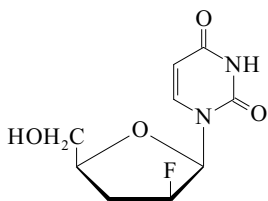
β-L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-2-fluoro-β-L-talopyranoside
 $C_7H_{13}FO_4$ 180.176
 Solid. Mp 136-137°. $[\alpha]_D^{20} +63.7$
 (c, 1.45 in $CHCl_3$).

Deal, S.T. *et al.*, *Carbohydr. Res.*, 1999, **315**, 187-191 (synth)

2',3'-Dideoxy-2'-fluorouridine D-570

1-(2,3-Dideoxy-2-fluoro-β-D-threo-pentofuranosyl)-2,4(1H,3H)-pyrimidinedione, 9CI
 [124424-25-5]

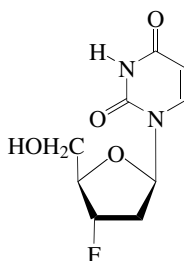


$C_9H_{11}FN_2O_4$ 230.195
 Cryst. Mp 159-162°.

Sterzycki, R.Z. *et al.*, *J. Med. Chem.*, 1990, **33**, 2150 (synth, pmr, cmr)

2',3'-Dideoxy-3'-fluorouridine D-571

[41107-56-6]

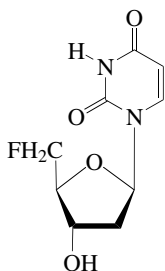


$C_9H_{11}FN_2O_4$ 230.195
 Cryst. (AcOH). Mp 189-190.5° (184-188°).
 $[\alpha]_D^{20} +10.5$ (c, 0.5 in 1M NaOH).

Kowollik, Von G. *et al.*, *J. Prakt. Chem.*, 1973, **315**, 895 (synth)
 Everaert, D.H. *et al.*, *Acta Cryst. C*, 1991, **47**, 898 (cryst struct)

2',5'-Dideoxy-5'-fluorouridine D-572

[27999-48-0]



$C_9H_{11}FN_2O_4$ 230.195
 Cryst. (Me₂CO/petrol). $[\alpha]_D^{20} +25.3$ (c, 1.46 in H₂O).

3'-Ac: [27999-49-1]

$C_{11}H_{13}FN_2O_5$ 272.233

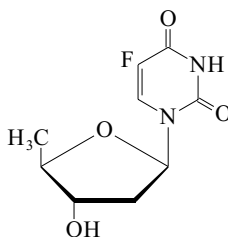
Cryst. (Me₂CO). Mp 190-193°.

Kowollik, G. *et al.*, *Carbohydr. Res.*, 1970, **12**, 301 (synth, pmr, 3'-Ac)

Von Schütt, M. *et al.*, *J. Prakt. Chem.*, 1972, **314**, 251 (synth, 3'-Ac)

2',5'-Dideoxy-5-fluorouridine D-573

[61168-97-6]

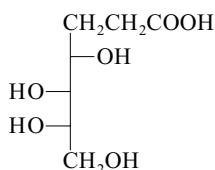


$C_9H_{11}FN_2O_4$ 230.195

Cryst. (EtOH). Mp 171-173° (168°).

Cook, A.F. *et al.*, *J. Med. Chem.*, 1980, **23**, 852 (synth, pmr, uv)

Chae, W.-G. *et al.*, *J. O. C.*, 1992, **57**, 1002 (synth, pmr, F-19 nmr)

2,3-Dideoxy-arabino-heptonic acid D-574

$C_7H_{14}O_6$ 194.184

L-form

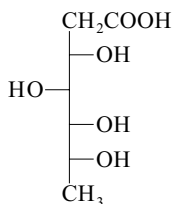
1,4-Lactone, tri-Ac: 5,6,7-Tri-O-acetyl-2,3-dideoxy-L-arabino-heptono-1,4-lactone
 [119124-89-9]

$C_{13}H_{18}O_8$ 302.28

Cryst. (EtOH). Mp 103-105°. $[\alpha]_D^{20} +7.4$ (c, 3.8 in MeOH).

[57501-72-1]

Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **179**, 87 (synth, cmr)

2,7-Dideoxy-gluco-heptonic acid D-575

$C_7H_{14}O_6$ 194.184

D-form

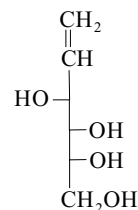
1,4-Lactone: 2,7-Dideoxy-D-gluco-heptono-1,4-lactone
 [116386-14-2]

Cryst. (EtOAc). Mp 104-106°. $[\alpha]_D^{20} -68$ → -64 (c, 0.7 in H₂O).

Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **174**, 331 (D-form, synth, pmr, cmr)

1,2-Dideoxy-arabino-hex-1-enitol D-576

1:2-Mannitoleen



$C_6H_{12}O_4$ 148.158

D-form [123672-31-1]

Mp 149°. $[\alpha]_D^{20} +33$ (H₂O).

Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1,2-dideoxy-D-arabino-hex-1-enitol
 [173006-87-6]

$C_{14}H_{20}O_8$ 316.307

Cryst. (petrol). Mp 81°. $[\alpha]_D^{20} +49$ (CHCl₃).

3,4:5,6-Di-O-isopropylidene: 1,2-Dideoxy-3,4:5,6-di-O-isopropylidene-D-arabino-hex-1-enitol
 [4239-90-1]

$C_{12}H_{20}O_4$ 228.288

$[\alpha]_D^{20} -5.5$ (c, 2.4 in CHCl₃).

3,4,5-Tri-O-benzyl: 3,4,5-Tri-O-benzyl-1,2-dideoxy-D-arabino-hex-1-enitol
 [73174-53-5]

$C_{27}H_{30}O_4$ 418.532

Oil. $[\alpha]_D -10.2$ (c, 0.8 in CHCl₃).

3,6-Anhydro, 4,5-O-isopropylidene: 3,6-Anhydro-1,2-dideoxy-4,5-O-isopropylidene-D-arabino-hex-1-enitol
 $C_9H_{14}O_3$ 170.208

Mp 23-24°. Bp_{0.05} 65-75° (bath). $[\alpha]_D^{20} +87.5$ (c, 0.9 in MeOH).

Karrer, P. *et al.*, *Helv. Chim. Acta*, 1948, **31**, 1611 (D-form, synth, D-tetra-Ac)

Bladon, P. *et al.*, *J.C.S.*, 1950, 598 (D-form, D-diisopropylidene, D-tetra-Ac)

Foster, A.B. *et al.*, *J.C.S.*, 1951, 680 (D-anhydro isopropylidene)

Bernet, B. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 2400-2410 (D-tribenzyl)

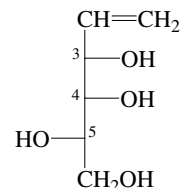
Gracza, T. *et al.*, *Synthesis*, 1991, **110**, 1108-1118 (D-form, synth, ir, pmr)

Moriarty, R.M. *et al.*, *Tet. Lett.*, 1995, **36**, 9265-9268 (D-tetra-Ac)

Désiré, J. *et al.*, *Eur. J. Org. Chem.*, 2000, 3075-3084 (D-tribenzyl)

1,2-Dideoxy-lyxo-hex-1-enitol D-577

5,6-Dideoxy-arabino-hex-5-enitol



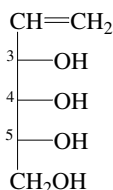
$C_6H_{12}O_4$ 148.158

The *arabino* name strictly has precedence acc. to the IUPAC special nomenclature rules for carbohydrates.

L-form

3,4-O-Isopropylidene: 1,2-Dideoxy-3,4-O-isopropylidene-L-lyxo-hex-1-enitol. 5,6-Dideoxy-3,4-O-isopropylidene-L-arabino-hex-5-enitol
[131234-68-9]
C₉H₁₆O₄ 188.223
Oil. [α]_D²⁰ +23.6 (c, 6 in CH₂Cl₂).
3,4,5-Tri-O-benzyl: 3,4,5-Tri-O-benzyl-1,2-dideoxy-L-lyxo-hex-1-enitol. 2,3,4-Tri-O-benzyl-5,6-dideoxy-L-arabino-hex-5-enitol
[305834-23-5]
C₂₇H₃₀O₄ 418.532
[α]_D²⁰ +13.2 (c, 1.17 in CHCl₃).

Fürstner, A. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 561-570 (isopropylidene)
Désiré, J. *et al.*, *Eur. J. Org. Chem.*, 2000, 3075-3084 (tribenzyl)

1,2-Dideoxy-ribo-hex-1-enitol D-578
5,6-Dideoxy-ribo-hex-5-enitol

C₆H₁₂O₄ 148.158

D-form [123672-26-4]

This is the D-form of the hex-1-enitol and the L-form of the hex-5-enitol. The 1-enitol name strictly has precedence acc. to the IUPAC special nomenclature rules for carbohydrates.

4,5-O-Isopropylidene: 1,2-Dideoxy-4,5-O-isopropylidene-D-ribo-hex-1-enitol. 5,6-Dideoxy-2,3-O-isopropylidene-L-ribo-hex-5-enitol
[182510-96-9]
C₉H₁₆O₄ 188.223
Bp_{0.25} 94-100°. [α]_D²³ -42.5 (c, 1.53 in CHCl₃).

5,6-O-Isopropylidene: 1,2-Dideoxy-5,6-O-isopropylidene-D-ribo-hex-1-enitol. 5,6-Dideoxy-1,2-O-isopropylidene-L-ribo-hex-1-enitol
[106948-25-8]
C₉H₁₆O₄ 188.223
Oil. [α]_D²³ +7 (c, 0.95 in CHCl₃).

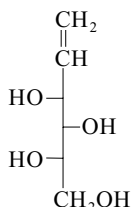
L-form [201800-16-0]

Solid. [α]_D²⁵ +7 (c, 0.73 in MeOH). This is the L-form of the hex-1-enitol and the D-form of the hex-5-enitol. The latter name has priority acc. to the IUPAC special carbohydrate rules.

3,4,5-Tribenzyl: 1,2-Dideoxy-3,4,5-tri-O-benzyl-D-ribo-hex-5-enitol. 5,6-Dideoxy-2,3,4-tri-O-benzyl-L-ribo-hex-1-enitol
[139014-28-1]
C₂₇H₃₀O₄ 418.532
Oil. [α]_D²⁰ -36 (c, 1.66 in CHCl₃).

Roush, W.R. *et al.*, *Tetrahedron*, 1992, **48**, 1981-1998 (D-5,6-isopropylidene)

Pearson, W.H. *et al.*, *J.O.C.*, 1996, **61**, 7217-7221 (D-4,5-isopropylidene)
Pitsch, S. *et al.*, *Helv. Chim. Acta*, 1997, **80**, 2286-2314 (L-form, synth, pmr, cmr)
Désiré, J. *et al.*, *Eur. J. Org. Chem.*, 2000, 3075-3084 (L-3,4,5-tribenzyl)
Sato, A. *et al.*, *J.O.C.*, 2000, **65**, 918-921, (D-5,6-isopropylidene)

1,2-Dideoxy-xylo-hex-1-enitol D-579
5:6-Sorbitoleen

C₆H₁₂O₄ 148.158

L-form [139404-79-8]

Oil. [α]_D¹⁹ +20 (c, 3.8 in H₂O).

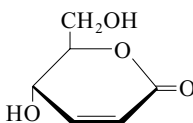
Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1,2-dideoxy-L-xylo-hex-1-enitol. 1,2,3,4-Tetra-O-acetyl-5,6-dideoxy-D-xylo-hex-5-enitol
[137491-74-8]
C₁₄H₂₀O₈ 316.307
Prisms (MeOH aq.). Mp 57-58°. [α]_D²¹ -14 (c, 1.2 in CHCl₃).

3,5:4,6-Di-O-ethylidene: 1,2-Dideoxy-3,5:4,6-di-O-ethylidene-L-xylo-hex-1-enitol
C₁₀H₁₆O₄ 200.234
Cryst. (EtOAc). Mp 122-123°. [α]_D²¹ -24 (c, 1.1 in CHCl₃).

3,5:4,6-Di-O-benzylidene: 3,5:4,6-Di-O-benzylidene-1,2-dideoxy-L-xylo-hex-1-enitol
C₂₀H₂₀O₄ 324.376
Mp 187-188°. [α]_D²⁰ +19 (CHCl₃). Exp. details not provided; apparently unpublished.

3,4,5-Tri-O-benzyl: 2,3,4-Tri-O-benzyl-5,6-dideoxy-D-xylo-hex-5-enitol
[73111-16-7]
C₂₇H₃₀O₄ 418.532
Oil. [α]_D²⁰ -2.4 (c, 1.17 in CHCl₃).

Hann, R.M. *et al.*, *J.A.C.S.*, 1944, **66**, 73, (L-dibenzylidene)
Bladon, P. *et al.*, *J.C.S.*, 1950, 598 (L-form, synth, L-diethylidene, L-tetra-Ac)
Bernet, B. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 1990-2016 (L-tribenzyl)
Gracza, T. *et al.*, *Synthesis*, 1991, 1108-1118, (L-form, synth, ir, pmr)
Désiré, J. *et al.*, *Eur. J. Org. Chem.*, 2000, 3075-3084 (L-tribenzyl)

2,3-Dideoxy-erythro-hex-2-enono-1,5-lactone D-580
2,3-Dideoxy-erythro-hex-2-enonic acid δ-lactone, 8CI

C₆H₈O₄ 144.127

D-form

4,6-Di-Ac: 4,6-Di-O-acetyl-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone
[41976-28-7]
C₁₀H₁₂O₆ 228.201
Syrup. Bp_{0.1} 135°. [α]_D +158 (+119.5) (CHCl₃).

4,6-Dibenzoyl: 4,6-Di-O-benzoyl-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone
[79999-45-4]
C₂₀H₁₆O₆ 352.343
Syrup. [α]_D +195 (c, 1.0 in CHCl₃).

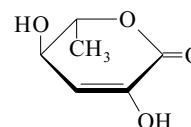
4-Ac, 6-tosyl: 4-O-Acetyl-2,3-dideoxy-6-O-tosyl-D-erythro-hex-2-enono-1,5-lactone
[84679-45-8]
C₁₅H₁₆O₇S 340.353
Mp 92-93°. [α]_D +92 (c, 1.0 in CHCl₃).

4,6-O-Benzylidene: 4,6-O-Benzylidene-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone
[25541-60-0]
C₁₃H₁₂O₄ 232.235
Cryst. (Me₂CO aq.). Mp 136-137°. [α]_D²⁷ +33 (c, 1.0 in CHCl₃). [α]_D +26.5 (c, 1.0 in CHCl₃).

2-Benzoyloxy, 4,6-dibenzoyl:
C₂₇H₂₀O₈ 472.45
Mp 110-111°. [α]_D +104 (c, 1.0 in CHCl₃).

[74708-50-2]

Baer, H.H. *et al.*, *Can. J. Chem.*, 1969, **47**, 2811 (D-benzylidene)
Mieczkowski, J. *et al.*, *Carbohydr. Res.*, 1977, **56**, 180 (D-di-Ac)
Bernasconi, C. *et al.*, *Bull. Soc. Chim. Fr.*, 1979, 332 (D-di-Ac)
Furuichi, K. *et al.*, *Chem. Comm.*, 1980, 66, (D-benzylidene)
Rollin, P. *et al.*, *Carbohydr. Res.*, 1981, **98**, 139 (D-di-Ac, D-dibenzoyl)
Jarglis, P. *et al.*, *Tet. Lett.*, 1982, **23**, 3781, (D-di-Ac, D-dibenzoyl)
Fun, H.K. *et al.*, *Acta Cryst. C*, 1995, **51**, 1330 (cryst struct)

3,6-Dideoxy-erythro-hex-2-enono-1,5-lactone D-581

C₆H₈O₄ 144.127

Unisolated enol.

L-form

Di-Ac: 2,4-Di-O-acetyl-3,6-dideoxy-L-erythro-hex-2-enono-1,5-lactone
[122359-36-8]
C₁₀H₁₂O₆ 228.201
Syrup. [α]_D²⁰ -122 (c, 1.1 in CHCl₃).

Dibenzoyl: 2,4-Di-O-benzoyl-3,6-dideoxy-L-erythro-hex-2-enono-1,5-lactone
[69992-13-8]
C₂₀H₁₆O₆ 352.343
Cryst. (EtOH). Mp 108-110°. [α]_D²⁰ -93 (c, 1.0 in CHCl₃).

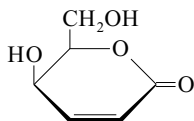
Varela, O.J. *et al.*, *Carbohydr. Res.*, 1979, **70**, 27 (dibenzoyl, pmr)

Lichtenthaler, F.W. *et al.*, *Annalen*, 1989, 1153 (*di-Ac*)

2,3-Dideoxy-threo-hex-2-enono-1,5-lactone

D-582

5-Hydroxy-6-hydroxymethyl-5,6-dihydro-2H-pyran-2-one



C₆H₈O₄ 144.127

D-form

Di-Ac: 4,6-Di-O-acetyl-D-threo-hex-2-enono-1,5-lactone

[63952-82-9]

C₁₀H₁₂O₆ 228.201

Oil. Bp_{0.3} 160°. [α]_D²⁰ -347 (c, 1.0 in CHCl₃).

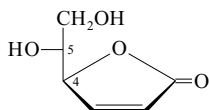
Mieczkowski, J. *et al.*, *Carbohydr. Res.*, 1977, **56**, 180 (*synth*, *pmr*)

Lichtenthaler, F.W. *et al.*, *Annalen*, 1989, 1153 (4,6-di-Ac, *pmr*)

2,3-Dideoxyhex-2-enono-1,4-lactone

D-583

5-(1,2-Dihydroxyethyl)-2(5H)-furanone



D-erythro-form

C₆H₈O₄ 144.127

Carbohydrate numbering shown.

D-erythro-form

(4S,5R)-form. 2,3-Dideoxy-D-ascorbic acid

[102335-56-8]

Cryst. (EtOAc). Mp 95-96°. [α]_D²⁰ -187 (c, 0.69 in H₂O).

D-threo-form

(4R,5R)-form

Cryst. Mp 86-87°. [α]_D²⁰ +118 (c, 1 in H₂O).

L-erythro-form

(4R,5S)-form

Cryst. (EtOAc). Mp 94-95°. [α]_D²⁰ +187 (c, 0.7 in H₂O).

L-threo-form

(4S,5S)-form. 2,3-Dideoxy-L-ascorbic acid

[102335-47-7]

Cryst. (EtOAc). Mp 85-86°. [α]_D²⁰ -120 (c, 1.00 in H₂O).

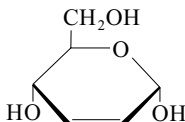
Vekemans, J.A.J.M. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1985, **104**, 266 (*synth*, *pmr*)

Vekemans, J.A.J.M. *et al.*, *J.O.C.*, 1988, **53**, 627; 1990, **55**, 5336 (*synth*, *ir*, *pmr*, *cmr*)

Fun, H. *et al.*, *Acta Cryst. C*, 1995, **51**, 1330 (*cryst struct*)

2,3-Dideoxy-erythro-hex-2-enopyranose

D-584



C₆H₁₀O₄ 146.143

α-D-form

Me glycoside, 4,6-dibenzoyl: Methyl 4,6-di-O-benzoyl-2,3-dideoxy-α-D-erythro-hex-2-enopyranoside

[13322-95-7]

C₂₁H₂₀O₆ 368.385

Cryst. (EtOH). Mp 75-76°. [α]_D +192 (c, 1 in CHCl₃).

Me glycoside, 4,6-dibenzyl: Methyl 4,6-di-O-benzyl-2,3-dideoxy-α-D-erythro-hex-2-enopyranoside

C₂₁H₂₄O₄ 340.418

[α]_D²⁰ +74.7 (c, 2.9 in CHCl₃).

Me glycoside, 4-benzyl, 6-trityl: Methyl 4-O-benzyl-2,3-dideoxy-α-D-erythro-hex-2-enopyranoside

C₃₃H₃₂O₄ 492.613

Cryst. (MeOH/Me₂CO). Mp 130°. [α]_D²⁴ +72.3 (c, 0.8 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2,3-dideoxy-α-D-erythro-hex-2-enopyranoside

[3169-98-0]

C₁₄H₁₆O₄ 248.278

Cryst. (heptane). Mp 119-120°. [α]_D²² +130 (c, 0.54 in CHCl₃).

Et glycoside: Ethyl 2,3-dideoxy-α-D-erythro-hex-2-enopyranoside

[23339-15-3]

C₈H₁₄O₄ 174.196

Mp 101° (96-97°). [α]_D²⁰ +96 (c, 1.8 in EtOH).

Et glycoside, 4,6-di-Ac: Ethyl 4,6-di-O-acetyl-2,3-dideoxy-α-D-erythro-hex-2-enopyranoside

[3323-72-6]

C₁₂H₁₈O₆ 258.271

Needles (EtOH). Mp 78-79°. [α]_D¹⁷ +106.7 (c, 2.1 in C₆H₆).

Et glycoside, 4,6-dimesyl: Ethyl 2,3-dideoxy-4,6-di-O-mesyl-α-D-erythro-hex-2-enopyranoside

C₁₀H₁₈O₈S₂ 330.379

Needles (EtOH aq.). Mp 71-72°. [α]_D²⁰ +87.7 (c, 1.46 in Me₂CO).

Et glycoside, 4,6-dibenzyl: Ethyl 4,6-di-O-benzyl-2,3-dideoxy-α-D-erythro-hex-2-enopyranoside

C₂₂H₂₆O₄ 354.445

[α]_D²⁰ +91 (c, 1.2 in CHCl₃).

β-D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2,3-dideoxy-β-D-erythro-hex-2-enopyranoside

[18968-70-2]

C₁₄H₁₆O₄ 248.278

Needles (EtOH). Mp 94-95°. [α]_D¹² +43 (c, 1 in CHCl₃).

Aldrich Library of ¹³C and ¹H FT NMR Spectra, 1992, **1**, 1094A (*nmr*)

Laland, S. *et al.*, *J.C.S.*, 1950, 738 (α-D-Et pyr, α-D-Et pyr di-Ac, α-D-Et pyr dimesyl)

Albano, E. *et al.*, *Carbohydr. Res.*, 1966, **2**, 349 (α-D-Me pyr benzylidene)

Ciment, D.M. *et al.*, *J.C.S. (C)*, 1966, 446, (α-D-Me pyr dibenzoyl, α-D-Et pyr)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**, 61 (α-D-Me pyr benzylidene, β-D-Me pyr benzylidene)

Ferrier, R.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1969, **24**, 199 (*rev*)

Dimitrijevic, S. *et al.*, *Carbohydr. Res.*, 1969, **11**, 531 (α-D-Me pyr benzyl trityl)

Yamazaki, T. *et al.*, *Carbohydr. Res.*, 1976, **50**, 279 (α-D-Me pyr benzylidene, β-D-Me pyr benzylidene)

Descotes, G. *et al.*, *Carbohydr. Res.*, 1977, **56**, 168 (α-D-Me pyr dibenzyl, α-D-Et pyr dibenzyl)

Barrett, A.G.M. *et al.*, *J.C.S. Perkin 1*, 1979, 2378 (α-D-Me pyr benzylidene)

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1980, **80**, 354 (α-D-Me pyr benzylidene)

Radatus, B.K. *et al.*, *Synthesis*, 1980, 47, (α-D-Me pyr benzylidene)

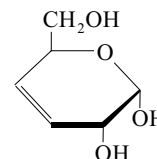
Paulsen, H. *et al.*, *Synthesis*, 1980, 636 (α-D-Me pyr benzylidene)

Bessodes, M. *et al.*, *Chem. Comm.*, 1981, 26 (*synth*, α-D-Me pyr benzylidene)

Wingert, L.M. *et al.*, *Carbohydr. Res.*, 1984, **128**, 1 (*cryst struct*, α-D-Et pyr)

3,4-Dideoxy-erythro-hex-3-enopyranose

D-585



C₆H₁₀O₄ 146.143

α-D-Pyranose-form

2,6-Dibenzoyl: 2,6-Di-O-benzoyl-3,4-dideoxy-α-D-erythro-hex-3-enopyranoside

C₂₀H₁₈O₆ 354.359

Characterised by *pmr*.

2,6-Bis-p-nitrobenzoyl: Mp 152-153°. [α]_D²³ -57.7 (c, 5.0 in CHCl₃).

Me glycoside: Methyl 3,4-dideoxy-α-D-erythro-hex-3-enopyranoside

[51385-38-7]

C₇H₁₂O₄ 160.169

Cryst. (Et₂O). Mp 61-62°. Bp_{0.2} 80-85° (bath). [α]_D +62.5 (c, 1 in CHCl₃).

Me glycoside, 2,6-dibenzoyl: Methyl 2,6-di-O-benzoyl-3,4-dideoxy-α-D-erythro-hex-3-enopyranoside

[34254-52-9]

C₂₁H₂₀O₆ 368.385

Liq. Bp_{0.0005} 180-190° (bath). [α]_D²² -17.3 (c, 1 in CHCl₃).

Me glycoside, 2,6-bis(4-nitrobenzoyl): Cryst. (CHCl₃/petrol). Mp 152-153°.

[α]_D²³ -57.7 (c, 5.0 in CHCl₃).

Me glycoside, 2,6-dimesyl: Methyl 3,4-dideoxy-2,6-di-O-mesyl-α-D-erythro-hex-3-enopyranoside

[56883-15-9]

C₉H₁₆O₈S₂ 316.353

[α]_D +120 (c, 0.9 in CHCl₃).

Me glycoside, 6-trityl: Methyl 3,4-dideoxy-6-O-trityl- α -D-erythro-hex-3-enopyranoside
 $C_{26}H_{26}O_4$ 402.489
 Cryst. (Et₂O/EtOH). Mp 122-123°. [α]_D²³ -11.3 (c, 6.1 in CHCl₃).

Me glycoside, 6-trityl, 2-benzoyl: Methyl 2-O-benzoyl-3,4-dideoxy-6-O-trityl- α -D-erythro-hex-3-enopyranoside
 $C_{33}H_{30}O_5$ 506.597
 Microcryst. solid. Mp 49-50°. [α]_D²⁴ +8 (c, 3.1 in EtOAc).

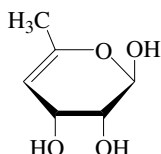
Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, **45**, 3619 (synth, pmr, *Me gly dibenzoyl*)

Holder, N.L. *et al.*, *Can. J. Chem.*, 1973, **51**, 3357 (α -D-*Me pyr bisnitrobenzoyl*, α -D-*Me pyr trityl*)

Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1975, 979 (α -D-*Me pyr*, α -D-*Me pyr bisnitrobenzoyl*)

Ho, W.M. *et al.*, *Tetrahedron*, 1995, **51**, 7373 (synth, trityl derivs)

4,6-Dideoxy-erythro-hex-4-enopyranose D-586



β -D-form

$C_6H_{10}O_4$ 146.143

β -D-form

Me glycoside, 2,3-O-isopropylidene: Methyl 4,6-dideoxy-2,3-O-isopropylidene- β -D-erythro-hex-4-enopyranoside, 8CI
 [22594-26-9]
 $C_{10}H_{16}O_4$ 200.234
 Bp₁₁ 87°. [α]_D -193 (c, 6.6 in CHCl₃).

Me glycoside, di-Me: Methyl 4,6-dideoxy-2,3-di-O-methyl- β -D-erythro-hex-4-enopyranoside, 9CI
 [28297-28-1]
 $C_9H_{16}O_4$ 188.223
 Bp_{0.05} 33-35°. [α]_D -288 (c, 1.2 in CHCl₃).

β -L-form

Me glycoside, 2,3-O-isopropylidene: Methyl 4,6-dideoxy-2,3-O-isopropylidene- β -L-erythro-hex-4-enopyranoside
 $C_{10}H_{16}O_4$ 200.234
 Bp₁₃ 93-96°. [α]_D²⁵ -193 (c, 1.0 in CHCl₃).

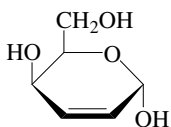
Lehmann, J. *et al.*, *Angew. Chem., Int. Ed.*, 1965, **4**, 874 (β -L-form)

Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1969, 1270 (β -D-isopropylidene)

Jary, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, **36**, 3046 (β -D-form)

Al-Radhi, A.K. *et al.*, *Carbohydr. Res.*, 1972, **22**, 103 (β -D-di-Me)

2,3-Dideoxy-threo-hex-2-enopyranose D-587



α -D-form

$C_6H_{10}O_4$ 146.143

α -D-form

Tri-Ac: 1,4,6-Tri-O-acetyl-2,3-dideoxy- α -D-threo-hex-2-enopyranose
 $C_{12}H_{16}O_7$ 272.254
 Mp 72-73°. [α]_D -232 (CHCl₃).

Me glycoside: Methyl 2,3-dideoxy- α -D-threo-hex-2-enopyranoside
 $C_7H_{12}O_4$ 160.169
 Mp 87-88°. [α]_D -134 (EtOH).

Me glycoside, di-Ac: Methyl 4,6-di-O-acetyl-2,3-dideoxy- α -D-threo-hex-2-enopyranoside
 [6605-29-4]
 $C_{11}H_{16}O_6$ 244.244
 Mp 61-62°. [α]_D -174 (CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2,3-dideoxy- α -D-threo-hex-2-enopyranoside
 [18968-71-3]
 $C_{14}H_{16}O_4$ 248.278
 Mp 163-164°. [α]_D²⁵ -130 (c, 3.0 in CHCl₃).

Et glycoside, di-Ac: Ethyl 4,6-di-O-acetyl-2,3-dideoxy- α -D-threo-hex-2-enopyranoside
 [69055-68-1]
 $C_{12}H_{18}O_6$ 258.271
 Syrup. Mp 19.5-20.5°. Bp_{0.6} 140°. [α]_D -171.5 (c, 1.5 in CHCl₃).

4-Nitrophenyl glycoside, 4,6-di-Ac: Mp
 114-115°. [α]_D -99 (C₆H₆).

β -D-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2,3-dideoxy- β -D-threo-hex-2-enopyranoside
 $C_{14}H_{16}O_4$ 248.278
 Mp 123°. [α]_D²⁵ -172 (c, 1.1 in CHCl₃).

[58917-64-9]

Ciment, D.M. *et al.*, *J.C.S. (C)*, 1966, 441 (α -D-tri-Ac, α -D-*Me pyr*, α -D-*Me pyr di-Ac*, α -D-nitrophenyl pyr di-Ac)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**, 61 (α -D-*Me pyr benzylidene*, β -D-*Me pyr benzylidene*)

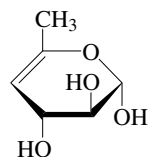
Ferrier, R.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1969, **24**, 199 (rev)

Gryniewicz, G. *et al.*, *Carbohydr. Res.*, 1979, **68**, 33 (synth, pmr)

Baer, H.H. *et al.*, *Can. J. Chem.*, 1981, **59**, 889 (synth)

Bessodes, M. *et al.*, *Chem. Comm.*, 1981, 26 (synth)

4,6-Dideoxy-threo-hex-4-enopyranose D-588



α -D-threo-form

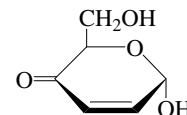
$C_6H_{10}O_4$ 146.143

α -D-Pyranose-form

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-4,6-dideoxy- α -D-threo-hex-4-enopyranoside, 9CI
 [55570-72-4]
 $C_{21}H_{24}O_4$ 340.418

Mp 62-63°. [α]_D²³ -20.1 (c, 1.0 in CHCl₃).
 Stevens, C.L. *et al.*, *J.O.C.*, 1975, **40**, 2474

2,3-Dideoxy-glycero-hex-2-enopyranos-4-ulose D-589



α -D-form

$C_6H_8O_4$ 144.127

α -D-form

Et glycoside: Ethyl 2,3-dideoxy- α -D-glycero-hex-2-enopyranosid-4-ulose
 [25474-14-0]
 $C_8H_{12}O_4$ 172.18
 Mp 85-86°. [α]_D²³ -14.5 (c, 2.0 in CHCl₃).

Et glycoside, 6-Ac: Ethyl 6-O-acetyl-2,3-dideoxy- α -D-glycero-hex-2-enopyranosid-4-ulose
 [25474-16-2]
 $C_{10}H_{14}O_5$ 214.218
 Mp 41-53°. [α]_D²³ -24.1 (c, 2.2 in CHCl₃).

Et glycoside, 6-benzoyl: Ethyl 6-O-benzoyl-2,3-dideoxy- α -D-glycero-hex-2-enopyranosid-4-ulose
 $C_{15}H_{16}O_5$ 276.288
 Mp 50-51°. [α]_D²³ -41.8 (c, 2.6 in CHCl₃).

Et glycoside, 6-tosyl: Ethyl 2,3-dideoxy-6-O-tosyl- α -D-glycero-hex-2-enopyranosid-4-ulose
 [25474-15-1]
 $C_{15}H_{18}O_6S$ 326.37
 Mp 84-85°. [α]_D²³ -29.6 (c, 2.0 in CHCl₃).

β -D-form

1,6-Anhydro: 1,6-Anhydro-2,3-dideoxy- β -D-glycero-hex-2-enopyranos-4-ulose. 6,8-Dioxabicyclo[3.2.1]oct-3-en-2-one. Isolevoglucosenone
 [33647-85-7]
 $C_6H_6O_3$ 126.112
 Pale yellow oil. [α]_D³¹ +425 (c, 1.10 in CHCl₃). Dec. on storage after several months at r.t.

β -L-form

1,6-Anhydro: [184576-71-4]
 Oil. [α]_D³⁰ -428 (c, 1.10 in CHCl₃).

Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1970, **48**, 2877 (α -D-Et-pyr, α -D-Et pyr benzoyl, α -D-Et pyr Ac, α -D-Et pyr tosyl)

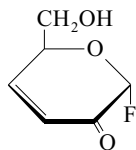
Köll, P. *et al.*, *Chem. Ber.*, 1976, **109**, 337, (β -D-anhydro)

Furieux, R.H. *et al.*, *Carbohydr. Res.*, 1986, **146**, 113 (β -D-anhydro)

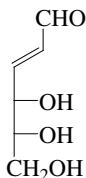
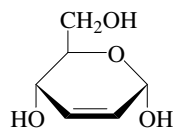
Horton, D. *et al.*, *J.O.C.*, 1996, **61**, 3783-3793 (β -D-anhydro, synth)

Kadota, K. *et al.*, *Synthesis*, 2000, 1372-1374 (β -D-anhydro, β -L-anhydro)

Witczak, Z.J. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 143-148 (β -D-anhydro, synth)

3,4-Dideoxy-glycero-hex-3-enopyranosulos-1-yl fluoride, 9CI**D-590**C₆H₇FO₃ 146.118 **α -D-form**

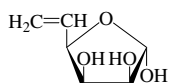
Ac: [25146-88-7]
 C₈H₉FO₄ 188.155
 Syrup. [α]_D²⁵ -126.9 (CHCl₃).
Benzoyl: [25146-89-8]
 C₁₃H₁₁FO₄ 250.226
 Syrup. [α]_D²⁵ -115.6 (c, 3.6 in CHCl₃).
 Bock, K. *et al.*, *Tet. Lett.*, 1969, 2983 (α -D-*Ac*, α -D-*benzoyl*)
 Bock, K. *et al.*, *Acta Chem. Scand.*, 1971, **25**, 1021 (α -D-*Ac*, α -D-*benzoyl*, *synth.*, *pmr*, *ir*)

2,3-Dideoxy-erythro-hex-2-enose**D-591**D-(2*E*)-form α -D-Pyranose-formC₆H₁₀O₄ 146.143**D-(2*E*)-form**

4,6-Di-Ac: 4,6-Di-O-acetyl-2,3-dideoxy-D-erythro-hex-2-enose
 [29581-05-3]
 C₁₀H₁₄O₆ 230.217
 Oil. [α]_D²³ +8.9 (c, 1.0 in CHCl₃).
Tri-Ac: 4,5,6-Tri-O-acetyl-2,3-dideoxy-D-erythro-hex-2-enose
 [37793-29-6]
 C₁₂H₁₆O₇ 272.254
 Oil. [α]_D²³ +11.7 (c, 4.6 in CHCl₃).

 α -D-Pyranose-form

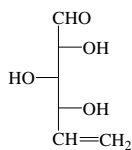
Et glycoside, 6-benzyl: Ethyl 6-O-benzyl-2,3-dideoxy- α -D-erythro-hex-2-enopyranoside
 [80516-25-2]
 C₁₅H₂₀O₄ 264.321
 Syrup. [α]_D²⁰ +35 (c, 1 in CHCl₃).
 [38081-31-1]
 Fraser-Reid, B. *et al.*, *J.A.C.S.*, 1970, **92**, 5288 (*synth.*, *pmr*)
 Gonzalez, F. *et al.*, *Carbohydr. Res.*, 1975, **42**, 267 (*synth.*, *pmr*)
 Valverde, S. *et al.*, *Chem. Comm.*, 1987, 1714, (α -D-pyr deriv)
 Lau, J. *et al.*, *Arch. Pharm. (Weinheim, Ger.)*, 1991, **324**, 83 (*di-Ac*)
 Pedretti, V. *et al.*, *Carbohydr. Res.*, 1993, **244**, 247 (α -D-pyr deriv)

5,6-Dideoxy-lyxo-hex-5-enose**D-592** α -D-Furanose-formC₆H₁₀O₄ 146.143 **α -D-Furanose-form**

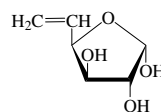
2,3-O-Isopropylidene: 5,6-Dideoxy-2,3-O-isopropylidene-D-lyxo-hex-5-enofuranose
 [73111-64-5]
 C₉H₁₄O₄ 186.207
 Cryst. Mp 61° (55-56°). [α]_D²⁰ -29 (c, 0.57 in CHCl₃).
Me glycoside, 2,3-O-isopropylidene: Methyl 5,6-dideoxy-2,3-O-isopropylidene-D-lyxo-hex-5-enofuranoside
 [57783-59-2]
 C₁₀H₁₆O₄ 200.234
 Syrup. [α]_D²⁰ +28 (c, 0.7 in CHCl₃).

 α -L-Furanose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 5,6-dideoxy-2,3-O-isopropylidene- α -L-lyxo-hex-5-enofuranoside
 [35906-38-8]
 C₁₀H₁₆O₄ 200.234
 Bp_{3.2} 76°. [α]_D -23.5 (c, 1.4 in CHCl₃).
 Chaves, G. *et al.*, *Carbohydr. Res.*, 1972, **22**, 205-208 (α -L-*Me fur isopropylidene*)
 Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1973, **31**, 146-150 (α -L-*Me fur isopropylidene*)
 Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1977, **31**, 248 (α -D-*Me fur isopropylidene*)
 Bernet, B. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 2400-2410 (α -D-isopropylidene)
 Kleban, M. *et al.*, *Synthesis*, 2000, 1027-1033 (α -D-isopropylidene)
 Von lanthen, D. *et al.*, *Synthesis*, 2003, 1087-1090 (α -D-isopropylidene)

5,6-Dideoxy-xylo-hex-5-enose**D-593**

D-form

 α -D-Furanose-formC₆H₁₀O₄ 146.143**D-form** [162238-84-8]

[139326-96-8]
 Yellow oil. [α]_D²² -2.9 (c, 0.85 in MeOH).
 Obt. as a mixt. of α - and β -furanose anomers.

Tri-Ac: 2,3,4-Tri-O-acetyl-5,6-dideoxy-D-xylo-hex-5-enose
 [131566-70-6]
 C₁₂H₁₆O₇ 272.254
 Oil. [α]_D²⁰ -20.4 (c, 1.22 in CHCl₃).
Tribenzyl: 2,3,4-Tribenzyl-5,6-dideoxy-D-xylo-hex-5-enose
 [73111-15-6]
 [73111-20-3]
 C₂₇H₂₈O₄ 416.516
 Unstable oil. [α]_D -15 (c, 0.8 in CHCl₃) (as dipropyl acetal).

 α -D-Furanose-form

1,2-O-Isopropylidene: 5,6-Dideoxy-1,2-O-isopropylidene- α -D-xylo-hex-5-enofuranose
 [7284-07-3]
 C₉H₁₄O₄ 186.207
 Cryst. (petrol). Mp 64°. [α]_D²⁵ -60.5 (c, 2.0 in H₂O).

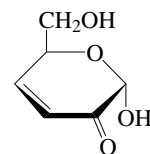
3-Me, 1,2-O-isopropylidene: 5,6-Dideoxy-1,2-O-isopropylidene-3-O-methyl- α -D-xylo-hex-5-enofuranose
 C₁₀H₁₆O₄ 200.234
 Bp₂ 80°. [α]_D²¹ -43.1 (c, 1.5 in EtOH).

3-Benzyl, 1,2-O-isopropylidene: 3-O-Benzyl-5,6-dideoxy-1,2-O-isopropylidene- α -D-xylo-hex-5-enofuranose
 C₁₆H₂₀O₄ 276.332
 Bp_{0.2} 124-128°. [α]_D²¹ -55.5 (c, 3.0 in EtOH).
 [139326-95-7]

Josan, J.S. *et al.*, *Carbohydr. Res.*, 1968, **7**, 161 (α -D-3-benzyl isopropylidene, α -D-3-*Me isopropylidene*)
 Lance, D.G. *et al.*, *Carbohydr. Res.*, 1969, **10**, 306 (α -D-isopropylidene)
 Bernet, B. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 1990-2016 (2,3,4-tribenzyl)
 Barrett, A.G.M. *et al.*, *J.C.S. Perkin 1*, 1979, 2378 (α -D-3-*Me isopropylidene*)
 Gracza, T. *et al.*, *Synthesis*, 1991, 1108-1118 (*synth.*, *ir*, *pmr*, *cmr*)
 Kleban, M. *et al.*, *Synthesis*, 2000, 1027-1033 (*tri-Ac*)

3,4-Dideoxy-glycero-hex-3-enos-2-ulose**D-594**

3,4-Dideoxy-glycero-hex-3-enopyranos-2-ulose. 2-Hydroxy-6-(hydroxymethyl)-2H-pyran-3(6H)-one, 9CI. Glucosenone

 α -D-formC₆H₈O₄ 144.127 **α -D-form**

Di-Ac: 1,6-Di-O-acetyl-3,4-dideoxy- α -D-glycero-hex-3-enopyranos-2-ulose
 [35303-95-8]
 C₁₀H₁₂O₆ 228.201
 Syrup. [α]_D²⁰ -116.4 (-85) (c, 2.1 in CHCl₃).

Me glycoside: Methyl 3,4-dideoxy- α -D-glycero-hex-3-enopyranosid-2-ulose
 [25146-92-3]
 C₇H₁₀O₄ 158.154
 Needles (Et₂O/petrol). Mp 61°. [α]_D²³ +54.7 (c, 5.0 in CHCl₃).

Me glycoside, 6-benzoyl: Methyl 6-O-benzoyl-3,4-dideoxy- α -D-glycero-hex-3-enopyranosid-2-ulose
 [35303-94-7]
 C₁₄H₁₄O₅ 262.262
 Cryst. (EtOH). Mp 87-88°.

Me glycoside, 6-trityl: Methyl 6-O-trityl- α -D-glycero-hex-3-enopyranosid-2-ulose
 C₂₆H₂₄O₄ 400.473

Needles (Et₂O/EtOH). Mp 127-128°. $[\alpha]_D^{25}$ -15.9 (c, 5.8 in CHCl₃).

tert-Butyl glycoside, 6-Ac: tert-Butyl 6-O-acetyl-3,4-dideoxy- α -D-glycero-hex-3-enopyranosid-2-uloside [81668-95-3]
C₁₂H₁₈O₅ 242.271
 $[\alpha]_D$ +4.4 (c, 1.4 in CHCl₃).

 β -D-form

1,6-Anhydro: See 1,6-Anhydro-3,4-dideoxy-glycero-hex-3-enopyranos-2-ulose, A-583

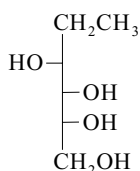
Di-Ac: 1,6-Di-O-acetyl-3,4-dideoxy- β -D-glycero-hex-3-enopyranos-2-ulose
C₁₀H₁₂O₆ 228.201
Syrup. $[\alpha]_D^{20}$ -87.6 (-78.2) (c, 1.1 in CHCl₃).

Holder, N.L. et al., *Can. J. Chem.*, 1973, **51**, 3357 (α -D-Me pyr, α -D-Me pyr trityl, α -D-Me pyr benzoyl)

Mori, M. et al., *Carbohydr. Res.*, 1984, **129**, 73 (purifn)

Köll, P. et al., *J. Carbohydr. Chem.*, 1984, **3**, 403-415 (di-Ac)

Hanessian, S. et al., *Tetrahedron*, 1990, **46**, 231 (α -D-tert-butyl pyr)

1,2-Dideoxy-arabino-hexitol D-595

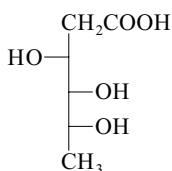
C₆H₁₄O₄ 150.174

D-form

Cryst. (EtOH/Me₂CO). Mp 122°. $[\alpha]_D^{18}$ +4.2.

Karrer, P. et al., *Helv. Chim. Acta*, 1948, **31**, 1611 (synth)

Regeling, H. et al., *Carbohydr. Res.*, 1990, **205**, 261 (synth)

2,6-Dideoxy-arabino-hexonic acid D-596

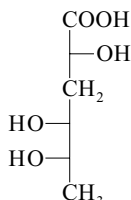
C₆H₁₂O₅ 164.158

D-form

1,4-Lactone: 2,6-Dideoxy-D-arabino-1,4-hexonolactone [71698-58-3]
C₆H₁₀O₄ 146.143
 $[\alpha]_D^{20}$ +53 (c, 3.3 in EtOH).

1,4-Lactone, di-Ac: 3,5-Di-O-acetyl-2,6-dideoxy-D-arabino-hexono-1,4-lactone
C₁₀H₁₄O₆ 230.217
Mp 101-102°. $[\alpha]_D^{25}$ +25 (c, 1.1 in CHCl₃).

Bock, K. et al., *Carbohydr. Res.*, 1981, **90**, 7 (synth, cmr)

3,6-Dideoxy-arabino-hexonic acid D-597

C₆H₁₂O₅ 164.158
 $[\alpha]_D^{20}$ -50.8 (c, 1.2 in H₂O).

L-form

Phenylhydrazide: [69992-18-3]

Cryst. (MeOH/Et₂O). Mp 170-172°. $[\alpha]_D^{20}$ +51 (c, 0.5 in H₂O).

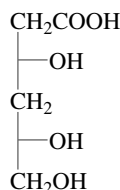
1,5-Lactone: 3,6-Dideoxy-L-arabino-hexono-1,5-lactone. Ascarylonolactone [69992-17-2]
C₆H₁₀O₄ 146.143
Syrup. $[\alpha]_D^{20}$ +8.6 (c, 1.6 in H₂O) (equilib.).

1,5-Lactone, dibenzoyl: 2,4-Di-O-benzoyl-3,6-dideoxy-L-arabino-hexono-1,5-lactone [6992-14-9]
C₂₀H₁₈O₆ 354.359
Cryst. (EtOH). Mp 85-87°. $[\alpha]_D^{20}$ +18.2 (c, 1.0 in CHCl₃).

Varela, O.J. et al., *Carbohydr. Res.*, 1979, **70**, 27 (synth, pmr)

2,4-Dideoxy-erythro-hexonic acid D-598

3,5,6-Trihydroxyhexanoic acid



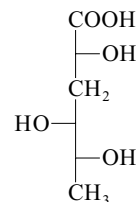
C₆H₁₂O₅ 164.158

D-form

3,5-O-Isopropylidene, tert-butyl ester: tert-Butyl 2,4-dideoxy-3,5-O-isopropylidene-erythro-hexonate [124655-09-0]
C₁₃H₂₄O₅ 260.33
 $[\alpha]_D^{20}$ -7.57 (c, 2 in MeOH).

Hirokazu, U. et al., *Tet. Lett.*, 1992, **33**, 4183 (synth)

Hiyama, T. et al., *Bull. Chem. Soc. Jpn.*, 1995, **68**, 364 (synth, pmr, ir, ms)

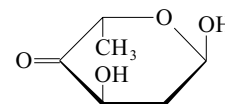
3,6-Dideoxy-xylo-hexonic acid D-599

C₆H₁₂O₅ 164.158

D-form

1,4-Lactone: 3,6-Dideoxy-D-xylo-hexono-1,4-lactone [79645-45-7]
C₆H₁₀O₄ 146.143
Cryst. (EtOAc). Mp 85-86°. $[\alpha]_D^{20}$ -50.8 (c, 1.2 in H₂O).

Bock, K. et al., *Acta Chem. Scand., Ser. B*, 1981, **35**, 155 (synth, cmr)

2,6-Dideoxy-erythro-hexopyranos-4-ulose D-600

C₆H₁₀O₄ 146.143

 α -L-form

Me glycoside, 3-(2-methoxyethoxymethyl): [83355-86-6]
C₁₁H₂₀O₆ 248.275
Syrup. $[\alpha]_D^{22}$ -127.7 (c, 5.68 in CHCl₃).

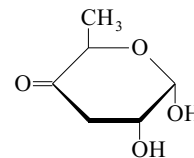
Me glycoside, 3-(tert-butyltrimethylsilyl): [86731-78-4]
C₁₃H₂₆O₄Si 274.431
Syrup. $[\alpha]_D^{22}$ -173.9 (c, 3.86 in CHCl₃).

Suami, T. et al., *Chem. Lett.*, 1982, 1245 (α -L-Me gly derivs)

Suami, T. et al., *Bull. Chem. Soc. Jpn.*, 1983, **56**, 1431 (α -L-Me gly derivs, pmr)

3,6-Dideoxy-erythro-hexopyranos-4-ulose D-601

3,6-Dideoxy-4-ketoglucose. Cinerulose B



α -D-form

C₆H₁₀O₄ 146.143

Isol. from *Pasteurella pseudotuberculosis* type V strain VO. Suggested biosynthetic intermediate for the formation of 3,6-Dideoxy-arabino-hexose, D-608, 3,6-Dideoxy-ribo-hexose, D-613 and 3,6-Dideoxy-xylo-hexose, D-617.

α -D-form [56783-59-6]

Gum.

1,2-O-Isopropylidene: 3,6-Dideoxy-1,2-O-isopropylidene- α -D-erythro-hexopyranos-4-ulose

[50272-24-7]

 $C_9H_{14}O_4$ 186.207Oil. Bp_{0.3} 47-49°. [α]_D²⁷ +166.3 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, oxime: [50272-13-4]

 $C_9H_{15}NO_4$ 201.222Cryst. (hexane). Mp 131-133°. [α]_D²⁷ +158.3 (c, 1.0 in CHCl₃).**L-form**

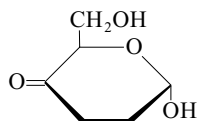
Constit. of Cinerubin B.

 α -L-formMe glycoside: Methyl 3,6-dideoxy- α -L-erythro-hexopyranosid-4-ulose. Methyl cineruloside B

[157380-22-8]

 $C_7H_{12}O_4$ 160.169[α]_D -176 (c, 2 in CHCl₃).

[50272-12-3]

Matsuhashi, S. *et al.*, *J. Biol. Chem.*, 1967, **242**, 3494 (isol)Ritchie, W. *et al.*, *Helv. Chim. Acta*, 1972, **55**, 467 (occur, L-form)Stevens, C.L. *et al.*, *J.A.C.S.*, 1973, **95**, 5767 (α -D-isopropylidene)Stevens, C.L. *et al.*, *J.O.C.*, 1975, **40**, 3704 (D-form, synth)Cossy, J. *et al.*, *Carbohydr. Res.*, 1994, **259**, 141 (α -L-Me pyr)**2,3-Dideoxy-glycero-hexopyranos-4-ulose** D-602 α -D-form $C_6H_{10}O_4$ 146.143 **α -D-form**Et glycoside: Ethyl 2,3-dideoxy- α -D-glycero-hexopyranosid-4-ulose $C_8H_{14}O_4$ 174.196[α]_D²³ +29.5 (c, 1.3 in CHCl₃).Et glycoside, 6-benzoyl: Ethyl 6-O-benzoyl-2,3-dideoxy- α -D-glycero-hexopyranosid-4-ulose $C_{15}H_{18}O_5$ 278.304[α]_D²³ +128.4 (c, 2.2 in CHCl₃).6-Deoxy, Me glycoside: Methyl 2,3,6-trideoxy- α -D-glycero-hexopyranosid-4-ulose

[26922-37-2]

 $C_7H_{12}O_3$ 144.17[α]_D²² +310 (c, 1.3 in CHCl₃). Dec. after 4d at 0°.

6-Deoxy, Me glycoside, oxime:

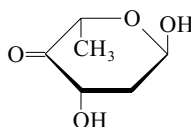
[28369-12-2]

 $C_7H_{13}NO_3$ 159.185Bp_{0.1} 95-98° (bath). [α]_D²⁰ +223 (c, 0.5 in CHCl₃).

6-Deoxy, Me glycoside, 4-nitrophenylhydrazine: [28369-11-1]

Mp 158-159°. [α]_D²⁰ +347 (c, 0.6 in CHCl₃). **β -D-form**Me glycoside: Methyl 2,3-dideoxy- β -D-glycero-hexopyranosid-4-ulose, 8CI

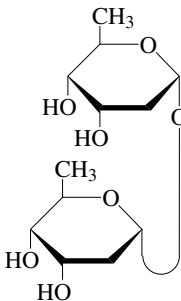
[34340-41-5]

 $C_7H_{12}O_4$ 160.169[α]_D -63.2 (c, 1.3 in CHCl₃). **α -L-form**6-Deoxy, Me glycoside: Methyl 2,3,6-trideoxy- α -L-glycero-hexopyranosid-4-ulose $C_7H_{12}O_3$ 144.17Bp₁₆ 80°. [α]_D -254 (c, 1.1 in CHCl₃) (-232).Albano, E.L. *et al.*, *Carbohydr. Res.*, 1969, **11**, 485 (α -D-Me pyr deoxy)Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1970, **48**, 2877 (α -D-Et pyr, α -D-Et pyr benzoyl)Williams, E.H. *et al.*, *Carbohydr. Res.*, 1971, **20**, 49 (β -D-Me pyr)Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 2146 (α -L-Me pyr deoxy)**2,6-Dideoxy-threo-hexopyranos-4-ulose** D-603 $C_6H_{10}O_4$ 146.143 **α -L-form**

Me glycoside, 3-Me: [67909-19-7]

 $C_8H_{14}O_4$ 174.196Syrup. [α]_D²⁰ -245 (c, 3.3 in CHCl₃).

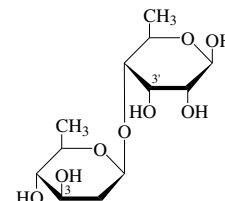
Me glycoside, 3-Me, oxime: [67909-20-0]

 $C_8H_{15}NO_4$ 189.211Cryst. Mp 105-110°. [α]_D²⁰ -193 (c, 1.22 in CHCl₃).Monneret, C. *et al.*, *Carbohydr. Res.*, 1978, **65**, 35 (α -L-Me gly derivs, ir)**2,6-Dideoxy- α -D-ribo-hexopyranosyl 2,6-dideoxy- α -D-ribo-hexopyranoside** D-604 $C_{12}H_{22}O_7$ 278.302Cryst. (CH₂Cl₂/diisopropyl ether). Mp 148-150°. [α]_D +165 (c, 1 in CHCl₃).

Tetrabenzoyl: [32780-23-7]

 $C_{40}H_{38}O_{11}$ 694.734Cryst. Mp 161-162°. [α]_D²⁰ +160 (c, 1.3 in CHCl₃).

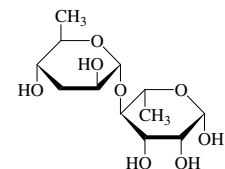
Tetramesyl: [33034-89-8]

 $C_{16}H_{30}O_{15}S_4$ 590.668Mp 110-112° dec. [α]_D +177 (c, 1.2 in DMF).Hough, L. *et al.*, *J.C.S. (C)*, 1971, 1732-1738 (tetrabenzoyl, tetramesyl)Lee, C.K. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 9-16 (tetrabenzoyl, cryst struct)**2,6-Dideoxy- β -D-arabino-hexopyranosyl-(1→4)-6-deoxy-D-allose** D-605 β -Pyranose-form $C_{12}H_{22}O_8$ 294.301 **β -Pyranose-form**Et glycoside, 3,3'-di-Me: **Rolinose**. Ethyl β -D-oleandropyranosyl-(1→4)-6-deoxy-3-O-methyl- β -D-allopyranoside

[230973-44-1]

 $C_{16}H_{30}O_8$ 350.408Constit. of the dried twigs of *Marsdenia roylei*.[α]_D +15 (c, 0.67 in CHCl₃).Kumar, A. *et al.*, *Phytochemistry*, 1999, **50**, 1353-1357 (isol, pmr, cmr, ms)**4-O-(3,6-Dideoxy- α -D-arabino-hexopyranosyl)-L-rhamnose** D-6066-Deoxy-4-O-(3,6-dideoxy- α -D-arabino-hexopyranosyl)-L-mannose. 4-O- α -D-Tyvelosyl-L-rhamnose

[74996-11-5]

 β -Pyranose-form $C_{12}H_{22}O_8$ 294.301Reducing disaccharide. [α]_D²⁰ +68.5 (c, 2 in H₂O).**Pyranose-form**

Penta-Ac: [74996-12-6]

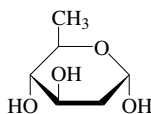
 $C_{25}H_{32}O_{13}$ 504.487[α]_D²⁰ +28 (c, 2.45 in CHCl₃). **β -Pyranose-form**

1,2-O-Methylorthoacetate, 2',3,4'-tri-Ac:

 $C_{21}H_{32}O_{12}$ 476.477[α]_D²⁰ +57 (c, 7 in CHCl₃).Kochetkov, N.K. *et al.*, *Tetrahedron*, 1980, **36**, 1099

2,6-Dideoxy-arabino-hexose, D-607 9CI

Chromose C. Olivose. Canarose. 2-Deoxyrhamnose. 2,6-Dideoxymannose



α-D-Pyranose-form

C₆H₁₂O₄ 148.158

D-form [6988-55-2]

Constit. of the antibiotics Chromomycin, Olivomycin, Flambamycin, F-8, Everninomicin B, E-33, Everninomicin C, E-34, Chromocyclomycin, C-127 and Oxamicetin also in cardiac glycosides. Hygroscopic cryst. Mp 100-103° (86-98°). [α]_D²¹ +25 (c, 1.4 in H₂O).

3-Me: 2,6-Dideoxy-3-O-methyl-D-arabino-hexose. **D-Oleandrose** C₇H₁₄O₄ 162.185 Present in cardiac glycosides. Mp 62-63°. [α]_D -12.5.

α-D-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-α-D-arabino-hexopyranoside C₇H₁₄O₄ 162.185 Syrup. Bp₁ 126-129°. [α]_D²³ +87 (c, 1.2 in H₂O).

Me glycoside, 4-Me: Methyl 2,6-dideoxy-4-O-methyl-α-D-arabino-hexopyranoside C₈H₁₆O₄ 176.212 Present in the tetrasaccharide group of *Mycobacterium kansasii* glycolipid. Fine needles (hexane). Mp 77° (75°). [α]_D²³ +101 (c, 0.40 in CHCl₃).

β-D-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-β-D-arabino-hexopyranoside C₇H₁₄O₄ 162.185 Cryst. (EtOAc/hexane). Mp 84°. [α]_D²² -85 (c, 1.0 in EtOH).

L-form

Found as component of seed glycosides in *Stapelia gigantea*. Mp 93-94°. [α]_D²² -20 (c, 0.8 in H₂O) (-18.1).

3-Me: 2,6-Dideoxy-3-O-methyl-L-arabino-hexose. **L-Oleandrose** [6786-76-1] C₇H₁₄O₄ 162.185

Hydrol. prod. from Oleandrogenin. Present in other plant glycosides and in Oleandromycin.

Mp 59-60°. [α]_D +11.7 (c, 1.5 in H₂O). 3-Me, 2,4-dinitrophenylhydrazone: Mp 155-160°.

3-Et: 2,6-Dideoxy-3-O-ethyl-L-arabino-hexopyranose. **Dianose** C₈H₁₆O₄ 176.212 Isol. from aerial parts of *Dianthus chinensis*. Needles (MeOH aq.). Mp 76-78°. Tentative assignment of abs. config.

α-L-Pyranose-form

3-Me, 1,4-dibenzoyl: 1,4-Di-O-benzoyl-2,6-dideoxy-3-O-methyl-arabino-α-L-hexopyranose C₂₁H₂₂O₆ 370.401 Mp 116-120°. [α]_D -51.5 (in MeOH).

Me glycoside: Methyl 2,6-dideoxy-α-L-arabino-hexopyranoside C₇H₁₄O₄ 162.185 Thick syrup. [α]_D²³ -152.5 (c, 0.7 in Me₂CO) (-146).

Me glycoside, 4-Me: Methyl 2,6-dideoxy-4-O-methyl-α-L-arabino-hexopyranoside C₈H₁₆O₄ 176.212 Fine needles (hexane). Mp 76-78°. [α]_D²³ -13.9 (c, 0.45 in CHCl₃).

Benzyl glycoside: Benzyl 2,6-dideoxy-α-L-arabino-pyranoside C₁₃H₁₈O₄ 238.283 Cryst. (EtOAc/hexane). Mp 98°. [α]_D²⁰ -88 (c, 1 in CHCl₃).

β-L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-β-L-arabino-hexopyranoside C₇H₁₄O₄ 162.185 Needles (EtOAc/hexane). Mp 87-87.5° (84°).

DL-form

Me glycoside, 3-Me, 4-Ac: Methyl 4-O-acetyl-2,6-dideoxy-3-O-methyl-DL-arabino-hexose C₁₀H₁₈O₅ 218.249 Bp₂ 101-103°.

α-DL-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-α-DL-arabino-hexopyranoside. Methyl α-DL-chromoside C [53293-94-0] C₇H₁₄O₄ 162.185 Cryst. (EtOAc). Mp 100°.

β-DL-Pyranose-form

Butyl glycoside: Butyl 2,6-dideoxy-β-DL-arabino-hexopyranoside. Butyl β-DL-olivose [144791-61-7] C₁₀H₂₀O₄ 204.266 Solid.

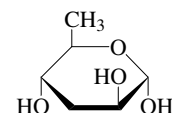
Butyl glycoside, 3-Me: Butyl 2,6-dideoxy-3-O-methyl-β-DL-arabino-hexopyranoside [144791-62-8] C₁₁H₂₂O₄ 218.292 Solid.

Vischer, E. et al., *Helv. Chim. Acta*, 1944, **27**, 1332 (D-form 3-Me, synth)
Blindenbacher, F. et al., *Helv. Chim. Acta*, 1948, **31**, 2061 (L-form 3-Me, synth)
Els, H. et al., *J.A.C.S.*, 1958, **80**, 3777 (L-form 3-Me, isol)
Reichstein, T. et al., *Adv. Carbohydr. Chem. Biochem.*, 1962, **17**, 65 (Oleandrose, rev)
Berlin, Y.A. et al., *Tet. Lett.*, 1964, 3513 (isol)
Miyamoto, M. et al., *Tetrahedron*, 1966, **22**, 2785 (D-form, isol, struct, pmr)
Yasuda, S. et al., *Tetrahedron*, 1973, **29**, 4087 (α-DL-Me pyr, synth, pmr)
Sztaricskai, F. et al., *Carbohydr. Res.*, 1978, **65**, 193 (α-L-Me pyr)
Berti, G. et al., *Tetrahedron*, 1982, **38**, 3067 (DL-3-Me, pmr, cmr, synth)
Klausener, A. et al., *Carbohydr. Res.*, 1983, **116**, 295 (synth, α-D-Me pyr)

Roush, W.R. et al., *J.O.C.*, 1983, **48**, 5093 (total synth, D-form)
Schmidt, R.C. et al., *Tet. Lett.*, 1985, **26**, 2065 (total synth, L-form)
Gilleron, M. et al., *J. Carbohydr. Chem.*, 1988, **7**, 733-748 (Me gly 4-Me)
Gurjar, M.K. et al., *J. Carbohydr. Chem.*, 1988, **7**, 799-804 (Me gly 4-Me)
Tolman, R.L. et al., *Carbohydr. Res.*, 1989, **189**, 113 (L-form 3-Me, α-L-pyr 3-Me dibenzoyl, pmr)
Ramliarison, C. et al., *J. Carbohydr. Chem.*, 1989, **8**, 723-734 (benzyl α-L-gly)
Bols, M. et al., *Carbohydr. Res.*, 1991, **222**, 141
Toshima, K. et al., *Carbohydr. Res.*, 1991, **222**, 173 (L-form, β-L-Me pyr, L-form 3-Me, synth, pmr)
Bredenkamp, M.W. et al., *Synth. Commun.*, 1992, **22**, 2459 (L-form 3-Me, synth)
Coleman, R.S. et al., *J.O.C.*, 1993, **58**, 385-392 (β-DL-pyr derivs)
Li, H. et al., *Carbohydr. Res.*, 1994, **252**, 303 (Dianose)
Jorgensen, C. et al., *Carbohydr. Res.*, 1997, **299**, 307-310 (synth)

3,6-Dideoxy-arabino-hexose, D-608 8CI

3,6-Dideoxymannose. 3,6-Dideoxyaltrose. Tyvelose. Ascarylose



α-D-Pyranose-form

C₆H₁₂O₄ 148.158

Historically Tyvelose was the D-form and Ascarylose the L-form.

D-form [5658-12-8]

Isol. from various lipopolysaccharides elaborated by Gram-negative bacteria, e.g. *Salmonella typhi*. Cryst. (MeCN). Mp 97-99°. [α]_D +22 (c, 0.7 in H₂O). 4-Nitrophenylsulfonylhydrazone: Mp 143-144°.

α-D-Pyranose-form

Me glycoside: Methyl 3,6-dideoxy-α-D-arabino-hexopyranoside [6154-71-8] C₇H₁₄O₄ 162.185 Mp 82-84°. [α]_D²⁰ +102.7 (c, 1.8 in H₂O). Me glycoside, bis-4-nitrobenzoyl: [58056-39-6] Cryst. (MeOH). Mp 139-141°. [α]_D -59 (CHCl₃). Me glycoside, 2,4-dibenzyl: Methyl 2,4-di-O-benzyl-3,6-dideoxy-α-D-arabino-hexopyranoside [187746-19-6] C₂₁H₂₆O₄ 342.434 Oil. [α]_D²³ +66 (c, 0.4 in CHCl₃).

β-D-Pyranose-form

Me glycoside: Methyl 3,6-dideoxy-β-D-arabino-hexopyranoside [6109-62-2] C₇H₁₄O₄ 162.185 [α]_D²³ -72 (c, 1.1 in MeOH).

L-form [32142-24-8]

Present in the egg cell membranes of *Ascaris* worms and in polysaccharides of

Pasteurella pseudotuberculosis.

Mp 97-99°. [α]_D -25 (H₂O).

Tosylhydrazone: Mp 124°.

4-Nitrobiphenylsulfonhydrazone: Mp 152°.

α -L-Pyranose-form

Tri-Ac: 1,2,4-Tri-O-acetyl-3,6-dideoxy- α -L-arabino-hexopyranose
[139630-54-9]
C₁₂H₁₈O₇ 274.27
Syrup. [α]_D²⁰ -84 (c, 0.9 in CHCl₃). Cont. some pyranose isomer.

Me glycoside: Methyl 3,6-dideoxy- α -L-arabino-hexopyranoside
[64880-44-0]
C₇H₁₄O₄ 162.185
Mp 85-87° (80-81°). [α]_D -80.5 (CHCl₃). [α]_D -102 (H₂O).

Me glycoside, 2,4-dibenzyl: Methyl 2,4-di-O-benzyl-3,6-dideoxy- α -L-arabino-hexopyranoside
[76178-08-0]
C₂₁H₂₆O₄ 342.434
Syrup. [α]_D -58 (CHCl₃).

α -L-Furanose-form

2,5-Dibenzoyl: 2,5-Di-O-benzoyl-3,6-dideoxy- α -L-arabino-hexofuranose
[75721-94-7]
C₂₀H₂₀O₆ 356.374
Cryst. (EtOH aq.). Mp 76-78°. [α]_D²⁰ +48.3 (c, 0.5 in CHCl₃).

2,5-Dibenzoyl, 1-Ac: 1-O-Acetyl-2,5-di-O-benzoyl-3,6-dideoxy- α -L-arabino-hexofuranose
[75721-95-8]
C₂₂H₂₂O₇ 398.412
Cryst. (EtOH). Mp 100-102°. [α]_D²⁰ +10 (c, 0.5 in CHCl₃).

Fouquey, C. et al., *Bull. Soc. Chim. Fr.*, 1959, 803 (*D*-form, synth, struct)

Westphal, O. et al., *Angew. Chem.*, 1960, **72**, 881 (rev)

Davies, D.A.L. et al., *Nature (London)*, 1961, **191**, 43 (*isol*)

Butterworth, R.F. et al., *Adv. Carbohydr. Chem. Biochem.*, 1971, **26**, 279 (rev)

Williams, E.H. et al., *Can. J. Chem.*, 1971, **49**, 796 (*D*-form, synth, β -D-Me pyr)

Ekborg, G. et al., *Acta Chem. Scand., Ser. B*, 1975, **29**, 765 (α -D-Me pyr bisnitrobenzoyl)

Varela, O.J. et al., *Carbohydr. Res.*, 1980, **85**, 130 (α -L-fur derivs)

Poszgay, V. et al., *Carbohydr. Res.*, 1980, **85**, 143-150 (α -L-Me pyr, α -L-Me pyr dibenzyl)

Klausener, A. et al., *Carbohydr. Res.*, 1983, **116**, 295 (α -D-Me pyr, synth)

Jütten, P. et al., *J. Carbohydr. Chem.*, 1990, **9**, 675-681 (*Me* α -L-Pyr, synth, pmr, cmr)

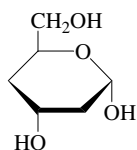
Bols, M. et al., *Carbohydr. Res.*, 1991, **222**, 141 (*L*-fur, α -L-pyr tri-Ac, synth, pmr, cmr)

Bartley, J.P. et al., *J. Nat. Prod.*, 1996, **59**, 921 (struct)

Hirooka, M. et al., *Bull. Chem. Soc. Jpn.*, 2003, **76**, 1409-1421 (α -D-Me pyr dibenzyl)

2,4-Dideoxy-erythro-hexose

D-609

 α -D-Pyranose-formC₆H₁₂O₄ 148.158**D-form** [89401-22-9]Syrup. [α]_D²⁵ +98 (c, 1.1 in MeOH).

D-Pyranose-form

Me glycoside, dibenzoyl: Methyl 3,6-di-O-benzoyl-2,4-dideoxy-D-erythro-hexopyranoside
C₂₁H₂₂O₆ 370.401
No phys. props. reported.

[149067-55-0, 149067-64-1, 152335-69-8]

Ho, P. et al., *Carbohydr. Res.*, 1984, **125**, 318, (*D*-pyr form, synth)

Augustyns, K. et al., *J.O.C.*, 1993, **58**, 2977, (*D*-Me pyr dibenzoyl)

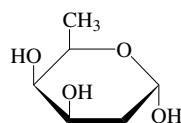
2,6-Dideoxy-lyxo-hexose, 9CI

D-610

2,6-Dideoxygalactose. 2-Deoxyfucose.

Oliosie

[5658-09-3]

 α -D-Pyranose-formC₆H₁₂O₄ 148.158

Equilib. α -pyranose approx 40%, β -furanose 50%, furanose 10% (D₂O).

D-form [6988-56-3]

Component of Olivomycin.

Syrup. [α]_D²⁰ +46 (c, 0.7 in H₂O).

3-Ac: 3-O-Acetyl-2,6-dideoxy-lyxo-hexose.

Chromose D

[2595-12-2]

C₈H₁₄O₅ 190.196

Constit. of the antibiotic Chromomycin.

Needles.

Mp 118°. [α]_D²³ +87 (c, 1.5 in H₂O).

4-Me: 2,6-Dideoxy-4-O-methyl-D-lyxo-hexose. Chromose A. Olivomose
[3868-09-5]

C₇H₁₄O₄ 162.185

Constit. of antibiotics of the Chromomycin, Olivomycin and Rhodomycin groups.

Cryst. (petrol/EtOAc).

Mp 158-162° (151-153° dec.). [α]_D²⁵ +80 (c, 1.1 in H₂O).

4-Me, 2,4-dinitrophenylhydrazone:

Cryst. (EtOH). Mp 148-149°.

α -D-Pyranose-form

4-Me, *Me glycoside*: Methyl 2,6-dideoxy-4-O-methyl- α -D-lyxo-hexopyranoside
[3868-02-8]

C₈H₁₆O₄ 176.212

Needles (cyclohexane). Mp 96-97°. [α]_D²⁵ +174 (c, 1.2 in EtOH). [α]_D²² +122 (c, 1.0 in EtOH).

Me glycoside, 3-Ac: Methyl 3-O-acetyl-2,6-dideoxy- α -D-lyxo-hexopyranoside
[4092-39-1]

C₉H₁₆O₅ 204.222Syrup. [α]_D¹⁶ +142 (c, 2.4 in CHCl₃).

β -D-Pyranose-form

4-Me, *Me glycoside*: Methyl 2,6-dideoxy-4-O-methyl- β -D-lyxo-hexopyranoside
C₈H₁₆O₄ 176.212

Needles (cyclohexane). Mp 152°. [α]_D²² -

36 (c, 1.0 in EtOH).

L-form [19165-06-1]

Cryst. Mp 100.5-103°. [α]_D²¹ -70.3 (6 min.) → -50.3 (c, 0.4 in H₂O).

α -L-Pyranose-form

[51020-42-9]

Tri-Ac: 1,3,4-Tri-O-acetyl-2,6-dideoxy- α -L-lyxo-hexopyranose
[33985-27-2]

C₁₂H₁₈O₇ 274.27

Cryst. (2-propanol). Mp 198-200°. [α]_D²² -128.5 (c, 0.26 in CHCl₃).

Me glycoside: Methyl 2,6-dideoxy- α -L-lyxo-hexopyranoside
[33985-35-2]

C₇H₁₄O₄ 162.185

Hygroscopic cryst. Mp 53-55°. [α]_D²² -160 (c, 0.19 in H₂O).

Me glycoside, di-Ac: Methyl 3,4-di-O-acetyl-2,6-dideoxy- α -L-lyxo-hexopyranoside
[78464-95-6]

C₁₁H₁₈O₆ 246.26

Cryst. (EtOH/petrol). Mp 66.5-67.5°. [α]_D²⁵ -166 (c, 0.79 in CHCl₃).

Benzyl glycoside, di-Ac: Benzyl 3,4-di-O-acetyl-2,6-dideoxy- α -L-lyxo-hexopyranoside
[128135-62-6]

C₁₇H₂₂O₆ 322.357

Syrup. [α]_D²⁴ -123 (c, 1 in CHCl₃).

Benzyl glycoside, 3-benzyl, 4-Ac: Benzyl 4-O-acetyl-3-O-benzyl-2,6-dideoxy- α -L-lyxo-hexopyranoside
[131768-76-8]

C₂₂H₂₆O₅ 370.444

Syrup. [α]_D²⁴ -172 (c, 1 in CHCl₃).

β -L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy- β -L-lyxo-hexopyranoside
[62346-15-0]

C₇H₁₄O₄ 162.185

Cryst. (Et₂O). Mp 110°. [α]_D²² +44 (c, 0.8 in MeOH). [α]_D²² +50.3 (c, 1.2 in CHCl₃).

Me glycoside, 3,4-dibenzoyl: Methyl 3,4-di-O-benzoyl-2,6-dideoxy- β -L-lyxo-hexopyranoside
[64429-65-8]

C₂₁H₂₂O₆ 370.401

Needles (EtOH). Mp 122-123°. [α]_D²² -63.4 (c, 0.9 in CHCl₃).

β -L-Furanose-form

Me glycoside: Methyl 2,6-dideoxy- β -L-lyxo-hexofuranoside
[143087-71-2]

C₇H₁₄O₄ 162.185

Oil. [α]_D²¹ +97 (c, 3 in CH₂Cl₂).

Me glycoside, 3,5-di-Ac: Methyl 3,5-di-O-acetyl- β -L-lyxo-hexofuranoside
[78464-94-5]

C₁₁H₁₈O₆ 246.26

Oil. [α]_D²⁴ +129 (c, 0.73 in CHCl₃).

Brimacombe, J.S. et al., *J.C.S.*, 1964, 5614 (synth, Chromose A)

Berlin, Y.A. et al., *Tet. Lett.*, 1964, 1323; 1966, 1431 (*isol*, synth, *D*-form, derivs)

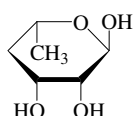
Brimacombe, J.S. et al., *Carbohydr. Res.*, 1965, **1**, 128 (Chromose D)

Miyamoto, M. et al., *Tetrahedron*, 1966, **22**, 2785 (*isol*, synth, *D*-form, derivs)

Berlin, Y.A. et al., *Khim. Prir. Soedin.*, 1973, **9**, 539 (occur)
 Cheung, T.M. et al., *Carbohydr. Res.*, 1977, **58**, 139-151 (β -L-form, synth, β -L-Me pyr, β -L-Me pyr dibenzoyl)
 Horton, D. et al., *Methods Carbohydr. Chem.*, 1980, **8**, 201 (L-form, synth)
 Korytnyk, W. et al., *Carbohydr. Res.*, 1982, **103**, 170 (synth, L-form, α -L-pyr derivs)
 Rousch, W.R. et al., *J.O.C.*, 1983, **48**, 5093, (D-form, synth, pmr, cmr)
 Pauls, H.W. et al., *J. Carbohydr. Chem.*, 1985, **4**, 1-14 (Me α -L-pyr, synth)
 Kolar, C. et al., *Carbohydr. Res.*, 1990, **208**, 111 (α -L-pyr benzyl gly di-Ac, α -L-pyr benzyl gly benzyl Ac)
 Durnat, J.M. et al., *Synth. Commun.*, 1992, **22**, 1883 (β -L-fur Me gly, β -L-fur Me gly di-Ac)
 Shafer, C.M. et al., *Carbohydr. Res.*, 1998, **310**, 223-228 (synth)

4,6-Dideoxy-lyxo-hexose**D-611**

Janose

 α -L-Pyranose-form $C_6H_{12}O_4$ 148.158**L-form**

Cryst. (2-propanol/petrol). Mp 129-134° (137-138.5°). $[\alpha]_D^{20}$ -3.5 (c, 0.38 in H_2O) (5h). $[\alpha]_D^{20}$ -10.6 (5 min.) \rightarrow -2.8 (c, 0.5 in H_2O).

2-Me: 4,6-Dideoxy-2-O-methyl-L-lyxo-hexose

 $C_7H_{14}O_4$ 162.185

Syrup. Bp_{0.02} 100° (bath). $[\alpha]_D^{26}$ +8.7 (c, 0.5 in H_2O).

3-Me: 4,6-Dideoxy-3-O-methyl-L-lyxo-hexose

 $C_7H_{14}O_4$ 162.185

Cryst. Mp 104-106°. $[\alpha]_D^{23}$ +5.8 (c, 1 in H_2O) (6h).

2,3-Di-Me: 4,6-Dideoxy-2,3-di-O-methyl-L-lyxo-hexose

 $C_8H_{16}O_4$ 176.212

Syrup. Bp_{0.05} 70-80°. $[\alpha]_D^{24}$ +13.5 (c, 0.6 in H_2O).

2-Benzyl: 2-O-Benzyl-4,6-dideoxy-L-lyxo-hexose

 $C_{13}H_{18}O_4$ 238.283

Cryst. Mp 111-112°.

 α -L-Pyranose-form

Me glycoside: Methyl 4,6-dideoxy- α -L-lyxo-hexopyranoside

 $C_7H_{14}O_4$ 162.185

Cryst. (EtOAc/petrol). Mp 102-103° (99-100.5°). $[\alpha]_D^{22}$ -89.8 (c, 0.5 in $CHCl_3$) (-83).

Me glycoside, 2-Me: Methyl 4,6-dideoxy-2-O-methyl- α -L-lyxo-hexopyranoside

 $C_8H_{16}O_4$ 176.212

Syrup. Bp_{0.1} 50° (bath). $[\alpha]_D^{23}$ -42.4 (c, 0.95 in $CHCl_3$).

Me glycoside, 3-Me: Methyl 4,6-dideoxy-3-O-methyl- α -L-lyxo-hexopyranoside

 $C_8H_{16}O_4$ 176.212

Syrup. Bp_{0.1} 50° (bath). $[\alpha]_D^{24}$ -87.5 (c, 0.9 in $CHCl_3$).

Me glycoside, di-Me: Methyl 4,6-dideoxy-2,3-di-O-methyl- α -L-lyxo-hexopyranoside

 $C_9H_{18}O_4$ 190.239

Syrup. Bp_{0.1} 30-40°. $[\alpha]_D^{22}$ -59 (c, 0.6 in $CHCl_3$).

Benzyl glycoside, 2-benzyl: Benzyl 2-O-benzyl-4,6-dideoxy- α -L-lyxo-hexopyranoside

 $C_{20}H_{24}O_4$ 328.407

Mp 47-48°. $[\alpha]_D^{23}$ -65.9 (c, 1 in MeOH).

 β -L-Pyranose-form

Benzyl glycoside, 2-benzyl: Benzyl 2-O-benzyl-4,6-dideoxy- β -L-lyxo-hexopyranoside

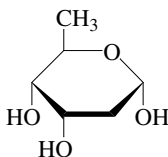
 $C_{20}H_{24}O_4$ 328.407

Cryst. Mp 104-106°. $[\alpha]_D^{23}$ +10.5 (c, 1 in $CHCl_3$).

Kefurt, K. et al., *Coll. Czech. Chem. Comm.*, 1971, **36**, 1701; 1973, **38**, 2627 (L-form, L-Me, L-di-Me, α -L-Me pyr, α -L-Me pyr Me, α -L-Me pyr di-Me)

Pozsgay, V. et al., *Carbohydr. Res.*, 1980, **85**, 143 (synth, pmr, cmr, Me α -L-pyr)

Küfner, U. et al., *Carbohydr. Res.*, 1987, **161**, 211

2,6-Dideoxy-ribo-hexose, 9CI, 8CI**D-612****Digitoxose** α -D-form $C_6H_{12}O_4$ 148.158

A solution in DMSO-*d*₆ contains 11.2% α -pyr, 67.3% β -pyr, 8.4% α -fur, 13.0% β -fur and 0.1% open-chain form.

D-form [527-52-6]

Me glycosides are components of the antibiotic α -lipomycin produced by *Streptomyces aureofaciens*. A common constit. of plant glycosides, e.g. Digitoxin. Found, *inter alia*, in the Cruciferae, Scrophulariaceae, Asclepiadaceae and Apocynaceae.

Mp 110-112°. $[\alpha]_D^{18}$ +43.6 \rightarrow +50.2 (c, 1.65 in H_2O).

Oxime: $C_6H_{13}NO_4$ 163.173

Mp 102°.

Phenylhydrazone: Mp 204-209°.

3-Me: 2,6-Dideoxy-3-O-methyl-D-ribo-hexose. **Cymarose. Variose**

[13089-76-4]

 $C_7H_{14}O_4$ 162.185

Cryst. (Me₂CO/Et₂O). Mp 92-95° (84-85°). $[\alpha]_D^{18}$ +48.9 (c, 0.47 in H_2O).

 α -D-Pyranose-form

Tribenzoyl: 1,3,4-Tri-O-benzoyl-2,6-dideoxy- α -D-ribo-hexopyranose

 $C_{27}H_{24}O_7$ 460.482

Mp 145-147°.

Me glycoside: Methyl 2,6-dideoxy- α -D-ribo-hexopyranoside. Methyl α -D-

digitoxoside

[17676-19-6]

 $C_7H_{14}O_4$ 162.185

Syrup. Bp_{0.1} 98-110°. $[\alpha]_D^{20}$ +178.4 (c, 3.7 in $CHCl_3$).

Me glycoside, 3,4-dibenzoyl: Methyl 3,4-di-O-benzoyl-2,6-dideoxy- α -D-ribo-hexopyranoside

[32469-90-2]

 $C_{21}H_{22}O_6$ 370.401

Needles (Et₂O/petrol). Mp 83-85°. $[\alpha]_D^{20}$ +214.6 (c, 1.6 in $CHCl_3$).

Me glycoside, 3-Me: Methyl 2,6-dideoxy-3-O-methyl- α -D-ribo-hexopyranoside

[33650-59-8]

 $C_8H_{16}O_4$ 176.212

Mp 41-44°. $[\alpha]_D^{17}$ +212 (c, 1.2 in MeOH).

Me glycoside, 3-Me, 4-tosyl: Methyl 2,6-dideoxy-3-O-methyl-4-O-tosyl- α -D-ribo-hexopyranoside

[25878-51-7]

 $C_{15}H_{22}O_6S$ 330.401

Mp 83-84°. $[\alpha]_D^{20}$ +154 (c, 1.0 in $CHCl_3$).

 β -D-Pyranose-form

Tribenzoyl: 1,3,4-Tri-O-benzoyl-2,6-dideoxy- β -D-ribo-hexopyranoside

 $C_{27}H_{24}O_7$ 460.482

Mp 176-177°.

 α -D-Furanose-form

Me glycoside, 3-Me: Methyl 2,6-dideoxy-3-O-methyl- α -D-ribo-hexofuranoside.

Methyl α -D-cymarofuranoside

[76234-95-2]

 $C_8H_{16}O_4$ 176.212

Oil. Bp₂ 81° (bath). $[\alpha]_D$ +175 (c, 0.7 in $CHCl_3$).

L-form [75044-73-4] Component of Kijanamicin. Isolated from *Digitalis purpurea*, *Strophanthus ledienli* and *Euonymus atropurpurea*.

Cryst. (Me₂CO/Et₂O). Mp 105-106°.

$[\alpha]_D$ -48.1 (c, 0.79 in H_2O , equilib.).

3-Me: 2,6-Dideoxy-3-O-methyl-L-ribo-hexose

[32791-73-4]

 $C_7H_{14}O_4$ 162.185

Component of glycosides, e.g. Needles (Et₂O/petrol).

Mp 87-91°. $[\alpha]_D^{25}$ -53.6 (c, 0.92 in H_2O).

4-Me: 2,6-Dideoxy-4-O-methyl-L-ribo-hexose

 $C_7H_{14}O_4$ 162.185

Component of Kijanamicin.

 α -L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy- α -L-ribo-hexopyranoside. Methyl α -L-digitoxoside

[78853-88-0]

 $C_7H_{14}O_4$ 162.185

Isol. from Kijanamicin. Oil. $[\alpha]_D$ -158.4 (c, 0.07 in $CHCl_3$). β -L-anomer also isol.

Me glycoside, 4-Me: Methyl 2,6-dideoxy-4-O-methyl- α -L-ribo-hexopyranoside

[78798-10-4]

 $C_8H_{16}O_4$ 176.212

Bp_{0.1} 68-71° (bath). $[\alpha]_D$ -204.5 (c, 0.8 in $CHCl_3$).

 β -L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy- β -L-

ribo-hexopyranoside
[71305-70-9]
C₇H₁₄O₄ 162.185
Oil. [α]_D²⁰ +33.2 (c, 0.3 in CHCl₃).

α-L-Furanose-form

Me glycoside: Methyl 2,6-dideoxy-α-L-ribo-hexofuranoside
[78798-12-6]
C₇H₁₄O₄ 162.185
Oil. [α]_D²⁰ -135.8 (c, 0.3 in CHCl₃).

β-L-Furanose-form

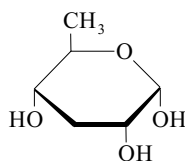
Me glycoside: Methyl 2,6-dideoxy-β-L-ribo-hexofuranoside
[78798-13-7]
C₇H₁₄O₄ 162.185
Oil. [α]_D²⁰ +98.4 (c, 0.3 in CHCl₃).

Bolliger, H.R. et al., *Helv. Chim. Acta*, 1952, **35**, 93 (*D*-form, α-*D*-Me pyr *D*-form, α-*D*-Me pyr 3-*Me*, α-*D*-Me pyr 3-*Me* tosyl)
Micheel, F. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 204 (*isol*)
Krasso, A.F. et al., *Helv. Chim. Acta*, 1963, **46**, 1691-1696 (3-*Me*, *isol*, *struct*)
v. Euw, J. et al., *Helv. Chim. Acta*, 1966, **49**, 1475 (*biosynth*)
Haga, M. et al., *Carbohydr. Res.*, 1971, **16**, 486 (*D*-form, α-*D*-Me pyr, α-*D*-Me pyr dibenzoyl)
Zeeck, A. et al., *Annalen*, 1975, 2079 (α-*D*-Me pyr, β-*D*-Me pyr, α-*D*-Me fur, β-*D*-Me fur, *isol*, *pmr*, *ms*)
Tursunova, R.N. et al., *Khim. Priro. Soedin.*, 1975, **11**, 171-177; *Chem. Nat. Compd. (Engl. Transl.)*, 1975, **11**, 183-187 (*Cymarose*, *occur*)
Brimacombe, J.S. et al., *J.C.S. Perkin 1*, 1980, 1800-1803 (α-*D*-Me fur 3-*Me*)
Mallams, A.K. et al., *J.A.C.S.*, 1981, **103**, 3938 (*Me* α-*L*-fur, *Me* α-*L*-pyr)
Ahmad, H.I. et al., *Carbohydr. Res.*, 1982, **105**, 165 (α-*L*-Me pyr, α-*L*-Me pyr 4-*Me*)
Roush, W.R. et al., *J.O.C.*, 1983, **48**, 5093 (*D*-form, *pmr*, *cmr*, *total synth*)
Bock, K. et al., *Acta Chem. Scand., Ser. B*, 1984, **38**, 555 (*L*-form, *synth*)
Coxon, B. et al., *J. Carbohydr. Chem.*, 1984, **3**, 525-543 (*pmr*, *equilib*)
Pauls, H.W. et al., *J. Carbohydr. Chem.*, 1985, **4**, 1-14 (*Me* α-*L*-pyr, *synth*)
Tsukamoto, S. et al., *Chem. Pharm. Bull.*, 1986, **34**, 3130-3134 (3-*Me*, *resoln*)
Binkley, R.W. et al., *J. Carbohydr. Chem.*, 1988, **7**, 157-167 (α-*D*-pyr tribenzyl, β-*D*-pyr tribenzyl)
Tsukamoto, S. et al., *J.C.S. Perkin 1*, 1988, 2621 (*occur*, *hplc*)
Toshima, K. et al., *Carbohydr. Res.*, 1991, **222**, 173-188 (*synth*, *pmr*, *L*-form)

3,6-Dideoxy-ribo-hexose, 9CI, 8CI

D-613

3,6-Dideoxyglucose. Paratose

C₆H₁₂O₄ 148.158**D-form** [5658-13-9]

Constit. of the lipopolysaccharides of *Salmonella* spp.
Syrup. [α]_D²² +8 (c, 1.1 in H₂O).
4-Nitrophenylsulfonhydrazone:

[14125-93-0]
Mp 241°.

α-D-Pyranose-form

Me glycoside: Methyl 3,6-dideoxy-α-D-ribo-hexopyranoside
[31899-66-8]
C₇H₁₄O₄ 162.185
Syrup. [α]_D²³ +170 (c, 1.0 in CHCl₃).

β-D-Pyranose-form

Me glycoside: Methyl 3,6-dideoxy-β-D-ribo-hexopyranoside
[31505-15-4]
C₇H₁₄O₄ 162.185
Cryst. (EtOAc/petrol). Mp 63-65°. [α]_D²³ -60 (c, 1.5 in MeOH).

α-D-Furanose-form

1,2-O-Isopropylidene: 3,6-Dideoxy-1,2-O-isopropylidene-α-D-ribo-hexofuranose
C₉H₁₆O₄ 188.223
Hygroscopic needles. Mp 35.5-37°. [α]_D²² -28 (c, 1.0 in CHCl₃).

L-form [73679-24-0][α]_D²⁰ -11 (c, 6.1 in MeOH).

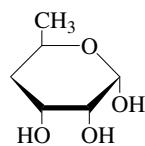
[583-82-4]

Westphal, O. et al., *Angew. Chem.*, 1960, **72**, 881 (*rev*)
Williams, E.H. et al., *Can. J. Chem.*, 1971, **49**, 796 (*D*-form, *synth*, β-*D*-Me pyr)
Ekborg, G. et al., *Acta Chem. Scand.*, 1973, **27**, 1437 (α-*D*-Me pyr, *synth*, *pmr*)
Patroni, J.J. et al., *Aust. J. Chem.*, 1978, **31**, 445 (*D*-form, *synth*, α-*D*-fur isopropylidene)
Shibaev, V.N. et al., *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1980, 158 (*L*-form, *synth*)

4,6-Dideoxy-ribo-hexose

D-614

4,6-Dideoxyallose. 4,6-Dideoxyglucose

C₆H₁₂O₄ 148.158**α-D-Pyranose-form****D-Pyranose-form** [116907-47-2]

Solid. Mixt. of anomers.

2,3-Isopropylidene: 4,6-Dideoxy-2,3-O-isopropylidene-*D*-ribo-hexopyranose
[94498-98-3]
C₉H₁₆O₄ 188.223
Light yellow oil. Mixt. of anomers.

α-D-Pyranose-form

Me glycoside: Methyl 4,6-dideoxy-α-D-ribo-hexopyranoside
[72212-13-6]
C₇H₁₄O₄ 162.185
Oil. [α]_D²⁰ +111 (c, 1.97 in MeOH).

Me glycoside, 2-tosyl: Methyl 4,6-dideoxy-2-O-tosyl-α-D-ribo-hexopyranoside
[101155-81-1]
C₁₄H₂₀O₆S 316.374
Cubic cryst. (Et₂O/pentane). Mp 88-88.5° (82-84°). [α]_D²⁰ +43.5 (c, 1.58 in CHCl₃).

Me glycoside, 2-Me: Methyl 4,6-dideoxy-2-

O-methyl-α-D-ribo-hexopyranoside
[94772-57-3]
C₈H₁₆O₄ 176.212
Oil. Bp_{0.05} 43°. [α]_D²⁰ +76 (c, 1.03 in CHCl₃).

Me glycoside, 2-benzyl: Methyl 2-O-benzyl 4,6-dideoxy-α-D-ribo-hexopyranoside
[294178-42-0]
C₁₄H₂₀O₄ 252.31
No phys. props. reported.

β-D-Pyranose-form [116907-46-1]

Tri-Ac: 1,2,3-Tri-O-acetyl-4,6-dideoxy-β-D-ribo-hexopyranose
[96744-64-8]
C₁₂H₁₈O₇ 274.27
Solid. Mp 131.5-133°. [α]_D²⁰ -53.3 (c, 3.32 in CHCl₃).

L-form [61244-61-9]Cryst. (CHCl₃). Mp 105-106°. [α]_D²⁰ +71 (c, 1.2 in H₂O).

2,3-Di-Me: 4,6-Dideoxy-2,3-di-O-methyl-*L*-ribo-hexose
[61244-63-1]
C₈H₁₆O₄ 176.212
Bp_{0.05} 60-70°.

α-L-Pyranose-form [23583-37-1]

Me glycoside: Methyl 4,6-dideoxy-α-L-ribo-hexopyranoside, 9CI
[94841-22-2]
C₇H₁₄O₄ 162.185
Syrup. Bp_{0.05} 100°. [α]_D²⁰ -116.6 (c, 1 in CHCl₃).

Me glycoside, 2,3-di-Ac: [94772-55-1]
C₁₁H₁₈O₆ 246.26
Bp_{0.01} 102°. [α]_D²⁰ -53.8 (c, 0.9 in CHCl₃).

Me glycoside, 2-Me: Methyl 4,6-dideoxy-2-O-methyl-α-L-ribo-hexopyranoside
[94772-61-9]
C₈H₁₆O₄ 176.212
Bp_{0.05} 45°. [α]_D²⁰ -75.8 (c, 1.03 in CHCl₃).

Me glycoside, 2,3-di-Me: Methyl 4,6-dideoxy-2,3-di-O-methyl-α-L-ribo-hexopyranoside
[94772-62-0]
C₉H₁₈O₄ 190.239
Bp_{0.05} 50°. [α]_D²⁰ -67.3 (c, 1 in CHCl₃).

β-L-Pyranose-form

Me glycoside: Methyl 4,6-dideoxy-β-L-ribo-hexopyranoside
[94841-23-3]
C₇H₁₄O₄ 162.185
Solid by subl. Mp 61°. [α]_D²⁰ +104.5 (c, 1.3 in CHCl₃).

Me glycoside, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,6-dideoxy-β-L-ribo-hexopyranoside
[94772-56-2]
C₁₁H₁₈O₆ 246.26
Bp_{0.01} 98°. [α]_D²⁰ +107.5 (c, 1.5 in CHCl₃).

Me glycoside, 2-benzoyl: Methyl 2-O-benzoyl-4,6-dideoxy-β-L-ribo-hexopyranoside
[94772-59-5]
C₁₄H₁₈O₅ 266.293
Solid (Et₂O/petrol). Mp 74-75°. [α]_D²⁰ +58.9 (c, 1.0 in CHCl₃).

Me glycoside, 2-Me: Methyl 4,6-dideoxy-2-

O-methyl- β -L-ribo-hexopyranoside
[94772-63-1]
 $C_8H_{16}O_4$ 176.212
Bp_{0.05} 60°. $[\alpha]_D^{20}$ +101.8 (c, 0.86 in $CHCl_3$).

Me glycoside, 3-Me: Methyl 4,6-dideoxy-3-O-methyl- β -L-ribo-hexopyranoside
[94841-24-4]
 $C_8H_{16}O_4$ 176.212
Oil. Bp_{0.19} 44-45°. $[\alpha]_D^{20}$ +129.2 (c, 0.62 in $CHCl_3$).

Me glycoside, 3-Me, 2-benzoyl: Methyl 2-O-benzoyl-4,6-dideoxy-3-O-methyl- β -L-ribo-hexopyranoside
[94772-60-8]
 $C_{15}H_{20}O_5$ 280.32
Syrup.

Me glycoside, 2,3-di-Me: Methyl 4,6-dideoxy-2,3-di-O-methyl- β -L-ribo-hexopyranoside
[94772-64-2]
 $C_9H_{18}O_4$ 190.239
Bp_{0.05} 50°. $[\alpha]_D^{20}$ +89.3 (c, 1.1 in $CHCl_3$).

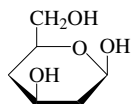
Nemec, J. et al., *Coll. Czech. Chem. Comm.*, 1969, **34**, 843-848 (α -L-Pyr, synth)
Kerfurt, K. et al., *Coll. Czech. Chem. Comm.*, 1976, **41**, 1791-1798; 1984, **49**, 2130-2140, (L-form, L-2,3-di-Me, Me L-gly derivs)

Hanessian, S. et al., *Can. J. Chem.*, 1985, **63**, 163-172 (α -D-Me gly, β -D-Pyr tri-Ac)
Miljkovic, D. et al., *Tetrahedron*, 1985, **41**, 2737-2743 (α -D-Me gly 2-tosyl, synth, ir, pmr, ms)

Keck, G.E. et al., *J.O.C.*, 1989, **54**, 896-906, (α -D-Pyr derivs, β -D-Pyr derivs, synth, ir, pmr, cmr)

Chang, C.-W. et al., *Angew. Chem., Int. Ed.*, 2000, **39**, 2160-2163 (α -D-Me gly 2-benzyl)

Brimble, M.A. et al., *J.C.S. Perkin 1*, 2000, 697-709 (D-2-benzyl-3-triethylsilyl-5-tert-butylidimethylsilyl, synth, ir, pmr, cmr, ms)

2,4-Dideoxy-threo-hexose**D-615** β -D-Pyranose-form $C_6H_{12}O_4$ 148.158**D-form**Syrup. $[\alpha]_D$ +9.6 (c, 1.2 in H_2O).**D-Pyranose-form**

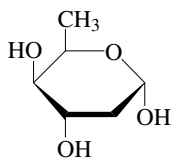
3,6-Dibenzoyl: 3,6-Di-O-benzoyl-2,4-dideoxy-D-threo-hexopyranose
[113544-66-4]
 $C_{20}H_{20}O_6$ 356.374
Cryst. (Et_2O). Mp 116-117°. $[\alpha]_D$ +37 (c, 1 in $CHCl_3$). Obt. as a 2:1 α : β anomeric mixt. Anomeric composition of the crystalline material not detd.

 β -D-Pyranose-form

Tribenzoyl: 1,3,6-Tri-O-benzoyl-2,4-dideoxy- β -D-threo-hexopyranose
[108274-14-2]
 $C_{27}H_{24}O_7$ 460.482
Syrup. $[\alpha]_D$ +8 (c, 1 in $CHCl_3$).

Cook, A.F. et al., *Chem. Ind. (London)*, 1966, 1141 (D-form)

Fiandor, J. et al., *Carbohydr. Res.*, 1986, **153**, 325 (D-dibenzoyl)

2,6-Dideoxy-xylo-hexose, 9CI, 8CI**Boivinose**

Pyranose-form

 $C_6H_{12}O_4$ 148.158**D-form** [13263-85-9]

Constit. of strobiside and boistroside; isol. from *Corchorus trilocularis* and *Vincetoxicum hirundinaria*.

Cryst. (Me_2CO/Et_2O).Mp 100-103°. $[\alpha]_D^{20}$ -3.9 \rightarrow +3.9 (c, 0.6 in H_2O).

3-Me: 2,6-Dideoxy-3-O-methyl-D-xylo-hexose, 9CI, 8CI. Sarmenose
[90-56-2]

 $C_7H_{14}O_4$ 162.185

Present in Chinese crude drug Wujiapi and hydrolysates of cardiac heterosides.
Mp 78-79°. $[\alpha]_D$ +12 \rightarrow +15.8 (H_2O).

 α -D-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy- α -D-xylo-hexopyranoside

 $C_7H_{14}O_4$ 162.185Bp_{0.05} 50-70° (bath). $[\alpha]_D^{20}$ +108.7 (c, 1.0 in MeOH).

Me glycoside, ditosyl: Methyl 2,6-dideoxy-3,4-di-O-tosyl- α -D-xylo-hexopyranoside
 $C_{21}H_{26}O_8S_2$ 470.564
Cryst. (petrol/ C_6H_6). Mp 58-68°. $[\alpha]_D^{19}$ +22.9 (c, 1.1 in $CHCl_3$).

3-Me, Me glycoside: Methyl 2,6-dideoxy-3-O-methyl- α -D-xylo-hexopyranoside
 $C_8H_{16}O_4$ 176.212
Mp 35°. $[\alpha]_D$ +156 (c, 2.3 in Me_2CO).

 β -D-Pyranose-form

3-Me, Me glycoside: Methyl 2,6-dideoxy-3-O-methyl- β -D-xylo-hexopyranoside
 $C_8H_{16}O_4$ 176.212
Mp 45°. $[\alpha]_D$ -39.4 (c, 1.7 in Me_2CO).

 β -DL-Pyranose-form

Butyl glycoside: Butyl 2,6-dideoxy- β -DL-xylo-hexopyranoside. Butyl β -DL-boivinose
[144791-77-5]
 $C_{10}H_{20}O_4$ 204.266
Solid.

Butyl glycoside, 3-Me: Butyl 2,6-dideoxy-3-O-methyl- β -DL-xylo-hexopyranoside. Butyl β -DL-sarmenose
[144791-78-6]
 $C_{11}H_{22}O_4$ 218.292
Oil.

Hauenstein, H. et al., *Helv. Chim. Acta*, 1950, **33**, 446 (3-Me, α -D-Me pyr 3-Me, β -D-Me pyr 3-Me)

Schindler, O. et al., *Helv. Chim. Acta*, 1952, **35**, 730 (isol)

Bolliger, H.R. et al., *Helv. Chim. Acta*, 1953, **36**, 302 (synth, α -D-Me pyr, α -D-Me pyr ditosyl)

Russel, J.H. et al., *Helv. Chim. Acta*, 1961, **44**, 1315 (isol, 3-Me)

Mitsuhashi, H. et al., *Chem. Pharm. Bull.*, 1963, **11**, 1452; 1966, **14**, 779 (isol, 3-Me)

D-616

Stoeckel, K. et al., *Helv. Chim. Acta*, 1969, **52**, 1175 (isol)

Banaszek, A. et al., *Pol. J. Chem. (Rocz. Chem.)*, 1971, **45**, 391 (synth, 3-Me)

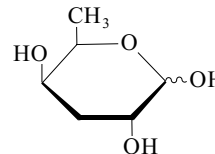
Perry, M.B. et al., *Can. J. Chem.*, 1973, **51**, 3039 (synth)

Coleman, R.S. et al., *J.O.C.*, 1993, **58**, 385-392 (β -DL-Bu pyr, β -DL-Bu pyr 3-Me)

Binder, W.H. et al., *Tetrahedron*, 1994, **50**, 749 (synth, pmr)

3,6-Dideoxy-xylo-hexose, 9CI, 8CI**D-617**

3,6-Dideoxygalactose. 3-Deoxyfucose. Abequose. Colitose
[28196-64-7]

 $C_6H_{12}O_4$ 148.158**D-form** [56816-60-5]

Constit. of the lipopolysaccharides of *Salmonella abortus equi* and other Gram-negative organisms.

Syrup. $[\alpha]_D^{20}$ -5 (c, 0.33 in H_2O).

4-Nitrophenylsulfonylhydrazone: Cryst. (MeOH). Mp 138-139°.

 α -D-Pyranose-form

Me glycoside: Methyl 3,6-dideoxy- α -D-xylo-hexopyranoside
[6109-60-0]

 $C_7H_{14}O_4$ 162.185Oil. $[\alpha]_D$ +139.1 (c, 0.9 in $CHCl_3$).

Me glycoside, 2,4-bis(4-nitrobenzoyl): Cryst. ($EtOH/Me_2CO$). Mp 89-90°. $[\alpha]_D$ +155.5 (c, 1 in $CHCl_3$).

D-Furanose-form

1,2-O-Isopropylidene: 3,6-Dideoxy-1,2-O-isopropylidene-D-xylo-hexofuranose

[22395-75-1]

 $C_9H_{16}O_4$ 188.223Syrup. $[\alpha]_D^{20}$ -25 (c, 1 in $CHCl_3$).

2,5-Dibenzoyl: 2,5-Di-O-benzoyl-3,6-dideoxy-D-xylo-hexofuranose

[136757-84-1, 136757-85-2]

 $C_{20}H_{20}O_6$ 356.374Syrup. $[\alpha]_D$ -30 (c, 1 in $CHCl_3$). Mixt. of anomers. **β -D-Furanose-form**

2,5-Dibenzoyl, 1-Ac: 1-O-Acetyl-2,5-di-O-benzoyl-3,6-dideoxy- β -D-xylo-hexofuranose

[136757-86-3]

 $C_{22}H_{22}O_7$ 398.412Syrup. $[\alpha]_D$ -66 (c, 0.5 in CH_3Cl) (solvent prob. a misprint for $CHCl_3$).

Me glycoside, 2,5-dibenzoyl: Methyl 2,5-di-O-benzoyl-3,6-dideoxy- β -D-xylo-hexofuranoside

[136757-87-4]

 $C_{21}H_{22}O_6$ 370.401 $[\alpha]_D$ -53 (c, 0.4 in $CHCl_3$).

L-form [4221-05-0]

Occurs in lipopolysaccharides of various strains of *Salmonella* and *E. coli*.
Syrup. $[\alpha]_D^{25} +4$ (H₂O).

4-Nitrophenylsulfonylhydrazone:
Needles (MeOH). Mp 141°.

 β -L-Pyranose-form

Me glycoside: Methyl 3,6-dideoxy- β -L-xylo-hexopyranoside

C₇H₁₄O₄ 162.185

Syrup. $[\alpha]_D^{25} -149$ (c, 1 in CHCl₃).

1,2,4-Tribenzoyl: 1,2,4-Tri-O-benzoyl-3,6-dideoxy- β -L-xylo-hexopyranose
[210100-15-5]

C₂₇H₂₄O₇ 460.482

Syrup. $[\alpha]_D^{25} -184.3$.

Lüderitz, O. *et al.*, *Biochem. J.*, 1958, **330**, 193
(*synth, isol*)

Forquay, C. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1958, **246**, 2417 (*struct*)

Westphal, O. *et al.*, *Angew. Chem.*, 1960, **72**, 881

Eklind, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 633 (*synth*)

Copeland, C. *et al.*, *Aust. J. Chem.*, 1977, **30**, 1269 (*synth, struct, pmr*)

Bundle, D.R. *et al.*, *Can. J. Chem.*, 1978, **56**, 2686 (*synth*)

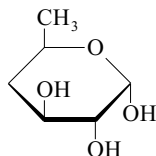
Baer, H.H. *et al.*, *Carbohydr. Res.*, 1984, **126**, 343 (*Me gly*)

Moradei, O. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 469-479 (*D-Fur 2,5-dibenzoyl, β -D-fur 2,5-dibenzoyl 1-Ac, D-fur Me gly 2,5-dibenzoyl*)

Binch, H. *et al.*, *Carbohydr. Res.*, 1998, **306**, 409-419 (*synth, L-pyr-form, β -L-pyr tri-benzoyl*)

4,6-Dideoxy-xylo-hexose**D-618**

4-Deoxyfucose

 α -D-formC₆H₁₂O₄ 148.158**D-form**

Mp 137-138°. $[\alpha]_D^{20} +37.5$ (c, 1 in H₂O)
(2h). Mixt. of anomers.

3-Me: 4,6-Dideoxy-3-O-methyl-D-xylo-hexose, 9CI, 8CI. **Chalcose**. Lankavose
[3150-28-5]

Constit. of the antibiotics Chalcomycin,
Lankamycin and Neutramycin.

Needles (petrol/Et₂O).

Mp 96-99°. $[\alpha]_D^{24} +120 \rightarrow +76$ (c, 1.5 in H₂O).

 β -D-Pyranose-form

Me glycoside, 3-Me: Methyl 4,6-dideoxy-3-O-methyl- β -D-xylo-hexopyranoside

C₈H₁₆O₄ 176.212

Mp 101.5-102°. $[\alpha]_D^{27} -21$ (c, 2.04 in CHCl₃).

L-form

3-Me: 4,6-Dideoxy-3-O-methyl-L-xylo-hexose

C₇H₁₄O₄ 162.185

Mp 89-90°. $[\alpha]_D^{23} -78$ (c, 0.66 in H₂O, equilib., 1 day).

L-Pyranose-form

Mp 125°. Mp 141°. Mixt. of anomers.

 α -L-Pyranose-form

Me glycoside: Methyl 4,6-dideoxy- α -L-xylo-hexopyranoside

[102340-49-8]

C₇H₁₄O₄ 162.185

Mp 107°. $[\alpha]_D^{20} -163$ (c, 1.1 in MeOH).

[132957-12-1, 132957-13-2]

Woo, P.W. *et al.*, *J.A.C.S.*, 1961, **83**, 3352; 1962, **84**, 1066 (*synth, struct, 3-Me*)

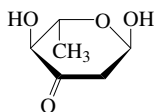
Foster, A.B. *et al.*, *J.C.S.*, 1965, 2318
(*stereochem*)

Lawton, B.T. *et al.*, *Can. J. Chem.*, 1969, **47**, 2899 (*synth, 3-Me*)

Danishesky, S. *et al.*, *J.O.C.*, 1982, **47**, 1597
(*pmr, 3-Me*)

Küfner, U. *et al.*, *Carbohydr. Res.*, 1987, **161**, 211 (*synth*)

Lindhorst, T.K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 119 (*synth, pmr, cmr, L-pyr, α -L-Me pyr*)

2,6-Dideoxy-erythro-hexos-3-ulose**D-619** α -L-Pyranose-formC₆H₁₀O₄ 146.143 **α -L-Pyranose-form**

Me glycoside: Methyl 2,6-dideoxy- α -L-erythro-hexopyranosid-3-ulose

[68682-42-8]

C₇H₁₂O₄ 160.169

$[\alpha]_D^{20} -177.8$ (c, 1.7 in MeOH).

Me glycoside, 4-Me: Methyl 2,6-dideoxy-4-O-methyl- α -L-erythro-hexopyranosid-3-ulose, 9CI

[61199-77-7]

C₈H₁₄O₄ 174.196

Cryst. (petrol). Mp 71-72°. $[\alpha]_D^{25} -301$ (c, 1 in CHCl₃).

Me glycoside, 4-methoxymethyl: Methyl 2,6-dideoxy-4-O-methoxymethyl- α -L-erythro-hexopyranosid-3-ulose

C₉H₁₆O₅ 204.222

Mp 73-75°. $[\alpha]_D -344$ (c, 1 in CHCl₃).

Me glycoside, 4-(tetrahydropyranyl):

Methyl 2,6-dideoxy-4-O-(tetrahydro-2H-pyran-2-yl)- α -L-erythro-hexopyranosid-3-ulose, 9CI

[69277-68-5]

C₁₂H₂₀O₅ 244.287

$[\alpha]_D^{20} -74.5$ (c, 0.75 in MeOH).

 β -L-Pyranose-form

Me glycoside, 4-Me: Methyl 2,6-dideoxy-4-O-methyl- β -L-erythro-hexopyranosid-3-ulose, 9CI

[72397-95-6]

C₈H₁₄O₄ 174.196

Cryst. (hexane). Mp 98-100°. $[\alpha]_D^{22} -96.2$ (c, 0.85 in CHCl₃).

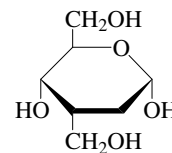
Clode, D.M. *et al.*, *Carbohydr. Res.*, 1976, **49**, 305 (α -L-Me)

Thiem, J. *et al.*, *Chem. Ber.*, 1978, **111**, 3514, (α -L-form)

Klemer, A. *et al.*, *J. Chem. Res., Synop.*, 1978, 303; *J. Chem. Res., Miniprint*, 3823 (α -L-tetrahydropyranyl)

Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1979, **76**, 67 (α -L-Me, β -L-Me)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1982, **100**, C10 (α -L-methoxymethyl)

2,3-Dideoxy-3-C-(hydroxymethyl)-methyl-ribo-hexose**D-620**C₇H₁₄O₅ 178.185 **α -D-Pyranose-form**

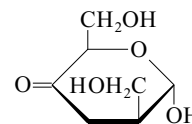
Et glycoside, 6-benzyl: Ethyl 6-O-benzyl-2,3-dideoxy-3-C-(hydroxymethyl)- α -D-ribo-hexopyranoside

[151807-84-0]

C₁₆H₂₄O₅ 296.363

Foam. $[\alpha]_D^{20} +71$ (c, 1 in CHCl₃).

Pedretti, V. *et al.*, *Carbohydr. Res.*, 1993, **244**, 247-257 (α -D-Et pyr benzyl)

2,3-Dideoxy-2-C-(hydroxymethyl)-threo-hexos-4-ulose**D-621**C₇H₁₂O₅ 176.169 **α -D-Pyranose-form**

Et glycoside: Ethyl 2,3-dideoxy-2-C-(hydroxymethyl)- α -D-threo-hexopyranos-4-ulose

[66176-59-8]

C₉H₁₆O₅ 204.222

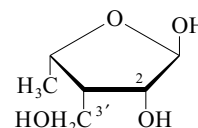
Syrup.

Et glycoside, bis(4-nitrobenzoyl):

[66176-60-1]

Mp 134.5-135°. $[\alpha]_D^{23} +75$ (c, 5 in CHCl₃).

Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1977, **55**, 3978 (*synth*)

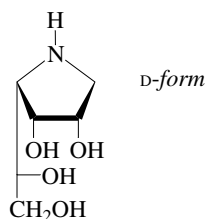
3,5-Dideoxy-3-C-hydroxymethyllyxose**D-622**C₆H₁₂O₄ 148.158 **α -L-form**

Benzyl glycoside, 2,3'-dibenzyl: Benzyl 2-O-benzyl-3-C-benzylloxymethyl-3,5-dideoxy- α -L-lyxofuranoside
[73980-93-5]

$C_{27}H_{30}O_4$ 418.532
 $[\alpha]_D -53$ (c, 0.4 in $CHCl_3$).

Pozgay, V. et al., *Tet. Lett.*, 1980, **21**, 211 (synth, pmr, cmr)

1,4-Dideoxy-1,4-iminogulitol D-623
 2-(1,2-Dihydroxyethyl)-3,4-pyrrolidinediol



$C_6H_{13}NO_4$ 163.173

D-form [129247-85-4]

Yellow needles (as hydrochloride). Mp 180-182° (hydrochloride). $[\alpha]_D -4.9$ (c, 1.0 in H_2O) (hydrochloride). CAS no. refers to hydrochloride.

L-form [114927-10-5]

[114976-75-9]

Syrup; cryst. (MeOH) (as hydrochloride). Mp 182-183° (170-173°) (hydrochloride). $[\alpha]_D^{20} +6$ (c, 4 in H_2O).

Austin, G.N. et al., *Tetrahedron*, 1987, **43**, 3095-3108 (L-form, synth, ir, pmr, cmr, ms)

Buchanan, J.G. et al., *J.C.S. Perkin 1*, 1990, 699-706 (D-form, synth, pmr, cmr, ms)

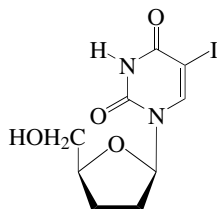
Lundt, I. et al., *Tetrahedron*, 1994, **50**, 7513-7526 (L-form, synth, pmr, cmr)

Blanco, M.-J. et al., *J.O.C.*, 1996, **61**, 4748-4755 (L-form, synth, ir, pmr, cmr)

Henkel, S. et al., *Z. Kristallogr.*, 1997, **212**, 217-218 (D-form, synth, cryst struct)

2',3'-Dideoxy-5-iodouridine, D-624
9CI

[105784-83-6]



$C_9H_{11}IN_2O_4$ 338.101
 Mp 176° (dec.).

5'-Ac: [161058-54-4]

$C_{11}H_{13}IN_2O_5$ 380.139
 Mp 150-151°.

Lin, T.-S. et al., *J. Med. Chem.*, 1987, **30**, 440 (synth, uv, pmr)

Persson, T. et al., *Antiviral Chem. Chemother.*, 1994, **5**, 395 (5'-Ac)

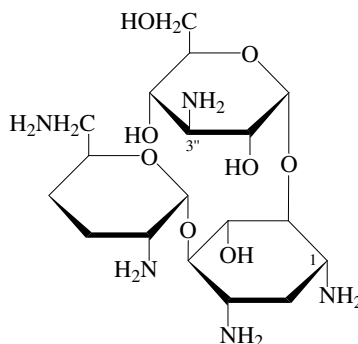
McGuigan, C. et al., *J. Med. Chem.*, 2004, **47**, 1847-1851 (synth, pmr)

3',4'-Dideoxykanamycin B D-625

Dibekacin, BAN, INN, JAN. Orbicin.

Debecacin. Many other names

[34493-98-6]



$C_{18}H_{37}N_5O_8$ 451.519

Aminocyclitol antibiotic. Semisynthetic. Active against some kanamycin-resistant bacteria. Solid. $[\alpha]_D^{20} +132$ (c, 0.65 in H_2O). Log P -6.02 (uncertain value) (calc).

► LD_{50} (mus, orl) 763 mg/kg. LD_{50} (mus, ipr) 12 mg/kg. Exp. reprod. and teratogenic effects. WK1985000

Sulfate salt (1:7): Panimycin. Debekacyl [58580-55-5]

Yellowish-white powder with bitter taste.

► LD_{50} (rat, ivn) 140 mg/kg. LD_{50} (rat, orl) 6950 mg/kg. WK1990000

N^1 -(4-Amino-2-hydroxybutanoyl): Habekacin. **Arbekacin, INN. HBK** [51025-85-5]

$C_{22}H_{44}N_6O_{10}$ 552.624

Launched 1990

Semisynthetic. Antibacterial agent. Log P -7.34 (uncertain value) (calc).

► WK1979000

N^1 -(4-Amino-2-hydroxybutanoyl), sulfate: **Arbekacin sulfate, JAN. Habekacin** [104931-87-5]

3''-N-Me: 3',4'-Dideoxy-3''-N-methylkanamycin B. Combimicin B₄ [76551-36-5]

$C_{19}H_{39}N_5O_8$ 465.546

Prod. by *Micromonospora echinospora*. Powder. $[\alpha]_D +131.1$ (H_2O).

3'',6'-N,N-Di-Me: 3',4'-Dideoxy-3'',6'-di-N-methylkanamycin B. Combimicin B₃ $C_{20}H_{41}N_5O_8$ 479.573

Prod. by *Micromonospora echinospora*. Powder. $[\alpha]_D +134.8$ (H_2O).

Umezawa, S. et al., *J. Antibiot.*, 1971, **24**, 485 (synth)

Umezawa, S. et al., *Bull. Chem. Soc. Jpn.*, 1972, **45**, 3624 (synth)

Fakatsu, S. et al., *Jpn. J. Antibiot.*, (Suppl.), 1972, **32**, S178 (rev)

Miyake, T. et al., *Carbohydr. Res.*, 1976, **49**, 141 (synth)

Yoneta, T. et al., *Bull. Chem. Soc. Jpn.*, 1979, **52**, 1131 (synth)

Tsuchiya, T. et al., *Tet. Lett.*, 1979, 4951 (synth, deriv)

Tanaka, Y. et al., *J. Antibiot.*, 1981, **34**, 892 (deriv)

Matsuno, T. et al., *Carbohydr. Res.*, 1982, **109**, 271 (synth)

Takeda, N. et al., *Org. Mass Spectrom.*, 1982, **17**, 247 (ms)

Noone, P. et al., *Drugs*, 1984, **27**, 548 (rev, pharmacol)

Chemotherapy (Tokyo), Suppl. 1, 1986, **34**, (deriv, numerous papers)

Okamoto, R. et al., *Chemotherapy (Tokyo)*, (Suppl. 1), 1986, **34**, 1-10 (habekacin, pharmacol)

Saito, A. et al., *Chemotherapy (Tokyo)*, (Suppl. 1), 1986, **34**, 129-137 (habekacin, pharmacol)

Yoshikawa, M. et al., *Chem. Pharm. Bull.*, 1987, **35**, 2136 (synth)

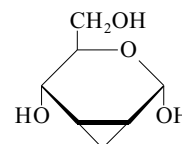
Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 5083

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 118; 159

Kak, V. et al., *Antimicrob. Agents Chemother.*, 2000, **44**, 2545-2546 (habekacin, pharmacol)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DCQ800; PAG050

2,3-Dideoxy-2,3-C-methylene-neallose D-626



$C_7H_{12}O_4$ 160.169

α-D-Pyranose-form

Et glycoside: Ethyl 2,3-dideoxy-2,3-C-methylene-α-D-allopyranoside

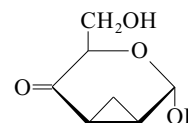
[39937-79-6]

$C_9H_{16}O_4$ 188.223

Oil.

Fraser-Reid, B. et al., *Can. J. Chem.*, 1972, **50**, 2928 (synth, pmr)

2,3-Dideoxy-2,3-C-methylene-lyxo-hexopyranos-4-ulose D-627



$C_7H_{10}O_4$ 158.154

α-D-form

Et glycoside: Ethyl 2,3-dideoxy-2,3-C-methylene-α-D-lyxo-hexopyranosid-4-ulose

[39937-84-3]

$C_9H_{14}O_4$ 186.207

Syrup.

Et glycoside, Ac: Ethyl 6-O-acetyl-2,3-dideoxy-2,3-C-methylene-α-D-lyxo-hexopyranosid-4-ulose

[39937-86-5]

$C_{11}H_{16}O_5$ 228.244

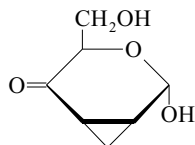
Syrup. $[\alpha]_D^{23} +74.3$ (c, 5.16 in $CHCl_3$).

[39937-83-2]

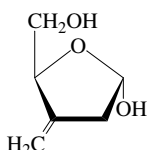
Fraser-Reid, B. et al., *Can. J. Chem.*, 1972, **50**, 2928 (α-D-Et pyr derivs, ir, pmr)

2,3-Dideoxy-2,3-C-methylene-*ribo*-hexopyranos-4-ulose

D-628

C₇H₁₀O₄ 158.154**α-D-form***Et glycoside, 6-trityl*: [39937-85-4]C₂₈H₂₈O₄ 428.527Cryst. (EtOAc). Mp 169-170.5°. [α]_D²³ +33.2 (c, 2.36 in CHCl₃).Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1972, **50**, 2928 (*α*-D-*Et gly deriv*, *ir*, *pmr*)**2,3-Dideoxy-3-C-methylene-glycero-pentose**

D-629

Tetrahydro-5-hydroxy-3-methylene-2-furan-methanol

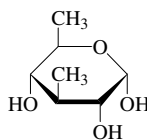
α-D-Furanose-form

C₆H₁₀O₃ 130.143**D-form**Syrup. [α]_D +4 (c, 2.0 in H₂O).

[140429-33-0, 140630-49-5]

Raifeld, Yu.E. *et al.*, *Carbohydr. Res.*, 1992, **224**, 103 (*synth*)**3,6-Dideoxy-3-C-methylglucose**

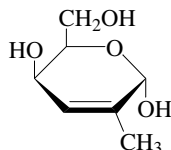
D-630



α-D-Pyranose-form

C₇H₁₄O₄ 162.185**α-D-Pyranose-form***1,2-Isopropylidene-3,6-Dideoxy-1,2-O-isopropylidene-3-C-methyl-α-D-glucopyranose* [84247-09-6]C₁₀H₁₈O₄ 202.25Cryst. solid. Characterised by *pmr*.*Me glycoside: Methyl 3,6-dideoxy-3-C-methyl-α-D-glucopyranoside* [84247-04-1]C₈H₁₆O₄ 176.212Needles (EtOAc/hexane). Mp 51.5-52.5°. [α]_D¹⁹ +155 (c, 0.71 in MeOH).**α-D-Furanose-form***1,2-Isopropylidene-3,6-Dideoxy-1,2-O-isopropylidene-3-C-methyl-α-D-glucofuranose* [78822-31-8]C₁₀H₁₈O₄ 202.25Syrup. [α]_D²⁵ -42 (c, 1 in CHCl₃).Kinoshita, M. *et al.*, *Carbohydr. Res.*, 1982, **109**, 5 (*α*-D-*Me pyr*, *isopropylidene-fur*, *isopropylidene-pyr*)**2,3-Dideoxy-2-C-methyl-threo-hex-2-enose**

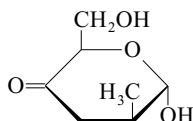
D-631



α-D-Pyranose-form

C₇H₁₂O₄ 160.169**α-D-Pyranose-form***Benzyl glycoside, 4,6-dibenzyl: Benzyl 4,6-di-O-benzyl-2,3-dideoxy-2-C-methyl-α-D-threo-hex-2-enopyranoside* [308116-75-8]C₂₈H₃₀O₄ 430.543[α]_D²⁵ +45.7 (c, 0.6 in CHCl₃).Beyer, J. *et al.*, *J.A.C.S.*, 2000, **122**, 9575-9783 (*α*-D-benzyl pyr dibenzyl)**2,3-Dideoxy-2-C-methyl-threo-hexopyranos-4-ulose**

D-632

C₇H₁₂O₄ 160.169**α-D-form***Me glycoside*: [94795-61-6]C₈H₁₄O₄ 174.196

Syrup.

Me glycoside, 2,4-dinitrophenylhydrazone:Cryst. Mp 188.5-189°. [α]_D²³ +203(c, 0.51 in CHCl₃).*Me glycoside, 6-Ac*: [94795-60-5]C₁₀H₁₆O₅ 216.233Gum. [α]_D²⁵ +94 (c, 1.0 in CHCl₃).*Me glycoside, 6-trityl*: [68880-93-3]C₂₇H₂₈O₄ 416.516Cryst. Mp 88-89°. [α]_D²⁸ +98.8 (c, 0.2 in CHCl₃).*Et glycoside*: [66149-53-9]C₉H₁₆O₄ 188.223

Syrup.

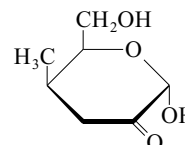
Et glycoside, 2,4-dinitrophenylhydrazone:

[66149-61-9]

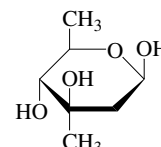
Yellow cryst. (EtOAc). Mp 188.5-189°.

Yunker, M.B. *et al.*, *Can. J. Chem.*, 1977, **55**,4002 (*α*-D-*Et gly*, *pmr*)Sum, P.E. *et al.*, *Can. J. Chem.*, 1978, **56**, 2700(*α*-D-*Me gly deriv*, *ir*, *pmr*)Chapleur, Y. *et al.*, *J. Carbohydr. Chem.*, 1984,**3**, 443 (*α*-D-*Me gly*)**3,4-Dideoxy-4-C-methyl-threo-hexopyranos-2-ulose**

D-633

C₇H₁₂O₄ 160.169**α-D-form***Me glycoside, 6-trityl: Methyl 3,4-dideoxy-4-C-methyl-6-O-trityl-α-D-threo-hexopyranosid-2-ulose* [66149-56-2]C₂₇H₂₈O₄ 416.516Mp 164-165°. [α]_D²³ +4.6 (c, 3.1 in CHCl₃).**α-L-form***6-Deoxy, Me glycoside: Methyl 3,4,6-trideoxy-4-C-methyl-α-L-threo-hexopyranosid-2-ulose*C₈H₁₄O₃ 158.197[α]_D²⁰ -138 (c, 1.0 in CHCl₃).Yunker, M.B. *et al.*, *Can. J. Chem.*, 1977, **55**,4002 (*α*-D-*Me gly* 6-trityl)Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 2127 (*6-deoxy Me gly*)**2,6-Dideoxy-3-C-methyl-arabino-hexose**

D-634

Olivomycose. Deacetylchromose. Epimycarose. Evermicose

β-D-Pyranose-form

C₇H₁₄O₄ 162.185

Historically, Evermicose was the D-form and Olivomycose the L-form.

D-form [26391-83-3]Obt. by hydrol. of Everninomicin C, E-34. Mp 108-112°. [α]_D +20.7 (H₂O).*1,4-Di-Ac*:C₁₁H₁₈O₆ 246.26Mp 73°. [α]_D +39.5 (CHCl₃). Anomeric config. not certain.**L-form** [6988-54-1]

Component of Olivomycin and

Chromomycin A₃.Cryst. (Me₂CO/Et₂O).Mp 109°. [α]_D²² -22 (c, 1.0 in H₂O).*4-Ac: 4-O-Acetyl-2,6-dideoxy-3-C-methyl-L-arabino-hexopyranose, 9CI. Chromose B*

[13322-75-3]

C₉H₁₆O₅ 204.222Constit. of Chromomycin A₃. Syrup. [α]_D²¹ -24 (c, 1.1 in H₂O).*4-O-(2-Methylpropanoyl): 4-O-Isobutyryl-L-olivomycose*C₁₁H₂₀O₅ 232.276

Glycoside residue from Olivomycin A.

α -L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-3-C-methyl- α -L-arabino-hexopyranoside
 $C_8H_{16}O_4$ 176.212
 Oil. $[\alpha]_D^{25}$ -147 (c, 1 in EtOH).

 β -L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-3-C-methyl- β -L-arabino-hexopyranoside
 $C_8H_{16}O_4$ 176.212
 Cryst. (hexane). Mp 93-94°. $[\alpha]_D^{23}$ +50 (c, 1 in EtOH).

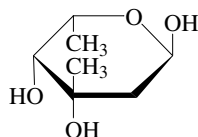
 β -DL-Pyranose-form

Butyl glycoside, 4-Ac: Butyl 4-O-acetyl-2,6-dideoxy-3-C-methyl- β -DL-arabino-hexopyranoside. Butyl β -DL-chromoside B
 [144791-65-1]
 $C_{13}H_{24}O_5$ 260.33
 Oil.

Berlin, Y.A. *et al.*, *Tet. Lett.*, 1964, 1323; 3513 (*Me gly, Olivomycose, struct*)
 Miyamoto, M. *et al.*, *Tet. Lett.*, 1964, 2371; 1966, 2785 (*Olivomycose*)
 Miyamoto, M. *et al.*, *Tetrahedron*, 1966, **22**, 2785 (*L-pyr form, Chromose B L-pyr Ac, isol*)
 Williams, E.H. *et al.*, *Can. J. Chem.*, 1969, **47**, 4467 (*Olivomycose*)
 Ganguly, A.K. *et al.*, *Chem. Comm.*, 1969, 1149 (*struct, abs config*)
 Dyong, I. *et al.*, *Chem. Ber.*, 1977, **110**, 2721 (*synth*)
 Fuganti, C. *et al.*, *Chem. Comm.*, 1978, 299 (*Olivomycose*)
 Thiem, J. *et al.*, *Chem. Ber.*, 1979, **112**, 818, (α -L-Me gly)
 Giuliano, R.M. *et al.*, *Carbohydr. Res.*, 1984, **131**, 341 (*synth*)
 Toshima, K. *et al.*, *Carbohydr. Res.*, 1991, **222**, 173 (*synth, pmr, L-form*)
 Coleman, R.S. *et al.*, *J.O.C.*, 1993, **58**, 385-392 (β -DL-Bu pyr Ac)
 Giuliano, R.M. *et al.*, *J.O.C.*, 1995, **60**, 202, (*Me gly, synth, pmr, cmr*)

2,6-Dideoxy-3-C-methyl-lyxo-hexose

[98168-10-6]

 $C_7H_{14}O_4$ 162.185 **α -L-Pyranose-form**

Me glycoside: Methyl 2,6-dideoxy-3-C-methyl- α -L-lyxo-hexopyranoside
 [56782-16-2]
 $C_8H_{16}O_4$ 176.212
 Cryst. (diisopropyl ether). Mp 77-78°. $[\alpha]_D$ -161 (c, 0.5 in $CHCl_3$).

Me glycoside, 4-O-benzyl: Methyl 4-O-benzyl-2,6-dideoxy-3-C-methyl- α -L-lyxo-hexopyranoside
 [56733-54-1]
 $C_{15}H_{22}O_4$ 266.336
 Syrup.

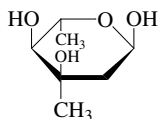
[98168-09-3]

Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 507-512 (α -L-Me pyr, *synth, pmr*)

Roush, W.R. *et al.*, *Carbohydr. Res.*, 1985, **136**, 187-193 (*synth*)

2,6-Dideoxy-3-C-methyl-ribo-hexose

D-636

 α -L-Pyranose-form $C_7H_{14}O_4$ 162.185**D-form** [6752-46-1]

Found in Mithramycin.

Needles.

Mp 129.5-130.5°. $[\alpha]_D$ +32 (c, 1.7 in H_2O).

3-Me: 2,6-Dideoxy-3-C-methyl-3-O-methyl-D-ribo-hexose, 9CI. 2,6-Dideoxy-3-C,3-O-dimethyl-D-ribo-hexose
 [470-12-2]
 $C_8H_{16}O_4$ 176.212
 Syrup. Bp_{0.005} 90-95°. $[\alpha]_D$ +21 (c, 0.7 in H_2O).

 α -D-Pyranose-form

3-Me, di-Ac: 1,4-Di-O-acetyl-2,6-dideoxy-3-C-methyl-3-O-methyl- α -D-ribo-hexopyranose
 $C_{12}H_{20}O_6$ 260.286
 Mp 66-67°. $[\alpha]_D$ +41.2 (c, 0.6 in MeOH).

Me glycoside: Methyl 2,6-dideoxy-3-C-methyl- α -D-ribo-hexopyranoside, 9CI, 8CI
 [6752-55-2]
 $C_8H_{16}O_4$ 176.212
 Mp 56-57°. $[\alpha]_D$ +136 (c, 1.0 in $CHCl_3$).

Me glycoside, 3-Me: Methyl 2,6-dideoxy-3-C-methyl-3-O-methyl- α -D-ribo-hexopyranoside
 $C_9H_{18}O_4$ 190.239
 Plates. Mp 27.5-28.5° (sealed tube). $[\alpha]_D$ +7.3 (c, 4.1 in H_2O).

L-form Mycarose

[6032-92-4]

Residue present in numerous antibiotics.

Needles.

Mp 129-131°. $[\alpha]_D^{25}$ -31.1 (c, 4.0 in H_2O).

4-Ac: 4-O-Acetyl-2,6-dideoxy-3-C-methyl-L-ribo-hexopyranose
 $C_9H_{16}O_5$ 204.222
 Residue present in leucomycins.

1,4-Di-Ac: 1,4-Di-O-acetyl-2,6-dideoxy-3-C-methyl- α -L-ribo-hexose
 [18423-83-1]
 $C_{11}H_{18}O_6$ 246.26

Cryst. (Et_2O /petrol). Mp 88-90°.

4-(3-Methylbutanoyl): 4-O-Isovaleroylmycarose
 $C_{12}H_{22}O_5$ 246.303
 Residue present in Leucomycin A₁ and other leucomycins. Oil. Bp_{1.5} 115-116°.

3-Me: 2,6-Dideoxy-3-C-methyl-3-O-methyl-L-ribo-hexose. 2,6-Dideoxy-3-C,3-O-dimethyl-L-ribo-hexose.

Cladinose

[3758-45-0]

 $C_8H_{16}O_4$ 176.212

Degradn. prod. from Erythromycin, E-18.
 Syrup. Bp_{2.5} 120-132°. $[\alpha]_D$ -23.1 (H_2O).

 α -L-Pyranose-form

3-Me, di-Ac: 1,4-Di-O-acetyl-2,6-dideoxy-3-C-methyl-3-O-methyl- α -L-ribo-hexopyranose
 [18464-06-7]
 $C_{12}H_{20}O_6$ 260.286
 Mp 66-67°. $[\alpha]_D$ -36 (c, 1.4 in MeOH).

Me glycoside: Methyl 2,6-dideoxy-3-C-methyl- α -L-ribo-hexopyranoside, 8CI
 [18424-67-4]
 $C_8H_{16}O_4$ 176.212

Mp 55-57°. $[\alpha]_D$ -143 (c, 0.7 in EtOH).

Me glycoside, 3-Me: Methyl 2,6-dideoxy-3-C-methyl-3-O-methyl- α -L-ribo-hexopyranoside
 [18423-88-6] Bp_{0.2} 51-53°. $[\alpha]_D^{30}$ -6.9 (c, 3.0 in H_2O).

DL-form

Mp 63-64° (monohydrate) Mp 110-111° (anhyd.).

Regna, P.P. *et al.*, *J.A.C.S.*, 1953, **75**, 4625-4626 (*L-form*)

Flynn, E.H. *et al.*, *J.A.C.S.*, 1954, **76**, 3121, (*3-Me, isol*)

Watanabe, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1961, **34**, 1285 (*4-Isovaleroylmycarose*)

Foster, A.B. *et al.*, *Chem. Ind. (London)*, 1962, 1619 (α -L-pyr 3-Me di-Ac)

Wiley, P.F. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 264 (*3-Me, synth*)

Korte, F. *et al.*, *Tetrahedron*, 1962, **18**, 1257, (*DL-form, synth*)

Hofheinz, W. *et al.*, *Tetrahedron*, 1962, **18**, 1265 (*pmr*)

Lemal, D.M. *et al.*, *Tetrahedron*, 1962, **18**, 1275 (*L-form, L-form 3-Me, isol, synth, config*)

Flaherty, B. *et al.*, *J.C.S. (C)*, 1966, 398, (*D-form, D-pyr -Me, α -D-pyr 3-Me di-Ac*)

Howarth, G.B. *et al.*, *Can. J. Chem.*, 1967, **45**, 2253 (*L-form, synth, α -L-Me pyr, L-di-Ac*)

Berlin, Y.A. *et al.*, *Nature (London)*, 1968, **218**, 193 (*isol*)

Nourse, J.G. *et al.*, *J.A.C.S.*, 1975, **97**, 4584 (*conform, cmr*)

Terui, Y. *et al.*, *Tet. Lett.*, 1975, 2583 (α -L-Me pyr 3-Me, β -L-Me pyr -Me, *cmr*)

Williams, N.R. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1980, **1B**, 761 (*rev*)

Roush, W.R. *et al.*, *Carbohydr. Res.*, 1985, **136**, 187 (*L-form, synth*)

Binkley, R.W. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 227-242 (*Me α -D-gly, synth*)

Koft, E.R. *et al.*, *J.O.C.*, 1989, **54**, 2936, (*3-Me, synth*)

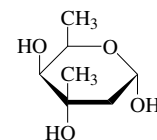
Montgomery, S.H. *et al.*, *Carbohydr. Res.*, 1990, **202**, 13 (*3-Me, synth*)

Kaufmann, T. *et al.*, *Carbohydr. Res.*, 1990, **207**, 33-38 (α -L-Me pyr)

Toshima, K. *et al.*, *Carbohydr. Res.*, 1991, **222**, 173 (*L-form, L-form 3-Me, synth, pmr*)

2,6-Dideoxy-3-C-methyl-xylo-hexose, 9CI

D-637

Axenose α -D-Pyranose-form $C_7H_{14}O_4$ 162.185

D-form

3-*Me*: 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*D*-xylo-hexose, 9CI
[19231-36-8]
C₈H₁₆O₄ 176.212
Prisms (EtOAc/petrol). Mp 101-102°. [α]_D²⁰ +19.8 (c, 1.0 in EtOH).

α-D-Pyranose-form

Me glycoside, 3-*Me*: Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl-α-*D*-xylo-hexopyranoside
C₉H₁₈O₄ 190.239
Needles (pentane). Mp 93-94°. [α]_D +167 (c, 0.7 in CHCl₃).

L-form [26548-40-3]

Sugar component of Axenomycin A and Axenomycin B.
Mp 106-108°. [α]_D²¹ -27 (c, 0.32 in H₂O).
3-*Me*: 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*L*-xylo-hexose, 2,6-Dideoxy-3-*C*,3-*O*-dimethyl-*L*-xylo-hexose. Arcanose
C₈H₁₆O₄ 176.212
Residue present in Lankamycin.
Mp 96-98°. [α]_D²⁰ -19.2 (c, 4.6 in EtOH).
3-*Me*, 4-*Ac*: 4-*O*-Acetyl-3-*C*-methyl-3-*O*-methyl-*L*-xylo-hexose, 4-*O*-Acetylarcanose
C₁₀H₁₈O₅ 218.249
Hydrol. prod. of Lankamycin. Oil. [α]_D -52.3 (c, 5.98 in EtOH).

α-L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-3-*C*-methyl-α-*L*-xylo-hexopyranoside
C₈H₁₆O₄ 176.212
Mp 101-103°. [α]_D -142 (CHCl₃).

β-L-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-3-*C*-methyl-β-*L*-xylo-hexopyranoside
C₈H₁₆O₄ 176.212
Mp 122-123°. [α]_D +38 (CHCl₃).

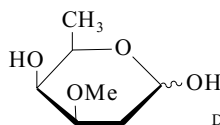
[41942-90-9]

Keller-Schierlein, W. *et al.*, *Helv. Chim. Acta*, 1962, **45**, 138 (*L*-form, *L*-*Ac*, *isol*)
Roncari, G. *et al.*, *Helv. Chim. Acta*, 1966, **49**, 705 (*config*)
Haworth, G.B. *et al.*, *Carbohydr. Res.*, 1968, **7**, 284 (*D*-form, *synth*, α-*D*-*Me* *pyr*)
v. Muntwyler, R. *et al.*, *Helv. Chim. Acta*, 1972, **55**, 460 (*stereochem*, *pmr*)
Arcamone, F. *et al.*, *J.A.C.S.*, 1973, **95**, 2008 (*synth*, *ms*, *L*-form)
Garegg, P.J. *et al.*, *Acta Chem. Scand.*, Ser. B, 1975, **29**, 507 (*synth*, *L*-form)
Giuliano, R.M. *et al.*, *J.O.C.*, 1995, **60**, 202 (*synth*, *pmr*, *cmr*, *L*-form)

2,6-Dideoxy-3-*O*-methyl-lyxo-hexose, 8CI

D-638

Diginose. 2-Deoxy-3-*O*-methylfucose
[4432-92-2]



D-form

C₇H₁₄O₄ 162.185**D-form** [22252-39-7]

Component of several plant glycosides.
Syrup. [α]_D¹⁸ +56.2 (c, 0.68 in H₂O).

α-D-Pyranose-form

Me glycoside: Methyl 2,6-dideoxy-3-*O*-methyl-*D*-lyxo-hexopyranoside
C₈H₁₆O₄ 176.212
Syrup. Bp_{0.08} 50-70°. [α]_D²⁰ +81.4 (c, 1.58 in Me₂CO).

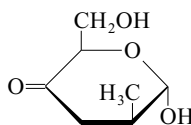
L-form [23457-90-1]

Hydrol. prod. of glycosides *isol.* from roots of *Vincetoxicum hirundinaria* and others.
Mp 81-87°. [α]_D²² -63.4 → +59.6 (c, 0.68 in H₂O).

Tamm, C. *et al.*, *Helv. Chim. Acta*, 1948, **31**, 1630 (*synth*)
Reichstein, T. *et al.*, *Helv. Chim. Acta*, 1954, **37**, 1361; 1493; 2204; 1955, **38**, 98 (*isol*)
Renkonen, O. *et al.*, *Helv. Chim. Acta*, 1959, **42**, 182 (*isol*)
Meyer, U. *et al.*, *Helv. Chim. Acta*, 1964, **47**, 2230 (*isol*)
Stoeckel, K. *et al.*, *Helv. Chim. Acta*, 1969, **52**, 1175 (*isol*)

2,3-Dideoxy-2-*C*-methyl-threo-hexos-4-ulose

D-639

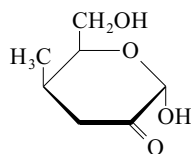
C₇H₁₂O₄ 160.169**α-D-Pyranose-form**

Et glycoside, 6-trityl: Ethyl 2,3-dideoxy-2-*C*-methyl-6-*O*-trityl-α-*D*-threo-hexopyranosid-4-ulose
[66149-54-0]
C₂₈H₃₀O₄ 430.543
No phys. props. reported.

Yunker, M.B. *et al.*, *Can. J. Chem.*, 1977, **55**, 4002 (*synth*, *pmr*)

3,4-Dideoxy-4-*C*-methyl-threo-hexos-2-ulose

D-640

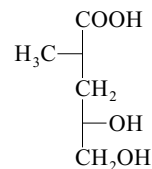
C₇H₁₂O₄ 160.169**α-D-Pyranose-form**

tert-Butyl glycoside, *Ac*: *tert*-Butyl 6-*O*-acetyl-3,4-dideoxy-4-*C*-methyl-α-*D*-threo-hexopyranosid-2-ulose
[81668-94-2]
C₁₃H₂₂O₅ 258.314
Syrup. [α]_D +141.4.

Hanessian, S. *et al.*, *Tet. Lett.*, 1981, **22**, 4583 (*synth*)

2,3-Dideoxy-2-*C*-methyl-threo-pentonic acid

D-641

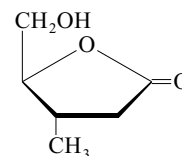
C₆H₁₂O₄ 148.158**D-form**

1,4-Lactone, *Ac*: 5-*O*-Acetyl-2,3-dideoxy-2-*C*-methyl-threo-pentono-1,4-lactone
[111507-13-2]
C₈H₁₂O₄ 172.18
Liq. [α]_D²⁰ +45.1 (c, 0.7 in CHCl₃). CAS name error.

Bock, K. *et al.*, *Acta Chem. Scand.*, Ser. B, 1987, **41**, 13 (*synth*, *pmr*, *cmr*)

2,3-Dideoxy-3-*C*-methyl-erythro-1,4-pentonolactone

D-642

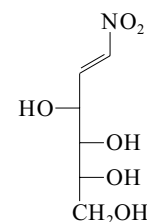
C₆H₁₀O₃ 130.143**D-form**

Trityl: 2,3-Dideoxy-3-*C*-methyl-5-*O*-trityl-*D*-erythro-1,4-pentonolactone
[84911-45-5]
C₂₅H₂₄O₃ 372.463
[α]_D²⁵ +22.3 (c, 2.8 in CHCl₃).

Ireland, R.E. *et al.*, *J.A.C.S.*, 1983, **105**, 1988 (*synth*, *pmr*)

1,2-Dideoxy-1-nitro-arabino-hex-1-enitol

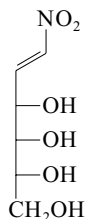
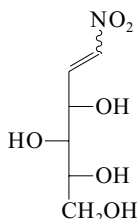
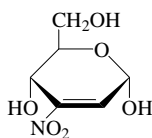
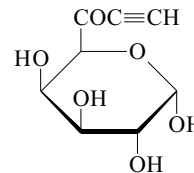
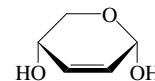
D-643

C₆H₁₁NO₆ 193.156**D-(1E)-form**

Tetra-Ac: 3,4,5,6-Tetra-*O*-acetyl-1,2-dideoxy-1-nitro-*D*-arabino-hex-1-enitol
[122999-05-7]
C₁₄H₁₉NO₁₀ 361.305
Cryst. (EtOH). Mp 115-116°. [α]_D²³ +32.4 (c, 5.2 in CHCl₃).

Sowden, J.C. *et al.*, *J.A.C.S.*, 1947, **69**, 1048 (*synth*)

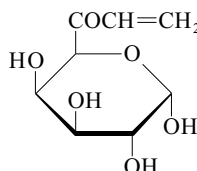
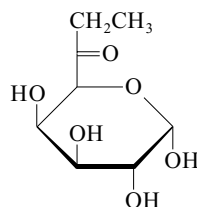
Sowden, J.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 235 (*synth*)

1,2-Dideoxy-1-nitro-ribo-hex-1-enitol**D-644**Prisms (EtOAc/petrol). Mp 183-184°. $[\alpha]_D^{23}$ -93 (c, 0.9 in EtOAc). $C_6H_{11}NO_6$ 193.156**D-(1E)-form***Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1,2-dideoxy-1-nitro-D-ribo-hex-1-enitol* [60478-51-5] $C_{14}H_{19}NO_{10}$ 361.305Cryst. (EtOH). Mp 87-88°. $[\alpha]_D$ +17 (c, 5 in $CHCl_3$).Sowden, J.C. *et al.*, *J.A.C.S.*, 1947, **69**, 1048 (synth)Perry, M.B. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 25 (synth)**1,2-Dideoxy-1-nitro-xylo-hex-1-enitol****D-645** $C_6H_{11}NO_6$ 193.156**D-form***Tetra-Ac: 3,4,5,6-Tetra-O-acetyl-1,2-dideoxy-1-nitro-D-xylo-hex-1-enitol* [39848-12-9] $C_{14}H_{19}NO_{10}$ 361.305Cryst. (EtOH). Mp 115-116°. $[\alpha]_D^{25}$ +10.2 ($CHCl_3$).Sowden, J.C. *et al.*, *J.A.C.S.*, 1947, **69**, 1048 (synth)Perry, M.B. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 29 (synth)**2,3-Dideoxy-3-nitro-erythro-hex-2-enose****D-646** α -D-Pyranose-form $C_6H_9NO_6$ 191.14 **α -D-Pyranose-form***Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2,3-dideoxy-3-nitro- α -D-erythro-hex-2-enopyranoside* [16697-51-1] $C_{14}H_{15}NO_6$ 293.276**7,8-Dideoxy-galacto-oct-7-ynopyranos-6-ulose****D-649** $C_8H_{10}O_6$ 202.163 **α -D-form***1,2:3,4-Di-O-isopropylidene: [65784-43-2]* $C_{14}H_{18}O_6$ 282.293Needles (Et_2O /petrol). Mp 128-129°. $[\alpha]_D^{25}$ -117 (c, 0.8 in $CHCl_3$).Gonzalez, A. *et al.*, *Carbohydr. Res.*, 1977, **59**, 598 (diisopropylidene)Horton, D. *et al.*, *Carbohydr. Res.*, 1978, **67**, 357; 1979, **75**, 151 (diisopropylidene, ir, cryst struct)**2,3-Dideoxy-glycero-pent-2-enose****D-650** α -D-Pyranose-form $C_5H_8O_3$ 116.116 **α -D-Pyranose-form***Me glycoside, Ac: Methyl 4-O-acetyl-2,3-dideoxy- α -D-glycero-pent-2-enopyranoside* [25874-23-1] $C_8H_{12}O_4$ 172.18Bp_{0.4} 100°. **α -D-Furanose-form***Me glycoside, 6-trityl: Methyl 2,3-dideoxy-5-O-trityl- α -D-glycero-pent-2-enofuranoside* [67890-35-1] $C_{25}H_{24}O_3$ 372.463 $[\alpha]_D^{22}$ -57 (c, 1 in CH_2Cl_2). Error in struct. diag. in the ref. **β -D-Furanose-form***Me glycoside, 6-trityl: Methyl 2,3-dideoxy-5-O-trityl- β -D-glycero-pent-2-enofuranoside* [16802-02-1] $C_{25}H_{24}O_3$ 372.463 $[\alpha]_D^{22}$ -71 (c, 1 in CH_2Cl_2).Bock, K. *et al.*, *Acta Chem. Scand.*, 1969, **23**, 2083 (*Me pyr deriv*)Achmatowicz, O. *et al.*, *Tetrahedron*, 1971, **27**, 1973 (*Me pyr deriv*)Lacourt-Gadras, B. *et al.*, *Carbohydr. Res.*, 1992, **235**, 281 (*Me fur derivs*) **β -D-Pyranose-form***Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2,3-dideoxy-3-nitro- β -D-erythro-hex-2-enopyranoside* $C_{14}H_{15}NO_6$ 293.276

Needles (EtOAc/petrol). Mp 144-145°.

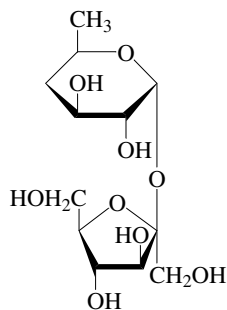
 $[\alpha]_D^{23}$ -192.5 (c, 1.2 in $CHCl_3$).

[61664-96-8, 66008-34-2]

Baer, H.H. *et al.*, *Can. J. Chem.*, 1965, **43**, 840; 1967, **45**, 983 (α -D-form, β -D-form, synth)Tachimori, Y. *et al.*, *Chem. Lett.*, 1976, 483, (α -D-form, β -D-form)Baer, H.H. *et al.*, *J.O.C.*, 1976, **41**, 3474, (α -D-form, synth)Sakakibara, T. *et al.*, *Chem. Comm.*, 1981, 261 (α -D-form, β -D-form)**7,8-Dideoxy-galacto-oct-7-enopyranos-6-ulose****D-647** $C_8H_{12}O_6$ 204.179 **α -D-form***1,2:3,4-Di-O-isopropylidene: [72369-63-2]* $C_{14}H_{20}O_6$ 284.308Cryst. Mp 81-83°. $[\alpha]_D^{25}$ -104 (c, 0.6 in $CHCl_3$).Horton, D. *et al.*, *Carbohydr. Res.*, 1978, **67**, 357; 1979, **75**, 151 (diisopropylidene, ir, cryst struct)**7,8-Dideoxy-galacto-octopyranos-6-ulose****D-648** $C_8H_{14}O_6$ 206.195 **α -D-form***1,2:3,4-Di-O-isopropylidene: [65784-44-3]* $C_{14}H_{22}O_6$ 286.324Cryst. (Et_2O /hexane). Mp 70-72°. $[\alpha]_D^{20}$ -136 (c, 1.0 in $CHCl_3$).Gonzalez, A. *et al.*, *Carbohydr. Res.*, 1977, **59**, 598 (diisopropylidene, ir)

4,6-Dideoxysucrose**D-651**

β -D-Fructofuranosyl 4,6-dideoxy- α -D-xylohexopyranoside, 9CI
[118650-57-0]

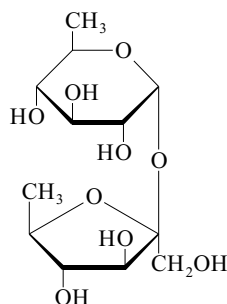


$C_{12}H_{22}O_9$ 310.3
Cryst. (MeOH). Mp 188° (176-178°). $[\alpha]_D^{20}$ +56.6 (c, 1.2 in H_2O). $[\alpha]_D^{20}$ -61.9 (c, 1.43 in MeOH).

Tamriseven, A. *et al.*, *Carbohydr. Res.*, 1989, **186**, 87-94 (synth)
Descotes, G. *et al.*, *Carbohydr. Res.*, 1989, **188**, 63-70 (synth, pmr)

6,6'-Dideoxysucrose**D-652**

6-Deoxy- α -D-glucopyranosyl 6-deoxy- β -D-fructofuranoside
[68791-19-5]

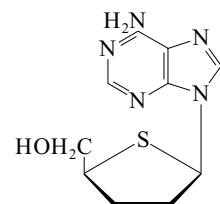


$C_{12}H_{22}O_9$ 310.3
Cryst. (EtOH). Mp 205-206°. $[\alpha]_D^{25}$ +54 (c, 1.5 in H_2O).

Chen, C.C. *et al.*, *Carbohydr. Res.*, 1983, **117**, 318 (synth, pmr, cmr, bibl)

2',3'-Dideoxy-4'-thioadenosine**D-653**

5-(6-Amino-9H-purin-9-yl)tetrahydro-2-thiophenemethanol, 9CI
[137819-75-1]

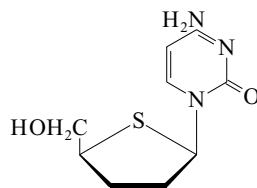


$C_{10}H_{13}N_5OS$ 251.312
Cryst. (EtOH/EtOAc). Mp 179-182°.

Secrist, J.A. *et al.*, *J. Med. Chem.*, 1992, **35**, 533 (synth, pmr)

2',3'-Dideoxy-4'-thiocytidine**D-654**

4-Amino-1-[tetrahydro-5-(hydroxymethyl)-2-thienyl]-2(1H)-pyrimidinone, 9CI
[137719-36-9]

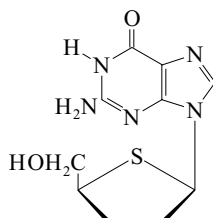


$C_9H_{13}N_3O_2S$ 227.287
Amorph. solid. Mp 83-85°.

Secrist, J.A. *et al.*, *J. Med. Chem.*, 1992, **35**, 533 (synth, pmr)

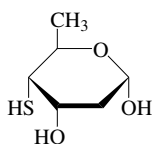
2',3'-Dideoxy-4'-thioguanosine**D-655**

2-Amino-1,9-dihydro-9-[tetrahydro-5-(hydroxymethyl)-2-thienyl]-6H-purin-6-one, 9CI
[137719-32-5]



$C_{10}H_{13}N_5O_2S$ 267.311
Cryst. (EtOH). Mp 180-183°.

Secrist, J.A. *et al.*, *J. Med. Chem.*, 1992, **35**, 533 (synth, pmr)

2,6-Dideoxy-4-thio-ribo-hex-ose**D-656** α -D-Pyranose-form

$C_6H_{12}O_3S$ 164.225

D-form [126448-21-3]

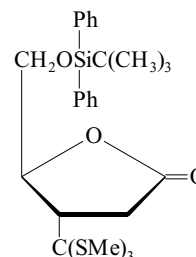
Constit. of the Calicheamicins, a new class of antitumour antibiotics.

 α -D-form

Me glycoside: Methyl 2,6-dideoxy-4-thio- α -D-ribo-hexopyranoside, 9CI
[126448-25-7]

$C_7H_{14}O_3S$ 178.252
Syrup. $[\alpha]_D^{20}$ +144.7 (c, 1.5 in $CHCl_3$).

Van Laak, K. *et al.*, *Tet. Lett.*, 1989, **30**, 4505; 1990, **31**, 4113 (synth, pmr, cmr)

2,3-Dideoxy-3-[tris(methylthio)methyl]-5-O-tert-butylidiphenylsilyl-erythro-pentono-1,4-lactone**D-657**

$C_{25}H_{34}O_3S_3Si$ 506.825

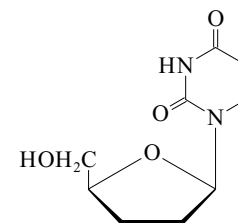
D-form [106820-44-4]

Functionalised carbohydrate synthon.
Cryst. Mp 140-142°. $[\alpha]_D^{20}$ +20.5 (c, 1.1 in $CHCl_3$).

Hanessian, S. *et al.*, *Tetrahedron*, 1987, **43**, 5055 (synth, pmr, ir)

2',3'-Dideoxyuridine, 9CI**D-658**

[5983-09-5]



$C_9H_{12}N_2O_4$ 212.205
Used in antiviral and anticancer studies.
Cryst. Mp 127-129°. $[\alpha]_D^{20}$ +34 (c, 0.4 in H_2O).

5'-Ac: [102935-28-4]

$C_{11}H_{14}N_2O_5$ 254.242
Cryst. Mp 80.1-80.6°.

5'-Benzoyl: [28616-91-3]

$C_{16}H_{16}N_2O_5$ 316.313
Needles (EtOAc). Mp 143-144°.

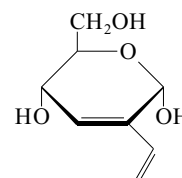
Pfizer, K.E. *et al.*, *J.O.C.*, 1964, **29**, 1508 (synth)

Furukawa, Y. *et al.*, *Chem. Pharm. Bull.*, 1970, **18**, 554 (synth, benzoyl, uv, pmr)

Shiragami, H. *et al.*, *J.O.C.*, 1988, **53**, 5170 (synth, Ac, uv, pmr)

Jung, M.E. *et al.*, *Tet. Lett.*, 1992, **33**, 2921 (synth, benzoyl)

McGuigan, C. *et al.*, *J. Med. Chem.*, 2004, **47**, 1847-1851 (synth, pmr)

2,3-Dideoxy-2-C-vinyl-erythro-hex-2-enose**D-659**

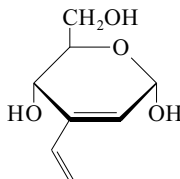
$C_8H_{12}O_4$ 172.18

α-D-Pyranose-form

Me glycoside, 4,6-benzylidene: Methyl 4,6-O-benzylidene-2,3-dideoxy-2-C-vinyl-α-D-erythro-hex-2-enopyranoside [117514-02-0]
C₁₆H₁₈O₄ 274.316
Cryst. Mp 138-140°. [α]_D +127 (c, 1.8 in CHCl₃).

López, J.C. *et al.*, *Tetrahedron*, 1993, **49**, 7701 (pmr, cmr)

2,3-Dideoxy-3-C-vinyl-erythro-hex-2-enose **D-660**
2,3-Dideoxy-3-C-ethenyl-erythro-hex-2-enose



C₈H₁₂O₄ 172.18

α-D-Pyranose-form

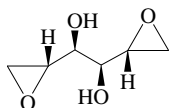
Me glycoside, 4,6-O-benzylidene(R-): Methyl 4,6-O-benzylidene-2,3-dideoxy-3-C-vinyl-α-D-erythro-hex-2-enopyranoside [118204-02-7]
C₁₆H₁₈O₄ 274.316
Needles. Mp 130-133°. [α]_D²³₃₆₅ -52 (c, 1.0 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: [117514-04-2]
Cryst. Mp 119-121°. [α]_D -1.2 (c, 1.1 in CHCl₃). Not clear if this is the same as the compd. reported above. Benzylidene configuration not determined.

Lipschutz, B.H. *et al.*, *Tetrahedron*, 1988, **44**, 3355 (synth, pmr, cmr, ms)

López, J.C. *et al.*, *Tetrahedron*, 1993, **49**, 7701 (synth, pmr, cmr)

1,2,5,6-Diepoxy-3,4-hexane-diol **D-661**
1,2-Dioxiranyl-1,2-ethanediol, 1,2,5,6-Dianhydrohexitol



(2R,3S,4S,5R)-form

C₆H₁₀O₄ 146.143

(2R,3S,4S,5R)-form

1,2:5,6-Dianhydro-L-iditol [132957-76-7]
No phys. props. reported.

(2S,3S,4S,5S)-form

1,2:5,6-Dianhydro-D-mannitol [19895-66-0] Antineoplastic agent. Needles. Mp 64-66°. [α]_D²⁵ +40 (c, 1.25 in H₂O).

Di-Et ether: [71223-72-8]
C₁₀H₁₈O₄ 202.25
Liq. Bp_{0.1} 67-70°. [α]_D -5.5 (c, 3.4 in CHCl₃).

3,4-O-Isopropylidene: 1,2:5,6-Dianhydro-3,4-O-isopropylidene-D-mannitol [63700-05-0]
C₉H₁₄O₄ 186.207
[α]_D -2 (c, 4.0 in CHCl₃).

(2RS,3SR,4RS,5SR)-form 1,2:5,6-Dianhydrogalactitol

[23261-20-3] Antineoplastic agent. Plates. Mp 96.5-98.5°. [α]_D²⁵ +2 (c, 1.25 in H₂O). Dimorphic. A meso-dia stereoisomer.

Di-Ac: 3,4-Di-O-acetyl-1,2:5,6-dianhydrogalactitol [57230-48-5]
C₁₀H₁₄O₆ 230.217
Needles (MeOH). Mp 91°.

Elson, L.A. *et al.*, *Eur. J. Cancer*, 1968, **4**, 617 (synth, pharmacol)

Jarman, M. *et al.*, *Carbohydr. Res.*, 1969, **9**, 139 (synth)

Kuszmán, J. *et al.*, *Carbohydr. Res.*, 1979, **71**, 123-134 (*di-Me ether, di-Et ether*)

Czúgler, M. *et al.*, *Carbohydr. Res.*, 1982, **108**, 173 (cryst struct, dianhydrogalactitol)

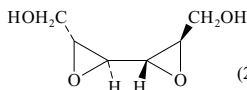
Horváth, I.P. *et al.*, *Eur. J. Cancer Clin. Oncol.*, 1982, **18**, 573 (pharmacol)

Takano, S. *et al.*, *J.A.C.S.*, 1991, **113**, 2786 (*Dianhydroiditol*)

de March, P. *et al.*, *J.O.C.*, 2003, **68**, 2437-2447 (*di-Et ether, isopropylidene, synth*)

2,3,4,5-Diepoxy-1,6-hexane-diol **D-662**

2,2'-Bioxirane-3,3'-dimethanol, 2,3:4,5-Dianhydrohexitol



(2R,3S,4S,5R)-form

C₆H₁₀O₄ 146.143

(2R,3S,4S,5R)-form

(+)-trans,trans-form. 2,3:4,5-Dianhydro-D-iditol [20706-76-7]
Cryst. (EtOAc). Mp 100-101°. [α]_D²⁵ +82.1 (c, 1.0 in H₂O).

Di-Ac: 1,6-Di-O-acetyl-2,3:4,5-dianhydro-D-iditol [20706-77-8]
C₁₀H₁₄O₆ 230.217
Cryst. (2-propanol). Mp 48-49.5°. [α]_D²² +87 (c, 2.1 in CHCl₃).

Dibenzoyl: 2,3:4,5-Dianhydro-1,6-di-O-benzoyl-D-iditol [20706-78-9]
C₂₀H₁₈O₆ 354.359
Cryst. (EtOH). Mp 95-96°. [α]_D²¹ +63.8 (c, 1.0 in CHCl₃).

(2S,3R,4R,5S)-form (-)-trans-trans-form. 2,3:4,5-Dianhydro-L-iditol

[23261-22-5]
Prisms. Mp 98-99°. [α]_D²⁰ -80.4 (c, 0.5 in H₂O) (-72).

(2RS,3RS,4SR,5SR)-form

2,3:4,5-Dianhydroallitol. cis-cis-form [63699-93-4]
Cryst. (EtOAc). Mp 140-141°. *Meso*-.

Di-Ac: 1,6-Di-O-acetyl-2,3:4,5-dianhydroallitol [63699-94-5]

C₁₀H₁₄O₆ 230.217
Cryst. (2-propanol). Mp 88.5-89°.

Dimesyl: 2,3:4,5-Dianhydro-1,6-di-O-mesyllallitol [42355-32-8]

C₈H₁₄O₈S₂ 302.326
Cryst. (Me₂CO). Mp 132.5-133.5°.

Tipson, R.S. *et al.*, *Carbohydr. Res.*, 1968, **7**, 232 (synth, *di-Ac*, dibenzoyl, pmr)

Jarman, M. *et al.*, *Carbohydr. Res.*, 1969, **9**, 139 (synth)

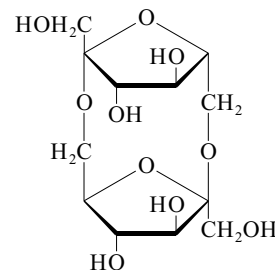
Schneider, G. *et al.*, *Carbohydr. Res.*, 1977, **56**, 43 (*dianhydroallitol*)

Bock, K. *et al.*, *Acta Chem. Scand.*, 1989, **43**, 264 (synth)

Di-β-D-fructofuranose **D-663**

2,6':6,2'-dianhydride, 9CI

β-D-Fructofuranose β-D-fructofuranose 2,6':6,2'-dianhydride. *Alliuminoside* [546-42-9]



C₁₂H₂₀O₁₀ 324.284

Not to be confused with Alliumosides (see Furost-5-ene-3,22,26-triol. Isol. from bulbs of *Allium sewertzowii*. Prod. by reacting levan or phlein with fructosyl transferase from *Pseudomonas fluorescens*. Exhibits good heat stability. Shows anticancer activity. Cryst. (EtOH). Mp 177-178° (92-93°). [α]_D²⁰ -32 (c, 1.2 in H₂O). [α]_D²⁰ -23.8 (H₂O).

Hexa-Ac:

C₂₄H₃₂O₁₆ 576.507
Mp 142-143° (98-99°). [α]_D²⁰ -54.9 (c, 0.7 in CHCl₃) (-29.3).

Hexa-Me:

C₁₈H₃₂O₁₀ 408.445
[α]_D²⁰ -56.6 (c, 1.1 in CHCl₃) (-39.7). [α]_D²⁰ -39.7 (c, 1.1 in CHCl₃).

[97949-45-6]

Streptkov, S.M. *et al.*, *Zh. Obshch. Khim.*, 1958, **28**, 3143 (*isol, deriv*)

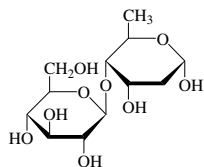
Tanaka, K. *et al.*, *Carbohydr. Res.*, 1982, **99**, 197 (synth, deriv)

Japan. Pat., 1988, 214 160; *CA*, **110**, 153057p (*use*)

Japan. Pat., 1989, 91 793; *CA*, **111**, 76554q (*synth*)

Digilanidobiose**D-664**

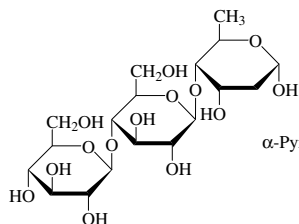
4-O- β -D-Glucopyranosyl-2,6-dideoxy-D-ribo-hexose, 8CI. 4-O- β -D-Glucopyranosyl-D-digitoxose
[7757-13-3]

 α -Pyranose-formC₁₂H₂₂O₉ 310.3

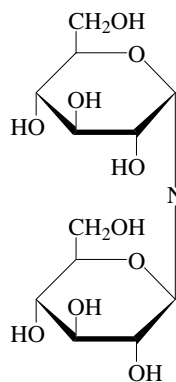
Isol. by mild acid hydrolysis from the glycosides lanatoside A, B and C (from *Digitalis* species), Erysimoside (from *Erysimum perofskianum*) and from the glycosides of *Isoplexis isabelliana* and from *Isoplexis canariensis*.

Mp 229-230°. [α]_D +30.6 (H₂O).Breton, J.L. *et al.*, *Chem. Ind. (London)*, 1960, 205Kowalewski, Z. *et al.*, *Helv. Chim. Acta*, 1960, **43**, 1280Lichti, H. *et al.*, *Helv. Chim. Acta*, 1961, **44**, 238Sigrid, S. *et al.*, *Helv. Chim. Acta*, 1967, **50**, 1893 (isol)Imre, Z. *et al.*, *Arch. Pharm. (Weinheim, Ger.)*, 1977, **310**, 142; *CA*, **86**, 177205x**Digilanidotriose****D-665**

β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-digitoxose. β -D-Cellobiosyl-(1 \rightarrow 4)-D-digitoxose. β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-2,6-dideoxy-D-ribo-hexose

 α -Pyranose-formC₁₈H₃₂O₁₄ 472.442

The sugar moiety of the glycoside Gitorocellobioside from *Digitalis purpurea*. Needles (MeOH/H₂O/Et₂O). Mp 215-219°. [α]_D²⁰ +17.6 (c, 1.206 in H₂O).

Okano, A. *et al.*, *Chem. Pharm. Bull.*, 1959, **7**, 226 (isol, struct)**Diglucopyranosylamine****D-666**D,D- α,β -formC₁₂H₂₃NO₁₀ 341.314**D,D- α,β -form**

α -D-Glucopyranosyl- β -D-glucopyranosylamine

[103129-66-4]

Mp 170-171°. [α]_D²⁰ +88.5 (c, 2.0 in H₂O). Formerly assigned the α,α -config.

Octa-Ac: (2,3,4,6-Tetra-O-acetyl- α -D-glucopyranosyl)-(2,3,4,6-tetra-O-acetyl- β -D-glucopyranosyl)amine

[68398-27-6]

C₂₈H₃₉NO₁₈ 677.612Cryst. (EtOH/Me₂CO). Mp 212-213°.[α]_D²⁰ +88 (c, 2.0 in CHCl₃).**D,D- β,β -form** [103059-85-4]Foam. [α]_D²⁰ +6 (c, 2.0 in H₂O).

Octa-Ac: Bis(2,3,4,6-tetra-O-acetyl- β -D-glucopyranosyl)amine

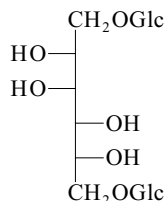
[63976-10-3]

C₂₈H₃₉NO₁₈ 677.612Cryst. (EtOH). Mp 154°. [α]_D²⁰ +16.9 (c, 2.0 in CHCl₃).Linek, K. *et al.*, *Carbohydr. Res.*, 1987, **164**, 195

(synth, pmr, cmr, bibl)

Imberty, A. *et al.*, *Carbohydr. Res.*, 1998, **311**, 135-146 (octa-Ac, cryst struct)**1,6-Di-O- β -D-glucopyranosyl-D-mannitol****D-667**

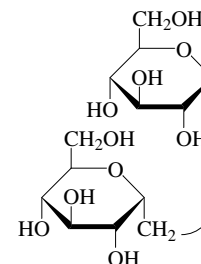
O- β -D-Glucopyranosyl-(1 \rightarrow 6)-O- β -D-glucopyranosyl-(1 \rightarrow 1)-D-mannitol, 8CI
[28976-36-5]

C₁₈H₃₄O₁₆ 506.457

Occurs in the brown algae *Fucus vesiculosus*, *Fucus spiralis*, *Pelvetia canaliculata*, *Laminaria cloustoni* and *Desmarestia aculeata*.

[α]_D²⁰ -14 (c, 2.0 in H₂O).Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1953, **7**, 1119 (isol)

Bouveng, H. *et al.*, *Acta Chem. Scand.*, 1955, **9**, 168 (isol)
Coassini, L.L. *et al.*, *CA*, 1970, **73**, 63240f

Di-1-glucosylmethane C-Trehalose**D-668** α,α -formC₁₃H₂₄O₁₀ 340.327

Analogue of α,α -Trehalose, T-123, α,β -Trehalose, T-124 and β,β -Trehalose, T-125 with CH₂ replacing glycosidic O.

 α,α -form

Solid + 2H₂O (MeOH). Mp 225° dec. [α]_D +81.8 (c, 1.59 in H₂O).

 α,β -form[α]_D +33 (c, 1.02 in H₂O). **β,β -form**Gum. [α]_D -20.7 (c, 0.73 in H₂O).

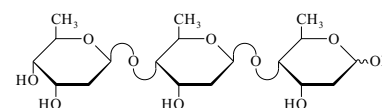
Octa-Ac: [130168-59-1]

C₂₉H₄₀O₁₈ 676.624

Hygroscopic solid. Mp 127-129°. [α]_D²⁰ -9.1 (c, 1.0 in CHCl₃).

Wei, A. *et al.*, *J.O.C.*, 1994, **59**, 88 (synth, pmr, cmr, conform)Paterson, D.E. *et al.*, *Eur. J. Org. Chem.*, 2002, 1323-1336 (β,β -octa-Ac)**Digoxose****D-669**

2,6-Dideoxy- β -D-ribo-hexopyranosyl-(1 \rightarrow 4)-2,6-dideoxy- β -D-ribo-hexopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-D-ribo-hexose
[93449-30-0]

C₁₈H₃₂O₁₀ 408.445

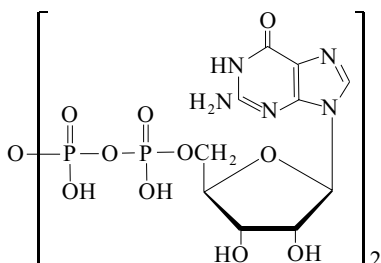
Isol. from dried twigs of *Orthenthera viminea* (Asclepiadaceae). Present in several cardioactive glycosides.

Mp 171-174°. [α]_D²⁵ +36.3 (c, 0.70 in MeOH). **α -Pyranose-form****Penta-Ac:**C₂₈H₄₂O₁₅ 618.631Amorph. [α]_D²⁵ +75.3 (c, 0.6 in MeOH).Tiwari, K.N. *et al.*, *Carbohydr. Res.*, 1984, **129**, 179 (isol, pmr)

P¹,P⁴-Diguanosine 5'-tetra-phosphate

D-670

Guanosine 5'-(pentahydrogen tetraphosphate) 5',5'-ester of guanosine, 9CI, 8CI. Diguanosine 5',5'''-(P¹,P⁴-tetraphosphate). GP₄G [4130-19-2]

C₂₀H₂₈N₁₀O₂₁P₄ 868.39

Present in brine shrimp (*Artemia salina*) eggs and in rat liver. Is converted into ATP in the metabolism of the brine shrimp. λ_{max} 256-7 nm (ε 21 700) (pH 2 and 10).

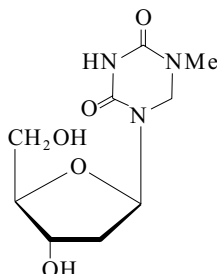
Biochem. Prep., 1966, **11**, 27 (isol, synth) van Denbos, G. et al., J. Biol. Chem., 1974, **249**, 2816

Sy, J. et al., Biochemistry, 1975, **14**, 970 Vallejo, C.G. et al., Biochim. Biophys. Acta, 1976, **438**, 304

5,6-Dihydro-5-azathymidine

D-671

1-(2-Deoxy-β-D-erythro-pentofuranosyl)-dihydro-5-methyl-1,3,5-triazine-2,4-(1H,3H)-dione, 9CI. PA 399. U 44590. Antibiotic PA 399. Antibiotic U 44590 [57350-36-4]

C₉H₁₅N₃O₅ 245.235

Nucleoside-type antibiotic. Obt. from *Streptomyces platensis* var. *clarensis* and *Micromonospora melanogenes*. Antiviral agent, useful against herpes simplex. Also active against gram-positive and -negative bacteria. Needles. Sol. H₂O.

Mp 141-142°. [α]_D²³ -5 (c, 0.903 in H₂O).

3',5'-Di-O-Ac: 3',5'-Diacetyl-5,6-dihydro-5-azathymidine. U 44474. Antibiotic U 44474

[57350-37-5]

C₁₃H₁₉N₃O₇ 329.309

Semisynthetic.

U.S. Pat., 1975, 3 907 643; CA, **84**, 15683h (isol) Argoudelis, A.D. et al., J. Antibiot., 1976, **29**, 818

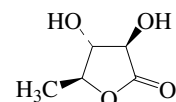
Weirenga, W. et al., J.O.C., 1978, **43**, 529 (cmr) Japan. Pat., 1978, 78 66 494; CA, **89**, 178087 (isol)

Skulnick, H.I. et al., J. Carbohydr. Nucleosides, Nucleotides, 1979, **6**, 263 (synth) Wierenga, W. et al., Carbohydr. Res., 1981, **90**, 41 (synth)

Dihydro-3,4-dihydroxy-5-methyl-2(3H)-furanone

D-672

2,3-Dihydroxy-4-methylbutyrolactone. 5-Deoxypentono-1,4-lactone



(3R,4R,5S)-form

C₅H₈O₄ 132.116**(3R,4R,5S)-form**

L-arabino-form

Long needles (CHCl₃). Mp 125°(119-122°). [α]_D²⁰ -39 (c, 1.5 in EtOAc).**(3R,4S,5R)-form**

D-ribo-form

[96291-06-4]

Yellowish solid. Mp 127°. [α]_D +17

(c, 1.0 in MeOH).

(3S,4S,5R)-form

D-arabino-form

Cryst. (EtOAc). Mp 120-122°. [α]_D²⁵ +39

(c, 1 in EtOAc).

Andrews, P. et al., J.A.C.S., 1955, **77**, 125

Bock, K. et al., Carbohydr. Res., 1982, **104**, 79 (synth)

Papageorgiou, C. et al., Tet. Lett., 1984, **25**, 6041 (D-ribo, synth)

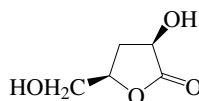
Torii, S. et al., Bull. Chem. Soc. Jpn., 1985, **58**, 3629-3630 (synth, ir, pmr, cmr)

Fernandez, A.M. et al., J.O.C., 1997, **62**, 4007-4014 (synth, ir, pmr, cmr)

4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3H)-furanone

D-673

3-Deoxypentonic acid γ-lactone, 9CI. 2-Hydroxy-4-hydroxymethyl-4-butanolide [74243-47-3]



(3R,5R)-form

C₅H₈O₄ 132.116**(3R,5R)-form**

L-threo-form

[117141-72-7]

Oil. [α]_D²⁰ -22.2 (c, 1.26 in MeOH).[α]_D -22.5 (c, 1.5 in MeOH).

3-Benzoyl: [116983-09-6]

C₁₂H₁₂O₅ 236.224

Mp 49-50°. [α]_D²⁰ -20.5 (c, 0.87 in MeOH).

(3R,5S)-form

D-erythro-form

[19473-19-9]

Oil. [α]_D²⁰ +50.3 (c, 1.75 in MeOH). [α]_D +49.2 (c, 1.4 in EtOH).

3-Benzoyl: [116983-07-4]

Solid. Mp 84-86°. [α]_D²⁰ +41.9 (c, 1.0 in MeOH).

(3S,5R)-form

L-erythro-form

[117141-71-6]

Oil. [α]_D²⁵ -47.5 (c, 0.72 in EtOH).[α]_D²⁰ -45.6 (c, 1.6 in MeOH).

5-Ac: [124867-29-4]

C₇H₁₀O₅ 174.153[α]_D²⁵ -53.8 (c, 0.53 in CHCl₃).

5-Benzoyl: [116983-08-5]

C₁₂H₁₂O₅ 236.224

Mp 82-85°. [α]_D²⁰ -42.1 (c, 1.12 in MeOH).

(3S,5S)-form

D-threo-form

[19473-20-2]

Isol. from human and rat blood serum.

Shows appetite-stimulant props.

Oil. [α]_D²⁰ +23.2 (c, 3.61 in MeOH) (+11.4).

Di-Ac: [79580-65-7]

C₉H₁₂O₆ 216.19

Cryst. (EtOAc/hexane). Mp 69-71°. [α]_D²⁵ +51.2 (c, 1.3 in CHCl₃).

3-Benzoyl: [116983-06-3]

C₁₂H₁₂O₅ 236.224

Mp 50-51°. [α]_D²⁰ +21.1 (c, 0.9 in MeOH).

Dibenzoyl: [149311-32-0]

C₁₉H₁₆O₆ 340.332

Cryst. Mp 135.5-137.5°. CA gives the erythro stereochem. to this compd. which is incorr.

3-(4-Methylbenzenesulfonyl):

[147410-02-4]

C₁₂H₁₄O₆S 286.305

Cryst. (EtOAc/hexane). Mp 90-95°. [α]_D +9.49 (c, 1.18 in CHCl₃).

Bock, K. et al., Acta Chem. Scand., Ser. B, 1981, **35**, 155-162 (di-Ac)

Attwood, S.V. et al., J.C.S. Perkin 1, 1984, 1315-1322 (synth, pmr)

Uchikawa, O. et al., Bull. Chem. Soc. Jpn., 1988, **61**, 2025-2029 (synth, ir, pmr, cmr, bibl)

Xie, Z.-F. et al., Chem. Pharm. Bull., 1989, **37**, 1650-1652 (5-Ac)

Matsumoto, K. et al., Heterocycles, 1992, **34**, 363-367 (synth)

Ariza, J. et al., Tetrahedron, 1993, **49**, 1315-1326 (2-tosyl)

Xie, Z.-F. et al., Tetrahedron: Asymmetry, 1993, **4**, 973-980 (synth)

Ticozzi, C. et al., Tet. Lett., 1994, **35**, 7421-7424 (synth, pmr)

Choquet-Farnier, C. et al., Carbohydr. Res., 1997, **303**, 185-191 (synth, pmr, cmr)

Org. Synth., Coll. Vol., 9, 1998, 717-721 (synth, di-Ac, 4,5-isopropylidene)

Shiraiwa, T. et al., Chem. Pharm. Bull., 1999, **47**, 1180-1183 (synth, ir, pmr, cmr)

Enders, D. et al., Tetrahedron, 1999, **55**, 6129-6138 (synth, ir, pmr, cmr, ms)

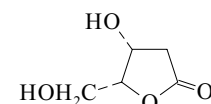
4,5-Dihydro-4-hydroxy-5-(hydroxymethyl)-2(3H)-furanone

D-674

3-Hydroxy-4-hydroxymethyl-4-butanolide.

3,4,5-Trihydroxypentanoic acid 1,4-lactone.

2-Deoxypentono-1,4-lactone



(4R,5R)-form

C₅H₈O₄ 132.116

Satiety-modulating substance in rats.

(4R,5R)-form

D-threo-form. 2-Deoxy-*D*-xylono-1,4-lactone
[78185-08-7]
Oil. $[\alpha]_D^{24} +67.3$ (c, 1.01 in MeOH) (+49.3).

(4R,5S)-form

L-erythro-form. 2-Deoxy-*L*-ribono-1,4-lactone
[38996-14-4]
Constit. of the fruit of *Foeniculum vulgare* (fennel).
Oil. $[\alpha]_D^{22} +3.5$ (c, 0.8 in MeOH). $[\alpha]_D +13.5$ (c, 0.8 in H₂O).

(4S,5R)-form

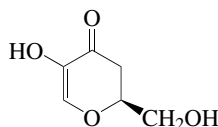
D-erythro-form. 2-Deoxy-*D*-ribono-1,4-lactone
[34371-14-7]
Constit. of the leaves of *Aristolochia arcuata*.
 $[\alpha]_D^{24} -4.5$ (c, 1.44 in EtOH) (-1.5).
l',4-Bis (triphosphate): 2-Deoxy-*D*-ribono-1,4-lactone 3,5-bis(triphosphate)
C₅H₁₄O₂₂P₆ 611.995
Constit. of the leaves of *Aristolochia arcuata*. Solid (MeOH).
Mp 189-190°. $[\alpha]_D^{25} -1.9$ (c, 1.65 in H₂O).

(4R*,5S*)-form

Constit. of the roots of *Clematis chinensis*.
Fernández, M.V. *et al.*, *Tetrahedron*, 1990, **46**, 7911-7922 (synth, pmr, cmr)
Matsumoto, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1995, **68**, 670-672 (synth)
Kita, Y. *et al.*, *J.O.C.*, 1998, **53**, 554-561 (synth)
Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 988-992 (isol, pmr, cmr)
Doyle, M.P. *et al.*, *J.O.C.*, 1999, **64**, 8907-8915 (synth, bibl, pmr)
He, M. *et al.*, *Yaoxue Xuebao*, 2001, **36**, 278-280 (isol)
Francisco, M.C. *et al.*, *Phytochemistry*, 2003, **62**, 1265-1270 (3,5-bis-triphosphate)

2,3-Dihydro-5-hydroxy-2-(hydroxymethyl)-4H-pyran-4-one D-675

l',5-Anhydro-4-deoxy-glycero-hex-1-en-3-ulose. Ascopyrone P
[6380-97-8]



C₆H₈O₄ 144.127

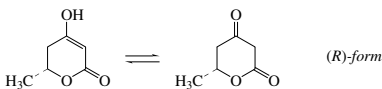
(S)-form

D-form
[68732-99-0]
Prod. by *Plicaria leiocarpa*. Squalene synthase inhibitor. Cryst. Sol. H₂O. Mp 91-96° (92°). $[\alpha]_D +155$ (c, 1.1 in H₂O). λ_{\max} 292 (log ϵ 3.8) (H₂O). λ_{\max} 211 (ϵ 345) (MeCN) (Berdy). λ_{\max} 339 (NaOH) (Berdy).
Shafizadeh, F. *et al.*, *Carbohydr. Res.*, 1978, **67**, 433 (synth)
Stevenson, T.T. *et al.*, *Carbohydr. Res.*, 1981, **90**, 319 (cryst struct)
Baute, M.A. *et al.*, *Phytochemistry*, 1993, **33**, 41-45 (isol, uv, ir, pmr, cmr, ms)

Andersen, S.M. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 569-578 (synth)

5,6-Dihydro-4-hydroxy-6-methyl-2H-pyran-2-one, 9CI D-676

Dihydro-6-methyl-2H-pyran-2,4(3H)-dione, 9CI. β -Keto- δ -valerolactone
[33177-29-6]
[85825-79-2]



C₆H₈O₃ 128.127

(R)-form [148586-29-2]

Cryst. (MeOH aq.). Mp 135°. $[\alpha]_D^{25} -147.3$ (c, 2.10 in EtOH).
Me ether: 5,6-Dihydro-4-methoxy-6-methyl-2H-pyran-2-one
[221356-83-8]
C₇H₁₀O₃ 142.154
Solid. Mp 61°. $[\alpha]_D^{25} -168.09$ (c, 1.2 in CHCl₃).

(S)-form [149115-92-4]

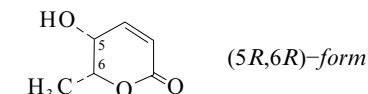
[132604-11-6]
Solid. Mp 135°. $[\alpha]_D^{25} +145.4$ (c, 2.1 in EtOH).
O- β -D-Glucopyranoside: Gerberin
[125445-59-2]
C₁₂H₁₈O₈ 290.269
Constit. of *Gerbera jamesonii hybrida*.
Amorph. powder. $[\alpha]_D^{19} -11.2$ (c, 1.2 in MeOH).
Me ether: Mp 59-60°. $[\alpha]_D^{17} +256$ (c, 0.5 in MeOH).

(±)-form [74259-30-6]

Cryst. Mp 123-125° (121-122°).
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1158B (nmr)
Izawa, T. *et al.*, *Chem. Lett.*, 1975, 161 (synth)
Svendsen, A. *et al.*, *J.O.C.*, 1975, **40**, 1927 (synth)
Nedjar, B. *et al.*, *J. Het. Chem.*, 1978, **15**, 1153 (synth)
Haeusler, J. *et al.*, *Monatsh. Chem.*, 1982, **113**, 1213 (synth)
Nagumo, S. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 2621-2623 (Gerberin)
Tabuchi, H. *et al.*, *J.O.C.*, 1994, **59**, 4749-4759 (synth, ir, pmr, cmr)
Fehr, M.J. *et al.*, *New J. Chem.*, 1998, **22**, 1499-1504 (*Me ether*)
Drochner, D. *et al.*, *Eur. J. Org. Chem.*, 2001, 211-215 (enantiomers, *Me ether*, synth, pmr, cmr)

5,6-Dihydro-5-hydroxy-6-methyl-2H-pyran-2-one, 9CI D-677

4-Hydroxy-2-hexen-5-olide
[54826-92-5]



C₆H₈O₃ 128.127

(5R,6R)-form

O- β -D-Glucopyranoside: Angiopteriside
[80433-52-9]
C₁₂H₁₈O₈ 290.269
Constit. of rhizome of *Angiopteris lygodifolia*. Cryst. (CHCl₃/MeOH).
Ac: [54621-88-4]
C₈H₁₀O₄ 170.165
Oil. Bp_{0.1} 130°. $[\alpha]_D^{20} -179$ (c, 1 in CHCl₃).

(5R,6S)-form Osmundalactone

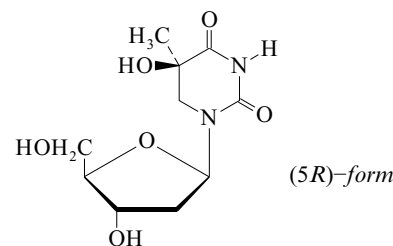
[69308-39-0]
Constit. of *Osmunda japonica* (zenmai).
Plates (C₆H₆) or needles.
Mp 82-82.5°. $[\alpha]_D^{22} -70.6$ (c, 2.0 in H₂O).
O- β -D-Glucopyranoside: Osmundalin
[54835-71-1]
C₁₂H₁₈O₈ 290.269
Isol. from ferns *Osmunda japonica* (zenmai) and *Osmunda regalis*. Syrup; needles (MeOH) as tetra-Ac.
Mp 172.5-173.5° (tetra-Ac).

(5S,6R)-form

Isol. from the fungus *Paxillus atrotomentosus*. Cryst. (EtOAc). Mp 81.5-82.5°. $[\alpha]_D +70.9$ (c, 1.3 in H₂O).
Hollenbeak, K.H. *et al.*, *Tetrahedron*, 1974, **30**, 2307 (isol, synth)
Torssell, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1977, **31**, 297; 1978, **32**, 457 (synth)
Yamagiwa, S. *et al.*, *J.C.S. Perkin 1*, 1979, 570 (synth)
Hseu, T.H. *et al.*, *Acta Cryst. B*, 1981, **37**, 2095 (cryst struct)
Numata, A. *et al.*, *Chem. Pharm. Bull.*, 1984, **32**, 2815
Murayama, T. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 2347 (synth)
Lichtenthaler, F.W. *et al.*, *Annalen*, 1989, 1153 (synth, pmr, acetate)
Buchanan, M.S. *et al.*, *Phytochemistry*, 1995, **40**, 1251 (isol, pmr, cmr)
Ono, M. *et al.*, *Heterocycles*, 1999, **51**, 1503-1508 (synth)
Yonghang, G. *et al.*, *J. Chem. Res., Synop.*, 1999, 488-489 (synth)
Carda, M. *et al.*, *Eur. J. Org. Chem.*, 2002, 2649-2655; 3491 (synth)

5,6-Dihydro-5-hydroxythymidine D-678

Thymidine C(5)-hydrate
[41308-58-1]



C₁₀H₁₆N₂O₆ 260.246

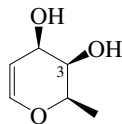
► Prob. mutagenic and/or cytotoxic.

(5R)-form [78216-58-7]

Oxidative stress prod. derived from interaction of reactive oxygen species with Thymidine, T-104. Mp 216°.

(5S)-form [67145-02-2]

Cryst. (EtOH). Mp 192-194°.

Grand, A. *et al.*, *Acta Cryst. B*, 1978, **34**, 1524 (cryst struct)Barvian, M.R. *et al.*, *J.O.C.*, 1993, **58**, 6151 (synth, ir, pmr, cmr)Matray, T.J. *et al.*, *J.A.C.S.*, 1994, **116**, 6931 (props)**3,4-Dihydro-2-methyl-2H-pyran-3,4-diol****D-679***3,4-Dihydro-3,4-dihydroxy-2-methyl-2H-pyran***(2R,3R,4R)-form** $C_6H_{10}O_3$ 130.143

Care needed with nomenclature and numbering. Shown here numbered as pyrans. If named as carbohydrates, it is preferable to consider all stereoisomers as hex-1-enitols, in which case positions 2,3,4 become 5,4,3 respectively. Strict application of the IUPAC special rules for carbohydrates would mean that some of the stereoisomers would be named as hex-5-enitols not hex-1-enitols (e.g. 2,6-anhydro-1,5-dideoxy-arabino-hex-5-enitol is preferred over 1,5-anhydro-2,6-dideoxy-lyxo-hex-1-enitol), in which case 2,3,4- remain 2,3,4- but with the Me group not the O atom numbered 1.

(2R,3R,4R)-form*2,6-Anhydro-1,5-dideoxy-arabino-hex-5-enitol*, *1,5-Anhydro-2,6-dideoxy-lyxo-hex-1-enitol*, *D-Fucal*, *6-Deoxy-D-galactal* [134355-03-6]Mp 72-73°. $[\alpha]_D^{21}$ -18.9 (c, 1.25 in $CHCl_3$).*Di-Ac*: [75829-69-5] $C_{10}H_{14}O_5$ 214.218Mp 49-51°. $[\alpha]_D^{21}$ -8.53 (c, 0.95 in Me_2CO).**(2R,3S,4R)-form***1,5-Anhydro-2,6-dideoxy-D-arabino-hex-1-enitol*, *D-Rhamnal*, *6-Deoxy-D-glucal*, *6-Deoxy-D-mannal*

[78086-61-0]

Solid.

Di-Ac: *3,4-Di-O-acetyl-D-rhamnal*

[76739-66-7]

 $C_{10}H_{14}O_5$ 214.218Syrup. $[\alpha]_D^{20}$ -76.4 (c, 0.28 in $CHCl_3$).*3-Me*: *3-O-Methyl-D-rhamnal*, *6-Deoxy-3-O-methyl-D-glucal* $C_7H_{12}O_3$ 144.17Mp 26°. Bp_{0.03} 47-49°. $[\alpha]_D^{14}$ -75.6 (c, 5.3 in H_2O). CAS no. not found 8-14CI.*3-Me, 4-Ac*: *4-O-Acetyl-6-deoxy-3-O-methyl-D-glucal* $C_9H_{14}O_4$ 186.207Bp_{0.03} 45-50°. $[\alpha]_D^{16}$ -32.6 (c, 4.8 in Me_2CO). CAS no. not found 8-14CI.**(2R,3S,4S)-form** *1,5-Anhydro-2,6-dideoxy-D-ribo-hex-1-enitol*, *1,2,6-Trideoxy-D-ribo-**hex-1-enopyranose*, *6-Deoxy-D-allal*, *D-Digitoxal*

[69515-54-4]

Cryst. ($CHCl_3$ /hexane). Mp 118-119°. $[\alpha]_D^{20}$ +323 (H_2O).*3,4-Di-Ac*: *3,4-Di-O-acetyl-1,5-anhydro-1,6-dideoxy-D-ribo-hex-1-enitol*, *3,4-Di-O-acetyl-1,2,6-trideoxy-D-ribo-hex-1-enopyranose*, *3,4-Di-O-acetyl-6-deoxy-D-allal*

[69483-67-6]

 $C_{10}H_{14}O_5$ 214.218Mp 47-50°. $[\alpha]_D^{20}$ +387 ($CHCl_3$).*3,4-Bis(4-nitrobenzoyl)*:Cryst. (Et_2O). Mp 143-144°. $[\alpha]_D^{20}$ +389.*4-Me ether*, *3-O-[2,6-dideoxy-3-O-methyl-β-D-arabino-hexopyranosyl-(1→4)-2,6-dideoxy-β-D-ribo-hexopyranoside]*:**Maryal**

[230973-11-2]

 $C_{20}H_{34}O_9$ 418.483Constit. of the dried twigs of *Marsdenia roylei*. $[\alpha]_D^{20}$ +185 (c, 0.27 in $CHCl_3$).**(2S,3R,4R)-form** *2,6-Anhydro-1,5-dideoxy-L-ribo-hex-5-enitol*, *L-Digitoxal*

[80483-21-2]

Cryst. ($CHCl_3$ /hexane). Mp 117°. $[\alpha]_D^{20}$ -319.6 (c, 1.0 in $MeOH$).**(2S,3R,4S)-form** [53657-42-4]Solid (C_6H_6). Mp 74-75°. $[\alpha]_D^{20}$ -21 (c, 2 in $CHCl_3$). $[\alpha]_D^{20}$ +45 (H_2O). The positive opt. rotn. is from the older lit. It may be due to solvent dependence.*4-O-β-D-Glucopyranoside*: **Sapopyroside**

[81793-76-2]

 $C_{12}H_{20}O_8$ 292.285Isol. from *Saponaria officinalis* and *Dianthus superbus* var. *longicalycinus*. Prisms or needles ($EtOH/EtOAc$).Mp 179°. $[\alpha]_D^{20}$ -64 (c, 1.0 in H_2O).*3-Ac*: *3-O-Acetyl-L-rhamnal*

[95475-49-3]

 $C_8H_{12}O_4$ 172.18Syrup. $[\alpha]_D^{25}$ +21 (c, 2.0 in $CHCl_3$).*4-Ac*: *4-O-Acetyl-L-rhamnal*

[95475-50-6]

 $C_8H_{12}O_4$ 172.18Syrup. $[\alpha]_D^{25}$ -41 (c, 1.5 in $CHCl_3$).*Di-Ac*: *3,4-Di-O-acetyl-L-rhamnal*

[34819-86-8]

 $C_{10}H_{14}O_5$ 214.218Oil. $[\alpha]_D^{20}$ +63 (tetrachloroethane).*3-Benzoyl*: *3-O-Benzoyl-L-rhamnal*

[104006-65-7]

 $C_{13}H_{14}O_4$ 234.251Needles (C_6H_6 /cyclohexane).Mp 64-65°. $[\alpha]_D^{25}$ +120 (c, 1.0 in $CHCl_3$).*4-Benzoyl*: *4-O-Benzoyl-L-rhamnal*

[104069-01-4]

 $C_{13}H_{14}O_4$ 234.251Cryst. (Et_2O /hexane). Mp 76°. $[\alpha]_D^{25}$ -79 (c, 1.0 in $CHCl_3$).*3,4-Dibenzoyl*: *3,4-Di-O-benzoyl-L-rhamnal* [34820-21-8] $C_{20}H_{18}O_5$ 338.359Syrup. $[\alpha]_D^{23}$ +229 (c, 1.2 in $CHCl_3$).*3-Me*: *3-O-Methyl-L-rhamnal*, *6-Deoxy-3-O-methyl-L-glucal*, *L-Oleandral*

[112042-01-0]

 $C_7H_{12}O_3$ 144.17Needles. Mp 25°. $[\alpha]_D^{20}$ +75 (c, 1.2 in H_2O).*3-Me, 4-Ac*: *4-O-Acetyl-3-O-methyl-L-rhamnal*

[101665-43-4]

 $C_9H_{14}O_4$ 186.207 $[\alpha]_D^{20}$ +32 (c, 2.0 in Me_2CO).*3-Me, 4-benzoyl*: *1,5-Anhydro-4-O-benzoyl-2,6-dideoxy-3-O-methyl-L-arabino-hex-1-enitol*

[74920-14-2]

 $C_{14}H_{16}O_4$ 248.278 $[\alpha]_D^{20}$ +89.7 (c, 0.7 in $MeOH$).**(2S,3S,4R)-form***2,6-Anhydro-1,5-dideoxy-D-xylo-hex-5-enitol*, *9CI*, *6-Deoxy-L-gulal*

[80483-17-6]

 $[\alpha]_D^{20}$ -134 (c, 5.5 in H_2O).*3,4-Di-Ac*: *3,4-Di-O-acetyl-1,5-anhydro-2,6-dideoxy-L-xylo-hex-1-enitol*

[80483-15-4]

 $C_{10}H_{14}O_5$ 214.218Needles (Et_2O /petrol). Mp 79-80°. $[\alpha]_D^{20}$ -291 (c, 2.6 in Me_2CO).*4-Me*: *1,5-Anhydro-2,6-dideoxy-4-O-methyl-L-xylo-hex-1-enitol*, *2,6-Anhydro-1,5-dideoxy-3-O-methyl-D-xylo-hex-5-enitol*, *9CI*, *6-Deoxy-4-O-methyl-L-gulal*

[65981-48-8]

 $C_7H_{12}O_3$ 144.17Liq. $[\alpha]_D^{23}$ -121.5 (c, 1.4 in $CHCl_3$).**(2S,3S,4S)-form** *L-Fucal*, *6-Deoxy-L-galactal*

[80483-16-5]

Cryst. (C_6H_6). Mp 70-72°. $[\alpha]_D^{15}$ +10.4 (c, 1.4 in Me_2CO).*4-O-β-D-Glucopyranoside*: **Barbapypside**

[94323-77-0]

 $C_{12}H_{20}O_8$ 292.285Isol. from *Dianthus barbatus* and *Dianthus deltoides*. Prisms or needles.Mp 215°. $[\alpha]_D^{20}$ -24 (c, 1.0 in H_2O).*Di-Ac*: *3,4-Di-O-acetyl-L-fucal*

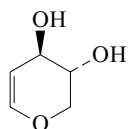
[54621-94-2]

Mp 49-50°. Bp_{0.02} 68-69°. $[\alpha]_D^{19}$ +9.9 (c, 1.0 in Me_2CO).*Aldrich Library of 13C and 1H FT NMR Spectra*, 1992, **1**, 1058C (nmr)Bergmann, M. *et al.*, *Ber.*, 1921, **54**, 440-455 (*L-Rhamnal*, *L-Rhamnal di-Ac*, synth)Micheel, F. *et al.*, *Ber.*, 1930, **63**, 347-359 (*D-Rhamnal di-Ac*, *D-Allal*, *D-Allal di-Ac*)Iselin, B. *et al.*, *Helv. Chim. Acta*, 1944, **27**,1200-1203 (*L-Fucal*, synth, *L-Fucal di-Ac*)Vischer, E. *et al.*, *Helv. Chim. Acta*, 1944, **27**,1332-1345 (*3-Methyl-D-rhamnal*, *3-Methyl-D-rhamnal 4-Ac*)Meyer, A.S. *et al.*, *Helv. Chim. Acta*, 1946, **29**,139-152 (*6-Deoxy-L-gulal*, *6-Deoxy-L-gulal di-Ac*)Blindenbacher, F. *et al.*, *Helv. Chim. Acta*, 1948, **31**,2061-2064 (*3-Methyl-L-rhamnal*, *3-Methyl-L-rhamnal 4-Ac*)Zorbach, W.W. *et al.*, *J.O.C.*, 1962, **27**, 1474-1477 (*D-Allal bisnitrobenzoyl*)El Khadem, H.S. *et al.*, *Carbohydr. Res.*, 1977, **58**,230-234 (*L-Fucal di-Ac*)Thiem, J. *et al.*, *Chem. Ber.*, 1980, **113**, 955-969 (*D-Allal*, *D-Allal di-Ac*)Ireland, R.E. *et al.*, *J.O.C.*, 1980, **45**, 48-61 (*4-Methyl-L-gulal*)Shimizu, M. *et al.*, *Phytochemistry*, 1982, **21**,245-247 (*Sapopyroside*)

- Fraser-Reid, B. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 105-114 (*D*-Rhamnal di-Ac)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1985, **144**, 317-324 (*L*-Rhamnal Ac, Benzoyl-*L*-rhamnal, *L*-Rhamnal di-Ac, Dibenzoyl-*L*-rhamnal, *cmr*)
 Czernecki, S. *et al.*, *J.O.C.*, 1986, **51**, 5472-5475 (*L*-Rhamnal, *synth*)
 Plouvier, G. *et al.*, *Phytochemistry*, 1986, **25**, 546-548 (*Barbapryoside*, *Sapopyroside*)
 Köpper, S. *et al.*, *Annalen*, 1987, 531-535 (*L*-Allal)
 Tolman, R.L. *et al.*, *Carbohydr. Res.*, 1989, **189**, 113-122 (*Allal*, *Oleandral*, *synth*)
 Berkowitz, D.B. *et al.*, *J.A.C.S.*, 1992, **114**, 4518-4529 (*D*-Fucal, *D*-Fucal di-Ac, *L*-Fucal di-Ac, *synth*, *pmr*, *ir*, *ms*)
 Bredenkamp, M.W. *et al.*, *Synth. Commun.*, 1992, **22**, 2459-2477 (*L*-Rhamnal, *synth*, *ir*, *pmr*, *cmr*, *ms*)
 Shull, B.K. *et al.*, *J. Carbohydr. Chem.*, 1996, **15**, 955-964 (*L*-form di-Ac, *synth*)
 Van Heerden, F.R. *et al.*, *Synth. Commun.*, 1998, **28**, 3345-3357 (*3,4*-Dibenzoyl-*L*-rhamnal, *synth*)
 Kumar, A. *et al.*, *Phytochemistry*, 1999, **50**, 1353-1357 (*Maryal*)

3,4-Dihydro-2H-pyran-3,4-diol D-680

1,2-Dideoxypent-1-enopyranose, 8CI. *1,5*-Anhydro-2-deoxypent-1-enitol. *3,4*-Dihydro-3,4-dihydroxy-2H-pyran



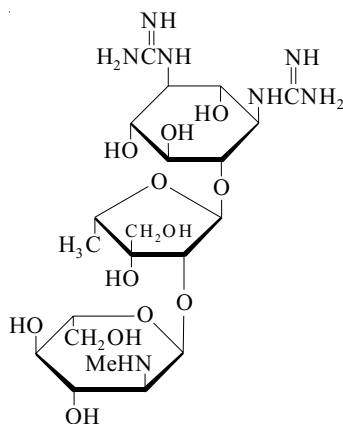
$C_5H_8O_3$ 116.116

(3R,4R)-form

- D*-threo-form. *D*-Xylal. *D*-Lyxal
 [496-62-8]
 Prisms (EtOH/Et₂O). Mp 51°. Bp_{0.05} 100-105°. $[\alpha]_D^{25}$ -259 (c, 1.0 in H₂O). Has sweet taste followed by bitter aftertaste.
4-Ac: *4*-O-Acetyl-*1,5*-anhydro-2-deoxy-*D*-threo-pent-1-enitol. *4*-O-Acetal-*D*-xylal [115344-45-1]
 $C_7H_{10}O_4$ 158.154
 No phys. props. reported.
Di-Ac: *3,4*-Di-O-acetyl-*1,5*-anhydro-2-deoxy-*D*-threo-pent-1-enitol. *3,4*-Di-O-acetyl-*D*-xylal [3152-43-0]
 $C_9H_{12}O_5$ 200.191
 Mp 40°. $[\alpha]_D^{25}$ -314.7 (CHCl₃).
3,4-Di-Me: *3,4*-Dihydro-3,4-dimethoxy-2H-pyran. *3,4*-Di-O-methyl-*D*-xylal
 $C_7H_{12}O_3$ 144.17
 Liq. Bp₁₇ 73° approx. $[\alpha]_D^{20}$ -180 (CHCl₃).
 Levene, P.A. *et al.*, *J. Biol. Chem.*, 1929, **83**, 803 (*synth*)
 Haworth, W.N. *et al.*, *J.C.S.*, 1937, 780 (*struct*)
 Overend, W.G. *et al.*, *J.C.S.*, 1950, 1027 (*synth*)
 Helfferich, B. *et al.*, *Chem. Ber.*, 1954, **87**, 1488 (*di*-Ac)
 Bouhroum, S. *et al.*, *Tet. Lett.*, 1987, **28**, 5529 (*4*-Ac)

Dihydrostreptomycin, BAN, INN

Abiicine. *Citrocin*. *Dihydrostrep. Hydrosin*. *Mycin*. *Vibriomycin*. *DST*. M43-05026. Many other names [128-46-1]



$C_{21}H_{41}N_7O_{12}$ 583.595

Aminoglycoside antibiotic. Isol. from *Streptomyces humidus* and obt. by redn. of streptomycin. Broad-spectrum antibacterial agent, restricted to veterinary use due to likely ototoxicity. Sol. H₂O; poorly sol. butanol, hexane. Log P -7.25 (uncertain value) (calc).

- Human and exp. teratogenic effects. LD₅₀ (rat, ivn) 200 mg/kg; LD₅₀ (mus, ivn) 200 mg/kg. WK2450000

Hydrochloride (1:3): [6533-54-6]

Cryst. (MeOH). Mp 190-195° dec. $[\alpha]_D^{25}$ -95.

Sulfate (1:1.5): **Dihydrostreptomycin sulfate, USAN**. *Sol*-Mycin. *Streptomagma*. *Didromycine* [5490-27-7]

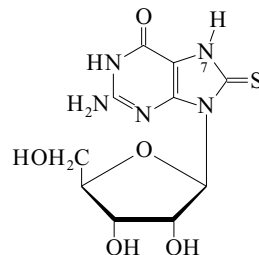
Cryst. (MeOH aq.). $[\alpha]_D^{17}$ -85 (c, 0.1 in H₂O). Dec. at 255-265°. Component of Diathal and Azimycin.

- WK2236000

- Peck, R.L. *et al.*, *J.A.C.S.*, 1946, **68**, 1390 (*synth*)
 Bartz, Q.R. *et al.*, *J.A.C.S.*, 1946, **68**, 2163 (*synth*)
 Tatsuoaka, S. *et al.*, *Chem. Pharm. Bull.*, 1957, **5**, 343 (*isol*)
 Schlessinger, D. *et al.*, *Antibiotics (N.Y.)*, 1975, **3**, 535 (rev)
 Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1975, **48**, 568 (*synth*, *pmr*)
 Yamasaki, T. *et al.*, *J. Antibiot.*, 1978, **31**, 1233 (*synth*, *pmr*)
 Wallace, B.J. *et al.*, *Antibiotics (N.Y.)*, 1979, **5**, 272 (*pharmacol*, rev)
 Umezawa, S. *et al.*, *Jpn. J. Antibiot.*, (Suppl.), 1979, **32**, S60 (*synth*, rev)
 Nichols, W.W. *et al.*, *Biochim. Biophys. Acta*, 1987, **895**, 11 (*pharmacol*, rev)
 Kimitsuki, T. *et al.*, *Brain Res.*, 1993, **624**, 143 (*ototoxicity*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 159
 Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 8770 (*synonyms*)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DME000

7,8-Dihydro-8-thioxoguanosine, 9CI

D-682



$C_{10}H_{13}N_5O_5S$ 315.309

7-Me: *7,8*-Dihydro-7-methyl-8-thioxoguanosine [127794-14-3]

$C_{11}H_{15}N_5O_5S$ 329.336

Shows antiviral activity. Amorph. solid.

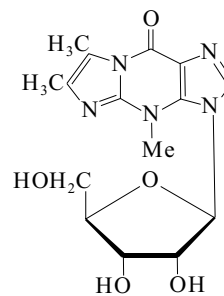
Henry, E.M. *et al.*, *J. Med. Chem.*, 1990, **33**, 2127 (*synth*, *pmr*, *cmr*, *use*)

3,4-Dihydro-4,6,7-trimethyl-3-β-D-ribofuranosyl-9H-imidazo[1,2-a]purin-9-one, 9CI

D-683

MimG

[108274-04-0]



$C_{15}H_{19}N_5O_5$ 349.346

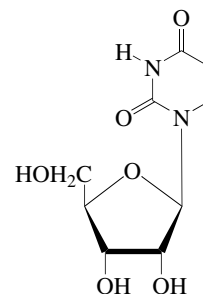
Isol. from *Sulfolobus solfataricus*, *Thermoproteus neutrophilus* and *Pyrodicticum occultum*. No phys. props. reported.

McCloskey, J.A. *et al.*, *Nucleic Acids Res.*, 1987, **15**, 683 (*isol*, *struct*)

5,6-Dihydrouridine

D-684

5,6-Dihydro-1-β-*D*-ribofuranosyluracil [5627-05-4]



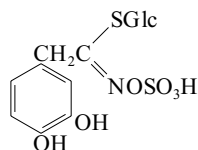
$C_9H_{14}N_2O_6$ 246.219

Modified nucleoside present in tRNAs. Needles (MeOH).

Mp 101–103° (dec.). $[\alpha]_D^{20}$ -36.8 (c, 2 in H₂O).
 Cerutti, P. *et al.*, *J.A.C.S.*, 1968, **90**, 771 (*synth*)
 Sundaralingam, M. *et al.*, *J.A.C.S.*, 1971, **93**, 7055 (*cryst struct*)
 Suck, D. *et al.*, *Acta Cryst. B*, 1972, **28**, 596 (*cryst struct*)
 Pfeleiderer, W. *et al.*, *Annalen*, 1981, 1568 (*synth*)
 Smith, D.L. *et al.*, *Biomed. Mass Spectrom.*, 1983, **10**, 269 (*ms*)
 Crow, F.W. *et al.*, *Anal. Biochem.*, 1984, **139**, 243 (*ms*)
 Davis, D.R. *et al.*, *J. Biol. Chem.*, 1986, **261**, 3584 (*occurs*, *N-15 nmr*)

3,4-Dihydroxybenzyl glucosinolate D-685

1-Thio-β-D-glucopyranose 1-[3,4-dihydroxy-N-(sulfooxy)benzeneethanimidate], 9CI. *Glucomatrolin*
 [31297-64-0]



C₁₄H₁₉NO₁₁S₂ 441.436
 Present in leaves of *Bretschneidera sinensis*.

3-Me ether: 4-Hydroxy-3-methoxybenzyl glucosinolate
 [88162-42-9]
 C₁₅H₂₁NO₁₁S₂ 455.463

Present in seeds of *Brassica elongata*.

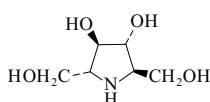
Di-Me ether: 3,4-Dimethoxybenzyl glucosinolate. *Veratryl glucosinolate*
 [88162-43-0]
 C₁₆H₂₃NO₁₁S₂ 469.49

Present in seeds of *Heliphila longifolia* and *Brassica elongata*.

Ettlinger, M.G. *et al.*, *Acta Chem. Scand.*, 1966, **20**, 1778 (*occurs*)
 Schroeder, W.P. *et al.*, *J. Nat. Prod.*, 1983, **46**, 667 (*occurs*)
 Boufford, D.F. *et al.*, *Biochem. Syst. Ecol.*, 1989, **17**, 375 (*occurs*)

3,4-Dihydroxy-2,5-bis(hydroxymethyl)pyrrolidine D-686

3,4-Dihydroxy-2,5-pyrrolidinedimethanol, 9CI
 [59920-31-9]



(2R,3R,4R,5R)-form

C₆H₁₃NO₄ 163.173

(2R,3R,4R,5R)-form

2,5-Dideoxy-2,5-imino-D-mannitol
 Alkaloid from the leaves of *Derris elliptica* and the seeds of *Lonchocarpus sericeus* (Leguminosae). Glycosidase inhibitor.
 Cryst. (EtOH/Me₂CO/EtOAc).
 Mp 115–117°. $[\alpha]_D^{20}$ +56.4 (c, 7 in H₂O).

(2S,3R,4R,5S)-form

2,5-Dideoxy-2,5-imino-D-glucitol
 Sl. yellow powder. Mp 139–142.5°. $[\alpha]_D^{23}$ +25.75 (c, 4.0 in H₂O).

(2S,3R,4R,5S)-form

2,5-Dideoxy-2,5-imino-L-itolol, 9CI
 [105015-44-9]
 Mp 161–162°. $[\alpha]_D$ +14.3 (c, 0.93 in H₂O).

(2S,3R,4S,5S)-form

L-altro-form. 2,5-Dideoxy-2,5-imino-L-altritol
 Yellow oil. C-3 and C-4 are pseudoasymmetric.
 Hydrochloride: [152785-78-9]
 Mp 191–192°. $[\alpha]_D^{22}$ -51 (c, 1.1 in H₂O).

(2R,3R,4SR,5SR)-form

allo-form. 2,5-Dideoxy-2,5-imino-allitol
 [368424-96-8]
 Hygroscopic gum. Obt. only in admixture with the D-altro isomer. Called D-allo- in the ref. although it is a meso-compd.

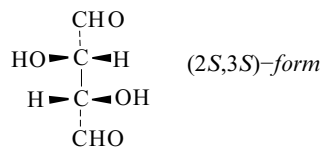
(2R,3SR,4RS,5SR)-form

all-cis-form. 2,5-Dideoxy-2,5-iminogalactitol
 Oil(?). Opt. inactive (meso-).

Welter, A. *et al.*, *Phytochemistry*, 1976, **15**, 747 (*isol*, *ir*, *pmr*, *cmr*, *ms*, *struct*)
 Lamotte-Brasseur, J. *et al.*, *Acta Cryst. B*, 1977, **33**, 409 (*cryst struct*)
 Fleet, G.W.J. *et al.*, *Tet. Lett.*, 1985, **26**, 1469 (*synth*, *abs config*)
 Shing, T.K.M. *et al.*, *Chem. Comm.*, 1987, 262 (*synth*)
 Hung, R.R. *et al.*, *J.O.C.*, 1991, **56**, 3849 (*synth*)
 Liu, K.K.C. *et al.*, *J.O.C.*, 1991, **56**, 6280 (*synth*)
 Zou, W. *et al.*, *Carbohydr. Res.*, 1993, **242**, 311 (*synth*)
 Legler, G. *et al.*, *Carbohydr. Res.*, 1993, **250**, 67 (*synth*)
 Wang, Y. *et al.*, *Angew. Chem., Int. Ed.*, 1994, **33**, 1242 (*synth*, *cryst struct*)
 Watson, A.A. *et al.*, *Phytochemistry*, 1997, **46**, 255 (*isol*, *props*)
 Huwe, C.M. *et al.*, *Synthesis*, 1997, 61 (*synth*, *pmr*, *cmr*, *L-altro*)
 Fechter, M.H. *et al.*, *Carbohydr. Res.*, 1999, **319**, 55–62 (*D-galacto*, *D-altro*, *L-altro*, *allo*, *synth*)
 Dondoni, A. *et al.*, *J.O.C.*, 2002, **67**, 7203–7214 (*gluco*, *manno*, *altro*, *allo*, *synth*, *pmr*)
 Wrodnigg, T.M. *et al.*, *Monatsh. Chem.*, 2002, **133**, 393–426 (*rev*, *isol*, *synth*, *activity*)
 Garcia, A.L.L. *et al.*, *Tet. Lett.*, 2003, **44**, 1553–1557 (*all-R-form*, *synth*)

2,3-Dihydroxybutanedial, 9CI D-687

Tartaric dialdehyde. Dihydroxysuccindialdehyde. Tartraldialdehyde. Tetrodialdose
 [34361-91-6]



(2S,3S)-form

C₄H₆O₄ 118.089

(2S,3S)-form

Monophenylhydrazone: Sol. EtOAc, spar. sol. H₂O, Et₂O. Mp 145° dec. $[\alpha]_D^{18}$ -183 (EtOH aq.).

α-Bisphenylhydrazone:

Platelets (EtOH aq.). Mp 177–179° dec. $[\alpha]_D^{20}$ -100 (Py).

β-Bisphenylhydrazone:

Platelets (AcOH/Py). Mp 195° dec. $[\alpha]_D$ -2 (Py).

(2RS,3SR)-form

meso-form
 [58066-70-9]

Bisphenylhydrazone:

Yellow prisms. Mp 197.5° dec.

Bis-2,4-dinitrophenylhydrazone:

[62729-38-8]

Cryst. (DMF aq.). Mp 213.5°.

[66213-22-7, 74111-90-3]

Wohl, A. *et al.*, *Ber.*, 1912, **45**, 322 (*synth*)

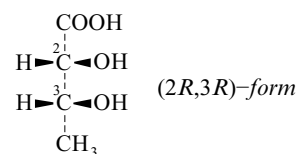
Bergmann, M. *et al.*, *Ber.*, 1921, **54**, 2651

(2S3S-form, hydrazone derivs)

Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1965, **18**, 1973 (*meso-bisphenylhydrazone*)

2,3-Dihydroxybutanoic acid, 9CI D-688

3-Methylglyceric acid. 4-Deoxytetriconic acid
 [3413-97-6]



(2R,3R)-form

C₄H₈O₄ 120.105

(2R,3R)-form

(-)-erythro-form. 4-Deoxy-D-erythronic acid

[15851-57-7]

$[\alpha]_D^{25}$ -9.5 (c, 1.0 in H₂O).

Et ester: [6982-48-5]

C₆H₁₂O₄ 148.158

Liq. $[\alpha]_D$ -10 (c, 1 in EtOH).

(2S,3S)-form

(+)-erythro-form. 4-Deoxy-L-erythronic acid

[23334-72-7]

$[\alpha]_D^{20}$ +10.3 (c, 3.2 in H₂O).

(2RS,3RS)-form

(±)-erythro-form

[36294-90-3]

Cryst. (EtOAc). Mp 81°.

Me ester:

C₅H₁₀O₄ 134.132

Bp₁₀ 109°.

Phenylhydrazide:

Cryst. (EtOAc). Mp 123.5°.

Di-Ac:

C₈H₁₂O₆ 204.179

Cryst. + H₂O (H₂O), oily liq. when anhyd. Mp 50°. Bp₄ 127° (anhyd.).

Di-Ac, chloride:

C₈H₁₁ClO₅ 222.625

Bp₃ 79°.

(2R,3S)-form

(+)-threo-form. 4-Deoxy-L-threonic acid

[105663-42-1]

$[\alpha]_D^{20}$ +15.9 (c, 2.1 in H₂O).

(2S,3R)-form

(-)-threo-form. 4-Deoxy-D-threonic acid

[15851-58-8]
[α]_D²⁵ -17.75 (c, 1.0 in H₂O).

(2R,3SR)-form

(\pm)-threo-form

[97275-68-8]
Prisms (H₂O). Mp 73-74°.

[759-06-8, 5057-95-4, 36183-26-3, 38410-83-2]

Meyer, C.E. *et al.*, *J. Biol. Chem.*, 1936, **115**, 721
(phenylhydrazide derivs)

Glattfeld, J.W.E. *et al.*, *J.A.C.S.*, 1938, **60**, 1384
(\pm)-erythro-form, (\pm)-erythro derivs)

Izumi, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1966, **39**,
2223 ((+)-erythro-form, (+)-threo-form)

Bachelor, F.W. *et al.*, *Can. J. Chem.*, 1967, **45**,

79; 1969, **47**, 4089 ((-)-erythro-form, (-)-
threo-form, (\pm)-erythro-form, (\pm)-threo-
form, synth, abs config)

Viscontini, M. *et al.*, *Helv. Chim. Acta*, 1972,
55, 570 ((\pm)-erythro-form)

Sakai, T. *et al.*, *Chem. Pharm. Bull.*, 1986, **59**,
3185-3188 ((+)-threo-form, (+)-erythro-
form)

Solladié, G. *et al.*, *Eur. J. Org. Chem.*, 2000,
357-364 (Et ester)

1,4-Dihydroxy-2-butanone, 9CI D-689

[140-86-3]

HOCH₂CH₂COCH₂OH

C₄H₈O₃ 104.105

Bp_{0.5} 108-110°.

4-Me ether: 1-Hydroxy-4-methoxy-2-
butanone

[58177-21-2]

C₅H₁₀O₃ 118.132

Bp_{3.6} 71°.

Di-Me ether: 1,4-Dimethoxy-2-butanone

[25680-86-8]

C₆H₁₂O₃ 132.159

Bp₁₇ 83-85°.

Hennion, G.F. *et al.*, *J.O.C.*, 1953, **18**,

1601-1609 (synth)

Reppe, W. *et al.*, *Annalen*, 1955, **596**, 63 (synth)

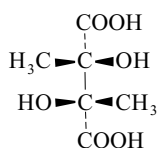
2,3-Dihydroxy-2,3-dimethyl- D-690

butanedioic acid, 9CI

2,3-Dimethyltartaric acid, 8CI, 2,3-

Dihydroxy-2,3-dimethylsuccinic acid

[74543-88-7]



(2R,3R)-form

C₆H₁₀O₆ 178.141

(2R,3R)-form

Mp 160°. [α]_D²⁰ -13.4 (c, 4 in H₂O).

(2S,3S)-form

Mp 158°. [α]_D²⁰ +13.4 (c, 4.0 in H₂O).

(2RS,3RS)-form

(\pm)-form

Mp 185-186°.

(2RS,3SR)-form

meso-form

Mp 179-180°.

Bailey, W.J. *et al.*, *J.O.C.*, 1963, **28**, 828 (synth)

Izumi, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1966, **39**,
361; 602 (synth, resoln)

Muroi, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969,
42, 2948 (synth)

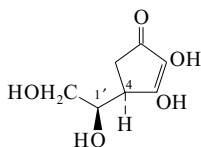
Hahs, S.K. *et al.*, *Chem. Comm.*, 1974, 791 (abs
config)

Katsaros, N. *et al.*, *Tet. Lett.*, 1979, 4319 (synth)

Duesler, E.N. *et al.*, *Acta Cryst. C*, 1984, **40**,
1286; 1887 (cryst struct)

4-(1,2-Dihydroxyethyl)-2,3-di- D-691

hydroxy-2-cyclopenten-1-one, 9CI



(1'RS,4RS)-form

C₇H₁₀O₅ 174.153

(1'RS,4RS)-form

Carbaascorbic acid

[170649-43-1] Carbocyclic analogue of

Ascorbic acid, A-868 (racemate).

Cryst. (1-butanol/MeOH). Mp 165° dec.

(1'RS,4SR)-form

Carbaisoascorbic acid

[170649-44-2]

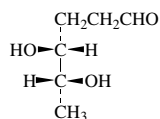
Cryst. (MeOH aq.). Mp 163° dec.

Schachtner, J. *et al.*, *Tetrahedron*, 1995, **51**, 9005

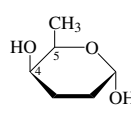
(synth, uv, pmr, cmr, cryst struct)

4,5-Dihydroxyhexanal, 9CI D-692

2,3,6-Trideoxyhexose



(4R,5R)-form



α -Pyranose-form

C₆H₁₂O₃ 132.159

(4R,5R)-form

D-threo-form

Bp_{0.1} 60-65° (bath). [α]_D -0.2 (H₂O).

2,4-Dinitrophenylhydrazones: Mp 121-122°.

[α]_D +13.7 (c, 0.9 in Py).

(4S,5S)-form

L-threo-form. Rhodnose

[35903-48-1]

A component of Rhodomycin, Streptoly-
digin, S-82 and Granaticin B.

[α]_D²⁵ -11 (c, 1.1 in Me₂CO).

2,4-Dinitrophenylhydrazones: [35775-20-3]

Mp 116-118°. [α]_D²⁰ -17 (c, 0.83 in Py).

(4S,5R)-form

D-erythro-form. Amicetose

Fragment of the struct. of Amicetin, A-

119. Bp_{0.1} 70-80° (bath). [α]_D +28.6 (H₂O).

[α]_D²² +43.6 (c, 1.0 in Me₂CO).

2,4-Dinitrophenylhydrazones:

Needles (MeOH/C₆H₆). Mp 154-155°

(152-153°). [α]_D -9.8 (Py).

Di-Me acetal, di-Ac: 4,5-Diacetoxy-1,1-

dimethoxyhexane

C₁₂H₂₂O₆ 262.302

Oil. [α]_D -1.7 (c, 1.0 in CHCl₃).

α -Me pyranoside: Methyl 2,3,6-trideoxy- α -
D-erythro-hexopyranoside. Methyl α -
amicetoside

C₇H₁₄O₃ 146.186

Bp₃ 55-60° (bath). [α]_D²⁵ +75.1 (c, 0.87 in
H₂O). [α]_D¹⁸ +142 (c, 1.2 in H₂O).

α -Me pyranoside, 4-(3,5-dinitrobenzoyl):

Platelets (MeOH). Mp 100-101°.

[α]_D +134 (c, 0.4 in CHCl₃).

α -Et pyranoside: Ethyl 2,3,6-trideoxy- α -D-
erythro-hexopyranose

C₈H₁₆O₃ 160.213

Bp_{0.2} 53-55°. [α]_D²¹ +144 (c, 1.0 in
CHCl₃).

Stevens, C.L. *et al.*, *J.O.C.*, 1962, **27**, 2991;

J.A.C.S., 1964, **86**, 3592

v. Barcza, S. *et al.*, *Helv. Chim. Acta*, 1966, **49**,
1736 (L-threo-form, isol)

Albano, E.L. *et al.*, *J.O.C.*, 1969, **34**, 3519 (α -D-
erythro-Me pyr, α -D-erythro-Me pyr

dinitrobenzoyl)

Butterworth, R.F. *et al.*, *Adv. Carbohydr. Chem.*
Biochem., 1971, **26**, 279 (rev, derivs)

Bethell, G.S. *et al.*, *J.C.S. Perkin I*, 1973, 1400

(α -D-erythro-Me pyr, α -D-erythro-Me pyr

dinitrobenzoyl)

Brockmann, H. *et al.*, *Tet. Lett.*, 1973, 3699;

1975, 831 (L-threo-form, isol)

Knollmann, R. *et al.*, *Chem. Ber.*, 1975, **108**,

2021 (L-threo-form, synth, pmr)

Collins, P.M. *et al.*, *Chem. Comm.*, 1977, 927,

(α -D-erythro-Me pyr)

Berti, G. *et al.*, *Carbohydr. Res.*, 1983, **124**, 35

(synth)

Kelly, T.R. *et al.*, *J.O.C.*, 1983, **48**, 2775,

(L-threo-form, synth)

Marco, J.L. *et al.*, *Synth. Commun.*, 1989, **19**,

485 (D-erythro-form, synth)

Dondoni, A. *et al.*, *Tetrahedron*, 1989, **45**, 5141

(L-threo-form, synth)

Herczegh, P. *et al.*, *Annalen*, 1991, 599,

(D-threo- and L-threo-forms, synth)

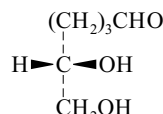
Regeling, H. *et al.*, *Carbohydr. Res.*, 1991, **216**, 79

Lajšić, S. *et al.*, *Carbohydr. Res.*, 1992, **233**, 261

(D-erythro-form, synth)

5,6-Dihydroxyhexanal D-693

2,3,4-Trideoxyhexose



C₆H₁₂O₃ 132.159

(R)-form

D-form

[74720-50-6]

[α]_D²⁰ +37 (H₂O).

2,4-Dinitrophenylhydrazones: [136963-35-4]

Cryst. (1,2-dimethoxyethane/toluene).

Mp 106-108°. [α]_D -8 (c, 0.4 in Py).

5,6-Isopropylidene: 2,2-Dimethyl-1,3-

dioxolane-4-butanal

[131064-72-7]

C₉H₁₆O₃ 172.224

Bp_{0.4} 100°. [α]_D +16 (c, 1 in CHCl₃).

(S)-form L-form

[74720-51-7]

[α]_D²⁰ -41 (H₂O).

David, S. *et al.*, *J.C.S. Perkin I*, 1974, 2274;

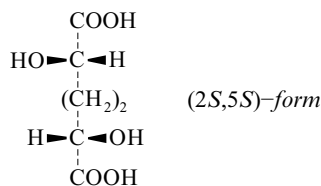
1979, 1795 (D-form, L-form)

Regeling, H. *et al.*, *Carbohydr. Res.*, 1991, **216**,

79 (isopropylidene, pmr)

2,5-Dihydroxyhexanedioic acid, 9CI

2,5-Dihydroxyadipic acid, 3,4-Dideoxyhexaric acid
[13544-77-9]



C₆H₁₀O₆ 178.141

(2S,5S)-form

Needles (Me₂CO/CHCl₃). Mp 157° dec. [α]_D¹⁶ +3.8 (H₂O). Abs. config. based on rotational comparisons and may not be reliable.

Diisopropyl ester:

C₁₂H₂₂O₆ 262.302
Cryst. (hexane). Mp 53.5-54.5°. [α]_D²⁵ -17.3 (c, 1.6 in CHCl₃).

Diamide:

C₆H₁₂N₂O₄ 176.172
Cryst. (Py). Mp 164°.

Di-Ac:

C₁₀H₁₄O₈ 262.216
Cryst. (Me₂CO/petrol). Mp 159° dec.

(2RS,5RS)-form

(±)-form
Plates (Me₂CO/CHCl₃). Mp 146°.

Diamide: Mp 177° dec.

Dianilide:

C₁₈H₂₀N₂O₄ 328.367
Plates (EtOH). Mp 186°.

(2RS,5SR)-form

meso-form
[20221-46-9]
Plates (EtOH). Mp 174°.

Di-Me ester:

C₈H₁₄O₆ 206.195
Needles (C₆H₆/petrol). Mp 89°.

Diamide: [20221-48-1]
Plates (H₂O). Mp 243° dec.

Dianilide:

Plates (EtOH). Mp 216°.

Di-Ac, di-Me ester: [20221-49-2]

C₁₂H₁₈O₈ 290.269
Cryst. (C₆H₆). Mp 130°.

Di-Me ether, di-Me ester:

C₁₀H₁₈O₆ 234.249
Cryst. (petrol). Mp 53°.

[20221-44-7, 20221-47-0, 120849-46-9]

Le Sueur, H.R. *et al.*, *J.C.S.*, 1908, **93**, 716,
((±)-form, (±)-diamide, (±)-dianilide,
meso-form, meso-di-Me ester, meso-diamide,
meso-dianilide)

Freudenberg, K. *et al.*, *Annalen*, 1934, **510**, 206
(2SSS-form, synth, resoln, abs config)

Schmidt, O.T. *et al.*, *Ber.*, 1941, **74**, 33 (meso-di-

Me ester di-Me ether)

Gryszkiewicz-Trochimowski, E. *et al.*, *Bull. Soc.*

Chim. Fr., 1958, 603 (meso-form, synth)

Brettie, R. *et al.*, *J.C.S.(C)*, 1968, 906,

((±)-form, meso-form, meso-di-Me ester

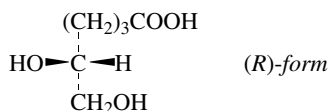
di-Ac, meso-diamide)

Burns, C.J. *et al.*, *J.O.C.*, 1989, **54**, 2826,

(2SSS-diisopropyl ester)

5,6-Dihydroxyhexanoic acid

2,3,4-Trideoxyhexonic acid
[51460-81-2]



C₆H₁₂O₄ 148.158

(R)-form

Lactone: 6-(Hydroxymethyl)tetrahydro-2H-pyran-2-one, 9CI. 5-(Hydroxymethyl)-δ-valerolactone
[160226-44-8]

C₆H₁₀O₃ 130.143
[α]_D²⁵ -32 (c, 1.3 in CHCl₃).

(S)-form

Me ester: [103367-32-4]

C₇H₁₄O₄ 162.185
Oil. [α]_D²⁰ -26.7 (c, 4.8 in EtOH).

Et ester:

C₈H₁₆O₄ 176.212
[α]_D²⁰ -14.1 (c, 2.0 in EtOH).

5,6-Isopropylidene, Me ester:

C₁₀H₁₈O₄ 202.25
[α]_D +15 (CHCl₃) (+6.7).

Lactone: [89408-86-6] Bp_{0.5} 130-140°. [α]_D²⁰ +34.5 (c, 0.6 in CHCl₃) (98% ee).

Lactone, Ac: [122804-27-7]

C₈H₁₂O₄ 172.18
[α]_D²⁰ +30 (c, 0.98 in CCl₄).

(±)-form [122804-25-5]

Liq. Lactonises on distillation.

Nitrile: 5-Cyano-1,2-pentanediol
[133775-61-8]

C₆H₁₁NO₂ 129.158
Pale yellow syrup.

Lactone: [122872-98-4]

[81683-96-7]

C₆H₁₀O₃ 130.143

No. phys. props. reported.

Murahashi, S.-I. *et al.*, *Tet. Lett.*, 1981, **52**,

5327-5330 (lactone, (±)-form, synth)

Corey, E.J. *et al.*, *Tet. Lett.*, 1983, **24**, 4883-4886
(lactone, S-form, synth)

Gerth, D.B. *et al.*, *J.O.C.*, 1986, **51**, 3726-3729
(lactone, S-form, synth, pmr)

Pianetti, P. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**,
811-815 (lactone, (±)-form, S-form, synth,
lactone Ac)

Regeling, H. *et al.*, *Carbohydr. Res.*, 1991, **216**,
79 (isopropylidene Me ester)

de Raadt, A. *et al.*, *J.C.S. Perkin 1*, 1992, 137
(nitrile)

Sugita, Y. *et al.*, *J.C.S. Perkin 1*, 1992,
2855-2861 (S-form, lactone, synth, bibl)

Coutrot, Ph. *et al.*, *Tet. Lett.*, 1994, **35**,

8381-8384 (lactone, R-form, S-form, synth)

Liu, Z.Y. *et al.*, *J.C.S. Perkin 1*, 2000, 3519-3521
(S-form, lactone, synth, ir, pmr, ms)

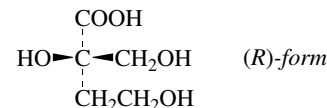
2,4-Dihydroxy-2-(hydroxymethyl)butanoic acid, 9CI

3-Deoxy-2-C-hydroxymethyltetronic acid.

Xyloisaccharinic acid

[80620-03-7]

[29706-64-7]

D-696

C₅H₁₀O₅ 150.131

A major degradn. prod. of wood xylan. Individual enantiomers are not well characterised and it is not clear which enantiomer occurs naturally.

(RS)-form**DL-form**

Lactone: Dihydro-3-hydroxy-3-(hydroxymethyl)-2-(3H)-furanone. 3-Deoxy-2-C-hydroxymethyltetrono-1,4-lactone.

Xyloisaccharinic acid lactone

[19444-86-1]

C₅H₈O₄ 132.116

Cryst. (EtOAc). Mp 95.5-96.1°.

Aspinall, G.O. *et al.*, *J.C.S.*, 1956, 4807-4810

(DL-lactone, synth)

Aten, R. *et al.*, *Acta Chem. Scand., Ser. B*, 1980,
34, 387-388 (DL-lactone, ir, pmr, glc)

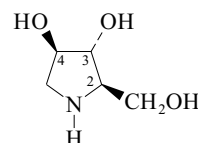
Alén, R. *et al.*, *Acta Chem. Scand.*, 1995, **49**,
536-539 (DL-lactone, cryst struct)

3,4-Dihydroxy-2-(hydroxymethyl)pyrrolidine**D-697**

1,4-Dideoxy-1,4-iminopentitol, 11CI. 2-

(Hydroxymethyl)-3,4-pyrrolidinediol,
12CI. DAB-1

[98632-49-6]



C₅H₁₁NO₃ 133.147

(2R,3R,4R)-form

1,4-Dideoxy-1,4-imino-D-arabinitol
[100937-52-8]

Isol. from *Arachniodes standishii* and
Angylocalyx spp. α-Glucosidase inhibitor.
Hygroscopic oil. [α]_D²⁰ +7.8 (c, 0.46 in
H₂O).

Hydrochloride: [100991-91-1]

Cryst. (Me₂CO aq.). Mp 107-111°.
[α]_D²⁵ -34.6 (c, 0.37 in H₂O).

1'-O-β-D-Glucopyranoside: 1,4-Dideoxy-
1,4-imino-5-O-β-D-glucopyranosyl-D-
arabinitol

C₁₁H₂₁NO₈ 295.289

Alkaloid from the pods of *Angylocalyx*
pynaertii.

[α]_D +40.1 (c, 0.16 in H₂O).

4-O-β-D-Glucopyranoside:

C₁₁H₂₁NO₈ 295.289

Alkaloid from leaves of *Morus bombycis*
(Moraceae). Powder. [α]_D -29.8 (c, 0.73
in H₂O).

N-(2-Hydroxyethyl): 3,4-Dihydroxy-1-(2-
hydroxyethyl)-2-(hydroxymethyl)pyrro-
lidine

C₇H₁₅NO₄ 177.2

Alkaloid from the pods of *Angylocalyx*
pynaertii.

[α]_D +54.7 (c, 0.38 in H₂O).

N-(3-Amino-3-oxopropyl): 3,4-Dihydroxy-2-hydroxymethyl-1-pyrrolidinepropanamide
 $C_8H_{16}N_2O_4$ 204.225
 Alkaloid from *Morus alba* (white mulberry).
 $[\alpha]_D -53.7$ (c, 0.41 in H_2O).

(2R,3R,4S)-form**1,4-Dideoxy-1,4-imino-D-ribitol**

[105990-41-8]

Alkaloid from roots of *Morus alba* (white mulberry) (Moraceae).
 Solid. $[\alpha]_D +42$ (c, 0.53 in H_2O).

Hydrochloride: [117781-12-1]

Cryst. Mp 128-132°. $[\alpha]_D^{20} +57.6$ (c, 0.5 in H_2O).

(2R,3S,4R)-form**1,4-Dideoxy-1,4-imino-D-lyxitol**

[100937-51-7] α -Galactosidase inhibitor.
 $[\alpha]_D^{20} -15.8$ (c, 0.14 in H_2O).

Hydrochloride: [100991-93-3]

Cryst. Mp 159-161°. $[\alpha]_D^{20} +19.8$ (c, 0.45 in H_2O).

(2R,3S,4S)-form**1,4-Dideoxy-1,4-imino-D-xylitol**

[97058-12-3]

Alkaloid from the bark of *Angylocalyx pynaerti*.

Hydrochloride: [101399-04-6]

Cryst. (EtOH/Me₂CO). Mp 127-129°. $[\alpha]_D^{20} +9.8$ (c, 0.6 in H_2O).

(2S,3R,4R)-form**1,4-Dideoxy-1,4-imino-L-xylitol. 2,5-****Dideoxy-2,5-imino-D-xylitol**

[105990-42-9]

Oil. $[\alpha]_D^{31} -4.1$ (c, 1.0 in H_2O).

Hydrochloride: [114488-33-4]

Cryst. (EtOH/Me₂CO). Mp 128-129°. $[\alpha]_D -9.9$ (c, 0.71 in H_2O).

(2S,3R,4S)-form**1,4-Dideoxy-1,4-imino-L-lyxitol**

[129568-47-4]

Hydrochloride: [129568-48-5]

Cryst. Mp 155-156°. $[\alpha]_D^{20} -18.4$ (c, 0.22 in H_2O).

(2S,3S,4R)-form**1,4-Dideoxy-1,4-imino-L-ribitol**

[105990-40-7]

Pale yellow solid. Mp 119-120°. $[\alpha]_D^{20} -53.9$ (c, 0.6 in H_2O).

Hydrochloride: [117770-01-1]

Cryst. Mp 126-131°. $[\alpha]_D^{20} -59$ (c, 0.59 in H_2O).

(2S,3S,4S)-form**1,4-Dideoxy-1,4-imino-L-arabinitol**

[100937-53-9]

$[\alpha]_D^{20} -12$ (c, 0.21 in MeOH).

Hydrochloride: [100991-91-1]

Cryst. (Me₂CO aq.). Mp 107-111°.

$[\alpha]_D^{25} -34.6$ (c, 0.37 in H_2O).

Furukawa, J. *et al.*, *Phytochemistry*, 1985, **24**,

593 (isol, pmr, cmr, ms, ord, config)

Nash, R.J. *et al.*, *Phytochemistry*, 1985, **24**, 1620

(isol, pmr, cmr, ms, struct)

Japan. Pat., 1986, 86 118 360 (1,4-Dideoxy-1,4-

imino-D-arabinitol)

Fleet, G.W.J. *et al.*, *Tetrahedron*, 1986, **42**, 5685; 1987, **43**, 3083; 1988, **44**, 2637; 2649 (synth, ir, pmr)

Setol, H. *et al.*, *Chem. Pharm. Bull.*, 1987, **35**, 3995 (synth, ir, pmr)

Ikota, N. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 1087; 3399 (synth)

Wehmer, V. *et al.*, *Angew. Chem., Int. Ed.*, 1990, **29**, 1169 (synth)

Dur  ault, A. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 121-123 (2S,3R,4S-form, synth)

Buchanan, J.G. *et al.*, *J.C.S. Perkin I*, 1990, 699 (synth)

Van der Klein, P.A.M. *et al.*, *Synth. Commun.*, 1992, **22**, 1763 (synth)

Asano, N. *et al.*, *Carbohydr. Res.*, 1994, **253**, 235; **259**, 243 (1,4-Dideoxy-1,4-imino-2-O-  -D-glucopyranosyl-D-arabinitol, 1,4-Dideoxy-1,4-imino-D-ribitol)

Griffart-Brunet, D. *et al.*, *Tet. Lett.*, 1994, **35**, 2889 (synth)

Blanco, M.-J. *et al.*, *J.O.C.*, 1996, **61**, 4748 (2R,3S,4R-form, synth, ir, pmr, cmr)

Huang, Y. *et al.*, *J.O.C.*, 1997, **62**, 372-376 (synth, pmr, ir, cmr)

Watson, A.A. *et al.*, *Phytochemistry*, 1997, **46**, 255 (isol, props)

Huwe, C.M. *et al.*, *Synthesis*, 1997, 61 (synth, pmr, cmr)

Hulme, A.N. *et al.*, *J.C.S. Perkin I*, 2000, 1837-1841 (2R,3R,4R-form, synth, pmr, cmr)

Lee, B.W. *et al.*, *Synthesis*, 2000, 1305-1309 (2S,3R,4R-form)

Asano, N. *et al.*, *Eur. J. Biochem.*, 2001, **268**, 35-41 (1,4-Dideoxy-1,4-imino-D-xylitol, isol)

Asano, N. *et al.*, *J. Agric. Food Chem.*, 2001, **49**, 4208-4213 (N-propanamide)

Lombardo, M. *et al.*, *J.O.C.*, 2001, **66**, 1264-1268 (1,4-Dideoxy-1,4-imino-L-arabinitol)

Yasuda, K. *et al.*, *J. Nat. Prod.*, 2002, **65**, 198-202 (1,4-Dideoxy-1,4-imino-5-glucopyranosylarabinitol, 1-hydroxyethyl deriv)

El-Ashry, E.H. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2265-2290 (rev, synth)

Ayad, T. *et al.*, *Eur. J. Org. Chem.*, 2003, 2903-2910 (1,4-dideoxy-1,4-imino-D-arabinitol)

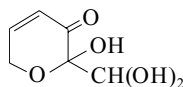
Koh, D.W. *et al.*, *J. Med. Chem.*, 2003, **46**, 4322-4332 (2R,3R,4S-form, synth, pmr, cmr)

2-(Dihydroxymethyl)-2-hydroxy-2H-pyran-3(6H)-one, 9CI

D-698

Cortalcosterone

[59896-20-7]

 $C_6H_8O_5$ 160.126

Isol. from *Corticium caeruleum*. Shows antibiotic props. Sol. H_2O .

Mp 87°. λ_{max} 230 ; 345 (dioxan) (Berdy). λ_{max} 230 (H_2O) (Berdy).

Baute, R. *et al.*, *Phytochemistry*, 1976, **15**, 1753 (isol)

Baute, R. *et al.*, *Phytochemistry*, 1987, **26**, 1395 (biosynth)

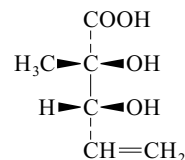
Kothes, K. *et al.*, *Carbohydr. Res.*, 1992, **232**, 59 (synth)

Szechner, B. *et al.*, *Coll. Czech. Chem. Comm.*, 1992, **57**, 159 (synth)

Gabriel, J. *et al.*, *Carbohydr. Res.*, 1994, **252**, 297 (synth)

2,3-Dihydroxy-2-methyl-4-pentenoic acid

D-699

4,5-Dideoxy-2-C-methylpent-4-enonic acid $C_6H_{10}O_4$ 146.143**(2R,3R)-form****D-erythro-form**

2,3-Isopropylidene: [130353-10-5]

 $C_9H_{14}O_4$ 186.207

Oil. $[\alpha]_D^{20} +23$ (c, 2.2 in $CHCl_3$).

2,3-Isopropylidene, Me ester: [85963-85-5]

 $C_{10}H_{16}O_4$ 200.234

Syrup. $[\alpha]_D^{20} -30$ (c, 1.6 in $CHCl_3$).

Hoffmann, R.W. *et al.*, *Chem. Ber.*, 1983, **116**, 1631 (synth, pmr, cmr)

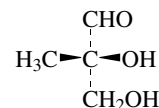
Degu  n, B. *et al.*, *J.O.C.*, 1991, **56**, 405 (synth, pmr)

2,3-Dihydroxy-2-methylpropanal, 9CI

D-700

2-C-Methylglyceraldehyde

[37428-66-3]



(R)-form

 $C_4H_8O_3$ 104.105**(R)-form****D-form**

2,3-O-Isopropylidene: [69821-02-9]

 $C_7H_{12}O_3$ 144.17

Bp₁₂ 80° (bath).

2,3-O-Isopropylidene, semicarbazone:

[71541-44-1]

Cryst. Mp 201-203°.

(S)-form

2,3-O-Isopropylidene: [79243-92-8]

Bp₃₀ 50-53°. $[\alpha]_D^{25} -7$ (c, 1 in MeOH).

2-Benzyl, 3-benzoyl: [119927-26-3]

 $C_{18}H_{18}O_4$ 298.338

Syrup. $[\alpha]_D^{22} +6$ (c, 0.5 in $CHCl_3$).

(  )-form [114790-45-3]

2,4-Dinitrophenylhydrazones: [114790-49-7]

Cryst. (EtOH aq.). Mp 177-178°.

2,3-O-Isopropylidene:

[68691-67-8, 81600-36-4]

Bp₂₀ 51°.

Maag, H. *et al.*, *J.A.C.S.*, 1978, **100**, 6786-6788 (2,3-isopropylidene)

Barner, R. *et al.*, *Helv. Chim. Acta*, 1979, **62**,

2384-2399 (2,3-isopropylidene semicarbazone)

Yamaura, M. *et al.*, *Carbohydr. Res.*, 1988, **181**, 267-272 (2,3-isopropylidene, 2-benzyl

3-benzoyl)

Bischoffberger, N. *et al.*, *J.O.C.*, 1988, **53**,

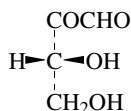
3457-3465 (synth)

Snyder, J.R. *et al.*, *Carbohydr. Res.*, 1991, **210**,

21-38 (synth)

3,4-Dihydroxy-2-oxobutanal
glycero-Tetros-2-ulose

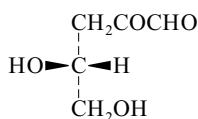
D-701

Vlahos, C.J. *et al.*, *J. Biol. Chem.*, 1985, **260**,
5480-5485 (*synth*)C₄H₆O₄ 118.089**(R)-form***D-form*

[25691-81-0]

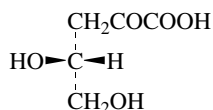
Bis(diphenylhydrazone):

Pale yellow syrup.

Volc, J. *et al.*, *Carbohydr. Res.*, 2000, **329**,
219-225 (*R-form*, *synth*)**4,5-Dihydroxy-2-oxopentanal** D-702
3-Deoxy-glycero-pentos-2-ulose. 3-Deoxy-xylosoneC₅H₈O₄ 132.116**(R)-form***L-form*

[16397-95-8]

Syrup.

Bis(benzoylhydrazone): Mp 230°.Dong Bum Shin, *et al.*, *Carbohydr. Res.*, 1990,
208, 246 (*synth*)**4,5-Dihydroxy-2-oxopentanoic acid** D-703
3-Deoxy-2-ketoarabonic acid. 3-Deoxy-2-pentulosonic acid
[7636-04-6]*(R)-form*C₅H₈O₅ 148.115**(R)-form***L-form*

[3495-27-0]

2,4-Dinitrophenylhydrazone:

Cryst. Mp 163°.

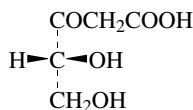
(S)-form*D-form*

[53857-83-3]

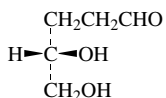
Isolated from cell free extracts of *Pseudomonas saccharophila* with L-arabonate.**(±)-form** [56782-24-2]

2,4-Dinitrophenylhydrazone:

Cryst. (MeOH). Mp 219-221°.

Palleroni, N.J. *et al.*, *J. Biol. Chem.*, 1956, **223**,
499-508 (*synth*)Stoolmiller, A.C. *et al.*, *J. Biol. Chem.*, 1966,
241, 5764-5771 (*synth*)Stoolmiller, A.C. *et al.*, *Methods Enzymol.*, Part
B, 1975, **41**, 101-103 (*synth*)**4,5-Dihydroxy-3-oxopentanoic acid, 9CI** D-704
2-Deoxy-3-pentulosonic acidC₅H₈O₅ 148.115**(R)-form***D-form*4,5-*O*-Isopropylidene, *Me ester*: Methyl
2,2-dimethyl-β-oxo-1,3-dioxolane-4-
propanoic acid, 9CI

[69763-95-7]

C₉H₁₄O₅ 202.207Liq. Bp_{0.5} 80°.López Aparicio, F.J. *et al.*, *An. Quim.*, 1978, **74**,
1561-1565 (*isopropylidene Me ester*)**4,5-Dihydroxypentanal, 9CI** D-705
2,3-Dideoxy-glycero-pentose*D-form*C₅H₁₀O₃ 118.132**D-form***(S)-form**Di-Et acetal*: 5,5-Diethoxy-1,2-
pentanediol, 9CI

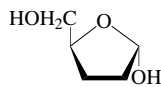
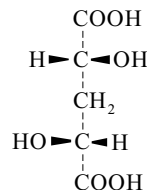
[163106-11-4]

C₉H₂₀O₄ 192.255Yellow oil. [α]_D²⁰ -3.3 (c, 3.2 in MeOH).
n_D²⁰ 1.4480.**α-D-Furanose-form***Et glycoside*: Ethyl 2,3-dideoxy-α-*D*-
pentofuranoside

[163251-14-7]

C₇H₁₄O₃ 146.186[α]_D²⁰ +51.6 (c, 2.1 in MeOH).**β-D-Furanose-form***Et glycoside*: Ethyl 2,3-dideoxy-β-*D*-
pentofuranoside

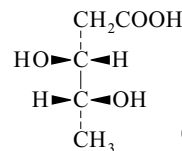
[163251-13-6]

C₇H₁₄O₃ 146.186[α]_D²⁰ -12.5 (c, 3.9 in MeOH).Raifeld, Y.E. *et al.*, *Tetrahedron*, 1994, **50**,
8603-8616 (*synth*, *pmr*, *cmr*)α-*D*-Furanose-form**2,4-Dihydroxypentanedioic acid** D-706
3-Deoxypentonic acid, 9CI. 2,4-Dihydroxyglutaric acid*(2R,4R)-form*C₅H₈O₆ 164.115**(2R,4R)-form***L-threo-form*Cryst. (H₂O). Mp 135°. [α]_D²⁰ +3.9 (H₂O).**(2S,4S)-form***D-threo-form*Cryst. (H₂O). Mp 135°. [α]_D²⁰ -2.6 (H₂O).*Diisopropyl ester*: [120742-26-9]C₁₁H₂₀O₆ 248.275Flocculent solid (hexane). Mp 66-67°.
[α]_D²⁵ -8.8 (c, 3.0 in CHCl₃).**(2RS,4RS)-form***(±)-threo-form*Plates or prisms (H₂O), cryst. (Me₂CO).
Mp 143-144° (125°).*Dianilide*:C₁₇H₁₈N₂O₄ 314.34

Prisms (EtOH). Mp 156°.

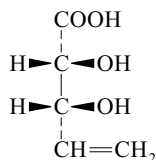
(2RS,4SR)-form*meso-form*, *erythro-form*Prisms (Me₂CO). Mp 162°.*Dianilide*:

Plates (EtOH). Mp 223°.

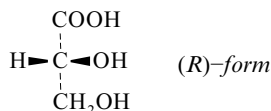
Kiliani, H. *et al.*, *Ber.*, 1907, **40**, 1238,*(2R4R-form)*Nef, J.U. *et al.*, *Annalen*, 1910, **376**, 22,*(2S4S-form, 2R4R-form, synth)*Ingold, C.K. *et al.*, *J.C.S.*, 1921, **119**, 322,*((±)-form, (±)-dianilide, meso-form,**meso-dianilide)*Benoit, L. *et al.*, *J.A.C.S.*, 1957, **79**, 6192 (*abs**config*)Tailly, F. *et al.*, *Bull. Soc. Chim. Fr.*, 1962, 38*(synth, ir, (±)-form)*Burns, C.J. *et al.*, *J.O.C.*, 1989, **54**, 2826 (*synth*,*pmr, cmr, resoln, 2S4S-diisopropyl ester)***3,4-Dihydroxypentanoic acid** D-707
2,5-Dideoxypentonic acid*(4R,5R)-form*C₅H₁₀O₄ 134.132**(4R,5R)-form***D-threo-form*Bp₃ 103-105°.1,4-Lactone: 2,5-Dideoxy-*D*-threo-1,4-
pentonolactone. Dihydro-4-hydroxy-5-
methyl-2(3H)-furanone
[38996-24-6]

C₅H₈O₃ 116.116Oil. [α]_D²⁰ +75 (c, 0.25 in EtOH).**(4R,5S)-form** *L*-erythro-form*1,4-Lactone: 2,5-Dideoxy-L-erythro-1,4-pentonolactone*
[98512-76-6]C₅H₈O₃ 116.116Liq. Bp₁₂ 125°. [α]_D²⁰ -10.81 (c, 1.85 in CHCl₃).**(4S,5R)-form** *D*-erythro-form*1,4-Lactone: 2,5-Dideoxy-D-erythro-1,4-pentonolactone*
[88400-20-8]C₅H₈O₃ 116.116Liq. Bp_{0.025} 108-110°. [α]_D²⁰ +10.87 (c, 2.42 in CHCl₃).**(4S,5S)-form** *L*-threo-form*1,4-Lactone: 2,5-Dideoxy-L-threo-1,4-pentonolactone*
[105881-47-8]C₅H₈O₃ 116.116Oil. [α]_D²⁰ -73.7 (c, 1.6 in EtOH).Chen, S. *et al.*, *J.O.C.*, 1984, **49**, 2168 (*synth*, *pmr*, *cmr*, *ir*, *ms*)Moore, R.E. *et al.*, *J.O.C.*, 1984, **49**, 2484 (*synth*, *pmr*, *cd*)Ortuño, R.M. *et al.*, *Tetrahedron*, 1987, **43**, 2191 (*synth*, *pmr*, *ir*, *ms*)Takahata, H. *et al.*, *J.O.C.*, 1994, **59**, 7201 (*synth*, *ir*, *pmr*, *cmr*, *lactone*)**2,3-Dihydroxy-4-pentenoic acid**

D-708

C₅H₈O₄ 132.116**(2R,3R)-form***2,3-Isopropylidene, Me ester: Methyl 5-ethenyl-2,2-dimethyl-1,3-dioxolane-4-carboxylate*
[85963-83-3]C₉H₁₄O₄ 186.207Oil. Bp₁₂ 94-96°. [α]_D²³ -52.4 (c, 5.0 in CDCl₃).Hoffmann, R.W. *et al.*, *Chem. Ber.*, 1983, **116**, 1631 (*synth*, *pmr*, *cmr*)**2,3-Dihydroxypropanoic acid, 9CI**

D-709

Glyceric acid. Glyceronic acid
[473-81-4]C₃H₆O₄ 106.078**(R)-form***D-form*

[6000-40-4]

Isol. from various plants, e.g. *Vicia faba* and cress. Intermed. in plant metabolic cycles.

Thick gum. Dec. on dist. Laevorotatory.

Ca salt (2:1): [14028-62-7]Cryst. + 2H₂O. Mp 138°. [α]_D²⁰ +14.4 (c, 2.2 in H₂O).*Quinine salt:* Mp 178-180°. [α]_D²⁰ -116.2 (H₂O).*Di-Ac, amide:*C₇H₁₁NO₅ 189.168Needles (C₆H₆/MeOH). [α]_D²⁰ +1.6 (c, 1.22 in CHCl₃).*2-O-α-D-Mannopyranosyl: Digeneaside*
[68005-65-2]C₉H₁₆O₉ 268.22Isol. from red algae *Alsidium*, *Chondria*, *Laurencia*, *Polysiphonia*, *Halopithys*, *Vidalia* and *Digenea* spp.Mp 255-270° dec. (as Na salt). [α]_D¹⁸ +106 (c, 1 in H₂O).*3-O-(p-Hydroxycinnamoyl), Me ester:**Methyl 3-O-(4-hydroxycinnamoyl)glycerate*
[113459-57-7]C₁₃H₁₄O₆ 266.25Constit. of *Coronilla varia*.*2-O-(3,4-Dihydroxycinnamoyl): 2-O-Caffeoylglyceric acid*
[147199-43-7]C₁₂H₁₂O₇ 268.223Constit. of *Chelidonium majus*.
[α]_D²⁰ -57.9 (c, 1.05 in H₂O).*3-Phosphate: 2-Hydroxy-3-phosphonooxypropanoic acid, 9CI*
[3443-58-1]C₃H₇O₇P 186.058[α]_D²⁰ -14.3 (c, 1.19 in 1N HCl).**(S)-form** *L-form*

[28305-26-2]

Residue present in gellan gum from

Pseudomonas elodea.

Thick gum. Dec. on dist. Dextrorotatory.

Ca salt (2:1): [6057-35-8]Cryst. + 2H₂O. Mp 137°. [α]_D²⁰ -14.6 (H₂O).*Brucine salt:* Mp 222°. [α]_D²⁰ -33 (H₂O).*Me ester:* [10303-88-5]C₄H₈O₄ 120.105Constit. of the rhizomes of *Begonia nantoensis*. Oil. Bp₁₄ 119-120°. [α]_D²⁰ -14.6 (c, 5 in H₂O). λ_{max} 204 (log ε 3.11); 222 (log ε 2.97) (MeOH).*Et ester, di-Ac:*C₉H₁₄O₆ 218.206Bp 247-249°. [α]_D¹⁵ -16.3.*2,3-Isopropylidene:* See 2,2-Dimethyl-1,3-dioxolane-4-carboxylic acid in *The Combined Chemical Dictionary*.*3-Phosphate:* [73358-94-8][α]_D²⁰ +12 (c, 0.7 in 1N HCl).**(±)-form** [600-19-1]Thick gum. pK_a 5.5. Dec. on dist.*Ca salt:* [65644-56-6]

[67525-74-0]

Cryst. Mp 138-139° dec.

Me ester: [15909-76-9] Bp₁₄ 119-120°.*Amide:* [54393-33-8]C₃H₇NO₃ 105.093

Prisms (EtOH). Mp 92°.

*2-Benzoyl:*C₁₀H₁₀O₅ 210.186

Mp 141-142°.

3-Phosphate: [820-11-1]**(ξ)-form***2-O-(E-p-Hydroxycinnamoyl):*

[154639-28-8]

C₁₂H₁₂O₆ 252.223Constit. of *Eleusine coracana* (finger millet).
[α]_D²⁴ -55 (c, 1.5 in MeOH).*2-O-(Z-p-Hydroxycinnamoyl):*

[154639-27-7]

C₁₂H₁₂O₆ 252.223Constit. of *Eleusine coracana* (finger millet).
[α]_D²⁴ +70 (c, 1.5 in MeOH). Config. not confirmed.

[115136-20-4]

*Aldrich Library of 13C and 1H FT NMR**Spectra*, 1992, **1**, 855C (*nmr*)Karrer, P. *et al.*, *Helv. Chim. Acta*, 1924, **7**, 931 (*synth*)Kiessling, W. *et al.*, *Ber.*, 1935, **68**, 243-248, (3-phosphate)Brewster, P. *et al.*, *Nature (London)*, 1950, **166**, 178 (*abs config*)Sallach, *et al.*, *J.A.C.S.*, 1952, **74**, 2415 (*synth*, *bibl*)Isherwood, F.A. *et al.*, *Biochem. J.*, 1954, **56**, 15 (*isol*)Ballou, C.E. *et al.*, *J.A.C.S.*, 1954, **76**, 3188-3193 (*R-form*, 3-phosphate)Bouveng, H. *et al.*, *Acta Chem. Scand.*, 1955, **9**, 807 (*Digeneaside*)Wold, F. *et al.*, *J.O.C.*, 1961, **26**, 197-199, (*S-form*, 3-phosphate, *synth*)Ashworth, J.M. *et al.*, *J.C.S.*, 1963, 2563*Biochem. Prep.*, 1966, **11**, 50 (*synth*)Barton, D.H.R. *et al.*, *J.C.S.(C)*, 1967, 128 (*synth*)Taga, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1978, **51**, 1697-1700 (*Ca salt*, *cryst struct*)Kirst, G.O. *et al.*, *Phytochemistry*, 1980, **19**, 1107 (*Digeneaside*)Kuo, M.S. *et al.*, *Carbohydr. Res.*, 1986, **156**, 173 (*occur*, *S-form*)Opletal, L. *et al.*, *Pharmazie*, 1987, **42**, 708 (*deriv*)Petrarulo, M. *et al.*, *Clin. Chim. Acta*, 1992, **211**, 143 (*hplc*)Hahn, R. *et al.*, *Planta Med.*, 1993, **59**, 71, (*2-Caffeoylglyceric acid*)Kim, C.-S. *et al.*, *Biosci. Biotechnol., Biochem.*, 1994, **58**, 380 (*2-hydroxycinnamates*)Sone, H. *et al.*, *J.O.C.*, 1995, **60**, 4774, (*di-Ac amide*)Popek, T. *et al.*, *Acta Cryst. C*, 1996, **52**, 2716 (*cryst struct*, *salts*)Wu, P.-L. *et al.*, *Chem. Pharm. Bull.*, 2004, **52**, 345-349 (*Me ester*, *isol*)**1,3-Dihydroxy-2-propanone, D-710 9CI***1,3-Dihydroxyacetone. Glycerone. DHA. Otan*

[96-26-4]

HOCH₂COCH₂OHC₃H₆O₃ 90.079Prod. by microorganisms, e.g. *Corynebacterium diphtheriae*. Artificial tanning agent. Hygroscopic cryst. Sol. H₂O, EtOH; insol. petrol.

Mp ca. 80°. Cryst. in form of dimer. On heating, forms a ladder polymer with a spiroacetal struct. In aq. soln., equilibrates with dimers and with via the enediol tautomer.

► UC1645000

Oxime: [37110-18-2]
C₃H₇NO₃ 105.093
Mp 84°.

2,4-Dinitrophenylhydrazone: [54420-11-0]
Mp 277-278° dec.

Di-Ac: [6946-10-7]
C₇H₁₀O₅ 174.153
Needles (Et₂O/petrol). Mp 46-47°.

Di-Et acetal: 2,2-Diethoxy-1,3-propanediol
C₇H₁₆O₄ 164.201
Cryst. (C₆H₆). Mp 90°.

Mono-O-phosphate: Dihydroxyacetone
phosphate
[57-04-5]
C₃H₇O₆P 170.058

Important biochemical intermed.
Relatively unstable in soln.

Di-Me ether: 1,3-Dimethoxy-2-propanone,
9CI
[18664-32-9]
C₅H₁₀O₃ 118.132
Liq. Bp₃₂ 85.5-86°.

Di-Et ether: 1,3-Diethoxy-2-propanone,
9CI
[5460-70-8]
C₇H₁₄O₃ 146.186
Liq. Bp₁₄ 90-92°.

Dibenzyl ether: 1,3-Bis(phenylmethoxy)-2-
propanone, 9CI
[77356-14-0]
C₁₇H₁₈O₃ 270.327
Solid.

Di-Ph ether: 1,3-Diphenoxy-2-propanone,
9CI
[57641-21-1]
C₁₅H₁₄O₃ 242.274
Cryst. (Et₂O). Mp 56-58°.

Benzylidene deriv.: See 2-Phenyl-1,3-diox-
an-5-one in *The Combined Chemical
Dictionary*.

Di-Me acetal: 2,2-Dimethoxy-1,3-propane-
diol
C₅H₁₂O₄ 136.147
V. hygroscopic cryst. (toluene) or waxy
solid. Bp₂ 115-125°.

[26776-70-5]

Fischer, H.O. *et al.*, *Ber.*, 1924, **57**, 707 (*synth*)
Ruttan, A.M.G. *et al.*, *Rec. Trav. Chim. (J. R.
Neth. Chem. Soc.)*, 1951, **70**, 449 (*biosynth*)
Kenner, J. *et al.*, *J.C.S.*, 1953, 2240 (*dialkyl
derivs*)

Ballou, C.E. *et al.*, *J.A.C.S.*, 1956, **78**, 1659
(*phosphate*)

Ando, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, **45**,
2611 (*synth*)

Karrer, W. *et al.*, *Konstitution und Vorkommen
der Organischen Pflanzenstoffe*, 2nd edn.,
Birkhäuser Verlag, Basel, 1972, no. 443
(*occur*)

Kobayashi, Y. *et al.*, *J. Mol. Struct.*, 1976, **35**,
85 (*ir, Raman*)

Kobayashi, Y. *et al.*, *Spectrochim. Acta A*, 1979,
35, 307 (*pmr, conform*)

Araki, Y. *et al.*, *J.C.S. Perkin 1*, 1981, 12 (*di-Me
ether, synth, pmr*)

Akar, A. *et al.*, *Makromol. Chem. Rapid
Commun.*, 1989, **10**, 127 (*polym*)

Fessner, W.D. *et al.*, *Angew. Chem., Int. Ed.*,
1994, **33**, 209 (*synth, pmr, bibl, phosphate*)

Cho, H. *et al.*, *J. Med. Chem.*, 1996, **39**,
3797-3805 (*di-Me ether*)

Yaylayan, V.A. *et al.*, *Carbohydr. Res.*, 1999,
318, 20-25 (*equilib*)

Ferroni, E.L. *et al.*, *J.O.C.*, 1999, **64**, 4943-4945
(*di-Me acetal*)

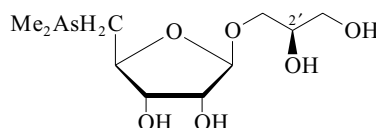
Walker, L.F. *et al.*, *J.C.S. Perkin 1*, 2002, 965-
981 (*di-Me ether, di-Et ether, dibenzyl ether,
synth, ir, pmr, cmr*)

Sax, N.I. *et al.*, *Dangerous Properties of
Industrial Materials*, 5th edn., Van Nostrand
Reinhold, 1979, 588

2',3'-Dihydroxypropyl [5-deoxy-5-(dimethylarsino)]ribofuranoside

D-711

3-[[5-Deoxy-5-(dimethylarsinoyl)ribofura-
nosyl]oxy]-1,2-propanediol



C₁₀H₂₁AsO₆ 312.194

(β-D, 2'R)-form

2,3:2',3'-Diisopropylidene:

C₁₆H₂₉AsO₆ 392.323
Oil. Bp_{0.05} 150°. [α]_D¹⁹ +30.

As-Oxide: 2',3'-Dihydroxypropyl [5-deoxy-
5-(dimethylarsinyl)]ribofuranoside
[103476-61-5]
C₁₀H₂₁AsO₇ 328.193

Isol. from brown kelp *Ecklonia radiata* and
giant clam *Tridacna maxima* and brown
alga *Laminaria japonica*. Oil. [α]_D²⁰ -2.6 (c,
5.5 in MeOH).

As-Oxide, 2,3:2',3'-diisopropylidene:

C₁₆H₂₉AsO₇ 408.322
Oil. [α]_D²⁰ -7.7.

As-Me, O-sulfate: See 2-Hydroxy-3-(sul-
foxy)propyl-5-deoxy-5-(trimethylarso-
nio)-β-D-ribofuranoside, H-199

As-Oxide, O-sulfate: See 3-[5-Deoxy-5-
(dimethylarsinyl)ribofuranosyloxy]-2-
hydroxy-1-propanesulfonic acid, D-62

[77939-93-6]

Edmonds, J.S. *et al.*, *J.C.S. Perkin 1*, 1982,
2989; 1983, 2375 (*oxide, isol, cmr, pmr*)

Shibata, Y. *et al.*, *Agric. Biol. Chem.*, 1987, **51**,
391 (*oxide, isol, pmr, cmr, hplc*)

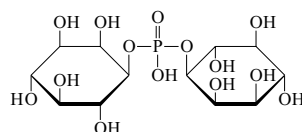
McAdam, D.P. *et al.*, *Aust. J. Chem.*, 1987, **40**,
1901 (*isol, derivs*)

Edmonds, J.S. *et al.*, *Nat. Prod. Rep.*, 1993, **10**,
421 (*isol, rev*)

1,1'-Di-myoinosityl phosphate

D-712

[143491-08-1]



C₁₂H₂₃O₁₄P 422.279

Isol. from *Pyrococcus woesei*.

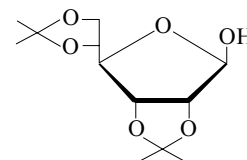
[143562-44-1]

Scholz, S. *et al.*, *FEBS Lett.*, 1992, **306**, 239
(*isol, pmr, ms, P-31 nmr*)

L-form

2,3:5,6-Di-O-isopropylidene-neallofuranose, 9CI

D-713



C₁₂H₂₀O₆ 260.286

D-form [33823-04-0]

Cryst. (petrol). Mp 67-69°. [α]_D²⁴ -26.6
(c, 2.0 in CHCl₃). Config. of this prepn.
not detd. but prob. β- as phys. consts.
almost identical with the β-form below.

1-(4-Nitrobenzoyl): [33823-05-1]

Needles (Et₂O/petrol). Mp 117.5-119°.
[α]_D²⁴ -42.6 (c, 2.0 in CHCl₃).

β-D-form [27108-13-0]

Cryst. (petrol). Mp 65-67.5°. [α]_D²⁶ -26.4
(c, 1.0 in CHCl₃).

1-Ac: 1-O-Acetyl-2,3:5,6-di-O-
isopropylidene-β-D-allofuranose
[29474-75-7]

C₁₄H₂₂O₇ 302.324
Cryst. (petrol). Mp 42-45° (51-51.5°).
[α]_D²⁶ -45.1 (c, 1.24 in CHCl₃).

1-Benzoyl: 1-O-Benzoyl-2,3:5,6-di-O-
isopropylidene-β-D-allofuranose
[29474-76-8]

C₁₉H₂₄O₇ 364.394
Cryst. (EtOH). Mp 109-110°. [α]_D²⁰ -38.5
(c, 1.0 in CHCl₃).

Me glycoside: See Methyl alloside, M-148

Haga, M. *et al.*, *Carbohydr. Res.*, 1970, **14**, 237
(β-D-form, β-D-Ac, β-D-benzoyl)

Kohn, B.D. *et al.*, *Carbohydr. Res.*, 1971, **18**,
349 (D-form, D-nitrobenzoyl, *synth*)

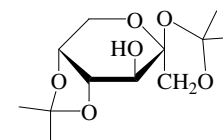
Ballard, J.M. *et al.*, *Carbohydr. Res.*, 1972, **12**,
37 (β-D-form)

Dick, W.E. *et al.*, *Carbohydr. Res.*, 1975, **39**, 87
(β-D-form, β-D-Ac, *pmr*)

1,2:4,5-Di-O-isopropylidene-fructopyranose

D-714

1,2:4,5-Di-O-isopropylidene-fructose, 8CI



β-D-form

C₁₂H₂₀O₆ 260.286

β-D-form [25018-67-1]

Needles (Et₂O/pentane). Mp 118-119°.
[α]_D²³ -155 (c, 1.0 in Me₂CO). [α]_D²³ -145
(CHCl₃).

3-Ac: 3-O-Acetyl-1,2:4,5-di-O-isopropyl-
dene-β-D-fructopyranose
C₁₄H₂₂O₇ 302.324

Cryst. (EtOH aq.). Mp 76-77°.
[α]_D²⁵ -175.9 (c, 1.0 in CHCl₃).

3-Mesyl: 1,2:4,5-Di-O-isopropylidene-3-O-
mesyl-β-D-fructopyranose
C₁₃H₂₂O₈S 338.378

Cryst. (Et₂O). Mp 102-104°. [α]_D²⁰ -159
(c, 0.99 in CHCl₃).

β -L-form [83602-34-0]

Cryst. (petrol). Mp 120°. $[\alpha]_D^{25} +150$ (c, 1 in Me₂CO).

3-O-Benzyl:

C₁₉H₂₆O₆ 350.411

Oil. $[\alpha]_D^{23} +87$ (c, 2 in CHCl₃).

Ness, R.K. *et al.*, *J.O.C.*, 1968, **33**, 181 (β -D-form, synth, β -D-mesyl)

Brady, R.F. *et al.*, *Carbohydr. Res.*, 1970, **15**, 35 (β -D-form, synth)

Tipson, R.S. *et al.*, *Carbohydr. Res.*, 1971, **16**, 383 (β -D-form, synth, β -D-Ac)

Morgenlie, S. *et al.*, *Carbohydr. Res.*, 1982, **107**, 137 (β -L-form, synth)

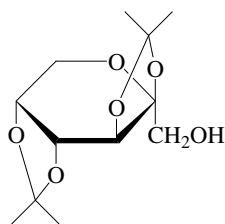
Bessières, B. *et al.*, *J.O.C.*, 2003, **68**, 4100-4103 (β -L-form, 3-benzyl, synth)

Org. Synth., 2003, **80**, 1-8 (β -D-form, synth, ir, pmr, cmr)

2,3:4,5-Di-*O*-isopropylidene-fructopyranose

D-715

2,3:4,5-Bis-*O*-(1-methylethylidene)fructopyranose, 9CI

 β -D-form

C₁₂H₂₀O₆ 260.286 Log P 0.36 (calc).

 β -D-form [20880-92-6]

Needles (Et₂O/pentane). Mp 97°.

$[\alpha]_D^{23} -24.2$ (c, 0.6 in CHCl₃).

Sulfamoyl: Topiramate, BAN, INN, USAN.
Topamax. MCN 4853. RWJ 17021
[97240-79-4]

C₁₂H₂₁NO₈S 339.366

Launched 1995 (UK). Worldwide 94th best selling prescription drug (\$0.69 bn, 2002) (Johnson and Johnson) (Med Ad News)

Anticonvulsant. Cryst. (EtOAc/hexane). Mp 125-126°. $[\alpha]_D^{23} -34$ (c, 0.4 in MeOH).

► LS7083000

Dimethylsulfamoyl: [106881-33-8]

Cryst. (EtOH aq.). Mp 57-58°.

$[\alpha]_D^{23} -31.3$ (c, 0.31 in MeOH).

1-Triflyl:

C₁₃H₁₉F₃O₈S 392.349

Mp 36-38.5°. $[\alpha]_D -28.5$ (c, 1.03 in CHCl₃).

1-Me: 2,3:4,5-Di-*O*-isopropylidene-1-*O*-methyl- β -D-fructopyranose

[60885-04-3]

C₁₃H₂₂O₆ 274.313

Cryst. (C₆H₆). Mp 48-49°. $[\alpha]_D -29.8$ (CHCl₃).

 β -L-form [76513-58-1]

Cryst. (petrol). Mp 97°. $[\alpha]_D^{25} +23$ (c, 2 in CHCl₃).

Maeda, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969, **42**, 2635 (conformm, pmr)

Morgenlie, S. *et al.*, *Carbohydr. Res.*, 1980, **80**, 215 (ms)

Martin, O.R. *et al.*, *Can. J. Chem.*, 1982, **60**, 1857 (β -D-form, synth)

Card, P.J. *et al.*, *J.A.C.S.*, 1984, **106**, 5348

(triflate)

Maryanoff, B.E. *et al.*, *J. Med. Chem.*, 1987, **30**, 880 (synth, sulfamate, pharmacol)

Watkins, S.F. *et al.*, *Carbohydr. Res.*, 1990, **197**, 33 (cryst struct, 1-Me)

Nortey, S.O. *et al.*, *Carbohydr. Res.*, 1997, **304**, 29-34 (metab, Topiramate)

Langtry, H.D. *et al.*, *Drugs*, 1997, **54**, 752-773 (rev, topiramate)

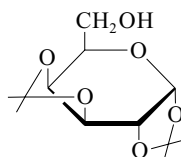
Michelucci, R. *et al.*, *CNS Drug Rev.*, 1998, **4**, 165-186

Clarke's Analysis of Drugs and Poisons, 3rd edn., (eds. Moffat, A.C. *et al.*), Pharmaceutical Press, 2004, 1651 (props. gc, Topiramate)

1,2:3,4-Di-*O*-isopropylidene-galactopyranose, 8CI

D-716

1,2:3,4-Bis-*O*-(1-methylethylidene)galactopyranose, 9CI



C₁₂H₂₀O₆ 260.286

 α -D-form [4064-06-6]

Bp_{0.35} 125-130° (lit. gives a pressure range) Bp_{0.2} 131-135°.

6-Ac: 6-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene- α -D-galactopyranose
[4860-78-0]

C₁₄H₂₂O₇ 302.324

Mp 108°. $[\alpha]_D^{20} -48$ (c, 1.0 in CHCl₃).

6-Mesyl: 1,2:3,4-Di-*O*-isopropylidene-6-*O*-mesyl- α -D-galactopyranose
[4148-55-4]

C₁₃H₂₂O₈S 338.378

Mp 122°. $[\alpha]_D -62$ (in CHCl₃).

6-(p-Nitrobenzoyl): [20581-75-3]
Pale-yellow plates. Mp 116.5-117.5°.
 $[\alpha]_D^{20} -57$ (c, 1.0 in CHCl₃).

6-Tosyl: 1,2:3,4-Di-*O*-isopropylidene-6-*O*-tosyl- α -D-galactopyranose
[4478-43-7]

C₁₉H₂₆O₈S 414.476

Plates (EtOH). Mp 104-105° (99-100°).

$[\alpha]_D^{20} -66$ (c, 1.0 in CHCl₃).

6-Allyl: 6-*O*-Allyl-1,2:3,4-di-*O*-isopropylidene- α -D-galactopyranose
[2771-58-6]

C₁₅H₂₄O₆ 300.351

Bp_{0.6} 110° Bp_{0.3} 86°.

6-Benzyl: 6-*O*-Benzyl-1,2:3,4-di-*O*-isopropylidene- α -D-galactopyranose
[35526-05-7]

C₁₉H₂₆O₆ 350.411

Bp_{0.5} 140-145°. $[\alpha]_D^{23} -59$ (c, 2.0 CHCl₃).

6-Me: 1,2:3,4-Di-*O*-isopropylidene-6-*O*-methyl- α -D-galactopyranose
C₁₃H₂₂O₆ 274.313

Bp_{0.5} 120° Bp_{0.2} 109-115° (Pressure

Bp_{0.2-0.5}).

6-Trityl: 1,2:3,4-Di-*O*-isopropylidene-6-*O*-trityl- α -D-galactopyranose
[76951-66-1]

C₃₁H₃₄O₆ 502.606

Mp 80-82°. $[\alpha]_D -58.4$ (in CHCl₃).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 200D (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 316B (nmr)

Freudenberg, K. *et al.*, *Ber.*, 1923, **56**, 2119;

1927, **60**, 1633 (6-tosyl, 6 Me)

Ohle, H. *et al.*, *Ber.*, 1925, **58**, 2585 (6-Ac)

Hockett, R.C. *et al.*, *J.A.C.S.*, 1941, **63**, 2516, (6-trityl)

De Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219; *Adv. Carbohydr. Chem.*

Biochem., 1977, **34**, 179 (rev)

Black, W.A.P. *et al.*, *Carbohydr. Res.*, 1967, **5**, 362 (6-allyl)

Horton, D. *et al.*, *Carbohydr. Res.*, 1976, **7**, 56 (nitrobenzoyl)

Dimetrev, B.A. *et al.*, *Carbohydr. Res.*, 1976, **47**, 25 (synth)

Berry, J.M. *et al.*, *Carbohydr. Res.*, 1976, **47**, 307 (6-benzyl)

Stacey, B.E. *et al.*, *Carbohydr. Res.*, 1976, **49**, 129 (pmr)

Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1986, **148**, 1 (6-tosyl, cryst struct)

Dahlhoff, W.V. *et al.*, *Synthesis*, 1986, 561

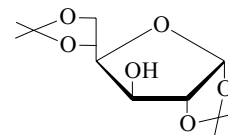
Romero Zaliz, C.L. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 689-701 (6-mesyl)

1,2:5,6-Di-*O*-isopropylidene-glucofuranose, 8CI

D-717

Diacetone glucose

[582-52-5]



C₁₂H₂₀O₆ 260.286

► LZ4958000

 α -D-form

Readily obt. in 1 step from glucose.

Important chiral building block.

Mp 111-113°. $[\alpha]_D -19.7$ (H₂O).

3-Ac: 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene- α -D-glucofuranose, 8CI
[16713-80-7]

C₁₄H₂₂O₇ 302.324

Mp 62-63°. $[\alpha]_D -31.6$ (EtOH).

► LZ4910000

3-Benzoyl: 3-*O*-Benzoyl-1,2:5,6-di-*O*-isopropylidene- α -D-glucofuranose
[13964-22-2]

C₁₉H₂₄O₇ 364.394

Mp 66.5°. $[\alpha]_D^{20} -53.5$ (CHCl₃).

3-O-(4-Bromobenzoyl): Mp 79-80°.

$[\alpha]_D^{19} -49.1$ (Me₂CO).

3-Mesyl: 1,2:5,6-Di-*O*-isopropylidene-3-*O*-mesyl- α -D-glucofuranose
[5450-26-0]

C₁₃H₂₂O₈S 338.378

Mp 83-84°. $[\alpha]_D -50$ (CHCl₃).

3-Tosyl: 1,2:5,6-Di-*O*-isopropylidene-3-*O*-tosyl- α -D-glucofuranose
[3253-75-6]

C₁₉H₂₆O₈S 414.476

Mp 120-121°. $[\alpha]_D -82$ (C₂H₂Cl₄).

3-Trifluoromethylsulfonyl: 1,2:5,6-Di-*O*-isopropylidene-3-*O*-triflyl- α -D-glucofuranose

Cryst. (petrol). Mp 70°. $[\alpha]_D^{25} -35$ (c, 2.0 in Me₂CO).

3-(2,2,2-Trifluoroethylsulfonfyl):
Needles (petrol). Mp 90-91°. [α]_D²⁵ -39
(c, 2.7 in Me₂CO).

3-(Pentafluorophenylsulfonfyl): Mp 132-136°.

3-Allyl: [20316-77-2]
C₁₅H₂₄O₆ 300.351
Syrup. [α]_D²⁰ -31 (c, 0.5 in CHCl₃).

3-tert-Butyl:
C₁₆H₂₈O₆ 316.394
Bp₁₄ 165°. [α]_D -5.9 (petrol).

3-Benzyl: 3-*O*-Benzyl-1,2:5,6-di-*O*-
isopropylidene- α -D-glucufuranose
C₁₉H₂₆O₆ 350.411
Bp_{0.003} 143°. [α]_D -28.3 (EtOH).

3-Trityl: 1,2:5,6-Di-*O*-isopropylidene-3-*O*-
trityl- α -D-glucufuranose
C₃₁H₃₄O₆ 502.606
Mp 115°. [α]_D -24.1 (CHCl₃).

Aldrich Library of FT-IR Spectra, 1st edn., 1985,
1, 200A (ir)

Aldrich Library of 13C and 1H FT NMR
Spectra, 1992, 1, 314B; 1059B (nmr)

Tollens, B. *et al.*, *Kurzes Handbuch der
Kohlenhydrate*, Edwards Bros., Inc., Ann
Arbor, 1943, 250 (rev)

Schmidt, O.T. *et al.*, *Methods Carbohydr.
Chem.*, 1963, 2, 318 (synth)

de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*,
1965, 20, 219 (rev, derivs)

Vyas, D.M. *et al.*, *Can. J. Chem.*, 1975, 53, 2748
(cmr)

de Bruyn, A. *et al.*, *J. Carbohydr. Nucleosides,
Nucleotides*, 1975, 2, 227 (conformn, pmr)

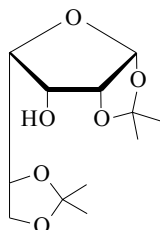
Hall, L.D. *et al.*, *Carbohydr. Res.*, 1976, 47, 299
(synth, pmr, fluorinated derivs)

Smith, A.B. *et al.*, *J.A.C.S.*, 1991, 113, 2092-
2112 (3-allyl, synth, ir, pmr)

Fieser and Fieser's Reagents for Organic
Synthesis, Wiley, 1992, 16, 136 (use)

Bozo, E. *et al.*, *Carbohydr. Res.*, 1996, 290, 159-
173 (3-allyl, synth)

1,2:5,6-Di-*O*-isopropylidene- gulofuranose, 8CI D-718



C₁₂H₂₀O₆ 260.286

α -D-form [14686-89-6]
Cryst. (EtOH/Et₂O/petrol).
Mp 105-106°. [α]_D²⁰ +7.5 (c, 1.0 in
CHCl₃).

3-Ac: 3-*O*-Acetyl-1,2:5,6-di-*O*-
isopropylidene- α -D-gulofuranose
[26775-14-4]

C₁₄H₂₂O₇ 302.324
Cryst. (EtOH). Mp 73-74°. [α]_D +66
(c, 0.36 in CHCl₃).

3-Tosyl: 1,2:5,6-Di-*O*-isopropylidene-3-*O*-
tosyl- α -D-gulofuranose
[19131-06-7]
C₁₉H₂₆O₈S 414.476

Cryst. (EtOH aq.). Mp 122-123° dec.
[α]_D +32 (c, 0.7 in CHCl₃).

3-Me: 1,2:5,6-Di-*O*-isopropylidene-3-*O*-
methyl- α -D-gulofuranose
[29587-01-7]
C₁₃H₂₂O₆ 274.313
Mp 72-73.5°. [α]_D +33 (c, 1.1 in CHCl₃).

3-Benzyl: 3-*O*-Benzyl-1,2:5,6-di-*O*-
isopropylidene- α -D-gulofuranose
[23885-38-3]
C₁₉H₂₆O₆ 350.411
Cryst. (MeOH). Mp 132-133°. [α]_D²⁰
+39.1 (c, 1.4 in CHCl₃).

Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1968, 567
(α -D-form, α -D-tosyl)

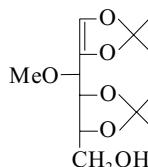
Slessor, K.N. *et al.*, *Can. J. Chem.*, 1969, 47,
3989 (α -D-form, α -D-Ac)

Paulsen, H. *et al.*, *Chem. Ber.*, 1969, 102, 820
(α -D-benzyl)

Brimacombe, J.S. *et al.*, *Chem. Ind. (London)*,
1970, 655 (α -D-Me)

Meyer zu Reckendorf, W. *et al.*, *Methods
Carbohydr. Chem.*, 1972, 6, 130 (α -D-form,
synth)

1,2:4,5-Di-*O*-isopropylidene- 3-*O*-methyl-arabino-hex-1-enitol D-719

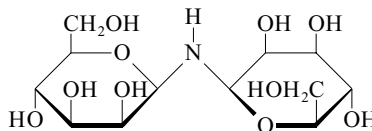


C₁₃H₂₂O₆ 274.313

D-form [62478-10-8]
[α]_D²⁰ -75.5 (c, 1 in MeOH).

Klemer, A. *et al.*, *Annalen*, 1977, 181 (synth,
pmr)

Dimannopyranosylamine D-720



C₁₂H₂₃NO₁₀ 341.314

D,D- β , β -form [152612-56-1]

Mp 160°. [α]_D -36.8 (c, 5.0 in H₂O).

O-Octa-Ac: [152612-57-2]

C₂₈H₃₉NO₁₈ 677.612

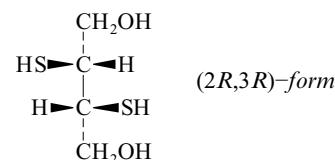
Cryst. or solid. Mp 146-147°. [α]_D²⁵ -27
(c, 2 in CHCl₃). [α]_D²⁰ -68 (c, 2.0 in
CHCl₃). Linek *et al* were unable to
crystallise this deriv. according to earlier
work and obt. it as a solid with the
lower opt. rotn. given.

Isbell, H.S. *et al.*, *J.O.C.*, 1958, 23, 1309

Linek, K. *et al.*, *Carbohydr. Res.*, 1993, 247, 329

2,3-Dimercapto-1,4-butane- diol, 9CI D-721

1,4-Dihydroxy-2,3-butanedithiol
[64131-50-6]



C₄H₁₀O₂S₂ 154.254

(2R,3R)-form

(-)-threo-form. 2,3-Dithio-D-threitol
[176779-07-0]

Cryst. Mp 114.8-115.3°. [α]_D²² -6.3 (c, 2.0
in EtOH).

Tetra Ac: [176703-50-7]

C₁₂H₁₈O₆S₂ 322.403

Oil which solidifies on standing. [α]_D²² -
3.4 (c, 1.0 in CHCl₃).

(2RS,3SR)-form

(+)-erythro-form. 2,3-Dithioerythritol
[122844-69-3]

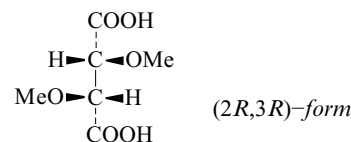
Yellow oil. meso-.

Boyd, V.L. *et al.*, *Chem. Res. Toxicol.*, 1989, 2,
301 (synth, pmr, cmr)

Bránalt, J. *et al.*, *J.O.C.*, 1996, 61, 3611 (synth,
tetra-Ac, pmr, cmr)

2,3-Dimethoxybutanedioic acid D-722

Dimethoxysuccinic acid. Tartaric acid di-
methyl ether



C₆H₁₀O₆ 178.141

(2R,3R)-form [7305-62-6]

Prisms (H₂O), plates (Me₂CO). Sol.
H₂O. Mp 153°. [α]_D²⁰ +95.8 (Me₂CO).
Dec. on dist.

Di-Na salt: [α]_D²⁰ +52.7 (H₂O).

Di-Me ester: [56145-21-2]

C₈H₁₄O₆ 206.195

Mp 53-54°. Bp₁₂ 130-132°.

Dichloride:

C₆H₈Cl₂O₄ 215.032

Prisms (Et₂O). Mp 90-93°. [α]_D²⁰ +80
(Me₂CO).

Anhydride: [28008-17-5]

C₆H₈O₅ 160.126

Cryst. (Et₂O). Mp 80-82°. [α]_D²⁰ +14.9
(Me₂CO).

Diamide:

C₆H₁₂N₂O₄ 176.172

Needles (H₂O). Mp 266-268° dec. [α]_D²⁰
+97.1 (H₂O).

Bis(dimethylamide): 2,3-Dimethoxy-
N,N,N',N'-tetramethylbutanediamide,
9CI

C₁₀H₂₀N₂O₄ 232.279

Resolving agent. Mp 61-62°. [α]_D +115 (c, 1.2 in CHCl₃).

(2S,3S)-form

Mp 154°.

Di-Me ester:

C₈H₁₄O₆ 206.195

Cryst. (Et₂O/petrol). Mp 52°.

Bp₉ 125-135°. [α]_D -28.3.

(2RS,3RS)-form

(\pm)-form

[34209-22-8]

Cryst. (Me₂CO/hexane). Mp 168-169°.

Di-Me ester:

Cryst. (Et₂O). Mp 68°.

(2RS,3SR)-form

meso-form

[34212-77-6]

Cryst. (H₂O). Mp 161°.

Di-Me ester: [72719-00-7]

Cryst. (C₆H₆ or Et₂O). Mp 68°.

Diamide: Mp 255-257° dec.

[26549-29-1, 62182-40-5, 63126-53-4]

Patterson, T.S. *et al.*, *J.C.S.*, 1915, **107**, 152

(*synth*)

Asahina, Y. *et al.*, *Ber.*, 1931, **64**, 1805 (*synth*)

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1932, **97**, 491

(*synth*)

Wintersteiner, O. *et al.*, *J.A.C.S.*, 1948, **70**, 885;

1951, **73**, 2917 (*synth*)

Summerbell, R.K. *et al.*, *J.A.C.S.*, 1957, **79**,

3878 (*synth*)

Yunstén, H. *et al.*, *J. Antibiot.*, 1958, **11**, 77; 79;

233; 244 (*synth*)

Cope, A.C. *et al.*, *J.A.C.S.*, 1964, **86**, 1268

(*synth, abs config*)

Toda, F. *et al.*, *J.A.C.S.*, 1988, **53**, 3607

(*bisdimethylamide*)

Fieser and Fieser's *Reagents for Organic*

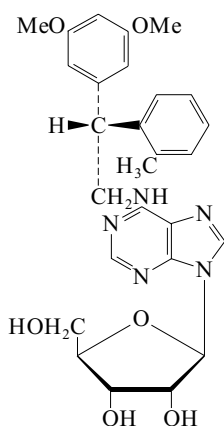
Synthesis, Wiley, 1990, **15**, 140

(*bisdimethylamide, use*)

N⁶-[2-(3,5-Dimethoxyphenyl)- 2-(2-methylphenyl)ethyl]adenosine D-723

DPMA. PD 125944

[120442-40-2]



(2R)-form

C₂₇H₃₁N₅O₆ 521.572

Selective adenosine A₂-receptor agonist.

Enhances serum erythropoietin levels in

hypoxic (polycythaemic) mice.

Abs. config. not detd.

[114675-14-8, 114675-18-2]

Bridges, A.J. *et al.*, *J. Med. Chem.*, 1988, **31**,

1282 (*synth, pharmacol*)

Pat. Coop. Treaty (WIPO), 1988, 88 03 147,

(*Warner-Lambert*); *CA*, **111**, 97690w (*synth,*

pharmacol)

Trivedi, B.K. *et al.*, *J. Med. Chem.*, 1989, **32**,

1667 (*sar, pharmacol*)

Bridges, A.J. *et al.*, *Nucleosides Nucleotides*,

1989, **8**, 357 (*synth, resoln*)

Lappe, R.W. *et al.*, *J. Cardiovasc. Pharmacol.*,

1992, **19**, 460 (*pharmacol*)

Klitgaard, H. *et al.*, *Eur. J. Pharmacol.*, 1993,

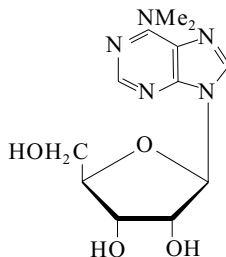
242, 221 (*pharmacol*)

Ohigashi, T. *et al.*, *J. Lab. Clin. Med.*, 1995,

126, 299 (*pharmacol*)

N,N-Dimethyladenosine, 9CI, 8CI D-724

[2620-62-4]



C₁₂H₁₇N₅O₄ 295.297

Component of *t*-RNA and of Puromycin.

Isol. from *E. coli* ribosomal RNA and

Triticum spp. Needles (Me₂CO aq.).

Mp 182-183°. [α]_D²⁰ -58.5 (c, 2.3 in H₂O).

p*K*_{a1} 4.5 (22°).

5'-Ac:

C₁₄H₁₉N₅O₅ 337.335

Mp 114-119°.

2'-Benzoyl:

C₁₉H₂₁N₅O₅ 399.405

Mp 149-151°.

3'-Benzoyl:

C₁₉H₂₁N₅O₅ 399.405

Mp 176-177°.

5'-Benzoyl:

C₁₉H₂₁N₅O₅ 399.405

Cryst. (MeOH aq.). Mp 116-123°.

2',3'-O-Isopropylidene: [19083-21-7]

C₁₅H₂₁N₅O₄ 335.362

Mp 176-177°.

2',3'-O-Benzylidene:

C₁₉H₂₁N₅O₄ 383.406

Mp 172°.

5'-Benzyl: [74397-38-9]

C₁₉H₂₃N₅O₄ 385.422

Cryst. (C₆H₆). Mp 142-145°.

5'-Phosphate:

C₁₂H₁₈N₅O₇P 375.277

Mp 225° dec. [α]_D²⁰ -51 (c, 2.0 in H₂O).

λ _{max} 268 nm (ϵ 18 300) (H₂O).

Littlefield, J.W. *et al.*, *Biochemistry*, 1958, **70**,

642 (*isol*)

Andrews, K.J.M. *et al.*, *J.C.S.*, 1958, 2768

(*synth*)

Starr, J.L. *et al.*, *J. Biol. Chem.*, 1964, **239**, 3457

(*isol*)

Townsend, L.B. *et al.*, *J.A.C.S.*, 1964, **86**, 5320

(*pmr*)

Green, D.P.L. *et al.*, *Chem. Comm.*, 1968, 729

(*synth, pmr*)

Komoroski, R.A. *et al.*, *Biochemistry*, 1974, **13**,

369 (*cmr*)

Žemlička, J. *et al.*, *Biocatalysis*, 1975, **14**, 5239

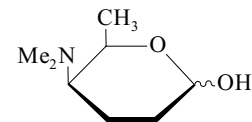
(*synth*)

Kato, T. *et al.*, *J.O.C.*, 1980, **45**, 4006

(*isopropylidene, 5'-benzyl, 5'-benzoyl*)

4-(Dimethylamino)-2,3,4,6-tetradecoxy-threo-hexose D-725

4-Dimethylamino-5-hydroxyhexanal. Ossamine



C₈H₁₇NO₂ 159.228

D-form [18423-30-8]

Constit. of Ossamycin.

Syrup. Bp_{0.5} 100-110° (bath) Bp_{0.01} 60°

(bath). [α]_D²⁶ -2.46 (c, 1.1 in MeOH).

Hydrochloride: [24384-99-4]

Mp 145-147°. [α]_D +3 (c, 3.4 in EtOH).

Picrate: [18423-31-9]

Cryst. Mp 171-172°. [α]_D²⁷ -1.4 (c, 1.0 in

MeOH).

Tosylate salt: [24385-02-2]

Cryst. Mp 102-103°.

Methiodide: [18423-32-0]

Mp 162-163°. [α]_D²⁷ +3.67 (c, 1.0 in

MeOH).

 α -D-Pyranose-form

Me glycoside: Methyl 4-(dimethylamino)-

2,3,4,6-tetradecoxy- α -D-threo-

hexopyranoside, 8CI

[28369-14-4]

C₉H₁₉NO₂ 173.255

Bp_{0.5} 40-45° (bath). [α]_D²⁵ +55.2 (c, 0.7 in

CHCl₃).

Et glycoside, tosylate salt: [18423-29-5]

Mp 128-129°. [α]_D²⁶ +53 (c, 0.9 in

MeOH).

Stevens, C.L. *et al.*, *Tet. Lett.*, 1966, 5717; 1969,

1181 (*isol*)

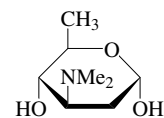
Albano, E.L. *et al.*, *Carbohydr. Res.*, 1969, **11**,

485 (*synth, pmr*)

3-(Dimethylamino)-2,3,6-tri-deoxy-arabino-hexose, 9CI, 8CI D-726

Angolosamine

[14702-57-9]



α -D-Pyranose-form

C₈H₁₇NO₃ 175.227

The *xylo*-configuration is given in some

earlier work.

D-form

Constit. of Angolamycin.

Hydrochloride: [14702-59-1]

Cryst. (EtOH/Et₂O). Mp 172-174°. [α]_D

+4.6 (c, 1.6 in H₂O).

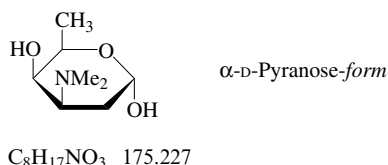
1,4-Di-Ac: 1,4-Di-*O*-acetyl-3-(dimethylamino)-2,3,6-trideoxy-*D*-arabino-hexose [14702-58-0]
 $C_{12}H_{21}NO_5$ 259.302
 Syrup. $[\alpha]_D^{25} +56$ (c, 0.6 in Me_2CO).

 α -D-Pyranose-form

Me glycoside: Methyl 3-(dimethylamino)-2,3,6-trideoxy- α -*D*-arabino-hexopyranoside. Methyl α -*D*-angolosaminide [72062-93-2]
 $C_9H_{19}NO_3$ 189.254
 Oil. $[\alpha]_D^{22} +87$ (c, 1.8 in MeOH).

 β -D-Pyranose-form

Me glycoside: Methyl 3-(dimethylamino)-2,3,6-trideoxy- β -*D*-arabino-hexopyranoside [72062-94-3]
 $C_9H_{19}NO_3$ 189.254
 Oil. $[\alpha]_D^{22} -68$ (c, 1.3 in MeOH).
 Brufani, M. *et al.*, *Helv. Chim. Acta*, 1966, **49**, 1962 (*D*-form, *synth*, *D*-di-Ac)
 Kinumaki, A. *et al.*, *J. Antibiot.*, 1972, **25**, 480
 Bartner, P. *et al.*, *J.C.S. Perkin 1*, 1979, 1600 (α -*D*-Me pyr, β -*D*-Me pyr, *pmr*, *cmr*)

3-(Dimethylamino)-2,3,6-trideoxy-lyxo-hexose **D-727**
Rhodosamine
 **α -D-Pyranose-form**

Me glycoside: Methyl 2,3,6-trideoxy-3-dimethylamino- α -*D*-lyxo-hexopyranoside
 $C_9H_{19}NO_3$ 189.254
 Syrup. $[\alpha]_D^{25} +114$ (c, 1.6 in MeOH).

 β -D-Pyranose-form

Me glycoside: Methyl 2,3,6-trideoxy-3-dimethylamino- β -*D*-lyxo-hexopyranoside
 $C_9H_{19}NO_3$ 189.254
 Syrup. $[\alpha]_D^{22} -38$ (c, 1.0 in MeOH).

***L*-form**

Sugar component of the antibiotics Rhodomycin A, Rhodomycin B, γ -Rhodomycin II, γ -Rhodomycin III, R-85, γ -Rhodomycin IV, R-86, Pyrromycin, Cinerubin A and Cinerubin B.
Hydrochloride: Mp 152-153°. $[\alpha]_D^{20} -65.2 \rightarrow -48.2$ (25 min; c, 2.9 in H_2O).

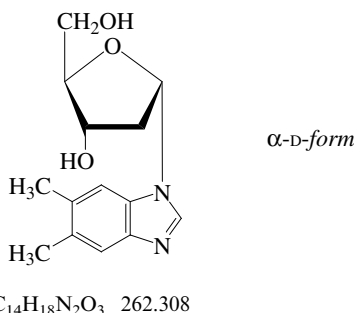
 α -L-Pyranose-form

Di-Ac: 1,4-Di-*O*-acetyl-2,3,6-trideoxy-3-(dimethylamino)- α -*L*-lyxo-hexopyranose
 $C_{12}H_{21}NO_5$ 259.302
 Mp 81-83°. $[\alpha]_D^{20} -109$ (c, 0.18 in Me_2CO).

 β -L-Pyranose-form

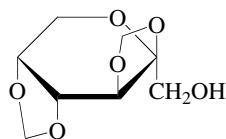
Di-Ac: 1,4-Di-*O*-acetyl-2,3,6-trideoxy-3-(dimethylamino)- β -*L*-lyxo-hexopyranose
 $C_{12}H_{21}NO_5$ 259.302
 Mp 68-73°. $[\alpha]_D^{20} -20$ (c, 2.87 in Me_2CO).
 [30636-50-1]

Brockmann, H. *et al.*, *Chem. Ber.*, 1963, **96**, 2925 (*isol*, *config*, α -*L*-di-Ac, β -*L*-di-Ac)
 Brockmann, H. *et al.*, *Naturwissenschaften*, 1963, **50**, 92 (*isol*)
 Nourse, J.G. *et al.*, *J.A.C.S.*, 1975, **97**, 4584 (*cmr*)
 Thang, T.T. *et al.*, *J.A.C.S.*, 1978, **100**, 663 (*occur*)
 Bartner, P. *et al.*, *J.C.S. Perkin 1*, 1979, 1600, (α -*D*-Me pyr, β -*D*-Me pyr, *pmr*)

5,6-Dimethyl-1-(2-deoxyribofuranosyl)benzimidazole **D-728**
1-(2-Deoxy-erythro-pentofuranosyl)-5,6-dimethylbenzimidazole, 8CI


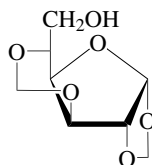
α -D-form [4600-71-9]
 Mp 225-226°. $[\alpha]_D^{27} +109.6$ (MeOH).

β -D-form [4600-72-0]
 Mp 158-160°. $[\alpha]_D^{27} -32.2$ (MeOH).
 Whittle, C.P. *et al.*, *J.A.C.S.*, 1965, **87**, 4940 (*synth*, *pmr*)
 Diwan, A. *et al.*, *J. Gen. Virol.*, 1968, **3**, 393; *CA*, **70**, 35339q

2,3:4,5-Di-*O*-methylenefructopyranose, 9CI **D-729**


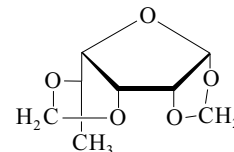
$C_8H_{12}O_6$ 204.179

β -D-form [139964-44-6]
 Syrup. $[\alpha]_D -30$ (c, 1.5 in MeOH).
 Nouguier, R. *et al.*, *Carbohydr. Res.*, 1995, **277**, 339-345 (*synth*, *pmr*, *cmr*)

1,2:3,5-Di-*O*-methyleneglucofuranose, 9CI **D-730**


$C_8H_{12}O_6$ 204.179

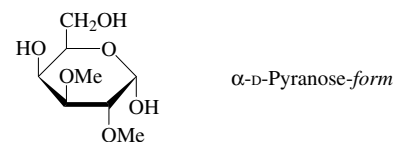
α -D-form [16667-94-0]
 Syrup. $[\alpha]_D +35$ (c, 1.3 in MeOH).
 Nouguier, R. *et al.*, *Carbohydr. Res.*, 1995, **277**, 339-345 (*synth*, *pmr*, *cmr*)

1,2:3,5-Di-*O*-methylenetherhamnofuranose **D-731**
6-Deoxy-1,2:3,5-di-O-methylenemannofuranose


$C_8H_{12}O_5$ 188.18

 β -L-form

Mp 100°. $[\alpha]_D +3$ (H_2O).
 Andrews, P. *et al.*, *J.A.C.S.*, 1955, **77**, 125

2,3-Di-*O*-methylgalactose, 9CI, 8CI **D-732**


$C_8H_{16}O_6$ 208.211

***D*-form** [4060-10-0]
 Glass. $[\alpha]_D^{15} +11.3$ (c, 1.15 in $CHCl_3$).
 $[\alpha]_D^{19} +113$ (c, 3.2 in H_2O).

 α -D-Pyranose-form [13403-33-3]

Me glycoside: Methyl 2,3-di-*O*-methyl- α -*D*-galactopyranoside [22323-71-3]
 $C_9H_{18}O_6$ 222.238
 Syrup. $[\alpha]_D^{15} +173.7$ (c, 1.13 in $CHCl_3$).

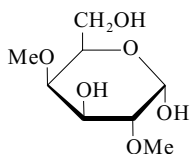
Me glycoside, 6-benzoyl: Methyl 6-*O*-benzoyl-2,3-di-*O*-methyl- α -*D*-galactopyranoside [53437-96-0]
 $C_{16}H_{22}O_7$ 326.346
 Cryst. (petrol/EtOH). Mp 109°. $[\alpha]_D +110$ (c, 2.2 in $CHCl_3$).

Me glycoside, 4,6-dinitrate:
 $C_9H_{16}N_2O_{10}$ 312.233
 Mp 95°. $[\alpha]_D^{19} +114$ (c, 1.6 in $CHCl_3$).

 β -D-Pyranose-form [13403-34-4]

Me glycoside: Methyl 2,3-di-*O*-methyl- β -*D*-galactopyranoside [22323-70-2]
 $C_9H_{18}O_6$ 222.238
 Syrup. $[\alpha]_D^{18} +23$ (c, 7.4 in H_2O).
 $[\alpha]_D -10.7$ (c, 6.8 in $CHCl_3$).

Robertson, G.J. *et al.*, *J.C.S.*, 1934, 1321, (*D*-form, *synth*, α -*D*-Me pyr, α -*D*-Me pyr dinitrate, α -*D*-Me pyr benzylidene)
 Bell, D.J. *et al.*, *J.C.S.*, 1955, 1136 (*D*-form, *synth*, α -*D*-Me pyr, α -*D*-Me pyr dinitrate, β -*D*-Me pyr)
 Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, **21**, 73 (*pmr*)
 Haverkamp, J. *et al.*, *Carbohydr. Res.*, 1974, **33**, 319 (*cmr*)
 Cooper, D.B. *et al.*, *J.C.S. Perkin 1*, 1974, 1049 (α -*D*-Me pyr benzoyl)
 Vogt, D.C. *et al.*, *Carbohydr. Res.*, 1990, **206**, 333 (*pmr*, *cmr*)

2,4-Di-*O*-methylgalactose, 9CI, 8CI**D-733** α -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [4301-53-5]

Obt. as a crystalline α -monohydrate. Mp 105-108°. $[\alpha]_D^{25} +130 \rightarrow +85$ (H_2O).

 α -D-Pyranose-form [35780-92-8]

Me glycoside: Methyl 2,4-di-*O*-methyl- α -D-galactopyranoside [35781-10-3]

 $C_9H_{18}O_6$ 222.238

Cryst. (Me_2CO /petrol). Mp 105°. $[\alpha]_D^{18} +142$ (c, 1.1 in H_2O).

 β -D-Pyranose-form [35781-03-4]

Me glycoside: Methyl 2,4-di-*O*-methyl- β -D-galactopyranoside

 $C_9H_{18}O_6$ 222.238

Cryst. (Me_2CO /Et $_2O$). Mp 165-166°. $[\alpha]_D^0$ 0 (c, 1.8 in H_2O).

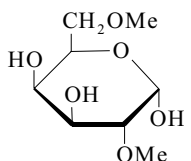
Smith, F. *et al.*, *J.C.S.*, 1939, 1724 (*D*-form, α -D-Me pyr, β -D-Me pyr)

Westwood, J.H. *et al.*, *J.O.C.*, 1967, 32, 1643, (*D*-form, synth, β -D-Me pyr)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, 21, 73 (*pmr*)

Dea, I.C.M. *et al.*, *J.C.S. Perkin 2*, 1974, 105, (*D*-form, *cryst struct*)

Vogt, D.C. *et al.*, *Carbohydr. Res.*, 1990, 206, 333 (*pmr*, *cmr*)

2,6-Di-*O*-methylgalactose, 9CI, 8CI**D-734** α -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [4060-07-5]

Mp 119-120°. $[\alpha]_D +47 \rightarrow +88$ (c, 5.4 in H_2O).

 α -D-Pyranose-form [35781-04-5]

Me glycoside, 3,4-*O*-isopropylidene: Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-methyl- α -D-galactopyranoside [35780-98-4]

 $C_{12}H_{22}O_6$ 262.302

$[\alpha]_D +155$ (c, 1 in H_2O).

Me glycoside, 3,4-dinitrate:

 $C_9H_{16}N_2O_{10}$ 312.233

Needles (petrol). Mp 50-51°. $[\alpha]_D^{20} +161$ ($CHCl_3$).

 β -D-Pyranose-form [5188-19-2]

Me glycoside: Methyl 2,6-di-*O*-methyl- β -D-galactopyranoside [7225-55-0]

 $C_9H_{18}O_6$ 222.238

Needles ($CHCl_3$ /petrol). Mp 73-75°.

$[\alpha]_D^{21} -24$ (c, 6.98 in $CHCl_3$).

Me glycoside, 3,4-*O*-isopropylidene: Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-methyl- β -D-galactopyranoside

 $C_{12}H_{22}O_6$ 262.302

Mp 56-57°. $[\alpha]_D^{21} -4.5$ (c, 5.8 in $CHCl_3$).

Me glycoside, 3,4-dinitrate:

 $C_9H_{16}N_2O_{10}$ 312.233

Needles (MeOH). Mp 88°. $[\alpha]_D^{17} +3.5$ ($CHCl_3$).

Oldham, J.W.H. *et al.*, *J.A.C.S.*, 1938, 60, 323 (β -D-Me pyr, β -D-Me pyr dinitrate)

Bell, D.J. *et al.*, *J.C.S.*, 1938, 1196 (α -D-Me pyr dinitrate, α -D-Me pyr isopropylidene)

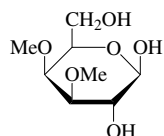
Bell, D.J. *et al.*, *J.C.S.*, 1945, 692 (β -D-Me pyr, β -D-Me pyr isopropylidene)

Dewar, E.T. *et al.*, *J.C.S.*, 1947, 1622 (*occur*)

Andrews, P. *et al.*, *J.C.S.*, 1954, 806 (*occur*)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, 21, 73 (*pmr*)

Morgenlie, S. *et al.*, *Carbohydr. Res.*, 1975, 41, 77 (*D*-form, *synth*)

3,4-Di-*O*-methylgalactose, 9CI**D-735** β -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [50721-19-2]

Mp 170-171°. $[\alpha]_D^{20} +90.2 \rightarrow +117.3$ (c, 0.92 in H_2O).

 β -D-Pyranose-form [35781-07-8]

Me glycoside: Methyl 3,4-di-*O*-methyl- β -D-galactopyranoside [22323-72-4]

 $C_9H_{18}O_6$ 222.238

Needles ($CCl_4/CHCl_3$). Mp 102-103°.

$[\alpha]_D^{20} -9.1$ (c, 6.2 in $CHCl_3$).

Me glycoside, 2,6-dinitrate: [35781-00-1]

 $C_9H_{16}N_2O_{10}$ 312.233

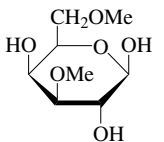
Plates (MeOH aq.). Mp 75-76°.

$[\alpha]_D^{21} -13.3$ (c, 6.5 in $CHCl_3$).

Bacon, J.S.D. *et al.*, *J.C.S.*, 1939, 1869 (*D*-form, *synth*, β -D-Me pyr, β -D-Me pyr dinitrate)

Hirase, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, 45, 1569 (*synth*)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, 21, 73 (*pmr*)

3,6-Di-*O*-methylgalactose**D-736** β -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [51385-33-2]

Cryst. (EtOH aq./ Me_2CO).

Mp 101-102°. $[\alpha]_D +93.2$ (c, 1.1 in H_2O).

 β -D-Pyranose-form

Me glycoside: Methyl 3,6-di-*O*-methyl- β -D-galactopyranoside [51385-32-1]

 $C_9H_{18}O_6$ 222.238

Syrup. $[\alpha]_D -11.5$ (c, 1.86 in Me_2CO).

 α -D-Furanose-form

1,2-*O*-Isopropylidene: 1,2-*O*-Isopropylidene-3,6-di-*O*-methyl- α -D-galactofuranose [53951-14-7]

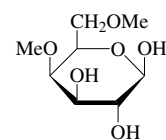
 $C_{11}H_{20}O_6$ 248.275

Syrup. Bp $_{0.1}$ 105° (bath). $[\alpha]_D -39$ (c, 0.8 in $CHCl_3$).

Penman, A. *et al.*, *J.C.S. Perkin 1*, 1973, 2188

(*D*-form, *occur*, β -D-Me pyr)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1974, 36, 205 (*D*-form, *synth*, α -D-fur isopropylidene)

4,6-Di-*O*-methylgalactose, 9CI, 8CI**D-737** β -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [34327-08-7]

Cryst. (EtOH). Mp 148-150°. $[\alpha]_D^{20} +128.8 \rightarrow +76.2$ (c, 1.3 in H_2O).

 β -D-Pyranose-form [25029-41-8]

Me glycoside: Methyl 4,6-di-*O*-methyl- β -D-galactopyranoside [25029-39-4]

 $C_9H_{18}O_6$ 222.238

Needles (Et $_2O$). Mp 140°. $[\alpha]_D^{20} -41.5$ (c, 4 in $CHCl_3$).

Me glycoside, 2,3-dibenzoyl: Methyl 2,3-di-*O*-benzoyl-4,6-di-*O*-methyl- β -D-galactopyranoside [25029-38-3]

 $C_{23}H_{26}O_8$ 430.454

Gum. $[\alpha]_D^{26} +63.8$ (c, 1.5 in $CHCl_3$).

Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-*O*-benzyl-4,6-di-*O*-methyl- β -D-galactopyranoside

 $C_{23}H_{30}O_6$ 402.486

Mp 68-69°. $[\alpha]_D^{18} +3.05$ (c, 6.5 in $CHCl_3$).

Me glycoside, 2,3-ditosyl: Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- β -D-galactopyranoside

 $C_{23}H_{30}O_{10}S_2$ 530.616

Syrup. $[\alpha]_D +6$ (c, 2.34 in $CHCl_3$).

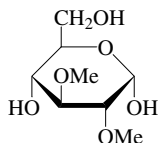
Bacon, J.S.D. *et al.*, *J.C.S.*, 1940, 1147, (*D*-form, *synth*, β -D-Me pyr, β -D-Me pyr ditosyl, β -D-Me pyr dibenzyl)

Gros, E.G. *et al.*, *Carbohydr. Res.*, 1969, 10, 318 (*D*-form, *synth*, β -D-Me pyr)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, 21, 73 (*pmr*)

2,3-Di-*O*-methylglucose, 9CI, 8CI

D-738

 α -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [4261-27-2]Hydrol. prod. of *Streblus asper* heterosides.

Anil: Mp 134°.

 α -D-Pyranose-form [13405-48-6]Mp 85-87°. $[\alpha]_D^{25} +81.9 \rightarrow +48.3$ (Me₂CO).*Me* glycoside: Methyl 2,3-di-*O*-methyl- α -*D*-glucopyranoside

[14048-30-7]

 $C_9H_{18}O_6$ 222.238Mp 83-85°. $[\alpha]_D^{20} +143$ (H₂O).*Me* glycoside, 4,6-*O*-isopropylidene: Methyl 4,6-*O*-isopropylidene-2,3-di-*O*-methyl- α -*D*-glucopyranoside $C_{12}H_{22}O_6$ 262.302Bp₁₂ 142-143°. $[\alpha]_D^{19} -19$ (MeOH).*Me* glycoside, 4,6-*O*-benzylidene: Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- α -*D*-glucopyranoside $C_{16}H_{22}O_6$ 310.346Mp 122-123°. $[\alpha]_D^{30} +97$ (Me₂CO). **β -D-Pyranose-form** [13224-89-0]Cryst. (EtOAc). Mp 110°. $[\alpha]_D^{20} +5.7 \rightarrow +64.4$ (H₂O).*Me* glycoside: Methyl 2,3-di-*O*-methyl- β -*D*-glucopyranoside

[10227-29-9]

 $C_9H_{18}O_6$ 222.238Mp 62-64°. $[\alpha]_D -47.8$ (CHCl₃).*Ph* glycoside: Phenyl 2,3-di-*O*-methyl- β -*D*-glucopyranoside $C_{14}H_{20}O_6$ 284.308Cryst. (H₂O). Mp 97-98°. $[\alpha]_D^{25} -72.8$ (c, 2.0 in CHCl₃).*Ph* glycoside, 4,6-*O*-benzylidene: Phenyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- β -*D*-glucopyranoside $C_{21}H_{24}O_6$ 372.417Cryst. (1,2-diethoxyethane/EtOH). Mp 179-180°. $[\alpha]_D^{25} -55.8$ (c, 2.0 in CHCl₃).Irvine, J.C. *et al.*, *J.C.S.*, 1913, **103**, 575,(α-*D*-pyr, β-*D*-pyr)McCloskey, C.M. *et al.*, *J.O.C.*, 1945, **10**, 184(β-*D*-pyr, β-*D*-Ph pyr, β-*D*-Ph pyr benzylidene)Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*,1950, **5**, 145 (rev. derivs)Khare, M.P. *et al.*, *Helv. Chim. Acta*, 1962, **45**,

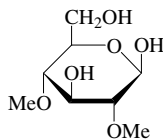
1534 (isol)

Casu, B. *et al.*, *Tetrahedron*, 1967, **24**, 803

(conformn, pmr)

2,4-Di-*O*-methylglucose, 9CI, 8CI

D-739

 β -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [19887-43-5]

Anil:

 $C_{14}H_{21}NO_5$ 283.324

Needles (EtOH). Mp 196°.

4-Nitroanil: 2,4-Di-*O*-methyl-N-

(4-nitrophenyl)glucosylamine

Mp 250-251°. $[\alpha]_D^{25} -252 \rightarrow -268$

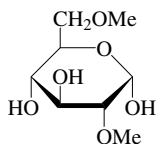
(c, 0.5 in Py).

 β -D-Pyranose-formMp 128-130°. $[\alpha]_D^{25} +37.3 \rightarrow +76.5$ (c, 1.6 in H₂O).*Tri*-Ac: 1,3,6-Tri-*O*-acetyl-2,4-di-*O*-methyl- β -*D*-glucopyranoside $C_{14}H_{22}O_9$ 334.322Needles (CHCl₃/petrol). Mp 105-106°. $[\alpha]_D^{20} +11.5$ (c, 7.3 in CHCl₃).*Me* glycoside: Methyl 2,4-di-*O*-methyl- β -*D*-glucopyranoside

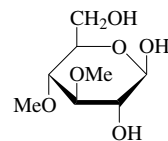
[2811-19-0]

 $C_9H_{18}O_6$ 222.238Cryst. (Et₂O). Mp 120-121°. $[\alpha]_D^{20} -26.8$ (c, 3.4 in H₂O).*Ph* glycoside: Phenyl 2,4-di-*O*-methyl- β -*D*-glucopyranoside $C_{14}H_{20}O_6$ 284.308Cryst. (C₆H₆). Mp 166.5-167.5°. $[\alpha]_D^{25} -54.5$ (c, 3.0 in Me₂CO).Bell, D.J. *et al.*, *J.C.S.*, 1954, 1145 (*D*-form,β-*D*-pyr tri-Ac, β-*D*-Me pyr)Van Cleve, J.W. *et al.*, *J.A.C.S.*, 1955, **77**, 5341(β-*D*-form, synth, β-*D*-Me pyr, β-*D*-Ph pyr)Petersson, G. *et al.*, *CA*, 1969, **70**, 78 300n (ms)Nanasi, P. *et al.*, *Magy. Kem. Foly.*, 1974, **80**,217; *CA*, **81**, 91880y (pmr)**2,6-Di-*O*-methylglucose, 9CI, 8CI**

D-740

 α -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [16274-29-6]Syrup. $[\alpha]_D^{20} +58.3 \rightarrow +63.3$ (H₂O). **α -D-Pyranose-form***Me* glycoside: Methyl 2,6-di-*O*-methyl- α -*D*-glucopyranoside $C_9H_{18}O_6$ 222.238Syrup. $[\alpha]_D +156$ (H₂O). **β -D-Pyranose-form***Me* glycoside: Methyl 2,6-di-*O*-methyl- β -*D*-glucopyranoside $C_9H_{18}O_6$ 222.238Hygroscopic needles (Et₂O/hexane). Mp 50-52°. $[\alpha]_D^{20} -43.5$ (c, 11 in CHCl₃).Bell, D.J. *et al.*, *J.C.S.*, 1938, 833 (*D*-form, synth, β-*D*-Me pyr)Freudenberg, K. *et al.*, *Ber.*, 1941, **74**, 237, (*D*-form, synth)Haworth, S. *et al.*, *Carbohydr. Res.*, 1969, **9**, 491 (glc)**3,4-Di-*O*-methylglucose, 9CI**

D-741

 β -D-Pyranose-form $C_8H_{16}O_6$ 208.211***D*-form** [37111-57-2]Cryst. (EtOAc). Mp 115-119°. $[\alpha]_D^{22} +80.95 \rightarrow +75$ (c, 1.0 in H₂O).*Phenylosazone*:

Yellow needles. Mp 126-127°.

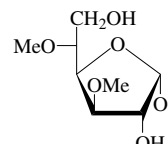
Anil:

 $C_{14}H_{21}NO_5$ 283.324Mp 177-178°. $[\alpha]_D^{20} -106$ (c, 2.2 in EtOH). **α -D-Pyranose-form***Me* glycoside: Methyl 3,4-di-*O*-methyl- α -*D*-glucopyranoside

[23262-69-3]

 $C_9H_{18}O_6$ 222.238Cryst. (Et₂O/hexane). Mp 55-56°. $[\alpha]_D^{22} +179.3$ (c, 1.0 in CHCl₃). **β -D-Pyranose-form**Cryst. (propyl acetate). Mp 113°. $[\alpha]_D^{16} +64.9 \rightarrow +94.8$ (c, 0.97 in H₂O).*Me* glycoside: Methyl 3,4-di-*O*-methyl- β -*D*-glucopyranoside $C_9H_{18}O_6$ 222.238Cryst. (Me₂CO). Mp 79-81°. $[\alpha]_D^{15} -10.9$ (c, 5.38 in Me₂CO).*Me* glycoside, 6-trityl: Methyl 3,4-di-*O*-methyl-6-*O*-trityl- β -*D*-glucopyranoside $C_{28}H_{32}O_6$ 464.557 $[\alpha]_D^{15} +14.2$ (c, 3.76 in CHCl₃).*Me* glycoside, 2,6-dinitrate: $C_9H_{16}N_2O_{10}$ 312.233Mp 62-63°. $[\alpha]_D^{11} +9.7$ (c, 3.7 in CHCl₃).Dewar, J. *et al.*, *J.C.S.*, 1944, 496 (β-*D*-pyr, synth, β-*D*-Me pyr, β-*D*-Me pyr trityl)Bell, D.J. *et al.*, *J.C.S.*, 1950, 1902 (β-*D*-pyr, synth, β-*D*-Me pyr)Mitra, A.K. *et al.*, *J.O.C.*, 1962, **27**, 160, (α-*D*-3,4-di-Me, Me α-*D*-pyr)Lipták, A. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1970, **66**, 315 (*D*-form, synth, α-*D*-Me pyr)Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1974, **38**, 71 (glc, ms)**3,5-Di-*O*-methylglucose**

D-742

 α -D-Furanose-form $C_8H_{16}O_6$ 208.211

D-form*Phenylosazone:*

Cryst. (EtOH aq.). Mp 64-65° dec. $[\alpha]_D^{25}$ -83 (c, 1.5 in EtOH).

D-Furanose-form [16714-11-7]

Bp_{0.0001} 140-155° (bath). $[\alpha]_D^{20}$ -20.1 (c, 1.37 in H₂O). $[\alpha]_D^{25}$ -28 (c, 0.9 in H₂O).

α-D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-3,5-di-O-methyl-α-D-glucopyranose
C₁₁H₂₀O₆ 248.275
Bp_{0.011} 89-90°.

1,2-O-Isopropylidene, 6-tosyl: 1,2-O-Isopropylidene-3,5-di-O-methyl-6-O-tosyl-α-D-glucopyranose
[16714-10-6]
C₁₈H₂₆O₈S 402.465
 $[\alpha]_D^{25}$ -15 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, 6-benzyl: 6-O-Benzyl-1,2-O-isopropylidene-3,5-di-O-methyl-α-D-glucopyranose
C₁₈H₂₆O₆ 338.4
Cryst. (petrol). Mp 80.8-81.3°.
 $[\alpha]_D^{20}$ -41.6 (CHCl₃).

1,2-O-Isopropylidene, 6-trityl: 1,2-O-Isopropylidene-3,5-di-O-methyl-6-O-trityl-α-D-glucopyranose
C₃₀H₃₄O₆ 490.595
 $[\alpha]_D^{27}$ -30 (c, 1.4 in EtOH).

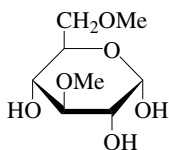
Huffman, G.W. *et al.*, *J.A.C.S.*, 1955, **77**, 4346 (*D-fur-form, synth*)

Bishop, C.T. *et al.*, *Can. J. Chem.*, 1957, **35**, 61 (*D-fur form, α-D-fur isopropylidene trityl*)

Coleman, G.H. *et al.*, *J.O.C.*, 1957, **22**, 1336, (*α-D-fur, α-D-fur isopropylidene, α-D-fur isopropylidene benzyl*)

Cox, J.M. *et al.*, *J.C.S. (C)*, 1967, 1121 (*α-D-fur, α-D-fur isopropylidene tosyl*)

Chittenden, G.F. *et al.*, *Carbohydr. Res.*, 1979, **74**, 333-336 (*synth*)

3,6-Di-*O*-methylglucose, 9CI, 8CI **D-743****α-D-Pyranose-form**C₈H₁₆O₆ 208.211**D-form** [6207-55-2]

Fragment of *Mycobacterium leprae* phenolic glycolipids responsible for their immunological specificity. Has been used in experimental serological tests for leprosy infection in humans.

Phenylosazone:

Yellow needles. Mp 114.5-115.5°. $[\alpha]_D^{25}$ -139.4 → -50 (c, 1.51 in 2:3 Py/EtOH).

α-D-Pyranose-form [24435-81-2]

Cryst. (EtOAc). Mp 124-126° (113-116°). $[\alpha]_D^{23}$ +101 → +64.7 (c, 1.2 in H₂O).

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-3,6-di-O-methyl-α-D-glucopyranose
C₁₁H₂₀O₆ 248.275
Bp_{0.1} 97-101° (bath). $[\alpha]_D$ -33.5 (c, 2.0 in Me₂CO).

β-D-Pyranose-form [24435-82-3]

Me glycoside: Methyl 3,6-di-O-methyl-β-D-glucopyranoside
[65877-30-7]
C₉H₁₈O₆ 222.238
Syrup. $[\alpha]_D^{18}$ +62.9 (CHCl₃).

Me glycoside, 2,4-di-Ac: Methyl 2,4-di-O-acetyl-3,6-di-O-methyl-β-D-glucopyranoside
[24905-08-6]
C₁₃H₂₂O₈ 306.312
Cryst. (petrol). Mp 100-101°. $[\alpha]_D^{23}$ -30.5 (c, 0.97 in CHCl₃).

Me glycoside, dibenzoyl: Methyl 2,4-di-O-benzoyl-3,6-di-O-methyl-β-D-glucopyranoside
C₂₃H₂₆O₈ 430.454
Cryst. (MeOH). Mp 155-156°.
 $[\alpha]_D^{19}$ -11.65 (c, 3.0 in CHCl₃).

Me glycoside, ditosyl: Methyl 3,6-di-O-methyl-2,4-di-O-tosyl-β-D-glucopyranoside
C₂₃H₃₀O₁₀S₂ 530.616
Cryst. (EtOH). Mp 158-160°. $[\alpha]_D^{15}$ -22.8 (c, 4.5 in CHCl₃).

α-D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-3,6-di-O-methyl-α-D-glucopyranose
[77778-12-2]
C₁₁H₂₀O₆ 248.275
Syrup. $[\alpha]_D^{23}$ -48 (c, 1 in CHCl₃).

Bell, D.J. *et al.*, *J.C.S.*, 1935, 175; 1936, 1553, (*α-D-pyr, α-D-Me pyr, α-D-Me pyr dibenzoyl, α-D-Me pyr ditosyl, synth*)

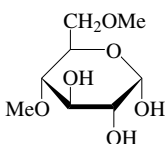
Fried, J. *et al.*, *J.A.C.S.*, 1952, **74**, 5468 (*α-D-pyr, synth*)

Sinner, M. *et al.*, *J. Chromatogr.*, 1976, **121**, 122 (*chromatog*)

Gigg, R. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 207-223 (*synth, β-D-pyr di-Ac, β-D-pyr dibenzoyl, α-D-fur isopropylidene*)

Liaiv, A. *et al.*, *Carbohydr. Res.*, 1986, **149**, C13 (*synth, bibl*)

Sen, A.K. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 645-654 (*synth*)

4,6-Di-*O*-methylglucose, 9CI **D-744****α-D-Pyranose-form**C₈H₁₆O₆ 208.211**α-D-Pyranose-form** [24462-98-4]

Needles (EtOAc). Mp 156-158°. $[\alpha]_D$ +110 → +64 (H₂O).

Me glycoside: Methyl 4,6-di-O-methyl-α-D-glucopyranoside
[23262-68-2]
C₉H₁₈O₆ 222.238
Bp_{0.05} 140-142°. $[\alpha]_D^{20}$ +156.8 (CHCl₃).

Me glycoside, ditosyl: Methyl 4,6-di-O-methyl-2,3-di-O-tosyl-α-D-glucopyranoside
C₂₃H₃₀O₁₀S₂ 530.616
Cryst. (MeOH). Mp 113°. $[\alpha]_D^{18}$ +55.5 (CHCl₃).

Me glycoside, dibenzyl: Methyl 2,3-di-O-benzyl-4,6-di-O-methyl-α-D-glucopyranoside
C₂₃H₃₀O₆ 402.486
Bp_{0.03} 215-220° (bath). $[\alpha]_D^{18}$ +32.9 (c, 5.0 in CHCl₃).

β-D-Pyranose-form [24435-83-4]

Me glycoside: Methyl 4,6-di-O-methyl-β-D-glucopyranoside
[4153-25-7]
C₉H₁₈O₆ 222.238
Cryst. (Et₂O). Mp 77-78° Mp 50-52° (monohydrate). $[\alpha]_D^{18}$ -33.7 (c, 0.41 in CHCl₃).

Me glycoside, ditosyl: Methyl 4,6-di-O-methyl-2,3-di-O-tosyl-β-D-glucopyranoside
C₂₃H₃₀O₁₀S₂ 530.616
Cryst. (EtOH). Mp 146-149°. $[\alpha]_D^{20}$ -14.8 (c, 3.0 in CHCl₃).

Me glycoside, dinitrate:

C₉H₁₆N₂O₁₀ 312.233
Needles (petrol). Mp 54-57°. $[\alpha]_D^{15}$ -13.4 (c, 3.0 in CHCl₃).

Bell, D.J. *et al.*, *J.C.S.*, 1937, 1711 (*α-D-pyr, β-D-Me pyr, β-D-Me pyr ditosyl, β-D-Me pyr dinitrate*)

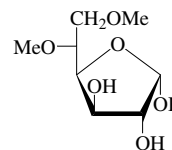
Freudenberg, K. *et al.*, *Ber.*, 1940, **73**, 621, (*α-D-pyr, synth*)

Bell, D.J. *et al.*, *J.C.S.*, 1940, 453 (*α-D-pyr, α-D-Me pyr, α-D-Me pyr ditosyl, α-D-Me pyr dibenzyl*)

O'Meara, D. *et al.*, *J.C.S.*, 1955, 4232 (*β-D-Me pyr dinitrate*)

Grellert, E. *et al.*, *Carbohydr. Res.*, 1973, **30**, 218 (*chromatog*)

Terui, T. *et al.*, *Chem. Pharm. Bull.*, 1974, **22**, 2476 (*pmr*)

5,6-Di-*O*-methylglucose **D-745****α-D-Furanose-form**C₈H₁₆O₆ 208.211**D-form**

Syrup. $[\alpha]_D^{32}$ +4 (c, 2.4 in H₂O).

4-Bromophenylosazone:

Yellow needles. Mp 155-156°.

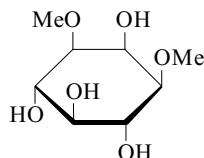
Tris-4-nitrobenzoyl: Methyl 90-120°. $[\alpha]_D$ +90 (Me₂CO).

α-D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-5,6-di-O-methyl-α-D-glucopyranose
C₁₁H₂₀O₆ 248.275
Cryst. (petrol). Mp 56°. Bp_{0.15} 105-110°. $[\alpha]_D^{30}$ -13 (H₂O) (-5.2). Also descr. as a syrup.

Salmon, M.R. *et al.*, *J.A.C.S.*, 1939, **61**, 3507 (*D-form, synth, α-D-fur isopropylidene*)

Freudenberg, K. *et al.*, *Ber.*, 1940, **73**, 621, (*D-form, synth*)

1,3-Di-*O*-methyl-*myo*-inositol, 9CI, 8CI**Dambonitol.** *Dambonite* [523-94-4] $C_8H_{16}O_6$ 208.211

Constit. of latex of *Dyera lowii* and in the leaves of *Anodendron affine*. Also from *Nerium oleander*, *Trachelospermum jasminoides* and other plants. Latex used for manuf. of chewing gum. Allergy inhibitor. Cryst. (EtOH) with sweet taste. Mp 210°. Exhibits polymorphism. Opt. inactive (*meso*-).

Tetra-Ac: 2,4,5,6-Tetra-*O*-acetyldambonitol [109338-68-3]

 $C_{16}H_{24}O_{10}$ 376.36

Cryst. (MeOH). Mp 195°.

Comollo, A.J. *et al.*, *J.C.S.*, 1953, 3319, (*isol, constit*)

Kiang, A.K. *et al.*, *J.C.S.*, 1956, 480-483 (*struct*)

Angyal, S.J. *et al.*, *J.C.S.*, 1957, 1417-1422, (*isol, struct*)

Kindl, H. *et al.*, *Monatsh. Chem.*, 1966, **97**, 1778 (*biosynth*)

Dorman, E.D. *et al.*, *J.A.C.S.*, 1970, **92**, 1351 (*cmr*)

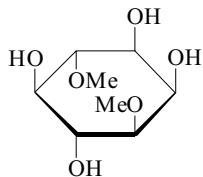
Anderson, L. *et al.*, *The Carbohydrates*, Academic Press, 1972, **1A**, 519 (*rev*)

Paart, E. *et al.*, *J. Chromatogr.*, 1973, **85**, 93 (*chromatog*)

Sakurai, K. *et al.*, *Biosci., Biotechnol., Biochem.*, 1992, **56**, 975 (*isol, pmr, cmr, props*)

1,4-Di-*O*-methyl-*myo*-inositol D-747**Liriodendritol**

[28282-41-9]

(±)-*form* $C_8H_{16}O_6$ 208.211**D-form** [22006-88-8]

Isol. from *Liriodendron tulipifera*, *Liriodendron chinense* and other plants. Prisms (EtOH).

Mp 224° (anhyd.). $[\alpha]_D$ -25 (c, 1.5 in H_2O).

Tetra-Ac: $C_{16}H_{24}O_{10}$ 376.36

Mp 139°. $[\alpha]_D$ -24 ($CHCl_3$).

(±)-*form*

Mp 203°.

Tetra-Ac:

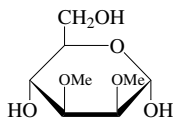
Cryst. (EtOH aq.). Mp 155-156°.

Angyal, S.J. *et al.*, *J.C.S.*, 1961, 4718 (*struct, synth*)

D-746

Kindl, H. *et al.*, *Prog. Chem. Org. Nat. Prod.*, 1966, **24**, 149 (*rev*)

Aguilo, A. *et al.*, *Tet. Lett.*, 1992, **33**, 401-404 (*synth*)

2,3-Di-*O*-methylmannose**D-748** α -D-Pyranose-*form* $C_8H_{16}O_6$ 208.211**D-form**

Syrup. $[\alpha]_D^{17}$ -21.7 (c, 1.17 in H_2O).

4-*Me*: 2,3,4-Tri-*O*-methyl-D-mannose [58894-01-2]

 $C_9H_{18}O_6$ 222.238

$[\alpha]_D^{20}$ +2 (c, 5.9 in H_2O).

 α -D-Pyranose-*form*

1,4,6-Tris(p-nitrobenzoyl): [53767-32-1]

Cryst. (MeOH). Mp 194-195°. $[\alpha]_D^{20}$ +42 (c, 0.9 in $CHCl_3$).

Me glycoside: Methyl 2,3-di-*O*-methyl- α -D-mannopyranoside [27299-05-4]

 $C_9H_{18}O_6$ 222.238

$[\alpha]_D^{18}$ +37.1 (c, 1.31 in $CHCl_3$).

Me glycoside, 4-*Ac*: Methyl 4-*O*-acetyl-2,3-di-*O*-methyl- α -D-mannopyranoside [53767-30-9]

 $C_{11}H_{20}O_7$ 264.275

Syrup. $[\alpha]_D$ +33.5 (c, 1.63 in $CHCl_3$).

Me glycoside, 4-tosyl: Methyl 2,3-di-*O*-methyl-4-*O*-tosyl- α -D-mannopyranoside [32934-13-7]

 $C_{16}H_{24}O_8S$ 376.427

$[\alpha]_D^{22}$ +41 (c, 2.5 in $CHCl_3$).

Me glycoside, 4-*Me*: Methyl 2,3,4-tri-*O*-methyl- α -D-mannopyranoside [6150-08-9]

 $C_{10}H_{20}O_6$ 236.264

Bp_{0.005} 150° (bath). $[\alpha]_D^{20}$ +38 (c, 3.9 in 1N HCl).

Robertson, G.J. *et al.*, *J.C.S.*, 1934, 330 (*D-form, α -D-Me pyr*)

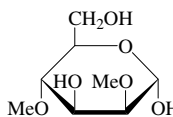
Haworth, W.N. *et al.*, *J.C.S.*, 1939, 1878, (*D-4-Me, α -D-Me pyr 4-Me*)

Aspinall, G.O. *et al.*, *Adv. Carbohydr. Res.*, 1953, **8**, 217 (*D-4-Me, rev*)

Murty, V.L.N. *et al.*, *Carbohydr. Res.*, 1969, **11**, 273 (*D-form, synth, α -D-pyr-trisnitrobenzoyl, α -D-Me pyr*)

Choy, Y.M. *et al.*, *Carbohydr. Res.*, 1971, **17**, 439 (*α -D-Me pyr 4-tosyl*)

Baker, C.W. *et al.*, *Carbohydr. Res.*, 1974, **33**, 372 (*α -D-Me pyr, α -D-Me pyr Ac*)

2,4-Di-*O*-methylmannose**D-749** α -D-Pyranose-*form* $C_8H_{16}O_6$ 208.211**D-form** [25581-53-7]

Mp 120°. $[\alpha]_D$ +13.5 (c, 0.6 in H_2O).

 α -D-Pyranose-*form*

Me glycoside: Methyl 2,4-di-*O*-methyl- α -D-mannopyranoside [25581-52-6]

 $C_9H_{18}O_6$ 222.238

$[\alpha]_D$ +51 (c, 1.1 in H_2O).

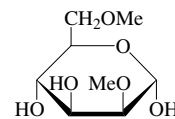
Me glycoside, dibenzoyl: Methyl 3,6-di-*O*-benzoyl-2,4-di-*O*-methyl- α -D-mannopyranoside [50710-90-2]

 $C_{23}H_{26}O_8$ 430.454

$[\alpha]_D^{25}$ +24 (c, 1.0 in MeOH).

Seymour, F.R. *et al.*, *Carbohydr. Res.*, 1973, **30**, 327; 1975, **44**, 181 (*synth, pmr*)

Noumi, K. *et al.*, *Carbohydr. Res.*, 1984, **134**, 172 (*Me gly*)

2,6-Di-*O*-methylmannose D-750**Curamicose** α -D-Pyranose-*form* $C_8H_{16}O_6$ 208.211**D-form** [58859-02-2]

Syrup. $[\alpha]_D^{20}$ +10.3 \rightarrow +22.4 (c, 1.0 in H_2O). Component of Curamycin A, C-157.

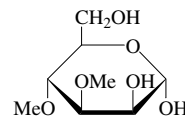
Gross, E.G. *et al.*, *Experientia*, 1968, **24**, 323

Perry, M.B. *et al.*, *Can. J. Chem.*, 1969, **47**, 31

Lipták, A. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1977, **94**, 261

3,4-Di-*O*-methylmannose D-751

[27299-06-5]

 α -D-Pyranose-*form* $C_8H_{16}O_6$ 208.211

Cryst. (EtOAc).

D-form

Cryst. (EtOAc), also reported as a syrup. Mp 73-74°. $[\alpha]_D^{19}$ +12.2 (5 min.) \rightarrow +5 (2 hr.) (H_2O). $[\alpha]_D^{19}$ +1.1 (c, 4.3 in H_2O).

 α -D-Pyranose-*form* [23397-61-7]

$[\alpha]_D^{28}$ +1.1 (c, 4.32 in H_2O).

Me glycoside: Methyl 3,4-di-*O*-methyl- α -D-mannopyranoside [27299-04-3]

 $C_9H_{18}O_6$ 222.238

$[\alpha]_D^{25}$ +86 (c, 1.4 in $CHCl_3$). $[\alpha]_D^{18}$ +72.5 (c, 0.9 in H_2O).

Me glycoside, 2-tosyl: Methyl 3,4-di-*O*-methyl-2-*O*-tosyl- α -D-mannopyranoside [53008-60-9]

 $C_{16}H_{24}O_8S$ 376.427

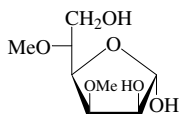
$[\alpha]_D^{25}$ +76 (c, 5.3 in $CHCl_3$).

Murty, V.L.N. *et al.*, *Carbohydr. Res.*, 1969, **11**, 273 (*D-form, α -D-Me pyr*)

Handa, N. *et al.*, *Carbohydr. Res.*, 1969, **11**, 467 (*D-form*)

Medvedeva, E.I. *et al.*, *Khim. Pri. Soedin.*, 1973, **2**, 229

Noumi, K. *et al.*, *Carbohydr. Res.*, 1984, **134**, 172 (α -D-Me pyr)

3,5-Di-*O*-methylmannose**D-752** α -D-Furanose-formC₈H₁₆O₆ 208.211

Reports before 1968 may be wrong.

D-Furanose-form [14253-67-9]
[α]_D²⁰ +4.4 (c, 5.0 in H₂O).

6-Me: 3,5,6-Tri-*O*-methyl-*D*-mannofuranose
[25018-60-4]

C₉H₁₈O₆ 222.238

Cryst. (diisopropyl ether). Mp 73-75°.

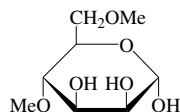
[α]_D²⁰ +12.8 (c, 1.5 in H₂O). [α]_D +10.6 (3 min.) → +12.8 (5 hr., equilib.) (c, 1.5 in H₂O).

Siddiqui, I.R. *et al.*, *Carbohydr. Res.*, 1968, **8**, 477 (synth)

Siddiqui, I.R. *et al.*, *Carbohydr. Res.*, 1969, **9**, 344 (D-6-Me)

4,6-Di-*O*-methylmannose**D-753**

[36722-30-2]

 α -D-Pyranose-formC₈H₁₆O₆ 208.211**D-form**[α]_D²¹ +20.8 (c, 1.0 in H₂O).

2,3-*O*-Isopropylidene: 2,3-*O*-Isopropylidene-4,6-di-*O*-methyl-*D*-mannose
[13000-41-4]

C₁₁H₂₀O₆ 248.275

Cryst. (petrol). Mp 76-77°. [α]_D²¹ +11 (c, 1.0 in MeOH).

 α -D-Pyranose-form

Me glycoside: Methyl 4,6-di-*O*-methyl- α -*D*-mannopyranoside
[13000-41-4]

C₉H₁₈O₆ 222.238

[α]_D²¹ +81.3 (c, 1.0 in MeOH).

Me glycoside, 2,3-dimesyl: Methyl 2,3-di-*O*-mesyl-4,6-di-*O*-methyl- α -*D*-mannopyranoside
[16802-93-0]

C₁₁H₂₂O₁₀S₂ 378.421

Mp 128°. [α]_D²² +30.5 (c, 2.5 in CHCl₃).

Me glycoside, 2,3-ditosyl: Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- α -*D*-mannopyranoside
[58720-05-1]

C₂₃H₃₀O₁₀S₂ 530.616

[α]_D³³ +3.5 (c, 3.3 in CHCl₃).

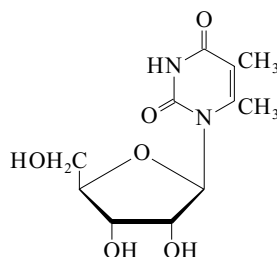
Ault, R.G. *et al.*, *J.C.S.*, 1935, 1012 (isopropylidene)

Gross, E.G. *et al.*, *Carbohydr. Res.*, 1972, **23**, 148 (D-form, α -D-Me pyr)

Seymour, F.R. *et al.*, *Carbohydr. Res.*, 1976, **46**, 189 (α -D-Me pyr, α -D-Me pyr ditosyl)

5,6-Dimethyluridine, 9CI, 8CI**D-754**

[16710-16-0]

C₁₁H₁₆N₂O₆ 272.257

Cryst. (2-propanol aq.). Mp 182° (179-180°). [α]_D³⁰ -30.6 (c, 1.47 in H₂O).

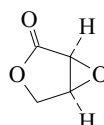
2',3',5'-Tribenzoyl: [25691-82-1]

C₃₂H₂₈N₂O₉ 584.581Needles (CH₂Cl₂/pentane).

Mp 176-178°. [α]_D²⁰ -10.3 (c, 1.0 in CHCl₃).

Winkley, M.W. *et al.*, *J.O.C.*, 1968, **33**, 2822 (synth)

Niedballa, U. *et al.*, *J.O.C.*, 1974, **39**, 3660 (tribenzoyl)

3,6-Dioxabicyclo[3.1.0]hexan-2-one**D-755**C₄H₄O₃ 100.074**(1*S*,5*S*)-form**

L-erythro-form. 2,3-Anhydro-*L*-erythrano-1,4-lactone
[129939-80-6]

Cryst. (CHCl₃). Mp 21-24°. Bp₁ 79°.

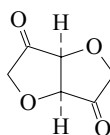
[α]_D²⁰ -25 (c, 2.9 in CHCl₃).

[152785-40-5]

Bols, M. *et al.*, *Acta Chem. Scand.*, 1990, **44**, 252 (synth, cmr)

2,6-Dioxabicyclo[3.3.0]octane-3,8-dione**D-756**

1,4:3,6-Dianhydrohexo-2,5-diulose, 9CI.
Tetrahydrofuro[3,2-b]furan-3,6-dione

C₆H₆O₄ 142.111**(3*aS*,6*aS*)-form**(+)-cis-form. *D*-threo-form

[13241-36-6]

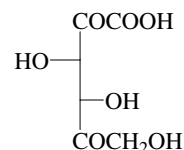
Cryst. Mp 116°. [α]_D²⁷ +110 (H₂O).

Heyns, K. *et al.*, *Chem. Ber.*, 1963, **96**, 3195 (synth)

Limberg, G. *et al.*, *Synthesis*, 1994, 317 (synth, pmr, cmr)

2,5-Dioxo-threo-hexonic acid**D-757**

2,5-Diketo-threo-hexonic acid

C₆H₈O₇ 192.125

Exists in a hydrated pyranose-form in aq. soln.

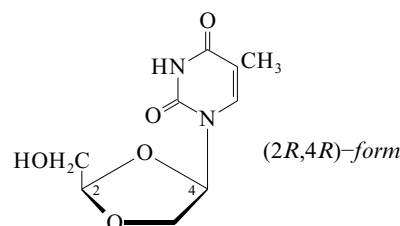
D-form2,5-Diketo-*D*-gluconic acid

Obt. by cultivation of *Gluconobacter* sp. or *Erwinia citreus* on glucose, galactose in v. high efficiency. Intermed. in coml. synth. of ascorbic acid. [α]_D²⁴ -54.1 (c, 1 in H₂O).

Hameršak, Z. *et al.*, *Carbohydr. Res.*, 1997, **302**, 245-249 (synth, bibl)

Dioxolane T**D-758**

1-[2-(Hydroxymethyl)-1,3-dioxolan-4-yl]-5-methyl-2,4-(1*H*,3*H*)-pyrimidinedione, 9CI. 1-[2-(Hydroxymethyl)-4-dioxolanyl]thymine. 3'-Oxa-3'-deoxythymidine
[126652-30-0]

C₉H₁₂N₂O₅ 228.204

Thymidine analogue showing powerful antiviral activity.

(2*R*)-Isomers pharmacol. more active.**(2*R*,4*R*)-form** [136982-89-3]

Solid. Mp 174-175°. [α]_D²⁵ -18.8 (c, 0.17 in MeOH).

(2*R*,4*S*)-form [136982-90-6]Foam. [α]_D²⁵ +10.7 (c, 0.15 in MeOH).**(2*S*,4*R*)-form** [145414-66-0]Foam. [α]_D²⁵ -10 (c, 0.45 in MeOH).**(2*S*,4*S*)-form** [145414-65-9]Cryst. (Et₂O/MeOH). Mp 174-175°.[α]_D²⁵ +18.6 (c, 0.75 in MeOH).

[126652-14-0, 126652-15-1, 127658-07-5]

Eur. Pat., 1989, 337 713, (IAF Biochem Internat); C.A., **112**, 198359 (synth, pharmacol)

Norbeck, D.W. *et al.*, *Tet. Lett.*, 1989, **30**, 6263 (synth, pmr, pharmacol)

Choi, W.-B. *et al.*, *J.A.C.S.*, 1991, **113**, 9377 (synth)

Kim, H.O. *et al.*, *J. Med. Chem.*, 1992, **35**, 1987; 1993, **36**, 519 (synth, pmr, pharmacol)

Evans, C.A. *et al.*, *Tetrahedron: Asymmetry*, 1993, **4**, 2319 (synth)

2,3-Dioxopropanoic acid, 9CI D-759

Mesoxalaldehydic acid, 8CI. Oxalaldehydoacetic acid. Aldehydoglyoxylic acid [815-53-2]

HOCCOCHO

C₃H₂O₄ 102.046

Syrup.

Dioxime:

C₃H₄N₂O₄ 132.076

Needles. Mp 178-180°.

Bisphenylhydrazone: [75640-08-3]

Mp 213-215°.

Bisphenylhydrazone, Et ester: [53249-98-2]

Yellow cryst. (C₆H₆). Mp 220-222°.

Bis-4-nitrophenylhydrazone, Et ester:

Bright-red prisms (AcOH).

Mp 272-274°.

Tetra-Et acetal, Et ester: Ethyl 2,2,3,3-tetraethoxypropanoate [77070-74-7]

C₁₃H₂₆O₆ 278.345

Liq. Bp_{0.01} 78°.

Panizzi, L. *et al.*, *Gazz. Chim. Ital.*, 1946, **76**, 56; *CA*, **40**, 7163 (synth)

Baganz, H. *et al.*, *Chem. Ber.*, 1963, **96**, 2666 (acetal, synth)

Diquafosol, INN D-760

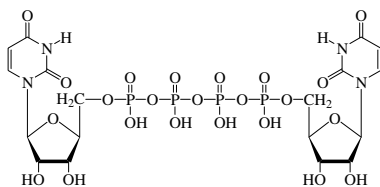
Uridine 5'-(pentahydrogen tetraphosphate)

P'''-5'-ester with uridine, 9CI. P¹, P⁴

Di(uridine 5'-)tetraphosphate. INS 365.

KPY 998

[59985-21-6]



C₁₈H₂₆N₄O₂₃P₄ 790.312

Purine P_{2Y} receptor agonist. In clinical development for the enhancement of mucosal hydration in the treatment of dry eye and lung diseases (incl. cystic fibrosis).

Tetra-Na salt: **Diquafosol tetrasodium,**

USAN

[211427-08-6]

Solid.

[219786-28-4]

Coste, H. *et al.*, *J. Biol. Chem.*, 1987, **262**, 12096-12103 (synth, activity)

Yerxa, B.R. *et al.*, *Drugs of the Future*, 1999, **24**, 759-769; 2001, **26**, 707-710 (rev)

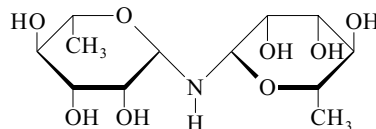
Pat. Coop. Treaty (WIPO), 1999, 99 05 155, (Inspire); *CA*, **130**, 125350y (synth)

Pendergast, W. *et al.*, *Bioorg. Med. Chem. Lett.*, 2001, **11**, 157-160 (tetra Na salt, synth, activity, pmr, P-31nmr)

Fujihara, T. *et al.*, *Invest. Ophthalmol. Visual Sci.*, 2001, **42**, 96-100 (pharmacol)

Noone, P.G. *et al.*, *Pediatr. Pulmonol.*, 2001, **32**, 122-128 (pharmacol)

Fischberg, J. *et al.*, *Curr. Opin. Invest. Drugs*, 2003, **4**, 1377-1384 (diquafosol tetrasodium, rev)

Dirhamnopyranosylamine D-761

C₁₂H₂₃NO₈ 309.316

L,L-β,β-form

6-Deoxy-N-(6-deoxy-β-L-mannopyranosyl)-β-L-mannopyranosylamine, 9CI

[152501-66-1]

Mp 118°. [α]_D²⁵ +52 (c, 2.0 in H₂O).

O-Hexa-Ac: [152501-67-2]

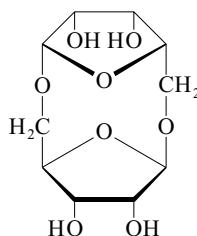
C₂₄H₃₅NO₁₄ 561.539

Mp 153-155°. [α]_D²⁵ +23 (c, 2 in CHCl₃).

Linek, K. *et al.*, *Carbohydr. Res.*, 1993, **247**, 329

Di-β-D-ribofuranose 1,5':5,1'-dianhydride D-762

β-D-Ribofuranose β-D-ribofuranose 1,5':5,1'-dianhydride



C₁₀H₁₆O₈ 264.232

Cryst. (EtOH). Mp 224-227°. [α]_D +6.8 (c, 1.06 in H₂O).

Tetra-Ac:

C₁₈H₂₄O₁₂ 432.38

Mp 165-167°. [α]_D +52.6 (c, 0.93 in CHCl₃).

Di-O-benzylidene:

C₂₄H₂₄O₈ 440.449

Cryst. (Me₂CO). Mp 200-201°. [α]_D -41.4 (c, 0.66 in CHCl₃).

Tetra-Me:

C₁₄H₂₄O₈ 320.339

Mp 125-126°.

Barker, G.R. *et al.*, *J.C.S.*, 1950, 23

Wood, H.B. *et al.*, *J.A.C.S.*, 1956, **78**, 4715

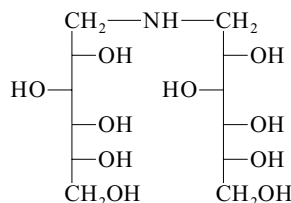
Stoddart, J.F. *et al.*, *Can. J. Chem.*, 1968, **46**, 3061 (synth)

Disorbitylamine D-763

1,1'-Iminobis[1-deoxyglucitol], 9CI. α-

Diglucoylamine

[15351-31-2]



C₁₂H₂₇NO₁₀ 345.346

D-form

Cryst. (MeOH aq.). Mp 166-168°. [α]_D²⁰ -22 (c, 5 in H₂O).

Hydrochloride: [96037-90-0]

Cryst. (MeOH aq.). [α]_D²⁵ -26.7 (c, 5 in H₂O).

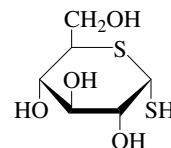
N-Ac:

C₁₄H₂₉NO₁₁ 387.383

Mp 130°. [α]_D²⁵ -27 (c, 1 in H₂O).

Brigl, P. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1929, **180**, 38 (synth)

Hodge, J.E. *et al.*, *J.O.C.*, 1963, **28**, 2784 (synth, derivs)

1,5-Dithioglucose D-764

C₆H₁₂O₄S₂ 212.29

β-D-Pyranose-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1,5-dithio-β-D-glucopyranose

[152039-48-0]

C₁₄H₂₀O₈S₂ 380.439

Cryst. (MeOH). Mp 128°. [α]_D +11 (c, 1.0 in CHCl₃).

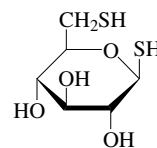
4-Nitrophenyl glycoside: 4-Nitrophenyl 1,5-dithio-β-D-glucopyranoside

[152135-45-0]

C₁₂H₁₅NO₆S₂ 333.386

Cryst. Mp 154-156°. [α]_D +33 (c, 1.0 in Me₂CO).

Joseph, B. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 719-729 (β-D-pyr, tetra-Ac, 4-nitrophenyl gly, synth, pmr, cmr)

1,6-Dithioglucose D-765

β-D-Pyranose-form

C₆H₁₂O₄S₂ 212.29

D-form

Syrup. [α]_D¹⁸ +4.1 (c, 1.1 in H₂O).

β-D-Pyranose-form

1,6-Dibenzoyl, tri-Ac: 2,3,4-Tri-O-acetyl-

1,6-di-S-benzoyl-1,6-dithio-β-D-glucopyranose

C₂₆H₂₆O₉S₂ 546.618

Mp 130-131°. [α]_D²⁰ -9 (c, 4.0 in CHCl₃).

6-Tosyl, tetra-Ac:

C₂₁H₂₆O₁₀S₃ 534.628

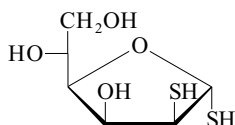
Prisms (Me₂CO/EtOH). Mp 192-193° dec. [α]_D²⁵ +23.8 (c, 1.7 in CHCl₃).

Akagi, M. *et al.*, *Chem. Pharm. Bull.*, 1963, **11**, 58 (synth, β-D-pyr-tosyl tetra-Ac)

Kocourek, J. *et al.*, *Angew. Chem., Int. Ed.*, 1964, **3**, 62 (β-D-pyr-dibenzoyl tri-Ac)

1,2-Dithiomannose

D-766

C₆H₁₂O₃S₂ 196.291 α -D-Furanose-form

S,S'-Di-Et: Ethyl 2-S-ethyl-1,2-dithio- α -D-mannofuranoside
[30085-91-7]

C₁₀H₂₀O₄S₂ 268.398

Cryst. (H₂O). Mp 93-94°. [α]_D²⁵ +106
(c, 1.1 in CHCl₃).

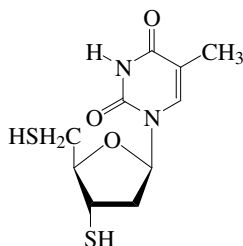
Ducruix, A. et al., *Acta Cryst. B*, 1972, **28**, 1195
(cryst struct)

Horton, D. et al., *Carbohydr. Res.*, 1975, **39**, 67
(synth)

3',5'-Dithiothymidine, 9CI

D-767

[183428-19-5]

C₁₀H₁₄N₂O₃S₂ 274.364

Cryst. (EtOH/AcOH). Mp 163-166°. [α]_D²⁵
+1.85 (c, 1.00 in dichloroethane).

3',5'-S-Isopropylidene: [183428-18-4]

C₁₃H₁₈N₂O₃S₂ 314.429

Cryst. (MeOH aq.). Mp 191-192.5°.

3'-S-Me:

C₁₁H₁₆N₂O₃S₂ 288.391

Oil. [α]_D²⁵ +1.92 (c, 1.00 in
dichloroethane).

3',5'-S-Di-Me:

C₁₂H₁₈N₂O₃S₂ 302.418

Oil. [α]_D²⁵ +3.03 (c, 1.00 in
dichloroethane).

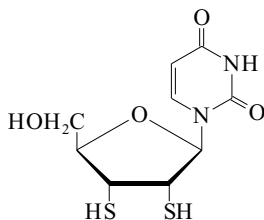
Eleuteri, A. et al., *J.C.S. Perkin 1*, 1996, 2237
(synth, pmr, cmr)

Chiba, J. et al., *J.O.C.*, 2003, **68**, 331-338 (synth,
Me derivs, ir, pmr, cmr, cryst struct)

2',3'-Dithiouridine, 9CI

D-768

[156592-92-6]

C₉H₁₂N₂O₄S₂ 276.337

Needles. Mp 131-132°.

S,S'-Isopropylidene: [156592-91-5]

C₁₂H₁₆N₂O₄S₂ 316.401

Cryst. Mp 158-160°.

S,S'-Di-Me: [156592-89-1]

C₁₁H₁₆N₂O₄S₂ 304.39

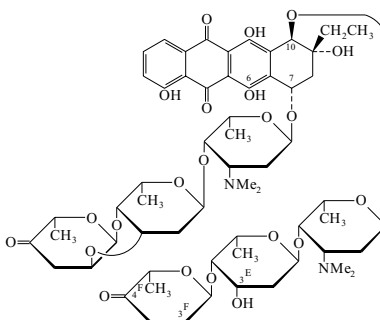
Cryst. Mp 159-160°.

Johnson, R. et al., *Chem. Comm.*, 1994, 133
(isopropylidene, di-Me, pmr, cmr)

Ditrisarubicin A

D-769

[87399-21-1]

C₆₀H₈₂N₂O₂₂ 1183.308

Anthracycline antibiotic. Isol. from
Streptomyces cyaneus. Active against
gram-positive bacteria and tumours.
Red powder. Sol. MeOH, CHCl₃,
DMSO, MeCN; poorly sol. H₂O, C₆H₆,
hexane.

Mp 184-187° dec. [α]_D²⁵ +119 (c, 0.1 in
CHCl₃). λ_{\max} 234 (€ 40300); 253 (€
22100); 290 (€ 7800); 495 (€ 14300); 527
(€ 9100) (MeOH/HCl) (Derep). λ_{\max} 238
(€ 45500); 288 (€ 10900); 567 (€ 17700);
602 (€ 15700) (MeOH/NaOH) (Derep).
 λ_{\max} 234 (€ 37800); 252 (€ 23600); 290
(€ 6860); 496 (€ 11800); 530 (€ 9570); 588
(€ 4960) (MeOH) (Derep). λ_{\max} 234
(E1%/1cm 320); 252 (E1%/1cm 200);
290 (E1%/1cm 56); 496 (E1%/1cm 100);
530 (E1%/1cm 81); 588 (E1%/1cm 42)
(MeOH) (Berdy). λ_{\max} 234 (E1%/1cm
341); 253 (E1%/1cm 187); 290 (E1%/1cm
66); 495 (E1%/1cm 121); 527 (E1%/1cm
77) (MeOH-HCl) (Berdy). λ_{\max} 238
(E1%/1cm 385); 288 (E1%/1cm 92); 567
(E1%/1cm 150); 602 (E1%/1cm 133)
(MeOH-NaOH) (Berdy).

► LD₅₀ (mus, ipr) 5 - 10 mg/kg. QI9296050

4^F-Alcohol (S-): **Ditrisarubicin G**

[101799-25-1]

C₆₀H₈₄N₂O₂₂ 1185.324

From *Streptomyces cyaneus*. Cytotoxic.
Sol. MeOH, CHCl₃, MeCN, Py, DMSO;
poorly sol. H₂O, hexane. λ_{\max} 234 (E1%/1cm
219); 290 (E1%/1cm 67); 464 (€ 126)
(MeOH) (Berdy). λ_{\max} 242 (E1%/1cm
325); 298 (E1%/1cm 62); 565 (E1%/1cm
138); 605 (E1%/1cm 125) (MeOH-NaOH)
(Berdy).

3^E-Deoxy: **Ditrisarubicin D**

[101799-24-0]

C₆₀H₈₂N₂O₂₁ 1167.309

From *Streptomyces cyaneus*. Cytotoxic.

3^E-Deoxy, 4^FS-alcohol: **Ditrisarubicin F**
Cytorhodin U

[101770-05-2]

[100630-85-1]

C₆₀H₈₄N₂O₂₁ 1169.324

From *Streptomyces cyaneus* and
Streptomyces purpurascens. Cytotoxic.

3^E-Deoxy, 2^F,3^F-didehydro: **Ditrisarubicin**

C. Cytorhodin D

[87385-18-0]

[100630-83-9]

C₆₀H₈₀N₂O₂₁ 1165.293

From *Streptomyces cyaneus* and
Streptomyces purpurascens. Active against
gram-positive bacteria and tumours. Red
powder.

Mp 173-176° dec. [α]_D²⁵ +167 (c, 0.1 in
CHCl₃). λ_{\max} 234 (€ 40300); 253 (€ 22100);
290 (€ 7800); 495 (€ 14300); 527 (€ 9100)
(MeOH/HCl) (Derep). λ_{\max} 238 (€ 45500);
288 (€ 10900); 567 (€ 17700); 602 (€ 15700)
(MeOH/NaOH) (Derep). λ_{\max} 234 (€
37800); 252 (€ 23600); 290 (€ 6860); 496
(€ 11800); 530 (€ 9570); 588 (€ 4960)
(MeOH) (Derep).

► QI9296070

6-Deoxy: **Cosmocarcin B**

[106750-24-7]

C₆₀H₈₂N₂O₂₁ 1167.309

Prod. by *Streptomyces cosmosus*.
Antitumour agent.

4^E-O-Deglycosyl: 4^E-O-Derhodinosylditri-
sarubicin G

[101770-07-4]

C₅₄H₇₄N₂O₂₀ 1071.18

Prod. by *Streptomyces cyaneus*. Sol.
MeOH, Py, DMSO, MeCN, CHCl₃;
poorly sol. H₂O, hexane.

Mp 176°. [α]_D²⁵ +176 (CHCl₃). λ_{\max} 254 ;
290 ; 495 (MeOH). λ_{\max} 254 (E1%/1cm
256); 290 (E1%/1cm 75); 495 (E1%/1cm
142) (MeOH) (Berdy). λ_{\max} 242 (E1%/1cm
374); 300 (E1%/1cm 67); 565 (E1%/1cm
159); 605 (E1%/1cm 141) (MeOH-NaOH)
(Berdy).

10-De-O-glycosyl: **Betaclamycin B**

[143413-62-1]

C₄₀H₄₉NO₁₅ 783.825

Biosynth. prod. from *Streptomyces gali-
leus*. Sol. MeOH, CHCl₃; poorly sol. H₂O,
hexane.

Mp 182-185°. λ_{\max} 204 (E1%/1cm 332);
235 (E1%/1cm 589); 254 (E1%/1cm 344);
293 (E1%/1cm 115); 495 (E1%/1cm 208)
(MeOH) (Berdy). λ_{\max} 206 (E1%/1cm
486); 235 (E1%/1cm 654); 254 (E1%/1cm
388); 291 (E1%/1cm 138); 498 (E1%/1cm
208) (MeOH-HCl) (Berdy). λ_{\max} 207
(E1%/1cm 686); 240 (E1%/1cm 557); 298
(E1%/1cm 107); 550 (E1%/1cm 203); 592
(E1%/1cm 180) (MeOH-NaOH) (Berdy).

7-De(glycosyloxy), 6-deoxy:

Cosmocarcin C

[106750-06-5]

C₄₀H₅₁NO₁₃ 753.842

Semisynth. Antitumour agent.

Uchida, T. et al., *J. Antibiot.*, 1983, **36**, 1080;

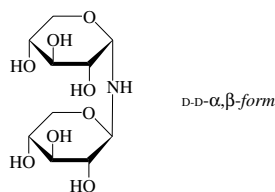
1985, **38**, 795 (isol, uv, ir, pmr, struct)
Eur. Pat., 1986, 167 935; *CA*, **104**, 184852 (isol)
Japan. Pat., 1986, 86 212 595; *CA*, **106**, 100845
(Cosmocarcin)

Yoshimoto, A. et al., *J. Antibiot.*, 1992, **45**, 1005
(Betaclamycin B)

Mackay, J.P. et al., *Tetrahedron*, 1996, **52**,
5617-5624 (pmr, conformn)

Dixylopyranosylamine

D-770

 $C_{10}H_{19}NO_8$ 281.262**D,D- α,β -form**

Hexa-Ac: (2,3,4-Tri-O-acetyl- α -dixylopyranosyl) (2,3,4-tri-O-acetyl- β -dixylopyranosyl) amine
[114244-99-4]
 $C_{22}H_{31}NO_{14}$ 533.485
Cryst. (EtOH). Mp 224-225° (218-219°).
[α]_D²⁰ +16.8 (c, 2.0 in CHCl₃) (+15.1).

D,D- β,β -form [62983-70-4]

Cryst. (H₂O/MeOH/Me₂CO). Mp 164° (154-155°). [α]_D²⁰ -44.3 (c, 1.4 in H₂O).

Hexa-Ac: Bis(2,3,4-tri-O-acetyl- β -dixylopyranosyl) amine
[114298-55-4]
 $C_{22}H_{31}NO_{14}$ 533.485
Mp 151-152°. [α]_D²⁰ -28 (c, 2.0 in CHCl₃).

Ishbell, H.S. *et al.*, *J.O.C.*, 1958, **23**, 1309 (synth)

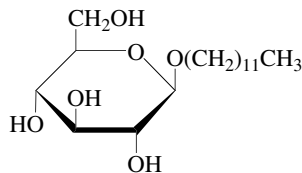
De Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1976, **85**, 605 (pmr, conformn)

Linek, K. *et al.*, *Carbohydr. Res.*, 1987, **164**, 195 (synth, pmr, cmr, bibl)

Dodecyl glucoside

AG 12

D-771

 $C_{18}H_{36}O_6$ 348.479 **β -D-Pyranose-form** [59122-55-3]

Surfactant. Used in the isol. and purifn. of membrane proteins. Mp 78-80°
Mp 136-137°. [α]_D²⁰ -22 (c, 1.0 in MeOH).

Tetra-Ac: [66854-07-7]

$C_{26}H_{44}O_{10}$ 516.628

Mp 59°. [α]_D²⁰ -19 (c, 1.0 in MeOH).

Weber, N. *et al.*, *Chem. Phys. Lipids*, 1982, **31**, 325-329 (synth, ir, ms, bibl)

Koeltzow, D.E. *et al.*, *J. Am. Oil Chem. Soc.*, 1984, **61**, 1651-1655 (synth, props)

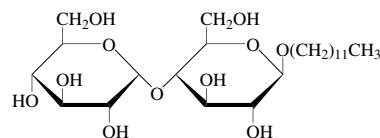
Kiwada, H. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 753-759 (use)

Focher, B. *et al.*, *Chem. Phys. Lipids*, 1990, **53**, 141-155 (synth, pmr, cmr, props)

Dodecyl maltoside

Lauryl maltoside

D-772

 $C_{24}H_{46}O_{11}$ 510.621 **β -D-Pyranose-form** [69227-93-6]

Detergent used in study of photosynthetic membranes and the characterisation of enzymes.

Cryst. (MeOH/EtOH). Mp 104-105°.

[α]_D²⁰ +47 (MeOH).

De Grip, W.J. *et al.*, *Chem. Phys. Lipids*, 1979, **23**, 321-335 (synth, pmr)

Rosevar, P. *et al.*, *Biochemistry*, 1980, **19**, 4108-4115 (synth, cmr)

Van Aken, T. *et al.*, *Methods Enzymol.*, 1986, **125**, 27 (synth, use)

Hodges, M. *et al.*, *Biochim. Biophys. Acta*, 1988, **935**, 41-52 (use)

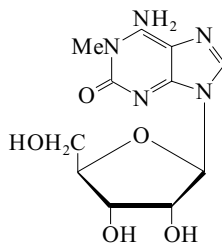
Dekker, J.P. *et al.*, *Biochim. Biophys. Acta*, 1988, **936**, 307-318 (use)

Tandon, S. *et al.*, *Biochim. Biophys. Acta*, 1988, **955**, 19-25 (use)

Doridosine

N,6-Didehydro-1,2,3,6-tetrahydro-1-methyl-2-oxoadenosine, 9CI. 1-Methylisoguanosine
[73027-05-1]

D-773

 $C_{11}H_{15}N_5O_5$ 297.27

Nucleoside antibiotic. Obt. from the marine sponges *Tedania digitata* and *Anisodoris nobilis*. Shows antiinflammatory and muscle relaxant props. Long-acting hypertensive agent. Cryst. (H₂O). Sol. MeOH, H₂O; poorly sol. Me₂CO, hexane.

Mp 266-267° (262-263°). [α]_D²⁴ -65.4 (c, 1.0 in DMSO). [α]_D²² -54.6 (c, 1.0 in H₂O). Log P -4.17 (calc). λ_{\max} 237

(ϵ 5600); 283 (ϵ 12900) (dil HCl) (Derep). λ_{\max} 253 (ϵ 8400); 292

(ϵ 11200) (dil. NaOH) (Derep). λ_{\max} 250 (ϵ 8600); 294 (ϵ 11400) (H₂O at pH 6.3) (Derep). λ_{\max} 250 (ϵ 9400); 299

(ϵ 11500) (MeOH) (Berdy). λ_{\max} 234 (ϵ 7000); 283 (ϵ 13700) (HCl) (Berdy).

λ_{\max} 286 (ϵ 7500) (pH 12 buffer) (Berdy).

► LD₅₀ (mus, orl) 1000 mg/kg.
[70639-65-5]

Cook, A.F. *et al.*, *J.O.C.*, 1980, **45**, 4020 (isol, synth, cmr, ms)

Fuhrman, F.A. *et al.*, *Science (Washington, D.C.)*, 1980, **207**, 193; 1981, **212**, 557, (isol, pharmacol)

Quinn, R.J. *et al.*, *Tet. Lett.*, 1980, **21**, 567, (isol, struct, synth)

Kim, Y.H. *et al.*, *J. Nat. Prod.*, 1981, **44**, 206 (isol, struct, pharmacol)

Wong, R.L. *et al.*, *Acta Cryst. C*, 1984, **40**, 1409 (cryst struct)

Nachman, R.J. *et al.*, *J.C.S. Perkin 1*, 1985, 1315 (synth)

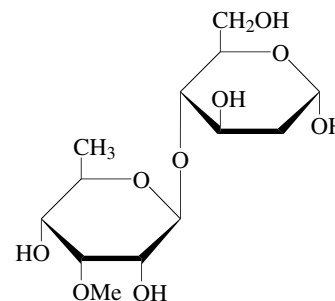
Davies, L.P. *et al.*, *Trends Pharmacol. Sci.*, 1985, **6**, 143 (isol, rev)

Chern, J.-W. *et al.*, *J.O.C.*, 1991, **56**, 4213 (synth)

Dredechongbiase

D-774

6-Deoxy-3-O-methyl- β -D-allopyranosyl-(1→4)-2-deoxy-D-arabino-hexose
[117869-63-3]

 $C_{13}H_{24}O_9$ 324.327 **α -D-Pyranose-form**

Me glycoside: Methyl 6-deoxy-3-O-methyl- β -D-allopyranosyl-(1→4)-2-deoxy- α -D-arabino-hexopyranoside. Methyl α -dredechongbiase

$C_{14}H_{26}O_9$

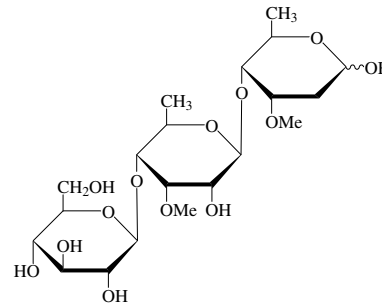
Present in *Dregea volubilis*.

Chiu, M. *et al.*, *Zhiwu Xuebao*, 1988, **30**, 297; *CA*, **110**, 4673j

Dregeatriose

D-775

β -D-Glucopyranosyl-(1→4)-6-deoxy-3-O-methyl- β -D-allopyranosyl-(1→4)-2,6-di-deoxy-3-O-methyl-D-ribo-hexose, 9CI. β -D-Glucopyranosyl-(1→4)-3-O-methyl- β -D-allomethylpyranosyl-(1→4)-D-cymaropyranoside
[89203-41-8]

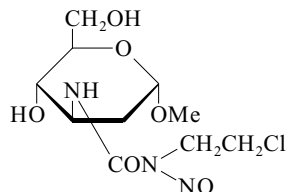
 $C_{20}H_{36}O_{13}$ 484.497

Constit. of *Dregea volubilis*.

Hayashi, K. *et al.*, *CA*, 1984, **100**, 135778p

Ecomustine, INN

Methyl 3-[[[(2-chloroethyl)nitrosoamino]carbonyl]amino]-2,3-dideoxy- α -D-arabino-hexopyranoside, 9CI. Cy 233. NSC 609224 [98383-18-7]

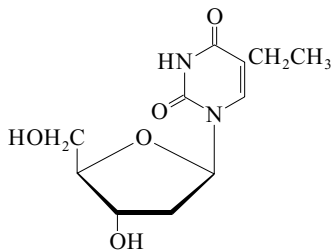


$C_{10}H_{18}ClN_3O_6$ 311.721
Antineoplastic agent. Cryst. (cyclohexane). Mp 118°. $[\alpha]_D^{25} +96.2$ (c, 0.5 in $CHCl_3$). Log P -1.21 (calc).

- LD₅₀ (mus, ipr) 40 mg/kg. MQ3130200
Gosse, C. *et al.*, *Anticancer Res.*, 1988, **8**, 1419 (pharmacol)
Atassi, G. *et al.*, *Cancer Chemother. Pharmacol.*, 1989, **25**, 205 (pharmacol)
Gosse, C. *et al.*, *J. Med. Chem.*, 1989, **32**, 16 (synth, pmr, pharmacol)
el Abed, I. *et al.*, *Cancer Chemother. Pharmacol.*, 1991, **27**, 295 (hplc)

Edoxudine, INN, USAN

2'-Deoxy-5-ethyluridine, 9CI. Aedurid. Edurid. Etoxuridine. Virostat. ORF 15817. EDU. Et UdR. EUDR [15176-29-1]

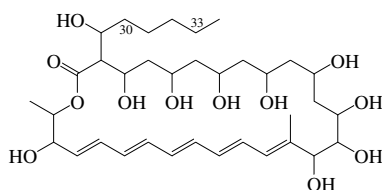


$C_{11}H_{16}N_2O_5$ 256.258
Antiviral agent; used topically in treatment of herpes infections. Long needles (Me_2CO). Mp 152-153°. Log P -1.41 (calc).

- Mutagenic props.. YU7500000
Remin, M. *et al.*, *Eur. J. Biochem.*, 1975, **53**, 197 (conformn, pmr)
Bergstrom, D.E. *et al.*, *J.A.C.S.*, 1978, **100**, 8106 (synth)
Robins, M.J. *et al.*, *J.O.C.*, 1983, **48**, 1854 (synth)
Rode, W. *et al.*, *Biochem. Pharmacol.*, 1984, **33**, 2699 (synth, pharmacol)
Hempel, B. *et al.*, *Arzneim.-Forsch.*, 1985, **35**, 1058 (pharmacol)
Walker, R.T. *et al.*, *Nucleic Acids Symp. Ser.*, 1985, **16**, 291 (synth, pharmacol)
Buchele, A. *et al.*, *Arzneim.-Forsch.*, 1989, **39**, 220 (metab)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 544

E-1**Elizabethin**

Isolagosin [78361-81-6]



$C_{35}H_{58}O_{12}$ 670.836

Polyene antibiotic. Prod. by *Streptomyces elizabethii* and *Streptomyces* sp. M90025. Antifungal agent. Shows cytotoxic activity. Pale yellow cryst. (MeOH). Sol. Py, DMF; fairly sol. MeOH; poorly sol. EtOH, hexane. Mp 225-227°. $[\alpha]_D^{25} -228$ (c, 1.0 in DMF). $[\alpha]_D^{25} -155$ (c, 0.4 in MeOH). λ_{max} 310 ; 325 ; 340 ; 360 (MeOH) (Berdy).

- LD₅₀ (mus, ipr) 24 mg/kg, LD₅₀ (mus, orl) 50-70 mg/kg. JX9500000
Deca-Ac: Mp 70-75°. $[\alpha]_D^{25} +47$ (c, 0.8 in MeOH).

33-Demethyl: **Antibiotic M 90025A. M 90025A** [300811-60-3]

$C_{34}H_{56}O_{12}$ 656.809

Prod. by *Streptomyces* sp. M90025. Antifungal agent.

32-Deethyl, 30-methyl: **Antibiotic M 90025B. M 90025B** [300811-61-4]

$C_{34}H_{56}O_{12}$ 656.809

Prod. by *Streptomyces* sp. M90025. Antifungal agent.

- Pirt, S.J. *et al.*, *J. Chem. Technol. Biotechnol.*, 1981, **31**, 167 (isol)
Bird, C.W. *et al.*, *J. Chem. Technol. Biotechnol.*, 1981, **31**, 368 (struct)
Seo, Y. *et al.*, *J. Microb. Biotechnol.*, 2000, **10**, 176-180 (M 90025)

Elsinan

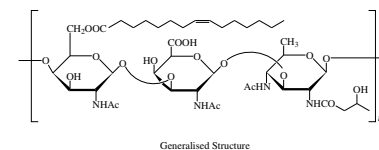
[66457-06-5]

Linear α -D-glucan consisting mainly of 1,4- and 1,3-linkages in molar ratios 2.0:1 to 2.5:1. Approx. 1 in 140 linkages is α -1,6. MW 2-6 $\times 10^6$. Secondary metabolite prod. by species of *Elsinoe*. $[\alpha]_D^{20} +243$ (c, 0.81 in H_2O).

- Misaki, A. *et al.*, *Agric. Biol. Chem.*, 1978, **42**, 491 (isol)
Tsumuraya, Y. *et al.*, *Carbohydr. Res.*, 1978, **66**, 53; 1982, **109**, 207 (struct)
Misaki, A. *et al.*, *ACS Symp. Ser.*, 1980, **126**, 197 (rev)
Backman, I. *et al.*, *J.C.S. Perkin 1*, 1988, 889 (cmr)
Misaki, A. *et al.*, *Methods Carbohydr. Chem.*, 1994, **10**, 165 (struct)
Yui, T. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 1075-1081 (struct)

E-3**Emulsan**

[80450-55-1]



Lipoheteropolysaccharide. Prod. by *Acinetobacter calcoaceticus* RAG-1. Emulsifies hydrocarbons and crude oil. MW ca. 10^6 Da.

- Gutnick, D.L. *et al.*, *Biopolymers*, 1987, **26**, S223-S240 (rev)
Gorkovenko, A. *et al.*, *Polym. Mater. Sci. Eng.*, 1995, **72**, 92-94 (biosynth)
Zhang, J. *et al.*, *Int. J. Biol. Macromol.*, 1997, **20**, 9-21 (biosynth, derivs)
Zhang, J. *et al.*, *J. Chem. Technol. Biotechnol.*, 1999, **74**, 759-765 (props, bibl)

Enoxaparin, BAN, INN**E-7**

Clexane†. Deciphar. Klexane. Lovenox. Plaucina. Trombenox. PK 10169. Kabi 2165. CY 216†

Low MW heparin (see Heparin, H-5).

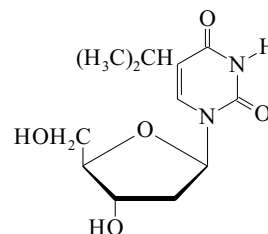
Prep. by alkaline degradation of heparin benzyl ester obt. from the intestinal mucosa of pigs. Anticoagulant, antithrombotic. Intended for use in the treatment of deep vein thrombosis. Launched 1987. Worldwide 31st best selling prescription drug (\$1.48 bn, 2002) (Aventis) (Med Ad News). Av. MW 3500-5500.

Na salt: Enoxaparin sodium, BAN, USAN [9041-08-1, 679809-58-6]

- Doutzenberg, M.D. *et al.*, *Thromb. Haemostasis*, 1990, **64**, 490 (activity)
Buckley, M.M. *et al.*, *Drugs*, 1992, **44**, 465 (rev)
Bouthier, J. *et al.*, *Low Mol. Weight Heparins Clin. Pract.*, (Ed. C. Doutremepuich), Dekker, 1992, 199 (rev)
Carter, C.A. *et al.*, *Ann. Pharmacother.*, 1993, **27**, 1223 (rev)
Cziraky, M.J. *et al.*, *Clin. Pharm.*, 1993, **12**, 892 (rev)
Noble, S. *et al.*, *Drugs*, 1995, **49**, 388; 1998, **56**, 259-272 (rev)
Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 864
Ibbotson, T. *et al.*, *Drugs*, 2002, **62**, 1407-1431 (rev)
Chapman, T.M. *et al.*, *Drugs*, 2003, **63**, 2357-2377 (beniparin, rev)

Epervudine, INN**E-8**

2'-Deoxy-5-(1-methylethyl)uridine, 9CI. 5-Isopropyl-2'-deoxyuridine. IPDU [60136-25-6]



$C_{12}H_{18}N_2O_5$ 270.285

Antiviral agent; used in the treatment of herpes. Launched (1988). Log P -1.01 (calc).

Otvos, L. *et al.*, *Nucleic Acids Res., Spec. Publ.*, 1975, **1**, S49 (synth)
 Czugler, M. *et al.*, *Acta Cryst. B*, 1979, **35**, 1626 (cryst struct)
 Draminski, M. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1980, **54**, 1085 (synth)
 De Clercq, E. *et al.*, *Mol. Pharmacol.*, 1987, **32**, 286 (pharmacol)
 Czugler, M. *et al.*, *Acta Pharm. Hung.*, 1993, **63**, 193 (cryst struct)

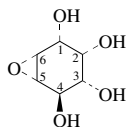
Epiglucon**E-9**

A highly branched (1 → 3:1 → 6)-β-D-glucan. Two alternative structs. have been proposed. Polysaccharide prod. by the microfungus *Epicoccum nigrum*. Amorph. solid.

Schmid, F. *et al.*, *Carbohydr. Res.*, 2001, **331**, 163-171 (isol, uv, cmr)

5,6-Epoxy-1,2,3,4-cyclohexanetetrol**E-10**

1,2-Anhydroinositol, 9CI. 7-Oxabicyclo[4.1.0]heptane-1,2,3,4-tetrol



(1α,2α,3α,4β,5α,6α)-form

C₆H₁₀O₅ 162.142**(1α,2α,3α,4β,5α,6α)-form**

1,2-Anhydro-epi-inositol, 9CI. *Conduritol C cis-epoxide* [80736-38-5] Specific β-glycosidase inhibitor.

Cryst. Mp 126° (110-127°). Racemate.

Tetra-Ac:

C₁₄H₁₈O₉ 330.291

Prisms (EtOH). Mp 115.5-116.5°.

(1α,2α,3α,4β,5β,6β)-form 1,2-Anhydro-neo-inositol, 9CI. *Conduritol C trans-epoxide* [80736-37-4] α-Galactosidase inhibitor. Cryst. (EtOH). Mp 145° (130-143°). Racemate.

Tetra-Ac:

Cryst. (EtOH/H₂O). Mp 114-115°.

(1α,2α,3β,4β,5α,6α)-form 1,2-Anhydro-allo-inositol, 9CI. *Conduritol E epoxide* [23559-36-6] Mp 176-177°. Racemate. Known also in opt. active form (+)-form +153 (c, 0.5 in H₂O).

Tetranitrate: [23627-80-7]

C₆H₆N₄O₁₃ 342.132

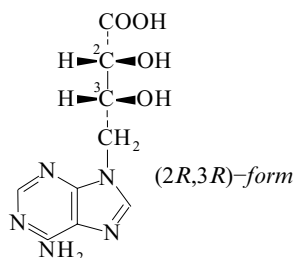
Cryst. (EtOH). Mp 89-89.2°.

(1α,2β,3α,4β,5α,6α)-form 1,2-Anhydro-DL-myo-inositol, 9CI. *Conduritol B epoxide* [6090-95-5] Inhibitor of the enzyme which cleaves glucosylceramide. The enzyme is defective in the human genetic disorder Gaucher disease. Reliable glucosidase inhibitor used in enzyme research. Cryst. (EtOH). Mp 155-156°. Racemate. Has also been synthesised in opt. active form.

Angyal, S.J. *et al.*, *J.C.S.*, 1957, 3691 ((+)-*Conduritol E epoxide*)
 Nakajima, M. *et al.*, *Chem. Ber.*, 1959, **92**, 173; 1961, **94**, 515 (synth, ir)
 Legler, G. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1966, **345**, 197 (synth)
 Anikeeva, A.N. *et al.*, *Zh. Obshch. Khim.*, 1966, **36**, 194; *J. Gen. Chem. USSR (Engl. Transl.)*, 1966, **36**, 203 (ir)
 Eremenko, L.T. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1970, 920; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1970, 920 (*Conduritol E tetranitrates*)
 Legler, G. *et al.*, *FEBS Lett.*, 1981, **135**, 139 (synth, biochem)
 Lee, K.J. *et al.*, *Carbohydr. Res.*, 1985, **144**, 148 (synth, *Conduritol B epoxide*)
 Gal, A.E. *et al.*, *J. Labelled Compd. Radiopharm.*, 1987, **24**, 397; *CA*, **108**, 55775k (synth)
 Datta, S.C. *et al.*, *Biochem. Biophys. Res. Commun.*, 1988, **152**, 155 (biochem)
 Jaramillo, C. *et al.*, *Carbohydr. Res.*, 1991, **209**, 296 (synth, 1D-1,2-anhydro-myo-inositol)
 Carless, H.A.J. *et al.*, *Tet. Lett.*, 1992, **33**, 6379 (synth, pmr, cmr, *Conduritol E epoxides*)
 Falshaw, A. *et al.*, *Carbohydr. Res.*, 2000, **329**, 301-308 (myo- enantiomers)

Eritadenine**E-11**

6-Amino-α,β-dihydroxy-9H-purine-9-butanoic acid, 9CI. 4-(6-Amino-9H-purin-9-yl)-4-deoxyerythronic acid, 8CI. 4-(9-Adeniny)-2,3-dihydroxybutanoic acid. *Lentysine. Lentinacin*



(2R,3R)-form

C₉H₁₁N₅O₄ 253.217

Shows antihypercholesterolaemic activity and antiviral props. Log P -2.76 (calc).

(2R,3R)-form

D-erythro-form

[23918-98-1]

Isol. from the edible shiitake mushroom *Lentinus edodes*.

Mp 261-263° dec. (279° dec.). [α]_D +50 (0.1M NaOH). [α]_D +16 (1M HCl). λ_{max} 259 (ε 14129) (HCl) (Berdy). λ_{max} 261 (ε 14508) (H₂O) (Berdy). λ_{max} 262 (ε 14300) (NaOH) (Berdy).

Me ester: [25616-63-1]

Mp 231° dec.

2,3-Di-Ac, *Me ester*: [25616-64-2]

Mp 225° dec.

2,3-O-Isopropylidene, *Me ester*:

[28991-46-0]

Mp 181°.

3-Deoxy: *Deoxyeritadenine*

[31701-90-3]

C₉H₁₁N₅O₃ 237.218

Constit. of the edible shiitake mushroom *Lentinus edodes*. Exhibits weak hypocholesterolemic activity.

Mp 270-271° dec. [α]_D +18.4 (c, 1.0 in 0.1N NaOH). λ_{max} 262 (ε 14300) (0.1 M NaOH). λ_{max} 262 (ε 13900) (0.1 M HCl).

(2R,3S)-form

D-threo-form

[28617-17-6]

Mp 297° dec. [α]_D +82 (0.1M NaOH).

(2S,3R)-form

L-threo-form

[28617-16-5]

Mp 297° dec. [α]_D -81 (0.1M HCl).

Chibata, I. *et al.*, *Experientia*, 1969, **25**, 1237 (isol)

Rokujo, T. *et al.*, *Life Sci.*, 1970, **9**, 379 (pharmacol)

Hashimoto, M. *et al.*, *Tet. Lett.*, 1970, 1359 (synth)

Saito, Y. *et al.*, *Tet. Lett.*, 1970, 4863 (Deoxyeritadenine)

Okumura, K. *et al.*, *J.O.C.*, 1971, **36**, 1573

Kamiya, T. *et al.*, *Tetrahedron*, 1972, **28**, 899 (synth, abs config)

Kawazu, M. *et al.*, *J.O.C.*, 1973, **38**, 2887 (synth, pmr)

Okumura, K. *et al.*, *J. Med. Chem.*, 1974, **17**, 846

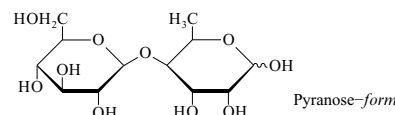
Tensho, A. *et al.*, *Yakugaku Zasshi*, 1974, **94**, 708 (Deoxyeritadenine)

Holy, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1982, **47**, 1392 (synth, pharmacol)

Erycordinobiose**E-12**

6-Deoxy-4-O-β-D-glucopyranosyl-D-glucose, 9CI

[41094-27-3]



Pyranose-form

C₁₂H₂₂O₁₀ 326.3

Constit. of the cardiac glycoside

erycordin. Cryst. (MeOH/butanol).

Mp 133-136° Mp 160-163°. [α]_D¹⁹ -22.4

(c, 1.2 in H₂O).

Phenylosazone: Mp 214.5-216°.

[α]_D²¹ -34.7 (c, 0.35 in Py).

Hepta-Ac: [40879-87-6]

C₂₆H₃₆O₁₇ 620.56

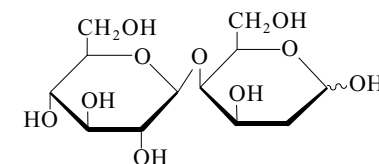
Cryst. (Et₂O/petrol). Mp 71-73°.

[α]_D¹⁸ -1.8 (c, 1.67 in CHCl₃).

Makarevich, I. *et al.*, *Khim. Prir. Soedin.*, 1973, **9**, 50; 1989, **25**, 73; *Chem. Nat. Compd. (Engl. Transl.)*, 40; 63

Eryscenobiose**E-13**

4-O-β-D-Glucopyranosyl-2-deoxy-D-lyxohexopyranose

C₁₂H₂₂O₁₀ 326.3

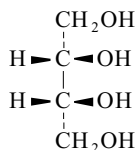
Isol. from *Erysimum canescens*.

Mp 211-216°. [α]_D²⁵ +22.2 (c, 1.0 in H₂O, 8 hr.). Acid hydrol. → 2-Deoxygalactose + Glucose.

Bauer, S. *et al.*, *Tet. Lett.*, 1966, 1703 (isol)

Erythritol, 9CI, 8CI**E-14**

(R,S)-1,2,3,4-Butanetetrol, 9CI, 8CI. *Me-soerythritol*. *Phycitol*. *Erythroglucin* [149-32-6]



$\text{C}_4\text{H}_{10}\text{O}_4$ 122.121

For (R,R)-form see Threitol, T-100. Opt. inactive (*meso*-): some derivs. may be chiral (see for example 5-Hydroxy-2-phenyl-1,3-dioxane-4-methanol, H-193). Found in a variety of algae, lichens and fungi. Prod. by *Protococcus vulgaris*, *Trentepohlia iolithus* and *Aspergillus terreus*. Bulk sweetener with good taste props. Also thickener, stabiliser, humectant, etc. in food. Cryst. (MeOH). Mp 121.5°. Bp 329-331° Bp₂₀₀ 294-296°. Sweetness ca. 0.7 x sucrose.

► **KF2000000**

1-O-[3,4-Dihydroxycinnamoyl-(\rightarrow 6)- β -D-glucopyranoside]:

$\text{C}_{19}\text{H}_{26}\text{O}_{12}$ 446.407

Constit. of the leaves of *Lonicera gracilipes* var. *glandulosa*. Amorph. powder. $[\alpha]_D^{30}$ -15.2 (c, 0.5 in MeOH).

Tetra-Ac: 1,2,3,4-Tetra-O-acetylerythritol [7208-40-4]

$\text{C}_{12}\text{H}_{18}\text{O}_8$ 290.269

Cryst. (AcOH). Mp 89°.

2,3-Dibenzoyl: 2,3-Di-O-benzoylerythritol [50622-01-0]

$\text{C}_{18}\text{H}_{18}\text{O}_6$ 330.337

Cryst. (Et₂O/petrol). Mp 129-131°.

1,2,3-Tribenzoyl: 1,2,3-Tri-O-benzoylerythritol [60405-75-6]

$\text{C}_{25}\text{H}_{22}\text{O}_7$ 434.445

Mp 108-108.5°.

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoylerythritol [16054-80-1]

$\text{C}_{32}\text{H}_{26}\text{O}_8$ 538.553

Cryst. (EtOH). Mp 188-189°.

Tetrakis(4-hydroxybenzoyl): **Kelletinin I** [87697-99-2]

$\text{C}_{32}\text{H}_{26}\text{O}_{12}$ 602.55

Metab. of the marine mollusc *Kelletia kelleitii*. Antibacterial, cytotoxic. Sol. MeOH, bases, Et₂O; poorly sol. H₂O. λ_{max} 258 (ε 63100) (EtOH/HCl) (Derep). λ_{max} 301 (ε 100000) (EtOH/NaOH) (Derep). λ_{max} 258 (ε 50100) (EtOH) (Derep).

Tetranitrate: **Erythrityl tetranitrate**,

USAN. Eritrityl tetranitrate, **INN**. Erythrol tetranitrate. *Cardilate*. *Cardiloid*. *Cardiwell*. *Nitroerythrite*. *Tetranitrin*. *Tetranitrol*. **NSC 106566**

[7297-25-8]

$\text{C}_4\text{H}_6\text{N}_4\text{O}_{12}$ 302.111

Coronary vasodilator and antispasmodic agent. Leaflets (EtOH). Mp 61°. Log P 0.93 (calc).

► Explosive by percussion or excessive heat.

2,3-O-Isopropylidene: 2,3-O-Isopropylideneerythritol [55904-12-6]

$\text{C}_7\text{H}_{14}\text{O}_4$ 162.185

Cryst. (diisopropyl ether). Mp 48-49.5°. Bp_{0.5} 106-108°.

1,2,3,4-Diisopropylidene: 1,2,3,4-Di-O-isopropylideneerythritol. 2,2,2',2'-Tetramethyl-4,4'-bi-1,3-dioxolane, 9CI [3969-82-2]

$\text{C}_{10}\text{H}_{18}\text{O}_4$ 202.25

Mp 53°.

1,3:2,4-Diisopropylidene: 1,3:2,4-Di-O-isopropylideneerythritol. Tetrahydro-2,2,6,6-tetramethyl[1,3]dioxino[5,4-d]-1,3-dioxin, 9CI [131247-51-3]

$\text{C}_{10}\text{H}_{18}\text{O}_4$ 202.25

Mp 108-110°.

1,4:2,3-Diisopropylidene: 1,4:2,3-Di-O-isopropylideneerythritol. Tetrahydro-2,2,6,6-tetramethyl-1,3-dioxolo[4,5-e][1,3]dioxepin, 9CI [131247-50-2]

$\text{C}_{10}\text{H}_{18}\text{O}_4$ 202.25

Syrup.

1,3-Benzylidene: See 5-Hydroxy-2-phenyl-1,3-dioxane-4-methanol, H-193

1,3:2,4-Dibenzylidene: 1,3:2,4-Di-O-benzylideneerythritol [4148-59-8]

$\text{C}_{18}\text{H}_{18}\text{O}_4$ 298.338

Mp 201-202°.

1,2-Dibenzyl ether (2R,3S-): 1,2-Di-O-benzylerythritol

$\text{C}_{18}\text{H}_{22}\text{O}_4$ 302.369

Oil. $[\alpha]_D$ -27.3 (c, 3.4 in CHCl₃).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 184C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 287A (nmr)

Trenner, N.R. et al., *J.A.C.S.*, 1949, **71**, 2352 (synth)

Jeanes, A. et al., *J.O.C.*, 1955, **20**, 1565 (synth)

Feit, P.W. et al., *J. Med. Chem.*, 1964, **7**, 14 (isopropylidene)

Kovář, J. et al., *Coll. Czech. Chem. Comm.*, 1967, **32**, 4099 (dibenzylidene)

Haga, M. et al., *J.O.C.*, 1968, **33**, 1810 (tetrabenzoate)

Sonogashira, K. et al., *Bull. Chem. Soc. Jpn.*, 1972, **45**, 2616 (synth, ir)

Karrer, W. et al., *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 144 (occur)

Nánási, P. et al., *Carbohydr. Res.*, 1973, **29**, 201 (dibenzoate)

Ceccarelli, C. et al., *Acta Cryst. B*, 1980, **36**, 3079 (cryst struct)

Angyal, S.J. et al., *Carbohydr. Res.*, 1980, **84**, 201 (cmr)

Tymiak, A.A. et al., *J.A.C.S.*, 1983, **105**, 7396 (Kelletin)

Hawkes, G.E. et al., *J.C.S. Perkin 2*, 1984, 2073 (pmr, conform)

Awal, A. et al., *Carbohydr. Res.*, 1990, **205**, 173 (diisopropylidene derivs)

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 1020

Matsuda, N. et al., *Chem. Pharm. Bull.*, 1995, **43**, 1049 (6-caffeoylglucoside)

Marco, J.A. et al., *Annalen*, 1996, 1801, (1,2-dibenzyl ether)

Rozenberg, M. et al., *Carbohydr. Res.*, 1999, **315**, 85-97 (ir, Raman)

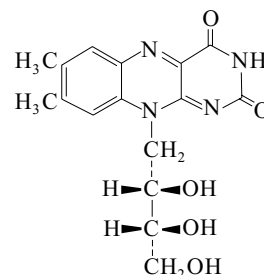
Kitajima, J. et al., *Chem. Pharm. Bull.*, 1999, **47**, 988-992 (isol, pmr, cmr)

Food Chem. News, 2001, **43**(36), 26-27 (use)

Bachir-Lesage, S. et al., *J. Carbohydr. Chem.*, 2002, **21**, 35-46 (alkyl derivs)

Erythroflavin**E-15**

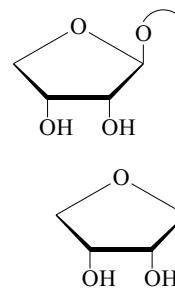
7,8-Dimethyl-10-(2,3,4-trihydroxybutyl)-benzo[g]pteridine-2,4-(3H,10H)-dione, 9CI. 9-(1'-D-Erythrityl)-6,7-dimethylisoxaloxazine [303-59-3]



$\text{C}_{16}\text{H}_{18}\text{N}_4\text{O}_5$ 346.342

Orange plates (6N HCl). Mp 285° dec. $[\alpha]_D^{25}$ -106.

Uehara, K. et al., *J. Biochem. (Tokyo)*, 1963, **54**, 267; *CA*, **60**, 15962 (synth)

 β -D-Erythrofuranosyl β -D-erythrofuranoside**E-16**

$\text{C}_8\text{H}_{14}\text{O}_7$ 222.194

2,3-Isopropylidene:

$\text{C}_{11}\text{H}_{18}\text{O}_7$ 262.259

Cryst. (C₆H₆/heptane). Mp 127-128°.

$[\alpha]_D^{20}$ -237 (c, 1 in EtOH).

2,3-Isopropylidene, dibenzyl:

$\text{C}_{25}\text{H}_{30}\text{O}_7$ 442.508

Mp 75-76°.

2,3:2',3'-Diethylidene:

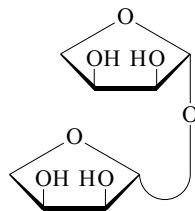
$\text{C}_{12}\text{H}_{18}\text{O}_7$ 274.27

Cryst. (C₆H₆/heptane). Mp 164-165°.

$[\alpha]_D^{20}$ -245 (c, 1 in C₆H₆).

Van Cleve, J.W. et al., *Carbohydr. Res.*, 1982, **106**, 246 (synth, pmr, cmr)

**β-L-Erythrofuranosyl
β-L-erythrofuranoside**



C₈H₁₄O₇ 222.194

2,3:2',3'-Diisopropylidene: 2,3-O-Isopropylidene-β-L-erythrofuranosyl 2,3-O-isopropylidene-β-L-erythrofuranoside [120142-89-4]

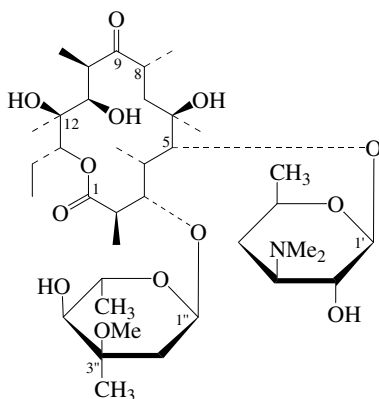
C₁₄H₂₂O₇ 302.324

Feathery needles. Mp 117-118°. [α]_D²⁶ +221 (c, 2.07 in EtOAc).

Lerner, L.M. *et al.*, *Carbohydr. Res.*, 1988, **182**, 287; 1990, **208**, 273 (diisopropylidene, pmr)

Erythromycin, 9CI, BAN, INN

Ilotycin. Erythrocin. Erythromycin A [114-07-8]



C₃₇H₆₇NO₁₃ 733.935

Macrolide antibiotic. Exists partly as 9, 12-cyclic hemiacetal. Prod. by *Streptomyces erythraeus*, *Streptomyces griseoplanus*, *Arthrobacter* sp., *Saccharopolyspora erythraea* Nrr12338, *Bacillus* and *Nocardia* spp. Broad-spectrum clinically used antibiotic. Hypotensive agent, antifouling agent. Cryst. (Me₂CO aq. or CHCl₃). Sol. MeOH, Et₂O; fairly sol. H₂O, hexane. Mp 136-140° Mp 190-193° (double Mp). [α]_D²⁵ -78 (c, 1.99 in EtOH). Log P 0.65 (uncertain value) (calc). λ_{max} 282 (ε 30) (EtOH) (Derp). λ_{max} 278 (ε 27) (MeOH) (Berdy). λ_{max} 289 (ε 25.7) (pH 6 buffer) (Berdy).

- Gastrointestinal disturbances and other adverse effects reported when used therapeutically. LD₅₀ (rat, orl) 9272 mg/kg. LD₅₀ (ham, orl) 3018 mg/kg, LD₅₀ (mus, scu) 1800 mg/kg, LD₅₀ (mus, scu) 2500 mg/kg, LD₅₀ (mus, ivn) 425 mg/kg, LD₅₀ (mus, ipr) 490 mg/kg. Exp. reprod. and teratogenic effects. KF4375000

E-17

Thiocyanate salt: Erythromix V [7704-67-8] Antibiotic.

Octadecanoate salt: Erythromycin stearate, USAN. Gallimycin. Many other names [643-22-1] Antibacterial agent. Mp 92-93°.

- LD₅₀ (mus, orl) 3112 mg/kg. KF5790000

4-O-β-D-Galactopyranosyl-D-gluconate salt: Erythromycin lactobionate, USAN [3847-29-8] Antibacterial agent. Amorph. powder. Mp 145-150°.

- LD₅₀ (mus, ipr) 735 mg/kg. OD7320000
- D-glycero-D-gulo-Heptonate salt: Erythromycin glucoheptonate. Erythromycin gluceptate, USAN. Ilotycin gluceptate* [23067-13-2] Antibacterial agent. Mp 95-140°.

- LD₅₀ (ham, orl) 4 mg/kg. KF4950000

N-Oxide: Erythromycin N-oxide [992-65-4]

C₃₇H₆₇NO₁₄ 749.935

From *Streptomyces erythraeus*.

Mp 222-224°.

9-(O-Methyloxime): Lexithromycin, INN. 9-Deoxy-9-methoxyiminoerythromycin [53066-26-5]

C₃₈H₇₀N₂O₁₃ 762.977

Prisms (Me₂CO aq.). Mp 128-129°. [α]_D²¹ -71.8.

2'-Ac: Erythromycin acetate

[992-69-8]

C₃₉H₆₉NO₁₄ 775.972

Antibiotic. Needles (C₆H₆/hexane). Mp 128-138°. [α]_D²⁵ -62.2 (EtOH). Log P 1.5 (uncertain value) (calc).

2'-Ac, octadecanoate salt: Erythromycin acistrate, INN. Erasis. Gallimycin W. Matachron

[96128-89-1]

C₅₇H₁₀₅NO₁₆ 1060.454

Launched 1988

Antibiotic. Needles (C₆H₆/hexane). Mp 128-138°. [α]_D²⁵ -62.2 (EtOH).

2'-Propanoyl: Erythromycin propionate, USAN. Propiocine

[134-36-1]

C₄₀H₇₁NO₁₄ 789.999

Antibiotic. Cryst. + 1H₂O (Me₂CO aq.). Mp 122-126°. [α]_D²⁵ -81.6 (Me₂CO). Log P 2.03 (uncertain value) (calc).

- KF5190000

2'-Propanoyl, dodecyl sulfate salt:

Erythromycin estolate, BAN, USAN. Propionylerythromycin lauryl sulfate.

Ilosone. Many other names

[3521-62-8] Antibacterial agent.

Long needles. Mp 135-140° dec.

- Hepatic and other adverse effects reported when used therapeutically. LD₅₀ (rat, orl) 1447 mg/kg. KF5775000

2'-Propanoyl, salt with mercaptobutanedioic acid: RV11. Zalog

[84252-06-2] Antibiotic used in the treatment of chronic bronchitis.

2'-Propanoyl, compd. with N-acetyl-L-cysteine (1:1): Erythromycin stinoprate, INN

[84252-03-9]

Cryst. Mp 128-140°.

2'-(Ethyl butanedioate): Erythromycin ethylsuccinate, USAN. Evesin. Many other names

[1264-62-6]

C₄₃H₇₅NO₁₆ 862.063

Launched 1989

Antibiotic. Cryst. (Me₂CO aq.). Mp 219-224°. [α]_D²¹ -54 (c, 2 in dioxan). Log P 2.27 (uncertain value) (calc).

- LD₅₀ (mus, orl) >10000 mg/kg. WM9800000

2'-(Ethyl carbonate): [7218-80-6]

C₄₀H₇₁NO₁₅ 805.999

Antibiotic. [α]_D²⁴ -75 (c, 1 in CHCl₃). Log P 1.99 (uncertain value) (calc).

Cyclic 11,12-carbonate: Davercin

[55224-05-0]

C₃₈H₆₅NO₁₄ 759.93

Antibiotic. Cryst. (Me₂CO aq.). Mp 219-224°. [α]_D²¹ -54 (c, 2 in dioxan). Log P 0.92 (uncertain value) (calc).

- KF4670000

N-De-Me: N-Demethylethromycin

[992-62-1]

C₃₆H₆₅NO₁₃ 719.908

Minor metab. of *Streptomyces erythraeus*. Cryst. (Me₂CO). Sol. MeOH, C₆H₆; fairly sol. hexane; poorly sol. H₂O.

Mp 140-145°.

O⁶-Me: 6-O-Methylethromycin, 9CI. Clarithromycin, BAN, INN, USAN.

Biaxin. Cyllind. Klacid. Klaricid. Maccladin. Mavid. Naxy. Veclam. Zeclar. A

56268. TE 031. Many other names

[81103-11-9]

C₃₈H₆₉NO₁₃ 747.962

Antibacterial agent. Shows superior pharmacokinetic props. to erythromycin and about twice the activity, with a similar spectrum of activity. Marketed drug. Launched 1990. Worldwide 47th best selling prescription drug (\$1.10 bn, 2002) (Abbott) (Med Ad News). Needles (EtOH). Mp 222-225°. [α]_D²⁴ -90.4 (c, 1 in CHCl₃). Log P 1.28 (uncertain value) (calc).

- KF4997000

3''-O-De-Me: Erythromycin C

[1675-02-1]

C₃₆H₆₅NO₁₃ 719.908

Prod. by *Streptomyces erythraeus*. Broad-spectrum antibiotic. Needles (CHCl₃). Mp 121-125°.

11-Ketone: 11-Deoxy-11-oxoerythromycin A

[150418-09-0]

C₃₇H₆₅NO₁₃ 731.919

Prod. by a gene-modified *Saccharopolyspora erythraea*.

7-Hydroxy: 7-Hydroxyerythromycin A

[150418-10-3]

C₃₇H₆₇NO₁₄ 749.935

Prod. by a gene-modified *Saccharopolyspora erythraea*.

16-Hydroxy: Erythromycin F

[82230-93-1]

C₃₇H₆₇NO₁₄ 749.935

Prod. by *Streptomyces erythraeus*. Cryst. (CH₂Cl₂). Sol. MeOH, C₆H₆; poorly sol. H₂O, hexane.

Mp 168-170°. [α]_D²⁴ -61.5 (c, 1 in MeOH).

6-Deoxy: 6-Deoxyerythromycin A

[135361-13-6]

Prod. by *Saccharopolyspora erythraea*.

[α]_D -54.8 (CHCl₃).

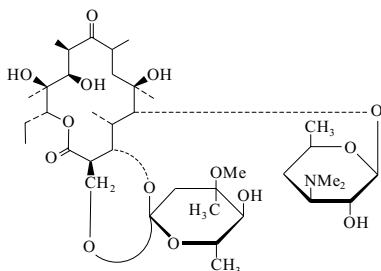
6-Deoxy, 3''-O-de-Me: 6-Deoxyerythromycin C

[135329-67-8]

- C₃₆H₆₅NO₁₂ 703.909
Prod. by *Saccharopolyspora erythraea*.
[α]_D -41 (CHCl₃).
6-Deoxy, 6,7-didehydro, 3''-O-de-Me: **6,7-Anhydroerythromycin C**
[150335-94-7]
C₃₆H₆₃NO₁₂ 701.893
Prod. by *Saccharopolyspora erythraea*.
Powder.
6-Deoxy, 7-hydroxy: **6-Deoxy-7-hydroxyerythromycin A**
[150418-11-4]
C₃₇H₆₇NO₁₃ 733.935
Prod. by a gene-modified *Saccharopolyspora erythraea*.
12-Deoxy: **Erythromycin B**. 12-Deoxyerythromycin, 9CI. Berythromycin, INN, USAN. Abbott 24091
[527-75-3]
C₃₇H₆₇NO₁₂ 717.936
Prod. by *Streptomyces erythreus* and *Saccharopolyspora erythraea*. Shows similar antimicrobial spectrum as Erythromycin A; broad spectrum of antimicrobial activity. Cryst. (Me₂CO). Sol. MeOH, Et₂O; fairly sol. H₂O, hexane.
Mp 191-195°. [α]_D²⁵ -78 (c, 2 in EtOH).
λ_{max} 286 (ε 59) (MeOH) (Berdy). λ_{max} 289 (ε 36.4) (pH 6 buffer) (Berdy).
▶ LD₅₀ (mus, ivn) 200 mg/kg.
12-Deoxy, hydrochloride:
Cryst. (Me₂CO). Mp 149-150°.
12-Deoxy, hydroiodide: Mp 167-169°.
12-Deoxy, sulfate: Mp 154-156°.
12-Deoxy, 16-hydroxy: **Erythromycin G**
C₃₇H₆₇NO₁₃ 733.935
Prod. by *Saccharopolyspora erythraea*.
Solid.
Mp 220-222° (MeCN). [α]_D²⁵ -80.5 (c, 0.9 in MeOH).
6,12-Dideoxy: **6-Deoxyerythromycin B**
[135361-14-7]
C₃₇H₆₇NO₁₁ 701.936
Prod. by *Saccharopolyspora erythraea*.
[α]_D -74.3 (CHCl₃).
8-Fluoro: **Flurithromycin, INN**. 8-Fluoroerythromycin, 9CI. Fluithromycin. P 0501A
[82664-20-8]
C₃₇H₆₆FNO₁₃ 751.926
Isol. from *Streptomyces erythreus*. Antibacterial agent. Phase I clinical trials.
Cryst. (EtOH).
Mp 183-184°. [α]_D -54.9.
8-Fluoro, ethylsuccinate: **Flurithromycin ethylsuccinate. Ritro**
[82730-23-2]
[160515-65-1]
Cryst. (Et₂O/hexane). Mp 80-85°. [α]_D²⁰ -52.7 (c, 1 in Me₂CO).
3-O-Deglycosyl: **Erythrolosamine**. 5-O-Desosaminylerythromycin A
[53066-32-3]
C₂₉H₅₃NO₁₀ 575.738
Minor metab. of *Streptomyces erythraeus*.
Sol. MeOH, C₆H₆; poorly sol. hexane.
[α]_D -24 (MeOH). λ_{max} 285 (E1%_{1cm} 0.54) (MeOH) (Berdy).
5-De-(glucosyloxy), 12-deoxy, 5-oxo:
[150418-17-0]
C₂₉H₅₀O₁₀ 558.708
Prod. by a gene-modified *Saccharopolyspora erythraea*. Cryst.
14S-(1S-Hydroxyethyl): 14-(1-Hydroxyethyl)erythromycin A, 9CI
[150941-01-8]
C₃₉H₇₁NO₁₄ 777.988
Prod. by a gene-modified *Saccharopolyspora erythraea*.
14-Propyl: 14-Propylerythromycin A, 9CI
[150418-15-8]
C₄₀H₇₃NO₁₃ 776.016
Prod. by a gene-modified *Saccharopolyspora erythraea*.
14-(1-Hydroxypropyl): 14-(1-Hydroxypropyl)erythromycin A, 9CI
[150418-16-9]
C₄₀H₇₃NO₁₄ 792.015
Prod. by a gene-modified *Saccharopolyspora erythraea*.
[304-63-2, 14271-02-4, 41342-53-4, 118244-58-9, 118244-59-0, 132830-05-8]
Clark, R.K. et al., *Antibiot. Chemother.* (Washington, D.C.), 1955, **5**, 206 (struct)
Wiley, P.F. et al., *J.A.C.S.*, 1955, **77**, 3422; 1957, **79**, 6062; 6074 (struct)
Stephens, V.C. et al., *Antibiot. Annu.*, 1958, **59**; 346 (esters)
U.S. Pat., 1959, 2 852 429; 2 881 163; CA, **53**, 1650; **55**, 25172 (glucoheptanate, stearate)
Jones, P.H. et al., *J.O.C.*, 1968, **33**, 665 (oxide)
Mann, J.M. et al., *Anal. Profiles Drug Subst.*, 1972, **1**, 101 (estolate)
Jaret, R.S. et al., *J.C.S. Perkin 1*, 1973, 1374 (acetate)
Oleinick, N.L. et al., *Antibiotics (N.Y.)*, 1975, **3**, 396 (rev)
Slawinski, W. et al., *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1975, **94**, 236 (Davercin)
Terui, Y. et al., *Tet. Lett.*, 1975, 2583 (cmr)
Majer, J. et al., *J.A.C.S.*, 1977, **99**, 1620 (pmr)
Tadanier, J. et al., *J.O.C.*, 1978, **43**, 2351 (synth)
Koch, W.L. et al., *Anal. Profiles Drug Subst.*, 1979, **8**, 159 (rev)
U.S. Pat., 1979, 4 137 397; CA, **90**, 174677 (lactobionate)
Eur. Pat., 1982, 56 291, (Pierrel); CA, **97**, 196812m (Flurithromycin, Flurithromycin ethylsuccinate, synth)
Eur. Pat., 1982, 57 489; CA, **98**, 54400 (stinoprate)
Martin, J.R. et al., *J. Antibiot.*, 1982, **35**, 426 (Erythromycin F)
Gribble, M.J. et al., *Med. Clin. North Am.*, 1982, **66**, 79 (rev. pharmacol)
Toscano, L. et al., *J. Antibiot.*, 1983, **36**, 1439 (Flurithromycin)
Morimoto, S. et al., *J. Antibiot.*, 1984, **37**, 187 (Clarithromycin)
Belg. Pat., 1985, 901 411; CA, **104**, 19776
Washington, J.A. et al., *Mayo Clin. Proc.*, 1985, **60**, 189 (rev. pharmacol, metab)
Paterson, I. et al., *Tetrahedron*, 1985, **41**, 3569 (synth, rev)
Fernandes, P.B. et al., *Antimicrob. Agents Chemother.*, 1986, **30**, 865; 1987, **31**, 328; 343; 463; 640 (Clarithromycin)
Chater, K.F. et al., *Bacteria*, 1986, **9**, 119 (rev. biosynth)
Concia, P.M. et al., *J. Int. Med. Res.*, 1986, **14**, 137 (RV11)
Cane, D.E. et al., *J.A.C.S.*, 1986, **108**, 4957 (biosynth)
Kibwage, I.O. et al., *J. Antibiot.*, 1987, **40**, 1-6 (Erythrolosamine)
Everett, J.R. et al., *J.C.S. Perkin 2*, 1987, 1659; 1988, 325; 1989, 1719 (pmr, cmr, conformn, cryst struct)
Ager, D.J. et al., *Magn. Reson. Chem.*, 1987, **25**, 948 (cmr)
Davey, P. et al., *J. Antimicrob. Chemother. Suppl. D*, Eds., 1988, **21**, (Acistrate)
Benoni, G. et al., *Antimicrob. Agents Chemother.*, 1989, **33**, 1413; 1419 (Flurithromycin)
Lewis, R.J. et al., *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, EDH500
Watanabe, Y. et al., *Heterocycles*, 1990, **31**, 2121 (Clarithromycin)
Hunt, E. et al., *J.C.S. Perkin 2*, 1990, 2157 (synth, ir, pmr)
Staunton, J. et al., *Angew. Chem., Int. Ed.*, 1991, **30**, 1302 (rev, biosynth)
Muelzer, J. et al., *Angew. Chem., Int. Ed.*, 1991, **30**, 1452 (rev, synth)
Shepherd, M.J. et al., *Food Contaminants: Sources and Surveillance*, Royal Society of Chemistry, 1991, 145 (anal)
Gasc, J.-C. et al., *J. Antibiot.*, 1991, **44**, 313 (synth, pmr, activity)
Beran, M. et al., *J. Chromatogr.*, 1991, **558**, 265 (oxide)
Barber, J. et al., *J.C.S. Perkin 2*, 1991, 1489 (pmr, cmr, tautom, conformn)
Kirk-Othmer *Encycl. Chem. Technol.*, 4th edn., Wiley, 1991, **3**, 171 (rev)
Weber, J.M. et al., *Science (Washington, D.C.)*, 1991, **252**, 114-117 (6-Deoxyerythromycins)
Toshima, K. et al., *Tet. Lett.*, 1991, **32**, 6155 (synth)
Sturgill, M.G. et al., *Ann. Pharmacother.*, 1992, **26**, 1099 (rev)
Piscitelli, S.C. et al., *Clin. Pharm.*, 1992, **11**, 137 (Clarithromycin, rev)
Peters, D.H. et al., *Drugs*, 1992, **44**, 117 (Clarithromycin)
Saverino, D. et al., *J. Antimicrob. Chemother.*, 1992, **30**, 261 (Flurithromycin)
Iwasaki, H. et al., *Acta Cryst. C*, 1993, **49**, 1227 (cryst struct, Clarithromycin)
Fraschiui, F. et al., *Clin. Pharmacokinet.*, 1993, **25**, 189 (Clarithromycin, rev)
Watanabe, Y. et al., *J. Antibiot.*, 1993, **46**, 1163 (Clarithromycin)
Pat. Coop. Treaty (WIPO), 1993, 93 13 663; CA, **119**, 219166t (derivs)
Donadio, S. et al., *Proc. Natl. Acad. Sci. U.S.A.*, 1993, **90**, 7119-7123 (6,7-Anhydroerythromycin C)
Kirst, H.A. et al., *Prog. Med. Chem.*, 1993, **30**, 57 (rev)
Shida, Y. et al., *Tetrahedron*, 1993, **49**, 9221 (ms)
Colombo, N. et al., *Arzneim.-Forsch.*, 1994, **44**, 850-855 (Flurithromycin ethylsuccinate)
Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 11577; 11628; 11659; 11757
Langtry, H.D. et al., *Drugs*, 1997, **53**, 973-1004 (rev, Clarithromycin)
Martin, S.F. et al., *J.A.C.S.*, 1997, **119**, 3193 (synth)
Tyson, P. et al., *J. Chem. Res., Synop.*, 1998, 727 (pmr, cmr)
Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 189
Gates, P.J. et al., *Rapid Commun. Mass Spectrom.*, 1999, **13**, 242-246 (ms)
Awan, A. et al., *J.C.S. Perkin 2*, 2000, 1645-1652 (Erythromycin A, Clarithromycin, pmr, conformn)
Lo Bue, A.M. et al., *J. Chemother.*, 2001, **13**, 255-259 (flurithromycin, pharmacol)
Hergenrother, P.J. et al., *Angew. Chem., Int. Ed.*, 2003, **42**, 3278-3281 (Erythromycin B, synth)
Cevallos, A. et al., *J. Antibiot.*, 2003, **56**, 280-288 (Erythromycin G)
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, EDH500; EDJ000; EDI500; EDJ500

Erythromycin E

1'',16-Epoxyerythromycin, 9CI
[41451-91-6]

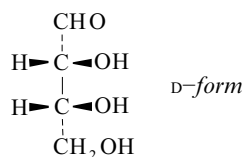


C₃₇H₆₅NO₁₄ 747.919

Macrolide antibiotic. Metab. of Erythromycin A. Prod. by *Nocardia brasiliensis*. Prisms (Et₂O). Sol. MeOH. Mp 160-165°. [α]_D²³ -49.7 (c, 1 in MeOH). λ_{max} 285 (ε 31) (MeOH). Martin, J.R. *et al.*, *Tetrahedron*, 1975, **31**, 1985-1989 (*isol, struct*) Mikami, Y. *et al.*, *J. Antibiot.*, 1999, **52**, 201-202 (*isol*)

Erythrose, 8CI

(2R,3R)-2,3,4-Trihydroxybutanal, 9CI
[1758-51-6]



C₄H₈O₄ 120.105

D-form

(2R,3R)-form
[583-50-6]

An intermed. in the Embden-Meyerhof glycolysis and alcohol fermentation scheme. Found in ferns and tobacco. Syrup. [α]_D²² -43.5 (c, 1 in H₂O). Exists in dilute aq. soln. as a mixt. of the hydrate and furanose forms. Concentration of the soln. causes dimerisation.

Phenylosazone:

Needles (C₆H₆). Mp 164°.

4-Phosphate: [585-18-2]

C₄H₉O₇P 200.085

Occurs in trace amounts in muscle. Important intermediate in the Embden-Meyerhof-Parnas metabolic pathway.

2,4-O-Benzylidene: 2,4-O-Benzylidene-D-erythrose

[81577-69-7]

C₁₁H₁₂O₄ 208.213

Mp 134-136°.

 α -D-Furanose-form

1,2,3-Tri-Ac: 1,2,3-Tri-O-acetyl- α -D-erythrofuranose

[66757-61-7]

C₁₀H₁₄O₇ 246.216

Amorphous solid. [α]_D +56.3 (c, 1.1 in CHCl₃).

E-19

1,2-O-Isopropylidene: 1,2-O-Isopropylidene- α -D-erythrofuranose

[14048-37-4]

C₇H₁₂O₄ 160.169

Cryst. (hexane). Mp 74.5-75.5°. [α]_D²³ +25.5 (c, 1.8 in EtOH).

Allyl glycoside: Allyl α -D-erythrofuranoside [82883-26-9]

C₇H₁₂O₄ 160.169

Syrup. Bp₅ 95-97° (bath). [α]_D²⁰ +120 (c, 2 in EtOH). n_D^{28} 1.4745.

Benzyl glycoside: Benzyl α -D-erythrofuranoside

[82883-31-6]

C₁₁H₁₄O₄ 210.229

Syrup. [α]_D²⁰ +96 (c, 0.7 in C₆H₆).

 β -D-Furanose-form

1,2,3-Tri-Ac: 1,2,3-Tri-O-acetyl- β -D-erythrofuranose

[66757-62-8]

C₁₀H₁₄O₇ 246.216

Amorphous solid. [α]_D -90.4 (c, 1.1 in CHCl₃).

2,3-O-Isopropylidene: 2,3-O-Isopropylidene- β -D-erythrofuranose

[90409-96-4]

C₇H₁₂O₄ 160.169

Readily obt. from D-arabinose. Important chiral intermediate. Mp 30-32.5°. [α]_D²⁵ -77.03 (c, 2.09 in CHCl₃). Has been reported to dimerise on long standing (not reproducible). Dimerises in presence of Fe³⁺ ions.

Allyl glycoside: Allyl β -D-erythrofuranoside [82883-25-8]

C₇H₁₂O₄ 160.169

Syrup hardening to a glassy solid on storage. Bp₅ 107-109° (bath). [α]_D²⁰ -155 (c, 2 in EtOH). n_D^{30} 1.4742.

Allyl glycoside, dibenzoyl: Allyl 2,3-di-O-benzoyl- β -D-erythrofuranoside

[82883-28-1]

C₂₁H₂₀O₆ 368.385

Cryst. (EtOH aq.). Mp 50°. [α]_D²⁰ -87 (c, 1.5 in EtOAc).

Benzyl glycoside: Benzyl β -D-erythrofuranoside

[82883-32-7]

C₁₁H₁₄O₄ 210.229

Syrup. [α]_D²⁰ -144 (c, 1.5 in C₆H₆).

Benzyl glycoside, dibenzoyl: Benzyl 2,3-di-O-benzoyl- β -D-erythrofuranoside

[82883-35-0]

C₂₅H₂₂O₆ 418.445

Cryst. (EtOH aq.). Mp 79.5°. [α]_D²⁰ -122 (c, 0.5 in C₆H₆).

L-form (2S,3S)-form

[533-49-3]

Syrup. [α]_D²⁰ +39 (H₂O).

Phenylosazone: Mp 163-164°.

 β -L-Furanose-form

2,3-O-Isopropylidene: 2,3-O-Isopropylidene- β -L-erythrofuranose

[23262-84-2]

C₇H₁₂O₄ 160.169

Syrup. Bp_{0.45} 67-74°. [α]_D²³ +83.2 (c, 4.36 in EtOAc).

DL-form (2RS,3RS)-form

[29825-68-1]

Syrup.

Phenylosazone:

Cryst. (C₆H₆). Mp 166-167° dec.

Di-Et-acetal, 2,3,4-tri-Ac: 4,4-Diethoxy-1,2,3-butanetriol triacetate

[38982-36-4]

C₁₄H₂₄O₈ 320.339

Viscous liq. Bp_{0.0001} 97-98°. n_D^{20} 1.4327.

[37669-01-5, 51607-16-0]

Aldrich Library of NMR Spectra, 2nd edn., 1983, **2**, 904A (nmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 187B (ir)

Ruff, O. *et al.*, *Ber.*, 1901, **34**, 1362-1372 (*synth*) Ballou, C.E. *et al.*, *J.A.C.S.*, 1957, **79**, 165-166 (*D*-2,3-isopropylidene)

Baxter, J.N. *et al.*, *Can. J. Chem.*, 1960, **38**, 2217-2225 (*L*-2,3-isopropylidene)

Perlin, A.S. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 64 (*synth*)

Ludlow, C.J. *et al.*, *Phytochemistry*, 1966, **5**, 251-257 (*occur*)

Walton, D.J. *et al.*, *Can. J. Chem.*, 1967, **45**, 2921-2925 (*synth*)

Carey, F.A. *et al.*, *Carbohydr. Res.*, 1967, **3**, 205-213 (*1,2-isopropylidene*)

Lerner, L.M. *et al.*, *Carbohydr. Res.*, 1969, **9**, 1-4; 1990, **208**, 273-275 (*L*-form, *synth*, *L*-2,3-isopropylidene)

Sonogashira, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1972, **45**, 2616-2612 (*D*-L-form, *synth*)

Andersson, R. *et al.*, *Carbohydr. Res.*, 1978, **61**, 501-509 (α -D-fur tri-Ac, β -D-fur tri-Ac)

Barker, R. *et al.*, *Can. J. Chem.*, 1979, **57**, 3160-3167 (*pmr, cmr*)

Westerlund, E. *et al.*, *Carbohydr. Res.*, 1981, **91**, 21-29 (*props*)

Van Cleve, J.W. *et al.*, *Carbohydr. Res.*, 1982, **106**, 239-245 (*D*-form, allyl gly derivs, benzyl gly derivs)

Cohen, N. *et al.*, *J.A.C.S.*, 1983, **105**, 3661-3672 (*D*-2,3-isopropylidene)

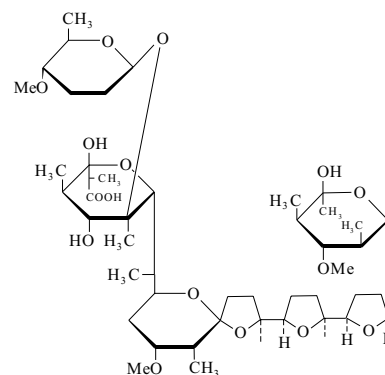
Shah, R.H. *et al.*, *Carbohydr. Res.*, 1986, **155**, 212-216 (*L*-form, *synth*)

Shah, R.H. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 139-146 (*D*-form, *synth*)

Baker, S.R. *et al.*, *Tet. Lett.*, 1988, **29**, 991-994 (*D*-form 2,4-benzylidene)

Etheromycin**E-21**

Antibiotic 38295. CP 38295. Antibiotic CP 38295. T 40517. Antibiotic T 40517 [59149-05-2]



C₄₈H₈₂O₁₆ 915.166

Polyether-type antibiotic. Isol. from *Streptomyces hygroscopicus*. Antifungal, anticoccidial agent. Active against gram-positive and -negative bacteria. Growth stimulant for ruminant and monogastric animals. Ionophore. [α]_D²⁵

+22.6 (c, 1.0 in MeOH).

NalK salt: Mp 200°. $[\alpha]_D^{25} +36$.

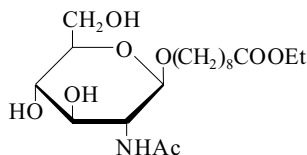
Ger. Pat., 1976, 2 534 342; *CA*, **85**, 19048y (*isol*)

U.S. Pat., 1978, 4 129 578; *CA*, **90**, 150295x (*isol*)

Seto, H. *et al.*, *J. Antibiot.*, 1979, **32**, 239 (*cmr*)

8-Ethoxycarbonyloctyl 2-acetamido-2-deoxyglucopyranoside E-22

Ethyl 9-[2-(acetyl-amino)-2-deoxyglucopyranosyl]oxy]nonanoate, 9CI



$C_{19}H_{35}NO_8$ 405.487

β -D-form [56342-94-0]

Amorph. powder (Et₂O).

Tri-Ac: [56342-97-3]

$C_{25}H_{41}NO_{11}$ 531.599

Cryst. (Et₂O/hexane). Mp 112°. $[\alpha]_D^{20} -12.2$ (c, 2.4 in CHCl₃).

4,6-O-Benzylidene: [56343-05-6]

$C_{26}H_{39}NO_8$ 493.596

Cryst. (EtOH). Mp 219-220°. $[\alpha]_D^{24} -55.5$ (c, 1.3 in CHCl₃).

Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4076

(β -D-form)

Netherlands Pat., 1977, 76 07 562; *CA*, **88**,

87558b (β -D-form)

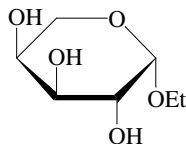
Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1980, **58**,

631 (*pmr, cmr, conformn*)

U.S. Pat., 1980, 4 238 473, (*Chembiomed*); *CA*,

94, 154863m (*synth*)

Ethyl arabinopyranoside E-23



$C_7H_{14}O_5$ 178.185

β -L-Pyranose-form

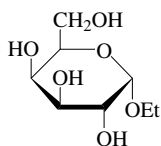
Isol. from roots of Hibiscus rosa-sinensis.

Plates.

Mp 139-140°. $[\alpha]_D^{25} +298.8$ (c, 0.5 in MeOH).

Qiu, S.X. *et al.*, *Carbohydr. Res.*, 1998, **311**, 85-88 (*isol, pmr, cmr*)

Ethyl galactoside E-24



$C_8H_{16}O_6$ 208.211

α -D-Pyranose-form

α -D-Pyranose-form

Eleutheroside C

[15486-24-5]

Constit. of *Acanthopanax* sp., *Adhatoda* sp., *Cassia* sp., *Clitoria* sp., *Eleutherococcus* sp., *Glycine max* (soybean) and *Trigonella* sp.

Cryst. (EtOH).

Mp 140°. $[\alpha]_D^{20} +186$ (H₂O).

Tetra-O-Ac: *Ethyl 2,3,4,6-tetra-O-acetyl- α -D-galactopyranoside*

[31281-90-0]

$C_{16}H_{24}O_{10}$ 376.36

Cryst. (pentane). Mp 87-88°. $[\alpha]_D^{20} +136$ (CHCl₃).

β -D-Pyranose-form [18997-88-1]

Constit. of *Polianthes tuberosa* and *Trigonella corniculata*.

Cryst. (EtOH).

Mp 159-161°. $[\alpha]_D^{21} -6$ (c, 2 in H₂O).

Overend, W.G. *et al.*, *J.C.S.*, 1962, 3429 (*synth*)

Ovodov, Y.S. *et al.*, *Khim. Prir. Soedin.*, 1967, **3**, 63; *Chem. Nat. Compd. (Engl. Transl.)*, 1967, **3**, 53 (*isol*)

Kulshrestha, D.K. *et al.*, *Chem. Ber.*, 1968, **101**, 2096 (*isol*)

Bruyne, C.K. *et al.*, *Carbohydr. Res.*, 1972, **25**, 59 (*synth*)

Sishandri, T.R. *et al.*, *Curr. Sci.*, 1973, **42**, 421 (*isol*)

Schroeder, L.R. *et al.*, *Carbohydr. Res.*, 1974, **37**, 368 (*synth*)

Zamojski, A. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1975, **49**, 2113 (*synth*)

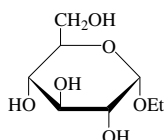
Van Heeswijk, W.A.R. *et al.*, *Carbohydr. Res.*, 1977, **58**, 494 (*synth*)

Jain, M.P. *et al.*, *Phytochemistry*, 1980, **19**, 1880 (*isol*)

Khan, K.M. *et al.*, *Nat. Prod. Lett.*, 2002, **16**, 283-290 (*isol, pmr, cmr*)

Ethyl glucoside, 8CI

[27214-60-4]



$C_8H_{16}O_6$ 208.211

α -D-Pyranose-form

α -D-Pyranose-form [19467-01-7]

Mp 114°. $[\alpha]_D^{26} +152$ (H₂O).

2,3,4,6-Tetra-Ac: *Ethyl 2,3,4,6-tetra-O-acetyl- α -D-glucopyranoside*

$C_{16}H_{24}O_{10}$ 376.36

Mp 58-59°. $[\alpha]_D +132$ (CHCl₃).

2,3,4,6-Tetrakis(4-nitrobenzoyl): Mp 110-115°.

2-Me, 3,4,6-tri-Ac: *Ethyl 3,4,6-tri-O-acetyl-2-O-methyl- α -D-glucopyranoside*

[35584-50-0]

$C_{15}H_{24}O_9$ 348.349

Mp 136-137°. $[\alpha]_D^{20} +145$ (c, 1.0 in CHCl₃).

3,4,6-Tribenzyl: *Ethyl 3,4,6-tri-O-benzyl- α -D-glucopyranoside*

$C_{29}H_{34}O_6$ 478.584

Mp 82-83°. $[\alpha]_D^{20} +93$ (c, 1.0 in CHCl₃).

3,4,6-Tribenzyl, 2-Me: *Ethyl 3,4,6-tri-O-benzyl-2-O-methyl- α -D-glucopyranoside*

$C_{30}H_{36}O_6$ 492.611

$[\alpha]_D^{20} +70.3$ (c, 1.0 in CHCl₃).

β -D-Pyranose-form [3198-49-0]

Constit. of *Artabotrys* sp., *Allophylus* sp., *Cistus* sp., *Citrus* sp., *Manihot* sp. and other plant spp. Exhibits antihypertensive activity in rats.

Cryst. with bitter taste.

Mp 90.4° Mp 98-100°. $[\alpha]_D^{20} -36.7$ (H₂O).

2,3,4-Tri-Ac: *Ethyl 2,3,4-tri-O-acetyl- β -D-glucopyranoside*

$C_{14}H_{22}O_9$ 334.322

Cryst. (EtOH). Mp 137-138°. $[\alpha]_D^{20} -27.1$ (c, 1.7 in CHCl₃).

2,3,4,6-Tetra-Ac: *Ethyl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside*

$C_{16}H_{24}O_{10}$ 376.36

Cryst. (EtOH). Mp 107°. $[\alpha]_D -22.7$ (H₂O).

4-O-(4-Hydroxy-3-methoxy-E-cinnamoyl): *Ethyl 4-feruloyl- β -D-glucopyranoside*

[274931-04-3]

$C_{18}H_{24}O_9$ 384.382

Constit. of the rhizomes of *Alpinia speciosa*. Antioxidant. Solid. $[\alpha]_D^{27} -34$ (c, 0.59 in Me₂CO).

2,3,4,6-Tetrakis(4-nitrobenzoyl): Mp 215-216°.

4-Me: *Ethyl 4-O-methyl- β -D-glucopyranoside*

$C_9H_{18}O_6$ 222.238

Cryst. (EtOAc). Mp 133°. $[\alpha]_D^{20} -29.2$ (c, 0.6 in H₂O).

4-Me, 2,3,6-tri-Ac: *Ethyl 2,3,6-tri-O-acetyl-4-O-methyl- β -D-glucopyranoside*

[38953-98-9]

$C_{15}H_{24}O_9$ 348.349

Mp 69-70°. $[\alpha]_D^{20} -39.4$ (c, 1.9 in CHCl₃).

3-Me, 2,4,6-tri-Ac: *Ethyl 2,4,6-tri-O-acetyl-3-O-methyl- β -D-glucopyranoside*

[38953-99-0]

$C_{15}H_{24}O_9$ 348.349

Mp 98°. $[\alpha]_D^{20} -41.6$ (c, 0.75 in CHCl₃).

2-Allyl, 3,4,6-tri-Ac: *Ethyl 3,4,6-tri-O-acetyl-2-O-allyl- β -D-glucopyranoside*

$C_{17}H_{26}O_9$ 374.387

Mp 101-102°. Bp_{0.15} 145-155°. $[\alpha]_D^{20} +1$ (c, 1.0 in CHCl₃).

6-Trityl, 2,3,4-tri-Ac: *Ethyl 2,3,4-tri-O-acetyl-6-O-trityl- β -D-glucopyranoside*

$C_{33}H_{36}O_9$ 576.642

Mp 156°. $[\alpha]_D^{20} +23.8$ (c, 0.67 in CHCl₃).

3,4,6-Tribenzyl: *Ethyl 3,4,6-tri-O-benzyl- β -D-glucopyranoside*

[35510-36-2]

$C_{29}H_{34}O_6$ 478.584

Mp 51-52°. $[\alpha]_D^{20} +26$ (c, 1.0 in CHCl₃).

α -D-Furanose-form

Needles (EtOAc/EtOH). Mp 82-83°. $[\alpha]_D +98$ (c, 1.58 in H₂O).

3,5,6-Tribenzoyl: *Ethyl 3,5,6-tri-O-benzoyl- α -D-glucopyranoside*

[35510-28-2]

$C_{29}H_{28}O_9$ 520.535

$[\alpha]_D^{20} +17$ (c, 1.0 in Py).

3,5,6-Tribenzyl: See Ethyl 3,5,6-tri-O-benzylglucopyranoside, E-28

β-D-Furanose-form [25320-77-8]Mp 59-60°. [α]_D²⁰ -86 (H₂O).

3,5,6-Tribenzoyl: Ethyl 3,5,6-tri-O-benzoyl-β-D-glucofuranoside [35510-29-3]

C₂₉H₂₈O₉ 520.535[α]_D²⁰ -108 (c, 1.0 in Py).

3,5,6-Tribenzoyl: See Ethyl 3,5,6-tri-O-benzylglucoside, E-28

Haworth, W.N. *et al.*, *J. C.S.*, 1929, 2796, (α-D-fur, β-D-fur)Ferguson, J.H. *et al.*, *J.A.C.S.*, 1932, **54**, 4086 (α-D-pyr, α-D-pyr tetra-Ac, β-D-pyr, β-D-pyr tetra-Ac)Wing, R.E. *et al.*, *Carbohydr. Res.*, 1969, **10**, 441 (α-D-pyr)Rowell, R.M. *et al.*, *Carbohydr. Res.*, 1972, **23**, 417 (β-D-pyr, β-D-pyr tri-Ac, β-D-pyr tri-Ac derivs, β-D-pyr Me)Staneek, J. *et al.*, *Helv. Chim. Acta*, 1972, **55**, 434 (α,β-D-pyr tribenzyl, α-D-pyr tribenzyl Me, β-D-pyr tri-Ac allyl, α-D-fur tribenzoyl)Prawat, H. *et al.*, *Phytochemistry*, 1995, **40**, 1167-1173 (isol, pmr, ms)Masuda, T. *et al.*, *J. Agric. Food Chem.*, 2000, **48**, 1479-1484 (isol, 4-ferulate)Matsubara, Y. *et al.*, *CA*, **113**, 17474g (β-D-pyr, isol, props)**Ethyl glucosinolate****E-26**1-Thio-β-D-glucopyranose 1-[N-(sulfoox-y)propanimide], 9CI. **Glucopediin** [101144-39-2]H₃CCH₂C(SGlc)=NOSO₃HC₉H₁₇NO₉S₂ 347.367The putative parent of ethyl isothiocyanate found in *Lepidium menziesii*.Amorph. powder (as K salt). [α]_D²⁰ -20.5 (c, 0.6 in H₂O) (K salt).

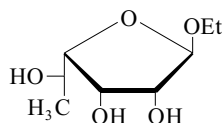
Tetra-Ac: [89752-91-0]

Cryst. (EtOH aq.) (as K salt). Mp 205-207° dec. (K salt). [α]_D²⁰ -18.6 (c, 1.0 in H₂O).

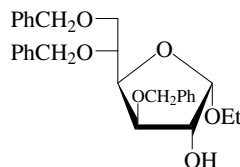
[89777-25-3]

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 699 (isol)Keller, T.H. *et al.*, *Can. J. Chem.*, 1984, **62**, 437 (synth, pmr)**Ethyl rhamnoside****E-27**

Ethyl 6-deoxymannoside

C₈H₁₆O₅ 192.211**α-L-Furanose-form**Hygroscopic needles (Et₂O/petrol). Mp 54-56°. [α]_D²⁰ -95.5 (c, 1.1 in H₂O).Green, J.W. *et al.*, *J.A.C.S.*, 1938, **60**, 2288 (α-L-form, synth)Pacsu, E. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 360 (synth)**Ethyl 3,5,6-tri-O-benzylglucoside, 8CI****E-28**

Ethyl 3,5,6-tris-O-(phenylmethyl)glucoside, 9CI



α-D-form

C₂₉H₃₄O₆ 478.584**D-form****Tribenoside, BAN, INN, JAN, USAN.**

Glyvenol

[10310-32-4] Antirheumatic and antiarthritic agent. Sclerosing agent.

Viscous lipophilic oil. Bp_{1.2} 270-280°.[α]_D²⁶ +8 (CHCl₃).

► LZ4993000

α-D-form [20822-90-6][α]_D²⁰ +21 (c, 1.0 in CHCl₃).

2-Ac: Ethyl 2-O-acetyl-3,5,6-tri-O-benzyl-α-D-glucoside

C₃₁H₃₆O₇ 520.621Bp_{0.05} 240°. [α]_D²⁰ +55 (c, 1.09 in CHCl₃).2-Allyl: [20789-50-8] Bp_{0.02} 225-230°. [α]_D²⁰ +47 (c, 1.06 in CHCl₃).**β-D-form** [20822-91-7][α]_D²⁰ -61 (c, 1.0 in CHCl₃).

2-Ac: Ethyl 2-O-acetyl-3,5,6-tri-O-benzyl-β-D-glucoside

C₃₁H₃₆O₇ 520.621Bp_{0.05} 260°. [α]_D²⁰ -78 (c, 1.05 in CHCl₃).2-Allyl: [20789-51-9] Bp_{0.02} 220-225°. [α]_D²⁰ -53 (c, 1.13 in CHCl₃).

2-Me: Ethyl 3,5,6-tri-O-benzyl-2-O-methyl-β-D-glucoside

[20789-47-3]

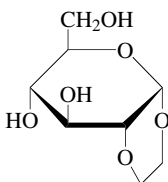
C₃₀H₃₆O₆ 492.611[α]_D²⁰ -61 (c, 1.1 in CHCl₃).U.K. Pat., 1962, 909 278, (CIBA); *CA*, **59**,

11642g (D-form, synth, derivs)

Huber, G. *et al.*, *Helv. Chim. Acta*, 1968, **51**,

1185 (α-D-form, α-D-Ac, α-D-allyl, β-D-form,

β-D-Ac, β-D-allyl, β-D-Me, pmr)

Hayashibara, M. *et al.*, *Takeda Kenkyusho*, 1973, **32**, 497; *CA*, **80**, 108813h (D-form, uv, ir, nmr)Jaques, R. *et al.*, *Pharmacology*, 1977, **15**, 445 (rev, pharmacol)Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1762**1,2-O-Ethylenegluco****E-29**C₈H₁₄O₆ 206.195**α-D-Pyranose-form** [22329-44-8]Cryst. (EtOH). Mp 131-132°. [α]_D²⁴ +96.8 ((H₂O)).

Tri-Ac: 3,4,6-Tri-O-acetyl-1,2-O-ethylene-α-D-glucopyranose

[125365-26-6]

C₁₄H₂₀O₉ 332.307Cryst. (EtOH). Mp 115-116°. [α]_D²⁰ +107.4 (c, 0.5 in CHCl₃).**β-D-Pyranose-form** [22329-45-9]Cryst. (EtOH). Mp 211-212°. [α]_D²⁵ +52 (c, 0.81 in H₂O).

6-Ac: 6-O-Acetyl-1,2-O-ethylene-β-D-glucopyranose

[136409-96-6]

C₁₀H₁₆O₇ 248.232

Solid (EtOAc/EtOH). Mp 138-141°.

[α]_D²⁰ +50.9 (c, 1 in EtOH).

Tri-Ac: 3,4,6-Tri-O-acetyl-1,2-O-ethylene-β-D-glucopyranose

[6087-45-2]

C₁₄H₂₀O₉ 332.307Mp 125°. [α]_D²⁰ +52 (c, 1.0 in CHCl₃).

Tribenzoyl: 3,4,6-Tri-O-benzoyl-1,2-O-ethylene-β-D-glucopyranose

[188431-31-4]

C₂₉H₂₆O₉ 518.519

Solid (hexane/EtOAc). Mp 122-123°.

[α]_D²⁵ -14.3 (c, 1.3 in CHCl₃).

Tri-Me: 1,2-O-Ethylene-3,4,6-tri-O-methyl-β-D-glucopyranose

[159320-45-3]

C₁₁H₂₀O₆ 248.275

Cryst. (hexane). Mp 80°.

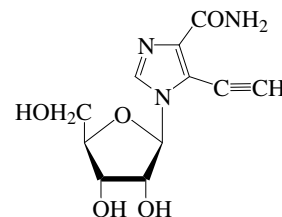
α-D-Furanose-form [22329-46-0]Cryst. (EtOH). Mp 218-220°. [α]_D²⁰ -56 (H₂O).

Tri-Ac: 3,5,6-Tri-O-acetyl-1,2-O-ethylene-α-D-glucoside

[28069-78-5]

C₁₄H₂₀O₉ 332.307Cryst. (EtOH). Mp 93-95°. [α]_D²⁰ -40.7(c, 0.11 in CHCl₃).Helferich, B. *et al.*, *Ber.*, 1942, **75**, 949-951, (α-D-pyr, β-D-pyr)Höök, J.E. *et al.*, *Acta Chem. Scand.*, 1968, **22**, 2157-2160 (α-D-fur)Srivastava, H.C. *et al.*, *Tet. Lett.*, 1969, 2643-2646 (α-D-fur)Marquez, F. *et al.*, *Carbohydr. Res.*, 1972, **22**, 446-449 (β-D-pyr, synth, pmr)Norrestam, R. *et al.*, *Acta Cryst. B*, 1981, **37**, 1689-1693 (β-D-pyr, cryst struct)Nagai, K. *et al.*, *Carbohydr. Res.*, 1989, **190**, 165-180 (tri-Ac)Reuben, J. *et al.*, *Carbohydr. Res.*, 1990, **197**, 257-261 (cmr)Miethchen, R. *et al.*, *Liebigs Ann./Recl.*, 1997, 553-561 (β-D-pyr, synth, pmr, cmr)**5-Ethynyl-1-β-D-ribofuranosyl-1H-imidazole-4-carboxamide, 9CI****E-30****EICAR**

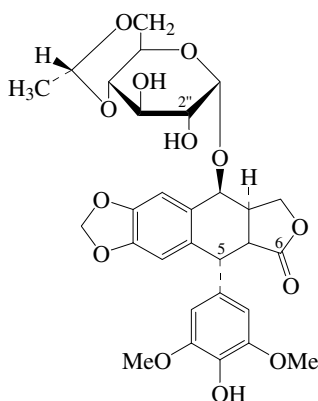
[118908-07-9]



$C_{11}H_{13}N_3O_5$ 267.241
Potent inhibitor of inosinate dehydrogenase activity. Antineoplastic agent. Cryst. (EtOH). Mp 182-185°.

Eur. Pat., 1989, 331 080, (Yamasa Shoyu; Sumitomo); *CA*, **112**, 158839w (synth, pharmacol)
Minakawa, N. *et al.*, *J. Med. Chem.*, 1991, **34**, 778-786 (synth, uv, pmr, pharmacol)
Shigeta, S. *et al.*, *Antimicrob. Agents Chemother.*, 1992, **36**, 435-439 (pharmacol)
Balzarini, J. *et al.*, *J. Biol. Chem.*, 1993, **268**, 24591-24598 (pharmacol)
Balzarini, J. *et al.*, *Adv. Exp. Med. Biol.*, 1998, **431**, 723-728 (metab)

Etoposide, BAN, INN, USAN E-31
Abiposid. Amizide. Citodox. Etopophos. Exitop. Toposar. Vepesid. Vepeside. Vespil. NSC 141540. VP 16213. BMY 40481. Many other names
[33419-42-0]



$C_{29}H_{32}O_{13}$ 588.564

Closely related to Teniposide, T-17. Semisynthetic podophyllotoxin deriv. DNA topoisomerase II inhibitor. Antineoplastic agent. Marketed drug. Cryst. (MeOH). Mp 236-251°. $[\alpha]_D^{25}$ -110.5 (c, 0.6 in $CHCl_3$). Log P -1.89 (uncertain value) (calc).

► Haemopoietic effects, gastrointestinal toxicity and neurotoxicity reported when used therapeutically. LD₅₀ (rat, orl) 1784 mg/kg. Mutagen. Exp. reprod. and teratogenic effects. Probable human carcinogen (IARC 2A). KC0190000
2''-Deoxy-2''-(dimethylamino): NK 611 [105655-99-0]

[105760-98-3, 112246-52-3]

$C_{31}H_{37}NO_{12}$ 615.633

Antineoplastic agent. Cryst. (Me₂CO). Mp 196-198°. $[\alpha]_D^{25}$ -107 (c, 0.78 in $CHCl_3$).

Keller-Juslen, C. *et al.*, *J. Med. Chem.*, 1971, **14**, 936 (synth, pharmacol)

Arnold, A.M. *et al.*, *Lancet*, 1981, **2**, 912 (rev)

Issell, B.F. *et al.*, *Etoposide (VP-16): Curr. Status New Dev. [Pap. Symp.]*, (Eds.), Academic Press, 1984, (book)

Saito, H. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 3741-3746 (NK 611, synth, pmr, ir)

Clark, P.I. *et al.*, *Clin. Pharmacokinet.*, 1987, **12**, 223 (rev, pharmacol, metab, tox)

Holthuis, J.J.M. *et al.*, *Anal. Profiles Drug Subst.*, 1989, **18**, 121 (rev)

Stähelin, H.F. *et al.*, *Prog. Drug Res.*, 1989, **33**, 169 (rev)

Kolar, C. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 571-583 (synth)

Stähelin, H.F. *et al.*, *Cancer Res.*, 1991, **51**, 5 (rev)

Semin. Oncol., Suppl. 13, 1992, **19**, (rev)

von Wartburg, A. *et al.*, *Chron. Drug Discovery*, 1993, **3**, 349 (rev)

Cragg, G. *et al.*, *Anticancer Drugs: Antimetabolite Metabolism and Natural Anticancer Agents*, (ed. Powis, G.), Pergamon Press, 1994, 364 (rev)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 10960 (synonyms)

Hainsworth, J.D. *et al.*, *Ann. Oncol.*, 1995, **6**, 325 (pharmacol, rev)

Hanauske, A.R. *et al.*, *Eur. J. Cancer, Part A*, 1995, **31**, 1677-1681 (NK 611, pharmacol)

Rassmann, I. *et al.*, *Invest. New Drugs*, 1996, **14**, 379-386; 1998, **16**, 319-324 (NK 611, pharmacokinetic)

Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 532

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, EAV500

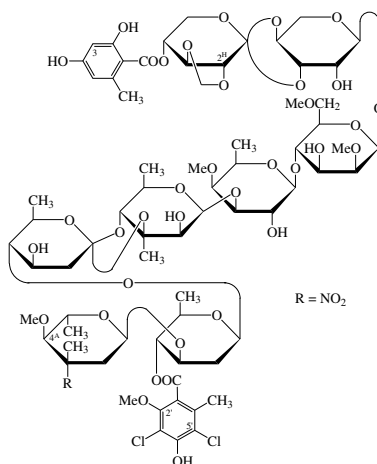
Evernimicin, INN, USAN E-32

Everninomicin. Sch 27899. Antibiotic Sch 27899. Ziracin. Antibiotic 13-384-1.

Everninomicin A

[109545-84-8]

[104841-32-9]



$C_{70}H_{97}Cl_2NO_{38}$ 1631.426

Oligosaccharide antibiotic. Prod. by *Micromonospora carbonacea*. Highly active against gram-positive bacteria, clinically used against infections caused by resistant bacteria. Amorph. Sol. EtOAc, Me₂CO; poorly sol. hexane. $[\alpha]_D^{26}$ -47.2 (MeOH). Related to Evernimomicin B, E-33. λ_{max} 215 ; 268 ; 301 (MeOH) (Berdy).

► LD₅₀ (mus, ivn) 320 mg/kg.

4⁴-O-De-Me: *Antibiotic Sch 58773. Sch 58773*

$C_{69}H_{95}Cl_2NO_{38}$ 1617.399

Prod. by *Micromonospora carbonacea* var. *africana*. Powder. $[\alpha]_D^{20}$ -45.5 (c, 0.1 in MeOH). λ_{max} 211 ; 265 ; 305 (no solvent reported).

2^H, 3^H-De-O-methylene, 3^H-O-formyl: *Antibiotic Sch 58775. Sch 58775*

$C_{70}H_{97}Cl_2NO_{39}$ 1647.425

Prod. by *Micromonospora carbonacea* var. *africana*. Powder. $[\alpha]_D^{20}$ -45.8 (c, 0.1 in MeOH). λ_{max} 213 ; 265 ; 303 (no solvent reported).

3-Chloro: *Antibiotic Sch 58761. Sch 58761*

$C_{70}H_{96}Cl_3NO_{38}$ 1665.87

Prod. by *Micromonospora carbonacea*. Active against multidrug-resistant bacteria. Amorph. powder.

Mp 183-185°. $[\alpha]_D^{20}$ -48.4 (c, 0.1 in MeOH).

3'-Dechloro: *Antibiotic Sch 58771. Sch 58771*

$C_{70}H_{98}ClNO_{38}$ 1596.981

Prod. by *Micromonospora carbonacea* var. *africana*. Powder. $[\alpha]_D^{20}$ -47 (c, 0.1 in MeOH). λ_{max} 211 ; 264 ; 305 (no solvent reported).

3'-Dechloro, 2'-O-de-Me: *Antibiotic Sch 58769. Sch 58769*

$C_{69}H_{96}ClNO_{38}$ 1582.954

Prod. by *Micromonospora carbonacea* var. *africana*. Powder. $[\alpha]_D^{20}$ -47.2 (c, 0.1 in MeOH). λ_{max} 211 ; 268 ; 305 (no solvent reported).

Cacciapuoti, A. *et al.*, *J. Interdisc. Conf. Antimicrob. Agents Chemother.*, 25th, 1985, 239 (activity)

Ganguly, A.K. *et al.*, *Heterocycles*, 1989, **28**, 83-88 (pmr, ms, struct)

Urban, C. *et al.*, *J. Antimicrob. Chemother.*, 1996, **37**, 361-364 (activity)

Chan, T.-M. *et al.*, *Magn. Reson. Chem.*, 1997, **35**, 529-532 (pmr, cmr)

Ganguly, A.K. *et al.*, *Tet. Lett.*, 1997, **38**, 7989-7992 (abs config)

Nicolaou, K.C. *et al.*, *Angew. Chem., Int. Ed.*, 1999, **38**, 3334-3339; 3340-3345; 3345-3350 (synth)

Dever, L.L. *et al.*, *Antimicrob. Agents Chemother.*, 1999, **43**, 1773-1775 (activity)

Maertens, J.A. *et al.*, *IDrugs*, 1999, **2**, 446-453 (rev)

Wang, E. *et al.*, *Antimicrob. Agents Chemother.*, 2000, **44**, 1010-1018 (pharmacokinetic)

Pramanik, B.N. *et al.*, *J. Antibiot.*, 2000, **53**, 640-643 (ms, struct)

Ganguly, A.K. *et al.*, *J. Antibiot.*, 2000, **53**, 1038-1044 (rev)

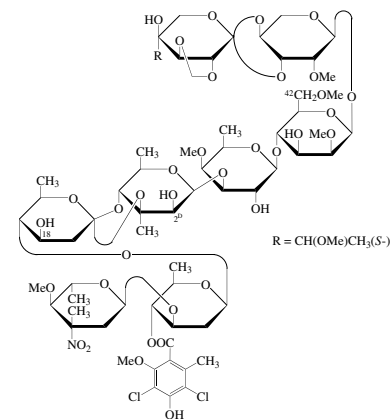
Chu, M. *et al.*, *Tet. Lett.*, 2000, **41**, 6689-6693 (Sch 58761)

Chu, M. *et al.*, *J. Nat. Prod.*, 2002, **65**, 1588-1593 (isol, pmr, cmr)

Evernimomicin B

E-33

[53296-30-3]



$C_{66}H_{99}Cl_2NO_{36}$ 1553.399

Oligosaccharide antibiotic. Isol. from *Micromonospora carbonaceae*. Active against gram-positive bacteria and mycobacteria. Sol. MeOH, bases, CHCl₃; fairly sol. C₆H₆; poorly sol. Et₂O, H₂O, hexane. Mp 184-185°. [α]_D -33.1 (CHCl₃). λ_{\max} 300 (ϵ 6360) (MeOH) (Derep). λ_{\max} 210 (E1%/1cm 17); 285 (E1%/1cm 1.5); 288 (E1%/1cm 12) (MeOH) (Berdy). λ_{\max} 296 (E1%/1cm 72) (MeOH-NaOH) (Berdy). λ_{\max} 305 (E1%/1cm 34) (pH 8 buffer) (Berdy).

- LD₅₀ (mus, scu) 1700 mg/kg, LD₅₀ (mus, ivn) 875 mg/kg, LD₅₀ (mus, ipr) 880 mg/kg, OP4099000

2^D-Deoxy: Everninomicin D

[39340-46-0]

C₆₆H₉₉Cl₂NO₃₅ 1537.399

Prod. by *Micromonospora carbonaceae*. Amorph. solid. Sol. MeOH, bases, CHCl₃; fairly sol. Et₂O; poorly sol. C₆H₆, hexane, H₂O. [α]_D -34.2. λ_{\max} 300 (ϵ 6360) (MeOH) (Derep). λ_{\max} 289 (E1%/1cm 22) (MeOH) (Berdy). λ_{\max} 295 (E1%/1cm 80.8) (MeOH-NaOH) (Berdy).

- LD₅₀ (mus, orl) 3750 mg/kg, LD₅₀ (mus, scu) 3750 mg/kg, LD₅₀ (mus, ivn) 125 mg/kg, LD₅₀ (mus, ipr) 500 mg/kg.

2^D-Deoxy, 3^F-de(nitroglycosyl), 42-O-de-Me: Everninomicin 6

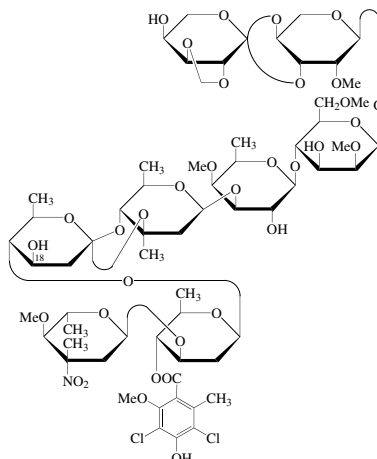
[197569-42-9]

C₅₇H₈₄Cl₂O₃₁ 1336.177

Weinstein, M.J. et al., *Antimicrob. Agents Chemother.*, 1964, 24; 33 (isol)
Ganguly, A.K. et al., *J. Antibiot.*, 1975, 28, 707; 1982, 35, 561; 1985, 38, 808 (ms, struct)
Ganguly, A.K. et al., *J.A.C.S.*, 1975, 97, 1984 (Everninomicin D)
Wright, D.E. et al., *Tetrahedron*, 1979, 35, 1207 (struct)
Yoshimura, J. et al., *Carbohydr. Res.*, 1982, 100, 283 (stereochem)
Jütten, P. et al., *J.O.C.*, 1991, 56, 7144 (partial synth)
Bartner, P. et al., *J. Am. Soc. Mass Spectrom.*, 1997, 8, 1134-1140 (Everninomicin 6)
Ganguly, A.K. et al., *Tet. Lett.*, 1997, 38, 7989-7992 (abs config)
Pramanik, B.N. et al., *J. Antibiot.*, 2000, 53, 640-643 (ms, struct)
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, ERD000; ERC800

Everninomicin C

[53296-29-0]



C₆₃H₉₃Cl₂NO₃₄ 1479.319

Isol. from *Micromonospora carbonaceae*.

Shows antibiotic activity. Sol. MeOH; poorly sol. H₂O.

Mp 181-184°. [α]_D -33.7. λ_{\max} 292 (ϵ 8710) (0.1N NaOH) (Derep). λ_{\max} 288 (ϵ 1770) (EtOH) (Derep). λ_{\max} 208 (E1%/1cm 19.8); 211 (E1%/1cm 19.5) (MeOH) (Berdy).

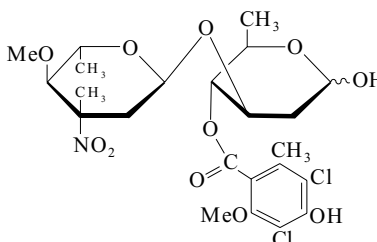
Ganguly, A.K. et al., *J. Antibiot.*, 1975, 28, 710 (struct)

Ganguly, A.K. et al., *Tet. Lett.*, 1997, 38, 7989-7992 (abs config)

Pramanik, B.N. et al., *J. Antibiot.*, 2000, 53, 640-643 (ms, struct)

Everninonitrose

[34361-82-5]



C₂₃H₃₁Cl₂NO₁₁ 568.403

Constit. of Everninomicins B, C and D.

[α]_D -65.4 (CHCl₃).

Ganguly, A.K. et al., *Chem. Comm.*, 1971, 746 (isol)

Ganguly, A.K. et al., *J. Antibiot.*, 1975, 28, 710

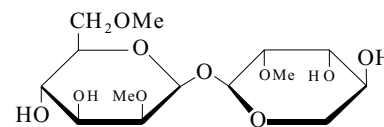
Ganguly, A.K. et al., *Chem. Comm.*, 1977, 313 (struct)

E-34

Everninose

E-36

2-O-Methyl- α -L-lyxopyranosyl 2,6-di-O-methyl- β -D-mannopyranoside, 9CI, 8CI [27963-83-3]



C₁₄H₂₆O₁₀ 354.353

Obt. by hydrol. of Everninomicin B, E-33 and Everninomicin C, E-34.

Mp 200-201°. [α]_D -74.1 (H₂O).

Tetra-Ac:

C₂₂H₃₄O₁₄ 522.502

Mp 150-151°. [α]_D -77.1 (CHCl₃).

Ganguly, A.K. et al., *Chem. Comm.*, 1969, 1488 (struct, abs config, pmr, ms)

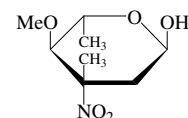
Ganguly, A.K. et al., *J. Antibiot.*, 1975, 28, 710

Olah, V.A. et al., *Carbohydr. Res.*, 1988, 174, 113 (synth)

Evernitrose

E-37

2,3,6-Trideoxy-3-C-methyl-4-O-methyl-3-nitro-arabino-hexose, 8CI



α -L-Pyranose-form

C₈H₁₅NO₅ 205.21

l-form [23259-14-5]

Present in Everninomicins B, C and D. Mp 88-93°. [α]_D -4.9 \rightarrow -19.4 (EtOH).

l-Pyranose-form

Ac: 1-O-Acetyl-2,3,6-trideoxy-3-C-methyl-4-O-methyl-3-nitro-L-arabino-hexopyranose

C₁₀H₁₇NO₆ 247.247

Mp 58-59°. [α]_D -20.5 (EtOH).

Ganguly, A.K. et al., *J.A.C.S.*, 1968, 90, 7129 (isol, pmr, ms)

Ganguly, A.K. et al., *Chem. Comm.*, 1977, 313 (stereochem, struct)

Yoshimura, J. et al., *Carbohydr. Res.*, 1979, 76, 67 (synth)

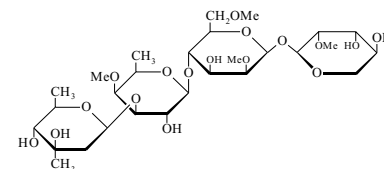
Brimacombe, J.S. et al., *J.C.S. Perkin 1*, 1980, 2054 (synth)

Jütten, P. et al., *Carbohydr. Res.*, 1991, 212, 93 (synth)

Evertetrose

E-38

2-O-Methyl- α -L-lyxopyranosyl O-2,6-di-deoxy-3-C-methyl- β -D-arabino-hexopyranosyl-(1 \rightarrow 3)-O-6-deoxy-4-O-methyl- β -D-galactopyranosyl-(1 \rightarrow 4)-2,6-di-O-methyl- β -D-mannopyranoside, 9CI, 8CI



C₂₈H₅₀O₁₇ 658.693

Constit. of Everninomicins C and D.
[α]_D -37.2 (H₂O).

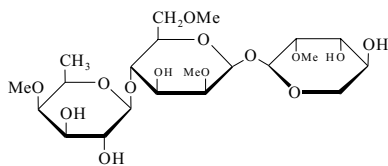
Ganguly, A.K. *et al.*, *Chem. Comm.*, 1971, 746
(*struct*, *pmr*, *ms*)

Ganguly, A.K. *et al.*, *J.A.C.S.*, 1975, 77, 1982
(*struct*, *synth*)

Ganguly, A.K. *et al.*, *J. Antibiot.*, 1975, 28, 710

Evertriose E-39

2-O-Methyl- α -L-lyxopyranosyl 4-O-(6-deoxy-4-O-methyl- β -D-galactopyranosyl)-2,6-di-O-methyl- β -D-mannopyranoside, 9CI, 8CI
[29747-97-5]



C₂₁H₃₈O₁₄ 514.523

Trisaccharide component of Everninomicins B, C and D.
[α]_D -41.6 (H₂O).

Penta-Me: [α]_D -47.7 (CHCl₃).

Ganguly, A.K. *et al.*, *Chem. Comm.*, 1970, 911
(*isol*, *struct*)

Ganguly, A.K. *et al.*, *J. Antibiot.*, 1975, 28, 710
(*struct*)

Exfoliatin E-40

[1407-50-7]

C₂₇H₄₀ClO₁₆ 656.056

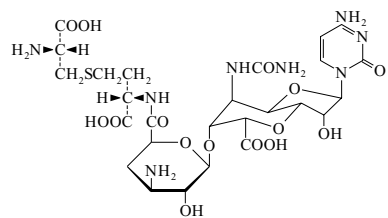
Struct. unknown. From *Streptomyces exfoliatus*. Antibiotic active against gram-positive bacteria. Needles (EtOH). Sol. MeOH, CHCl₃; poorly sol. Et₂O, hexane, H₂O.
Mp 172°. Probably an oligosaccharide similar to the Everninomicins.
 λ_{\max} 214 ; 288 (MeOH) (Berdy).

► LD₅₀ (mus, scu) 500 mg/kg. LF2500000

Umezawa, H. *et al.*, *J. Antibiot.*, 1952, 5, 466
Umezawa, H. *et al.*, *Jpn. J. Med. Sci. Biol.*, 1952, 5, 311

Ezomycin A₁ E-41

[39422-19-0]



C₂₆H₃₈N₈O₁₅S 734.697

Nucleoside-type antibiotic. Produced by a *Streptomyces* sp. Antifungal antibiotic. Sol. H₂O; poorly sol. MeOH, hexane.
Mp 200° dec. [α]_D²² +13.5 (c, 1.05 in H₂O). λ_{\max} 278 (€ 10500) (0.05N HCl) (Derep). λ_{\max} 271 (€ 7900) (0.05N NaOH) (Derep). λ_{\max} 278 (€ 10500) (0.05N HCl) (Derep). λ_{\max} 278 (E1%/1cm 120) (HCl) (Berdy). λ_{\max} 271 (E1%/1cm 87.1) (NaOH) (Berdy).

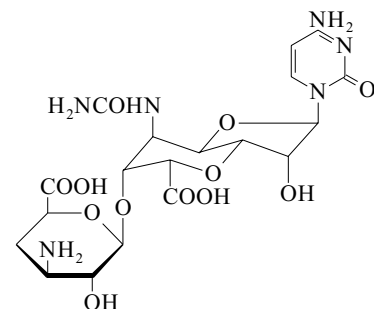
Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1974, 38, 1883; 1976, 40, 1993 (*isol*, *ir*, *uv*, *pmr*, *struct*)

Sakata, K. *et al.*, *Org. Magn. Reson.*, 1977, 10, 230 (*cmr*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, 41, 1711 (*rev*)

Ezomycin A₂

[54328-22-2]



C₁₉H₂₆N₆O₁₂ 530.447

Nucleoside antibiotic. Produced by a *Streptomyces* sp. Antifungal agent.
Mp 200° dec. [α]_D¹⁶ +44.4 (c, 1.03 in 0.2M NaOH). λ_{\max} 278 (€ 11100) (0.05N HCl) (Derep). λ_{\max} 229 (sh) (€ 6100); 271 (€ 7100) (0.05N NaOH) (Derep). λ_{\max} 278 (€ 11100) (0.05N HCl) (Derep).

Sakata, K. *et al.*, *Tet. Lett.*, 1974, 4327 (*struct*, *ir*, *nmr*, *ms*)

Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1976, 40, 1993 (*struct*, *uv*, *ir*, *ms*, *nmr*)

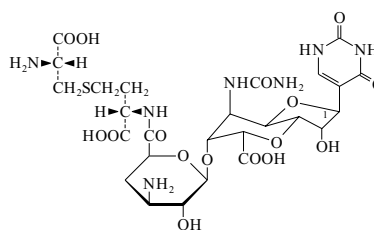
Sakata, K. *et al.*, *Org. Magn. Reson.*, 1977, 10, 230 (*cmr*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, 41, 1711 (*rev*)

Maier, S. *et al.*, *Annalen*, 1990, 483 (*synth*)

Ezomycin B₁

[39422-20-3]



C₂₆H₃₇N₇O₁₆S 735.682

Metab. of a *Streptomyces* sp. Antifungal antibiotic. Amorph. solid. Sol. H₂O; poorly sol. MeOH, hexane.
Mp 200° dec. [α]_D²² -25.4 (c, 1.32 in H₂O). λ_{\max} 262 (€ 7000) (0.05N HCl) (Derep). λ_{\max} 286 (€ 6100) (0.05N NaOH) (Derep). λ_{\max} 262 (€ 7000) (0.05N HCl) (Derep). λ_{\max} 263 (E1%/1cm 77.7) (HCl) (Berdy). λ_{\max} 286 (E1%/1cm 64.6) (NaOH) (Berdy).

1-Epimer: Ezomycin C₁

[58002-06-5]

C₂₆H₃₇N₇O₁₆S 735.682

From *Streptomyces* sp. Antifungal antibiotic. Amorph. Sol. H₂O; poorly sol. MeOH, hexane.
Mp 200° dec. [α]_D²² -76.4 (c, 0.94 in H₂O). λ_{\max} 262 (€ 7000) (0.05N HCl) (Derep). λ_{\max} 286 (€ 6100) (0.05N NaOH) (Derep).

λ_{\max} 262 (€ 7000) (0.05N HCl) (Derep).

λ_{\max} 263 (E1%/1cm 89.5) (HCl) (Berdy).

λ_{\max} 287 (E1%/1cm 73.6) (NaOH) (Berdy).

λ_{\max} 263 (€ 6400) (H₂O) (Berdy). λ_{\max} 287 (€ 4900) (pH 12 buffer) (Berdy).

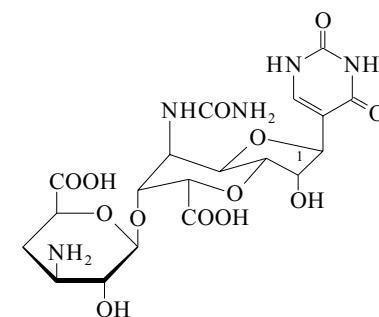
Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1974, 38, 1883; 1977, 41, 2033 (*isol*, *ir*, *uv*, *pmr*, *ms*, *struct*)

Sakata, K. *et al.*, *Org. Magn. Reson.*, 1977, 10, 230 (*cmr*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, 41, 1711 (*rev*)

Ezomycin B₂

[57973-16-7]



C₁₉H₂₅N₅O₁₃ 531.432

Metab. of a *Streptomyces* sp. Antifungal agent. Prisms.

Mp 205° dec. [α]_D¹⁶ +10.8 (c, 1.02 in 0.2M NaOH). λ_{\max} 262 (€ 6300) (0.05N HCl) (Derep). λ_{\max} 286 (€ 4900) (0.05N NaOH) (Derep). λ_{\max} 262 (€ 6300) (0.05N HCl) (Derep).

1-Epimer: Ezomycin C₂

[57973-14-5]

C₁₉H₂₅N₅O₁₃ 531.432

From a *Streptomyces* sp. Antifungal agent. Needles. Sol. H₂O.

Mp 200° dec. [α]_D¹⁸ -100 (c, 0.52 in NH₄OH). λ_{\max} 262 (€ 6300) (0.05N HCl) (Derep). λ_{\max} 286 (€ 4900) (0.05N NaOH) (Derep). λ_{\max} 262 (€ 6300) (0.05N HCl) (Derep). λ_{\max} 263 (€ 6200) (H₂O) (Berdy). λ_{\max} 287 (€ 4800) (pH 12 buffer) (Berdy). λ_{\max} 263 (€ 6200) (pH 2 buffer) (Berdy).

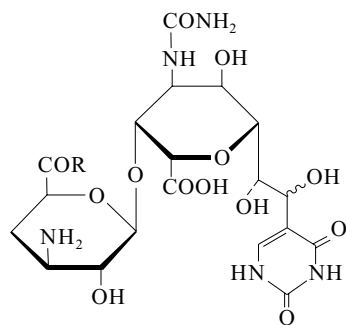
Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1974, 38, 1883; 1977, 41, 2033 (*isol*, *ir*, *uv*, *pmr*, *struct*)

Sakata, K. *et al.*, *Org. Magn. Reson.*, 1977, 10, 230 (*cmr*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, 41, 1711 (*rev*)

Ezomycin D₁

[57973-15-6]

As Ezomycin D₁, E-45 with

R = OH

C₂₆H₃₉N₇O₁₇S 753.697**E-45**

Aminoglycoside. Metab. of a *Streptomyces* sp. Antifungal antibiotic. Amorph. Sol. H₂O.
Mp 200° dec. $[\alpha]_D^{22}$ -62.1 (c, 0.84 in H₂O). λ_{\max} 262 (ε 7000) (0.05N HCl) (Derep). λ_{\max} 286 (ε 6100) (0.05N NaOH) (Derep). λ_{\max} 262 (ε 7000) (0.05N HCl) (Derep). λ_{\max} 263 (ε 6900) (H₂O) (Berdy). λ_{\max} 287 (ε 5200) (pH 12 buffer) (Berdy). λ_{\max} 263 (ε 6700) (pH 2 buffer) (Berdy).

Sakata, K. *et al.*, *Tet. Lett.*, 1975, 3191 (*struct, uv, ir, ms, nmr*)

Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 2033 (*struct, uv, ir, pmr, ms*)

Sakata, K. *et al.*, *Org. Magn. Reson.*, 1977, **10**, 230 (*cmr*)

Ezomycin D₂

[57973-11-2]

As Ezomycin D₁, E-45 with

R = OH

C₁₉H₂₇N₅O₁₄ 549.447

Metab. of a *Streptomyces* sp. Antifungal antibiotic. Needles. Sol. H₂O.

Mp 208° dec. $[\alpha]_D^{18}$ +58.8 (c, 0.87 in NH₄OH). λ_{\max} 264 (ε 6700) (H₂O) (Berdy). λ_{\max} 287 (ε 4900) (pH 12 buffer) (Berdy). λ_{\max} 264 (ε 6500) (pH 2 buffer) (Berdy).

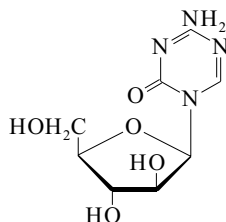
Sakata, K. *et al.*, *Tet. Lett.*, 1975, 3191 (*struct, uv, ir, ms, nmr*)

Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 2033 (*struct, ir, uv, ms, nmr*)

Sakata, K. *et al.*, *Org. Magn. Reson.*, 1977, **10**, 230 (*cmr*)

F-1 Fazarabine, INN, USAN

4-Amino-1- β -D-arabinofuranosyl-1,3,5-triazin-2(1H)-one, 9CI. 1- β -D-Arabinofuranosyl-5-azacytosine. Ara-Ac. Kymarabine. NSC 281272 [65886-71-7]



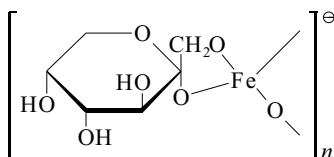
C₈H₁₂N₄O₅ 244.207
Antineoplastic agent. Mp 223-225°. [α]_D²⁴ +122 (c, 1.0 in H₂O). [α]_D²⁴ +63 (c, 1.0 in H₂O). Log P -4 (calc).

► **Mutagenic props.** XZ2854400

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 418C (nmr)
Beisler, J.A. et al., *J. Med. Chem.*, 1979, **22**, 1230 (synth, pharmacol)
Dalal, M. et al., *Cancer Res.*, 1986, **46**, 831; 4479 (props)
Grem, J.L. et al., *Invest. New Drugs*, 1987, **5**, 315 (rev, pharmacol)
Osman, F.H. et al., *J. Prakt. Chem.*, 1987, **329**, 209 (synth)
King, S.A. et al., *Drugs of the Future*, 1989, **14**, 20 (rev)
Bailey, H. et al., *Cancer Res.*, 1991, **51**, 1105 (clin trials)
Heideman, R.L. et al., *Invest. New Drugs*, 1993, **11**, 135 (pharmacokinetic tox)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 479

F-2 Ferric fructose, INN, USAN

F-2



C₆H₁₀FeO₇[⊖] 249.988
Polymeric. Minimum formula given.
Haematinic. Never marketed

K salt: Ferritose. CB 302 [12286-76-9]

[29041-71-2]

Stitt, C. et al., *Proc. Soc. Exp. Biol. Med.*, 1962, **110**, 70 (synth)
Charley, P.J. et al., *Biochim. Biophys. Acta*, 1963, **69**, 313 (formn, props)
Princiottio, J.V. et al., *Biochem. Med.*, 1970, **3**, 289

F-3 Fetuin

F-3

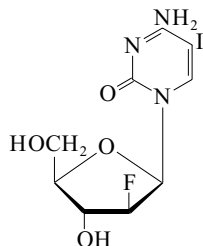
Glycoprotein. Consists of a single polypeptide chain linked to three heteropolysaccharide units consisting of sialic acid, galactose, N-acetylglucosamine and mannose linked through asparagine. The predominant glycoprotein of foetal calf serum.

Nilsson, B. et al., *J. Biol. Chem.*, 1979, **254**, 4545-4553 (struct, bibl)

F-4 Fiacitabine, INN, USAN

F-4

4-Amino-1-(2-deoxy-2-fluoroarabinofuranosyl)-5-iodo-2(1H)-pyrimidinone, 9CI. 2'-Fluoro-5-iodoaracytosine. FIAC



C₉H₁₁FIN₃O₄ 371.106
Antiviral agent. Log P -1.23 (calc).

► **β -D-form** [69123-90-6]► **Mutagenic props.** UW7353000

Hydrochloride: [69124-05-6]

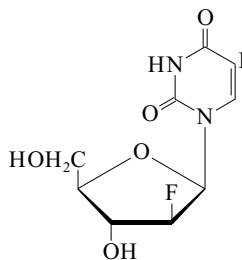
Cryst. (MeOH). Mp 177-181° dec.

Watanabe, K.A. et al., *J. Med. Chem.*, 1979, **22**, 21; 1983, **26**, 152 (synth, pmr, pharmacol)
Chou, T.-C. et al., *Cancer Res.*, 1982, **42**, 3957 (mutagen)
Birnbaum, G.I. et al., *J.A.C.S.*, 1982, **104**, 7626 (cryst struct)
Chun, M.W. et al., *Arch. Pharmacol. Res.*, 1983, **6**, 79 (synth)
Philips, F.S. et al., *Cancer Res.*, 1983, **43**, 3619 (metab)
Donner, A.L. et al., *Drug Intell. Clin. Pharm.*, 1984, **18**, 885 (rev, pharmacol)
Feingberg, A. et al., *Antimicrob. Agents Chemother.*, 1985, **27**, 733 (metab, pharmacokinetic)
Leyland-Jones, B. et al., *J. Infect. Dis.*, 1986, **154**, 430 (activity)
De Clercq, E. et al., *Life Sci.*, 1986, **38**, 281 (mutagen)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 544

F-5 Flaluridine, INN, USAN

F-5

1-(2-Deoxy-2-fluoro- β -D-arabinofuranosyl)-5-iodo-2,4(1H,3H)-pyrimidinedione, 9CI. 2'-Fluoro-5-iodo-1- β -D-arabinofuranosyluracil. FIAU [69123-98-4]



C₆H₁₀FIN₂O₅ 372.091
Antiviral agent. Cryst. (EtOH). Mp 223-226°. Log P -0.68 (calc).

► **YQ9512500**

[157695-90-4]

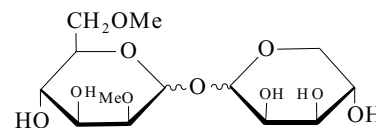
Watanabe, K.A. et al., *J. Med. Chem.*, 1979, **22**, 21 (synth, pharmacol)
Chou, T.-C. et al., *Cancer Res.*, 1981, **41**, 3336 (pharmacol)
Eur. Pat., 1985, 145 978, (Bristol-Myers); CA, **103**, 178579d (synth)

Tann, C.H. et al., *J.O.C.*, 1985, **50**, 3644 (synth, pmr, ir)
Staschke, K.A. et al., *Antiviral Res.*, 1994, **23**, 45 (pharmacol)
Colacino, J.M. et al., *Antiviral Res.*, 1996, **29**, 125 (rev, tox)

Flambabiose

F-7

L-Lyxopyranosyl 2,6-di-O-methyl-D-mannopyranoside, 9CI [55728-18-2]



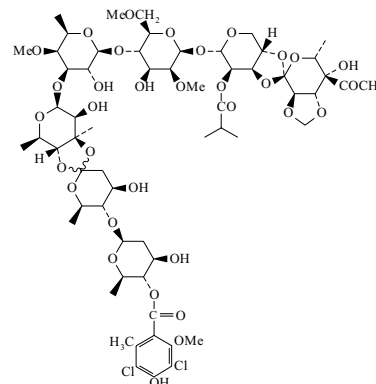
C₁₃H₂₄O₁₀ 340.327
Acid hydrol. prod. from Flambamycin, F-8.

Penta-Ac: Mp 149-150°.

Ollis, W.D. et al., *Chem. Comm.*, 1974, 881 (isol)**Flambamycin**

F-8

RP 21190. Antibiotic RP 21190 [42617-24-3]

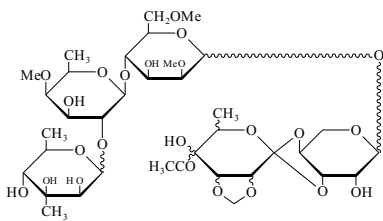
C₆₁H₈₈Cl₂O₃₃ 1420.252

Oligosaccharide antibiotic structurally related to the Evernimomycins. Isol. from *Streptomyces hygroscopicus* NRRL3576. Active against gram-positive bacteria and certain tumours. Cryst. (Me₂CO, MeOH or EtOH). Sol. CHCl₃, DMF, bases, Py; fairly sol. EtOAc, MeOH, EtOH, Me₂CO, H₂O; poorly sol. hexane.
Mp 226-228° (202-203°). [α]_D²⁰ -11.4 (c, 1 in CHCl₃). λ_{\max} 292 (ϵ 8270) (0.1N NaOH) (Derep). λ_{\max} 228 (ϵ 13200); 286 (ϵ 2000); 300 (sh) (ϵ 1320) (MeOH) (Derep). λ_{\max} 288 (E1%/1cm 12) (EtOH) (Berdy). λ_{\max} 292 (E1%/1cm 59) (NaOH) (Berdy).

► **LD₅₀** (mus, scu) 2500 mg/kg. OP4087000
Ninet, L. et al., *Experientia*, 1974, **30**, 1270 (isol)Wright, D.E. et al., *Tetrahedron*, 1979, **35**, 105; 1207 (uv, ir, pmr, ms)Yoshimura, J. et al., *Carbohydr. Res.*, 1982, **100**, 283 (stereochem)Brimacombe, J.S. et al., *J.C.S. Perkin 1*, 1982, 2583 (struct)

Flambeurekanose

O-4-C-Acetyl-6-deoxy-2,3-O-methylene-hexopyranosylidene-(1→3-4)-L-lyxopyranosyl O-6-deoxy-3-C-methyl-D-mannopyranosyl-(1→2)-O-6-deoxy-4-O-methyl-β-D-galactopyranosyl-(1→4)-2,6-di-O-methyl-D-mannopyranoside, 9CI [60551-08-8]



C₃₆H₅₈O₂₃ 858.84

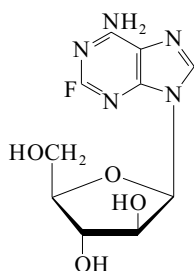
Hydrol. prod. from Flambamycin.
Mp 191-192°.

Penta-Ac: Mp 195-196°.

Ollis, W.D. *et al.*, *Chem. Comm.*, 1976, 348 (*isol*, *pmr*, *cmr*)

Fludarabine, INN

9-β-D-Arabinofuranosyl-2-fluoro-9H-purin-6-amine, 9CI. 9-β-D-Arabinofuranosyl-2-fluoroadenine. Fludara [21679-14-1]



C₁₀H₁₂FN₅O₄ 285.234

Antineoplastic agent. Launched 1991 (US). Cryst. (EtOH aq.). Mp 260°. [α]_D²⁵ +17 (c, 0.1 in EtOH). Log P -2.73 (calc).

► AU6207000

5'-Phosphate: Fludarabine phosphate, BAN, USAN. 2-Fluoro-9-(5-O-phosphono-β-D-arabinofuranosyl)-9H-purin-6-amine, 9CI. F-ara AMP-2. NSC 312887 [75607-67-9]

► UO7440900

[75607-66-8]

Montgomery, J.A. *et al.*, *J. Med. Chem.*, 1969, **12**, 498 (*synth*)

Brockman, R.W. *et al.*, *Cancer Res.*, 1980, **40**, 3610 (*metab*, *pharmacol*)

Plunkett, W. *et al.*, *Semin. Oncol.*, (Suppl. 7), 1993, **20**, 2 (*rev*)

Rodriguez, G. *et al.*, *Invest. New Drugs*, 1994, **12**, 75 (*rev*)

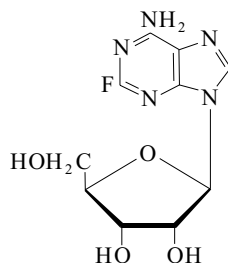
Adkins, J.C. *et al.*, *Drugs*, 1997, **53**, 1005-1037 (*rev*)

Plosker, G.L. *et al.*, *Drugs*, 2003, **63**, 2317-2323 (*rev*)

F-9

2-Fluoroadenosine, 9CI, 8CI

[146-78-1]



C₁₀H₁₂FN₅O₄ 285.234

Ribonucleotide metab. inhibitor, blood platelet aggregation antagonist. Shows synergism on Actinobolin antimicrobial action. Mp 200° dec. [α]_D²⁶ -60.3 (c, 0.13 in EtOH). λ_{max} 260.5 (ε 14 300) (H₂O), 260.5 (13 700) (pH 1), 260.5 nm (14 800) (pH 13).

► LD₅₀ (mus, ipr) 27.04 mg/kg. AU7386000 2',3',5'-Tri-Ac: [15811-32-2]

C₁₆H₁₈FN₅O₇ 411.346
Cryst. (EtOAc). Mp 204°. [α]_D²⁵ -28.6 (c, 1.0 in CHCl₃).

Montgomery, J.A. *et al.*, *J.A.C.S.*, 1957, **79**, 4559 (*synth*)

Mongomery, J.A. *et al.*, *J.O.C.*, 1968, **33**, 432 (*synth*, *tri-Ac*)

Montgomery, J.A. *et al.*, *J. Med. Chem.*, 1970, **13**, 427 (*N-Me*, *N,N-di-Me* derivs)

8-Fluoroadenosine, 9CI, 8CI

[23205-67-6]

C₁₀H₁₂FN₅O₄ 285.234

Mp 190-191°. λ_{max} 263 (H₂O), 261.5 (pH 1), 264 nm (pH 13).

2',3',5'-Tri-Ac: [23205-66-5]

C₁₆H₁₈FN₅O₇ 411.346
Mp 99-102° (170-171°).

Ikehara, M. *et al.*, *Chem. Comm.*, 1961, 1509 (*synth*, *pmr*)

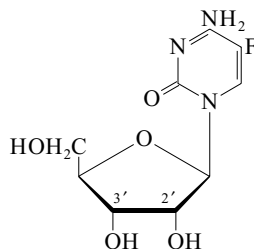
Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1971, **19**, 104 (*synth*, *tri-Ac*)

Ikehara, M. *et al.*, *Biochemistry*, 1972, **11**, 830 (*conform*)

Kobayashi, Y. *et al.*, *Chem. Comm.*, 1976, 430 (*synth*, *nmr*, *ms*, *tri-Ac*)

5-Fluorocytidine

[2341-22-2]



C₉H₁₂FN₃O₅ 261.209

Cryst. (EtOH). Mp 193-193.5°.

F-11

2'-Deoxy: 2'-Deoxy-5-fluorocytidine, 9CI, 8CI

[10356-76-0]

C₉H₁₂FN₃O₄ 245.21

Cryst. (EtOH). Mp 195-196.5°. [α]_D²⁶ +66 (c, 2.5 in H₂O).

► LD₅₀ (rat, ipr) 2000 mg/kg. Exp. reprod. and teratogenic effects. HA3850000

3'-Deoxy: 3'-Deoxy-5-fluorocytidine. 5-Fluoro-3'-deoxycytidine

C₉H₁₂FN₃O₄ 245.21

Cryst. (EtOH). Mp 194-195°. λ_{max} 238 (ε 7600); 289 (7700) (H₂O).

Aldrich Library of FT-NMR Spectra, **3**, 383C (*nmr*)

Wempen, I. *et al.*, *J.A.C.S.*, 1961, **83**, 4755 (*2'-deoxy*)

Utz, J.P. *et al.*, *Bull. N.Y. Acad. Med.*, 1975, **51**, 1103 (*rev*, *pharmacol*)

Waysek, E.H. *et al.*, *Anal. Profiles Drug Subst.*, 1976, **5**, 115 (*rev*)

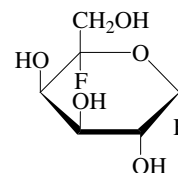
Robins, M.J. *et al.*, *J.A.C.S.*, 1976, **98**, 7381 (*synth*, *F-19 nmr*)

Louis, T. *et al.*, *Cryst. Struct. Commun.*, 1982, **11**, 1059 (*cryst struct*)

Saneyoshi, M. *et al.*, *Chem. Pharm. Bull.*, 1995, **43**, 2005 (*3'-deoxy*)

5-C-Fluorogalactosyl fluoride

F-14



C₆H₁₀F₂O₅ 200.139

α-D-Pyranose-form

Syrup.

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-5-C-fluoro-α-D-galactopyranosyl fluoride C₁₄H₁₈F₂O₉ 368.288

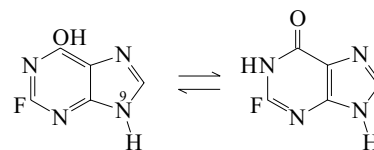
Gum.

Ly, H.D. *et al.*, *Carbohydr. Res.*, 2000, **329**, 539-547

2-Fluoro-4-hydroxypurine

F-15

2-Fluorohypoxanthine



C₅H₃FN₄O 154.103

Cryst. (Me₂CO). No phys. props. reported.

9-β-D-Ribopyranosyl: 2-Fluoroinosine

C₁₀H₁₁FN₄O₅ 286.219

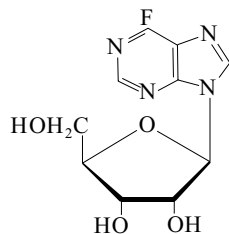
[α]_D²⁵ -34.4 (c, 1.0 in H₂O).

Gerster, J.F. *et al.*, *J.O.C.*, 1966, **31**, 3258 (*synth*, *pmr*)

Michal, G. *et al.*, *Pharmacol. Res. Commun.*, 1974, **6**, 203; *CA*, **81**, 59961q

6-Fluoro-9-ribofuranosyl-9H-purine, 9CI, 8CI

F-16

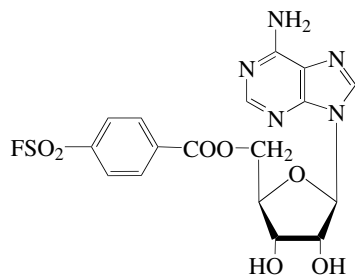
 $C_{10}H_{11}FN_4O_4$ 270.22 **β -D-form****9-Fluoronebularine**

[24784-69-8]

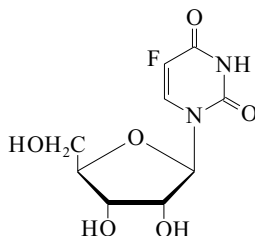
Mp 140-141°. $[\alpha]_D^{25}$ -39 (c, 1.0 in H_2O). λ_{max} 248 (ε 6 600) (pH 2), 254 nm (13 400) (pH 14).**2',3',5'-Tri-Ac:** [18354-17-1] $C_{16}H_{17}FN_4O_7$ 396.331 $[\alpha]_D^{25}$ -10.8 (c, 1.0 in $CHCl_3$). λ_{max} 243 nm (ε 6 500) (EtOH). Unstable at pH 13.Montgomery, J.A. *et al.*, *J.O.C.*, 1969, **34**, 1396 (synth, pmr)Kiburis, J. *et al.*, *J.C.S.(C)*, 1971, 3942 (synth)**5'-[4-(Fluorosulfonyl)benzoyl]adenosine**

F-17

Adenosine 5'-[4-(fluorosulfonyl)benzoate] [57454-44-1]

 $C_{17}H_{16}FN_5O_7S$ 453.407

Kinase inhibitor. Forms covalent adducts with ATP binding sites. Cryst. (DMF). Mp 159-160°.

Pal, P.K. *et al.*, *J. Biol. Chem.*, 1975, **250**, 8140-8147 (activity)Colman, R.F. *et al.*, *Methods Enzymol.*, 1977, **46**, 240-249 (synth, bibl, props)Kruse, C.H. *et al.*, *J. Med. Chem.*, 1988, **31**, 1762-1767 (use)McKay, G.A. *et al.*, *Biochemistry*, 1994, **33**, 14115-14120 (use)**5-Fluorouridine***1- α -D-Ribofuranosyl-5-fluoro-2,4(1H,3H)-pyrimidinedione* [316-46-1] $C_9H_{11}FN_2O_6$ 262.194Antineoplastic agent. Mp 151-154° Mp 184-185° (181-182°) (dimorph.). $[\alpha]_D^{26}$ +17 (c, 2 in H_2O).

► YU8050000

2'-Me: [61671-80-5] $C_{10}H_{13}FN_2O_6$ 276.221Needles. Mp 151-152° (144-147°). $[\alpha]_D^{22}$ +51.2 (c, 1 in MeOH).**3'-Deoxy: 3'-Deoxy-5-fluorouridine. 5-Fluoro-3'-deoxyuridine** $C_9H_{11}FN_2O_5$ 246.195

Cryst. (EtOH). Mp 169-171°.

5'-Phosphate: [796-66-7]

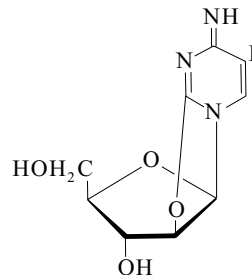
[67550-10-1]

 $C_9H_{12}FN_2O_9P$ 342.174Metab. of 5-Fluorouridine. Needles (Me_2CO aq.) (as Na salt).*Aldrich Library of 13C and 1H FT NMR Spectra*, 1992, **3**, 372A (nmr)Robins, M.J. *et al.*, *Can. J. Chem.*, 1975, **53**, 1302-1306 (synth, uv, pmr, F-19 nmr, 5-phosphate)Robins, M.J. *et al.*, *J.A.C.S.*, 1976, **98**, 7381 (synth, pmr, F-19 nmr, ms)Alderfer, J.L. *et al.*, *Biochemistry*, 1982, **21**, 2738 (cmr)Marunaka, T. *et al.*, *Biomed. Mass Spectrom.*, 1982, **9**, 381 (ms)Stavber, S. *et al.*, *Tetrahedron*, 1990, **46**, 3093 (synth)Tatsumura, T. *et al.*, *Br. J. Cancer*, 1993, **68**, 1146; *CA*, **120**, 289545kRoss, B.S. *et al.*, *J. Het. Chem.*, 1994, **31**, 765 (2'-O-Me)Saneyoshi, M. *et al.*, *Chem. Pharm. Bull.*, 1995, **43**, 2005 (3'-deoxy)Fujita, K. *et al.*, *J. Ferment. Bioeng.*, 1997, **77**, 696-699 (enzymic synth, 5-phosphate)Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, FMN000

F-18

Fluorocitabine, BAN, INN, USAN

F-19

7-Fluoro-2,3,3a,9a-tetrahydro-3-hydroxy-6-imino-6H-furo[2',3':4,5]oxazolo[3,2-a]pyrimidine-2-methanol, 9CI. 2,2'-Anhydro-5-fluoro-1- β -D-arabinofuranosylcytosine. Fluoroancitabine. AAFC. NSC 166641. Ro 21-0702 [37717-21-8] $C_9H_{10}FN_3O_4$ 243.194

Antineoplastic agent. Never marketed

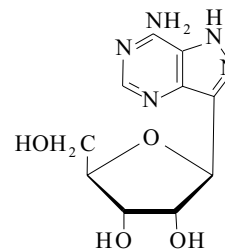
► HA5400000

Hydrochloride:

Cryst. (EtOH aq.). Mp 258-262° dec.

Kanai, T. *et al.*, *J. Med. Chem.*, 1972, **15**, 1218 (synth, pharmacol)Chou, T.-C. *et al.*, *Cancer Treat. Rep.*, 1977, **61**, 617 (metab)Mian, A.M. *et al.*, *J. Med. Chem.*, 1979, **22**, 514 (synth, pharmacol)**Formycin A**

F-20

1-C-(7-Amino-1H-pyrazolo[4,3-d]pyrimidin-3-yl)-1,4-anhydro-D-ribose, 9CI. Formycin. NSC 102811. Antibiotic 4-215 [6742-12-7] $C_{10}H_{13}N_5O_4$ 267.244Nucleoside-type antibiotic. Prod. by *Nocardia interforma*, *Streptomyces lavendulae* and *Streptomyces gunmaensis*. Shows limited antibacterial activity but possesses antitumour and antiviral props. Cryst. Sol. MeOH, H_2O , acids, bases; fairly sol. EtOH; poorly sol. Me_2CO , hexane.Mp 153-155°. $[\alpha]_D^{25}$ -39.3 (c, 0.5 in 0.1M HCl). pK_{a1} 4.4; pK_{a2} 9.7 (H_2O). λ_{max} 295 (ε 10700) (H_2O) (Derep). λ_{max} 294 (E1%/1cm 390) (H_2O) (Berdy). λ_{max} 234 (E1%/1cm 280); 295 (E1%/1cm 340) (HCl) (Berdy). λ_{max} 235 (E1%/1cm 500); 305 (E1%/1cm 260) (NaOH) (Berdy).► LD₅₀ (mus, orl) 1000 mg/kg ; LD₅₀ (mus, ivn) 250 - 350 mg/kg. UR0719000

4-Me:

$C_{11}H_{15}N_5O_4$ 281.271
Mp 268-269°.

6-Me:

$C_{11}H_{15}N_5O_4$ 281.271
Dihydrate. Mp 231-232°.

N⁷-Me:

$C_{11}H_{15}N_5O_4$ 281.271
Mp 145° dec.

3'-Epimer: Xyloformycin

$C_{10}H_{13}N_5O_4$ 267.244
Synthetic. Shows no antiviral props.
Cryst. Mp 138-140°. $[\alpha]_D^{25}$ -97.8 (c, 0.23 in H_2O).

Koyama, G. *et al.*, *J. Antibiot., Ser. A*, 1965, **18**, 175 (isol, ir, uv)

Koyama, G. *et al.*, *Tet. Lett.*, 1966, 597 (ir, uv, pmr, cryst struct)

Japan. Pat., 1967, 67 10 928; *CA*, **68**, 24552 (isol)

Japan. Pat., 1968, 68 6 996; *CA*, **69**, 34691 (isol)

Prusiner, P. *et al.*, *Biochemistry*, 1973, **12**, 1196 (cryst struct)

Ochi, K. *et al.*, *J. Antibiot.*, 1976, **29**, 638 (biosynth)

Chenon, M.-T. *et al.*, *J.A.C.S.*, 1976, **98**, 4736 (pmr, cmr)

Kalvoda, L. *et al.*, *Coll. Czech. Chem. Comm.*, 1978, **43**, 1431 (synth)

Lewis, A.F. *et al.*, *J.A.C.S.*, 1980, **102**, 2817

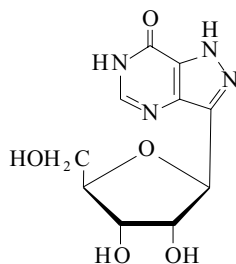
Spimulli, E.N. *et al.*, *Cancer Treat. Rep.*, 1983, **67**, 267 (pharmacol, tox)

Buchanan, J.G. *et al.*, *J.C.S. Perkin 1*, 1986, 1267 (analogs)

Cho, B.P. *et al.*, *Nucleosides Nucleotides*, 1994, **13**, 481 (pmr, cmr, tautom)

Formycin B**F-21**

1,4-Dihydro-3-β-D-ribofuranosyl-7H-pyrazolo[4,3-d]pyrimidin-7-one, 9CI. Laurusin. Ohyamycin. NSC 106486
[13877-76-4]



$C_{10}H_{12}N_4O_5$ 268.229

Nucleoside-type antibiotic. Prod. by *Nocardia interforma*, *Streptomyces lavendulae* and *Streptomyces roseochromogenes-oyaensis*. Shows limited antibacterial activity; possesses antitumour and antiviral props. Nucleoside transporter substrate. Cryst. (H_2O). Mp 254-255°. $[\alpha]_D^{25}$ -52 (c, 0.5 in H_2O). pK_{a1} 8.8; pK_{a2} 10.4. λ_{max} 219 (ε 9330); 280 (ε 7880) (H_2O) (Derep).

► LD₅₀ (mus, ivn) 1000 mg/kg. UR0800000

Hydrobromide:

Prisms + H_2O (H_2O). Mp 180-180.5°. Aizawa, S. *et al.*, *Agric. Biol. Chem.*, 1965, **29**, 375; 377 (isol)
Koyama, G. *et al.*, *J. Antibiot., Ser. A*, 1965, **18**, 175 (isol, ir, uv)
Japan. Pat., 1966, 66 13 792; *CA*, **65**, 19272 (isol)

Koyama, G. *et al.*, *Tet. Lett.*, 1966, 597 (uv, ir, nmr, cryst struct)

Acton, E.M. *et al.*, *Chem. Comm.*, 1971, 986 (synth, nmr)

Koyama, G. *et al.*, *Acta Cryst. B*, 1976, **32**, 813 (cryst struct)

Chenon, M.-T. *et al.*, *J.A.C.S.*, 1976, **98**, 4736 (pmr, cmr)

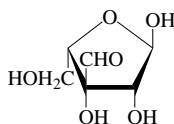
Kalvoda, L. *et al.*, *Coll. Czech. Chem. Comm.*, 1978, **43**, 1431 (synth)

Buchanan, J.G. *et al.*, *J.C.S. Perkin 1*, 1984, 2367 (synth)

Plagemann, P.G. *et al.*, *Biochim. Biophys. Acta*, 1990, **1022**, 93-102; 103-109; **1028**, 289-298 (pharmacol)

3-C-Formyllyxose**F-22**

Oxytstreptose. Hydroxystreptose



α-L-Furanose-form

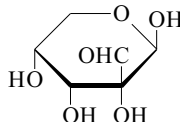
$C_6H_{10}O_6$ 178.141

L-form

Sugar component of Hydroxystreptomycin, H-197.

Stodola, F.H. *et al.*, *J.A.C.S.*, 1951, **73**, 2290 (struct)

Shemyakin, M.M. *et al.*, *Dokl. Akad. Nauk SSSR*, 1952, **85**, 1301; *CA*, **47**, 4292a (struct)

2-C-Formylribose**F-23**

$C_6H_{10}O_6$ 178.141

β-D-Pyranose-form

Me glycoside, 3,4-isopropylidene: Methyl 2-C-formyl-3,4-O-isopropylidene-β-D-ribo-pyranoside
[35522-72-6]
 $C_{10}H_{16}O_6$ 232.233

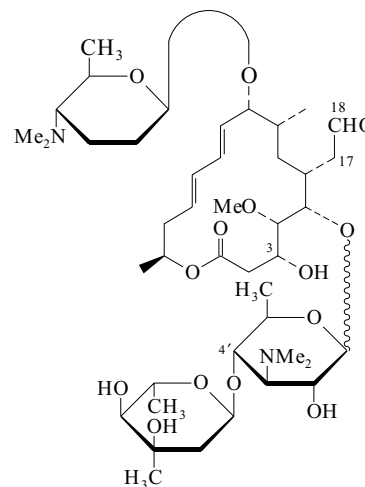
Syrup. $[\alpha]_D^{25}$ -192 (c, 1 in MeOH).

Paulsen, H. *et al.*, *Chem. Ber.*, 1972, **105**, 1978 (synth)

Paulsen, H. *et al.*, *Methods Carbohydr. Chem.*, 1980, **8**, 185 (synth)

Foromacidin A**F-24**

9-O-[5-(Dimethylamino)tetrahydro-6-methyl-2H-pyran-2-yl]leucomycin V, 9CI. Spiramycin I, 8CI. Spiramycin A. Espiramicin
[24916-50-5]



$C_{43}H_{74}N_2O_{14}$ 843.063

Macrolide antibiotic. Produced by a *Streptomyces ambofaciens*. Broad-spectrum antibiotic. Cryst. Sol. MeOH, Et_2O ; fairly sol. hexane; poorly sol. H_2O . Mp 134-138°. $[\alpha]_D^{20}$ -96 (c, 0.34 in MeOH). Log P 0.92 (uncertain value) (calc). λ_{max} 232 (ε 26500) (MeOH) (Derep). λ_{max} 231 (E1%/1cm 322) (EtOH) (Berdy).

► LD₅₀ (mus, scu) 1010 mg/kg; LD₅₀ (mus, ivn) 200 mg/kg; LD₅₀ (mus, orl) 5000 mg/kg. WG9405000

Mixt. with Foromacidins B and C:

Spiramycin, BAN, INN, USAN. Foromacidin. NSC 55926. Many other names
[8025-81-8]

$C_{43}H_{74}N_2O_{14}$ 843.063

Antibiotic complex. $[\alpha]_D^{20}$ -80 (MeOH).

► Gastro-intestinal and skin hypersensitivity reactions reported when used therapeutically. LD₅₀ (rat, orl) 3550 mg/kg. Exp. reprod. effects. WG9400000

3-Ac: Foromacidin B. Spiramycin II.

Spiramycin B

[24916-51-6]

$C_{45}H_{76}N_2O_{15}$ 885.1

Prod. by *Streptomyces ambofaciens*. Shows broad-spectrum antimicrobial props. Cryst. Sol. MeOH, Et_2O ; fairly sol. C_6H_6 , hexane; poorly sol. H_2O .

Mp 130-133°. $[\alpha]_D^{20}$ -86 (c, 0.82 in EtOH).

λ_{max} 231 (E1%/1cm 307) (EtOH) (Berdy).

► LD₅₀ (mus, ivn) 250 mg/kg; LD₅₀ (mus, scu) 1520 mg/kg. WG9413000

3,4''-Di-Ac: 4''-Acetylsipramycin B.

3,4''-Diacetylforomacidin A

[87111-42-0]

$C_{47}H_{78}N_2O_{16}$ 927.137

Prod. by *Streptomyces spiramyceticus* F21.

Tri-Ac:

Cryst. Mp 156-160° (140-142°). $[\alpha]_D^{20}$ -98.4 (-92.5).

3-Propanoyl: Foromacidin C. Spiramycin III. Spiramycin C[24916-52-7]
 $C_{46}H_{78}N_2O_{15}$ 899.127

Prod. by *Streptomyces ambofaciens*. Shows broad-spectrum antimicrobial props. Sol. MeOH, Et₂O; fairly sol. C₆H₆, hexane; poorly sol. H₂O. Mp 128–131°. $[\alpha]_D^{90}$ -83 (c, 1.0 in EtOH). λ_{max} 231 (E1%/1cm 327) (EtOH) (Berdy).
► LD₅₀ (mus, ivn) 250 mg/kg, LD₅₀ (mus, scu) 2040 mg/kg. WG9415000

3-Propanoyl, 4'-Ac: 4'-Acetylspiramycin C[112501-15-2]
 $C_{48}H_{80}N_2O_{16}$ 941.164Prod. by *Streptomyces spiramyceticus* F21.**4''-Propanoyl, 3-Ac: 4''-Propanoylsipramycin B. 4''-Propionylspiramycin B**

[145191-83-9]

 $C_{48}H_{80}N_2O_{16}$ 941.164Prod. by *Streptomyces spiramyceticus* F21.**3,4''-Dipropanoyl: 4''-Propanoylsipramycin C. 4''-Propionylspiramycin C**

[145191-82-8]

 $C_{49}H_{82}N_2O_{16}$ 955.191Prod. by *Streptomyces spiramyceticus* F21.**4''-Butanoyl, 3-Ac: 4''-Butanoylsipramycin B. 4''-Butyrylsipramycin B**

[67055-88-3]

 $C_{49}H_{82}N_2O_{16}$ 955.191Prod. by *Streptomyces spiramyceticus* F21.**4''-Butanoyl, 3-propanoyl: 4''-Butanoylforomacidin C. 4''-Butanoylsipramycin III**

[267662-19-1]

 $C_{50}H_{84}N_2O_{16}$ 969.217Prod. by *Streptomyces spiramyceticus* F21.**4''-(2-Methylpropanoyl), 3-Ac: 4''-(2-Methylpropanoyl)sipramycin B. 4''-Isobutyrylsipramycin B**

[267662-21-5]

 $C_{49}H_{82}N_2O_{16}$ 955.191Prod. by *Streptomyces spiramyceticus* F21.**4''-(2-Methylpropanoyl), 3-propanoyl: 4''-Isobutanoylforomacidin C. 4''-Isobutanoylsipramycin III**

[267662-20-4]

 $C_{50}H_{84}N_2O_{16}$ 969.217Prod. by *Streptomyces spiramyceticus* F21.**4''-(3-Methylbutanoyl): [267662-22-6] 4''-(3-Methylbutanoyl), 3-Ac: Shengjimyicin B**

[67055-89-4]

 $C_{50}H_{84}N_2O_{16}$ 969.217Prod. by *Streptomyces spiramyceticus* F21.**4''-(3-Methylbutanoyl), 3-propanoyl: Shengjimyicin A**

[212125-76-3]

 $C_{51}H_{86}N_2O_{16}$ 983.244Prod. by *Streptomyces spiramyceticus* F21.**18-Alcohol: Spiramycin IV. Dihydrospiramycin I**[43H₇₆N₂O₁₄] 845.078

Prod. by *Streptomyces ambofaciens*. Powder. Sol. MeOH, C₆H₆; poorly sol. H₂O, hexane. λ_{max} 233 (ε 26500) (MeOH).

18-Deoxo: 18-Deoxospiramycin I

[177584-14-4]

 $C_{43}H_{76}N_2O_{13}$ 829.079

Prod. by *Streptomyces ambofaciens*. Powder. Sol. MeOH, CHCl₃; poorly sol. H₂O. Incorrect struct. in CA to which CAS no. refers. λ_{max} 228 (MeOH) (Berdy).

4'-Deglycosyl: Neospiramycin I

[70253-62-2]

 $C_{36}H_{62}N_2O_{11}$ 698.893

Hydrol. prod. of Foromacidin A. Sol. MeOH, CHCl₃; poorly sol. H₂O. Mp 119–120°. $[\alpha]_D^{20}$ -57 (c, 1 in MeOH).

4'-Deglycosyl, 3-Ac: Neospiramycin II

[2564-78-5]

 $C_{38}H_{64}N_2O_{12}$ 740.93

Hydrol. prod. of Foromacidin B. Sol. MeOH, CHCl₃; poorly sol. H₂O. Mp 116–119°. $[\alpha]_D^{20}$ -56 (c, 1 in MeOH).

4'-Deglycosyl, 3-propanoyl: Neospiramycin III

[4617-99-6]

 $C_{39}H_{66}N_2O_{12}$ 754.957

Hydrol. prod. of Foromacidin C. Sol. MeOH, CHCl₃; poorly sol. H₂O. Mp 117–118°. $[\alpha]_D^{20}$ -52 (c, 1 in MeOH).

17-Methylene: 17-Methylenespiramycin I

[177584-13-3]

 $C_{44}H_{74}N_2O_{14}$ 855.074

Prod. by *Streptomyces ambofaciens*. Powder. Sol. MeOH, CHCl₃; poorly sol. H₂O. Incorrect struct. in CA to which CAS no. refers. λ_{max} 226 (MeOH) (Berdy).

Corbaz, R. et al., *Helv. Chim. Acta*, 1956, **39**, 304–317 (Foromacidins, isol)

Omura, S. et al., *J.A.C.S.*, 1969, **91**, 3401–3404; 1975, **97**, 4001 (struct, ir, ms, pmr, cmr)

Mitscher, A.L. et al., *J. Antibiot.*, 1973, **26**, 55–59 (ms, struct)

Freiberg, L.A. et al., *J.O.C.*, 1974, **39**, 2474–2477 (synth)

Omura, S. et al., *Chem. Pharm. Bull.*, 1979, **27**, 176–182 (biosynth, ms)

Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 8238

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 202

Shida, Y. et al., *Tetrahedron*, 1993, **49**, 9221–9234 (ms)

Alam, P. et al., *Magn. Reson. Chem.*, 1995, **33**, 228–231 (pmr, cmr)

Liu, L. et al., *J. Antibiot.*, 1996, **49**, 398 (17-methylene, 18-deoxo)

Khan, S.I. et al., *Nat. Prod. Lett.*, 1998, **11**, 167–171 (isol, hplc)

Sun, C. et al., *Actinomycetologica*, 1999, **13**, 120–125 (Shengjimyicins)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SLC000

Forssman pentasaccharide**F-25**

(2-Acetamido-2-deoxy-α-D-galactopyranosyl)-(1→3)-(2-acetamido-2-deoxy-β-D-galactopyranosyl)-(1→3)-α-D-galactopyranosyl-(1→4)-β-D-glucose. Forssman specific pentasaccharide

[71937-76-3]

α-D-Galp NAc-(1→3)-β-D-Galp NAc-

(1→3)-α-D-Galp-(1→4)-β-D-Galp-

(1→4)-D-Glc

 $C_{34}H_{58}N_2O_{26}$ 910.83

Part of the Forssman antigen. $[\alpha]_D^{20}$ +134 (c, 0.25 in H₂O).

[155753-73-4]

Paulsen, H. et al., *Carbohydr. Res.*, 1982, **100**, 143 (synth)

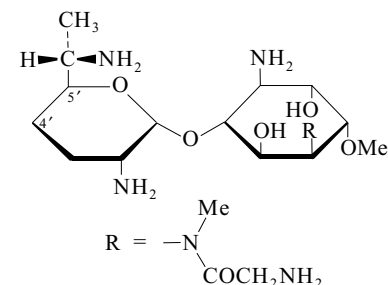
Poppe, L. et al., *Biochem. Biophys. Res. Commun.*, 1989, **159**, 618; 1991, **174**, 1169 (pmr, conformn)

Nilsson, U. et al., *Carbohydr. Res.*, 1994, **252**, 137 (synth)

Grönberg, G. et al., *Carbohydr. Res.*, 1994, **257**, 35 (conformn)

Fortimicin A**F-26****Astromicin, INN. Abbott 44747. KW 1070.****XX 70-1. Antibiotic KW 1070**

[55779-06-1]

 $C_{17}H_{35}N_5O_6$ 405.493

Aminoglycoside antibiotic. Isol. from *Micromonospora* spp. Antibacterial agent. Launched 1985. Amorph. powder. Sol. H₂O; fairly sol. MeOH, Me₂CO, EtOH; poorly sol. butanol, hexane, EtOAc.

Mp 200° dec. $[\alpha]_D^{25}$ +87.5 (c, 0.1 in H₂O). Log P -2.99 (uncertain value) (calc).

► LD₅₀ (mus, orl) 13600 mg/kg; LD₅₀ (mus, ivn) 380 mg/kg. Exp. reprod. and teratogenic effects (large doses). NM7521490

Sulfate (2:1): Astromicin sulfate, JAN, USAN. Fortimicin

[77275-67-3]

N^ω-Formyl: Antibiotic SF 1854. SF 1854

[74228-81-2]

 $C_{18}H_{35}N_5O_7$ 433.504

From *Micromonospora* sp. SF-1854. Active against gram-positive and -negative bacteria. Sol. H₂O; poorly sol. butanol, hexane. $[\alpha]_D^{25}$ +67 (c, 1 in H₂O).

3-O-De-Me: 3-O-Demethylfortimicin A

[74842-47-0]

 $C_{16}H_{33}N_5O_6$ 391.467

Isol. from *Micromonospora olivoasterospora*. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.

► NM7521485

[66768-12-5]

Nara, T. et al., *J. Antibiot.*, 1977, **30**, 533 (synth)

Okachi, R. et al., *J. Antibiot.*, 1977, **30**, 541 (isol)

Egan, R.S. et al., *J. Antibiot.*, 1977, **30**, 552 (struct, ir, ms, pmr)

Martin, J.R. et al., *Antimicrob. Agents Chemother.*, 1980, **18**, 761 (synth, deriv)

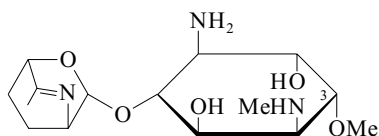
Inouye, S. et al., *J. Antibiot.*, 1980, **33**, 510 (deriv)

Cho, N. et al., *Chemotherapy (Tokyo)*, Suppl. 2, 1981, **29**, (pharmacol, tox, metab)

U.S. Pat., 1982, 4 330 673; CA, **97**, 128007 (synth, deriv)

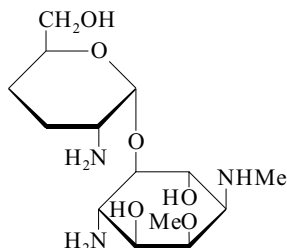
Neu, K.C. *et al.*, *J. Antimicrob. Chemother.*, 1983, **11**, 181 (*props. deriv*)
 Kunikatsu, O. *et al.*, *Mol. Pharmacol.*, 1983, **23**, 127 (*conformn*)
 Odakura, Y. *et al.*, *J. Antibiot.*, 1984, **37**, 1670 (*biosynth. bibl*)
 Kobayashi, S. *et al.*, *J.O.C.*, 1990, **55**, 1169 (*synth*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 118
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, FOK000

Fortimicin AH F-27
 [74918-32-4]



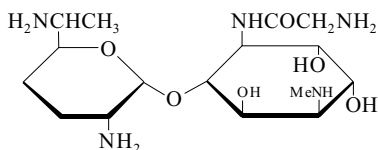
$C_{15}H_{27}N_3O_5$ 329.395
 Aminocyclitol antibiotic. Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H_2O .
 3-Epimer: **Fortimicin AI** [75419-92-0]
 $C_{15}H_{27}N_3O_5$ 329.395
 Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H_2O .
 McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295 (*struct*)
 U.S. Pat., 1980, 4 219 644; *CA*, **93**, 236932 (*isol*)
 U.S. Pat., 1980, 4 213 972; *CA*, **94**, 6377 (*derivs*)

Fortimicin AK F-28
 [74918-33-5]



$C_{14}H_{29}N_3O_6$ 335.4
 Aminoglycoside antibiotic. Prod. by *Micromonospora olivoasterospora*. Sol. H_2O .
 McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295
 U.S. Pat., 1980, 4 226 979; *CA*, **94**, 45586 (*isol. pmr*)

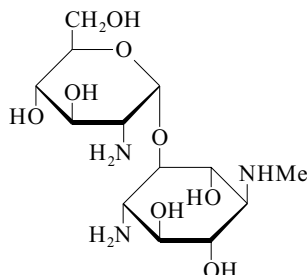
Fortimicin AN F-29
 [74918-34-6]



$C_{16}H_{33}N_5O_6$ 391.467

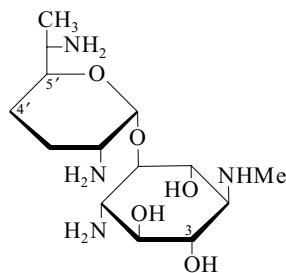
Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H_2O .
 U.S. Pat., 1980, 4 219 643; *CA*, **93**, 236933 (*isol*)
 McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295 (*struct*)

Fortimicin AO F-30
 [74918-35-7]



$C_{13}H_{27}N_3O_8$ 353.372
 Aminoglycoside antibiotic. Prod. by *Micromonospora olivoasterospora*. Sol. H_2O .
 McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295
 U.S. Pat., 1980, 4 219 642; *CA*, **94**, 2935 (*isol. cmr*)

Fortimicin AP F-31
 [74958-29-5]



$C_{14}H_{30}N_4O_5$ 334.415
 Aminocyclitol antibiotic. Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H_2O .
 3-Epimer: **Fortimicin AM** [74958-28-4]
 $C_{14}H_{30}N_4O_5$ 334.415
 Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H_2O .

4',5'-Didehydro: **Fortimicin AL** [74958-27-3]
 $C_{14}H_{28}N_4O_5$ 332.399
 Isol. from *Micromonospora olivoasterospora*. Active against gram-positive bacteria. Sol. H_2O .
 U.S. Pat., 1979, 4 214 078; 4 214 080; *CA*, **93**, 184277; 184278 (*isol*)
 U.S. Pat., 1979, 4 214 079; 4 216 210; *CA*, **94**, 82160; 82178 (*derivs*)
 McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295 (*struct*)

Fortimicin B F-32

4-Amino-1,4-dideoxy-3-O-(2,6-diamino-2,3,4,6,7-pentadeoxy-β-L-lyxo-hexopyranosyl)-6-O-methyl-1-(methylamino)-L-chiro-inositol, 9CI
 [54783-95-8]

As Fortimicin A, F-26 with
 R = NHMe

$C_{15}H_{32}N_4O_5$ 348.442

Aminoglycoside antibiotic. Isol. from *Micromonospora* spp. Amorph. powder. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane. Mp 101-103°. $[\alpha]_D^{25} +22.2$ (c, 0.1 in H_2O). λ_{max} 265 (H_2O) (Berdy).

N¹-Me: **Fortimicin AQ**

[70952-84-0]
 $C_{16}H_{34}N_4O_5$ 362.468

Prod. by *Micromonospora olivoasterospora*.

N¹-(2-Hydroxyethyl): **Fortimicin AS**

[66963-18-6]
 $C_{17}H_{36}N_4O_6$ 392.495

Prod. by *Micromonospora olivoasterospora*.

N¹-Aminoacetyl: See Fortimicin A, F-26

O-De-Me, 2'-N-glycyl: 2'-N-Glycyl-3-O-demethylfortimicin B

[71640-65-8]
 $C_{16}H_{33}N_5O_6$ 391.467

Prod. by *Micromonospora olivoasterospora*. Powder. Sol. H_2O , MeOH; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, butanol, hexane. $[\alpha]_D +57.4$ (H_2O). λ_{max} 200 (H_2O).

O-De-Me, 2'-N-(N-carbamoylglycyl): 2'-N-Hydantoyl-3-O-demethylfortimicin B

[74667-49-5]
 $C_{17}H_{34}N_6O_7$ 434.492

Prod. by *Micromonospora olivoasterospora*. Powder. Sol. H_2O , MeOH; fairly sol. EtOH, Me₂CO; poorly sol. butanol, EtOAc, hexane. $[\alpha]_D +15.3$ (H_2O). λ_{max} 200 (H_2O).

4',5'-Didehydro: **Fortimicin KG₂**, 4',5'-Dehydrofortimicin B

[72541-30-1]
 $C_{15}H_{30}N_4O_5$ 346.426

Minor prod. from *Micromonospora olivoasterospora*. Weakly active against gram-positive and -negative bacteria. Powder. Sol. H_2O , MeOH; fairly sol. EtOH, Me₂CO; poorly sol. butanol, hexane.

Mp 83-85°. $[\alpha]_D^{22} +30$ (c, 0.76 in H_2O).
 Japan. Pat., 1976, 79 66 679; *CA*, **91**, 156031 (*isol. props. deriv*)

Okachi, R. *et al.*, *J. Antibiot.*, 1977, **30**, 541 (*isol*)

Egan, R.S. *et al.*, *J. Antibiot.*, 1977, **30**, 552 (*struct. ir, ms, pmr*)

Hirayama, N. *et al.*, *Acta Cryst. B*, 1978, **34**, 2648 (*cryst struct*)

Sato, M. *et al.*, *J. Antibiot.*, 1979, **32**, 371 (*synth*)

McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295 (*Fortimicin KG₂*, *Fortimicin AS*, *Fortimicin AQ*)

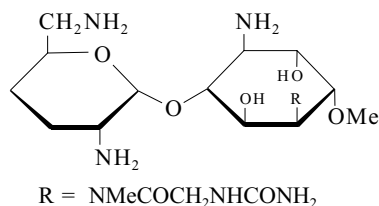
Japan. Pat., 1980, 80 45 631; *CA*, **93**, 184262m (*N-glycyl derivs*)

Honda, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1982, **55**, 1156 (*synth*)

Fortimicin C

F-33

[62874-51-5]

C₁₇H₃₄N₆O₇ 434.492

Aminoglycoside-type antibiotic. Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. butanol, hexane, EtOAc. Mp 160° dec. [α]_D²⁵ +84 (c, 0.1 in H₂O).

Sato, M. *et al.*, *J. Antibiot.*, 1979, **32**, 371 (synth)

Sugimoto, M. *et al.*, *J. Antibiot.*, 1979, **32**, 868 (isol)

Iida, M. *et al.*, *J. Antibiot.*, 1979, **32**, 1273 (pmr, cmr, struct)

Fortimicin D

F-34

4-N-Glycylfortimicin KE

[67330-20-5]

As Fortimicin C, F-33 with

R = NMeCOCH₂NH₂C₁₆H₃₃N₅O₆ 391.467

Aminoglycoside antibiotic. Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. CHCl₃, butanol, Et₂O, hexane, EtOAc. Mp 109-114°. [α]_D²⁵ +121 (c, 0.5 in H₂O).

▶ LD₅₀ (mus, ipr) 159 mg/kg. NM7521504

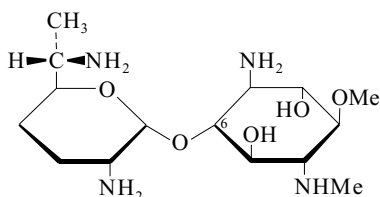
Sugimoto, M. *et al.*, *J. Antibiot.*, 1979, **32**, 868 (isol)

Iida, M. *et al.*, *J. Antibiot.*, 1979, **32**, 1273 (pmr, cmr, struct)

Fortimicin E

F-35

1-Amino-1,4-dideoxy-2-O-(2,6-diamino-2,3,4,6,7-pentadeoxy-β-L-lyxo-heptopyranosyl)-5-O-methyl-4-(methylamino)-D-scyllo-inositol, 9CI. Fortimicin KH. 3,4-Di-epi-fortimicin B [71772-09-3]

C₁₅H₃₂N₄O₅ 348.442

Aminocyclitol antibiotic. Minor prod. isol. from *Micromonospora olivoasterospora*. Weakly active against gram-positive and -negative bacteria. Powder. Sol. H₂O. [α]_D²⁵ +88 (c, 1 in MeOH).

Hydrochloride (1:4): [71629-36-2]

[α]_D²⁴ +56.5 (c, 1 in MeOH).

6-Epimer: **Fortimicin AE**

[72843-38-0]

C₁₅H₃₂N₄O₅ 348.442

Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Sol. H₂O.

Belg. Pat., 1979, 872 916; CA, **91**, 209359 (isol, props)

Kurath, P. *et al.*, *J. Antibiot.*, 1979, **32**, 884 (isol, props, pmr, cmr)

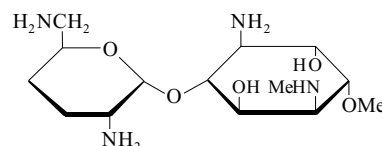
Japan. Pat., 1979, 79 95 548; CA, **92**, 109099 (isol)

McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295 (struct)

Fortimicin KE

F-36

4-Amino-1,4-dideoxy-3-O-(2,6-diamino-2,3,4,6-tetradecoxy-α-D-erythrohexopyranosyl)-6-O-methyl-1-(methylamino)-L-chiro-inositol, 9CI [67330-21-6]

C₁₄H₃₀N₄O₅ 334.415

Aminocyclitol antibiotic. Isol. from *Micromonospora olivoasterospora*. Weakly active against gram-positive and -negative bacteria. Amorph. powder. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. C₆H₆, butanol, hexane, EtOAc. Mp 72-77°. [α]_D²⁵ +28.5 (c, 0.5 in H₂O).

Ger. Pat., 1978, 2 748 530; CA, **89**, 105889 (isol)

Sugimoto, M. *et al.*, *J. Antibiot.*, 1979, **32**, 868 (isol, props)

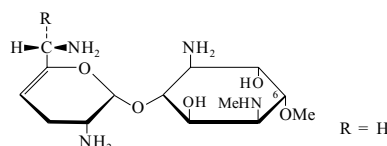
Iida, T. *et al.*, *J. Antibiot.*, 1979, **32**, 1273 (isol, struct, pmr, cmr, ms)

Shirahata, K. *et al.*, *Carbohydr. Res.*, 1981, **92**, 169 (cmr)

Fortimicin KF

F-37

4-Amino-3-O-[3-amino-6-(aminomethyl)-3,4-dihydro-2H-pyran-2-yl]-1,4-dideoxy-6-O-methyl-1-(methylamino)-L-chiro-inositol, 9CI [71415-84-4]

C₁₄H₂₈N₄O₅ 332.399

Aminocyclitol antibiotic. Isol. from *Micromonospora olivoasterospora*. Weakly active antibacterial agent. Powder + 1 H₂O. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. hexane, butanol, EtOAc. Mp 69-72°. [α]_D²⁴ +127 (c, 0.615 in H₂O).

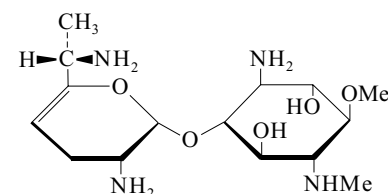
Japan. Pat., 1979, 79 66 679; CA, **91**, 156031 (isol, props)

McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295 (struct)

Fortimicin KG₁

F-38

[72541-31-2]

C₁₅H₃₀N₄O₅ 346.426

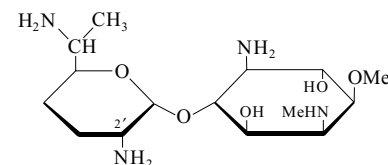
Aminocyclitol antibiotic. Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Powder. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. butanol, hexane. Mp 95-98°. [α]_D²² +58.3 (c, 0.66 in H₂O).

Ger. Pat., 1979, 2 908 150; CA, **92**, 74350 (isol, props)

Fortimicin KO₁

F-39

[73173-66-7]

C₁₅H₃₂N₄O₅ 348.442

Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Powder. Sol. H₂O. Mp 77-79°. [α]_D²² +79 (c, 0.3 in H₂O).

N^{2'}-Aminoacetyl: **Fortimicin KO**. Isofortimicin [71241-90-2]

C₁₇H₃₅N₅O₆ 405.493

Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Powder. Mp 130-132°. [α]_D²² +93 (c, 0.3 in H₂O).

[71564-58-4]

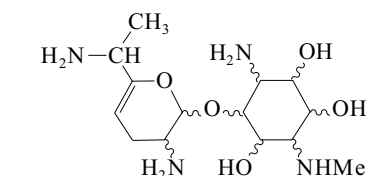
Japan. Pat., 1979, 79 109 948; CA, **92**, 162176

McAlpine, J.B. *et al.*, *ACS Symp. Ser.*, 1980, **125**, 295 (isol)

Fortimicin KQ

F-40

[74667-51-9]

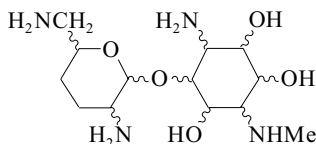
C₁₄H₂₈N₄O₅ 332.399

Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Powder. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. butanol, EtOAc, hexane. Mp 127-130°. [α]_D²⁴ +15.5 (c, 0.11 in H₂O).

Japan. Pat., 1980, 80 45 631; CA, 93, 184262 (isol, props)

Fortimicin KR₁**F-41**

[74741-67-6]

C₁₃H₂₈N₄O₅ 320.388

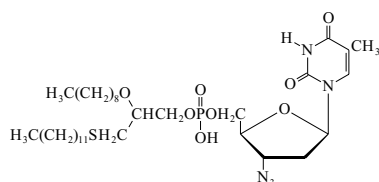
Aminocyclitol antibiotic. Isol. from *Micromonospora olivoasterospora*. Active against gram-positive and -negative bacteria. Powder.

Mp 125-128°. [α]_D²⁴ +69.5 (c, 0.29 in H₂O).

Japan. Pat., 1980, 80 45 631; CA, 93, 184262 (isol, props)

Fozivudine tidoxil, INN**F-42**

2-(Decyloxy)-3-(dodecylthio)propyl hydrogen 3'-azido-3'-deoxy-5'-thymidylate. BM 21.1290 [141790-23-0]

C₃₅H₆₄N₅O₈PS 745.959

Antiviral agent. Solid. Mp 220-223° dec.

Ger. Pat., 1992, 4 026 265, (Boehringer Mannheim); CA, 117, 8366d (synth)

Bogner, J.R. et al., *Antiviral Ther.*, 1997, 2, 249-256; 257-264 (pharmacol)

Fructans**F-43**

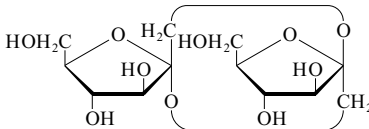
A series of straight-chain and branched-chain glucose-fructose oligomers of which the simplest member is Sucrose, S-92. One straight-chain series consists of 6-Kestose, K-14 and higher members such as 6,6-Kestotetraose. The lower members of other series are exemplified by Neokestose, N-20, Nystose, N-87, Bifurcose, B-32 and 1-Kestose, K-13. All members characterised contain one terminal glucose residue and a variable number of fructose residues in a straight-chain or branching pattern. Accumulate during vegetative and reproductive growth of cereal grasses and other plants.

Chatterton, N.J. et al., *J. Plant Physiol.*, 1993, 142, 552-556 (bibl)

Slaughter, L.H. et al., *Carbohydr. Res.*, 1994, 253, 287-291 (hplc)

α-D-Fructofuranose β-D-fructofuranose 1,2':2,1'-dianhydride, 9CI**F-44**

Di-β-D-fructofuranose 1,2':2,1'-dianhydride. Difructose anhydride I [97415-71-9]

C₁₂H₂₀O₁₀ 324.284

Formed by reversion of Fructose, F-84 in strong acid and during acid hydrol. of Inulin, I-38. Also by pyrolysis of Inulin I-38. Prod. from Inulin I-38 by *Aspergillus fumigatus*.

Mp 164° (160-162°). [α]_D²⁰ +27 (c, 1.2 in H₂O).

Hexa-Ac: [97390-14-2]

C₂₄H₃₂O₁₆ 576.507

Dimorphic. Mp 124-125° Mp 135-136°. [α]_D²⁰ -0.9 (c, 5.5 in CHCl₃). [α]_D +1.1 (CHCl₃).

6,6'-Ditrityl, tetra-Ac: [161169-17-1]

C₅₈H₅₆O₁₄ 977.072

Mp 187-188°. [α]_D -1.9 (c, 20.8 in CHCl₃).

[3568-49-8]

Jackson, R.F. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1929, 3, 27; 1930, 5, 733

Haworth, W.N. et al., *Helv. Chim. Acta*, 1932, 15, 693

Lemieux, R.U. et al., *Ann. Chim. Farm.*, 1964, 42, 1270-1278 (pmr)

Tanaka, K. et al., *Carbohydr. Res.*, 1979, 75, 340-344 (enzymic synth)

Defaye, J. et al., *Carbohydr. Res.*, 1985, 136, 53-65 (synth, cmr)

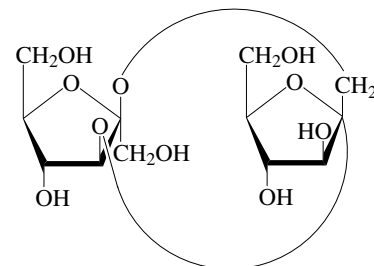
Blize, A.E. et al., *Carbohydr. Res.*, 1994, 265, 31-39 (synth)

Shalaby, M.A. et al., *Carbohydr. Res.*, 1994, 265, 207-214 (cryst struct, deriv)

Fernandez, J.M.G. et al., *Carbohydr. Res.*, 1994, 265, 249-269 (synth)

α-D-Fructofuranose β-D-fructofuranose 1',2:2',3'-dianhydride, 9CI**F-45**

Difructose anhydride III [81129-73-9]

C₁₂H₂₀O₁₀ 324.284

Formed by reversion of fructose in strong acid and during hydrol. of inulin. Also by pyrolysis of inulin and bacterial degradn. of inulin with *Arthrobacter ureafaciens*. Isol. from *Lycoris radiata*. Cryst. (EtOH).

Mp 162°. [α]_D²⁰ +136 (c, 1.98 in H₂O).

Hexa-Me:

C₁₈H₃₂O₁₀ 408.445

Syrup. [α]_D +15.7 (CHCl₃).

Jackson, R.F. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1931, 6, 709

McDonald, E.J. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1940, 24, 181

Uchiyama, T. et al., *Carbohydr. Res.*, 1982, 101, 138-140 (cmr)

Taniguchi, T. et al., *Carbohydr. Res.*, 1982, 107, 255-262 (cryst struct)

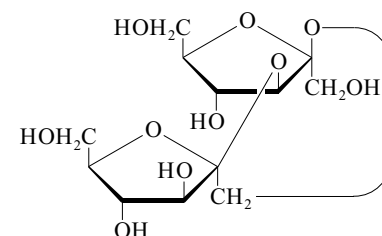
Uchiyama, T. et al., *Agric. Biol. Chem.*, 1983, 47, 437-439 (synth, ir)

Blize, A.E. et al., *Carbohydr. Res.*, 1994, 265, 31-39 (synth, pmr, cmr)

Li, H.Y. et al., *Carbohydr. Res.*, 1997, 299, 301-305 (isol, pmr, cmr)

β-D-Fructofuranose β-D-fructofuranose 1,2':2,3'-dianhydride**F-46**

Di-β-D-fructofuranose 1,2':2,3'-dianhydride. Difructose anhydride II [101623-07-8]

C₁₂H₂₀O₁₀ 324.284

Struct. formerly uncertain, settled in 1988.

Formed by reversion of Fructose, F-84 in strong acid and during hydrol. of Inulin, I-38. Also by pyrolysis of inulin. Cryst. (EtOH). Mp 198° Mp 204.5-208°. [α]_D +13.8 (H₂O).

Hexa-Me:

C₁₈H₃₂O₁₀ 408.445

Mp 73°. [α]_D -28 (CHCl₃).

McDonald, E.J. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1940, 24, 181

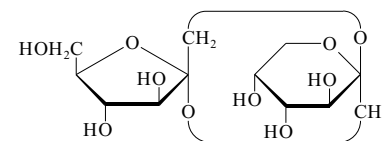
Wolfson, M.L. et al., *J.A.C.S.*, 1952, 74, 2867-2870 (synth)

Taniguchi, T. et al., *Carbohydr. Res.*, 1988, 177, 13-20 (cryst struct)

Blize, A.E. et al., *Carbohydr. Res.*, 1994, 265, 31-39 (synth, pmr, cmr)

α-D-Fructofuranose β-D-fructopyranose 1,2':2,1'-dianhydride, 9CI**F-47**

D-Fructofuranose D-fructopyranose 1,2':2,1'-dianhydride. Diheterolevulosan II [97415-70-8]

C₁₂H₂₀O₁₀ 324.284

Formed by reversion of fructose in strong acid and during acid hydrol. of inulin. Mp 257-260°. [α]_D²⁰ -38 (c, 3.7 in H₂O).

Hexa-Ac: [97415-73-1]

C₂₄H₃₂O₁₆ 576.507

Mp 124-125°. [α]_D -41.5 (CHCl₃).

Hexa-Me:

$C_{18}H_{32}O_{10}$ 408.445

Mp 101-102°. $[\alpha]_D^{27}$ -22.5 (c, 1 in $CHCl_3$).

[70005-72-0]

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1948, **70**, 2406; 1952, **74**, 2867

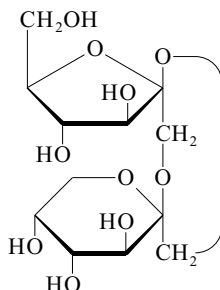
Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1953, **7**, 969

Defaye, J. *et al.*, *Carbohydr. Res.*, 1985, **136**, 53 (synth, cmr)

Manley-Harris, M. *et al.*, *Carbohydr. Res.*, 1992, **226**, 327 (ms)

Fernandez, J.M.G. *et al.*, *Carbohydr. Res.*, 1994, **265**, 249 (synth)

β-D-Fructofuranose β-D-fructopyranose 1,2':2,1'-dianhydride, 9CI **F-48**
Diheterolevulosan III
[50692-23-4]



$C_{12}H_{20}O_{10}$ 324.284

Formed by reversion of fructose in strong acid and during acid hydrol. of inulin. Mp 240°. $[\alpha]_D^{20}$ -182 (c, 0.5 in H_2O).

Hexa-Ac: [50692-19-8]

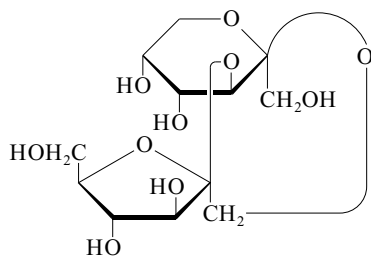
$C_{24}H_{32}O_{16}$ 576.507

Mp 127.5-129°. $[\alpha]_D$ -155 (c, 1.1 in $CHCl_3$). Physical constants given in the early lit. may be incorrect.

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1951, **73**, 3553
Wickberg, B. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 436

Defaye, J. *et al.*, *Carbohydr. Res.*, 1985, **136**, 53 (synth, cmr)

β-D-Fructofuranose β-D-fructopyranose 1,2':2,3'-dianhydride, 9CI **F-49**
[97398-95-3]



$C_{12}H_{20}O_{10}$ 324.284

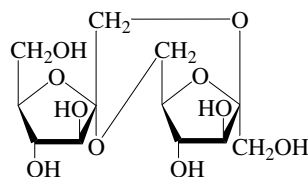
Formed by reversion of fructose in strong acid and during acid hydrol. of inulin. Mp 206-207°. $[\alpha]_D^{20}$ -58.5 (c, 1.03 in H_2O).

Hexa-Ac: [97398-96-4]

$C_{24}H_{32}O_{16}$ 576.507

Mp 122-123°. $[\alpha]_D^{20}$ -86 (c, 1.4 in $CHCl_3$).
Defaye, J. *et al.*, *Carbohydr. Res.*, 1985, **136**, 53 (synth, cmr)

α-D-Fructofuranose-β-D-fructofuranose 1,2':2,6'-dianhydride **F-50**
[135463-09-1]



$C_{12}H_{20}O_{10}$ 324.284

Isol. from a culture of *Aspergillus fumigatus* grown on inulin. Cryst. (EtOH).

Mp 201-203°. $[\alpha]_D^{20}$ +95.8 (c, 1.13 in H_2O).

Hexa-Ac: [135463-07-9]

$C_{24}H_{32}O_{16}$ 576.507

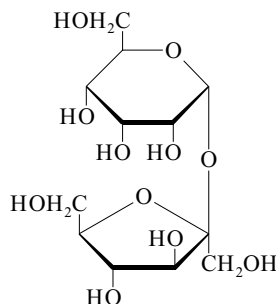
Cryst. (EtOH). Mp 113°. $[\alpha]_D^{20}$ +47 (c, 0.40 in $CHCl_3$).

Matsuyama, J. *et al.*, *Agric. Biol. Chem.*, 1991, **55**, 1413-1414 (isol)

Christian, T.J. *et al.*, *J. Agric. Food Chem.*, 2000, **48**, 1823-1837 (formn, cmr, pmr)

Manley-Harris, M. *et al.*, *J. Carbohydr. Chem.*, 2002, **22**, 1-8 (cryst struct, hexa-Ac)

β-D-Fructofuranosyl α-D-allopyranoside, 9CI **F-51**
[4217-76-9]



$C_{12}H_{22}O_{11}$ 342.299

Non-reducing sugar.

1,2',3,3',4,4'-Hexa-Ac: 1,3,4-Tri-O-acetyl-β-D-fructofuranosyl 2,3,4-tri-O-acetyl-α-D-allopyranoside [75800-75-8]

$C_{24}H_{34}O_{17}$ 594.522

Syrup. $[\alpha]_D$ +36.5 (c, 0.3 in $CHCl_3$).

Octa-Ac: [75800-69-0]

$C_{28}H_{38}O_{19}$ 678.597

Syrup. $[\alpha]_D$ +39 (c, 1.45 in $CHCl_3$).

Octabenzoyl: [75800-70-3]

$C_{68}H_{54}O_{19}$ 1175.163

Mp 85-87°. $[\alpha]_D$ +70.1 (c, 0.33 in $CHCl_3$).

6,6'-Ditrityl, hexa-Ac: 1,3,4-Tri-O-acetyl-6-O-trityl-β-D-fructofuranosyl 2,3,4-tri-O-acetyl-6-O-trityl-α-D-allopyranoside [75800-73-6]

$C_{62}H_{62}O_{17}$ 1079.162

Mp 175-177°. $[\alpha]_D$ +45.9 (c, 0.2 in $CHCl_3$).

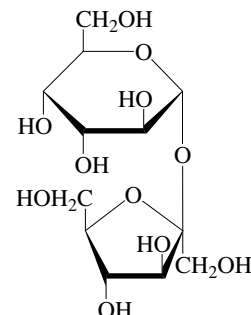
1,6,6'-Tritrityl, penta-Ac: 3,4-Di-O-acetyl-1,6-di-O-trityl-β-D-fructofuranosyl 2,3,4-tri-O-acetyl-6-O-trityl-α-D-allopyranoside [75800-72-5]

$C_{79}H_{74}O_{16}$ 1279.444

Mp 218°. $[\alpha]_D$ +54 (c, 0.3 in $CHCl_3$).

Hough, L. *et al.*, *Carbohydr. Res.*, 1980, **84**, 95

β-D-Fructofuranosyl α-D-altropyranoside, 9CI **F-52**
altro-Sucrose. α-D-Altropyranosyl β-D-fructofuranoside



$C_{12}H_{22}O_{11}$ 342.299

Syrup. $[\alpha]_D^{20}$ +7 (c, 1 in H_2O). Not sweet.

Octa-Ac: [197716-05-5]

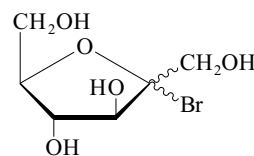
$C_{28}H_{38}O_{19}$ 678.597

Syrup. $[\alpha]_D^{20}$ -3.8 (c, 2.9 in $CHCl_3$).

Gurjar, M.K. *et al.*, *Carbohydr. Res.*, 1986, **150**, 53 (derivs)

Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1997, **303**, 293-302 (synth, pmr, cmr)

Fructofuranosyl bromide **F-53**



$C_6H_{11}BrO_5$ 243.054

D-form

Tetrabenzoyl: 1,3,4,6-Tetra-O-benzoyl-D-fructofuranosyl bromide [54401-13-7]

$C_{34}H_{27}BrO_9$ 659.486

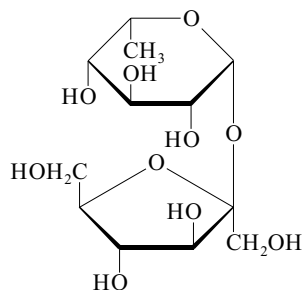
Syrup. $[\alpha]_D^{20}$ +40.3 ($CHCl_3$).

Helferich, B. *et al.*, *Chem. Ber.*, 1953, **86**, 651 (tetrabenzoyl)

Hrebabecky, H. *et al.*, *Coll. Czech. Chem. Comm.*, 1974, **39**, 2115 (tetrabenzoyl)

Chretien, F. *et al.*, *J.C.S. Perkin 1*, 1988, 3297 (use)

β -D-Fructofuranosyl 6-deoxy- β -L-idopyranoside F-54
6-Deoxy- β -L-idopyranosyl β -D-fructofuranoside

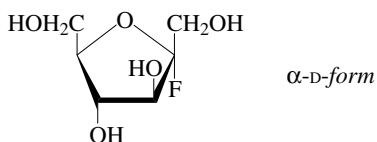


$C_{12}H_{22}O_{10}$ 326.3
Nonreducing disaccharide.

Hepta-Ac: [60117-40-0]
 $C_{26}H_{36}O_{17}$ 620.56
Mp 176-179°. $[\alpha]_D$ -1.44 (c, 1.1 in $CHCl_3$).

Khan, R. *et al.*, *Carbohydr. Res.*, 1976, **48**, 306

Fructofuranosyl fluoride F-55



$C_6H_{11}FO_5$ 182.148

α -D-form

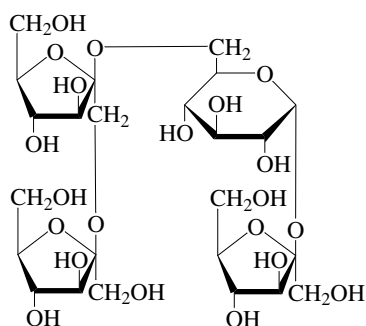
Tetra-Ac: 1,3,4,6-Tetra-O-acetyl- α -D-fructofuranosyl fluoride
[58634-84-7]
 $C_{14}H_{19}FO_9$ 350.297
Syrup. $[\alpha]_D^{22}$ +45 ($CHCl_3$).

β -D-form

Tetra-Ac: 1,3,4,6-Tetra-O-acetyl- β -D-fructofuranosyl fluoride
[475-02-5]
 $C_{14}H_{19}FO_9$ 350.297
Syrup. $[\alpha]_D^{22}$ +36 ($CHCl_3$).

Erbing, B. *et al.*, *Acta Chem. Scand., Ser. B*, 1976, **30**, 12 (tetra-Ac, cmr)

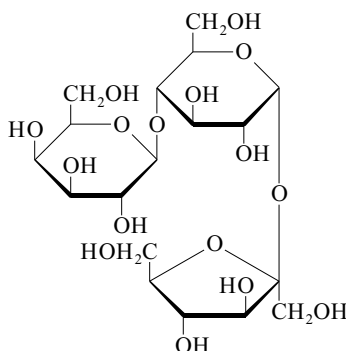
β -D-Fructofuranosyl β -D-fructofuranosyl-(2 \rightarrow 1)- β -D-fructofuranosyl-(2 \rightarrow 6)- α -D-glucopyranoside F-56
[29837-38-5]



$C_{24}H_{42}O_{21}$ 666.583
A fructan. Isol. from the roots of *Asparagus officinalis* (asparagus).
Fukushi, E. *et al.*, *Magn. Reson. Chem.*, 2000, **38**, 1005-1011 (isol, pmr, cmr)

β -D-Fructofuranosyl β -D-galactopyranosyl-(1 \rightarrow 4)- α -D-glucopyranoside, 9CI

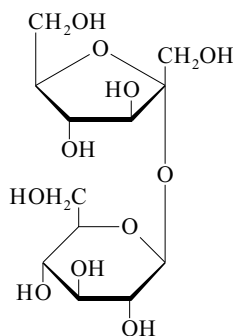
Lactosucrose. 4-O- β -D-Galactopyranosyl-sucrose
[87419-56-5]



$C_{18}H_{32}O_{16}$ 504.441
Selectively enhances growth of bifidobacteria in human intestines. Cryst. V. sol. H_2O . Mp 181° (131°). $[\alpha]_D$ +59 (+44) (H_2O). Sweetness about 30% of sucrose.

Avigad, G. *et al.*, *J. Biol. Chem.*, 1957, **229**, 121 (enzymic synth)
Tanaka, T. *et al.*, *J. Biochem. (Tokyo)*, 1981, **90**, 521 (enzymic synth)
Minami, Y. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 1688 (metab)
Hara, K. *et al.*, *CA*, 1991, **115**, 181572z (use)
Fujita, K. *et al.*, *CA*, 1991, **115**, 181751g (manuf)
Eur. Pat., 1991, 382 355; *CA*, **114**, 163008v (use)

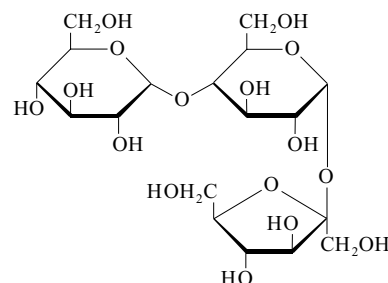
α -D-Fructofuranosyl β -D-glucopyranoside F-58
Isosucrose
[56086-34-1]



$C_{12}H_{22}O_{11}$ 342.299
 $[\alpha]_D^{27}$ +52.3 (c, 0.9 in MeOH).
Octa-Ac: [27641-20-9]
 $C_{28}H_{38}O_{19}$ 678.597
Cryst. (Et_2O). Mp 129-130.5°. $[\alpha]_D^{20}$ +20 (c, 1 in $CHCl_3$).
Irvine, J.C. *et al.*, *J.A.C.S.*, 1929, **51**, 1279 (synth)

Newkome, G.R. *et al.*, *Carbohydr. Res.*, 1976, **48**, 1 (synth, octa-Ac)

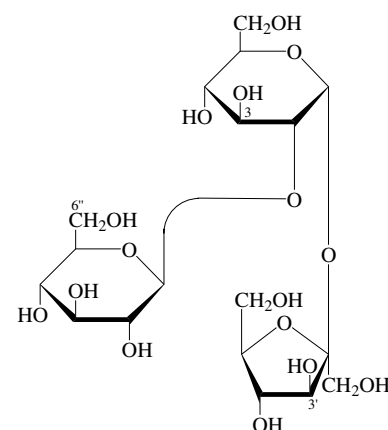
β -D-Fructofuranosyl α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucopyranoside F-59
 α -Maltosylfructose. 4-O- α -D-Glucopyranosylsucrose. Erlöse. Fructomaltose



$C_{18}H_{32}O_{16}$ 504.441
Occurs in *Aphis pemi* honeydew. Isol. from a honey invertase digest of sucrose. Shows anticarcinogenic props. Monohydrate or trihydrate.
Mp 118-124° dec. $[\alpha]_D^{25}$ +128.8 (c, 2.3 in H_2O).

Undeca-Ac: Mp 68-73°. $[\alpha]_D^{25}$ +86 (c, 1.2 in $CHCl_3$).
White, J.W. *et al.*, *J.A.C.S.*, 1953, **75**, 1259 (synth)
Taga, T. *et al.*, *Carbohydr. Res.*, 1993, **240**, 39; 1994, **251**, 203 (cryst struct)

β -D-Fructofuranosyl β -D-glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranoside F-60
2-O- β -D-Glucopyranosylsucrose



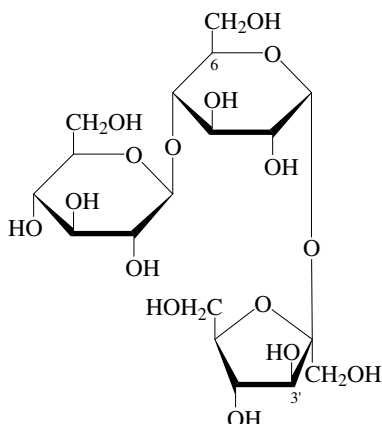
$C_{18}H_{32}O_{16}$ 504.441
3',4-Dibenzoyl: **Telephiose C**
 $C_{32}H_{40}O_{18}$ 712.657
Constit. of the roots of *Polygala telephioides*. Amorph. powder. $[\alpha]_D$ -19.5 (c, 0.48 in MeOH).
3',4-Dibenzoyl, 1',6-di-Ac: **Telephiose A**
 $C_{36}H_{44}O_{20}$ 796.732
Constit. of the roots of *Polygala telephioides*. Amorph. powder. $[\alpha]_D$ -11 (c, 0.45 in MeOH).
3',4-Dibenzoyl, 1',6'-di-Ac: **Telephiose B**
 $C_{36}H_{44}O_{20}$ 796.732

Constit. of the roots of *Polygala telephoides*. Amorph. powder. $[\alpha]_D^{25}$ -17.6 (c, 0.4 in MeOH).

Li, J.C. et al., *Chem. Pharm. Bull.*, 2000, **48**, 1223-1225 (*Telephioses*)

β-D-Fructofuranosyl β-D-glucopyranosyl-(1→4)-α-D-glucopyranoside **F-61**

4-O-β-D-Glucopyranosylsucrose



C₁₈H₃₂O₁₆ 504.441

The structs. of the Arillatoses are not certain. Structs. shown as given here, but stated to have the isomeric glucosyl-(1→3)-struct. in the text.

6-O-(4-Hydroxy-3,5-dimethoxy-E-cinnamoyl): **Arillatose D** [291744-65-5]
C₂₉H₄₂O₂₀ 710.639

Constit. of the roots of *Polygala arillata*. Amorph. powder. $[\alpha]_D^{25}$ +2 (c, 0.1 in MeOH). λ_{\max} 239 (log ϵ 4.21); 330 (log ϵ 4.13) (MeOH).

3'-O-(4-Hydroxy-3,5-dimethoxy-E-cinnamoyl): **Arillatose F** [291745-58-9]
C₂₉H₄₂O₂₀ 710.639

Constit. of the roots of *Polygala arillata*. Amorph. powder. $[\alpha]_D^{25}$ -4.5 (c, 0.1 in MeOH). λ_{\max} 202 (log ϵ 4.5); 240 (log ϵ 4.17); 330 (log ϵ 4.12) (MeOH).

6-O-(4-Hydroxy-3-methoxy-E-cinnamoyl): **Arillatose C** [291744-51-9]
C₂₈H₄₀O₁₉ 680.613

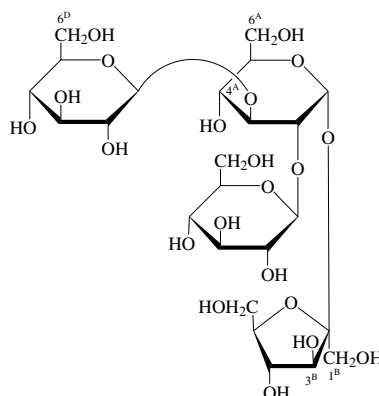
Constit. of the roots of *Polygala arillata*. Amorph. powder. $[\alpha]_D^{25}$ +15.8 (c, 0.13 in MeOH). λ_{\max} 245 (log ϵ 3.81); 295 (log ϵ 3.75); 326 (log ϵ 3.83) (MeOH).

3'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl): **Arillatose E** [291745-22-7]
C₂₈H₄₀O₁₉ 680.613

Constit. of the roots of *Polygala arillata*. Amorph. powder. $[\alpha]_D^{25}$ -20.6 (c, 0.09 in MeOH). λ_{\max} 203 (log ϵ 4.44); 240 (log ϵ 4.05); 294 (log ϵ 3.94); 327 (log ϵ 4.01); 380 (log ϵ 3.35) (MeOH).

Kobayashi, W. et al., *J. Nat. Prod.*, 2000, **63**, 1066-1069

β-D-Fructofuranosyl β-D-glucopyranosyl-(1→3)-[β-D-glucopyranosyl-(1→2)]-α-D-glucopyranoside **F-62**



C₂₄H₄₂O₂₁ 666.583

1^B,4^A-Bis(4-hydroxy-E-cinnamoyl), 3^B-benzoyl, 6^A,6^D-di-Ac: **Reiniosio G** [162478-57-1]
C₅₃H₆₂O₂₈ 1147.056

Constit. of *Polygala reinii*. Powder + 7H₂O. $[\alpha]_D^{20}$ -30.6 (c, 0.4 in MeOH).

1^B-(4-Hydroxy-3-methoxy-E-cinnamoyl), 4^A-(4-hydroxy-E-cinnamoyl), 3^B-benzoyl, 6^A, 6^D-di-Ac: **Reiniosio H** [162478-58-2]
C₅₄H₆₄O₂₉ 1177.082

Constit. of *Polygala reinii*. Powder + 4H₂O. $[\alpha]_D^{20}$ -15.7 (c, 1.1 in MeOH).

1^B-(4-Hydroxy-E-cinnamoyl), 4^A-(4-hydroxy-3-methoxy-E-cinnamoyl), 3^B-benzoyl, 6^A,6^D-di-Ac: **Glomeratose F**
C₅₄H₆₄O₂₉ 1177.082
Constit. of *Polygala glomerata*. Amorph. powder. $[\alpha]_D^{25}$ -5.9 (c, 1.3 in MeOH). λ_{\max} 209 (sh) (log ϵ 4.39); 231 (log ϵ 4.49); 319 (log ϵ 4.49) (MeOH).

1^B,6^A-Bis(4-hydroxy-E-cinnamoyl), 4^A-[β-D-glucopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl, 6^D-Ac: **Glomeratose G**
C₆₇H₇₈O₃₅ 1443.332
Constit. of *Polygala glomerata*. Amorph. powder. $[\alpha]_D^{28}$ -15.5 (c, 0.4 in MeOH). λ_{\max} 209 (log ϵ 4.75); 229 (log ϵ 4.7); 296 (sh) (log ϵ 4.67); 312 (log ϵ 4.71) (MeOH).

1^B-(4-Hydroxy-E-cinnamoyl), 4^A,6^D-bis(4-hydroxy-3-methoxy-E-cinnamoyl): **Dalmaisiose L**
C₅₃H₆₄O₂₉ 1165.071

Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -19.9 (c, 0.47 in MeOH). λ_{\max} 220 (log ϵ 4.6); 231 (log ϵ 4.62); 300 (log ϵ 4.64); 319 (log ϵ 4.73) (MeOH).

1^B-(4-Hydroxy-E-cinnamoyl), 4^A,6^D-bis(4-hydroxy-3-methoxy-E-cinnamoyl), 6^A-Ac: **Dalmaisiose M**
C₅₅H₆₆O₃₀ 1207.108

Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -10.7 (c, 0.29 in MeOH). λ_{\max} 220 (log ϵ 4.62); 231 (log ϵ 4.63); 300 (log ϵ 4.65); 320 (log ϵ 4.74) (MeOH).

1^B-(4-Hydroxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-E-cinnamoyl], 3^B-benzoyl, 6^A-Ac: **Dalmaisiose D**

C₅₇H₇₀O₃₁ 1251.161
Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -41.3 (c, 1 in MeOH). λ_{\max} 228 (log ϵ 4.5); 300 (log ϵ 4.59); 309 (log ϵ 4.62) (MeOH).

1^B-(4-Hydroxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl, 6^A-Ac: **Dalmaisiose E**

C₅₈H₇₂O₃₂ 1281.188
Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -69 (c, 0.3 in MeOH). λ_{\max} 230 (log ϵ 4.61); 299 (log ϵ 4.64); 313 (log ϵ 4.68) (MeOH).

1^B-(4-Hydroxy-3-methoxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-E-cinnamoyl], 3^B-benzoyl, 6^A-Ac: **Dalmaisiose F**
C₅₈H₇₂O₃₂ 1281.188
Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -45.7 (c, 0.44 in MeOH). λ_{\max} 229 (log ϵ 4.58); 298 (log ϵ 4.62); 310 (log ϵ 4.64) (MeOH).

1^B,6^D-Bis(4-hydroxy-E-cinnamoyl), 4^A-(4-hydroxy-3-methoxy-E-cinnamoyl), 3^B-benzoyl: **Dalmaisiose J**
C₅₉H₆₆O₂₉ 1239.153
Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -14.5 (c, 0.37 in MeOH). λ_{\max} 230 (log ϵ 4.7); 301 (log ϵ 4.77); 316 (log ϵ 4.83) (MeOH).

1^B-(4-Hydroxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-E-cinnamoyl], 3^B-benzoyl, 6^A,6^D-di-Ac: **Dalmaisiose B**
C₅₉H₇₂O₃₂ 1293.199
Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -46 (c, 0.49 in MeOH). λ_{\max} 210 (log ϵ 4.43); 228 (log ϵ 4.55); 300 (log ϵ 4.64); 309 (log ϵ 4.66) (MeOH).

1^B-(4-Hydroxy-3-methoxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl, 6^A-Ac: **Dalmaisiose G**
C₅₉H₇₄O₃₃ 1311.214
Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -41.4 (c, 0.9 in MeOH). λ_{\max} 219 (log ϵ 4.46); 233 (log ϵ 4.48); 297 (log ϵ 4.43); 323 (log ϵ 4.51) (MeOH).

1^B,4^A,6^D-Tris(4-hydroxy-E-cinnamoyl), 3^B-benzoyl, 6^A-Ac: **Dalmaisiose H**
C₆₀H₆₆O₂₉ 1251.164

Constit. of the roots of *Polygala dalmaisiana*. Amorph. powder. $[\alpha]_D^{23}$ -11.5 (c, 0.86 in MeOH). λ_{\max} 211 (log ϵ 4.64); 229 (log ϵ 4.74); 300 (log ϵ 4.85); 313 (log ϵ 4.91) (MeOH).

1^B-(4-Hydroxy-3-methoxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl, 6^A,6^D-di-Ac: **Dalmaisiose C**
C₆₁H₇₆O₃₄ 1353.251

Constit. of the roots of *Polygala dalmaisia*. Amorph. powder. $[\alpha]_D^{23}$ -67.8 (c, 0.2 in MeOH). λ_{\max} 220 (log ϵ 4.53); 232 (log ϵ 4.54); 298 (log ϵ 4.48); 323 (log ϵ 4.54) (MeOH).

$1^B, 6^D$ -Bis(4-hydroxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl, 6^A-Ac: **Dalmaiose I**

C₆₇H₇₈O₃₄ 1427.333
Constit. of the roots of *Polygala dalmaisia*. Amorph. powder. $[\alpha]_D^{23}$ -66.2 (c, 1.07 in MeOH). λ_{\max} 230 (log ϵ 4.73); 300 (log ϵ 4.8); 315 (log ϵ 4.84) (MeOH).

$1^B, 6^D$ -Bis(4-hydroxy-3-methoxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl: **Dalmaiose P**

C₆₇H₈₀O₃₅ 1445.348
Constit. of the roots of *Polygala dalmaisia*. Amorph. powder. $[\alpha]_D^{23}$ -61.8 (c, 0.33 in MeOH). λ_{\max} 219 (log ϵ 4.63); 232 (log ϵ 4.63); 298 (log ϵ 4.59); 323 (log ϵ 4.67) (MeOH).

1^B -(4-Hydroxy-E-cinnamoyl), 6^D-(4-hydroxy-3-methoxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl, 6^A-Ac: **Dalmaiose N**

C₆₈H₈₀O₃₅ 1457.359
Constit. of the roots of *Polygala dalmaisia*. Amorph. powder. $[\alpha]_D^{23}$ -67.9 (c, 0.4 in MeOH). λ_{\max} 231 (log ϵ 4.58); 300 (log ϵ 4.57); 318 (log ϵ 4.63) (MeOH).

1^B -(4-Hydroxy-3-methoxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 6^D-(4-hydroxy-E-cinnamoyl), 3^B-benzoyl, 6^A-Ac: **Dalmaiose K**

C₆₈H₈₀O₃₅ 1457.359
Constit. of the roots of *Polygala dalmaisia*. Amorph. powder. $[\alpha]_D^{23}$ -60.3 (c, 0.68 in MeOH). λ_{\max} 220 (log ϵ 4.64); 231 (log ϵ 4.67); 300 (log ϵ 4.69); 318 (log ϵ 4.73) (MeOH).

$1^B, 6^D$ -Bis(4-hydroxy-3-methoxy-E-cinnamoyl), 4^A-[α-L-rhamnopyranosyl-(1→4)-4-hydroxy-3-methoxy-E-cinnamoyl], 3^B-benzoyl, 6^A-Ac: **Dalmaiose O**

C₆₉H₈₂O₃₆ 1487.385
Constit. of the roots of *Polygala dalmaisia*. Amorph. powder. $[\alpha]_D^{23}$ -61.5 (c, 1.2 in MeOH). λ_{\max} 219 (log ϵ 4.68); 234 (log ϵ 4.69); 297 (log ϵ 4.65); 325 (log ϵ 4.75) (MeOH).

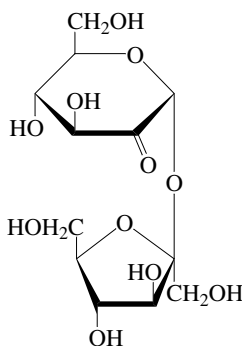
Saitoh, H. *et al.*, *Chem. Pharm. Bull.*, 1994, **42**, 1879-1885

Zhang, D. *et al.*, *Phytochemistry*, 1998, **47**, 45-52 (*Glomeratoses*)

Kobayashi, S. *et al.*, *J. Nat. Prod.*, 2002, **65**, 319-328 (*Dalmaioses*)

β-D-Fructofuranosyl α-D-ara-bino-hexopyranosid-2-ulose, 9CI

2-Ketosucrose
[78261-84-4]



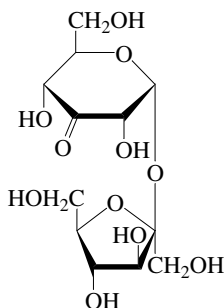
C₁₂H₂₀O₁₁ 340.283

Produced from sucrose by *Agrobacterium tumefaciens*. Syrup. $[\alpha]_D +19.6$ (c, 0.25 in H₂O).

Hough, L. *et al.*, *Carbohydr. Res.*, 1981, **92**, 314-317 (*synth*)

β-D-Fructofuranosyl α-D-ribo-hexopyranosid-3-ulose, 9CI

3-Ketosucrose
[1883-12-1]



C₁₂H₂₀O₁₁ 340.283

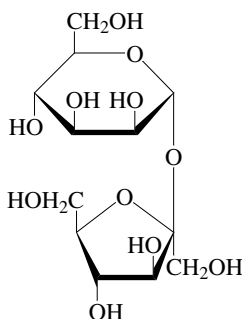
Produced from sucrose by *Agrobacterium tumefaciens*. $[\alpha]_D +22.5$ (c, 0.2 in H₂O).

Kurowski, W.M. *et al.*, *J. Appl. Chem. Biotechnol.*, 1978, **28**, 638-640 (*manuf*)

Hough, L. *et al.*, *Carbohydr. Res.*, 1980, **84**, 95-102; 1981, **92**, 314-317 (*synth, purifn*)

β-D-Fructofuranosyl α-D-man-nopyranoside, 9CI

[79324-70-2]



C₁₂H₂₂O₁₁ 342.299

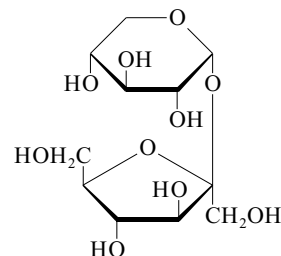
F-63

Syrup. $[\alpha]_D^{20} +19.1$ (c, 1.2 in H₂O). 5 times less sweet than Sucrose, S-92.

Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1997, **303**, 293-302 (*synth, pmr, cmr*)

β-D-Fructofuranosyl α-D-xylopyranoside, 9CI

α-D-Xylopyranosyl β-D-fructofuranoside
[512-66-3]



C₁₁H₂₀O₁₀ 312.273

Non-reducing disaccharide. Synth. by the transferase action of *Aerobacter levanicum* levansucrase on raffinose in the presence of xylose. Also formed by the reversal of normal levan synthesis when *Bacillus subtilis* levansucrase acts on levan plus xylose.
 $[\alpha]_D +62$ (H₂O).

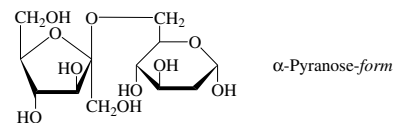
Avigad, G. *et al.*, *Biochim. Biophys. Acta*, 1956, **22**, 196 (*synth*)

Peaud-Lenoel, C. *et al.*, *Bull. Soc. Chim. Biol.*, 1957, **39**, 747

Tanaka, T. *et al.*, *J. Biochem. (Tokyo)*, 1981, **90**, 521 (*synth*)

6-O-β-D-Fructofuranosyl-2-deoxy-D-glucose

6-O-β-D-Fructofuranosyl-2-deoxy-D-arabino-hexose, 9CI
[57440-92-3]



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

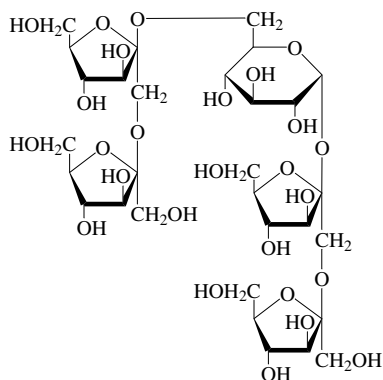
Reducing disaccharide. Isolated from plants (tobacco, horseradish and peas) which had been fed 2-deoxyglucose.
 $[\alpha]_D^{20} +28.2$ (c, 0.91 in H₂O).

Barber, G.A. *et al.*, *J.A.C.S.*, 1959, **81**, 3722 (*isol*)

Zemek, J. *et al.*, *Z. Pflanzenphysiol.*, 1975, **76**, 114; *CA*, **84**, 13358g

F-65

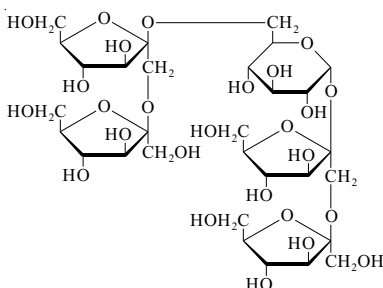
β-D-Fructofuranosyl-(2→1)-β-D-fructofuranosyl β-D-fructofuranosyl-(2→1)-β-D-fructofuranosyl-(2→6)-α-D-glucopyranoside **F-68**



C₃₀H₅₂O₂₆ 828.725
Prod. by *Penicillium citrium*.

Yang, H. *et al.*, *Magn. Reson. Chem.*, 2003, **41**, 223-226 (isol, pmr, cmr)

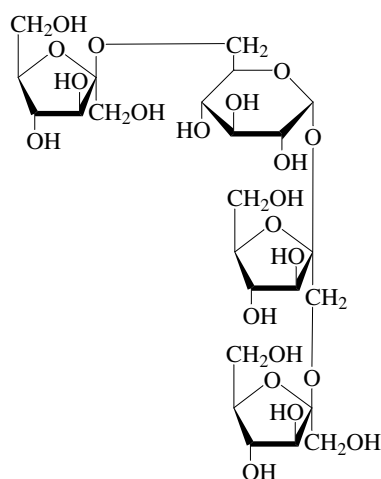
β-D-Fructofuranosyl-(2→1)-β-D-fructofuranosyl β-D-fructofuranosyl-(2→1)-β-D-fructofuranosyl-(2→6)-α-D-glucopyranoside, 9CI **F-69**
β-D-Fructofuranosyl-(2→1)-β-D-fructofuranosyl-(2→6)-α-D-glucopyranosyl-(1→2)-β-D-fructofuranosyl β-D-fructofuranoside [71231-05-5]



C₃₀H₅₂O₂₆ 828.725
Isol. from the roots of asparagus (*Asparagus officinalis*).
[α]_D²⁰ -6.6 (H₂O).

Shiomi, N. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 1375 (isol)

β-D-Fructofuranosyl-(2→1)-β-D-fructofuranosyl β-D-fructofuranosyl-(2→6)-α-D-glucopyranoside [29837-39-6] **F-70**

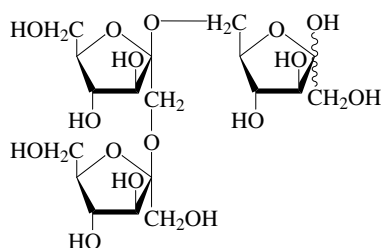


C₂₄H₄₂O₂₁ 666.583

A fructan. Isol. from the roots of *Asparagus officinalis* (asparagus).

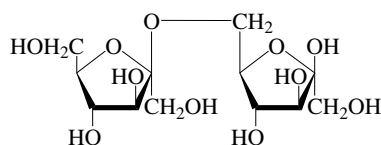
Fukushi, E. *et al.*, *Magn. Reson. Chem.*, 2000, **38**, 1005-1011 (isol, pmr, cmr)

β-D-Fructofuranosyl-(2→1)-β-D-fructofuranosyl-(2→6)-D-fructose **F-71**
[380383-44-8]



C₁₈H₃₂O₁₆ 504.441
Isol. from chicory. Not obt. in pure state.
Timmermans, J.W. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 375-395 (isol, pmr, cmr)

6-O-β-D-Fructofuranosyl-D-fructose, 9CI, 8CI **F-72**
Levanbiose [17669-60-2]



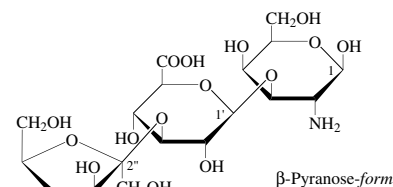
β-Furanose-form

C₁₂H₂₂O₁₁ 342.299
Isol. from the hydrolysates of Levan, L-34.
Present in chicory.
[α]_D¹⁷ -21 (H₂O).

Schlubach, H.H. *et al.*, *Annalen*, 1955, **595**, 224 (isol)

Aspinall, G.O. *et al.*, *J.C.S.*, 1955, 1106 (isol)
Avigad, G. *et al.*, *Carbohydr. Res.*, 1967, **5**, 417 (chromatog)
Tanaka, T. *et al.*, *J. Biochem. (Tokyo)*, 1981, **90**, 521 (occur)
Liu, J. *et al.*, *Carbohydr. Res.*, 1992, **232**, 1 (conformn)
Timmermans, J.W. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 375-395 (isol, pmr, cmr)

β-D-Fructofuranosyl-(2→3)-β-D-glucopyranuronosyl-(1→3)-2-amino-2-deoxy-D-galactose **F-73**



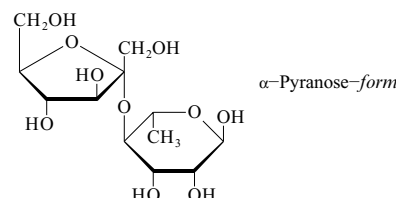
C₁₈H₃₁NO₁₆ 517.44
Repeat unit of the K4-specific capsular polysaccharide of *Escherichia coli* 05:K4:H4.

β-Pyranose-form

N-Ac: [117823-30-0]
C₂₀H₃₃NO₁₇ 559.477
Syrup.

Rodriguez, M.L. *et al.*, *Eur. J. Biochem.*, 1988, **177**, 117 (occur, pmr)

4-O-α-D-Fructofuranosyl-L-rhamnose **F-74**
6-Deoxy-4-O-α-D-fructofuranosyl-L-mannose



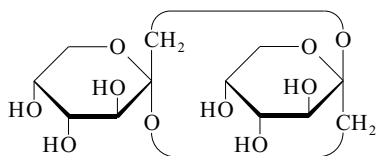
C₁₂H₂₂O₁₀ 326.3

α-Pyranose-form

Me glycoside, 2,3-O-isopropylidene, tetra-benzoyl: [80763-59-3]
C₄₄H₄₄O₁₄ 796.823
[α]_D²⁰ -11 (c, 1 in CHCl₃).

Bakinovskii, L.V. *et al.*, *Carbohydr. Res.*, 1982, **99**, 189

α -D-Fructopyranose β -D-fructopyranose 1,2':2,1'-dianhydride, 9CI F-75
Di-D-fructopyranose 1,2':2,1'-dianhydride. Diheterolevulosan I
 [97415-69-5]



$C_{12}H_{20}O_{10}$ 324.284

Formed by the reversion of fructose in strong acid and during acid hydrolysis of inulin. Mp 290° (266-267°). $[\alpha]_D^{20}$ -45 (c, 6 in H_2O).

Hexa-Ac: [97415-72-0]

$C_{24}H_{32}O_{16}$ 576.507

Mp 171-173°. $[\alpha]_D$ -57 (c, 3.5 in $CHCl_3$).

[70051-51-3]

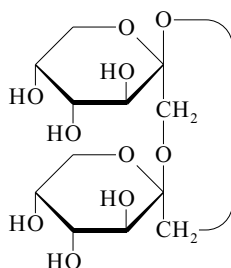
Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1953, **7**, 969

Boggs, L.A. *et al.*, *J.A.C.S.*, 1956, **78**, 1878

Defaye, J. *et al.*, *Carbohydr. Res.*, 1985, **136**, 53 (*synth, cmr*)

Manley-Harris, M. *et al.*, *Carbohydr. Res.*, 1992, **226**, 327 (*ms*)

β -D-Fructopyranose β -D-fructopyranose 1,2':2,1'-dianhydride F-76
Di-beta-D-fructopyranose 1,2':2,1'-dianhydride. Diheterolevulosan IV
 [50692-24-5]



$C_{12}H_{20}O_{10}$ 324.284

Formed by reversion of fructose in strong acid and during acid hydrol. of inulin. Mp 275-277°. $[\alpha]_D^{20}$ -313 (c, 3.5 in H_2O).

Hexa-Ac: [50692-20-1]

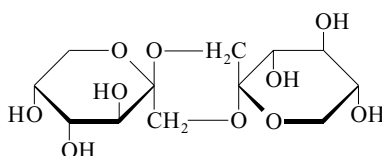
$C_{24}H_{32}O_{16}$ 576.507

Mp 269-270°. $[\alpha]_D$ -195 (c, 1.1 in $CHCl_3$). Physical constants given in the early lit. may be incorrect.

Wickberg, B. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 436

Defaye, J. *et al.*, *Carbohydr. Res.*, 1985, **136**, 53 (*synth, cmr*)

β -D-Fructopyranose α -D-sorbopyranose 1,2':2,1'-dianhydride F-77
 [137253-46-4]



$C_{12}H_{20}O_{10}$ 324.284

Major prod. (57%) from a mixt. of D-sorbose + D-fructose + HF. Cryst. (EtOH aq.). Mp 210° dec. $[\alpha]_D^{20}$ -43 (c, 1.4 in H_2O).

Hexa-Ac: [137253-47-5]

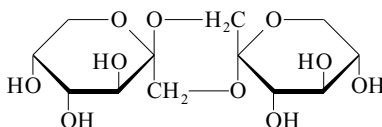
$C_{24}H_{32}O_{16}$ 576.507

Cryst. (CH_2Cl_2 /EtOH). Mp 236-238°.

$[\alpha]_D^{20}$ -42 (c, 2.2 in $CHCl_3$).

Bock, K. *et al.*, *Carbohydr. Res.*, 1991, **216**, 141 (*synth, pmr, cmr*)

β -D-Fructopyranose α -L-sorbopyranose 1,2':2,1'-dianhydride F-78
 [137253-48-6]



$C_{12}H_{20}O_{10}$ 324.284

Cryst. (MeOH/EtOH). Mp 194-196°. $[\alpha]_D^{20}$ -272 (c, 0.6 in H_2O).

Hexa-Ac: [137253-49-7]

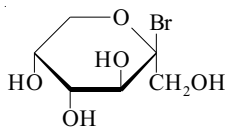
$C_{24}H_{32}O_{16}$ 576.507

Mp 229-231°. $[\alpha]_D^{20}$ -157 (c, 1.1 in $CHCl_3$).

Bock, K. *et al.*, *Carbohydr. Res.*, 1991, **216**, 141 (*synth, pmr, cmr*)

Fructopyranosyl bromide

F-79



$C_6H_{11}BrO_5$ 243.054

β -D-form

Tetra-Ac: 1,3,4,5-Tetra-O-acetyl- β -D-fructopyranosyl bromide

[14218-13-4]

$C_{14}H_{19}BrO_9$ 411.203

Cryst. (Et_2O). Mp 65°. $[\alpha]_D^{20}$ -189.1 ($CHCl_3$).

1,4,5-Tribenzoyl, 3-mesyl: 1,4,5-Tri-O-benzoyl-3-O-mesyl- β -D-fructopyranosyl bromide

$C_{28}H_{25}BrO_{10}S$ 633.469

Cryst. (Et_2O /pentane). Mp 157-158° dec. $[\alpha]_D^{20}$ -207 (c, 0.96 in CH_2Cl_2).

Tetrakis(p-nitrobenzoyl): [70551-21-2]

Cryst. ($Et_2O/CHCl_3$). Mp 162-163°. $[\alpha]_D^{25}$ -170 (c, 1.2 in $CHCl_3$).

Brauns, D.H. *et al.*, *J.A.C.S.*, 1923, **45**, 2381 (β -tetra-Ac)

Yamana, S. *et al.*, *J.O.C.*, 1966, **31**, 3698

(β -tetra-Ac)

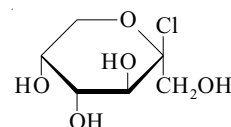
Ness, R.K. *et al.*, *J.O.C.*, 1968, **33**, 181

(β -tribenzoyl)

Steinlin, H. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 378 (β -tetranitrobenzoyl, *pmr, cmr*)

Fructopyranosyl chloride

F-80



$C_6H_{11}ClO_5$ 198.603

β -D-form

Tetra-Ac: 1,3,4,5-Tetra-O-acetyl- β -D-fructopyranosyl chloride

[14262-86-3]

$C_{14}H_{19}ClO_9$ 366.751

Cryst. (EtOH). Mp 108°. $[\alpha]_D^{20}$ +45.3 ($CHCl_3$).

1,4,5-Tribenzoyl, 3-mesyl: 1,4,5-Tri-O-benzoyl-3-O-mesyl- β -D-fructopyranosyl chloride

[15080-06-5]

$C_{28}H_{25}ClO_{10}S$ 589.018

Cryst. (Et_2O /pentane). Mp 161-163°. $[\alpha]_D^{20}$ -178 (c, 0.98 in CH_2Cl_2).

Tetrabenzoyl: 1,3,4,5-Tetra-O-benzoyl- β -D-fructopyranosyl chloride

[70551-23-4]

$C_{34}H_{27}ClO_9$ 615.035

Liq. $[\alpha]_D^{25}$ -149.6 (c, 1.3 in $CHCl_3$).

Tetrakis(p-nitrobenzoyl): [70551-20-1]

Cryst. (CH_2Cl_2/Et_2O). Mp 200-203°. $[\alpha]_D^{25}$ -193 (c, 1 in $CHCl_3$).

Brauns, D.H. *et al.*, *J.A.C.S.*, 1920, **42**, 1846 (β -tetra-Ac)

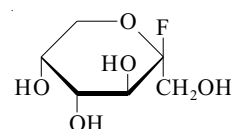
Ness, R.K. *et al.*, *J.O.C.*, 1968, **33**, 181

(β -tribenzoyl)

Steinlin, H. *et al.*, *Helv. Chim. Acta*, 1979, **62**, 378 (β -tetrabenzoyl, *ir, pmr, cmr*)

Fructopyranosyl fluoride

F-81



$C_6H_{11}FO_5$ 182.148

β -D-form

Tetra-Ac: 1,3,4,5-Tetra-O-acetyl- β -D-fructopyranosyl fluoride

[2823-45-2]

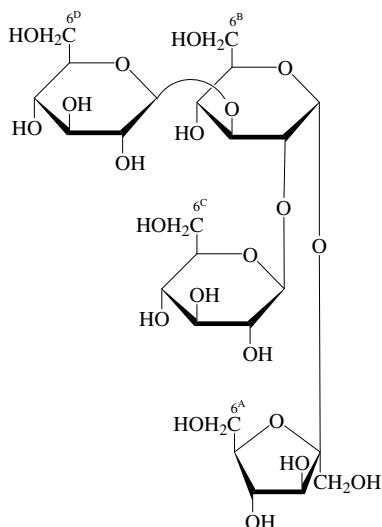
$C_{14}H_{19}FO_9$ 350.297

Cryst. (EtOH). V. sol. $CHCl_3$; spar. sol. EtOH, petrol. Mp 112°. $[\alpha]_D^{20}$ -90.4 ($CHCl_3$). Stable at r.t.

Brauns, D.H. *et al.*, *J.A.C.S.*, 1923, **45**, 2381 (β -tetra-Ac)

Yamana, S. *et al.*, *J.O.C.*, 1966, **31**, 3698 (β -tetra-Ac)

β-D-Fructopyranosyl β-D-glucopyranosyl-(1 → 2)-[β-D-glucopyranosyl-(1 → 3)]-β-D-glucopyranoside **F-82**



C₂₄H₄₂O₂₁ 666.583

4^B-(4-Hydroxycinnamoyl), 1^A,3^A-dibenzoyl, 6^B,6^D-di-Ac: Watterose H
C₅₁H₆₀O₂₇ 1105.019
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -41.2 (c, 1.9 in MeOH). λ_{max} 230 (log ε 4.53); 283 (log ε 4.11); 301 (log ε 4.28); 314 (log ε 4.35) (MeOH).

1^A-(3,4-Dihydroxycinnamoyl), 4^B-(4-hydroxycinnamoyl), 3^A-benzoyl: Watterose D
C₄₉H₅₈O₂₇ 1078.981
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ +17.5 (c, 1 in MeOH). λ_{max} 223 (log ε 4.57); 232 (log ε 4.61); 257 (log ε 4.31); 301 (log ε 4.51); 391 (log ε 4.6) (MeOH).

1^A-(3,4-Dihydroxycinnamoyl), 4^B-O-(4-hydroxycinnamoyl), 3^A-benzoyl, 6^D-Ac: Watterose C
C₅₁H₆₀O₂₈ 1121.018
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -6.6 (c, 1.1 in MeOH). λ_{max} 223 (log ε 4.45); 230 (log ε 4.55); 300 (log ε 4.53); 321 (log ε 4.6) (MeOH).

4^B-(3,4-Dihydroxycinnamoyl), 1^A,3^A-dibenzoyl, 6^D-Ac: Watterose I
C₄₉H₅₈O₂₇ 1078.981
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -46.8 (c, 1 in MeOH). λ_{max} 224 (log ε 4.47); 231 (log ε 4.49); 284 (log ε 4.01); 301 (log ε 4.16); 328 (log ε 4.28) (MeOH).

1^A,6^B-Bis-(3,4-dihydroxycinnamoyl), 3^A-benzoyl, 6^D-Ac: Watterose J
C₅₁H₆₀O₂₉ 1137.018
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -39 (c, 1.2 in MeOH). λ_{max} 221 (log ε 4.57); 234 (log ε 4.52); 300 (log ε 4.44); 329 (log ε 4.55) (MeOH).

1^A,4^B-Bis-(3,4-dihydroxycinnamoyl), 3^A-benzoyl, 6^B,6^D-di-Ac: Watterose G
C₅₃H₆₂O₃₀ 1179.055

Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -12.1 (c, 1.3 in MeOH). λ_{max} 221 (log ε 4.47); 233 (log ε 4.43); 300 (log ε 4.33); 331 (log ε 4.48) (MeOH).

1^A-(3,4-Dihydroxycinnamoyl), 4^B-(4-hydroxycinnamoyl), 3^A-benzoyl, 6^B,6^D-di-Ac: Watterose B
C₅₃H₆₂O₂₉ 1163.055
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -5 (c, 1 in MeOH). λ_{max} 222 (log ε 4.46); 231 (log ε 4.47); 301 (log ε 4.48); 319 (log ε 4.55) (MeOH).

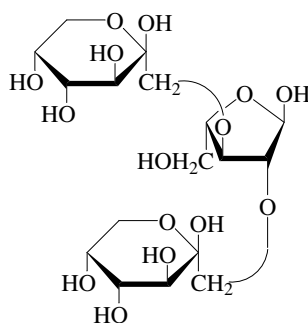
1^A-(4-Hydroxy-3-methoxycinnamoyl), 4^B-(4-hydroxycinnamoyl), 3^A-benzoyl, 6^D-Ac: Watterose A
C₅₂H₆₂O₂₈ 1135.045
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -25.7 (c, 0.98 in MeOH). λ_{max} 221 (log ε 4.45); 231 (log ε 4.5); 300 (log ε 4.5); 320 (log ε 4.59) (MeOH).

4^B-(4-Hydroxy-3-methoxycinnamoyl), 1^A-(3,4-dihydroxycinnamoyl), 3^A-benzoyl, 6^D-Ac: Watterose F
C₅₂H₆₂O₂₉ 1151.044
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -8 (c, 1 in MeOH). λ_{max} 221 (log ε 4.46); 233 (log ε 4.44); 300 (log ε 4.37); 329 (log ε 4.52) (MeOH).

4^B-(4-Hydroxy-3-methoxycinnamoyl), 1^A-(3,4-dihydroxycinnamoyl), 3^A-benzoyl, 6^B,6^D-di-Ac: Watterose E
C₅₄H₆₄O₃₀ 1193.082
Constit. of *Polygala wattersii*. Amorph. powder. [α]_D²³ -9.1 (c, 1.3 in MeOH). λ_{max} 221 (sh) (log ε 4.52); 233 (sh) (log ε 4.49); 300 (log ε 4.41); 329 (log ε 4.57) (MeOH).

Kobayashi, W. et al., *J. Nat. Prod.*, 2000, **63**, 1121-1126

β-D-Fructopyranosyl-(1 → 2)[β-D-fructopyranosyl-(1 → 3)]-L-arabinose **F-83**



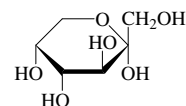
C₁₇H₃₀O₁₅ 474.415

α-Furanose-form

Tris-Me glycoside:
C₂₀H₃₆O₁₅ 516.495
Constit. of the stems of *Epigynum aurilum*. Oil. [α]_D²⁵ -79.3 (c, 0.95 in MeOH).

Cao, J.-X. et al., *Acta Chim. Sin. (Engl. edn.)*, 2003, **21**, 1665-1668 (isol, pmr, cmr, ms)

Fructose, 9CI, 8CI **F-84**
Levulose. arabino-Hexulose. Fruit sugar. Laevulose. α-Acrose
[30237-26-4]



α-D-Pyranose-form

C₆H₁₂O₆ 180.157

Equilib. difficult to study, but an aq. soln. prob. contains approx. 70-75% β-Pyr, 20-23% β-Fur, 5% α-Fur, 0-2% α-Pyr and 0-0.7% open-chain forms. In Py and DMSO soln. there are higher proportions of furanose forms. α-Acrose was apparently an old synonym for the racemate.

D-form [57-48-7]

Prepd. on large scale from invert sugar (hydrol. prod. of sucrose with dil. acid) or hydrolysed natural inulins. Fructose can be separated from glucose by precipitation of its Ca salt complex. Inulin from dandelion roots has also been used as a source. Occurs in honey, a large number of fruits, particularly apples and tomatoes, and detected in mammalian semen. Present in polymeric form in the inulins, the energy reserve polysaccharides of many plants, e.g. dahlia and Jerusalem artichoke tubers, and in Levan, L-34 which is found in grasses. Sucrose consists of fructofuranose glycosidically linked to the anomeric centre of D-glucopyranose. Fluid and nutrient replenisher, nutritive sweetener.

Mp 102-104°. [α]_D -133.5. [α]_D -92.4 (c, 4 in H₂O). pK_{a1} 12.03 (25°). Sweetness = 0.84 × sucrose (sometimes stated to be sweeter than sucrose).

► Gastrointestinal effects by ingestion (large dose).

Fe³⁺ complex: See Ferric fructose, F-2
p-Nitrophenylhydrazone: Mp 180-181°.

Anilide: Mp 147°. [α]_D -194 (EtOH).

1-Phosphate: See Fructose 1-dihydrogen phosphate, F-87

2-Phosphate: See Fructose 2-dihydrogen phosphate, F-88

6-Phosphate: See Fructose 6-dihydrogen phosphate, F-89

1,6-Diphosphate: See Fructose 1,6-bis(dihydrogen phosphate), F-85

1,3,4,5,6-Penta-Ac: 1,3,4,5,6-Penta-O-acetyl-D-fructose
[6341-07-7]
C₁₆H₂₂O₁₁ 390.343
Mp 68-69°. [α]_D +34.8 (CHCl₃).

1,3,4,5,6-Pentabenzoyl: 1,3,4,5,6-Penta-O-benzoyl-D-fructose
[83032-14-8]
C₄₁H₃₂O₁₁ 700.697
Mp 125°. [α]_D +40.9 (CHCl₃).

1-O-(3,4,5-Trihydroxybenzoyl): 1-O-Galloylfructose
[94356-19-1]

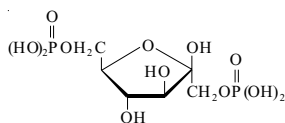
- $C_{13}H_{16}O_{10}$ 332.263
Isol. from commercial rhubarb (*Rheum* sp.). Needles + $\frac{1}{2}H_2O$ (H_2O).
Mp 168-169°. $[\alpha]_D^{25}$ -41.2 (c, 0.59 in MeOH). Exists as an equilibrated mixt. of α - and β -furanose and β -pyranose-forms.
- 6-O-(3,4,5-Trihydroxybenzoyl): **6-O-Galloylfructose**
[115713-47-8]
 $C_{13}H_{16}O_{10}$ 332.263
Constit. of *Saxifraga stellaris*. Glass. $[\alpha]_D^{21}$ +30.8 (c, 0.1 in MeOH). Anomeric mixture of furanose forms.
- Di-Et dithioacetal*:
 $C_{10}H_{22}O_5S_2$ 286.413
Mp 67°. $[\alpha]_D$ +35.8 (MeOH).
- Di-Et dithioacetal*, 1,3,4,5,6-penta-Ac: [7621-93-4]
 $C_{20}H_{32}O_{10}S_2$ 496.599
Mp 80-81°. $[\alpha]_D$ +20 (CHCl₃).
- 1,3,4,6-Tetrabenzyl: 1,3,4,6-Tetra-O-benzyl-D-fructose
[28697-72-5]
 $C_{34}H_{36}O_6$ 540.655
Cryst. (diisopropyl ether/pentane).
Mp 42-43°. $[\alpha]_D^{20}$ +6.5 \rightarrow +8.7 (c, 1.4 in CHCl₃).
- α -D-Pyranose-form** [10489-81-3]
Penta-Ac: 1,2,3,4,5-Penta-O-acetyl- α -D-fructopyranose
[20764-62-9]
 $C_{16}H_{22}O_{11}$ 390.343
Mp 122-123°. $[\alpha]_D$ +47.4 (CHCl₃).
- Me glycoside*: See Methyl fructopyranoside, M-182
- β -D-Pyranose-form** [7660-25-5]
► LS7000000
1,3,4,5-Tetra-Ac: 1,3,4,5-Tetra-O-acetyl- β -D-fructopyranose
[55221-54-0]
 $C_{14}H_{20}O_{10}$ 348.306
Mp 131-132°. $[\alpha]_D$ -91.6 (CHCl₃).
- Penta-Ac*: 1,2,3,4,5-Penta-O-acetyl- β -D-fructopyranose
[20764-61-8]
 $C_{16}H_{22}O_{11}$ 390.343
Mp 108-109°. $[\alpha]_D$ -120.9 (CHCl₃).
- 1,3,4,5-Tetrabenzoyl: 1,3,4,5-Tetra-O-benzoyl- β -D-fructopyranose
[7143-89-7]
 $C_{34}H_{28}O_{10}$ 596.589
Cryst. (EtOH). Mp 174-175°. $[\alpha]_D^{20}$ -165 (CHCl₃).
- 1,3,4,5-Tetrabenzoyl, 2-Ac: 2-O-Acetyl-1,3,4,5-tetra-O-benzoyl- β -D-fructopyranose
 $C_{36}H_{30}O_{11}$ 638.626
Mp 112-113°. $[\alpha]_D$ -160.7 (CHCl₃).
- 1,2-O-Isopropylidene: See 1,2-O-Isopropylidene-fructose, I-62
- 1,2,4,5-Di-O-isopropylidene: See 1,2,4,5-Di-O-isopropylidene-fructopyranose, D-714
- 1,2,4,5-Di-O-cyclohexylidene: 1,2,4,5-Di-O-cyclohexylidene- β -D-fructopyranose
[18608-92-9]
 $C_{18}H_{28}O_6$ 340.416
Mp 142-145°. $[\alpha]_D$ -123 (Me₂CO).
- 2,3,4,5-Di-O-isopropylidene: See 2,3,4,5-Di-O-isopropylidene-fructopyranose, D-715
- 2,3,4,5-Di-O-benzylidene: 2,3,4,5-Di-O-benzylidene- β -D-fructopyranose
[35521-92-7]
 $C_{20}H_{20}O_6$ 356.374
Mp 160°. $[\alpha]_D$ -22.9 (CHCl₃).
- 2,3,4,5-Di-O-benzylidene, 1-Ac: 1-O-Acetyl-2,3,4,5-di-O-benzylidene- β -D-fructopyranose
[35521-93-8]
 $C_{22}H_{22}O_7$ 398.412
Mp 145-146°. $[\alpha]_D^{20}$ -42.2 (CHCl₃).
- 2,3,4,5-Di-O-benzylidene, 1-tosyl: 2,3,4,5-Di-O-benzylidene-1-O-tosyl- β -D-fructopyranose
 $C_{27}H_{26}O_8S$ 510.564
Mp 171°. $[\alpha]_D$ -34.9 (CHCl₃).
- 1-Me, 2,3,4,5-di-O-benzylidene: 2,3,4,5-Di-O-benzylidene-1-O-methyl- β -D-fructopyranose
[70802-03-8]
 $C_{21}H_{22}O_6$ 370.401
Mp 113-114°. $[\alpha]_D$ -30.5 (CHCl₃).
- Me glycoside*: See Methyl fructopyranoside, M-182
- Me glycoside*, 2,3,4,5-tetra-Ac: 2,3,4,5-Tetra-O-acetyl-1-O-methyl- β -D-fructopyranose
 $C_{15}H_{22}O_{10}$ 362.333
Mp 99°. $[\alpha]_D$ -120 (CHCl₃).
- Butyl glycoside*: Butyl β -D-fructopyranoside
[67884-27-9]
 $C_{10}H_{20}O_6$ 236.264
Constit. of *Cynomorium*, *Diospyros*, *Smilax*, *Liriope* and *Saussurea* spp. Needles (EtOAc), cryst. (EtOH).
Mp 156-158°. $[\alpha]_D$ -145 (MeOH).
- 2-Chloroethyl glycoside: 2-Chloroethyl- β -D-fructopyranoside
[84543-36-2]
 $C_8H_{15}ClO_6$ 242.656
Cryst. (H_2O). Mp 146-147°. $[\alpha]_D^{23}$ -148 (c, 1 in H_2O).
- 2-Butyl: 2-D-Butyl- β -D-fructopyranose
 $C_{10}H_{20}O_6$ 236.264
Constit. of *Inula crithmoides*.
- α -D-Furanose-form** [10489-79-9]
Penta-Ac: 1,2,3,4,6-Penta-O-acetyl- α -D-fructofuranose
[58670-14-7]
 $C_{16}H_{22}O_{11}$ 390.343
Amorph. $[\alpha]_D^{22}$ +58 (c, 1 in CHCl₃).
- 1,6-Ditosyl: 1,6-Di-O-tosyl- α -D-fructofuranose
 $C_{20}H_{24}O_{10}S_2$ 488.536
Amorph. $[\alpha]_D$ +17.1 (CHCl₃).
- 1,3,4,6-Tetrabenzoyl: 1,3,4,6-Tetra-O-benzoyl- α -D-fructofuranose
[80763-56-0]
 $C_{34}H_{28}O_{10}$ 596.589
Cryst. (MeOH). Mp 121-123°. $[\alpha]_D$ -3 (c, 1 in CHCl₃).
- Me glycoside*: See Methyl fructofuranoside, M-181
- Butyl glycoside*: Butyl α -D-fructofuranoside
[80971-59-1]
 $C_{10}H_{20}O_6$ 236.264
Constit. of *Cynomorium songaricum* (Cynomoriaceae). Amorph. powder. $[\alpha]_D$ +96 (MeOH).
- 2-Butyl: 2-O-Butyl- α -D-fructofuranose
 $C_{10}H_{20}O_6$ 236.264
Constit. of *Inula crithmoides*.
- β -D-Furanose-form** [470-23-5]
Penta-Ac: 1,2,3,4,6-Penta-O-acetyl- β -D-fructofuranose
[53717-02-5]
 $C_{16}H_{22}O_{11}$ 390.343
Mp 57-58°. $[\alpha]_D^{22}$ -9 (c, 1 in CHCl₃).
- 1,3,4,6-Tetrabenzoyl, 2-Ac: 2-O-Acetyl-1,3,4,6-tetra-O-benzoyl- β -D-fructofuranose
[92588-03-9]
 $C_{36}H_{30}O_{11}$ 638.626
Cryst. (EtOH). Mp 112-113°. $[\alpha]_D^{20}$ -160.7 (CHCl₃).
- 1-Tosyl: 1-O-Tosyl- β -D-fructofuranose
[40518-97-6]
 $C_{13}H_{18}O_8S$ 334.346
Syrup. $[\alpha]_D$ -23 (MeOH).
- 3-Tosyl: 3-O-Tosyl- β -D-fructofuranose
 $C_{13}H_{18}O_8S$ 334.346
Amorph. $[\alpha]_D$ -36.5 (MeOH).
- 1,2-O-Isopropylidene: See 2,3-O-Isopropylidene-fructose, I-63
- Me glycoside*: See Methyl fructofuranoside, M-181
- Butyl glycoside*: Butyl β -D-fructofuranoside
[80971-60-4]
 $C_{10}H_{20}O_6$ 236.264
Constit. of *Cynomorium songaricum*. Amorph. $[\alpha]_D$ -28 (MeOH).
- Pentyl glycoside*: Pentyl β -D-fructofuranoside
[195379-74-9]
 $C_{11}H_{22}O_6$ 250.291
Constit. of *Dendranthema morifolium*.
- L-form** [7776-48-9]
Mp 101-103°. $[\alpha]_D$ +128 \rightarrow +98 (H_2O).
- β -L-Pyranose-form** [41847-69-2]
1,2,4,5-Di-O-isopropylidene: See 1,2,4,5-Di-O-isopropylidene-fructopyranose, D-714
- 2,3,4,5-Di-O-isopropylidene: See 2,3,4,5-Di-O-isopropylidene-fructopyranose, D-715
- DL-form**
Cryst. Mp 129-130°.
[8013-17-0, 25339-99-5, 27195-16-0, 41579-20-8, 41612-84-4, 41847-51-2, 92691-79-7, 92691-80-0]
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Honeyman, J. et al., *Methods Carbohydr. Chem.*, 1962, 1, 116 (β -D-form, isol)
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 Mathlouthi, M. *et al.*, *Carbohydr. Res.*, 1980, **78**, 225 (Raman)
 Pfeffer, P.E. *et al.*, *Carbohydr. Res.*, 1982, **102**, 11 (cmr)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 145 (cmr)
 Morgenlie, S. *et al.*, *Carbohydr. Res.*, 1982, **107**, 137 (synth, DL-form)
 Geigert, J. *et al.*, *Carbohydr. Res.*, 1983, **113**, 159 (synth)
 Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (equilib)
 Steele, D. *et al.*, *Carbohydr. Res.*, 1984, **133**, 313 (ir, Raman)
 Kashiwada, Y. *et al.*, *Chem. Pharm. Bull.*, 1984, **32**, 3461 (1-O-Galloylfructose)
 Chan, J.Y.C. *et al.*, *J.C.S. Perkin 1*, 1985, 1447 (chloroethyl glycoside)
 Dhawale, M.R. *et al.*, *Carbohydr. Res.*, 1986, **155**, 262 (synth, L-form)
 Cockman, M. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 181-201 (equilib)
 Chen, C.C. *et al.*, *Carbohydr. Res.*, 1988, **175**, 265 (synth, bibl, L-form)
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 Gizaw, Y. *et al.*, *Carbohydr. Res.*, 1995, **266**, 81-85 (synth, bibl, L-form)
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 Hu, L. *et al.*, 1997, **39**, 181-184; *CA*, **127**, 231883x (pentyl glycoside)
 Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1998, **313**, 69-89 (rev, use)
 Chevalley, I. *et al.*, *Phytochemistry*, 1999, **50**, 151-154 (6-O-Galloylfructose)
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Fructose 1,6-bis(dihydrogen phosphate), 9CI, 8CI

F-85

Harden-Young ester. Hexose diphosphate. 1,6-Fructose diphosphoric acid. Fructose 1,6-diphosphate

 β -Furanose-form $C_6H_{14}O_{12}P_2$ 340.117

D-form

Fosfructose, INN

[488-69-7]

Prepared by action of yeasts on Glucose, Sucrose and Fructose; formed from Fructose 6-phosphate in the presence of Mg^{2+} , ATP and the enzyme phosphohexokinase. Metabolic intermed. Cardioprotective agent. $[\alpha]_D^{17} +4.04$ (c, 13.6 in H_2O). pK_{a1} 1.52; pK_{a2} 6.31 (25°). Reversibly cleaved in the presence of Aldolase to give 3-Phosphoglyceraldehyde and 1-Phosphodihydroxyacetone.

Di-Ca salt monohydrate: Candiolin

[34378-77-3]

Powder.

Di-Na salt: [26177-85-5] Constit. of tonics.

Tri-Na salt: Fosfructose trisodium, USAN.

CPC 111

[81028-91-3]

[6035-52-5, 38099-82-0]

Neuberg, C. *et al.*, *Arch. Biochem. Biophys.*, 1944, **3**, 33 (synth)Gray, G.R. *et al.*, *Biochemistry*, 1971, **10**, 4705 (nmr)MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (rev)Koerner, T.A.W. *et al.*, *CA*, 1976, **85**, 124249h (synth, pmr)Narendra, N. *et al.*, *Acta Cryst. C*, 1985, **41**, 31-34 (fosfructose trisodium, cryst. struct)*Eur. Pat.*, 1994, 606 853, (Biomedica Foscam); *CA*, **121**, 212974n (Fosfructose trisodium, synth)Markov, A.K. *et al.*, *Am. Heart J.*, 1997, **133**, 541-549 (pharmacol)

Fructose 2,6-bis(dihydrogen phosphate)

F-86

 $C_6H_{14}O_{12}P_2$ 340.117

D-form

[77164-51-3, 79082-92-1] Isol. from rat liver. Stimulates activity of fructose 6-phosphate 1-kinase.

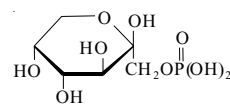
[105661-68-5]

Van Schaftingen, E. *et al.*, *Biochem. J.*, 1980, **192**, 897 (isol)Pilkis, S.J. *et al.*, *J. Biol. Chem.*, 1981, **256**, 3171 (occur, activity)Voll, R.J. *et al.*, *Carbohydr. Res.*, 1990, **203**, 173 (pmr, cmr, P-31 nmr)

Fructose 1-dihydrogen phosphate, 9CI, 8CI

F-87

Fructosyl phosphate. Fructose-1-phosphate

 β -Pyranose-form $C_6H_{13}O_9P$ 260.137

D-form

[15978-08-2]

 $[\alpha]_D -64.2$ (H_2O).

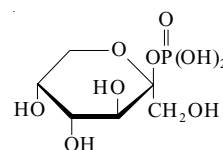
Ba salt: [53823-70-4]

 $[\alpha]_D -39$ (H_2O).Brucine salt: $[\alpha]_D -52.1$ (H_2O).Hydrazone: Mp 96-97°. $[\alpha]_D -33.6$ (1:1 Py/MeOH).Tanko, B. *et al.*, *Biochem. J.*, 1935, **29**, 961Graham, D. *et al.*, *Nature (London)*, 1965, **208**, 88Harvey, D.J. *et al.*, *J. Chromatogr.*, 1973, **76**, 51 (glc, ms)

Fructose 2-dihydrogen phosphate

F-88

Fructose 2-phosphate

 β -Pyranose-form $C_6H_{13}O_9P$ 260.137

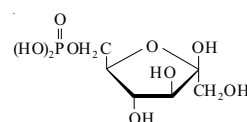
D-form

Ba salt: $[\alpha]_D^{20} -83.3$ (H_2O).Na salt: $[\alpha]_D^{20} -53.6$ (H_2O).Dicyclohexylammonium salt: $[\alpha]_D^{24} -78$ (c, 1.0 in H_2O).Pontis, H.G. *et al.*, *Biochem. J.*, 1963, **89**, 452 (synth)MacDonald, D.L. *et al.*, *J.O.C.*, 1966, **31**, 513 (synth)

Fructose 6-dihydrogen phosphate, 9CI, 8CI

F-89

Neuberg ester. Fructose-6-phosphoric acid. Hexose monophosphate. Fructose 6-phosphate

 β -Furanose-form $C_6H_{13}O_9P$ 260.137

D-form

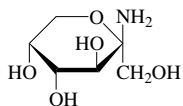
[643-13-0]
 Present in animal tissues as an equilib. mixt. with Glucose 6-phosphate. Formed by the action of the enzyme phosphohexose isomerase on Glucose 6-phosphate. $[\alpha]_D +1.2$ (c, 0.9 in H_2O). pK_{a1} 0.97; pK_{a2} 6.11.

Ba salt: [6035-54-7]

 $[\alpha]_D +3.6$ (H_2O).

[26177-86-6]

Neuberg, C. *et al.*, *Arch. Biochem. Biophys.*, 1944, **3**, 33 (*synth*)
 MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, 253 (*rev*)
 Beaucamp, K. *et al.*, *Methoden Enzym. Anal.*, 3rd Ed., 1984, **1**, 558 (*rev*)

Fructosylamine**F-90** β -D-Pyranose-form $C_6H_{13}NO_5$ 179.172**D-form**

N-Benzyl:

 $C_{13}H_{19}NO_5$ 269.297Cryst. (Me₂CO). Mp 107-108°. [α]_D²⁶ -42.6 (12 min) → +6.2 (2d) (MeOH).

N-Benzyl, 4,5-O-isopropylidene:

 $C_{16}H_{23}NO_5$ 309.361Mp 124-125° dec. [α]_D^{25.5} -64.5 → +14.6 (Py).

N-Ph:

 $C_{12}H_{17}NO_5$ 255.27Cryst. (EtOH). Mp 150°. [α]_D¹⁹ -203.6 → -161 (c, 2.0 in EtOH).

N-Ph, hydrochloride: [51009-13-3]

Cryst. Mp 132.5-134° dec. [α]_D²⁵ -63.7 → -57.8 (c, 1.0 in H₂O).

N-Ph, 1,3,4,5-tetra-Ac:

 $C_{20}H_{25}NO_9$ 423.419Mp 151°. [α]_D -149.6 (c, 1.1 in CHCl₃).

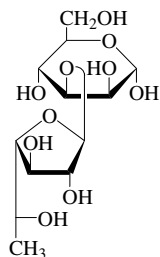
N-Ph, 1,3,4,5-tetraphenyl:

 $C_{40}H_{33}NO_9$ 671.702Mp 100-102°. [α]_D²⁰ -132 (c, 0.5 in CHCl₃).N-(4-Nitrophenyl): [α]_D²⁰ -181.1 (c, 1.1 in MeOH).

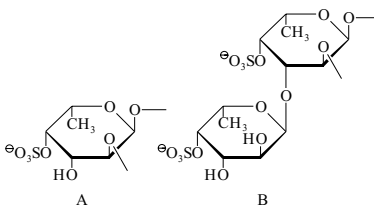
N-(4-Methylphenyl): [29355-13-3]

Mp 138° dec Mp 159-160° dec. [α]_D¹⁹ -207.7 → +176.9 (c, 0.3 in EtOH). [α]_D¹⁸ -200.4 → -167.3 (c, 1.3 in Py). **β -D-Pyranose-form**

N-Ph, 1,3,4,5-tetra-Ac: [51009-14-4]

Cryst. (EtOH). Mp 155°. [α]_D²⁵ +146.4 (c, 1.0 in CHCl₃).Barry, C.P. *et al.*, *J.C.S.*, 1952, 4147 (N-aryl derivs)Ellis, G.P. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 95 (*rev*)Carson, J.F. *et al.*, *J.A.C.S.*, 1955, **77**, 1881; 1956, **78**, 3728 (N-benzyl)Heyns, K. *et al.*, *Chem. Ber.*, 1973, **106**, 2680; 2693 (N-Ph)Gomez-Sanchez, A. *et al.*, *Carbohydr. Res.*, 1986, **149**, 329 **β -D-Fucufuranosyl-(1→3)-D-mannose****F-91** α -D-Pyranose-form $C_{12}H_{22}O_{10}$ 326.3Syrup. [α]_D -13 (c, 0.9 in H₂O).Chiocconi, A. *et al.*, *Carbohydr. Res.*, 2000, **323**, 7-13 (*synth*, *pmr*, *cmr*)**Fucoidin****F-92**

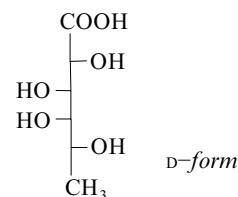
Fucoidan, 9CI, 8CI. Fucosidan [9072-19-9]



A polysaccharide containing L-fucose and half sulphate ester. Small amounts of galactose, xylose and uronic acid are present. Two possible components are illustrated. The precise struct. of fucoidin in variants remains unclear (2000). Present in the intercellular tissues and surface exudates of Phaeophyceae, although the amount in some spp. is exceedingly small. The polysaccharide content varies with the depth at which the plant is located. *Pelvetia canaliculata* contains about 23% of the dry weight while in permanently submerged *Laminaria* it is <7%. V. hygroscopic, may prevent dehyd. of the plant upon long exp. Shows a range of biol. activities incl. antitumour and antiviral. [α]_D -118.

Conchie, J. *et al.*, *J.C.S.*, 1950, 827Black, W.A.P. *et al.*, *J. Sci. Food Agric.*, 1954, **5**, 445 (*isol*, *occur*)Percival, E. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1970, **2B**, 551 (*rev*)Doner, L.W. *et al.*, *Ind. Gums*, (Whistler, R.L., Ed.), 2nd Ed., Academic Press, New York, 1973, 115; *CA*, **81**, 27482t (*rev*)Japan. Pat., 1975, 75 05 199; *CA*, **83**, 25277x (*manuf*)Zvyagintseva, T.N. *et al.*, *Carbohydr. Res.*, 1999, **322**, 32-39 (*isol*, *bibl*)Marais, M.F. *et al.*, *Carbohydr. Res.*, 2001, **336**, 155-159 (*isol*, *purifi*)Lee, J.-B. *et al.*, *Chem. Pharm. Bull.*, 2004, **52**, 1091-1094 (*isol*, *ms*)**Fuconic acid, 9CI, 8CI****F-93**

6-Deoxygalactonic acid [30516-86-0]

 $C_6H_{12}O_6$ 180.157**D-form** [30923-13-8]

Produced by the action of L-arabino-aldose dehydrogenase on D-fucose.

Mp 105.5°. [α]_D -76.3 → -29.1 (H₂O).

These props. prob. refer to a lactone.

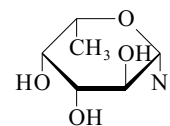
Phenylhydrazide: Mp 205-206°.

L-form [26372-13-4]Mp 106-107°. [α]_D +78.3 (H₂O). Props. prob. refer to a lactone.

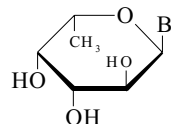
Phenylhydrazide: Mp 203-204°.

Müther, A. *et al.*, *Ber.*, 1904, **37**, 306 (*L-form*)Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 175; 177Dahms, A. *et al.*, *J. Biol. Chem.*, 1972, **247**, 2228 (*D-form*, *enzymic synth*)Szafraneck, J. *et al.*, *J. Chromatogr.*, 1974, **88**, 149 (*glc*)**Fucopyranosyl azide****F-94**

6-Deoxygalactopyranosyl azide

 $C_6H_{11}N_3O_4$ 189.171 **β -L-form** [66347-26-0]Cryst. (EtOAc/Et₂O/petrol). Mp 88.5-90°. [α]_D²² +10.8 (c, 0.25 in MeOH).Tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy- β -L-galactopyranosyl azide. 2,3,4-Tri-O-acetyl- β -L-fucopyranosyl azide [95581-07-0] $C_{12}H_{17}N_3O_7$ 315.282Cryst. Mp 121°. [α]_D²² -16.8 (c, 1 in EtOH).Györgydeák, Z. *et al.*, *Annalen*, 1985, 103 (*synth*)**Fucopyranosyl bromide****F-95**

6-Deoxygalactopyranosyl bromide, 8CI

 $C_6H_{11}BrO_4$ 227.054 **α -L-form**

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -L-fucopyranosyl bromide. 2,3,4-Tri-O-acetyl-6-deoxy- α -L-galactopyranosyl bromide. Acetobromofucose [16741-27-8] $C_{12}H_{17}BrO_7$ 353.166 $[\alpha]_D^{28}$ -160 (c, 2.3 in $CHCl_3$).

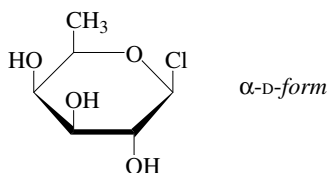
2,3,4-Tribenzyl: 2,3,4-Tri-O-benzyl- α -L-fucopyranosyl bromide. 2,3,4-Tri-O-benzyl-6-deoxy- α -L-galactopyranosyl bromide [33639-77-9] $C_{27}H_{29}BrO_4$ 497.428 Mp 72-73°. $[\alpha]_D^{20}$ -169 (c, 1.0 in CH_2Cl_2).

2-Benzyl, 3,4-bis-(4-nitrobenzoyl): $[\alpha]_D^{27}$ -272 (c, 1.0 in $CHCl_3$).

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1967, **4**, 189 (α -L-tri-Ac)

Dejter-Juszyski, M. *et al.*, *Carbohydr. Res.*, 1971, **18**, 219; 1972, **23**, 41 (α -L-tribenzyl, α -L-benzyl bisnitrobenzoyl)

Fucopyranosyl chloride F-96
6-Deoxygalactopyranosyl chloride



$C_6H_{11}ClO_4$ 182.603

α -D-form

3,4-Dibenzyl, 2-Ac: 2-O-Acetyl-3,4-di-O-benzyl- α -D-fucopyranosyl chloride [172792-40-4] $C_{22}H_{25}ClO_5$ 404.889 Syrup. $[\alpha]_D$ +138 (c, 4.3 in $CHCl_3$).

α -L-form [72864-48-3]
Oil (impure).

Tri-Ac: 2,3,4-Tri-O-acetyl- α -L-fucopyranosyl chloride [24332-96-5] $C_{12}H_{17}ClO_7$ 308.715 Cryst. (Et_2O /petrol). Mp 65°. $[\alpha]_D^{20}$ -215 (c, 1 in $CHCl_3$).

Tris(chlorosulfonyl): 2,3,4-Tri-O-chlorosulfonyl- α -L-fucopyranosyl chloride [53729-80-9] $C_6H_8Cl_4O_{10}S_3$ 478.132 Cryst. Mp 71-72°. $[\alpha]_D^{20}$ -171 (c, 0.93 in $CHCl_3$).

β -L-form

Tris(chlorosulfonyl): 2,3,4-Tri-O-chlorosulfonyl- β -L-fucopyranosyl chloride [52194-61-3] Cryst. ($CHCl_3$ /petrol). Mp 111.5-112.5°. $[\alpha]_D$ -28 (c, 1.0 in $CHCl_3$).

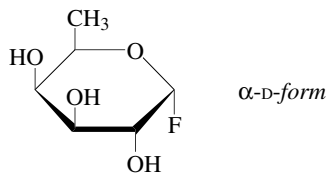
Pouigny, J.R. *et al.*, *Carbohydr. Res.*, 1974, **34**, 351-360 (α -L-form tris(chlorosulfonyl), β -L-form tris(chlorosulfonyl), synth, struct)

Du, Y. *et al.*, *Carbohydr. Res.*, 1995, **275**, 413-420 (pmr)

Benazza, M. *et al.*, *Carbohydr. Res.*, 1995, **275**, 421-431 (α -D-form 3,4-dibenzyl 2-Ac)

Hubbard, R.E. *et al.*, *Carbohydr. Res.*, 1996, **287**, 247-253 (β -D-form tris(chlorosulfonyl), β -L-form tris(chlorosulfonyl))

Fucopyranosyl fluoride F-97
6-Deoxygalactopyranosyl fluoride, 9CI



$C_6H_{11}FO_4$ 166.149

α -D-form

Tribenzyl: 2,3,4-Tri-O-benzoyl- α -D-fucopyranosyl fluoride [141020-08-8]

$C_{27}H_{23}FO_7$ 478.473 $[\alpha]_D^{20}$ +250 (c, 1.0 in $CHCl_3$).

β -D-form

3,4-Dibenzyl, 2-Ac: 2-O-Acetyl-3,4-di-O-benzyl- β -D-fucopyranosyl fluoride [172792-41-5]

$C_{22}H_{25}FO_5$ 388.435 Cryst. Mp 51-52°. $[\alpha]_D$ +9 (c, 0.4 in $CHCl_3$). Purifn. on silica column with petrol/ $EtOAc$ elution.

α -L-form [129864-98-8]

Cryst. ($MeOH/Et_2O$). Mp 237-239°. $[\alpha]_D^{20}$ -138 (c, 0.7 in $MeOH$).

Tri-Ac: 2,3,4-Tri-O-acetyl- α -L-fucopyranosyl fluoride [129864-97-7]

$C_{12}H_{17}FO_7$ 292.261 Cryst. (petrol). Mp 80-81°. $[\alpha]_D^{20}$ -113 (c, 1 in $CHCl_3$).

2,3-Dibenzyl, 4-benzoyl: 4-O-Benzoyl-2,3-di-O-benzyl- α -L-fucopyranosyl fluoride [167934-22-7]

$C_{27}H_{27}FO_5$ 450.506 $[\alpha]_D^{25}$ -79.4 (c, 0.77 in $CHCl_3$).

β -L-form

2,3-Dibenzyl, 4-benzoyl: 4-O-Benzoyl-2,3-di-O-benzyl- β -L-fucopyranosyl fluoride [167934-23-8]

$C_{27}H_{27}FO_5$ 450.506 $[\alpha]_D^{25}$ -107.3 (c, 0.59 in $CHCl_3$).

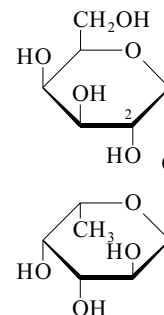
[50474-40-3, 53729-80-9, 64694-23-1, 92470-37-6, 117800-75-6, 122291-77-4, 159169-46-7, 163439-79-0, 171613-32-4]

Svensson, S.C.T. *et al.*, *Carbohydr. Res.*, 1990, **200**, 391 (synth, pmr)

Danishevsky, S.J. *et al.*, *J.A.C.S.*, 1995, **117**, 1940-1953 (derivs)

Huang, H. *et al.*, *J.O.C.*, 1995, **60**, 3100-3106 (derivs)

α -L-Fucopyranosyl α -D-galactopyranoside F-98
6-Deoxy- α -L-galactopyranosyl α -D-galactopyranoside, 9CI [56941-75-4]



$C_{12}H_{22}O_{10}$ 326.3

Non-reducing disaccharide. Mp 231-233°. $[\alpha]_D^{23}$ +2.9 (c, 1 in H_2O).

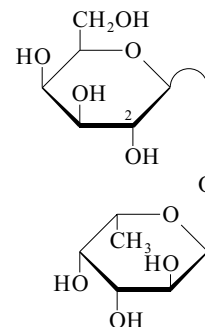
2,3,4,6-Tetra-Ac: [56822-57-2]

$C_{20}H_{30}O_{14}$ 494.449

Cryst. ($EtOH$). Mp 134-135°. $[\alpha]_D^{23}$ +26.7 (c, 0.5 in H_2O).

Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4056 (synth)

α -L-Fucopyranosyl β -D-galactopyranoside F-99
6-Deoxy- α -L-galactopyranosyl β -D-galactopyranoside [56941-76-5]



$C_{12}H_{22}O_{10}$ 326.3

Non-reducing disaccharide. $[\alpha]_D^{24}$ -125 (c, 0.9 in H_2O).

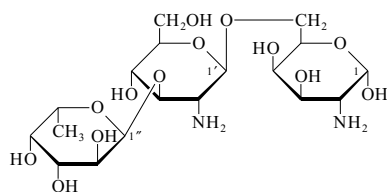
2,3,4,6-Tetra-Ac: [56906-87-7]

$C_{20}H_{30}O_{14}$ 494.449

Cryst. ($MeOH$). Mp 103-104°. $[\alpha]_D^{23}$ -95 (c, 1 in H_2O).

Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4056

α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose



$C_{18}H_{34}N_2O_{13}$ 486.472

α -Pyranose-form

N,N'-Di-Ac: [124040-67-1]

$C_{22}H_{38}N_2O_{15}$ 570.547

Syrup. $[\alpha]_D^{25}$ -33.5 (c, 1.8 in DMSO).

Benzyl glycoside, 2'',3'',4''-tribenzyl,

N,N'-di-Ac: [124040-66-0]

$C_{50}H_{62}N_2O_{15}$ 931.044

Amorph. $[\alpha]_D^{25}$ +28 (c, 0.2 in DMSO).

Benzyl glycoside, 2'',3'',4''-tribenzyl,

3,4:4',6'-di-O-isopropylidene, N,N'-

di-Ac: [124040-65-9]

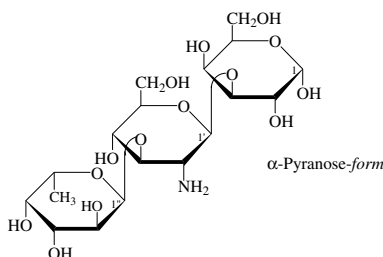
$C_{56}H_{70}N_2O_{15}$ 1011.173

Cryst. (CH₂Cl₂/Et₂O). Mp 154-156°.

$[\alpha]_D^{25}$ +6 (c, 0.9 in CHCl₃).

Thomas, R.L. *et al.*, *Carbohydr. Res.*, 1989, **189**, 21 (α -pyr di-Ac, α -benzyl pyr di-Ac derivs, pmr, cmr)

α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI



$C_{18}H_{33}NO_{14}$ 487.457

α -Pyranose-form

1,2,2',3'',4',4'',6,6'-Deca-Ac:

[115921-24-9]

$C_{38}H_{53}NO_{24}$ 907.829

Solid. $[\alpha]_D^{26}$ +17.5 (c, 1.4 in CHCl₃).

β -Pyranose-form

Me glycoside, nona-Ac: [115944-98-4]

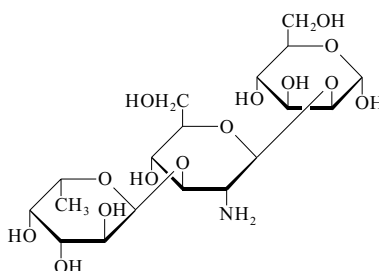
$C_{37}H_{53}NO_{23}$ 879.819

Amorph. $[\alpha]_D^{26}$ -31 (c, 1.1 in CHCl₃).

[115921-27-2]

Jain, R.K. *et al.*, *Carbohydr. Res.*, 1988, **173**, 297 (α -pyr deca-Ac, β -Me pyr nona-Ac, pmr, cmr)

α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose, 9CI



$C_{18}H_{33}NO_{14}$ 487.457

Constit. of glycopeptides isol. from urine of patients with fucosidosis.

α -Pyranose-form

N-Ac: [95274-25-2]

$C_{20}H_{35}NO_{15}$ 529.494

Amorph. powder. $[\alpha]_D^{22}$ -100 (c, 0.4 in H₂O).

Benzyl glycoside, 4',6'-O-benzylidene,

2'',3,3'',4,4'',6-hexabenzyl, N-Ac:

[99409-37-7]

$C_{76}H_{81}NO_{15}$ 1248.474

Syrup. $[\alpha]_D^{22}$ -32 (c, 1.1 in CHCl₃).

[99409-35-5]

Yamashita, K. *et al.*, *J. Biol. Chem.*, 1979, **254**, 4820 (isol)

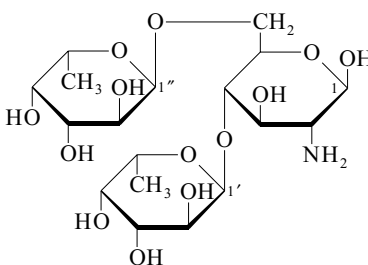
Lonn, H. *et al.*, *Carbohydr. Res.*, 1985, **139**, 105

(synth, pmr, cmr)

Hardy, M.R. *et al.*, *Proc. Natl. Acad. Sci.*

U.S.A., 1988, **85**, 3289 (hplc)

α -L-Fucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 6)]-2-amino-2-deoxy-D-glucose
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)-[6-deoxy- α -L-galactopyranosyl-(1 \rightarrow 6)]-2-amino-2-deoxy-D-glucose, 9CI



$C_{18}H_{33}NO_{13}$ 471.458

β -Pyranose-form

Me glycoside, N-Ac: [97242-91-6]

$C_{21}H_{37}NO_{14}$ 527.522

Amorph. solid. $[\alpha]_D^{26}$ -3.8 (c, 0.63 in H₂O).

Me glycoside, 2',2'',3,3',3'',4',4''-heptabenzyl,

N-Ac: [97242-90-5]

$C_{70}H_{79}NO_{14}$ 1158.392

Oil. $[\alpha]_D^{26}$ -41.5 (c, 1.0 in CHCl₃).

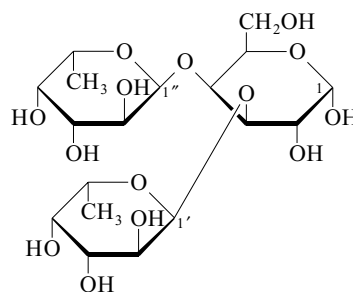
Me glycoside, N-phthaloyl, heptabenzyl:

[97242-87-0]

Oil. $[\alpha]_D^{26}$ -38.2 (c, 0.6 in CHCl₃).

Schwartz, D.A. *et al.*, *Can. J. Chem.*, 1985, **63**, 1073 (α -Me pyr derivs, pmr)

α -L-Fucopyranosyl-(1 \rightarrow 3)-[α -L-fucopyranosyl-(1 \rightarrow 4)]-D-galactose
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-[6-deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

α -Pyranose-form

Me glycoside: [127563-95-5]

$C_{19}H_{34}O_{14}$ 486.469

Syrup. $[\alpha]_D^{22}$ -74 (c, 0.7 in H₂O).

Me glycoside, 2,2',2'',3',3'',4',4'',6-octa-

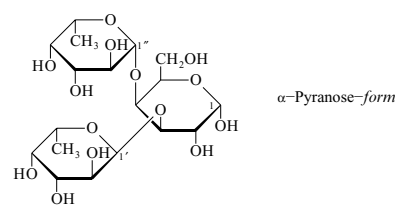
benzyl: [127563-85-3]

$C_{75}H_{82}O_{14}$ 1207.464

Syrup.

Baumann, H. *et al.*, *J. C. S. Perkin 1*, 1989, 2145; 2153 (α -Me pyr derivs, pmr, cmr, conformn)

α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -L-fucopyranosyl-(1 \rightarrow 4)]-D-galactose
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-[6-deoxy- β -L-galactopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

α -Pyranose-form

Me glycoside: [127641-10-5]

$C_{19}H_{34}O_{14}$ 486.469

Syrup. $[\alpha]_D^{22}$ +23 (c, 0.9 in H₂O).

Me glycoside, 2,2',3',4',6-pentabenzyl,

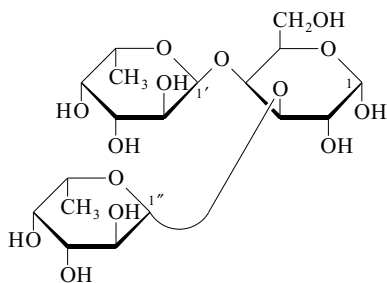
2'',3'',4''-tribenzoyl: [127563-86-4]

$C_{75}H_{76}O_{17}$ 1249.415

Syrup.

Baumann, H. *et al.*, *J. C. S. Perkin 1*, 1989, 2145; 2153 (α -Me pyr derivs, pmr, cmr, conformn)

α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-D-galactose F-106
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)-[6-deoxy- β -L-galactopyranosyl-(1 \rightarrow 3)]-D-galactose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

α -Pyranose-form

Me glycoside: [127641-11-6]

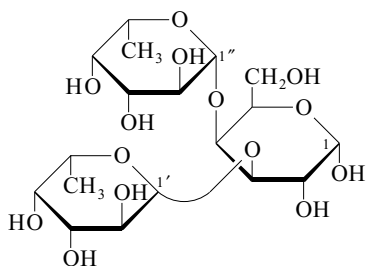
$C_{19}H_{34}O_{14}$ 486.469

Syrup. $[\alpha]_D^{22} +32$ (c, 1.0 in H_2O).

[127563-87-5]

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145; 2153 (α -Me pyr, pmr, cmr, conformn)

β -L-Fucopyranosyl-(1 \rightarrow 3)-[β -L-fucopyranosyl-(1 \rightarrow 4)]-D-galactose F-107
 6-Deoxy- β -L-galactopyranosyl-(1 \rightarrow 3)-[6-deoxy- β -L-galactopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

α -Pyranose-form

Me glycoside: [127563-96-6]

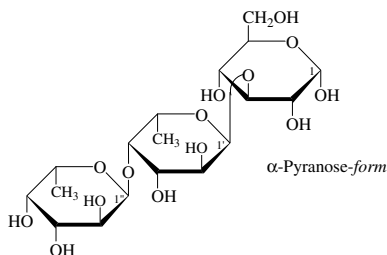
$C_{19}H_{34}O_{14}$ 486.469

Syrup. $[\alpha]_D^{22} +131$ (c, 0.8 in H_2O).

[127563-88-6]

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145; 2153 (α -Me pyr, pmr, cmr, conformn)

α -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose F-108
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-D-glucose



$C_{18}H_{32}O_{14}$ 472.442

α -Pyranose-form

Me glycoside, 2,2',3',4,6-pentabenzyl:

$C_{54}H_{64}O_{14}$ 937.091

Syrup. $[\alpha]_D -86$ (c, 1.5 in $CHCl_3$).

α -Furanose-form

1,2:5,6-Di-O-isopropylidene, 2',3'-dibenzyl: [87735-52-2]

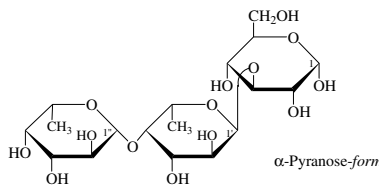
$C_{38}H_{52}O_{14}$ 732.82

Syrup. $[\alpha]_D -106.5$ (c, 0.6 in $CHCl_3$).

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1983, 119, 75 (α -Me pyr pentabenzyl, α -fur diisopropylidene dibenzyl, pmr)

β -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose, 9CI F-109

6-Deoxy- β -L-galactopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-D-glucose [87735-62-4]



$C_{18}H_{32}O_{14}$ 472.442

Syrup. $[\alpha]_D^{24} -60$ (c, 1.2 in MeOH).

α -Pyranose-form

Me glycoside: [87757-39-9]

$C_{19}H_{34}O_{14}$ 486.469

Cryst. (EtOH). Mp 223-226°. $[\alpha]_D^{24} -24$ (c, 1.0 in MeOH).

Me glycoside, 2,2',3',4,6-pentabenzyl:

$C_{54}H_{64}O_{14}$ 937.091

$[\alpha]_D^{24} -36$ (c, 1.0 in $CHCl_3$).

α -Furanose-form

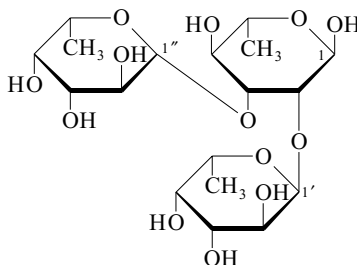
1,2:5,6-Di-O-isopropylidene, 2',3'-dibenzyl: [87735-53-3]

$C_{38}H_{52}O_{14}$ 732.82

Syrup. $[\alpha]_D -30.5$ (c, 1.6 in $CHCl_3$).

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1983, 119, 75 (*synth*, α -Me pyr derivs, α -fur diisopropylidene dibenzyl, pmr, cmr)

α -L-Fucopyranosyl-(1 \rightarrow 2)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-L-rhamnose F-110
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 2)-[6-deoxy- β -L-galactopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

α -Pyranose-form

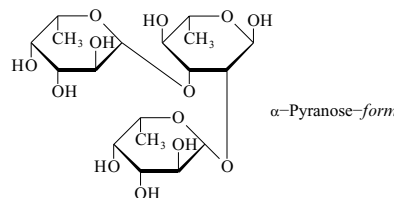
Me glycoside, heptabenzoyl: [135266-92-1]

$C_{68}H_{62}O_{20}$ 1199.226

Cryst. (EtOAc/hexane). Mp 164-167°. $[\alpha]_D^{28} -202.1$ (c, 0.7 in $CHCl_3$).

Nifantev, P.E. *et al.*, *Bioorg. Khim.*, 1991, 17, 517; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1991, 17, 292 (α -Me pyr heptabenzoyl, pmr, cmr)

β -L-Fucopyranosyl-(1 \rightarrow 2)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-L-rhamnose F-111
 6-Deoxy- β -L-galactopyranosyl-(1 \rightarrow 2)-[6-deoxy- β -L-galactopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

α -Pyranose-form

Me glycoside: [130143-20-3]

$C_{19}H_{34}O_{13}$ 470.47

Syrup. $[\alpha]_D^{30} +14.9$ (c, 1.0 in $CHCl_3$).

Me glycoside, heptabenzoyl: [135129-59-8]

$C_{68}H_{62}O_{20}$ 1199.226

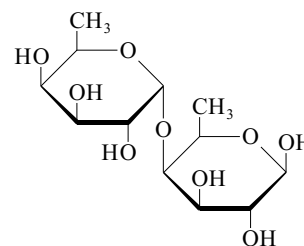
Syrup. $[\alpha]_D^{28} -137$ (c, 1.0 in $CHCl_3$).

Lipkind, G.M. *et al.*, *Can. J. Chem.*, 1990, 68, 1238 (α -Me pyr, pmr, conformn)

Nifantev, P.E. *et al.*, *Bioorg. Khim.*, 1991, 17, 517; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1991, 17, 292 (α -Me pyr heptabenzoyl, pmr, cmr)

4-O- α -D-Fucopyranosyl-D-fucose F-112

4-O-(6-Deoxy- α -D-galactopyranosyl)-6-deoxy-D-galactose. 6-Deoxy-4-O-(6-deoxy- α -D-galactopyranosyl)-D-galactose



$C_{12}H_{22}O_9$ 310.3

β -Pyranose-form

Me glycoside:

$C_{13}H_{24}O_9$ 324.327

$[\alpha]_D +79$ (c, 0.9 in H_2O).

[96103-03-6]

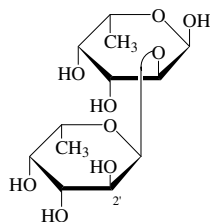
Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1985, 137, 270-275 (*Me gly*)

Kato, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 2000, 73, 967-976 (*synth*, pmr)

2-O- α -L-Fucopyranosyl-L-fucose

F-113

2-O-(6-Deoxy- α -L-galactopyranosyl)-6-deoxy-L-galactose, 9CI
[20237-62-1]

 α -Pyranose-form

C₁₂H₂₂O₉ 310.3
Isol. from the partial acetolysate of the seaweed polysaccharide Fucoidin, F-92. Cryst. (EtOH). Mp 193-195° (185-190°). [α]_D²⁵ -168.5 (c, 0.78 in H₂O).

 α -Pyranose-form

Benzyl glycoside, 2'-benzyl:

C₂₆H₃₄O₉ 490.549
Cryst. (EtOH). Mp 186-188°. [α]_D²⁵ -186 (c, 0.77 in MeOH).

Benzyl glycoside, 2'-benzyl, 3,4-O-isopropylidene:

C₂₉H₃₈O₉ 530.614
Cryst. (EtOH). Mp 143-145°. [α]_D²⁵ -218 (c, 1.4 in CHCl₃).

Me glycoside: Methyl 2-O- α -L-fucopyranosyl- α -L-fucopyranoside [71731-83-4]

C₁₃H₂₄O₉ 324.327
Cryst. (EtOH). Mp 190-192°. [α]_D²⁵ -227 (c, 0.57 in MeOH).

Me glycoside, 2'-benzyl: [71731-82-3]

C₂₀H₃₀O₉ 414.452
Cryst. (EtOH). Mp 192-194°. [α]_D²⁵ -201.2 (c, 1.03 in MeOH).

Me glycoside, 2'-benzyl, 3,4-O-isopropylidene: [71731-87-8]

C₂₃H₃₄O₉ 454.516
Mp 155-157°. [α]_D²⁵ -216 (c, 0.79 in CHCl₃).

 β -Pyranose-formMe glycoside: Methyl 2-O- α -L-fucopyranosyl- β -L-fucopyranoside

C₁₃H₂₄O₉ 324.327
Cryst. (EtOH). Mp 210-212°. [α]_D²⁵ -91.4 (c, 0.70 in MeOH).

Me glycoside, 2'-benzyl:

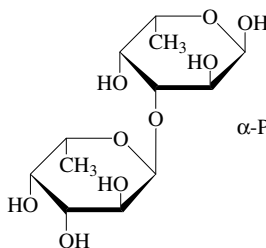
Cryst. (EtOH). Mp 193-195°. [α]_D²⁵ -100 (c, 0.5 in MeOH).

O'Neill, A.N. *et al.*, J.A.C.S., 1954, **76**, 5074Cote, R.H. *et al.*, J.C.S., 1959, 2248 (*isol*)Percival, E. *et al.*, Carbohydr. Res., 1967, **4**, 441 (*glc*)Flowers, H.M. *et al.*, Carbohydr. Res., 1979, **74**, 177 (*synth*, *pmr*, *deriv*)**3-O- α -L-Fucopyranosyl-L-fucose**

F-114

cose

3-O-(6-Deoxy- α -L-galactopyranosyl)-6-deoxy-L-galactose, 8CI. 6-Deoxy-3-O-(6-deoxy- α -L-galactopyranosyl)-L-galactose [20237-63-2]

 α -Pyranose-formC₁₂H₂₂O₉ 310.3

Reducing disaccharide. Isol. from partial acetolysate of Fucoidin, F-92. Cryst. (EtOH/CHCl₃). Mp 200-202° (198-200°). [α]_D²⁵ -190 (c, 0.9 in H₂O).

Hexa-Ac:

C₂₄H₃₄O₁₅ 562.524
Cryst. (EtOH). Mp 183-185°. [α]_D²⁵ -160 (c, 0.9 in CHCl₃).

 α -Pyranose-form

Me glycoside: [54187-60-9]

C₁₃H₂₄O₉ 324.327
Cryst. (EtOH). Mp 103-106°. [α]_D²⁵ -272 (c, 0.9 in EtOH).

Me glycoside, 2,2',4-tribenzyl: [54187-59-6]

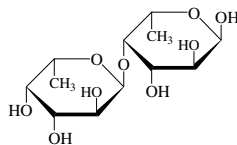
C₃₄H₄₂O₉ 594.7
Cryst. (Et₂O). Mp 114-116°. [α]_D²⁵ -134 (c, 1 in CHCl₃).

Cote, R.H. *et al.*, J.C.S., 1959, 2248 (*isol*)Percival, E. *et al.*, Carbohydr. Res., 1967, **4**, 441 (*glc*)Dejter-Juszynski, M. *et al.*, Carbohydr. Res., 1974, **37**, 75 (*synth*, *pmr*, *deriv*)**4-O- α -L-Fucopyranosyl-L-fucose**

F-115

cose, 8CI

4-O-(6-Deoxy- α -L-galactopyranosyl)-6-deoxy-L-galactose, 9CI. 6-Deoxy-4-O-(6-deoxy- α -L-galactopyranosyl)-L-galactose [20237-64-3]

 α -Pyranose-formC₁₂H₂₂O₉ 310.3

Reducing disaccharide. Isol. from partial acetolysate of fucoidin. Constit. in the repeating unit of the extracellular polysaccharide from *Corynebacterium insidiosum*. Syrup. [α]_D²⁵ -171 (c, 0.85 in H₂O).

2,2'-Di-Me:

C₁₄H₂₆O₉ 338.354
Cryst. (EtOH/Et₂O). Mp 93.5-94.5°. [α]_D⁵⁰ -164 (3 min) → +184 (3h) (c, 0.9 in H₂O).

2,2',3,3'-Tetra-Me:

C₁₆H₃₀O₉ 366.408

Cryst. (Et₂O/petrol). Mp 143.5-144.5°. [α]_D²⁶ -188 (c, 1 in CHCl₃).

 α -Pyranose-form

Me glycoside: [56883-89-7]

C₁₃H₂₄O₉ 324.327

Cryst. + 1/2 H₂O. Mp 102-104°. [α]_D²⁵ -240 (c, 0.95 in H₂O).

Me glycoside, penta-Ac: [56883-90-0]

C₂₃H₃₄O₁₄ 534.513

Cryst. (EtOH). Mp 90-93°. [α]_D²⁵ -212 (c, 0.83 in CHCl₃).

Me glycoside, 2,3-dibenzyl: [56883-91-1]

C₂₇H₃₆O₉ 504.576

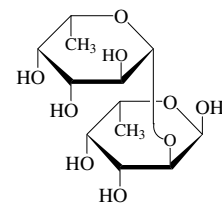
Cryst. (Me₂CO). Mp 172-174°. [α]_D²⁴ -145.2 (c, 0.9 in CHCl₃).

Cote, R.H. *et al.*, J.C.S., 1959, 2248 (*isol*)Percival, E. *et al.*, Carbohydr. Res., 1967, **4**, 441 (*glc*)Dejter-Juszynski, M. *et al.*, Carbohydr. Res., 1975, **41**, 308 (*synth*, *pmr*, *deriv*)Gorin, P.A.J. *et al.*, Carbohydr. Res., 1980, **79**, 313 (*occur*)**2-O- β -L-Fucopyranosyl-L-fucose**

F-116

cose

2-O-(6-Deoxy- β -L-galactopyranosyl)-6-deoxy-L-galactose, 9CI. 6-Deoxy-2-O-(6-deoxy- β -L-galactopyranosyl)-L-galactose [71731-79-8]

 α -Pyranose-formC₁₂H₂₂O₉ 310.3

Reducing disaccharide. Cryst. (EtOH). Mp 152-154°. [α]_D²⁵ -58.6 → +50.2 (20h) (c, 0.9 in H₂O).

 α -Pyranose-formMe glycoside: Methyl 2-O- β -L-fucopyranosyl- α -L-fucopyranoside

[66320-16-9]

C₁₃H₂₄O₉ 324.327

Cryst. (EtOH). Mp 236-238°. [α]_D²⁵ -88.9 (c, 0.9 in MeOH).

Benzyl glycoside:

C₁₉H₂₈O₉ 400.425

Cryst. (EtOH). Mp 181-183°. [α]_D²⁵ -140 (c, 0.69 in MeOH).

Benzyl glycoside, 3,4-O-isopropylidene:

C₂₂H₃₂O₉ 440.489

Oil. [α]_D²⁵ -96 (c, 2.33 in CHCl₃).

 β -Pyranose-formMe glycoside: Methyl 2-O- β -L-fucopyranosyl- β -L-fucopyranosideC₁₃H₂₄O₉ 324.327

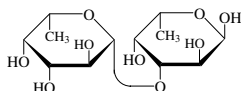
Cryst. (EtOH). Mp 188-190°. [α]_D²⁵ -1.2 (c, 1 in MeOH).

Flowers, H.M. *et al.*, Carbohydr. Res., 1979, **74**, 177 (*synth*)

3-O-β-L-Fucopyranosyl-L-fucose

F-117

3-O-(6-Deoxy-β-L-galactopyranosyl)-6-deoxy-L-galactose. 6-Deoxy-3-O-(6-deoxy-β-L-galactopyranosyl)-L-galactose



α-Pyranose-form

C₁₂H₂₂O₉ 310.3**α-Pyranose-form**

Me glycoside: [54187-63-2]

C₁₃H₂₄O₉ 324.327[α]_D²⁵ -123 (H₂O).

Me glycoside, 2,4-dibenzyl: [54187-62-1]

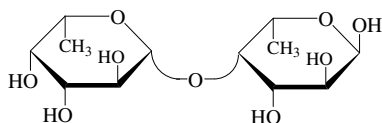
C₂₇H₃₆O₉ 504.576Cryst. (EtOH). Mp 112-114°. [α]_D²⁵ -40 (c, 1.02 in CHCl₃).

Dejter-Juszynski, M. et al., *Carbohydr. Res.*, 1974, **37**, 75

4-O-β-L-Fucopyranosyl-L-fucose

F-118

4-O-(6-Deoxy-β-L-galactopyranosyl)-6-deoxy-L-galactose. 6-Deoxy-4-O-(6-deoxy-β-L-galactopyranosyl)-L-galactose



α-Pyranose-form

C₁₂H₂₂O₉ 310.3

Reducing disaccharide. Constit. of the repeating unit of a mucous polysaccharide produced by enterobacteria.

α-Pyranose-form

Me glycoside: [56883-93-3]

C₁₃H₂₄O₉ 324.327

Needles (MeOH/diisopropyl ether). Mp 175-177°. [α]_D²⁴ -132.5 (c, 1.05 in H₂O).

Me glycoside, 2,3-dibenzyl: [56883-92-2]

C₂₇H₃₆O₉ 504.576Syrup. [α]_D²⁴ -37.7 (c, 1.34 in CHCl₃).

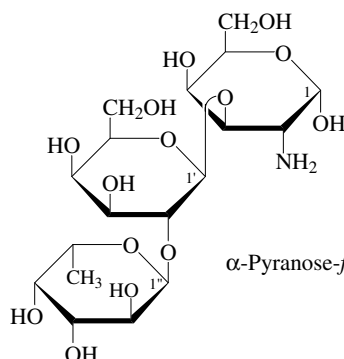
Garegg, P.J. et al., *Acta Chem. Scand.*, 1971, **25**, 1185; 2103 (occur)

Dejter-Juszynski, M. et al., *Carbohydr. Res.*, 1975, **41**, 308 (synth, Me gly)

α-L-Fucopyranosyl-(1→2)-β-D-galactopyranosyl-(1→3)-2-amino-2-deoxy-D-galactose

F-119

6-Deoxy-α-L-galactopyranosyl-(1→3)-β-D-galactopyranosyl-(1→3)-2-amino-2-deoxy-D-galactose, 9CI



α-Pyranose-form

C₁₈H₃₃NO₁₄ 487.457

Constit. of the excretory-secretory antigens isol. from the culture media of *Toxara canis* and *Toxara catilarvae*.

2''-Me, N-Ac: [136466-88-1]

C₂₁H₃₇NO₁₅ 543.521

Constit. of a parasitic nematode glycoprotein. Syrup.

2'',4'-Di-Me, N-Ac: [136466-87-0]

C₂₂H₃₉NO₁₅ 557.548

Constit. of a parasitic nematode glycoprotein. Syrup.

α-Pyranose-form

N-Ac: [108773-40-6]

C₂₀H₃₅NO₁₅ 529.494

Constit. of the submaxillary gland mucin. Amorph.

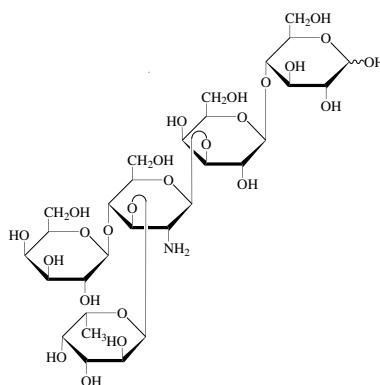
Gerken, T.A. et al., *Biochemistry*, 1987, **26**, 4689 (pmr, conform, occur)

Khoo, K.H. et al., *Glycobiology*, 1991, **1**, 163;

CA, **115**, 179713c (isol, ms, occur)**α-L-Fucopyranosyl-(1→3)-[β-D-galactopyranosyl-(1→4)]-2-amino-2-deoxy-β-D-glucopyranosyl-(1→3)-β-D-galactopyranosyl-(1→4)-D-glucose**

F-120

6-Deoxy-α-L-galactopyranosyl-(1→2)-α-D-galactopyranosyl-(1→3)-2-amino-2-deoxy-D-glucose, 9CI

C₃₀H₅₃NO₂₄ 811.741

N-Ac: Lacto-N-fucopentaose III. Lacto-N-neofucopentaose II [25541-09-7]

C₃₂H₅₅NO₂₅ 853.778

Isol. from human milk. Involved in cellular development.

Kobata, A. et al., *J. Biol. Chem.*, 1969, **244**, 5496-5502 (isol, N-Ac)

Breg, J. et al., *Carbohydr. Res.*, 1988, **183**, 19-34 (N-Ac, pmr, cmr)

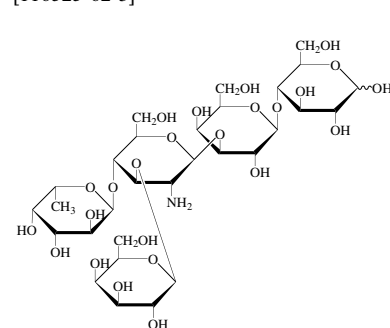
Wormald, M.R. et al., *Biochem. Biophys. Res. Commun.*, 1991, **180**, 1214-1221 (conform, N-Ac)

Feizi, T. et al., *Biochemistry*, 1994, **33**, 6342-6349 (activity, N-Ac)

Zhang, Y. et al., *J. Carbohydr. Chem.*, 1999, **18**, 419-427 (Me gly N-Ac, synth)

α-L-Fucopyranosyl-(1→4)-[β-D-galactopyranosyl-(1→3)]-2-amino-2-deoxy-β-D-glucopyranosyl-(1→3)-β-D-galactopyranosyl-(1→4)-D-glucose

F-121

C₃₀H₅₃NO₂₄ 811.741

N-Ac: Lacto-N-fucopentaose II. LNF II. Blood group substance Le^a. Lewis A antigen pentasaccharide [21973-23-9]

C₃₂H₅₅NO₂₅ 853.778

Component of human milk, also urine of pregnant and lactating women. Cryst. (MeOH).

Mp 213-216°. [α]_D²² -28.4 (5 min) → -30.4 (equilib.) (c, 2.4 in H₂O).

Kuhn, R. et al., *Chem. Ber.*, 1956, **91**, 364-374; 2514-2523 (N-Ac, isol, struct)

Lennholm, H. et al., *Glycoconjugate J.*, 1987, **4**, 313-316 (synth)

Hounsell, E.F. et al., *Carbohydr. Res.*, 1988, **178**, 67-78 (N-Ac, pmr)

Donald, A.S.R. et al., *Carbohydr. Res.*, 1988, **178**, 79-91 (N-Ac, isol, bibl)

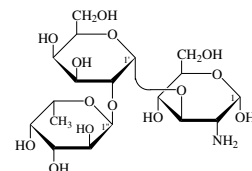
Reddy, G.P. et al., *Anal. Biochem.*, 1991, **198**, 278-284 (N-Ac, hplc)

Toepfer, A. et al., *J. Carbohydr. Chem.*, 1993, **12**, 809-822 (N-Ac, synth)

α-L-Fucopyranosyl-(1→2)-α-D-galactopyranosyl-(1→3)-2-amino-2-deoxy-D-glucose

F-122

6-Deoxy-α-L-galactopyranosyl-(1→2)-α-D-galactopyranosyl-(1→3)-2-amino-2-deoxy-D-glucose, 9CI



α-Pyranose-form

C₁₈H₃₃NO₁₄ 487.457

α -Pyranose-form

4-Nitrophenyl glycoside,
2N,2'',3',3'',4',4'',6'-hepta-Ac:
Amorph. $[\alpha]_D^{20} +95.9$ (c, 2.3 in MeOH).

 β -Pyranose-form

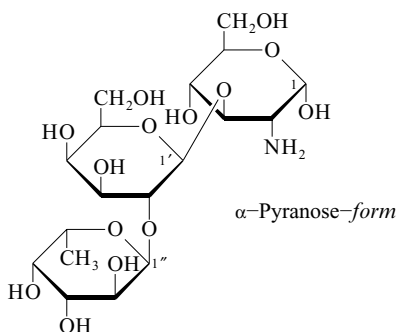
4-Nitrophenyl glycoside, N-Ac: [93496-51-6]
Cryst. Mp 262-264°. $[\alpha]_D^{20} +14.3$ (c, 0.5 in DMSO).

4-Nitrophenyl glycoside,
2N,2'',3',3'',4',4'',6'-hepta-Ac: [93496-50-5]
Amorph. $[\alpha]_D^{20} -4.7$ (c, 0.9 in MeOH).

Matta, K.L. *et al.*, *Carbohydr. Res.*, 1984, **131**, 247 (synth, pmr, cmr)

α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose, 9CI

6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose, 9CI



C₁₈H₃₃NO₁₄ 487.457
Constit. of the antigenic determinant of blood group substances A, B and H.

N-Ac: [66492-29-3]
C₂₀H₃₅NO₁₅ 529.494
Amorph. $[\alpha]_D^{20} -19.4$ (c, 1.0 in MeOH) (-18°). $[\alpha]_D^{20} -30$ (H₂O).

 α -Pyranose-form

Benzyl glycoside, 4,6:4',6'-di-O-benzylidene, 2'',3'',4''-tribenzyl, N-Ac: [67673-38-5]

C₆₂H₆₇NO₁₅ 1066.209
Amorph. Mp 117°. $[\alpha]_D^{20} +20$ (c, 1.0 in CHCl₃). $[\alpha]_D^{20} +16.1$ (c, 1.0 in CHCl₃).

Benzyl glycoside, 4,6:4',6'-di-O-benzylidene, 2'',3'',4''-tribenzyl, 3'-benzoyl, N-Ac: [67688-15-7]
C₆₉H₇₁NO₁₆ 1170.317
Cryst. Mp 114°. $[\alpha]_D^{23} +69.8$ (c, 1.0 in CHCl₃).

2-Nitrophenyl glycoside,
2N,2'',3',3'',4',4'',6'-hepta-Ac: [93496-57-2]
Amorph. $[\alpha]_D^{20} +55.4$ (c, 1.5 in MeOH).

 β -Pyranose-form

4-Nitrophenyl glycoside, N-Ac:
Amorph. $[\alpha]_D^{20} -52.5$ (c, 0.5 in DMSO).

4-Nitrophenyl glycoside, 2N-2'',3',3'',4',4'',6'-hepta-Ac: [93496-52-7]
Amorph. $[\alpha]_D^{20} -42.6$ (c, 1.2 in MeOH).

[79781-72-9, 81243-84-7]

Paulsen, H. *et al.*, *Chem. Ber.*, 1979, **112**, 3190 (occur, N-Ac, α -benzyl pyr tribenzyl, 3'-benzoyl N-Ac deriv, pmr)

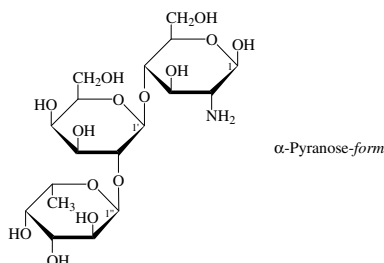
Bovin, N.V. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1982, 1148; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1982, 1023 (N-Ac, α -benzyl pyr tribenzyl N-Ac deriv)

Bovin, N.V. *et al.*, *Carbohydr. Res.*, 1983, **112**, 23 (N-Ac, pmr)

Matta, K.L. *et al.*, *Carbohydr. Res.*, 1984, **131**, 247 (nitrophenyl pyr derivs, pmr, cmr)

α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose

6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, 9CI



C₁₈H₃₃NO₁₄ 487.457
Constit. of the antigenic determinant of human blood group B (type 2).

N-Ac: [60797-31-1]
C₂₀H₃₅NO₁₅ 529.494
Amorph. $[\alpha]_D^{20} -55.9$ (-46.5) (H₂O).

 α -Pyranose-form

Deca-Ac: [61820-08-4]

C₃₈H₅₃NO₂₄ 907.829
Cryst. Mp 126°. $[\alpha]_D^{20} -17$ (c, 1.0 in CHCl₃).

Benzyl glycoside, 2'',3'',3'',4'',4'',6,6'-hepta-benzyl, 2N,3-di-Ac: [60920-96-9]
C₇₈H₈₅NO₁₆ 1292.527
Glass. $[\alpha]_D^{20} +2$ (c, 1.0 in CHCl₃).

Benzyl glycoside, 2'',3'',3'',4'',4'',6,6'-hepta-benzyl, N-Ac: [60920-95-8]
C₇₆H₈₃NO₁₅ 1250.489
Glass. $[\alpha]_D^{20} +1.5$ (c, 1.2 in CHCl₃).

Benzyl glycoside, 2,3,3',3'',4',4'',6,6'-octa-benzyl, N-Ac: [61820-07-3]
C₈₃H₈₉NO₁₅ 1340.614
Amorph. $[\alpha]_D^{20} +8.5$ (c, 1.0 in CHCl₃).

Benzyl glycoside, 4',6'-O-benzylidene, 2'',3'',3'',4'',6-pentabenzyl, N-Ac: [70209-58-4]
C₆₉H₇₅NO₁₅ 1158.349
Syrup. $[\alpha]_D^{20} +9.06$ (c, 1.06 in CHCl₃). $[\alpha]_D^{20} +13$ (c, 1.0 in CHCl₃).

Benzyl glycoside, 4',6'-O-benzylidene, 2'',3'',3'',4'',6-pentabenzyl, 3'-benzoyl, N-Ac: [70209-57-3]
C₇₆H₇₉NO₁₆ 1262.457
Syrup. $[\alpha]_D^{20} +38.4$ (c, 0.99 in CHCl₃).

[47776-54-5, 60920-94-7, 61913-81-3]

Jacquinet, J.C. *et al.*, *Tetrahedron*, 1976, **32**, 1693 (N-Ac, α -deca-Ac, α -benzyl pyr octabenzyl N-Ac, ir, pmr)

Jacquinet, J.C. *et al.*, *J.O.C.*, 1977, **42**, 720 (α -benzyl pyr heptabenzyl derivs, ir, pmr)

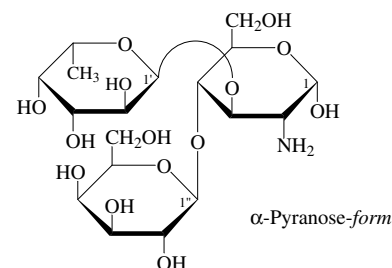
Milat, M.L. *et al.*, *Carbohydr. Res.*, 1981, **92**, 183 (α -benzyl pyr pentabenzyl N-Ac, occur)

Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 306 (N-Ac, α -benzyl pyr 3'-benzoyl N-Ac deriv, ir, pmr)

Rana, S.S. *et al.*, *J. Carbohydr. Chem.*, 1982, **1**, 261 (N-Ac)

α -L-Fucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose

6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)- $[\beta$ -D-galactopyranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose, 9CI



C₁₈H₃₃NO₁₄ 487.457
Isol. from the degradn. of Le^a blood group specific glycoprotein of ovarian cyst fluid. Located at the non-reducing end of several glycoconjugates of human origin.

N-Ac: [71208-06-5]
C₂₀H₃₅NO₁₅ 529.494
Powder + H₂O. Mp 140-142°. $[\alpha]_D^{20} -33$ (c, 1.0 in H₂O).

 α -Pyranose-form

Deca-Ac: [71208-07-6]

C₃₈H₅₃NO₂₄ 907.829
Cryst. (EtOAc/Et₂O). Mp 241-242°. $[\alpha]_D^{23} -31$ (c, 1.0 in CHCl₃).

Benzyl glycoside, 2',3',4'-tribenzyl, 2N,2'',3'',4'',6,6''-hexa-Ac: [71208-04-3]
C₅₈H₆₉NO₂₀ 1100.178
Cryst. Mp 132-133°. $[\alpha]_D^{26} +15$ (c, 1.0 in CHCl₃).

Benzyl glycoside, 2'',3'',4'',6-tetrabenzyl, N-Ac: [71208-05-4]
C₅₅H₆₅NO₁₅ 980.116
Cryst. + EtOAc (EtOAc/Et₂O). Mp 98-99°. $[\alpha]_D^{23} -8$ (c, 1.0 in MeOH).

Benzyl glycoside, 2',3',4',6-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac: [71208-03-2]
C₆₃H₇₃NO₁₉ 1148.265
Cryst. (EtOAc/Et₂O). Mp 154-155°. $[\alpha]_D^{26} +6.5$ (c, 1.0 in CHCl₃).

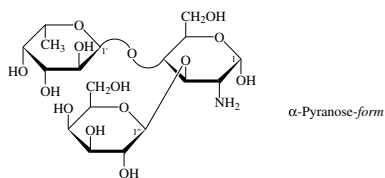
1-Phosphate:

C₁₈H₃₄NO₁₇P 567.437
Isol. from human pregnancy urine.

Jacquinet, J.C. *et al.*, *J.C.S. Perkin 1*, 1979, 314 (N-Ac, α -deca-Ac, α -benzyl pyr derivs, pmr, occur)

Derappe, C. *et al.*, *Carbohydr. Res.*, 1986, **150**, 273 (isol, phosphate)

α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose F-126
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, 9CI
 [56602-25-6]



$C_{18}H_{33}NO_{14}$ 487.457
 Constit. of the human blood group Lewis a (Le^a) antigenic determinant.

N-Ac: [56570-03-7]
 $C_{20}H_{35}NO_{15}$ 529.494
 Amorph. $[\alpha]_D^{25}$ -45.1 (c, 1.0 in H_2O).

α -Pyranose-form

Me glycoside, N-Ac: [86782-04-9]
 $C_{21}H_{37}NO_{15}$ 543.521
 Amorph. solid + $2H_2O$. $[\alpha]_D$ -17.4 (c, 0.8 in H_2O).
 Me glycoside, 2',3',4',6-tetrabenzyl, N-Ac: [86782-03-8]
 $C_{49}H_{61}NO_{15}$ 904.019
 Cryst. (EtOAc). Mp 220-222°. $[\alpha]_D$ -35.8 (c, 1.9 in MeOH).
 Me glycoside, 2',3',4',6-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac: [86782-02-7]
 $C_{57}H_{69}NO_{19}$ 1072.167
 Amorph. solid. $[\alpha]_D$ +3.2 (c, 0.8 in $CHCl_3$).

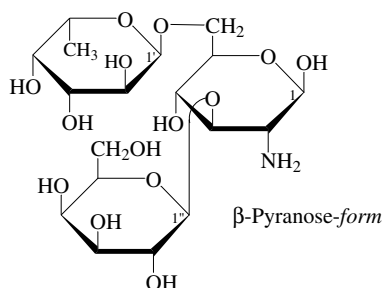
β -Pyranose-form

Benzyl glycoside, 2',3',4',6-tetrabenzyl, N-Ac: [86833-33-2]
 $C_{55}H_{65}NO_{15}$ 980.116
 Amorph. solid + H_2O . $[\alpha]_D$ -81.6 (c, 1.6 in MeOH).
 Benzyl glycoside, 2',3',4',6-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac: [86833-32-1]
 $C_{63}H_{73}NO_{19}$ 1148.265
 Cryst. (EtOAc/Et₂O/hexane). Mp 112-114°. $[\alpha]_D$ -74.9 (c, 1.0 in $CHCl_3$).
 8-Ethoxycarbonyloctyl glycoside, 2',3',4'-tribenzyl, 2N,2'',3'',4'',6,6''-hexa-Ac: [56343-08-9]
 $C_{62}H_{83}NO_{22}$ 1194.331
 Syrup. $[\alpha]_D^{22}$ -54 (c, 1.1 in $CHCl_3$).
 Ph glycoside, N-Ac: [81329-66-0]
 $C_{26}H_{39}NO_{15}$ 605.592
 Syrup. $[\alpha]_D$ -74.4 (MeOH).
 Ph glycoside, 2',3',4'-tribenzyl, 2N,2'',3'',4'',6,6''-hexa-Ac: [84333-52-8]
 $C_{57}H_{67}NO_{20}$ 1086.151
 Cryst. Mp 183-184°. $[\alpha]_D$ -66.2 (c, 0.5 in $CHCl_3$).

[79951-60-3]

Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4063; 4076 (N-Ac, β -ethoxycarbonyloctyl pyr deriv, pmr, cmr)
 Sykes, D.E. *et al.*, *Carbohydr. Res.*, 1983, **112**, 221 (β -Ph pyr deriv, pmr)
 Rana, S.S. *et al.*, *Carbohydr. Res.*, 1983, **117**, 101 (α -Me pyr derivs, β -benzyl pyr derivs, pmr, cmr, occur)

α -L-Fucopyranosyl-(1 \rightarrow 6)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose F-127
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 6)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, 9CI

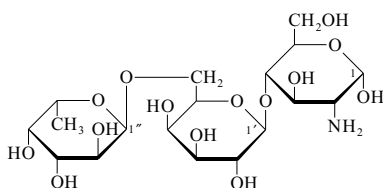


$C_{18}H_{33}NO_{14}$ 487.457
 N-Ac: [56570-06-0]
 $C_{20}H_{35}NO_{15}$ 529.494
 Amorph. powder. $[\alpha]_D^{27}$ -43 (c, 1.0 in H_2O).

β -Pyranose-form

2,2,2-Trichloroethyl glycoside, 2',3',4'-tribenzyl, 2N,2'',3'',4'',6''-penta-Ac: [56570-07-1]
 Cryst. (EtOAc). Mp 144-145°. $[\alpha]_D^{25}$ -26.5 (c, 1.0 in $CHCl_3$).
 Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4063 (N-Ac, β -trichloroethyl pyr penta-Ac deriv, cmr, pmr)

α -L-Fucopyranosyl-(1 \rightarrow 6)-[β -D-galactopyranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose F-128
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose, 9CI

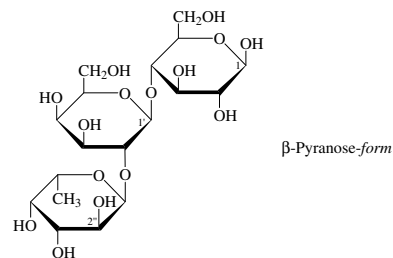


$C_{18}H_{33}NO_{14}$ 487.457

α -Pyranose-form

Benzyl glycoside, 2'',3'',4'',6,6-pentabenzyl, 2N,2',3',4'-tetra-Ac: [64694-25-3]
 $C_{68}H_{77}NO_{18}$ 1196.352
 Syrup. $[\alpha]_D^{20}$ +19 (c, 1.0 in $CHCl_3$).
 Pougny, J.R. *et al.*, *J.A.C.S.*, 1977, **99**, 6762 (α -benzyl pyr tetra-Ac deriv, pmr)

α -L-Fucopyranosyl-(1 \rightarrow 2)-[β -D-galactopyranosyl-(1 \rightarrow 4)]-D-glucose, 9CI, 8CI F-129
 2'-Fucosyllactose
 [41263-94-9]



$C_{18}H_{32}O_{15}$ 488.442
 Present in the free state in human milk. Major trisaccharide of the milk of the brown bear *Ursus arctos yessoensis*. Solid (EtOH).
 Mp 230-231°. $[\alpha]_D$ -53.5 \rightarrow -57.5 (72h) (c, 2.0 in H_2O). $[\alpha]_D$ -43 \rightarrow -48 (c, 0.47 in H_2O).

Phenylosazone: Mp 217°. $[\alpha]_D$ -29 (H_2O).

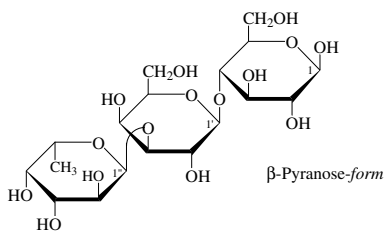
Pyranose-form [14843-73-3]

2'',3'',4''-Tribenzyl: [77680-93-4]
 $C_{39}H_{50}O_{15}$ 758.815
 Cryst. (MeOH/Et₂O). Mp 122-125°. $[\alpha]_D$ -41 (c, 0.9 in $CHCl_3$ /MeOH 2:1).

β -Pyranose-form

Benzyl glycoside, 3',4'-isopropylidene, 2,2'',3'',4'',6,6'-hexabenzyl: [109923-06-0]
 $C_{70}H_{78}O_{15}$ 1159.377
 Syrup. $[\alpha]_D^{20}$ -47 (c, 0.45 in $CHCl_3$).
 Kuhn, R. *et al.*, *Chem. Ber.*, 1955, **88**, 1135; 1956, **89**, 2513 (isol)
 Malpress, F.H. *et al.*, *Biochem. J.*, 1958, **68**, 708
 Biswas, M. *et al.*, *Biopolymers*, 1980, **19**, 1555 (conformn)
 Abbas, S.A. *et al.*, *Carbohydr. Res.*, 1981, **88**, 51 (synth, pmr)
 Fernandez-Mayoralas, A. *et al.*, *Carbohydr. Res.*, 1986, **154**, 93 (synth, benzyl gly synth, cmr)
 Hansson, G.C. *et al.*, *Biochemistry*, 1989, **28**, 6672 (gc-ms)
 Thurl, S. *et al.*, *J. Chromatogr.*, 1991, **568**, 291 (anal)
 Urashima, T. *et al.*, *Biochim. Biophys. Acta*, 1997, **1334**, 247-255 (occur)
 Ishizuka, Y. *et al.*, *J. Carbohydr. Chem.*, 1999, **18**, 523-533 (pmr, cmr, conformn)
 Albermann, C. *et al.*, *Carbohydr. Res.*, 2001, **334**, 97-103 (enzymic synth, pmr, cmr)

α -L-Fucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, 3'- α -L-Fucopyranosyl- α -lactose
 [75795-65-2]



$C_{18}H_{32}O_{15}$ 488.442

Isol. from faeces of blood group B human infants. Inhibits adhesion of *Streptococcus pyogenes* to epithelial pharyngeal cells. Patented for use in mouthrinses. Needles +0.5 H₂O (EtOH aq.). Mp 255-257° dec. $[\alpha]_D^{20}$ -25.3 \rightarrow -30 (c, 0.3 in H₂O). $[\alpha]_D$ -39 \rightarrow -42.6 (H₂O).

Pyranose-form

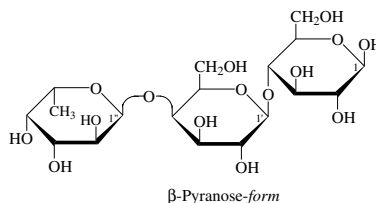
2'',3'',4''-Tribenzyl, 1,2,2',3,6,6'-hexa-Ac: [75795-63-0]
 $C_{51}H_{62}O_{21}$ 1011.038
 Cryst. Mp 156-158° (softens at 125-130°). $[\alpha]_D$ -20.5 (c, 1.0 in CHCl₃).

β -Pyranose-form

1,2,2',2'',3,3'',4',4'',6'-Nona-Ac: [78880-09-8]
 $C_{36}H_{50}O_{24}$ 866.777
 Amorph. powder + 0.5 H₂O. $[\alpha]_D^{21}$ -58.3 (c, 0.5 in CHCl₃).
 1,6-Anhydro: [78880-08-7]
 $C_{18}H_{30}O_{14}$ 470.427
 Hygroscopic amorph. powder + 2H₂O. $[\alpha]_D^{19}$ -89.4 (c, 0.9 in H₂O).
 1,6-Anhydro, 4',6'-O-benzylidene, 2,2',3-tribenzyl, 2'',3'',4''-tri-Ac: [78880-07-6]
 $C_{52}H_{58}O_{17}$ 955.02
 Amorph. powder. $[\alpha]_D^{22}$ -66.8 (c, 0.9 in CHCl₃).

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1980, **84**, 53 (synth, tribenzyl hexa-Ac, β -nona-Ac, pmr)
 Takamura, T. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 1076 (synth, anhydro derivs, pmr, cmr)
 Sabharwal, H. *et al.*, *Carbohydr. Res.*, 1988, **178**, 145 (isol)
 U.S. Pat., 1991, 5 002 759; *CA*, **115**, 142043h (use)

α -L-Fucopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI.
 4'- α -L-Fucopyranosyllactose
 [89435-95-0]



$C_{18}H_{32}O_{15}$ 488.442

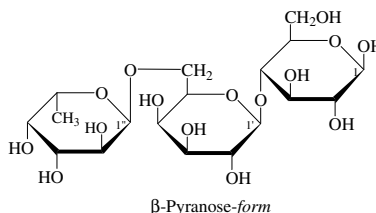
Hygroscopic amorph. powder + 0.5H₂O. $[\alpha]_D^{17}$ -37.2 (c, 0.4 in H₂O).

β -Pyranose-form

1,6-Anhydro: [86462-06-8]
 $C_{18}H_{30}O_{14}$ 470.427
 Amorph. powder + 0.5H₂O. $[\alpha]_D^{20}$ -105.8 (c, 0.82 in H₂O).
 1,6-Anhydro, octa-Ac: [86462-07-9]
 $C_{34}H_{46}O_{22}$ 806.724
 Amorph. powder. $[\alpha]_D^{21}$ -104.6 (c, 0.7 in CHCl₃).
 1,6-Anhydro, 2,2',3,3',6'-pentabenzyl, 2'',3'',4''-tri-Ac:
 $C_{59}H_{66}O_{17}$ 1047.16
 Syrup + 0.5H₂O. $[\alpha]_D^{24}$ -52.5 (c, 1.0 in CHCl₃).

Chiba, T. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 75 (synth, anhydro derivs, pmr)

α -L-Fucopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose.
 6'- α -L-Fucopyranosyllactose
 [80756-86-1]



$C_{18}H_{32}O_{15}$ 488.442

Lectin binding inhibitor. Hygroscopic solid + H₂O or glass. $[\alpha]_D^{25}$ -28.3 (c, 0.24 in MeOH). $[\alpha]_D^{25}$ -23 \rightarrow -21 (c, 0.3 in H₂O).

β -Pyranose-form

2'',3'',4''-Tribenzyl: [74800-97-8]
 $C_{39}H_{50}O_{15}$ 758.815
 Cryst. + 0.5H₂O (MeOH/Et₂O). Mp 160-162°. $[\alpha]_D^{25}$ -25 (c, 0.3 in CHCl₃).
 2'',3'',4''-Tribenzyl, hepta-Ac: [74800-96-7]
 $C_{53}H_{64}O_{22}$ 1053.075
 Cryst. (Et₂O/petrol). Mp 110-113°. $[\alpha]_D^{25}$ -36.4 (c, 1.0 in CHCl₃).

2'',3'',4''-Tribenzyl, 1,2,2',3,3',6-hexa-Ac: [74800-95-6]
 $C_{51}H_{62}O_{21}$ 1011.038
 Cryst. (EtOAc/petrol). Mp 195-197°. $[\alpha]_D^{25}$ -26.5 (c, 0.5 in CHCl₃).

1,6-Anhydro: [86462-24-0]
 $C_{18}H_{30}O_{14}$ 470.427
 Hygroscopic amorph. powder + 0.5H₂O. $[\alpha]_D^{10}$ -59.3 (c, 0.32 in H₂O).

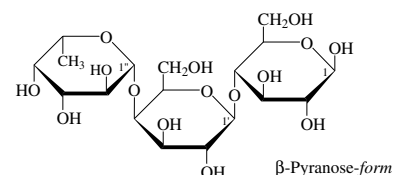
1,6-Anhydro, octa-Ac: [86462-25-1]
 $C_{34}H_{46}O_{22}$ 806.724
 Amorph. powder. $[\alpha]_D^{20}$ -88.3 (c, 1.2 in CHCl₃).

1,6-Anhydro, octabenzyl: [86462-23-9]
 $C_{74}H_{78}O_{14}$ 1191.422
 Syrup. $[\alpha]_D^{21}$ -49.7 (c, 1.0 in CHCl₃).

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1980, **83**, 146 (synth, tribenzyl derivs, pmr)
 Chiba, T. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 75 (anhydro derivs, pmr, cmr)
 Konami, Y. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 729 (biochem)

β -L-Fucopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI

6-Deoxy- β -L-galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose.
 4'- β -L-Fucopyranosyllactose



$C_{18}H_{32}O_{15}$ 488.442

Hygroscopic amorph. powder + H₂O. $[\alpha]_D^{22}$ +36.8 (c, 0.84 in H₂O).

β -Pyranose-form

1,2,2',2'',3,3'',4',4'',6'-Nona-Ac: [86462-13-7]
 $C_{36}H_{50}O_{24}$ 866.777
 Amorph. powder. $[\alpha]_D^{20}$ +11.7 (c, 1.04 in CHCl₃).

1,6-Anhydro: [86462-11-5]
 $C_{18}H_{30}O_{14}$ 470.427
 Needles (EtOH aq.). Mp 257-260°. $[\alpha]_D^{21}$ -32.5 (c, 0.57 in H₂O).

1,6-Anhydro, octa-Ac: [86462-12-6]
 $C_{34}H_{46}O_{22}$ 806.724
 Needles (EtOAc/MeOH). Mp 246-247°. $[\alpha]_D^{25}$ +4.4 (c, 1.1 in CHCl₃).

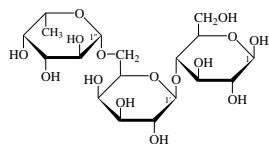
1,6-Anhydro, 2,2',3,3',6'-pentabenzyl: [86462-05-7]

$C_{53}H_{60}O_{14}$ 921.049
 Syrup + 0.5H₂O. $[\alpha]_D^{26}$ -10.4 (c, 1.08 in CHCl₃).

[86462-14-8]

Chiba, T. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 75 (synth, nona-Ac, anhydro derivs, pmr, cmr)

β-L-Fucopyranosyl-(1 → 6)-β-D-galactopyranosyl-(1 → 4)-D-glucose **F-134**
6-Deoxy-β-L-galactopyranosyl-(1 → 6)-β-D-galactopyranosyl-(1 → 4)-D-glucose, 9CI.
6'-β-L-Fucopyranosyllactose



β-Pyranose-form

C₁₈H₃₂O₁₅ 488.442
 Hygroscopic amorph. powder + H₂O. [α]_D²⁰ +48.4 (c, 1.6 in H₂O).

β-Pyranose-form [86462-22-8]

1,6-Anhydro: [86462-18-2]

C₁₈H₃₀O₁₄ 470.427

Hygroscopic needles (EtOH aq.). Mp 244-245°. [α]_D²² -28.4 (c, 1.0 in H₂O).

1,6-Anhydro, octa-Ac: [86462-19-3]

C₃₄H₄₆O₂₂ 806.724

Amorph. powder. [α]_D²⁴ -32.2 (c, 1.1 in CHCl₃).

1,6-Anhydro, 2,2',3,3',4'-pentabenzyl: [86462-17-1]

C₅₃H₆₀O₁₄ 921.049

Amorph. powder + 0.5H₂O. [α]_D²² -23.1 (c, 1.2 in CHCl₃).

1,6-Anhydro, 2,2',3,3',4'-pentabenzyl, 2'',3'',4''-tri-Ac: [86462-16-0]

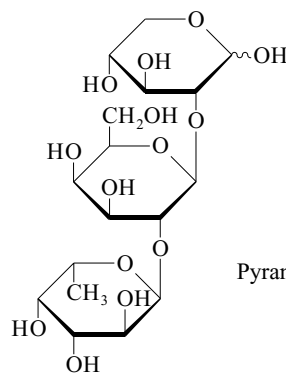
C₅₉H₆₆O₁₇ 1047.16

Amorph. powder. [α]_D²¹ -15.8 (c, 1.0 in CHCl₃).

[86462-21-7]

Chiba, T. et al., *Chem. Pharm. Bull.*, 1983, **31**, 75 (synth, anhydro derivs, pmr, cmr)

α-L-Fucopyranosyl-(1 → 2)-β-D-galactopyranosyl-(1 → 2)-D-xylose **F-135**
6-Deoxy-α-L-galactopyranosyl-(1 → 2)-β-D-galactopyranosyl-(1 → 2)-D-xylose, 9CI
 [130136-27-5]



Pyranose-form

C₁₇H₃₀O₁₄ 458.416

Isol. from the enzymic hydrolysate of a plant cell wall polysaccharide. Constit. in the cell wall material of scarlet runner bean (*Phaseolus coccineus*). Shows anti-auxin activity. Syrup.

Octabenzyl: [130136-35-5]

C₇₃H₇₈O₁₄ 1179.411

Syrup.

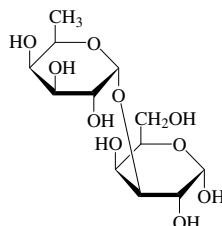
[130136-79-7]

Kato, Y. et al., *Agric. Biol. Chem.*, 1980, **44**, 1751 (constit)

McDougall, G.J. et al., *Plant Physiol.*, 1989, **89**, 883 (biol)

Torgov, V.I. et al., *Bioorg. Khim.*, 1990, **16**, 854; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1990, **16**, 482 (isol, pmr, cmr)

3-O-α-D-Fucopyranosyl-D-galactose **F-136**
3-O-(6-Deoxy-α-D-galactopyranosyl)-D-galactose



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

α-Pyranose-form

Me glycoside: Methyl 3-O-α-D-fucopyranosyl-α-D-galactopyranoside, 9CI

[116391-08-3]

C₁₃H₂₄O₁₀ 340.327

[α]_D²² +241 (c, 1.0 in H₂O).

Me glycoside, 2,2',3',4',6-pentabenzyl:

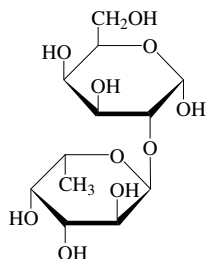
[116391-16-3]

C₄₈H₅₄O₁₀ 790.949

[α]_D²² +63 (c, 1.1 in CHCl₃).

Baumann, H. et al., *J.C.S. Perkin 1*, 1988, 209 (synth, pmr, cmr, conformn)

2-O-α-L-Fucopyranosyl-D-galactose **F-137**
2-O-(6-Deoxy-α-L-galactopyranosyl)-D-galactose, 9CI. Disaccharide H
 [24656-24-4]



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

Isol. from milk oligosaccharides and from blood group substances. Antigenic determinant. [α]_D²² -56 (c, 1.2 in H₂O).

Benzylphenylhydrazon: Mp 163.5°.

α-Pyranose-form

Hepta-Ac: [52921-44-5]

C₂₆H₃₆O₁₇ 620.56

Cryst. (EtOH/petrol). Mp 172-174°.

[α]_D²³ -28.3 (c, 1.0 in CHCl₃).

Me glycoside: Methyl 2-O-α-L-fucopyranosyl-α-D-galactopyranoside

[71731-89-0]

C₁₃H₂₄O₁₀ 340.327

Cryst. Mp 202-204°. [α]_D +2 (c, 0.1 in H₂O).

β-Pyranose-form

Me glycoside: Methyl 2-O-α-L-fucopyranosyl-β-D-galactopyranoside

[24656-23-3]

C₁₃H₂₄O₁₀ 340.327

Cryst. Mp 171°. [α]_D -112 (c, 0.5 in H₂O).

Me glycoside, hexa-Ac: [129864-99-9]

C₂₅H₃₆O₁₆ 592.55

Mp 148-150°. [α]_D²⁰ -113 (c, 1.2 in CHCl₃).

1,6-Anhydro: 1,6-Anhydro-2-O-α-L-fucopyranosyl-β-D-galactopyranose

[120703-64-2]

C₁₂H₂₀O₉ 308.285

Mp 88-92°. [α]_D²² -120 (c, 0.5 in MeOH).

1,6-Anhydro, penta-Ac: [120703-63-1]

C₂₂H₃₀O₁₄ 518.471

Needles (EtOH). Mp 172-173°. [α]_D²² -123 (c, 1.0 in CHCl₃).

1,6-Anhydro, 2',3',4'-tribenzyl: [120703-61-9]

C₃₃H₃₈O₉ 578.658

Mp 49-50°. [α]_D²² -55.5 (c, 1.0 in CHCl₃).

Kuhn, R. et al., *Annalen*, 1958, **611**, 242-249 (isol)

Levy, A. et al., *Carbohydr. Res.*, 1967, **4**, 305-311 (synth)

Matta, K.L. et al., *Carbohydr. Res.*, 1973, **31**, 410-412 (hepta-Ac)

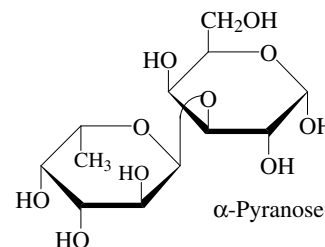
Jacquinet, J.C. et al., *Tetrahedron*, 1976, **32**, 1693-1697 (synth)

Wegmann, B. et al., *Carbohydr. Res.*, 1988, **184**, 254-261 (synth)

Nicotra, F. et al., *J. Carbohydr. Chem.*, 1992, **11**, 397-399 (synth)

Watt, D.K. et al., *Carbohydr. Res.*, 1996, **285**, 1-15 (synth, pmr, cmr, cryst struct, Me α-gly, Me β-gly)

3-O-α-L-Fucopyranosyl-D-galactose, 9CI **F-138**
 [24667-49-0]



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

α-Pyranose-form

Me glycoside: Methyl 3-O-α-L-fucopyranosyl-α-D-galactopyranoside, 9CI

[110891-65-1]

C₁₃H₂₄O₁₀ 340.327

Amorph. powder. [α]_D²² +22 (c, 1.0 in H₂O).

Me glycoside, 2,2',3',4',6-Pentabenzyl:

[116391-15-2]

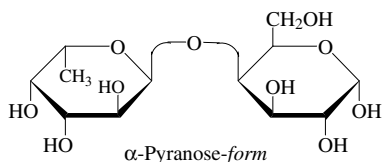
C₄₈H₅₄O₁₀ 790.949

[α]_D²² -35.

Baumann, H. et al., *J.C.S. Perkin 1*, 1988, 209; 1989, 2153 (synth, cmr)

4-O- α -L-Fucopyranosyl-D-galactose

F-139

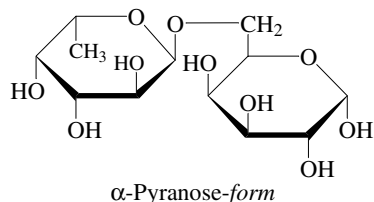
 $C_{12}H_{22}O_{10}$ 326.3 **α -Pyranose-form**

Me glycoside: Methyl 4-O- α -L-fucopyranosyl- α -D-galactopyranoside, 9CI
 [127772-98-9]
 $C_{13}H_{24}O_{10}$ 340.327
 $[\alpha]_D^{25} +18$ (c, 1.0 in H_2O).

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145**6-O- α -L-Fucopyranosyl-D-galactose**

F-140

6-O-(6-Deoxy- α -L-galactopyranosyl)-D-galactose, 9CI
 [52630-64-5]

 $C_{12}H_{22}O_{10}$ 326.3

Isol. from human blood group B substance from ovarian cyst-fluid. Amorph.
 $[\alpha]_D^{25} -61.1$ (c, 1.0 in H_2O).

2'-Benzyl:

$C_{19}H_{28}O_{10}$ 416.424
 $[\alpha]_D^{25} -64.4$ (c, 0.5 in 50% EtOH aq.).

 α -Pyranose-form

Me glycoside: Methyl 6-O- α -L-fucopyranosyl- α -D-galactopyranoside, 9CI
 [137063-43-5]
 $C_{13}H_{24}O_{10}$ 340.327
 $[\alpha]_D^{22} -8$ (c, 0.8 in H_2O).

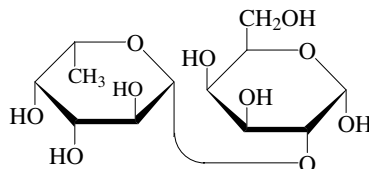
 β -Pyranose-form

Me glycoside, hexa-Ac:
 $C_{25}H_{36}O_{16}$ 592.55
 Cryst. (hexane/Et₂O). Mp 164-166°.
 $[\alpha]_D^{20} -102$ (c, 1.0 in $CHCl_3$).
 Matta, K.L. *et al.*, *Carbohydr. Res.*, 1974, **32**, 418 (*isol*)
 Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1991, 2229
 (*Me gly, pmr, cmr*)

2-O- β -L-Fucopyranosyl-D-galactose

F-141

2-O-(6-Deoxy- β -L-galactopyranosyl)-D-galactose, 9CI
 [52921-46-7]



$C_{12}H_{22}O_{10}$ 326.3
 $[\alpha]_D^{23} +48.3$ (c, 1.0 in H_2O).

 α -Pyranose-form

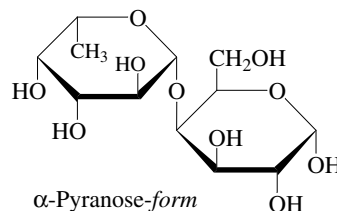
Hepta-Ac: [52921-45-6]
 $C_{26}H_{36}O_{17}$ 620.56
 Cryst. (EtOH). Mp 222-224°. $[\alpha]_D^{23} +54.7$ (c, 1.0 in $CHCl_3$).

 β -Pyranose-form

1,6-Anhydro, 3,4-di-Ac, 2',3',4'-tribenzyl:
 $C_{37}H_{42}O_{11}$ 662.732
 Oil. $[\alpha]_D^{22} +5$ (c, 1.0 in $CHCl_3$).
 1,6-Anhydro, 3,4-O-isopropylidene, 2',3',4'-tribenzyl:
 $C_{36}H_{42}O_9$ 618.722
 Oil. $[\alpha]_D^{25} -96.5$ (c, 1.0 in $CHCl_3$).
 Matta, K.L. *et al.*, *Carbohydr. Res.*, 1973, **31**, 410 (*synth*)
 Wegmann, B. *et al.*, *Carbohydr. Res.*, 1988, **184**, 254 (1,6-anhydro)

4-O- β -L-Fucopyranosyl-D-galactose

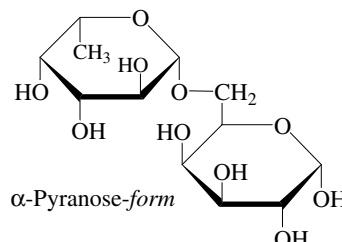
F-142

 $C_{12}H_{22}O_{10}$ 326.3 **α -Pyranose-form**

Me glycoside: Methyl 4-O- β -L-fucopyranosyl- α -D-galactopyranoside, 9CI
 [127563-94-4]
 $C_{13}H_{24}O_{10}$ 340.327
 $[\alpha]_D^{22} +127$ (c, 1.0 in H_2O).
 Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145

6-O- β -L-Fucopyranosyl-D-galactose

F-143



$C_{12}H_{22}O_{10}$ 326.3
 $[\alpha]_D^{25} +28$ (H_2O).

 α -Pyranose-form

Me glycoside: Methyl 6-O- β -L-fucopyranosyl- α -D-galactopyranoside, 9CI
 [137063-44-6]
 $C_{13}H_{24}O_{10}$ 340.327
 $[\alpha]_D^{22} +113$ (c, 1.0 in H_2O).

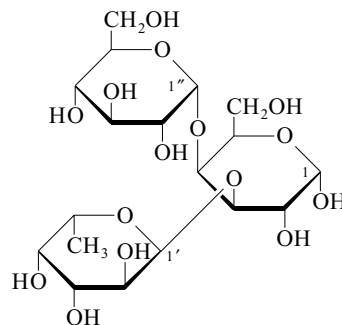
Schiffman, A. *et al.*, *J.A.C.S.*, 1960, **82**, 1122
 Matta, K.L. *et al.*, *Carbohydr. Res.*, 1974, **32**, 418

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1991, 2229
 (*pmr, cmr*)

 α -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose

F-144

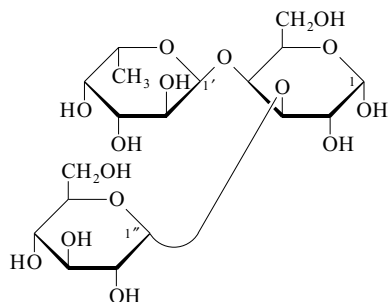
6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI

 $C_{18}H_{32}O_{15}$ 488.442 **α -Pyranose-form**

Me glycoside: [127592-66-9]
 $C_{19}H_{34}O_{15}$ 502.469
 Syrup. $[\alpha]_D^{22} +55$ (c, 1.3 in H_2O).
Me glycoside, 2,2',2'',3',3'',4',4'',6,6''-nonabenzyl: [127501-44-4]
 $C_{82}H_{88}O_{15}$ 1313.588
 Syrup.

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2167
 (α -Me pyr derivs, *pmr, cmr, conformn*)

α -L-Fucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose F-145
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

Me glycoside: [127593-38-8]

$C_{19}H_{34}O_{15}$ 502.469

Syrup. $[\alpha]_D^{22} +102$ (c, 1.1 in H_2O).

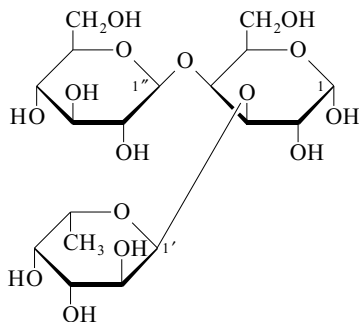
Me glycoside, 2,2',2'',3',3'',4',4'',6,6''-nonabenzyl: [127524-40-7]

$C_{82}H_{88}O_{15}$ 1313.588

Syrup.

Baumann, H. et al., *J.C.S. Perkin 1*, 1989, 2167 (α -Me pyr derivs, pmr, cmr, conformn)

α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose F-146
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

Me glycoside: [127592-67-0]

$C_{19}H_{34}O_{15}$ 502.469

Syrup. $[\alpha]_D^{22} -2$ (c, 1.1 in H_2O).

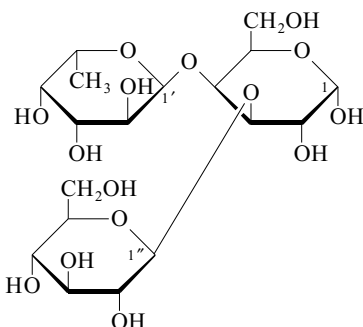
Me glycoside, 2,2',3',4',6-pentabenzyl, 2'',3'',4'',6''-tetrabenzoyl: [127501-45-5]

$C_{82}H_{80}O_{19}$ 1369.523

Syrup.

Baumann, H. et al., *J.C.S. Perkin 1*, 1989, 2167 (α -Me pyr derivs, pmr, cmr, conformn)

α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose F-147
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

Me glycoside: [127592-70-5]

$C_{19}H_{34}O_{15}$ 502.469

Syrup. $[\alpha]_D^{22} +7$ (c, 0.9 in H_2O).

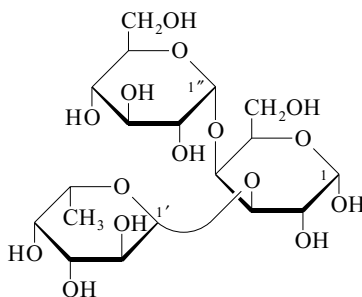
Me glycoside, 2,2',3',4',6-pentabenzyl, 2'',3'',4'',6''-tetrabenzoyl: [127501-48-8]

$C_{82}H_{80}O_{19}$ 1369.523

Syrup.

Baumann, H. et al., *J.C.S. Perkin 1*, 1989, 2167 (α -Me pyr derivs, pmr, cmr, conformn)

β -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose F-148
 6-Deoxy- β -L-galactopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

Me glycoside: [127592-68-1]

$C_{19}H_{34}O_{15}$ 502.469

$[\alpha]_D^{22} +188$ (c, 1.1 in H_2O).

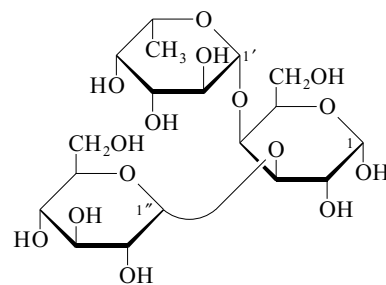
Me glycoside, 2,2',3',4',6,6''-hexabenzyl: [127501-46-6]

$C_{61}H_{70}O_{15}$ 1043.215

Syrup.

Baumann, H. et al., *J.C.S. Perkin 1*, 1989, 2167 (α -Me pyr derivs, pmr, cmr, conformn)

β -L-Fucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose F-149
 6-Deoxy- β -L-galactopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

Me glycoside: [127501-40-0]

$C_{19}H_{34}O_{15}$ 502.469

Syrup. $[\alpha]_D^{22} +181$ (c, 1.0 in H_2O).

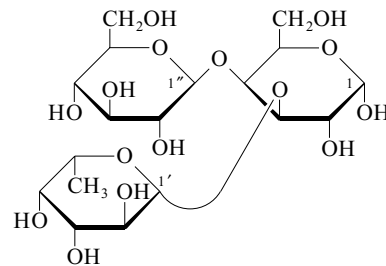
Me glycoside, 2,2',3',4'',6,6''-hexabenzyl, 2',3',4'-tri-Ac: [127501-47-7]

$C_{67}H_{76}O_{18}$ 1169.327

Syrup.

Baumann, H. et al., *J.C.S. Perkin 1*, 1989, 2167 (α -Me pyr derivs, pmr, cmr, conformn)

β -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose F-150
 6-Deoxy- β -L-galactopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

Me glycoside: [127592-69-2]

$C_{19}H_{34}O_{15}$ 502.469

Syrup. $[\alpha]_D^{22} +111$ (c, 0.9 in H_2O).

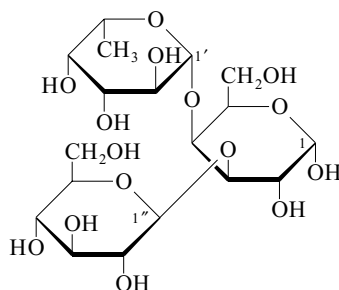
Me glycoside, 2,2',3',4'',6,6''-hexabenzyl: [127592-72-7]

$C_{61}H_{70}O_{15}$ 1043.215

Syrup.

Baumann, H. et al., *J.C.S. Perkin 1*, 1989, 2167 (α -Me pyr derivs, pmr, cmr, conformn)

β-L-Fucopyranosyl-(1→4)-[β-D-glucopyranosyl-(1→3)]-D-galactose F-151
6-Deoxy-β-L-galactopyranosyl-(1→4)-[β-D-glucopyranosyl-(1→3)]-D-galactose, 9CI



C₁₈H₃₂O₁₅ 488.442

α-Pyranose-form

Me glycoside: [127592-71-6]

C₁₉H₃₄O₁₅ 502.469

Syrup. [α]_D²² +88 (c, 1.1 in H₂O).

Me glycoside, 2,6-dibenzyl,

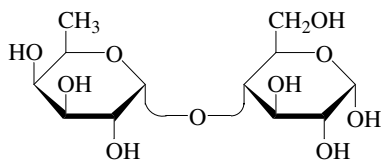
2',2'',3',3'',4',4'',6''-heptabenzoyl: [127524-41-8]

C₈₂H₇₄O₂₂ 1411.473

Syrup.

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2167 (α-Me pyr derivs, pmr, cmr, conformn)

4-O-α-D-Fucopyranosyl-D-glucose F-152
[56838-51-8]



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Hygroscopic amorph. powder. [α]_D²⁷ +128.3 (c, 0.72 in H₂O).

α-Pyranose-form

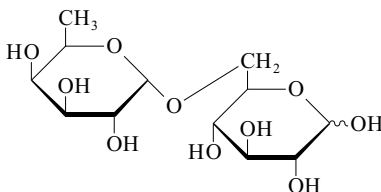
Hepta-Ac: [56907-31-4]

C₂₆H₃₆O₁₇ 620.56

Cryst. (EtOH). Mp 186-189°. [α]_D²⁵ +137.5 (c, 1.1 in CHCl₃).

Mori, M. *et al.*, *Chem. Pharm. Bull.*, 1975, 23, 1480 (*synth*)

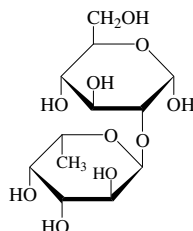
6-O-α-D-Fucopyranosyl-D-glucose F-153



C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Prepared by the degradn. of 6-O-α-D-Galactopyranosyl-D-glucose, G-145. [α]_D²⁵ +125 (H₂O). Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1959, 37, 1930

2-O-α-L-Fucopyranosyl-D-glucose F-154
[39848-55-0]



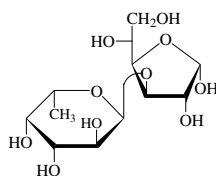
α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Isol. from urine. [α]_D²⁰ -65.5 (c, 1.8 in H₂O).

Lundblad, A. *et al.*, *Biochemistry*, 1973, 12, 307 (*isol*)

3-O-α-L-Fucopyranosyl-D-glucose, 9CI F-155
[56822-52-7]



α-Furanose-form

C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Amorph. powder. [α]_D²⁶ -86 (c, 1.0 in H₂O).

α-Furanose-form

1,2:5,6-Di-O-isopropylidene: [56822-53-8]

C₁₈H₃₀O₁₀ 406.429

Mp 92-94°. [α]_D²³ -122.5 (c, 1.4 in H₂O).

1,2:5,6-Di-O-isopropylidene, tribenzyl:

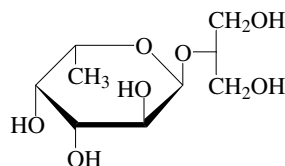
C₃₉H₄₈O₁₀ 676.802

Oil. [α]_D²⁷ -97 (c, 2 in CHCl₃).

Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, 97, 4056

2-O-α-L-Fucopyranosylglycerol F-156

2-Hydroxy-1-(hydroxymethyl)ethyl 6-deoxy-α-L-galactopyranoside. Glycerol 2-α-L-fucopyranoside



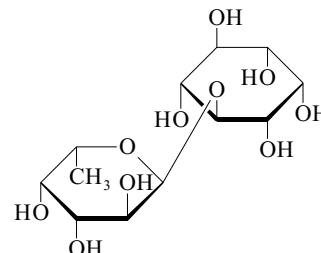
C₉H₁₈O₇ 238.237

Constit. of the fruit of *Cnidium monnieri*. Syrup. [α]_D²³ -127 (c, 0.9 in MeOH).

Kitajima, J. *et al.*, *Phytochemistry*, 2001, 58, 641-644

4-O-α-L-Fucopyranosyl-myo-inositol F-157

4-O-(6-Deoxy-α-L-galactopyranosyl)-D-myo-inositol



C₁₂H₂₂O₁₀ 326.3

1D-form [99044-50-5]

Isol. from human urine of (healthy) ABH-secreters.

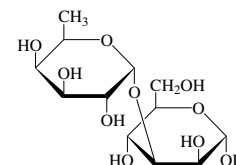
Cryst. + 2H₂O (MeOH/2-propanol).

Mp 241-243°. [α]_D²² -110 (c, 0.2 in H₂O).

Lennartson, G. *et al.*, *Biochem. Biophys. Res. Commun.*, 1976, 69, 920 (*isol*)

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1985, 139, 209 (*synth, abs config*)

3-O-α-D-Fucopyranosyl-D-mannose F-158



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

α-Pyranose-form

Me glycoside: Methyl 3-O-α-D-fucopyranosyl-α-D-mannopyranoside

C₁₃H₂₄O₁₀ 340.327

[α]_D²² +148 (c, 1.0 in H₂O).

Me glycoside, 4,6-O-benzylidene, tetrabenzyl:

C₄₈H₅₂O₁₀ 788.933

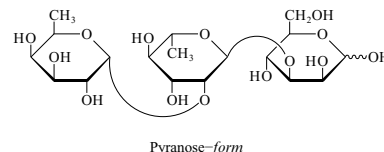
[α]_D²² +63 (c, 1.0 in CHCl₃).

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1988, 209 (*synth, pmr, cmr*)

α-D-Fucopyranosyl-(1→2)-α-L-rhamnopyranosyl-(1→3)-D-mannose F-159

6-Deoxy-α-D-galactopyranosyl-(1→2)-6-deoxy-α-L-mannopyranosyl-(1→3)-D-mannose, 9CI

[135743-31-6]



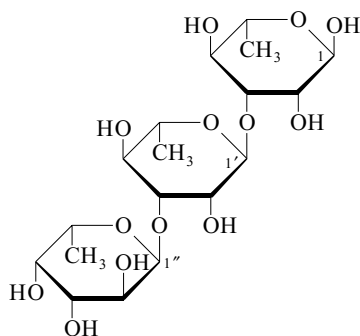
Pyranose-form

C₁₈H₃₂O₁₄ 472.442

Constit. of the repeating unit of the O-polysaccharide of *Pseudomonas gladioli allicola* strain 8494 (313).

Vinogradov, E.V. *et al.*, *Carbohydr. Res.*, 1991, 212, 313 (*occur, pmr, cmr*)

α -L-Fucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose F-160
 6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

α -Pyranose-form

Me glycoside, 2,2'',3'',4''-tetra-Me: [136963-57-0]

$C_{23}H_{42}O_{13}$ 526.577

Isol. as the trisaccharide segment of *Mycobacterium tuberculosis* strain Canetti. Syrup. $[\alpha]_D^{26}$ -136 (c, 0.22 in MeOH).

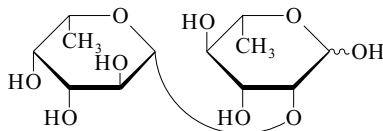
Me glycoside, 2',4,4'-tribenzyl, 2,2'',3'',4''-tetra-Me: [136933-85-2]

$C_{44}H_{60}O_{13}$ 796.95

Syrup. $[\alpha]_D^{25}$ -39.8 (c, 0.5 in $CHCl_3$).

Gurjar, M.K. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 481 (occur, α -Me pyr tetra-Me derivs, pmr, cmr)

2-O- β -L-Fucopyranosyl-L-rhamnose F-161
 2-O-6-Deoxy- β -L-galactopyranosyl-L-rhamnose
 [130009-30-2]

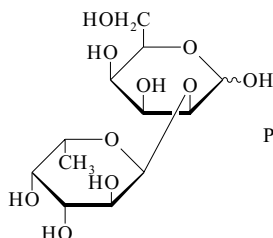


$C_{12}H_{22}O_9$ 310.3

Reducing disaccharide. $[\alpha]_D^{22}$ +9 (c, 0.7 in H_2O).

Jansson, P.E. *et al.*, *J.C.S. Perkin 1*, 1990, 591 (synth, pmr, cmr)

2-O- α -L-Fucopyranosyl-D-talose F-162
 2-O-(6-Deoxy- α -L-galactopyranosyl)-D-talose



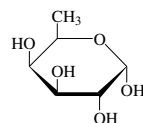
Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3

$[\alpha]_D$ -120 (H_2O).

Kuhn, R. *et al.*, *Annalen*, 1958, **611**, 242 (synth)

Fucose F-163
 6-Deoxygalactose. Rhodeose. Galactomethylose



α -D-Pyranose-form

$C_6H_{12}O_5$ 164.158

An aq. soln. at 31°C contains 28% α -pyr, 67% β -pyr, =5% fur and 0.01% aldehyde.

D-form [3615-37-0]

Obtained from glycosides found in various spp. of Convolvulaceae.

Mp 140-143°. $[\alpha]_D^{22}$ +89 \rightarrow +75.7 (H_2O).

Osazone: Mp 174-175°.

2-Me: 2-O-Methyl-D-fucose

[56192-98-4]

$C_7H_{14}O_5$ 178.185

Mp 150-153°. $[\alpha]_D^{25}$ +79 (c, 1 in H_2O).

3-Me: 6-Deoxy-3-O-methyl-D-galactose, 9CI. 3-O-Methyl-D-fucose. **Digitalose**

[523-74-0]

[4481-08-7]

$C_7H_{14}O_5$ 178.185

Hydrol. prod. of the cardiac glycosides from *Digitalinum verum* and from the seeds of *Strophanthus emini*. Also from many other steroidal glycosides. Cryst. (EtOAc).

Mp 104-106°. $[\alpha]_D$ +109 (c, 0.8 in H_2O).

4-Me: 4-O-Methyl-D-fucose. **Curacose**

[10592-43-5]

$C_7H_{14}O_5$ 178.185

Hydrol. prod. of Curamycin A, C-157, Everninomicin B, E-33 and Flambamycin, F-8. Prisms (EtOAc). Mp 131-132°. $[\alpha]_D^{24}$ +80.6 (c, 0.92 in H_2O).

2,4-Di-Me: 2,4-Di-O-methyl-D-fucose.

Labilose

[10123-01-0]

$C_8H_{16}O_5$ 192.211

Mp 131.5-132°. $[\alpha]_D^{25}$ +146 \rightarrow +100 (c, 1 in H_2O). $[\alpha]_D^{25}$ +94 \rightarrow +186 (H_2O).

α -D-Pyranose-form [6189-71-5]

Plates (EtOH). Mp 139-142°. $[\alpha]_D^{20}$ +76.6 (c, 1 in H_2O).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- α -D-fucopyranose
 [34371-40-9]
 $C_{14}H_{20}O_9$ 332.307
 Mp 94°. $[\alpha]_D^{25}$ +122 (c, 1.04 in $CHCl_3$).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene- α -D-fucopyranose
 [56119-01-8]
 $C_9H_{16}O_5$ 204.222
 Mp 110-111°. $[\alpha]_D^{22}$ +86 \rightarrow +71 (c, 2 in H_2O , 24h).

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene- α -D-fucopyranose
 [4026-27-1]

$C_{12}H_{20}O_5$ 244.287

Syrup. Bp_{0.2} 59-61°. $[\alpha]_D^{20}$ -62 ($CHCl_3$).

3-Me, 1,2,4-tri-Ac: 1,2,4-Tri-O-acetyl-3-O-methyl- α -D-fucopyranoside

$C_{13}H_{20}O_8$ 304.296

Needles. Mp 115-117°. $[\alpha]_D^{17}$ +160.8 ($CHCl_3$).

2-Benzyl: 2-O-Benzyl- α -D-fucopyranose

$C_{13}H_{18}O_5$ 254.282

Mp 164°. $[\alpha]_D$ +66.3 (H_2O). CAS No not found 8-14CI.

2,3,4-Tribenzyl: 2,3,4-Tri-O-benzyl- α -D-fucopyranose

[156719-47-0]

$C_{27}H_{30}O_5$ 434.531

Cryst. (Et₂O/hexane). Mp 94.5-95.6°. $[\alpha]_D^{20}$ +24 (c, 1.0 in $CHCl_3$).

2,3,4-Tribenzyl, 1-Ac: 1-O-Acetyl-2,3,4-tri-O-benzyl- α -D-fucopyranose

[156769-29-8]

$C_{29}H_{32}O_6$ 476.568

Cryst. (MeOH). Mp 119.6-120.6°. $[\alpha]_D^{20}$ +63.5 (c, 1.0 in $CHCl_3$).

Me glycoside: See Methyl fucopyranoside, M-183

β -D-Pyranose-form [28161-52-6]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- β -D-fucopyranose

[34371-41-0]

$C_{14}H_{20}O_9$ 332.307

Gum. $[\alpha]_D^{24}$ +47 (c, 2.1 in $CHCl_3$).

3-Me, 1,2,4-tri-Ac: 1,2,4-Tri-O-acetyl-3-O-methyl- β -D-fucopyranoside

[67441-10-5]

$C_{13}H_{20}O_8$ 304.296

Rods (Et₂O/petrol). Mp 96-97°. $[\alpha]_D^{17}$ +50.4 ($CHCl_3$).

3,4-Di-Me, 1,2-di-Ac: 1,2-Di-O-acetyl-3,4-di-O-methyl- β -D-fucopyranose

[60551-16-8]

$C_{12}H_{20}O_7$ 276.286

Mp 99-100°.

α -D-Furanose-form

3-Me, 1,2-O-isopropylidene: 1,2-O-Isopropylidene-3-O-methyl- α -D-fucofuranose

[34685-34-2]

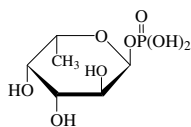
$C_{10}H_{18}O_5$ 218.249

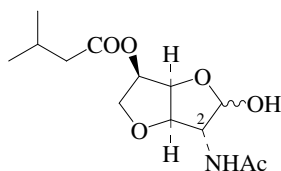
Bp₁₅ 110-115°. $[\alpha]_D$ -27.5 (c, 0.8 in $CHCl_3$).

Me glycoside: Methyl α -D-fucofuranoside
 [60762-64-3]

$C_7H_{14}O_5$ 178.185

Cryst. (EtOAc). Mp 127-128° (124-125°). $[\alpha]_D$ +104.7 (c, 0.3 in MeOH).

- Me glycoside, 2,3,5-tribenzyl: Methyl 2,3,5-tri-O-benzyl- α -D-fucofuranoside* [102935-32-0]
 $C_{28}H_{32}O_5$ 448.558
 $[\alpha]_D^{20} +20.2$ (c, 1.2 in MeOH).
- β -D-Furanose-form** [91443-99-1]
2,3,5-Tribenzyl, 1-Ac: 1-O-Acetyl-2,3,5-tri-O-benzyl- β -D-fucofuranose [102935-38-6]
 $C_{29}H_{32}O_6$ 476.568
 Syrup. $[\alpha]_D^{28} -36.9$ (c, 1.5 in MeOH).
- Me glycoside: Methyl β -D-fucofuranoside* [72813-19-5]
 $C_7H_{14}O_5$ 178.185
 Hygroscopic syrup. $[\alpha]_D^{28} -120.5$ (c, 1.4 in MeOH).
- Me glycoside, 2,3,5-tri-Ac: Methyl 2,3,5-tri-O-acetyl- β -D-fucofuranoside* [103002-26-2]
 $C_{13}H_{20}O_8$ 304.296
 $[\alpha]_D^{19} -61.8$ (c, 1.3 in MeOH).
- Me glycoside, 2,3,5-tri-Me: Methyl 2,3,5-tri-O-methyl- β -D-fucofuranoside* [102935-40-0]
 $C_{10}H_{20}O_5$ 220.265
 Oil. Bp₁ 75-77°. $[\alpha]_D^{30} -111.4$ (c, 0.6 in $CHCl_3$).
- Me glycoside, 2,3,5-tribenzyl: Methyl 2,3,5-tri-O-benzyl- β -D-fucofuranoside* [102935-31-9]
 $C_{28}H_{32}O_5$ 448.558
 Syrup. $[\alpha]_D^{15} -63.8$ (c, 1.8 in MeOH).
- L-form** [2438-80-4]
 A constit. of the polysaccharides obt. from eggs of sea urchin, frog spawn, gum tragacanth and marine algae. Also found in glycoproteins obt. from mucins, blood group substances and milk.
 Prisms (EtOH).
 Mp 145° (140-141°). $[\alpha]_D^{17} -124 \rightarrow -76$ (c, 2.0 in H_2O).
- Methylphenylhydrazone*: Mp 180-182°. $[\alpha]_D^{23} +6$ (c, 5.0 in Py).
- 2-Me: 2-O-Methyl-L-fucose** [34299-00-8]
 $C_7H_{14}O_5$ 178.185
 Present in plant polysaccharides, e.g. of *Prunus domestica* (plum).
 Mp 150-152°. $[\alpha]_D^{23} -88$ (c, 1.02 in H_2O).
- 3-Me: 6-Deoxy-3-O-methyl-L-galactose. 3-O-Methyl-L-fucose** [14064-39-2]
 $C_7H_{14}O_5$ 178.185
 Present in *Rhizobium* extracellular polysaccharides. Needles (EtOH/Et₂O).
 Mp 116-118°. $[\alpha]_D^{23} -93$ (c, 1.4 in H_2O).
- 4-Me: 4-O-Methyl-L-fucose** [42822-30-0]
 $C_7H_{14}O_5$ 178.185
 Syrup. $[\alpha]_D^{22} -76$ (c, 1.12 in H_2O).
- 2,4-Di-Me: 2,4-Di-O-methyl-L-fucose** [93132-55-9]
 $C_8H_{16}O_5$ 192.211
 Mp 131-132°. $[\alpha]_D -85$ (H_2O).
- 2,3-Dibenzyl: 2,3-Di-O-benzyl-L-fucose** [42822-45-7]
 $C_{20}H_{24}O_5$ 344.407
 Syrup. $[\alpha]_D^{23} +12$ (c, 1.86 in $CHCl_3$).
- 3,4-Dibenzyl: 3,4-Di-O-benzyl-L-fucose** [42822-39-9]
 $C_{20}H_{24}O_5$ 344.407
 Syrup. $[\alpha]_D^{25} -72$ (c, 1.41 in $CHCl_3$).
- 2,3,4-Tribenzyl: 2,3,4-Tri-O-benzyl-L-fucose** [60431-34-7]
 $C_{27}H_{30}O_5$ 434.531
 Mp 87-89°. $[\alpha]_D^{24} -29.7$ (c, 1.7 in $CHCl_3$).
- α -L-Pyranose-form** [51348-50-6]
 [6696-41-9]
 Cryst. (EtOH aq.). Mp 143-144°.
- 2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -L-fuco-pyranose** [40591-54-6]
 $C_{12}H_{18}O_8$ 290.269
 Mp 117°. $[\alpha]_D^{25} -118$ (c, 1.0 in EtOH).
- Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- α -L-fucopyranose** [24332-95-4]
 $C_{14}H_{20}O_9$ 332.307
 Mp 93°. $[\alpha]_D -116$ (c, 1.0 in $CHCl_3$).
- 2-Benzyl: 2-O-Benzyl- α -L-fucopyranose** [37776-55-9]
 $C_{13}H_{18}O_5$ 254.282
 Needles (H_2O). Mp 168-170°. $[\alpha]_D^{25} -64.5$ (c, 1.0 in H_2O).
- 2,4-Dibenzyl: 2,4-Di-O-benzyl- α -L-fuco-pyranose** [42822-31-1]
 $C_{20}H_{24}O_5$ 344.407
 Needles (Me_2CO/Et_2O). Mp 133-135°. $[\alpha]_D^{25} -75.5$ (c, 1.16 in $CHCl_3$).
- 2,3,4-Tribenzyl: 2,3,4-Tri-O-benzyl- α -L-fucopyranose** [33639-75-7]
 $C_{27}H_{30}O_5$ 434.531
 Cryst. (Et_2O /hexane). Mp 102-103°. $[\alpha]_D^{25} -26.5$ (c, 1.0 in $CHCl_3$).
- β -L-Pyranose-form** [13224-93-6]
2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- β -L-fuco-pyranose [40591-53-5]
 $C_{12}H_{18}O_8$ 290.269
 Mp 102-103°. $[\alpha]_D^{25} -5.19 \rightarrow -77$ (c, 1.0 in EtOH).
- Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- β -L-fucopyranose** [50615-78-6]
 $C_{14}H_{20}O_9$ 332.307
 $[\alpha]_D -34.16$ (c, 1.19 in $CHCl_3$).
- α -L-Furanose-form**
Me glycoside: Methyl α -L-fucofuranoside [57472-02-3]
 $C_7H_{14}O_5$ 178.185
 Syrup. $[\alpha]_D^{25} -192$ (c, 2.0 in H_2O).
 [3713-31-3]
 Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 188A; 190A (ir)
 Aldrich Library of ¹³C and ¹H FT NMR Spectra, 1992, 1, 291A (nmr)
 Lamb, I.D. et al., J.C.S., 1936, 442-447 (Digitalose, isol)
 Schmidt, O.T. et al., Annalen, 1944, 556, 179-186 (Digitalose, synth)
 Tamm, C. et al., Helv. Chim. Acta, 1949, 32, 163-172 (Digitalose, synth, α -D-tri-Ac, β -D-tri-Ac)
 Andrews, P. et al., Chem. Ind. (London), 1957, 1453 (2-O-Me, isol)
 Galmarni, O.L. et al., Tetrahedron, 1961, 15, 76-86 (4-Me, isol)
- Schmidt, O.Th. et al., Methods Carbohydr. Chem., 1962, 1, 191 (D-form, synth)
 Percival, E. et al., Methods Carbohydr. Chem., 1962, 1, 195 (L-form, synth)
 Gros, E.G. et al., Carbohydr. Res., 1966, 2, 56-62 (D-form, 4-Me, synth)
 Leaback, D.H. et al., Biochemistry, 1969, 8, 1351-1359 (α -L-pyr tetra-Ac)
 Binkley, W.W. et al., Carbohydr. Res., 1969, 11, 1-8 (D-diisopropylidene)
 Izumi, K. et al., Agric. Biol. Chem., 1971, 35, 1816-1818 (pmr)
 Dejter-Juszynski, M. et al., Carbohydr. Res., 1971, 18, 219-226; 1972, 23, 41-45; 1973, 28, 61-74; 144-146 (L-form, α -L-pyr benzyl derivs)
 Brimacombe, J.S. et al., J.C.S. (C), 1971, 3762-3765 (Digitalose, synth)
 Prihar, H.S. et al., Biochemistry, 1973, 12, 997-1002 (α -L-pyr tri-Ac, β -L-pyr tri-Ac)
 Dejter-Juszynski, M. et al., Carbohydr. Res., 1973, 28, 61-78 (L-3-Me)
 Longchambon, F. et al., Acta Cryst. B, 1975, 31, 2623-2627 (α -L-pyr, cryst struct)
 Gorin, P.J. et al., Can. J. Chem., 1975, 53, 1212-1223 (pmr)
 Morgenlie, S. et al., Carbohydr. Res., 1975, 41, 77-83 (α -D-pyr isopropylidene, α -D-pyr 2-Me)
 Montalvo, V.L. et al., CA, 1976, 84, 74536k (D-form, synth)
 Simon, P. et al., Synthesis, 1979, 951-952 (α -D-pyr diisopropylidene)
 Kennedy, L.D. et al., Carbohydr. Res., 1980, 87, 156-160 (L-3-Me, occur)
 Flowers, H.M. et al., Adv. Carbohydr. Chem. Biochem., 1981, 39, 279-345 (rev)
 Defaye, J. et al., Carbohydr. Res., 1981, 95, 131-141; 1984, 126, 165-169 (L-form, synth)
 Angyal, S.J. et al., Adv. Carbohydr. Chem. Biochem., 1984, 42, 15 (equilib)
 Kinoshita, T. et al., Carbohydr. Res., 1985, 143, 249-255 (α -D-fur derivs, β -D-fur derivs)
 Danishefsky, S.J. et al., J.A.C.S., 1985, 107, 1269-1274 (DL-form, total synth)
 Kristen, H. et al., J. Carbohydr. Chem., 1988, 7, 277-281 (L-form, synth)
 Aqeel, A. et al., J. Carbohydr. Chem., 1989, 8, 405-412 (2,4-dibenzyl)
 Lerner, L.M. et al., Carbohydr. Res., 1993, 241, 291-294 (α -D-pyr tetra-Ac)
 Lai, W. et al., Carbohydr. Res., 1993, 250, 185-193 (α -D-pyr 2,3,4-tribenzyl derivs)
 Sarbajna, S. et al., Carbohydr. Res., 1995, 270, 93-96 (L-form, synth)
 Takanashi, S. et al., J.C.S. Perkin 1, 1997, 607-612 (L-form, synth, pmr, cmr)
- Fucose 1-dihydrogen phosphate F-164**
Fucose 1-phosphate
- 
- $C_6H_{13}O_8P$ 244.138
- β -L-Pyranose-form** [16562-59-7]
 Solid (as dicyclohexylammonium salt).
 Mp 177-179° (browns before melting) (DCHA salt).
- 2,3,4-Tribenzoyl: [149300-29-8]**
 $C_{27}H_{25}O_{11}P$ 556.462
 Foam (as triethylamine salt).
 [40591-57-9]
 Adelhorst, K. et al., Carbohydr. Res., 1993, 242, 69

Furanodictine A

$C_{13}H_{21}NO_6$ 287.312

Prod. by *Dictyostelium discoideum*. Neuronal cell differentiation inducer. Oil. $[\alpha]_D^{25} +100.4$ (c, 0.23 in $CHCl_3$).

2-Epimer: Furanodictine B

$C_{13}H_{21}NO_6$ 287.312

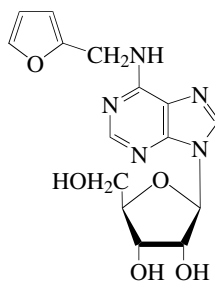
Prod. by *Dictyostelium discoideum*. Oil. $[\alpha]_D^{25} +85.6$ (c, 0.25 in $CHCl_3$).

Kikuchi, H. *et al.*, *J.O.C.*, 2001, **66**, 6982-6987 (*isol*)

Yoda, H. *et al.*, *Tet. Lett.*, 2004, **45**, 1599-1601 (*synth*)

F-165**N-(2-Furanylmethyl)adenosine, 9CI**

N-Furfuryladosine, 8CI. 6-Furylaminopurine
[4338-47-0]



$C_{15}H_{17}N_5O_5$ 347.33

Plant growth stimulant. Mp 152-154°. $[\alpha]_D^{22} -61.8$ (c, 1 in EtOH).

Hampton, A. *et al.*, *J.A.C.S.*, 1956, **78**, 5695 (*synth, uv, biochem*)

F-166

Conrad, K. *et al.*, *Biochem. Biophys. Pflanz.*, 1971, **162**, 327-333 (*biochem*)
Sattangi, P.D. *et al.*, *J.A.C.S.*, 1980, **102**, 770-774 (*synth*)
van Staden, J. *et al.*, *Plant Growth Regul.*, 1991, **10**, 109-115 (*biochem*)
Nicander, B. *et al.*, *Planta*, 1993, **189**, 312-320 (*hplc*)

Furcelleran**F-167**

Furcelleran gum. Danish agar. Burtonite 44

[9000-21-9]

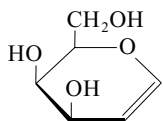
A sulfated polysaccharide, the dominant hexose units of which are galactose, anhydrogalactose and their half-ester sulfates. Obt. by extraction of the red seaweed *Furcellaria fastigata* (Rhodophyceae).

Bjerre-Peterson, E *et al.*, *Ind. Gums*, (ed. Whistler, R. L.), 2nd edn., Academic Press, 1973, 123-136 (*rev*)

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1135-1139 (*use, props, salts*)

Galactal, 8CI**G-1**

2,6-Anhydro-5-deoxy-arabino-hex-5-enitol, 12CI. 1,5-Anhydro-2-deoxy-lyxo-hex-1-enitol, 9CI. 1,2-Dideoxy-lyxo-1-hexenopyranose. Talal



Pyranose-form

C₆H₁₀O₄ 146.143

CAS name changed from 12CI. The *arabino* name strictly takes precedence under IUPAC rules. The enantiomer shown is D-*arabino* or D-*lyxo*-.

D-form [21193-75-9]

Mp 104° (93-94°). [α]_D -23 (c, 1 in MeOH). [α]_D +5 (c, 1.2 in MeOH). [α]_D²² -6 (c, 2.0 in H₂O).

Tri-Ac: 3,4,6-Tri-O-acetyl-1,5-anhydro-2-deoxy-D-lyxo-hex-1-enitol [4098-06-0] C₁₂H₁₆O₇ 272.254 Mp 30°. Bp_{0.01} 125-130°. [α]_D²³ -15 (c, 3.0 in CHCl₃).

3,6-Dibenzoyl: 1,5-Anhydro-3,6-di-O-benzoyl-2-deoxy-D-lyxo-hex-1-enitol [130323-36-3] C₂₀H₁₈O₆ 354.359 Mp 120-121°. [α]_D +106 (c, 1 in CHCl₃).

Tribenzoyl: 1,5-Anhydro-3,4,6-tri-O-benzoyl-2-deoxy-D-lyxo-hex-1-enitol [34948-79-3] C₂₇H₂₂O₇ 458.467 Syrup. [α]_D²³ -106 (c, 0.8 in CHCl₃).

3,4-O-Isopropylidene: 1,5-Anhydro-2-deoxy-3,4-O-isopropylidene-D-lyxo-hex-1-enitol C₉H₁₄O₄ 186.207 Cryst. (petrol). Mp 41-43°. Bp_{0.1} 110-112°. [α]_D²⁰ +14 (c, 1.62 in Me₂CO). [α]_D +28 (c, 1.9 in CHCl₃).

3,4-O-Isopropylidene, 6-Ac: 6-O-Acetyl-1,5-anhydro-2-deoxy-3,4-O-isopropylidene-D-lyxo-hex-1-enitol C₁₁H₁₆O₅ 228.244 Syrup. [α]_D +16 (c, 1.2 in CHCl₃).

3,4-O-Isopropylidene, 6-mesyl: 1,5-Anhydro-2-deoxy-3,4-O-isopropylidene-6-O-mesyl-D-lyxo-hex-1-enitol C₁₀H₁₆O₆S 264.299 Needles (MeOH aq.). Mp 131-133°. [α]_D²⁰ +16 (c, 1.6 in Me₂CO).

3,4-O-Isopropylidene, 6-tosyl: 1,5-Anhydro-2-deoxy-3,4-O-isopropylidene-6-O-tosyl-D-lyxo-hex-1-enitol C₁₆H₂₀O₆S 340.396 Needles (MeOH). Mp 81-83°. [α]_D²⁴ +22 (CHCl₃).

4,6-O-Isopropylidene: 1,5-Anhydro-2-deoxy-4,6-O-isopropylidene-D-lyxo-hex-1-enitol C₉H₁₄O₄ 186.207 Mp 48-50°. [α]_D +18 (c, 1.1 in CHCl₃).

4,6-O-Benzylidene: 1,5-Anhydro-4,6-O-benzylidene-2-deoxy-D-lyxo-hex-1-enitol C₁₃H₁₄O₄ 234.251 Cryst. (EtOAc/hexane). Mp 151-152°. [α]_D +47 (c, 1.0 in CHCl₃).

6-Me, 3,4-O-isopropylidene: 1,5-Anhydro-2-deoxy-3,4-O-isopropylidene-6-O-methyl-D-lyxo-hex-1-enitol C₁₀H₁₆O₄ 200.234 Syrup. [α]_D +19 (c, 1.7 in CHCl₃).

Tri-Me: 1,5-Anhydro-2-deoxy-3,4,6-tri-O-methyl-D-lyxo-hex-1-enitol C₉H₁₆O₄ 188.223 Bp_{0.001} 55-60°. [α]_D²³ -36.8 (c, 2.1 in CHCl₃).

6-Benzyl, 3,4-O-isopropylidene: 1,5-Anhydro-6-O-benzyl-2-deoxy-3,4-O-isopropylidene-D-lyxo-hex-1-enitol C₁₆H₂₀O₄ 276.332 Oil. Bp₃ 150°. [α]_D +18 (c, 1.2 in CHCl₃).

3,4-Dibenzyl, 6-Ac: 6-O-Acetyl-3,4-di-O-benzyl-D-galactal C₂₂H₂₄O₅ 368.429 Cryst. (Et₂O/hexane). Mp 47°. [α]_D²⁰ -71 (c, 1.0 in CHCl₃).

3,6-Dibenzyl, 4-Ac: 4-O-Acetyl-3,6-di-O-benzyl-D-galactal C₂₂H₂₄O₅ 368.429 Cryst. (Et₂O/hexane). Mp 51°. [α]_D -19 (c, 1.0 in CHCl₃).

4,6-Dibenzyl: 4,6-Di-O-benzyl-D-galactal C₂₀H₂₂O₄ 326.391 Cryst. (Et₂O). Mp 68°. [α]_D²⁰ -17 (c, 1.0 in CHCl₃).

4,6-Dibenzyl, 3-Ac: 3-O-Acetyl-4,6-di-O-benzyl-D-galactal C₂₂H₂₄O₅ 368.429 Syrup. [α]_D²⁰ -34 (c, 1.0 in CHCl₃).

Tribenzyl: 2,6-Anhydro-1,3,4-tri-O-benzyl-5-deoxy-D-arabino-hex-5-enitol [80040-79-5] C₂₇H₂₈O₄ 416.516 Mp 51° (47-48°). [α]_D -46 (c, 0.9 in CHCl₃).

L-form

Tribenzyl: 2,6-Anhydro-1,3,4-tri-O-benzyl-5-deoxy-L-arabino-hex-5-enitol [652972-16-2] C₂₇H₂₈O₄ 416.516 Oil. [α]_D²⁰ +42 (c, 1 in CHCl₃).

Foster, A.B. et al., *J.C.S.*, 1949, 2542 (isopropylidene, isopropylidene mesyl, isopropylidene tosyl)

Kuhn, R. et al., *Chem. Ber.*, 1955, **88**, 1537 (*D*-form synth, tri-Ac, tri-Me)

Shafizadeh, F. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 409 (synth)

Ferrier, R.J. et al., *Adv. Carbohydr. Chem.*, 1965, **20**, 67; 1969, **24**, 199 (rev)

Lundt, I. et al., *Acta Chem. Scand.*, 1971, **25**, 2749 (tribenzoyl)

Chalmers, A.A. et al., *J.C.S. Perkin 2*, 1974, 728 (pmr)

Bovin, N.V. et al., *J. Carbohydr. Chem.*, 1983, **2**, 249-262 (benzyl derivs)

Czernecki, S. et al., *J.O.C.*, 1986, **51**, 5472-5475 (synth)

Jacquinet, J.C. et al., *Carbohydr. Res.*, 1990, **199**, 153-181 (synth, pmr, cmr, 3,6-dibenzoyl)

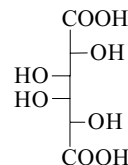
Shull, B.K. et al., *J. Carbohydr. Chem.*, 1996, **15**, 855-964 (tri-Ac, synth, ir, pmr, cmr)

Koto, S. et al., *Bull. Chem. Soc. Jpn.*, 1999, **72**, 765-777 (synth, D-tribenzyl)

Boulineau, F.P. et al., *J.O.C.*, 2004, **69**, 3391-3399 (L-tribenzyl, synth, pmr, cmr)

Galactaric acid, 9CI, 8CI**G-2**

1,2,3,4-Tetrahydroxy-1,4-butanedicarboxylic acid. Mucic acid. Tetrahydroxyadipic acid. Galactosaccharic acid [526-99-8]

C₆H₁₀O₈ 210.14

A *meso*-compd., certain derivs. induce asymmetry. For stereoisomers see Glucaric acid, G-241, Allaric acid, A-74, Mannaric acid, M-23, Galactaric acid, G-2 and Idaric acid, I-1. Isol. from sporophylls of brown algae, various fruits and fungi. Used as 2% aq. soln. to form colour complexes with Fe, Co, Cr(III), Mn, U(VI). (pH 3-10). Cryst. Sol. alkalis; spar. sol. H₂O. Mp 213° Mp 225° Mp 230° dec.

► LD₅₀ (mus, orl) 8000 mg/kg. LW5180000

Ca salt: Calcium mucate

[28380-80-5]

Mp 213°.

Bisphenylhydrazide: Mp 240°.

Di-Me ester: Dimethyl galactarate

C₈H₁₄O₈ 238.194

Mp 205°.

Mono-Et ester ((±)-):

C₈H₁₄O₈ 238.194

Mp 181-182°.

Di-Et ester: Diethyl galactarate

C₁₀H₁₈O₈ 266.247

Mp 171-172°.

Diamide: Galactaric diamide

C₆H₁₂N₂O₆ 208.171

Mp 220°.

2,3,4,5-Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-galactaric acid

C₁₄H₁₈O₁₂ 378.289

Mp 260° dec.

2,3,4,5-Tetra-Ac, di-Me ester:

C₁₆H₂₂O₁₂ 406.343

Mp 117° (110°).

2,3,4,5-Tetra-Ac, di-Et ester:

C₁₈H₂₆O₁₂ 434.396

Mp 195° (189°).

2,3,4,5-Tetra-Ac, dichloride:

C₁₄H₁₆Cl₂O₁₀ 415.18

Mp 189° (177°).

2,3,4,5-Tetra-Ac, diamide: 2,3,4,5-Tetra-O-acetyl-galactaric diamide

C₁₄H₂₀N₂O₁₀ 376.319

Mp 290-292°.

2-O-(3,4,5-Trihydroxybenzoyl): 2-O-

Galloylgalactaric acid. 2-O-Galloylmucic acid

C₁₃H₁₄O₁₂ 362.246

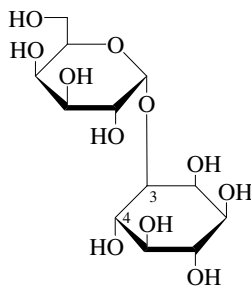
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. off-white powder + 1½ H₂O. [α]_D²² -25.3 (c, 0.28 in H₂O).

- 2-O-(3,4,5-Trihydroxybenzoyl), 1-Me ester:
C₁₄H₁₆O₁₂ 376.273
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 1 H₂O. [α]_D²² -38.1 (c, 0.22 in MeOH).
- 2-O-(3,4,5-Trihydroxybenzoyl), 6-Me ester:
C₁₄H₁₆O₁₂ 376.273
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 1½ H₂O. [α]_D²² -43.9 (c, 0.28 in MeOH).
- 2-O-(3,4,5-Trihydroxybenzoyl), di-Me ester:
C₁₅H₁₈O₁₂ 390.3
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 1¼ H₂O. [α]_D²² -51 (c, 0.41 in MeOH).
- 2,3,4,5-Di-O-methylene, di-Et ester:
[54929-03-2]
C₁₂H₁₈O₈ 290.269
Mp 107°.
- 2,5:3,4-Di-O-methylene, di-Et ester:
[54929-01-0]
C₁₂H₁₈O₈ 290.269
Mp 162-163°.
- Di-O-isopropylidene, di-Et ester:
C₁₆H₂₆O₈ 346.377
Mp 85°.
- 2,3,5-Tri-Me(±)-: 2,3,5-Tri-O-methylgalactaric acid
C₉H₁₆O₈ 252.221
Mp 164°.
- Tetra-Me: 2,3,4,5-Tetra-O-methylgalactaric acid
C₁₀H₁₈O₈ 266.247
Solid. Mp 151-153°.
- 1,4-Lactone, Et ester((±)-):
C₈H₁₂O₇ 220.179
Mp 103-104°.
- 1,4-Lactone, 2-O-(3,4,5-trihydroxybenzoyl): 2-O-Galloyl-1,4-galactarolactone
C₁₃H₁₂O₁₁ 344.231
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 1H₂O. [α]_D²² -9.5 (c, 0.26 in MeOH). This and the other *P. emblica* galactarolactones are chiral compds. but the information on their abs. config. in the lit. is confusing.
- 1,4-Lactone, 2-O-(3,4,5-trihydroxybenzoyl), Me ester:
C₁₄H₁₄O₁₁ 358.258
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 2 3/4 H₂O. [α]_D²² -13 (c, 0.19 in MeOH).
- 1,4-Lactone, 3-O-(3,4,5-trihydroxybenzoyl): 3-O-Galloyl-1,4-galactarolactone
C₁₃H₁₂O₁₁ 344.231
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 2H₂O. [α]_D²² -30.3 (c, 0.16 in MeOH). See note under 2-galloyl isomer.
- 1,4-Lactone, 5-O-(3,4,5-trihydroxybenzoyl): 5-O-Galloyl-1,4-galactarolactone
C₁₃H₁₂O₁₁ 344.231
Consist. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 1½H₂O. [α]_D²² -29.3 (c, 0.33 in MeOH). See note under 2-galloyl isomer.

- 1,4-Lactone, 5-O-(3,4,5-trihydroxybenzoyl), Me ester:
C₁₄H₁₄O₁₁ 358.258
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 2½ H₂O. [α]_D²² -30.9 (c, 0.58 in MeOH).
- 1,4-Lactone, 3,5-bis-O-(3,4,5-trihydroxybenzoyl): 3,5-Di-O-galloyl-1,4-galactarolactone
C₂₀H₁₆O₁₅ 496.337
Constit. of the fruit of emblic (*Phyllanthus emblica*). Amorph. powder + 2½H₂O. [α]_D²² -96.5 (c, 0.2 in MeOH). See note under 2-O-galloyl deriv.
- Aldrich Library of NMR Spectra, 2nd edn., 1983, 1, 458B (nmr)
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 524A (ir)
Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, 4th edn., J.A. Barth, 1935, 359 (rev. derivs)
Anet, E.F.L.J. et al., Nature (London), 1954, 174, 930 (isol)
Togawasa, Y. et al., CA, 1955, 49, 7064 (isol)
Tanner, H. et al., CA, 1961, 72, 77441p (Ca salt)
Lewis, B.A. et al., Methods Carbohydr. Chem., 1963, 2, 38 (synth, di-Me ester, tetra-Ac, 2,3,5-tri-Me, tetra-Ac dichloride, di-Me ester tetra-Ac, di-Et ester derivs)
Schormueller, J. et al., Z. Lebensm.-Unters. - Forsch., 1967, 132, 270-276 (formn, grapes)
Burden, I.J. et al., J.C.S. Perkin 1, 1974, 863 (pmr)
Jeffrey, G.A. et al., Carbohydr. Res., 1982, 108, 205 (cryst struct)
Gonzalez-Portal, A. et al., Microchem. J., 1982, 27, 357 (use)
Zhang, Y.-J. et al., Chem. Pharm. Bull., 2001, 49, 537-540 (2-galloyl derivs)
Mancera, M. et al., Carbohydr. Res., 2003, 338, 1115-1119 (tetra-O-Me)
Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, GAR000

Galactinol**G-3**

3-O-α-D-Galactopyranosyl-myo-inositol, 8CI. 1-O-α-D-Galactopyranosyl-myo-inositol (incorr.)
[3687-64-7]

C₁₂H₂₂O₁₁ 342.299

Frequently named as 1-O-galactosyl; see under myo-Inositol, I-32 for correct numbering. Constit. of sugar-beet juice, castor-oil seed meal, potatoes after cold storage, and cambial sap of beech. Present in plant families Bignoniaceae, Ericaceae, Labiatae and Onagraceae and esp. widespread in seeds of the Leguminosae. Galactosyl donor in formation of raffinose oligosaccharides in

higher plants. Thought to function in legume seeds as protectant against desiccation.

Mp 113-114° (closed tube) Mp 220-222° (open tube) (dihydrate). [α]_D²⁰ +135.6 (c, 2.0 in H₂O).

4-Me: 3-O-α-D-Galactopyranosyl-4-O-methyl-D-myo-inositol. 3-O-α-D-Galactopyranosylononitol. 4-O-Methylgalactinol
[75589-40-1]
C₁₃H₂₄O₁₁ 356.326
Powder. [α]_D²⁰ +129.6 (c, 0.5 in H₂O). Struct. revised in 1997.

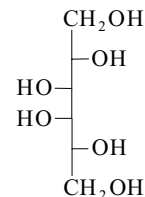
Nona-Me:

Cryst. (pentane). Mp 96.5-98°. [α]_D +119 (c, 2.0 in H₂O).

- Brown, R.J. et al., J.A.C.S., 1953, 75, 1040 (synth)
Kabat, E.A. et al., J.A.C.S., 1953, 75, 4507 (struct, nona-Me)
Senser, M. et al., Phytochemistry, 1967, 6, 1533 (occur)
Schweizer, T.F. et al., Carbohydr. Res., 1981, 95, 61-71 (cmr, ms)
Kuo, T.M. et al., J. Am. Oil Chem. Soc., 1992, 69, 569-574 (isol, hplc, bibl)
Richter, A. et al., J. Nat. Prod., 1997, 60, 749-751 (4-O-Methylgalactinol)
Mayer, T.G. et al., Liebigs Ann./Recl., 1997, 859 (synth, pmr, cmr)
Marinone, F. et al., Phytochemistry, 1999, 51, 499-505 (isol, pmr)
Noguchi, K. et al., Carbohydr. Res., 2000, 328, 241-248 (cryst struct)

Galactitol**G-4**

galacto-Hexitol. Dulcose. Dulcite. Melampyrin. Dulcitol. Euonymit. Melampyrum [608-66-2]

C₆H₁₄O₆ 182.173

Occurs in various mannans such as *Melampyrum nemorosum*, *Gymnosporia diflexa* and *Maylenus ebenifolia*. Also present in *Evonymus atropurpureus*, in seaweeds and in the pentose fermenting yeast *Torula utilis*. Shows some antitumour effect.

Mp 188.5°. Bp₁ 275-280°. Log P -4.67 (calc). Opt. inactive, a meso-compd.

1,6-Di-Ac: 1,6-Di-O-acetylgalactitol
[20847-03-4]
C₁₀H₁₈O₈ 266.247
Mp 168°.

Hexa-Ac: Hexa-O-acetylgalactitol
C₁₈H₂₆O₁₂ 434.396
Mp 168-171°.

1,6-Dibenzoyl: 1,6-Di-O-benzoyl galactitol
[58917-44-5]
C₂₀H₂₂O₈ 390.389
Mp 206°.

Hexabenzoyl: Hexa-O-benzoylgallactitol
 $C_{48}H_{38}O_{12}$ 806.821
 Mp 189-191°.

Hexanitate:
 $C_6H_8N_6O_{18}$ 452.159
 Mp 94-95°.

1,3:4,6-Dimethylene: 1,3:4,6-Di-O-methyl-
 lenegallactitol
 $C_8H_{14}O_6$ 206.195
 Mp 249-250°.

1,3:4,6-Dibenzylidene: 1,3:4,6-Di-O-ben-
 zylidenegallactitol
 $C_{20}H_{22}O_6$ 358.39
 Mp 215-220°.

1,2:4,5-Di-O-isopropylidene: 1,2:4,5-Di-O-
 isopropylidenegallactitol
 [20581-94-6]
 $C_{12}H_{22}O_6$ 262.302
 Prisms (95% EtOH). Mp 144-145°.

2,3,4,5-Tetra-Me: 2,3,4,5-Tetra-O-methyl-
 gallactitol
 $C_{10}H_{22}O_6$ 238.28
 Solid. Mp 60-62°.

1,6-Ditrityl: 1,6-Di-O-tritylgallactitol
 $C_{44}H_{42}O_6$ 666.812
 Solid. Mp 183-184°.

1,6-Ditrityl, 2,3,4,5-tetra-O-Me: 2,3,4,5-
 Tetra-O-methyl-1,6-di-O-tritylgallactitol
 $C_{48}H_{50}O_6$ 722.919
 Solid. Mp 180-182°.

[45007-61-2]

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 1, 186D (ir)

Aldrich Library of 13C and 1H FT NMR
 Spectra, 1992, 1, 290B (nmr)

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 1934, 1374 (synth)

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 4, 211 (rev, derivs)

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 435 (cryst struct)

Petersson, G. et al., Tetrahedron, 1969, 25, 4437
 (ms)

Bliss, C.A. et al., Phytochemistry, 1972, 11, 1705
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Brimacombe, J.S. et al., The Carbohydrates,
 Academic Press, 1972, 1A, 479 (rev)

Voelter, W. et al., Tetrahedron, 1973, 29, 3845
 (conform, cmr)

Angyal, S.J. et al., Carbohydr. Res., 1980, 84,
 201 (cmr)

Kopf, J. et al., Carbohydr. Res., 1992, 229, 17
 (cryst struct, hexa-Ac)

König, B. et al., Acta Cryst. C, 1998, 54, 1471-
 1473 (1,2:4,5-disopropylidene, cryst struct)

Shirota, O. et al., Nat. Med. (Tokyo), 1998, 52,
 184-186; CA, 129, 193564a (isol, activity)

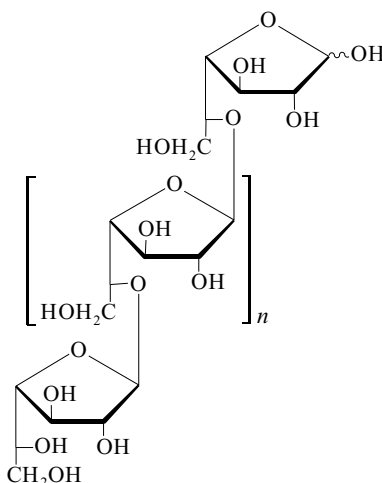
Mancera, M. et al., Carbohydr. Res., 2003, 338,
 1115-1119 (2,3,4,5-tetra-Me, 1,6-ditrityl, 1,6-
 ditrityl tetra-Me)

Galactocarolose, 9CI, 8CI
 [60495-58-1]

G-5

Galactofuranosyl fluoride

G-7



β -D-(1 \rightarrow 5)-Linked polygalactofuranose
 with a chain length of about 9-10 units.
 An extracellular polysaccharide pro-
 duced by *Penicillium charlesii*.

$[\alpha]_D^{25}$ -84 (H₂O).

Haworth, W.N. et al., Biochem. J., 1937, 31, 640
 (isol)

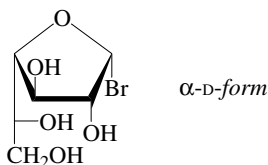
Gorin, P.A. et al., Can. J. Chem., 1959, 37, 499

Trejo, A.G. et al., Biochem. J., 1970, 117, 637
 (biosynth)

Bulman, R.A. et al., Biochim. Biophys. Acta,
 1976, 444, 202

Galactofuranosyl bromide

G-6



$C_6H_{11}BrO_5$ 243.054

α -D-form

2,3-Dibenzoyl, 5-chloroacetyl, 6-pivaloyl:
 [127501-12-6]

$C_{27}H_{28}BrClO_9$ 611.869

Oil. Unstable at ambient temp.

β -D-form

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl- β -D-
 galactofuranosyl bromide
 [39698-24-3]

$C_{14}H_{19}BrO_9$ 411.203

Oil.

2,3-Dibenzyl, 5,6-bis-(4-nitrobenzoyl):
 [55656-71-8]

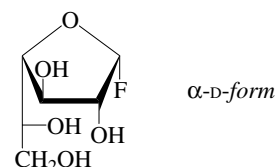
$C_{34}H_{29}BrN_2O_{11}$ 721.514

Amorph. solid. $[\alpha]_D^{25}$ -59.4 (c, 1.2 in
 CHCl₃).

Bock, K. et al., Acta Chem. Scand., Ser. B,
 1974, 28, 1041 (β -tetra-Ac)

Frechet, J.M.J. et al., Can. J. Chem., 1975, 53,
 670 (β -deriv)

Veeneman, G.H. et al., Rec. Trav. Chim. (J. R.
 Neth. Chem. Soc.), 1989, 108, 344 (α -deriv,
 pmr, cmr)



α -D-form

$C_6H_{11}FO_5$ 182.148

α -D-form

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl- α -D-
 galactofuranosyl fluoride
 [51785-55-8]

$C_{14}H_{19}FO_9$ 350.297

Syrup.

β -D-form

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl- β -D-
 galactofuranosyl fluoride
 [51785-54-7]

$C_{14}H_{19}FO_9$ 350.297

Cryst. (Et₂O/pentane). Mp 76-77°. $[\alpha]_D^{24}$
 -15.2 (c, 1.5 in CHCl₃).

Tetrabenzoyl: 2,3,5,6-Tetra-O-benzoyl-
 β -D-galactofuranosyl fluoride
 [51785-56-9]

$C_{34}H_{27}FO_9$ 598.58

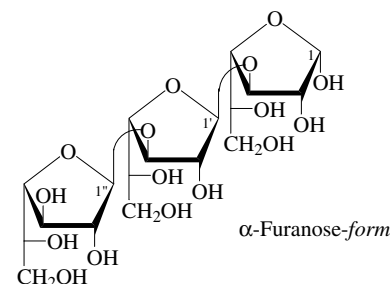
Cryst. Mp 110-111°. $[\alpha]_D^{24}$ +14.9 (c, 1.6
 in CHCl₃).

Bock, K. et al., Acta Chem. Scand., 1973, 27,
 3586 (α -tetra-Ac, β -tetra-Ac, β -tetrabenzoyl,
 pmr, F-19 nmr)

Voznyi, Y.V. et al., Biorg. Khim., 1986, 12, 521;
 Sov. J. Bioorg. Chem. (Engl. Transl.), 1986,
 12, 277 (β -tetra-Ac)

β -D-Galactofuranosyl-(1 \rightarrow 3)-
 β -D-galactofuranosyl-(1 \rightarrow 3)-D-galac-
 tose, 9CI

G-8



α -Furanose-form

$C_{18}H_{32}O_{16}$ 504.441

α -Furanose-form

1,2-O-(1-Cyanoethylidene), 6''-trityl,
 2',2'',3'',5,5',5'',6,6'-octabenzoyl:
 [127348-46-3]

$C_{96}H_{79}NO_{24}$ 1630.672

Amorph. $[\alpha]_D$ -19 (c, 1.0 in CHCl₃).

β -Furanose-form

1,6''-Anhydro: [127367-72-0]

$C_{18}H_{30}O_{15}$ 486.426

Amorph. $[\alpha]_D$ -114 (c, 0.7 in H₂O).

1,6''-Anhydro, 2',2'',3'',5,5',5'',6,6'-
 octabenzoyl, 2-Ac: [127348-50-9]

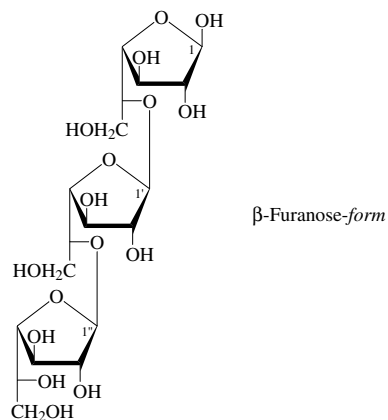
$C_{76}H_{64}O_{24}$ 1361.327

Amorph. film. $[\alpha]_D$ -58 (c, 1.5 in
 CHCl₃).

[127348-49-6]

Nepogod'ev, S.A. *et al.*, *Bioorg. Khim.*, 1989, **15**, 1555; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 855 (α-cyanoethylidene deriv, β-cyclic anhydride derivs, synth, cmr, pmr)

β-D-Galactofuranosyl-(1→5)-β-D-galactofuranosyl-(1→5)-D-galactose, 9CI



β-Furanose-form

C₁₈H₃₂O₁₆ 504.441

Constit. of an immunologically active component in the extracellular polysaccharide produced by *Aspergillus* and *Penicillium* spp.

β-Furanose-form

Me glycoside, 6,6',6''-tripivaloyl, 2,2',2'',3,3',3''-hexabenzoyl: [130719-14-1]

C₇₆H₈₂O₂₅ 1395.469
Oil. [α]_D -5 (c, 1.0 in CHCl₃).

Me glycoside, 6,6',6''-tripivaloyl, 2,2',2'',3,3',3''-hexabenzoyl, 5''-chloroacetyl: [130719-13-0]

C₇₈H₈₃ClO₂₆ 1471.951
Oil. [α]_D -3 (c, 1.0 in CHCl₃).

3-Aminopropyl glycoside: [127501-14-8]

C₂₁H₃₉NO₁₆ 561.536
Oil. [α]_D -74.5 (c, 1.0 in MeOH).

3-(Benzylloxycarbonylamino)propyl glycoside, 6,6',6''-tripivaloyl, 2,2',2'',3,3',3''-hexabenzoyl: [111192-50-8]

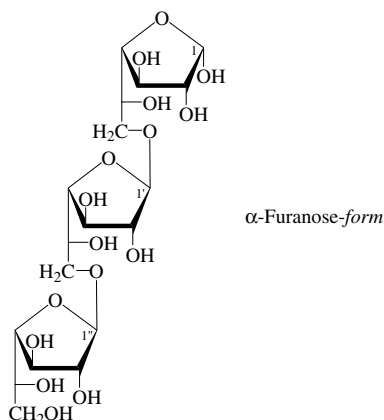
C₈₆H₉₃NO₂₇ 1572.671
Oil. [α]_D -5.6 (c, 1.0 in CHCl₃).

Veeneman, G.H. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1989, **108**, 344

(β-aminopropyl fur derivs, synth, pmr, cmr)
Zuurmond, H.M. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1990, **109**, 437 (β-Me fur derivs, pmr, cmr)

β-D-Galactofuranosyl-(1→6)-β-D-galactofuranosyl-(1→6)-D-galactose, 9CI

G-10



α-Furanose-form

C₁₈H₃₂O₁₆ 504.441

α-Furanose-form

1,2-O-(1-Cyanoethylidene), 6''-trityl, 2',2'',3,3',3'',5,5',5''-octabenzoyl: [128596-91-8]

C₉₆H₇₉NO₂₄ 1630.672
Syrup. [α]_D -24.5 (c, 1.5 in CHCl₃).

β-Furanose-form

6''-Trityl, 1,3,3',3'',5,5',5''-heptabenzoyl, 2,2',2''-tri-Ac: [128596-87-2]

C₉₂H₈₀O₂₆ 1601.628
Syrup. [α]_D -61 (c, 1.55 in CHCl₃).

1,6''-Anhydro: [128267-88-9]

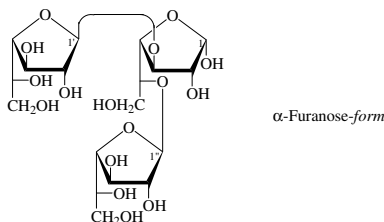
C₁₈H₃₀O₁₅ 486.426
Syrup. [α]_D -78 (c, 1.2 in CHCl₃).

[128596-82-7, 128596-90-7]

Kochetkov, N.K. *et al.*, *Tetrahedron*, 1990, **46**, 139 (α-cyanoethylidene deriv, β-trityl heptabenzoyl tri-Ac, anhydro, pmr, cmr)

β-D-Galactofuranosyl-(1→3)-β-D-galactofuranosyl-(1r5)-D-galactose, 9CI

G-11



α-Furanose-form

C₁₈H₃₂O₁₆ 504.441

α-Furanose-form

Undecabenzoyl: [129728-09-2]

C₉₅H₇₆O₂₇ 1649.629
Cryst. (EtOH). Mp 78-80°. [α]_D +19 (c, 1.0 in CHCl₃).

β-Furanose-form [129728-19-4]

Syrup. [α]_D -85 (c, 1.0 in H₂O).

Undecabenzoyl: [129728-08-1]

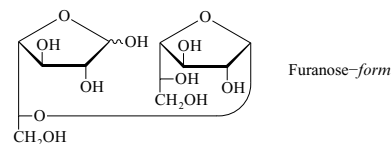
Cryst. (EtOH). Mp 88-89°. [α]_D -21 (c, 1.0 in CHCl₃).

De Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1990, **200**, 227 (synth, α-undecabenzoyl, β-undecabenzoyl, pmr, cmr)

5-O-α-D-Galactofuranosyl-D-galactose, 9CI

G-12

[35467-37-9]



Furanose-form

C₁₂H₂₂O₁₁ 342.299

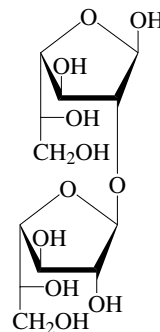
Constit. of *Mycobacterium tuberculosis* cell-wall.

[α]_D -22 (H₂O).

Vilkas, E. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1971, **273**, 845

2-O-β-D-Galactofuranosyl-D-galactose, 9CI

G-13



β-Furanose-form

C₁₂H₂₂O₁₁ 342.299

Constit. of the repeating unit of *Klebsiella* 09 antigen.

β-Furanose-form

Me glycoside: Methyl 2-O-β-D-galactofuranosyl-β-D-galactofuranoside [127501-22-8]

C₁₃H₂₄O₁₁ 356.326
[α]_D -117.6 (c, 1.0 in MeOH).

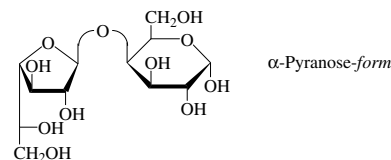
Lindberg, B. *et al.*, *Carbohydr. Res.*, 1972, **23**, 47 (occur)

Veeneman, G.H. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1989, **108**, 344

3-O-β-D-Galactofuranosyl-D-galactose

G-14

[119690-37-8]



α-Pyranose-form

C₁₂H₂₂O₁₁ 342.299

Free sugar exists in pyranose form, mixt. of anomers with β- predominating.

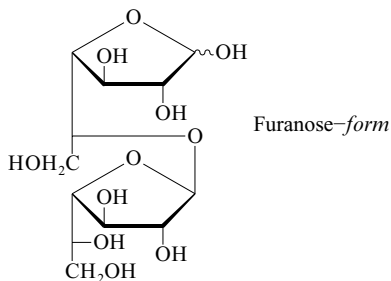
Constit. of the repeating units of *Klebsiella* 08 antigen and *Streptococcus pneumoniae* type 29 antigen.

[α]_D +28.5 (c, 0.8 in H₂O).

β-Furanose-form

Me glycoside: Methyl 3-O-β-D-galactofuranosyl-β-D-galactofuranoside, 9CI
[127501-23-9]
C₁₃H₂₄O₁₁ 356.326
[α]_D +135.4 (c, 1.0 in MeOH).

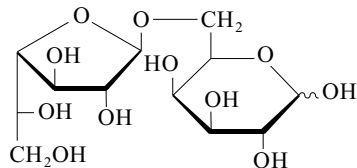
Rao, E.V. *et al.*, *Biochem. J.*, 1969, **111**, 547 (occur)
Curvall, M. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 4019 (occur)
Veeneman, G.H. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1989, **108**, 344
Wang, H. *et al.*, *Carbohydr. Res.*, 2003, **338**, 1033-1037 (synth)

5-O-β-D-Galactofuranosyl-D-galactose **G-15**

C₁₂H₂₂O₁₁ 342.299
Constit. of the O-antigen of *Actinobacillus pleuropneumoniae* serotype 12. Syrup. [α]_D -74 (c, 2.0 in H₂O) (-64).

Furanose-form

Benzyl glycoside:
C₁₉H₂₈O₁₁ 432.424
Syrup. [α]_D -113 (c, 8.0 in MeOH).
Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1959, **37**, 499 (isol)
Van Heeswijk, W.A.R. *et al.*, *Carbohydr. Res.*, 1977, **59**, 81 (synth)
Jansson, P.E. *et al.*, *Carbohydr. Res.*, 1980, **82**, 97 (occur)
Eur. Pat., 1989, 325 004; *CA*, **112**, 154854z
Beynon, L.M. *et al.*, *Can. J. Chem.*, 1991, **69**, 218 (occur)

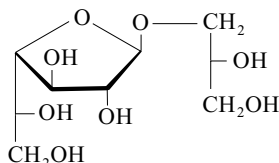
6-O-β-D-Galactofuranosyl-D-galactose, 9CI **G-16**
[25841-25-2]

C₁₂H₂₂O₁₁ 342.299
Isol. from hydrolysate of polysaccharides from *Mycoplasma mycoides* and *Mycobacterium tuberculosis*.
Mp 170-174° dec. [α]_D²⁰ -25 (c, 0.35 in H₂O).

α-Pyranose-form

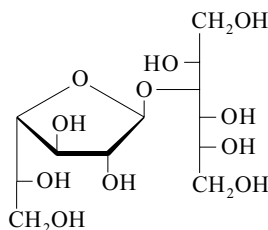
1,2,3,4-Tetrabenzyl:
C₄₀H₄₆O₁₁ 702.797
Mp 98-99°. [α]_D²⁰ +38 (c, 0.5 in MeOH).

1,2,3,4-Tetrabenzyl, 2',3',5',6'-tetra-Ac:
C₄₈H₅₄O₁₅ 870.946
[α]_D²⁰ +11.2 (c, 1.0 in CHCl₃).
Plackett, P. *et al.*, *Biochem. J.*, 1964, **90**, 201 (isol)
Vilkas, E. *et al.*, *Biochim. Biophys. Acta*, 1973, **297**, 423 (glc, pmr, ms)
Jacquinet, J.C. *et al.*, *Carbohydr. Res.*, 1974, **34**, 343 (synth)

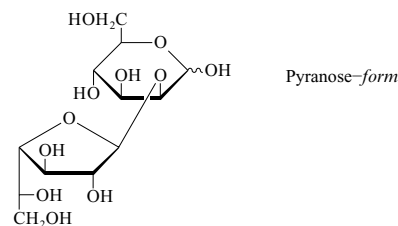
1-O-β-D-Galactofuranosyl-D-glycerol **G-17**
(R)-2,3-Dihydroxypropyl β-D-galactofuranoside, 9CI. 1-Glyceryl β-D-galactofuranoside
[20196-73-0]

C₉H₁₈O₈ 254.236
Constit. of the lipids of *Bacteroides symbiosus* and *Mycoplasma mycoides*.
Syrup. [α]_D -78 (c, 1.0 in H₂O).

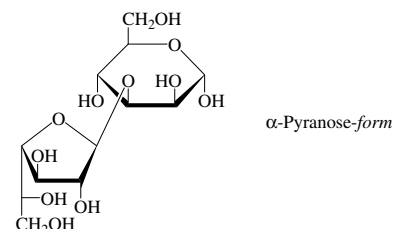
Hexabenzoyl:
C₅₁H₄₂O₁₄ 878.884
Mp 135-136.5°. [α]_D -6.8 (c, 1.0 in CHCl₃).
Beving, H.F.G. *et al.*, *Acta Chem. Scand.*, 1967, **21**, 2083 (synth)
Plackett, P. *et al.*, *Biochemistry*, 1967, **6**, 2746 (isol)
Boren, H. *et al.*, *CA*, 1972, **77**, 102045a (rev)

3-O-β-D-Galactofuranosyl-D-mannitol, 8CI **G-18**
Peltigeroside
[4144-97-2]

C₁₂H₂₄O₁₁ 344.315
Isol. from the lichen *Peltigera horizontalis*.
Mp 161-163°. [α]_D -61 (c, 2.0 in H₂O).
Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1964, **18**, 213 (isol)
Holligan, P.M. *et al.*, *CA*, 1971, **75**, 31241g (glc)

2-O-β-D-Galactofuranosyl-D-mannose, 9CI **G-19**
[76653-92-4]

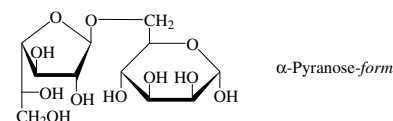
C₁₂H₂₂O₁₁ 342.299
Isol. from cells of the protozoan *Trypanosoma cruzi* (causative agent of chagas disease). Syrup. [α]_D²⁵ -30 (c, 0.8 in H₂O).
Barreto-Bergter, E. *et al.*, *ACS Symp. Ser.*, 1981, **150**, 149-159; 150 (cmr)
Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1981, **88**, 177-188 (isol, pmr)

3-O-β-D-Galactofuranosyl-D-mannose **G-20**

C₁₂H₂₂O₁₁ 342.299
Constit. of the galactomannan isol. from the cells of *Trypanosoma cruzi*, the causative agent of chagas disease.

α-Pyranose-form

Me glycoside: Methyl 3-O-β-D-galactofuranosyl-α-D-mannopyranoside, 9CI
[76653-91-3]
C₁₃H₂₄O₁₁ 356.326
[α]_D²⁵ -37 (c, 0.6 in H₂O).
Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1981, **88**, 177

6-O-β-D-Galactofuranosyl-D-mannose **G-21**

C₁₂H₂₂O₁₁ 342.299
Constit. of the galactomannan isol. from *Ceratocystis stenoceras*; tentatively assigned as a constit. of the galactomannans of *Sporothrix schenckii* and *Trichophyton interdigitale*.

α-Pyranose-form

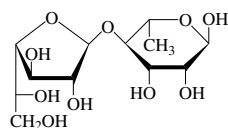
Me glycoside: Methyl 6-O-β-D-galactofuranosyl-α-D-mannopyranoside, 9CI
[76653-88-8]
C₁₃H₂₄O₁₁ 356.326
[α]_D²⁵ -13 (c, 1.2 in H₂O).

Bishop, C.T. *et al.*, *Can. J. Chem.*, 1965, **43**, 30 (occur)
 Mendonca, L. *et al.*, *Biochemistry*, 1976, **15**, 2423 (occur)
 Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1981, **88**, 177 (Me gly, cmr)

4-O-β-D-Galactofuranosyl-L-rhamnose

G-22

6-Deoxy-4-O-β-D-galactofuranosyl-L-mannose



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

α-Pyranose-form

Me glycoside, 2,3-O-isopropylidene, tetra-Ac: [97321-42-1]

C₂₄H₃₆O₁₄ 548.54

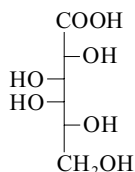
Syrup. [α]_D²⁰ -60.5 (c, 2.4 in CHCl₃).

Bakinovskii, L.V. *et al.*, *Carbohydr. Res.*, 1985, **138**, 41 (deriv, pmr)

Galactonic acid

galacto-Hexonic acid

G-23



D-form

C₆H₁₂O₇ 196.157

D-form [576-36-3]

Mp 122°. [α]_D²⁰ -11.2 → -57.6 (H₂O, 23 d). Forms a hemihydrate, Mp 140-1° [α]_D²⁰ -12.2° (H₂O).

Ca salt:

Tetrahydrate. Mp 140° dec. [α]_D +2.9 (H₂O).

Brucine salt: Mp 170°. [α]_D²⁰ -21 (H₂O).

Phenylhydrazide: Mp 203°. [α]_D²⁰ +10.4 (H₂O).

Amide: D-Galactonamide

C₆H₁₃NO₆ 195.172

Mp 172-173°. [α]_D²⁰ +30.2 (H₂O).

Anilide:

C₁₂H₁₇NO₆ 271.269

Mp 210°. [α]_D¹⁷ +62.6 (H₂O).

6-Me: 6-O-Methyl-D-galactonic acid

C₇H₁₄O₇ 210.183

Mp 156°. [α]_D¹⁸ -5.5 → -40.2 (H₂O, 8 d).

6-Me, phenylhydrazide: Mp 158-159°.

2,3,4-Tri-Me: 2,3,4-Tri-O-methyl-D-galactonic acid

C₉H₁₈O₇ 238.237

Mp 107-108°. [α]_D²² +29.8 (H₂O).

2,3,4-Tri-Me, phenylhydrazide: Mp 166-167°.

[α]_D +29.5 (EtOH).

2,3,4,6-Tetra-Me: 2,3,4,6-Tetra-O-methyl-D-galactonic acid

C₁₀H₂₀O₇ 252.264

Mp 84°. [α]_D²² +24 → +26.3 (H₂O, 2 d).

2,3,4,6-Tetra-Me, phenylhydrazide: Mp 135-136°.

2,3,4,6-Tetra-Me, amide: 2,3,4,6-Tetra-O-methyl-D-galactonamide

C₁₀H₂₁NO₆ 251.279

Mp 120°. [α]_D +37.9 (Me₂CO).

2,3,5,6-Tetra-Me, amide: 2,3,5,6-Tetra-O-methyl-D-galactonamide

[16751-97-6]

C₁₀H₂₁NO₆ 251.279

Mp 153°. [α]_D +6.5 (H₂O).

2,3,4,5,6-Penta-Ac: 2,3,4,5,6-Penta-O-acetyl-D-galactonic acid

C₁₆H₂₂O₁₂ 406.343

Mp 131°. [α]_D +11.8.

2,3,4,5,6-Penta-Ac, Et ester: Ethyl

2,3,4,5,6-penta-O-acetyl-D-galactonate

[24876-99-1]

C₁₈H₂₆O₁₂ 434.396

Mp 100-102°.

2,3,4,5,6-Penta-Ac, propyl ester: Propyl

2,3,4,5,6-penta-O-acetyl-D-galactonate

C₁₉H₂₈O₁₂ 448.423

Mp 114°. [α]_D²⁵ +14.8 (c, 2.0 in CHCl₃).

2,3,4,5,6-Penta-Ac, isopropyl ester:

Isopropyl 2,3,4,5,6-penta-O-acetyl-D-galactonate

C₁₉H₂₈O₁₂ 448.423

Mp 99-100°. [α]_D²⁵ +24.2 (c, 2.0 in CHCl₃).

1,4-Lactone: See 1,4-Galactonolactone, G-24

L-form

Amide: L-Galactonamide

C₆H₁₃NO₆ 195.172

Mp 175°. [α]_D -30 (H₂O).

2,3,4,5-Tetra-Me, Me ester: [620609-65-6]

C₁₁H₂₂O₇ 266.291

Oil. [α]_D -10.5 (c, 0.9 in CHCl₃).

2,3,4,5,6-Penta-Ac: 2,3,4,5,6-Penta-O-acetyl-L-galactonic acid

C₁₆H₂₂O₁₂ 406.343

Mp 132-133°. [α]_D²⁸ -14 (CHCl₃).

Brackenbury, J.M. *et al.*, *J.A.C.S.*, 1933, **55**, 2512 (synth)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, Leipzig, 1935, 354 (rev)

Jeffrey, G.A. *et al.*, *Chem. Comm.*, 1966, 211 (cryst struct)

Humphlett, W.J. *et al.*, *Carbohydr. Res.*, 1967, **4**, 157 (D-penta-Ac esters)

Zhadanov, Y.A. *et al.*, *Zh. Obshch. Khim.*, 1969, **39**, 1128

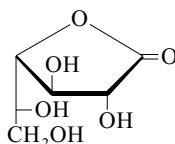
Horton, D. *et al.*, *Carbohydr. Res.*, 1983, **119**, 263 (pmr, cmr, conformn)

Carmen, L. *et al.*, *Tetrahedron: Asymmetry*, 2003, **14**, 2579-2586 (L-form, 2,3,4,5-tetra Me ester)

1,4-Galactonolactone

galacto-Hexono-1,4-lactone

G-24



D-form

C₆H₁₀O₆ 178.141

D-form [2782-07-2]

Mp 112° Mp 135° (hydrate 66°).

[α]_D²⁰ -73 → -63.7 (H₂O).

2,3,6-Tri-Ac: 2,3,6-Tri-O-acetyl-D-galactono-1,4-lactone

C₁₅H₁₆O₉ 304.253

[α]_D²⁰ -28.7 (c, 1.0 in CHCl₃).

2,6-Dibenzoyl: 2,6-Di-O-benzoyl-D-galactono-1,4-lactone

C₂₀H₁₈O₈ 386.357

Cryst. (EtOH). Mp 194-195°. [α]_D +3 (c, 0.8 in Me₂CO).

2,3,5-Tribenzoyl: 2,3,5-Tri-O-benzoyl-D-galactono-1,4-lactone

C₂₇H₂₂O₉ 490.465

[α]_D²⁰ +6 (c, 1 in CHCl₃).

Tetrabenzoyl: 2,3,5,6-Tetra-O-benzoyl-D-galactono-1,4-lactone

[35556-50-4]

C₃₄H₂₆O₁₀ 594.573

[α]_D +22.3 (c, 1.0 in CHCl₃).

5,6-Isopropylidene: 5,6-O-Isopropylidene-D-galactono-1,4-lactone

[56710-46-4]

C₉H₁₄O₆ 218.206

Syrup. [α]_D²² -42 (c, 2.0 in Me₂CO).

5-Me, 2,3,6-tri-Ac: 2,3,6-Tri-O-acetyl-5-O-methyl-D-galactono-1,4-lactone

C₁₃H₁₈O₉ 318.28

[α]_D²⁰ -38 (c, 1.0 in CHCl₃).

Tetra-Me: 2,3,5,6-Tetra-O-methyl-D-galactono-1,4-lactone

C₁₀H₁₈O₆ 234.249

Bp_{0.02} 127-128°. [α]_D -28.5 (2 m) → -25.9 (H₂O).

6-Trityl, 2,3,5-tri-Ac: 2,3,5-Tri-O-acetyl-6-O-trityl-D-galactono-1,4-lactone

C₃₁H₃₀O₉ 546.573

[α]_D²⁰ -38.7 (c, 1.0 in CHCl₃).

6-Trityl, 2,3,5-tribenzoyl: 2,3,5-Tri-O-benzoyl-6-O-trityl-D-galactono-1,4-lactone

C₄₆H₃₆O₉ 732.785

Cryst. (EtOH). Mp 145-146°. [α]_D²⁰ +8 (c, 1 in CHCl₃).

L-form [1668-08-2]

Mp 134-135°. [α]_D²⁶ +77 (c, 4 in H₂O, initial).

Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1933, **11**, 649 (D-form, synth)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros., Inc., Ann Arbor, 1943, 354 (D-form, rev)

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1952, **74**, 5583 (L-form)

de Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1971, **20**, 442 (D-tetrabenzoyl)

Morgenlie, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 367 (D-isopropylidene)

Walaszek, Z. *et al.*, *Carbohydr. Res.*, 1982, **105**, 131 (pmr, cmr, conformn)

Sznajdman, M.L. *et al.*, *Carbohydr. Res.*, 1986, **146**, 233 (D-tri-Ac, 5-Me tri-Ac, 6-trityl tri-Ac)

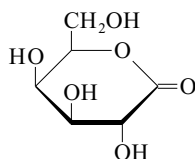
Vekemans, J.A.J.M. *et al.*, *J.O.C.*, 1987, **52**, 1093 (D-isopropylidene)

Du Mortier, C. *et al.*, *Carbohydr. Res.*, 1989, **189**, 79 (D-tribenzoyl, D-6-trityl tribenzoyl)

De Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1990, **200**, 227 (2,6-dibenzoyl)

1,5-Galactonolactone

G-25

C₆H₁₀O₆ 178.141**D-form***D*-Galactonic acid δ -lactone, 9CI

[15892-28-1]

Solid. Thermodynamically unstable. Isomerises to 1,4-Galactonolactone, G-24 in aq. soln. Fairly stable in DMF soln.

Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl-*D*-galactono-1,5-lactone

[82598-84-3]

C₃₄H₃₄O₆ 538.639Syrup. [α]_D +75.2 (c, 1 in CHCl₃).

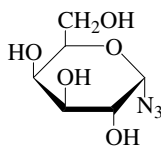
Overkleef, H.S. *et al.*, *Tetrahedron*, 1994, **50**, 4215 (synth, pmr, cmr, tetrabenzyl)

Xie, J. *et al.*, *J. Carbohydr. Chem.*, 1999, **18**, 481-498 (tetrabenzyl)

Bierenstiehl, M. *et al.*, *Eur. J. Org. Chem.*, 2004, 1474-1481 (*D*-form, synth, pmr)

Galactopyranosyl azide, 9CI

G-26

 α -D-formC₆H₁₁N₃O₅ 205.1x7 **α -D-form** [106192-39-6]

Cryst. (MeCN). Mp 145-146°. [α]_D²⁵ +215 (c, 0.288 in H₂O).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -*D*-galactopyranosyl azide

[94427-00-6]

C₁₄H₁₉N₃O₉ 373.319

Needles (Et₂O/petrol). Mp 77-78°. [α]_D +199 (c, 0.97 in CHCl₃).

 β -D-form [35899-89-9]

Cryst. (MeCN). Mp 153.5-154°. [α]_D +8.5 (H₂O).

2-*Ac*: 2-O-Acetyl- β -*D*-galactopyranosyl azide

[171895-17-3]

C₈H₁₃N₃O₆ 247.207

Cryst. (MeCN). Mp 154-155.5°.

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -*D*-galactopyranosyl azide

[13992-26-2]

C₁₄H₁₉N₃O₉ 373.319

Cryst. (MeOH). Mp 103-104°. [α]_D -18 (c, 1.0 in CHCl₃).

3,4-*Isopropylidene*: 3,4-O-*Isopropylidene*- β -*D*-galactopyranosyl azide

[260365-10-4]

C₉H₁₅N₃O₅ 245.235

Cryst. (EtOAc/hexane). Mp 113.5-114°.

4,6-*Isopropylidene*: 4,6-O-*Isopropylidene*- β -*D*-galactopyranosyl azide

C₉H₁₅N₃O₅ 245.235

Cryst. (EtOAc/hexane). Mp 145-146°.

Szarek, W.A. *et al.*, *Tetrahedron*, 1978, **34**, 1427-1433 (β -*D*-form, synth, ir, uv)

Szilagy, L. *et al.*, *Carbohydr. Res.*, 1985, **143**, 21-41 (α -*D*-tetra-Ac, synth, ir, pmr, cmr)

Gyorgydeak, Z. *et al.*, *Annalen*, 1987, 235-241 (synth, pmr)

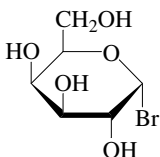
Tropper, F.D. *et al.*, *Synth. Commun.*, 1992, 618-620 (β -*D*-tetra-Ac, synth, pmr, cmr)

Masuda, M. *et al.*, *J. Carbohydr. Chem.*, 1998, **17**, 405-416 (β -*D*-form tetra-Ac)

Wittmann, V. *et al.*, *Chem. Eur. J.*, 2000, **6**, 162-171 (isopropylidene derivs)

Galactopyranosyl bromide

G-27

 α -D-formC₆H₁₁BrO₅ 243.054 **α -D-form**

2,3,4,6-*Tetra-Ac*: 2,3,4,6-Tetra-O-acetyl- α -*D*-galactopyranosyl bromide, 9CI, 8CI. Acetobromogalactose

[3068-32-4]

C₁₄H₁₉BrO₉ 411.203Mp 84-85°. [α]_D²⁰ +217 (CHCl₃).

6-*Tosyl*, 2,3,4-tri-*Ac*: 2,3,4-Tri-O-acetyl-6-O-tosyl- α -*D*-galactopyranosyl bromide

[13046-90-7]

C₁₉H₂₃BrO₁₀S 523.355Mp 146-147°. [α]_D²⁰ +157 (CHCl₃).

4,6-O-Ethylidene, 2-*Ac*, 3-*tosyl*: 2-O-Acetyl-4,6-O-ethylidene-3-O-tosyl- α -*D*-galactopyranosyl bromide

[13996-93-5]

C₁₇H₂₁BrO₈S 465.318

Needles (CHCl₃/Et₂O). Mp 167° dec. [α]_D²⁵ +240 (c, 0.8 in CHCl₃).

2,3,4,6-*Tetrabenzyl*: 2,3,4,6-Tetra-O-benzyl- α -*D*-galactopyranosyl bromide, 9CI

[53081-30-4]

C₃₄H₃₅BrO₅ 603.551[α]_D²⁵ +117 (c, 1.7 in CHCl₃).

6-Bromo-6-deoxy, 2,3,4-tri-*Ac*: 2,3,4-Tri-O-acetyl-6-bromo-6-deoxy- α -*D*-galactopyranosyl bromide

[53990-76-4]

C₁₂H₁₆Br₂O₇ 432.062Mp 100°. [α]_D²⁰ +203 (CHCl₃).

Haworth, W.N. *et al.*, *J.C.S.*, 1940, 620-632 (*tosyl tri-Ac*)

Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 207 (rev, derivs)

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1966, **2**, 371 (α -*D*-ethylidene *Ac* *tosyl*)

Wolfson, M.L. *et al.*, *Carbohydr. Res.*, 1969, **11**, 63 (α -*D*-tri-*Ac*-2-deoxy-trifluoroacetamido)

Kronzer, F.J. *et al.*, *Carbohydr. Res.*, 1974, **33**, 273 (α -*D*-tetrabenzyl)

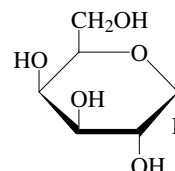
Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 2992-3012 (6-bromo-6-deoxy, *tri-Ac*)

Kartha, K.P.R. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 777-781 (*tetra-Ac*, *synth*)

Mani, N.S. *et al.*, *Synth. Commun.*, 1992, **22**, 2195 (*synth*, α -*D*-tetra-*Ac*)

Galactopyranosyl fluoride

G-28

 α -D-formC₆H₁₁FO₅ 182.148 **α -D-form** [2021-84-3]

Cryst. (MeOH/Et₂O). Mp 75-76°. [α]_D²⁰ +127 (c, 2.4 in H₂O).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -*D*-galactopyranosyl fluoride

[4163-44-4]

C₁₄H₁₉FO₉ 350.297

Cryst. (Et₂O/heptane). Mp 67-68°. [α]_D²⁵ +106.6 (c, 0.84 in CHCl₃).

2,3,6-Tribenzoyl: 2,3,6-Tri-O-benzoyl- α -*D*-galactopyranosyl fluoride

C₂₇H₂₃FO₈ 494.472Mp 157°. [α]_D +66.6 (c, 0.95 in CHCl₃).

Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl- α -*D*-galactopyranosyl fluoride

C₃₄H₂₇FO₉ 598.58Syrup. [α]_D +119.2 (c, 1.06 in CHCl₃).

Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl- α -*D*-galactopyranosyl fluoride

[94898-43-8]

C₃₄H₃₅FO₅ 542.646

Syrup.

 β -D-form [2021-62-7]

Solid. [α]_D²⁵ -32.6 (c, 1.5 in H₂O).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -*D*-galactopyranosyl fluoride

[4163-45-5]

C₁₄H₁₉FO₉ 350.297

Cryst. (Et₂O). Mp 103-104° (98-99°). [α]_D¹⁸ +22 (CHCl₃).

[143615-35-4]

Barnett, J.E.G. *et al.*, *Biochem. J.*, 1967, **105**, 669-672 (α -*D*-form, synth)

Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **47**, 1 (*tetra-Ac*, pmr, F-19 nmr)

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 682 (cmr, F-19 nmr)

Voznij, Y.V. *et al.*, *Carbohydr. Res.*, 1984, **132**, 339 (*tetra-Ac*)

Ger. Pat., 1987, 3 528 654; CA, **106**, 156814m (*tetra-Ac*)

Ger. Pat., 1987, 3 626 028; CA, **107**, 176407e (*tetra-Ac*)

Thiem, J. *et al.*, *Synthesis*, 1988, 124 (*tetrabenzyl*)

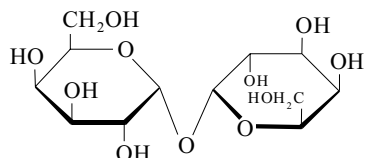
Eur. Pat., 1989, 298 438; CA, **112**, 75339g (*synth*)

Thiem, J. *et al.*, *Carbohydr. Res.*, 1993, **249**, 197 (*tribenzoyl*, *tetrabenzoyl*)

Takanashi, S. *et al.*, *Liebigs Ann./Recl.*, 1997, 1081-1084 (α -*tetra-Ac*)

Fukase, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 2001, **74**, 1123-1128 (β -*D*-form, synth)

α -D-Galactopyranosyl α -D-galactopyranoside, 9CI, 8CI **G-29**
 α,α -Galactobiose, α,α -Galactotrehalose.
 α,α -galacto-Trehalose
 [28140-35-4]



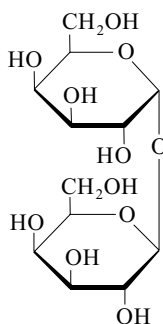
$C_{12}H_{22}O_{11}$ 342.299
 Mp 267-272°. $[\alpha]_D^{20} +244$ (c, 0.6 in H_2O).

Octa-Ac: [28140-36-5]
 $C_{28}H_{38}O_{19}$ 678.597
 Mp 227-229°. $[\alpha]_D^{20} +173$ (c, 1.2 in $CHCl_3$).

2,2',3,3',6,6'-Hexabenzoyl: [173543-51-6]
 $C_{54}H_{46}O_{17}$ 966.947
 Glass. $[\alpha]_D^{20} +204$ (c, 0.3 in CH_2Cl_2).

Birch, G. *et al.*, *J.C.S.(C)*, 1970, 749 (*synth*)
 Kamerling, J.P. *et al.*, *Tetrahedron*, 1972, **28**, 3037 (*pmr*)
 Linden, A. *et al.*, *Acta Cryst. C*, 1995, **51**, 1012 (*cryst struct*)
 Youssef, R.H. *et al.*, *Carbohydr. Res.*, 1995, **277**, 347-351 (*synth*)

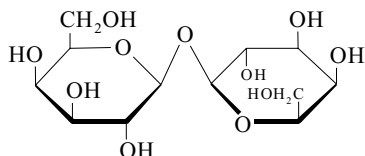
α -D-Galactopyranosyl β -D-galactopyranoside **G-30**
 α,β -Galactobiose



$C_{12}H_{22}O_{11}$ 342.299
 Mp 122° (110°) dec. $[\alpha]_D^{20} +67.8$ (+56) (H_2O).

Octa-Ac:
 $C_{28}H_{38}O_{19}$ 678.597
 Mp 85°. $[\alpha]_D^{20} +58$ (c, 1.0 in $CHCl_3$).
 Sharp, V.E. *et al.*, *J.C.S.*, 1951, 285 (*synth*)

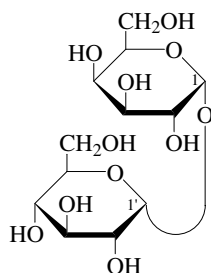
β -D-Galactopyranosyl β -D-galactopyranoside, 8CI **G-31**
 β,β -Galactobiose
 [14122-07-7]



$C_{12}H_{22}O_{11}$ 342.299
 Mp 108°. $[\alpha]_D^{20} +20$ (H_2O).

Octa-Ac:
 $C_{28}H_{38}O_{19}$ 678.597
 Mp 164°. $[\alpha]_D^{20} -6$ ($CHCl_3$).
 Brederick, H. *et al.*, *Chem. Ber.*, 1953, **86**, 1277 (*synth*)
 Boos, W. *et al.*, *Eur. J. Biochem.*, 1967, **1**, 382

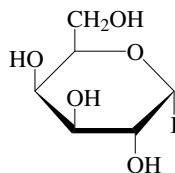
α -D-Galactopyranosyl α -D-glucopyranoside **G-32**
 [61277-35-8]



$C_{12}H_{22}O_{11}$ 342.299
 Mp 65-70°. $[\alpha]_D^{22} +208$ (c, 0.9 in H_2O).

2,3,4,6-Tetrabenzyl, 2',3',4',6'-tetrabenzoyl: [162601-94-7]
 $C_{68}H_{62}O_{15}$ 1119.229
 Syrup. $[\alpha]_D^{22} +89.1$ (c, 0.9 in $CHCl_3$).
 Defaye, J. *et al.*, *Carbohydr. Res.*, 1978, **63**, 41 (*synth*)
 Ronnow, T.E.C.L. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 197-211 (*synth*, tetrabenzyl tetrabenzoyl, *pmr*, *cmr*)

Galactopyranosyl iodide **G-33**

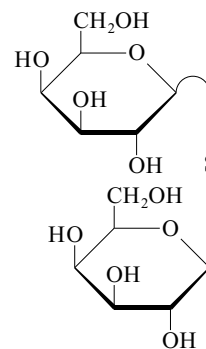


$C_6H_{11}IO_5$ 290.054

α -D-form
 2,3,4,6-Tetra-Ac: [75801-94-4]
 $C_{14}H_{19}IO_9$ 458.203
 Oil. $[\alpha]_D^{25} +236.9$ (c, 1.2 in $CHCl_3$).
 2,3,4,6-Tetrabenzoyl:
 $C_{34}H_{27}IO_9$ 706.486
 Amorph. mass. $[\alpha]_D^{25} +138.5$ (c, 1.2 in $CHCl_3$).

Thiem, J. *et al.*, *Chem. Ber.*, 1980, **113**, 3075-3085 (*tetra-Ac*)
 Caputo, R. *et al.*, *Eur. J. Org. Chem.*, 1999, 3147-3150 (*tetra-Ac*, tetrabenzoyl)

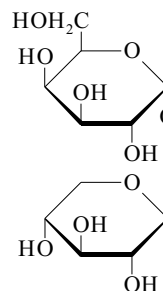
β -D-Galactopyranosyl 1-thio- β -D-galactopyranoside, 8CI **G-34**
 β -D-Galactosyl 1-thio- β -D-galactoside, 9CI, 8CI. Bis(β -D-galactopyranosyl)sulfide. Thiodigalactoside
 [51555-87-4]



$C_{12}H_{22}O_{10}S$ 358.366
 Used to study lectin binding and interactions. Mp 236-238°. $[\alpha]_D^{20} -40$ (c, 0.44 in H_2O).

Octa-Ac: [18968-44-0]
 $C_{28}H_{38}O_{18}S$ 694.663
 Mp 201-202°. $[\alpha]_D^{20} -35.5$ (c, 1 in $CHCl_3$).
 Stanek, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1965, **30**, 2494-2497 (*synth*, *octa-Ac*)
 Sakata, M. *et al.*, *Carbohydr. Res.*, 1970, **13**, 379-390 (*synth*, *octa-Ac*)
 Chrétien, F. *et al.*, *J.C.S. Perkin 1*, 1988, 3297-3300 (*octa-Ac*)

α -D-Galactopyranosyl β -D-xylopyranoside **G-35**
 β -D-Xylopyranosyl α -D-galactopyranoside

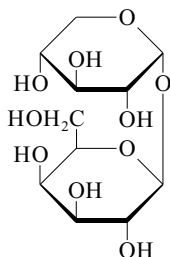


$C_{11}H_{20}O_{10}$ 312.273
 Non-reducing disaccharide.

Hepta-Ac:
 $C_{25}H_{34}O_{17}$ 606.533
 Mp 180-181°. $[\alpha]_D^{20} +140$ ($CHCl_3$).
 Helferich, B. *et al.*, *Chem. Ber.*, 1958, **91**, 1794 (*synth*)

β-D-Galactopyranosyl α-D-xylopyranoside **G-36**

α-D-Xylopyranosyl β-D-galactopyranoside



C₁₁H₂₀O₁₀ 312.273
Non-reducing disaccharide.

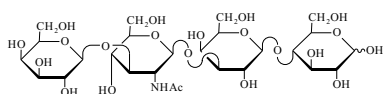
Hepta-Ac:

C₂₅H₃₄O₁₇ 606.533
Mp 189-190°. [α]_D +156 (CHCl₃).

Helferich, B. *et al.*, *Chem. Ber.*, 1958, **91**, 1794
(*synth*)

β-D-Galactopyranosyl-(1→3)-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→3)-β-D-galactopyranosyl-(1→4)-D-glucose **G-37**

Lacto-N-tetraose. 3²-β-Galactosyllacto-N-triose II
[14116-68-8]



Pyranose-form

C₂₆H₄₅NO₂₁ 707.636
Present in the free state in human milk.
Obt. from the partial acid hydrolysates of the penta- and higher saccharides present in human milk.
[α]_D +25.5 (H₂O).

Phenylosazone: Mp 222-223°.

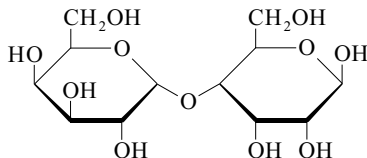
Kuhn, R. *et al.*, *Chem. Ber.*, 1954, **87**, 289; 1553; 1956, **89**, 504; 1027; 2514; 1958, **91**, 364; 1960, **93**, 647 (*isol. struct*)

Malpress, F.H. *et al.*, *Biochem. J.*, 1958, **68**, 708
Dua, V.K. *et al.*, *Anal. Biochem.*, 1983, **133**, 1
(*isol. hplc*)

Subramaniam, S. *et al.*, *J.A.C.S.*, 1986, **108**, 2068 (*pmr, cmr*)

Aly, M.R.E. *et al.*, *Carbohydr. Res.*, 1999, **316**, 121-132 (*synth*)

4-O-α-D-Galactopyranosyl-D-allose **G-38**



C₁₂H₂₂O₁₁ 342.299

β-Pyranose-form

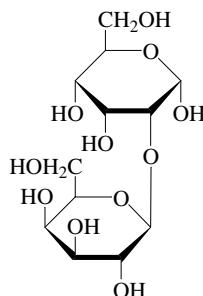
Me glycoside: Methyl 4-O-α-D-galactopyranosyl-β-D-allopyranoside
[66101-74-4]

C₁₃H₂₄O₁₁ 356.326
Cryst. (EtOH). Mp 215-216°. [α]_D²⁴ +112.3 (c, 1.3 in H₂O).

Me glycoside, heptabenzoyl: [66073-22-1]
C₆₂H₅₂O₁₈ 1085.082
Amorph. powder. [α]_D²⁴ +107 (c, 1 in CHCl₃).

Takeo, K. *et al.*, *Carbohydr. Res.*, 1977, **59**, 379

2-O-β-D-Galactopyranosyl-D-allose, 9CI **G-39**
[82443-89-8]



α-Pyranose-form

C₁₂H₂₂O₁₁ 342.299
Cryst. (EtOH aq.). Mp 178-179° Mp 214-216°. [α]_D +50.2 → +40 (c, 1.6 in H₂O). [α]_D -25.3 → -16.7 (c, 1.85 in H₂O).

α-Pyranose-form

Me glycoside: Methyl 2-O-β-D-galactopyranosyl-α-D-allopyranoside, 9CI
[82411-27-6]

C₁₃H₂₄O₁₁ 356.326
Mp 185-186°. [α]_D +55.8 (c, 2.5 in H₂O).

Me glycoside, hepta-Ac: Methyl 3,4,6-tri-O-acetyl-2-O-(2,3,4,6-tetra-O-acetyl-β-D-galactopyranosyl)-α-D-allopyranoside
[82430-50-0]
C₂₇H₃₈O₁₈ 650.586
Mp 144-145°. [α]_D +57.8 (c, 2.9 in CHCl₃).

β-Pyranose-form

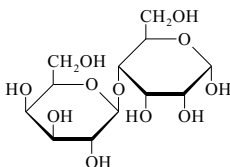
Octa-Ac: 1,3,4,6-Tetra-O-acetyl-2-O-(2,3,4,6-tetra-O-acetyl-β-D-galactopyranosyl)-β-D-allopyranose
[82443-90-1]

C₂₈H₃₈O₁₉ 678.597
Mp 153-154°. [α]_D +24.6 (c, 1.64 in CHCl₃).

Dick, W.E. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319
(*synth*)

Temeriusz, A. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1981, **55**, 783; *CA*, **97**, 56154y
(*synth, deriv*)

4-O-β-D-Galactopyranosyl-D-allose **G-40**
[62742-61-4]



α-Pyranose-form

C₁₂H₂₂O₁₁ 342.299

Mp 210-212°. [α]_D +49 (3 min.) → +50.2 (30 min.) (c, 1.0 in CHCl₃).

α-Pyranose-form

2,2',3,3',4',6,6'-Heptabenzoyl, 1-Ac: 1-O-Acetyl-4-O-(2,3,4,6-tetra-O-benzoyl-β-D-galactopyranosyl)-2,3,6-tri-O-benzoyl-α-D-allopyranose
[62701-14-8]
Powder (CHCl₃/petrol). Mp 117-122°. [α]_D +51 (c, 1.0 in CHCl₃).

β-Pyranose-form

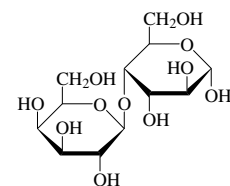
Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-galactopyranosyl)-β-D-allopyranose
[62701-15-9]
C₂₈H₃₈O₁₉ 678.597
Needles (EtOH). Mp 104-106°. [α]_D +13 (c, 1.0 in CHCl₃).

2,2',3,3',4',6,6'-Heptabenzoyl, 1-Ac: 1-O-Acetyl-4-O-(2,3,4,6-tetra-O-benzoyl-β-D-galactopyranosyl)-2,3,6-tri-O-benzoyl-β-D-allopyranose
[62701-13-7]
C₆₃H₅₂O₁₉ 1113.092
Mp 113-116°. [α]_D +33 (c, 1.0 in CHCl₃).

Me glycoside, heptabenzoyl: Methyl 2,3,6-tri-O-benzoyl-4-O-(2,3,4,6-tetra-O-benzoyl-β-D-galactopyranosyl)-β-D-allopyranoside
[62701-12-6]
C₆₂H₅₂O₁₈ 1085.082
Cryst. (2-propanol). Mp 107-109°. [α]_D +33 (c, 1.0 in CHCl₃).

Bhatt, R.S. *et al.*, *Carbohydr. Res.*, 1976, **51**, 272
(*synth*)

4-O-β-D-Galactopyranosyl-D-altrose, 9CI, 8CI **G-41**
Neolactose
[490-36-8]



α-Pyranose-form

C₁₂H₂₂O₁₁ 342.299
Prisms (MeOH). Mp 190° dec. [α]_D²⁰ +34.6 → +35.5 (H₂O).

Phenylosazone:

Yellow cryst. (H₂O). Mp 195° dec.

α-Pyranose-form

2,2',3,3',4',6,6'-Hepta-Ac: 2,3,6-Tri-O-acetyl-4-O-(tetra-O-acetyl-β-D-glucopyranosyl)-α-D-altropyranose
C₂₆H₃₆O₁₈ 636.56
Mp 85-95°. [α]_D²⁰ +23.3 → +21 (3d) (c, 4.0 in CHCl₃).

Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-(tetra-O-acetyl-β-D-glucopyranosyl)-α-D-altropyranose
C₂₈H₃₈O₁₉ 678.597
Laminae (EtOH). Mp 178°. [α]_D²⁴ +53.4 (CHCl₃).

β -Pyranose-form

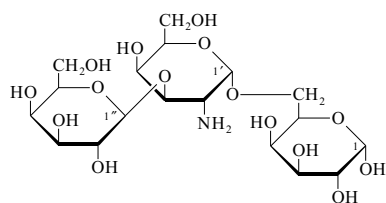
2,2',3,3',4',6,6'-Hepta-Ac: 2,3,6-Tri-O-acetyl-4-O-(tetra-O-acetyl- β -D-glucopyranosyl)- β -D-altropyranose
C₂₆H₃₆O₁₈ 636.56
Mp 135-136°. [α]_D²⁰ +10 \rightarrow +21 (3d)
(c, 4.0 in CHCl₃).

Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-(tetra-O-acetyl- β -D-glucopyranosyl)- β -D-altropyranose
C₂₈H₃₈O₁₉ 678.597
Plates (EtOH). Mp 148°. [α]_D²³ -7.04
(CHCl₃).

[33983-53-8]

Kunz, A. *et al.*, *J.A.C.S.*, 1926, **48**, 1978; 2435
(*struct.*, α -pyr octa-Ac, β -pyr octa-Ac)
Richtmyer, N.K. *et al.*, *J.A.C.S.*, 1935, **57**, 1716
(*synth.*, α -pyr hepta-Ac, β -pyr hepta-Ac)
Haverkamp, J. *et al.*, *J. Chromatogr.*, 1971, **59**,
281 (*glc*)
Kamerling, J. *et al.*, *Tetrahedron*, 1971, **27**, 4275
(*ms*)

β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 6)-D-galactose **G-42**



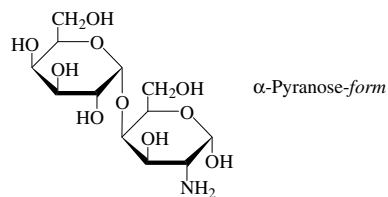
C₁₈H₃₃NO₁₅ 503.456

α -Pyranose-form

N-Ac: [85338-99-4]
C₂₀H₃₅NO₁₆ 545.494
Oil. [α]_D²⁰ -10.1 (c, 0.3 in H₂O).
1,2:3,4:4',6'-Tri-O-isopropylidene,
2''N,2'',3'',4'',6''-penta-Ac: [85338-96-1]
C₃₇H₅₅NO₂₀ 833.836
Cryst. Mp 102°. [α]_D²⁰ +5.3 (c, 0.2 in
CHCl₃).

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1983, **113**,
203 (*N-Ac*, triisopropylidene penta-Ac, *pmr*)

α -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-galactose **G-43**



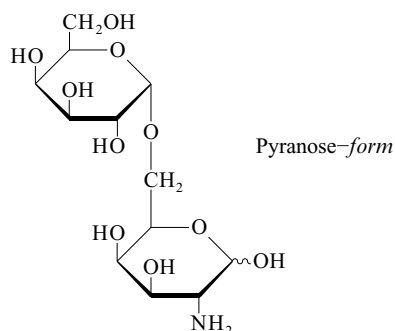
C₁₂H₂₃NO₁₀ 341.314

N-Ac:

C₁₄H₂₅NO₁₁ 383.352
Component of NOR glycolipids and
amphibian oviduct mucus.
[α]_D +143 (c, 0.6 in H₂O).

Westerlind, U. *et al.*, *Carbohydr. Res.*, 2002,
337, 1517-1522 (*synth.*, *pmr*, *cmr*)

α -D-Galactopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose **G-44**
2-Amino-2-deoxy-6-O-(α -D-galactopyranosyl)-D-galactose. 6- α -Galactosylgalactosamine

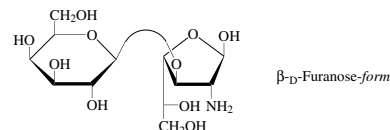


C₁₂H₂₃NO₁₀ 341.314

N-Ac: 2-Acetamido-2-deoxy-6-O-(α -D-galactopyranosyl)-D-galactose. 6- α -Galactosyl-N-acetylgalactosamine
C₁₄H₂₅NO₁₁ 383.352
Synth. by the transferase action of
Trichomonas foetus α -galactosidase on
6-O- α -D-Galactopyranosyl-D-glucose,
G-145 in the presence of N-acetylga-
lactosamine. [α]_D +142 (H₂O).

Watkins, W.M. *et al.*, *Nature (London)*, 1958,
181, 117 (*isol*)

β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose **G-45**
2-Amino-2-deoxy-3-O- β -D-galactopyranosyl-D-galactose



C₁₂H₂₃NO₁₀ 341.314

N-Ac: 2-Acetamido-2-deoxy-3-O- β -D-galactopyranosyl-D-galactose. β -D-Galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy-D-galactose
[3554-90-3]
C₁₄H₂₅NO₁₁ 383.352
Isol. from the acid hydrolysate of hu-
man blood group A, B, H and Le
substances. TF-antigenic disaccharide
(Thomsen-Friedenreich). [α]_D³⁵ +34.5
(c, 0.3 in H₂O).

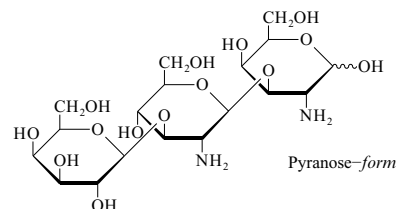
Me glycoside, 5,6-O-isopropylidene, N-Ac:
[139747-11-8]
C₁₈H₃₁NO₁₁ 437.443
[α]_D³⁵ -57.3 (c, 2.48 in H₂O).

Painter, T.J. *et al.*, *Chem. Ind. (London)*, 1962,
1535-1536 (*N-Ac*, *isol*)

Flowers, H.M. *et al.*, *J.O.C.*, 1965, **30**, 2041-
2043 (*N-Ac*, *synth*)
Springer, G.F. *et al.*, *Naturwissenschaften*, 1974,
61, 457 (*biochem*)

Ghosh, R. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**,
71-75 (*N-Ac deriv.*, *synth.*, *pmr*)

β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose, 9CI **G-46**



C₁₈H₃₄N₂O₁₄ 502.472

Constit. of the glycoprotein of human
meconium.

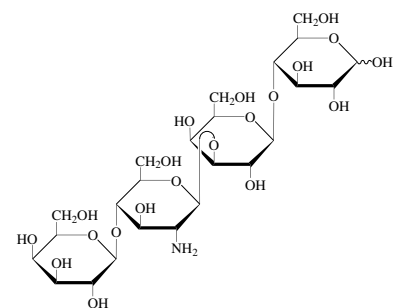
N,N'-Di-Ac: [103460-19-1]

C₂₂H₃₈N₂O₁₆ 586.546

Amorph.

Capon, C. *et al.*, *Eur. J. Biochem.*, 1989, **182**,
139 (*occur.*, *struct.*, *pmr*)

β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose **G-47**



C₂₄H₄₃NO₂₀ 665.598

N-Ac: Lacto-N-neotetraose. LNNT

[13007-32-4]

C₂₆H₄₅NO₂₁ 707.636

Isol. from human milk. Aminogenesis-
inducing agent.

Mp 214-218°. [α]_D²² +33 (6 min) \rightarrow +27
(17 h) (c, 1.0 in H₂O).

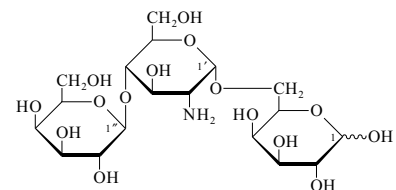
Kuhn, R. *et al.*, *Chem. Ber.*, 1962, **95**, 513-517;
518-522 (*isol*)

Sabesan, S. *et al.*, *J.A.C.S.*, 1986, **108**, 2068-
2080 (*N-Ac*, *synth.*, *pmr*, *cmr*, *bibl*)

Yuen, C.T. *et al.*, *J. Biol. Chem.*, 1994, **269**,
1595-1598 (*activity*)

Aly, M.R.E. *et al.*, *Carbohydr. Res.*, 1999, **316**,
121-132 (*synth*)

β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose, 9CI **G-48**



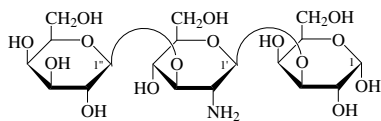
C₁₈H₃₃NO₁₅ 503.456

N-Ac: [98832-55-4]
C₂₀H₃₅NO₁₆ 545.494
Cryst. + 3H₂O. Mp 170° dec. (sinters
at ca.). [α]_D²⁵ +92.9 (c, 0.5 in H₂O).

[98832-54-3]

Lichtenthaler, F.W. et al., *Annalen*, 1985, 1659
(N-Ac, pmr, cmr)

**β-D-Galactopyranosyl-(1 → 3)-
2-amino-2-deoxy-β-D-glucopyranosyl-
(1 → 3)-D-galactose** G-49



α-Pyranose-form

C₁₈H₃₃NO₁₅ 503.456
Core chain trisaccharide related to human
blood group antigenic determinants.
Constit. of a sulfated polysaccharide from
an ovarian cyst glycoprotein exhibiting
blood group A activity.

2'-N-Ac: β-D-Glucopyranosyl-(1 → 3)-2-
acetamido-2-deoxy-β-D-glucopyranosyl-
(1 → 3)-D-galactose. Lacto-N-triose I
C₂₀H₃₅NO₁₆ 545.494
Isol. from the partial acid hydrol. of
human milk. Cryst. + 2H₂O.
Mp 202° (139-141° dec., 183-185°). [α]_D
+19.3 (c, 2.0 in H₂O) (+13.6).

N-Ac, phenylosazone: Mp 230°.

α-Pyranose-form

Benzyl glycoside, 6-allyl, 2,4-dibenzyl, hep-
ta-Ac:
C₅₆H₆₉NO₂₂ 1108.155
Amorph. [α]_D +18.8 (c, 1.27 in CHCl₃).

β-Pyranose-form

Me glycoside, N-Ac: [93253-21-5]
C₂₁H₃₇NO₁₆ 559.52
Cryst. + H₂O. Mp 256-258°. [α]_D -2.5
(c, 0.7 in H₂O).

Me glycoside, 4',6'-benzylidene, 2,4,6-tri-
benzyl, N-Ac: [93253-20-4]
C₄₉H₅₉NO₁₆ 918.002
Cryst. Mp 205-208°. [α]_D -25.9 (c, 1.6 in
CHCl₃).

8-Methoxycarbonyloctyl glycoside, N-Ac:
[70874-54-3]
C₃₀H₅₃NO₁₈ 715.745
Used as a hapten for attachment to
proteins. Amorph. powder. [α]_D²³ -4.7
(c, 0.9 in H₂O).

α-Furanose-form

2'-N-Phthaloyl, 1,2:5,6-di-O-isopropylidene,
hexa-Ac: [81414-98-4]
C₄₄H₅₅NO₂₃ 965.911
Cryst. Mp 106-109°. [α]_D²⁵ -15.5 (c, 0.5 in
CHCl₃).

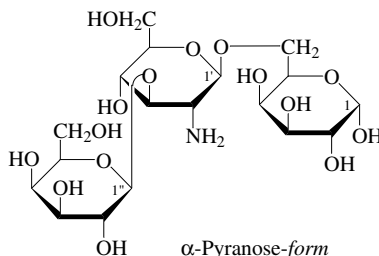
[93303-80-1]

Kuhn, R. et al., *Chem. Ber.*, 1954, **87**, 289; 1553;
1956, **89**, 504; 1027; 2514; 1958, **91**, 364; 1960,
93, 647 (isol)

Malpress, F.H. et al., *Biochem. J.*, 1958, **68**, 708
Auge, C. et al., *J.C.S. Perkin 1*, 1977, 1343
(N-Ac synth, α-pyr deriv synth, pmr)

Lemieux, R.U. et al., *Can. J. Chem.*, 1982, **60**,
68 (methoxycarbonyloctyl gly synth, pmr, cmr)
Kohata, K. et al., *Carbohydr. Res.*, 1984, **132**,
127 (Me gly deriv, synth, pmr, cmr)
Wu, S.S. et al., *Biochim. Biophys. Acta*, 1987,
924, 420 (isol, pmr, reactions)

**β-D-Galactopyranosyl-(1 → 3)-
2-amino-2-deoxy-β-D-glucopyranosyl-
(1 → 6)-D-galactose** G-50



α-Pyranose-form

C₁₈H₃₃NO₁₅ 503.456

N-Ac: [69975-83-3]
C₂₀H₃₅NO₁₆ 545.494
Cryst. + H₂O (MeOH). Mp 177-184°
(175-178°) dec. [α]_D²⁰ -9.5 → -1.2 (c, 0.84
in H₂O).

α-Pyranose-form

1,2:3,4-Di-O-isopropylidene, N-phthaloyl,
hexa-Ac: [81414-91-7]
C₄₄H₅₅NO₂₃ 965.911
Cryst. Mp 119-121°. [α]_D -39.1 (CHCl₃).

β-Pyranose-form

Benzyl glycoside, 2,4-dibenzyl, hepta-Ac:
[72380-30-4]
C₅₃H₆₅NO₂₂ 1068.09
Foam. [α]_D²⁰ -14 (c, 1.9 in CHCl₃).

Benzyl glycoside, 3-allyl, 2,4-dibenzyl, hep-
ta-Ac: [72380-29-1]
C₅₆H₆₉NO₂₂ 1108.155
Foam. [α]_D²⁰ -4 (c, 0.99 in CHCl₃).

4-Nitrophenyl glycoside, N-Ac: [62847-78-
3]
Amorph. + 2H₂O. [α]_D -53 (c, 0.5 in
H₂O).

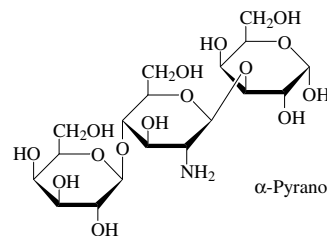
4-Nitrophenyl glycoside,
2,2',N,2'',3,3'',4',4'',6',6''-nona-Ac:
[62847-76-1]
Cryst. Mp 140-142°. [α]_D -6.5 (CHCl₃).

8-Methoxycarbonyloctyl glycoside, N-Ac:
[70874-53-2]
C₃₀H₅₃NO₁₈ 715.745
Hapten for attachment to proteins.
Powder + H₂O. Mp 185-188°. [α]_D -20.9
(c, 1.0 in H₂O).

8-Methoxycarbonyloctyl glycoside, deca-
Ac: [81415-08-9]
C₄₈H₇₁NO₂₇ 1094.079
Amorph. [α]_D²³ -13.7 (c, 0.7 in CHCl₃).

Matta, K.L. et al., *Carbohydr. Res.*, 1977, **53**,
209 (β-nitrophenyl pyr derivs, pmr)
Auge, C. et al., *Nouv. J. Chim.*, 1979, **3**, 491
(N-Ac, β-benzyl pyr hepta-Ac derivs, pmr)
Lemieux, R.U. et al., *Can. J. Chem.*, 1982, **60**,
68 (N-Ac, β-methoxycarbonyloctyl pyr, pmr)
Amano, J. et al., *J. Biol. Chem.*, 1991, **266**,
11461 (occur, struct)

**β-D-Galactopyranosyl-(1 → 4)-
2-amino-2-deoxy-β-D-glucopyranosyl-
(1 → 3)-D-galactose** G-51



α-Pyranose-form

C₁₈H₃₃NO₁₅ 503.456
Isol. from hydrolysate of the lipopolysac-
charides of *Neisseria meningitidis* serotype
L5. Constit. of Asparagine-linked sugar
chain of glucose transporter from human
erythrocytes. Syrup.

N-Ac: [69975-81-1]
C₂₀H₃₅NO₁₆ 545.494
Amorph. + H₂O. [α]_D²⁰ +19.5 (c, 0.62 in
H₂O) (+17.5).

α-Pyranose-form

Undeca-Ac: [130648-56-5]
C₄₀H₅₅NO₂₆ 965.866
Amorph. solid (CH₂Cl₂/Et₂O/hexane).
[α]_D²⁶ +54 (c, 1.0 in CHCl₃).

β-Pyranose-form

Me glycoside, N-Ac: [95795-79-2]
C₂₁H₃₇NO₁₆ 559.52
Syrup. [α]_D +4 (c, 0.6 in H₂O).

Me glycoside, 2',N,2'',3'',4',4'',6',6''-hepta-
Ac: [98151-11-2]
C₃₃H₄₉NO₂₂ 811.744
Syrup. [α]_D²⁵ -5 (c, 0.8 in CHCl₃).

Me glycoside, 2,4,6-tribenzyl, hepta-Ac:
[98151-10-1]
C₅₄H₆₇NO₂₂ 1082.117
Foam. [α]_D²³ -14 (c, 1.0 in CDCl₃).

Me glycoside, 2,3',4,6,6'-pentabenzyl,
6''-tert-butylidiphenylsilyl, N-Ac:
[130648-49-6]
C₇₂H₈₅NO₁₆Si 1248.546
Amorph. [α]_D²¹ -4 (c, 1.1 in CHCl₃).

8-Methoxycarbonyloctyl glycoside, N-Ac:
[70874-51-0]
C₃₀H₅₃NO₁₈ 715.745
Amorph. powder + H₂O. [α]_D²³ -3.8
(c, 1.0 in H₂O).

8-Methoxycarbonyloctyl glycoside, deca-
Ac: [81425-11-8]
C₄₈H₇₁NO₂₇ 1094.079
Amorph. solid. [α]_D²³ +4.6 (c, 0.75 in
CHCl₃).

[81415-06-7, 81415-13-6]

Auge, C. et al., *Nouv. J. Chim.*, 1979, **3**, 491
(N-Ac)

Lemieux, R.U. et al., *Can. J. Chem.*, 1982, **60**,
60 (synth, β-methoxycarbonyloctyl pyr derivs,
pmr, cmr)

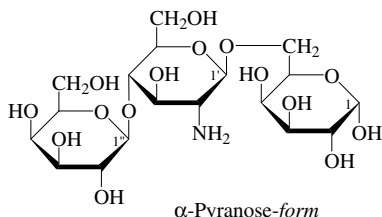
Dahmen, J. et al., *Carbohydr. Res.*, 1985, **138**,
17 (β-Me pyr N-Ac, β-Me pyr hepta-Ac derivs,
pmr, cmr)

Endo, T. et al., *Biochemistry*, 1990, **29**, 9126
(occur)

Khan, S.H. et al., *Carbohydr. Res.*, 1990, **203**,
139 (α-undeca Ac, β-Me pyr pentabenzyl deriv,
pmr, cmr)

Michon, F. *et al.*, *J. Biol. Chem.*, 1990, **265**, 7243 (*isol*, *pmr*)

β-D-Galactopyranosyl-(1→4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→6)-D-galactose, 9CI



C₁₈H₃₃NO₁₅ 503.456
Syrup. [α]_D²⁰ +4 (H₂O).

N-Ac: [20331-45-7]

C₂₀H₃₅NO₁₆ 545.494

Cryst. + H₂O. Mp 155-159° dec. [α]_D²⁴ +9.6 (c, 0.5 in H₂O) (+4.0).

α-Pyranose-form

1,2:3,4-Di-O-isopropylidene, N-phthaloyl, hexa-Ac: [81414-95-1]
C₄₄H₅₅NO₂₃ 965.911
Cryst. Mp 201-202°. [α]_D -19.6 (CHCl₃).

β-Pyranose-form

Benzyl glycoside, 3-allyl, 2,4-dibenzyl, 2',N,2'',3',3'',4'',6',6''-hepta-Ac: [72380-32-6]
C₅₆H₆₉NO₂₂ 1108.155
Syrup. [α]_D -27 (CHCl₃).

8-Methoxycarbonyloctyl glycoside, N-Ac: [70874-52-1]
C₃₀H₅₃NO₁₈ 715.745
Powder + H₂O. Mp 202-205°. [α]_D²³ -15.7 (c, 0.8 in H₂O).

8-Methoxycarbonyloctyl glycoside, deca-Ac: [81415-10-3]
C₄₈H₇₁NO₂₇ 1094.079
Amorph. [α]_D²³ -18.3 (c, 6.5 in CHCl₃).

[81415-09-0]

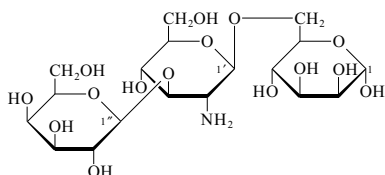
Auge, C. *et al.*, *Nouv. J. Chim.*, 1979, **3**, 491 (*synth*)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1982, **68**, 60 (N-Ac, α-diisopropylidene deriv, β-methoxycarbonyl pyr derivs, *pmr*, *cmr*)

Renkonen, O. *et al.*, *Glycoconjugate J.*, 1989, **6**, 129 (*synth*)

Renkonen, O. *et al.*, *Carbohydr. Res.*, 1991, **213**, 169 (*affinity chromatog*)

β-D-Galactopyranosyl-(1→3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→6)-D-mannose, 9CI



C₁₈H₃₃NO₁₅ 503.456

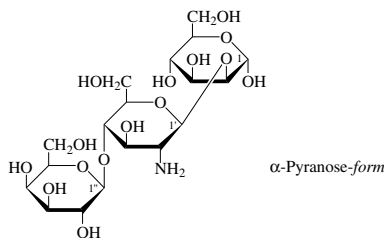
α-Pyranose-form

p-Nitrophenyl glycoside, N-Ac: [85193-91-5]
Amorph. + 2H₂O. [α]_D²⁰ +37.1 (c, 0.5 in H₂O).

p-Nitrophenyl glycoside, 2',N,2'',3'',4'',6',6''-hepta-Ac: [85193-90-4]
Amorph. + H₂O. [α]_D²⁰ +41.2 (c, 1.3 in CH₂Cl₂).

Rana, S.S. *et al.*, *Carbohydr. Res.*, 1983, **113**, 257 (*synth*, *pmr*, *cmr*)

β-D-Galactopyranosyl-(1→4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→2)-D-mannose, 9CI



C₁₈H₃₃NO₁₅ 503.456

Constit. of the desialylated portion of the glycan chains isol. from an alpha subunit of normal human chorionic gonadotropin (hCG). Constit. of sialoglycopeptides from human O-MN-type erythrocytes.

α-Pyranose-form

2',N, 2'',3,3',3'',4,4'',6,6',6''-Deca-Ac: [129750-35-2]
C₃₈H₅₃NO₂₅ 923.828
Syrup.

Ethylthio glycoside, deca-Ac: [129750-34-1]
C₄₀H₅₇NO₂₅S 983.948
Amorph. [α]_D²⁰ +16 (c, 1.19 in CHCl₃).

Me glycoside, N-Ac: [96691-77-9]
C₂₁H₃₇NO₁₆ 559.52
Syrup. [α]_D²⁰ -13 (c, 0.7 in H₂O).

Propyl glycoside, N-Ac: [108425-21-4]
C₂₃H₄₁NO₁₆ 587.574
Syrup + 0.5 H₂O. [α]_D²⁵ -4.5 (c, 1.0 in MeOH).

[129750-59-0]

Bock, K. *et al.*, *Eur. J. Biochem.*, 1982, **129**, 171 (*conformn*, *pmr*, *cmr*)

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1983, **123**, C8 (*deca-Ac*)

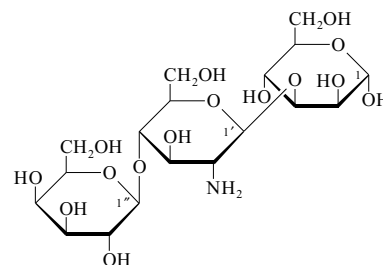
Shinozuka, T. *et al.*, *CA*, 1984, **100**, 189486k (*occur*)

Sadozai, K.K. *et al.*, *Carbohydr. Res.*, 1986, **152**, 173 (α-propyl pyr N-Ac, *pmr*, *occur*)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1990, **200**, 127 (ethylthio gly derivs, *synth*, *pmr*)

Auge, C. *et al.*, *Carbohydr. Res.*, 1990, **200**, 257 (α-Me pyr N-Ac, *pmr*)

β-D-Galactopyranosyl-(1→4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→3)-D-mannose, 9CI



C₁₈H₃₃NO₁₅ 503.456

Postulated trisaccharide of human erythrocyte membrane sialoglycoprotein.

α-Pyranose-form

N-Ac: [77455-36-8]

C₂₀H₃₅NO₁₆ 545.494

Amorph. [α]_D²⁰ -14 (c, 1.0 in H₂O).

1,2,4-Tribenzyl, 2',N,2'',3',3'',4'',6',6''-hepta-Ac: [77469-42-2]

C₅₃H₆₅NO₂₂ 1068.09

Amorph. [α]_D²⁰ +14 (c, 0.64 in CHCl₃).

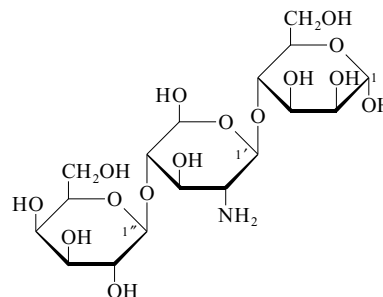
1,2,4-Tribenzyl, 6-allyl, hepta-Ac: [77455-35-7]

C₅₆H₆₉NO₂₂ 1108.155

Cryst. (Et₂O). Mp 120-121°. [α]_D²⁰ +8 (c, 1.1 in CHCl₃).

Alais, J. *et al.*, *J.C.S. Perkin 1*, 1981, 377 (N-Ac, hepta-Ac derivs, *pmr*)

β-D-Galactopyranosyl-(1→4)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→4)-D-mannose, 9CI



C₁₈H₃₃NO₁₅ 503.456

Constit. of the anomalous biantennary glycan chain in human chorionic gonadotropin (hCG) isol. from the urine of a choriocarcinoma patient.

α-Pyranose-form

Propyl glycoside, N-Ac: [110212-49-2]

C₂₃H₄₁NO₁₆ 587.574

Syrup. [α]_D 0 (c, 0.45 in H₂O).

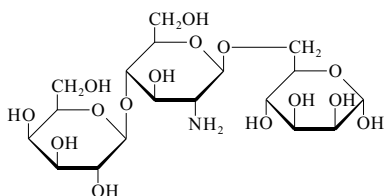
[110212-47-0, 110212-48-1]

Sadozai, K.K. *et al.*, *Carbohydr. Res.*, 1986, **155**, 101 (*occur*, α-propyl pyr N-Ac, *pmr*)

Japan. Pat., 1991, 03 157 391; *CA*, **115**, 208459g (α-propyl pyr N-Ac)

**β-D-Galactopyranosyl-(1→4)-
2-amino-2-deoxy-β-D-glucopyranosyl-
(1→6)-D-mannose, 9CI**

G-57



C₁₈H₃₃NO₁₅ 503.456

Constit. of blood group substance of human milk.

N-Ac: [82184-65-4]

C₂₀H₃₅NO₁₆ 545.494

Amorph. powder. [α]_D²¹ -10 (c, 1.0 in H₂O).

α-Pyranose-form

Benzyl glycoside, 2,3,4-tribenzyl, 2',N,2'',3',3'',4'',6',6''-hepta-Ac: [78561-23-6]

C₆₀H₇₁NO₂₂ 1158.214

Syrup. [α]_D²¹ +8 (c, 1.0 in CHCl₃).

[78561-25-8]

Arnarp, J. *et al.*, *Carbohydr. Res.*, 1981, **98**, 154

(N-Ac, α-benzyl pyr deriv, pmr, cmr)

Bock, K. *et al.*, *Eur. J. Biochem.*, 1982, **129**, 171

(N-Ac, pmr, cmr, conformn)

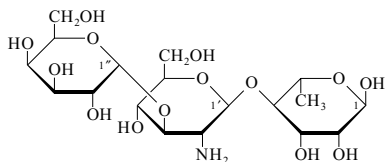
Gooi, H.C. *et al.*, *Carbohydr. Res.*, 1983, **120**, 293 (occur)

Townsend, R.R. *et al.*, *Anal. Biochem.*, 1988, **174**, 459 (chromatog, anal)

**α-D-Galactopyranosyl-(1→3)-
2-amino-2-deoxy-β-D-glucopyranosyl-
(1→4)-L-rhamnose**

G-58

α-D-Galactopyranosyl-(1→3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→4)-6-deoxy-L-mannose, 9CI



C₁₈H₃₃NO₁₄ 487.457

N-Ac:

C₂₀H₃₅NO₁₅ 529.494

Constit. of the group B streptococcal common antigen. Amorph.

α-Pyranose-form

Me glycoside, N-Ac: [118281-86-0]

C₂₁H₃₇NO₁₅ 543.521

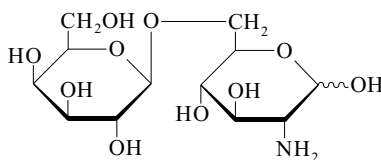
Amorph. [α]_D²⁰ +34.3 (c, 0.7 in H₂O).

[118281-95-1, 118281-96-2]

Pozsgay, V. *et al.*, *Carbohydr. Res.*, 1988, **179**, 61 (occur, α-Me pyr N-Ac, pmr, cmr)

**β-D-Galactopyranosyl-(1→6)-
2-amino-2-deoxy-D-glucose
2-Amino-2-deoxy-6-O-(β-D-galactopyranosyl)-D-glucose. 6-β-Galactosylglucosamine**

G-59



Pyranose-form

C₁₂H₂₃NO₁₀ 341.314

N-Ac: 6-β-Galactosyl-N-acetylglucosamine

[50787-10-5]

C₁₄H₂₅NO₁₁ 383.352

[α]_D +28 (H₂O).

[3757-90-2]

Zilliken, F. *et al.*, *J. Biol. Chem.*, 1954, **208**, 299; 1955, **217**, 79

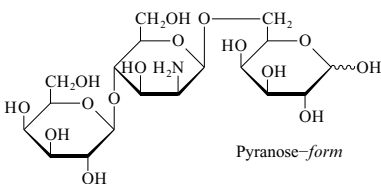
Kuhn, R. *et al.*, *Chem. Ber.*, 1955, **88**, 1713

(synth)

Alessandrini, A. *et al.*, *J. Biol. Chem.*, 1956, **220**, 71

**β-D-Galactopyranosyl-(1→4)-
2-amino-2-deoxy-β-D-mannopyranosyl-
(1→6)-D-galactose, 9CI**

G-60



Pyranose-form

C₁₈H₃₃NO₁₅ 503.456

N-Ac: [98832-56-5]

C₂₀H₃₅NO₁₆ 545.494

Mp 162° dec. [α]_D²⁰ +11 (c, 0.5 in H₂O).

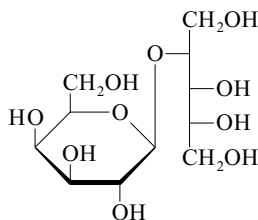
[98832-51-0]

Lichtenthaler, F.W. *et al.*, *Annalen*, 1985, 1659 (N-Ac, pmr)

**2-O-β-D-Galactopyranosyl-D-
arabinitol**

G-61

4-O-β-D-Galactopyranosyl-D-lyxitol



C₁₁H₂₂O₁₀ 314.289

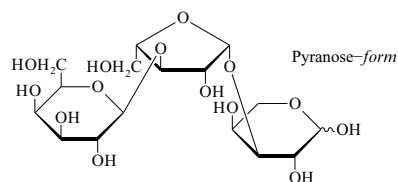
Mp 177-179°. [α]_D -7 (H₂O).

Charlson, J. *et al.*, *Can. J. Chem.*, 1957, **35**, 365 (synth)

**β-D-Galactopyranosyl-(1→3)-
β-L-arabinofuranosyl-(1→3)-L-arabi-
nose, 9CI**

G-62

[52287-02-2]



Pyranose-form

C₁₆H₂₈O₁₄ 444.389

Isol. from the hydrolysate of *Rhizophora mangle* gum.

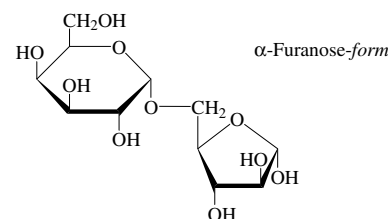
[α]_D³⁰ -60 (c, 0.5 in H₂O).

Sarkar, M. *et al.*, *Indian J. Chem., Sect. B*, 1974, **11**, 1129; 1978, **16**, 369 (isol)

**5-O-α-D-Galactopyranosyl-D-
arabinose, 9CI**

G-63

[94062-89-2]



α-Furanose-form

C₁₁H₂₀O₁₀ 312.273

[α]_D +82.2 (c, 1.0 in H₂O, equilib.). [α]_D²³ +75.5 (H₂O).

α-Furanose-form [50711-15-4]

[α]_D²⁰ +98 (10 min) → +82.1 (66h) (c, 0.8 in H₂O).

β-Furanose-form [50711-16-5]

[α]_D²⁰ +76.1 (10 min) → +82.1 (96h) (c, 1.0 in H₂O).

Deferrari, J.O. *et al.*, *Carbohydr. Res.*, 1973, **30**, 313

Gelpi, M.E. *et al.*, *An. Asoc. Quim. Argent.*, 1974, **62**, 35; *CA*, **81**, 120883j

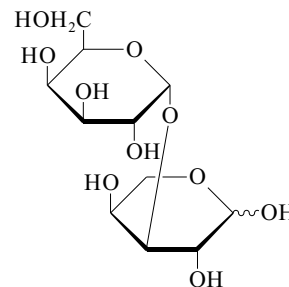
Bilik, V. *et al.*, *Chem. Zvesti*, 1984, **38**, 499; *CA*, **102**, 24936k (synth, cmr)

Zuazo, B.N. *et al.*, *Carbohydr. Res.*, 1988, **72**, 156 (synth, pmr)

**3-O-α-D-Galactopyranosyl-L-
arabinose, 9CI**

G-64

[72050-89-6]



Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Isol. from partial acid hydrolysates of gum arabic, *Acacia cyanophylla*, *Acacia karroo* and *Acacia saligna* gums. Constit. of polysaccharides found in *Watsonia corm-sacs*. Cryst. (MeOH). Mp 156°. $[\alpha]_D^{20} +152$ (H₂O). $[\alpha]_D^{20} +197$ (c, 1.0 in H₂O).

Phenylosazone: Mp 235°.

Hepta-Me:

C₁₈H₃₄O₁₀ 410.461

Mp 87-88°. $[\alpha]_D^{20} +162$ (CHCl₃).

Smith, F. *et al.*, *J.C.S.*, 1939, 744

Jones, J.K.N. *et al.*, *J.C.S.*, 1953, 1672

Charlson, A.J. *et al.*, *J.C.S.*, 1955, 269; 1428 (isol)

Shaw, D.H. *et al.*, *J.C.S.*, 1965, 2287 (isol)

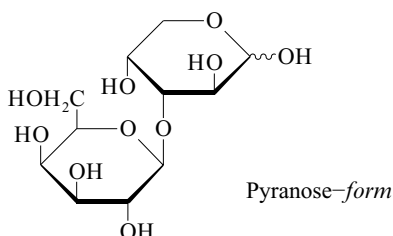
Pazur, J.H. *et al.*, *J. Chromatogr.*, 1987, **396**, 139 (glc, ms)

Joao, H.I. *et al.*, *Carbohydr. Res.*, 1988, **176**, 300 (pmr, struct)

Charlson, A.J. *et al.*, *Can. J. Chem.*, 1990, **68**, 1004

3-O-β-D-Galactopyranosyl-D-arabinose, 9CI, 8CI

[6057-48-3]



C₁₁H₂₀O₁₀ 312.273

Synth. chemically from lactose or from lactose derivatives. Mp 166-168° (163°). $[\alpha]_D^{20} -55$ (H₂O).

Phenylosazone: Mp 235-240°. $[\alpha]_D^{20} -13.5$ (H₂O).

Hepta-Ac: [20869-31-2]

C₂₅H₃₄O₁₇ 606.533

Mp 157° (154°). $[\alpha]_D^{20} -80.8$ (CHCl₃).

[130767-77-0, 130767-78-1]

Zilliken, F. *et al.*, *Arch. Biochem. Biophys.*, 1955, **54**, 398 (synth)

Pazur, J.M. *et al.*, *Arch. Biochem. Biophys.*, 1961, **94**, 142 (synth)

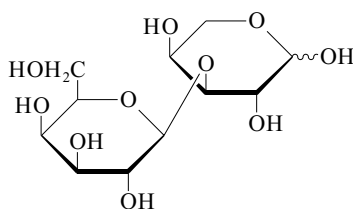
Whistler, R.L. *et al.*, *J.O.C.*, 1961, **26**, 1050 (synth)

Bilik, V. *et al.*, *Chem. Zvesti*, 1981, **35**, 829; *CA*, **96**, 123144q (synth)

Garozzo, D. *et al.*, *Anal. Chem.*, 1990, **62**, 279 (ms)

3-O-β-D-Galactopyranosyl-L-arabinose, 9CI, 8CI

[6055-00-1]



Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Isol. from partial acid hydrolysates of gum ghatti, *Rhizophora mangle* gum, *Aegle marmelos* gum (bael fruit), *Terminalia tomentosa* gum, *Anogeissus schimperi* gum, *Albizia zygia* gum, and from the mucilage of *Opuntia ficus-indica* (Indian fig). Cryst. (MeOH/EtOH).

Mp 202-204° (192-194°). $[\alpha]_D^{20} +62$ (in H₂O). $[\alpha]_D^{20} +57$ (c, 0.2 in H₂O).

Aspinall, G.O. *et al.*, *J.C.S.*, 1958, 4408; 1961, 3461 (isol)

Drummond, D.W. *et al.*, *J.C.S.*, 1961, 3908

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1966, **44**, 2083 (synth)

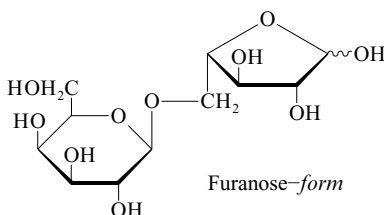
Roy, A. *et al.*, *Carbohydr. Res.*, 1975, **41**, 219

Audichya, T.D. *et al.*, *Indian J. Chem., Sect. B*, 1976, **14**, 601

McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol, struct)

5-O-β-D-Galactopyranosyl-L-arabinose, 9CI

[52287-01-1]



C₁₁H₂₀O₁₀ 312.273

Isolated from partial acid hydrolysate of corn-hull hemicellulose and *Rhizophora mangle* gum.

$[\alpha]_D^{20} -13$ (H₂O). $[\alpha]_D^{30} -20$ (c, 0.5 in H₂O).

α- and β- anomers have been characterised as 6-octyl derivs.

[129229-17-0, 131285-16-0, 131285-17-1, 131285-18-2, 131285-19-3]

Srivastava, H.C. *et al.*, *J.A.C.S.*, 1957, **79**, 982 (isol)

Goldstein, I.J. *et al.*, *J.A.C.S.*, 1957, **79**, 3558 (synth)

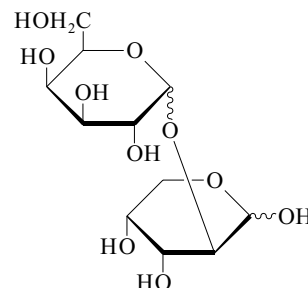
Sarkar, M. *et al.*, *Indian J. Chem., Sect. B*, 1973, **11**, 1129 (isol)

Cabaret, D. *et al.*, *Can. J. Chem.*, 1990, **68**, 2253 (synth, pmr)

G-66

2-O-D-Galactopyranosyl-D-arabinose

G-68



Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Unknown interglycosidic linkage. Mp 143-144°. $[\alpha]_D^{20} +34.4$ (H₂O).

Phenylosazone: Mp 184-186°.

Hepta-Ac:

C₂₅H₃₄O₁₇ 606.533

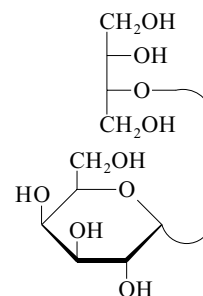
Mp 139-142°. $[\alpha]_D^{20} +40.6$ (CHCl₃).

Gakhokidze, A.M. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1952, **22**, 244; 247 (synth)

3-O-α-D-Galactopyranosyl-D-erythritol

G-69

2-O-α-D-Galactopyranosyl-L-erythritol



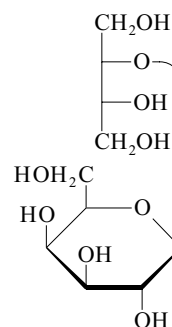
C₁₀H₂₀O₉ 284.263

Mp 156-158°. $[\alpha]_D^{20} +145$ (H₂O).

Venkataramah, R. *et al.*, *Arch. Biochem. Biophys.*, 1958, **75**, 443 (synth)

2-O-β-D-Galactopyranosyl-D-erythritol

G-70



C₁₀H₂₀O₉ 284.263

Mp 184-187°. $[\alpha]_D^{20} +7$ (H₂O).

Charlson, A.J. *et al.*, *Can. J. Chem.*, 1956, **34**, 1811 (synth)

2-O-β-D-Galactopyranosyl-D-erythrose

G-71

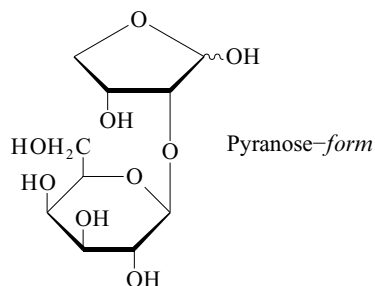
Reducing disaccharide. Synth. enzymically by the action of *Penicillium chrysogenum* β-galactosidase on a mixt. of Fructose, F-84 and Lactose, L-13. Mp 197-199°. $[\alpha]_D^{25}$ -33 (H₂O).

Phenylosazone: Mp 184-185°.

Kuhn, R. *et al.*, *Chem. Ber.*, 1954, **87**, 1560

(synth)

Ballio, A. *et al.*, *J. Chromatogr.*, 1960, **4**, 117



C₁₀H₁₈O₉ 282.247

Reducing disaccharide. Mp 154°. $[\alpha]_D^{25}$ +1822 (H₂O).

Hexa-Ac:

C₂₂H₃₀O₁₅ 534.47

Mp 138-140°.

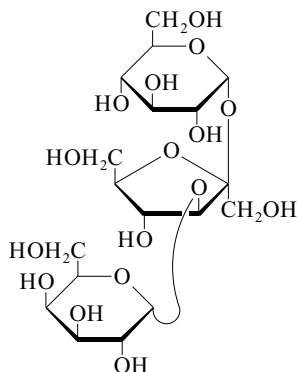
Zemplen, G. *et al.*, *Ber.*, 1926, **59**, 2402

Gakhokidze, A.M. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1950, **20**, 120 (synth)

α-D-Galactopyranosyl-(1 → 3)-β-D-fructofuranosyl α-D-glucopyranoside

G-72

[15397-05-4]



C₁₈H₃₂O₁₆ 504.441

Isol. from the roots of *Silene inflata* and from *Lychnis dioica*.

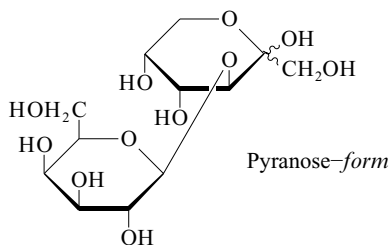
$[\alpha]_D^{20}$ +98.5 (H₂O).

Courtois, J.E. *et al.*, *Bull. Soc. Chim. Biol.*, 1959, **41**, 1261 (isol)

Davy, J. *et al.*, *CA*, 1966, **67**, 91053s (isol)

3-O-β-D-Galactopyranosyl-D-fructose

G-73

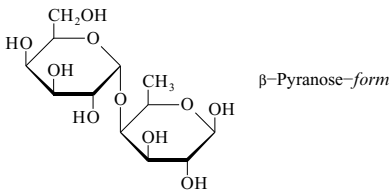


C₁₂H₂₂O₁₁ 342.299

4-O-α-D-Galactopyranosyl-D-fucose

G-74

4-O-α-D-Galactopyranosyl-6-deoxy-D-galactose. 6-Deoxy-4-O-α-D-galactopyranosyl-D-galactose



C₁₂H₂₂O₁₀ 326.3

β-Pyranose-form

Me glycoside: [96103-01-4]

C₁₃H₂₄O₁₀ 340.327

Amorph. $[\alpha]_D^{25}$ +109 (c, 0.7 in H₂O).

Me glycoside, 2',3',4',6'-tetra-benzyl:

[117124-68-2]

C₄₁H₄₈O₁₀ 700.824

Syrup. $[\alpha]_D^{25}$ +29.5 (c, 0.3 in CHCl₃).

Me glycoside, 2',3',4',6'-tetra-benzyl,

2,3-dibenzoyl: [117124-67-1]

C₅₅H₅₆O₁₂ 909.04

Syrup. $[\alpha]_D^{25}$ +96 (c, 0.9 in CHCl₃).

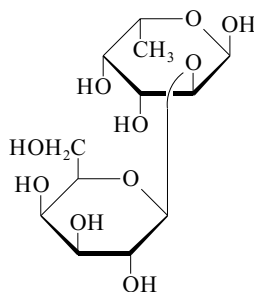
Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1985, **137**, 270 (benzylidene)

Kihlberg, J. *et al.*, *Carbohydr. Res.*, 1988, **176**, 271 (*Me gly*)

2-O-β-D-Galactopyranosyl-L-fucose

G-75

2-O-β-D-Galactopyranosyl-6-deoxy-L-galactose. 6-Deoxy-2-O-β-D-galactopyranosyl-L-galactose



C₁₂H₂₂O₁₀ 326.3

α-Pyranose-form

Me glycoside, 2',3',4',6'-tetra-Ac: [86734-75-0]

C₂₁H₃₂O₁₄ 508.475

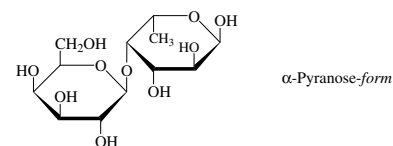
$[\alpha]_D^{25}$ -32 (c, 0.68 in CHCl₃).

Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1983, 921

4-O-β-D-Galactopyranosyl-L-fucose

G-76

4-O-β-D-Galactopyranosyl-6-deoxy-L-galactose, 9CI. 6-Deoxy-4-O-β-D-galactopyranosyl-L-galactose [87735-61-3]



C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Constit. of the repeating unit of M-antigen, a mucous polysaccharide produced by enterobacteria. Needles (EtOH/MeOH).

Mp 182-184°. $[\alpha]_D^{25}$ -39 (5 min) → +48 (18h) (c, 1 in H₂O).

α-Pyranose-form

Hepta-Ac: [87761-13-5]

C₂₆H₃₆O₁₇ 620.56

Syrup. $[\alpha]_D^{25}$ -84 (c, 2 in CH₂Cl₂).

Me glycoside: [87735-55-5]

C₁₃H₂₄O₁₀ 340.327

Cryst. (EtOAc). Mp 150°. $[\alpha]_D^{25}$ -103

(c, 1.5 in MeOH).

Me glycoside, 2,3-dibenzoyl: [87735-54-4]

C₂₇H₃₆O₁₀ 520.575

Cryst. (EtOAc/Me₂CO). Mp 184-186°.

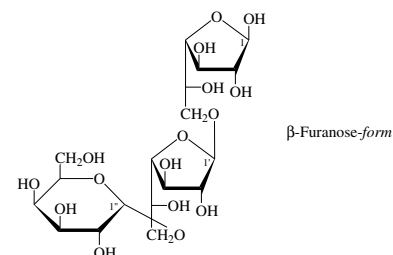
$[\alpha]_D^{25}$ -86 (c, 1.1 in EtOH).

Garegg, P.J. *et al.*, *Acta Chem. Scand.*, 1971, **25**, 1185; 2103 (*occur*)

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1983, **119**, 75

α-D-Galactopyranosyl-(1 → 6)-β-D-galactofuranosyl-(1 → 6)-D-galactose, 9CI

G-77



C₁₈H₃₂O₁₆ 504.441

Repeating unit in the O-specific polysaccharide of *Actinobacillus pleuropneumoniae* serotype 12.

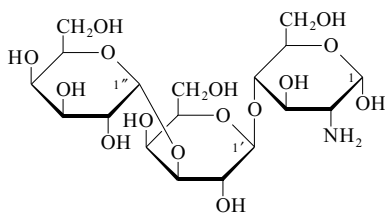
β-Furanose-form [133957-37-6]

Syrup.

Beynon, L.M. *et al.*, *Can. J. Chem.*, 1991, **69**, 218 (*occur*, pmr, cmr, glc, ms)

**α -D-Galactopyranosyl-(1 \rightarrow 3)-
 β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-D-glucose**

G-78

 $C_{18}H_{33}NO_{15}$ 503.456

Isol. from the hydrolysate of a human blood group B-specific glycoprotein.

Constit. of glycoproteins from membrane thyroid cells.

N-Ac: [77356-46-8]

 $C_{20}H_{35}NO_{16}$ 545.494Cryst. Mp 236-239° dec. $[\alpha]_D^{23} +104$
 $\rightarrow +100$ (c, 1.0 in H_2O). **α -Pyranose-form**

Benzyl glycoside, 2',2'',3,3'',4'',6,6',6''-octabenzyl, N-Ac: [77356-44-6]

 $C_{83}H_{89}NO_{16}$ 1356.613Cryst. (Et_2O /hexane). Mp 122-123°. $[\alpha]_D^{23} +63$ (c, 1.0 in $CHCl_3$).

Benzyl glycoside, 2',2'',3,3'',4'',6,6',6''-octabenzyl, 2N,4'-di-Ac: [77356-45-7]

 $C_{85}H_{91}NO_{17}$ 1398.65Syrup. $[\alpha]_D^{23} +57$ (c, 1.0 in $CHCl_3$). **β -Pyranose-form**

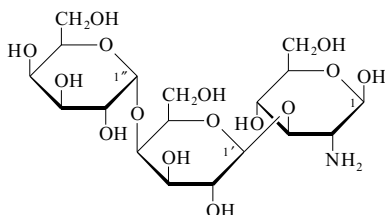
8-Methoxycarbonyloctyl glycoside, N-Ac: [97205-12-4]

 $C_{30}H_{53}NO_{18}$ 715.745Syrup. $[\alpha]_D +49$ (c, 0.6 in H_2O).

8-Methoxycarbonyloctyl glycoside, 2'',3,3'',4'',6,6''-hexabenzyl, 2',6'-dibenzoyl, 2N,4'-di-Ac: [97205-11-3]

 $C_{88}H_{99}NO_{21}$ 1506.744Syrup. $[\alpha]_D +30$ (c, 1.2 in $CHCl_3$).Painter, T.J. *et al.*, *Nature (London)*, 1963, **199**, 282 (*isol*)Jacquinet, J.C. *et al.*, *J.C.S. Perkin I*, 1981, 326 (N-Ac, α -benzyl pyr derivs, pmr)Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1985, **136**, 207 (β -methoxycarbonyloctyl pyr derivs, cmr)Thall, A. *et al.*, *Biochemistry*, 1990, **29**, 3959 (*anal*)Thall, A. *et al.*, *Acta Endocrinol.*, 1991, **124**, 692; *CA*, **115**, 229881d (*occur*) **α -D-Galactopyranosyl-(1 \rightarrow 4)-
 β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-
2-deoxy-D-glucose, 9CI**

G-79

 $C_{18}H_{33}NO_{15}$ 503.456 **β -Pyranose-form**

Propyl glycoside, N-Ac: [83562-63-4]

 $C_{23}H_{41}NO_{16}$ 587.574Amorph. solid + $5H_2O$. $[\alpha]_D^{25} +43.5$ (c, 1.0 in MeOH).

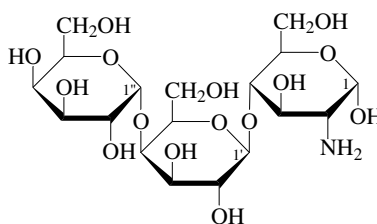
Propyl glycoside, 2'',3',3'',4,4'',6,6',6''-octabenzyl, N-Ac: [83562-62-3]

 $C_{79}H_{89}NO_{16}$ 1308.569Amorph. solid. $[\alpha]_D^{25} +42.6$ (c, 1.03 in $CHCl_3$).

Propyl glycoside, 2'',3',3'',4,4'',6,6',6''-octabenzyl, 2'-benzoyl, N-Ac: [83562-61-2]

 $C_{86}H_{93}NO_{17}$ 1412.677Syrup. $[\alpha]_D +50.9$ (c, 0.75 in $CHCl_3$).Nashed, M.A. *et al.*, *J.A.C.S.*, 1982, **104**, 7282 (β -propyl pyr derivs, pmr, cmr) **α -D-Galactopyranosyl-(1 \rightarrow 4)-
 β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-D-glucose, 9CI**

G-80

 α -Pyranose-form $C_{18}H_{33}NO_{15}$ 503.456 **α -Pyranose-form**

N-Ac: [88509-73-3]

 $C_{20}H_{35}NO_{16}$ 545.494Constit. of the human blood group P, antigenic determinant. Cryst. + $2H_2O$. Mp 179-180°. $[\alpha]_D^{23} +68 \rightarrow +72$ (c, 0.36 in MeOH aq.).

Benzyl glycoside, 2',2'',3,3'',3'',4'',6,6',6''-nonabenzyl, N-Ac: [88509-72-2]

 $C_{90}H_{95}NO_{16}$ 1446.738Amorph. $[\alpha]_D +59$ (c, 1.5 in $CHCl_3$). **β -Pyranose-form**

Allyl glycoside, 2'',3,3',3'',4'',6,6',6''-octabenzyl, N-Ac: [85395-70-6]

 $C_{79}H_{87}NO_{16}$ 1306.553Amorph. solid. $[\alpha]_D^{25} +42.7$ (c, 0.3 in $CHCl_3$).

Et glycoside, N-Ac: [90232-54-5]

 $C_{22}H_{39}NO_{16}$ 573.547Oil. $[\alpha]_D^{22} +38$ (c, 0.6 in H_2O).

Et glycoside, deca-Ac: [90232-53-4]

 $C_{40}H_{57}NO_{25}$ 951.882Cryst. Mp 130-133°. $[\alpha]_D^{22} +41$ (c, 0.7 in $CHCl_3$).

Propyl glycoside, N-Ac: [85395-71-7]

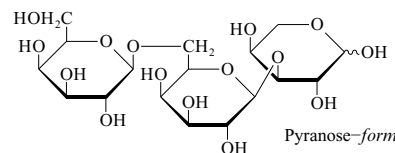
 $C_{23}H_{41}NO_{16}$ 587.574Amorph. solid + $2H_2O$. $[\alpha]_D^{25} +18.8$ (MeOH) (anhyd.). $[\alpha]_D^{23} +32$ (c, 1.3 in MeOH aq.) (dihydrate).

[85395-69-3, 88509-78-8, 88509-79-9, 101492-17-5]

Nashed, M.A. *et al.*, *Carbohydr. Res.*, 1983, **114**, 43 (β -allyl pyr octabenzyl N-Ac, β -propyl pyr N-Ac)Zollo, P.A. *et al.*, *Carbohydr. Res.*, 1983, **122**, 201 (α -N-Ac, β -propyl pyr N-Ac, α -benzyl pyr nonabenzyl N-Ac, β -allyl pyr octabenzyl N-Ac)Dahmen, J. *et al.*, *Carbohydr. Res.*, 1984, **129**, 63 (β -Et pyr derivs) **β -D-Galactopyranosyl-(1 \rightarrow 6)-
 β -D-galactopyranosyl-(1 \rightarrow 3)-L-arabi-
nose, 8CI**

G-81

[32694-83-0]



Pyranose-form

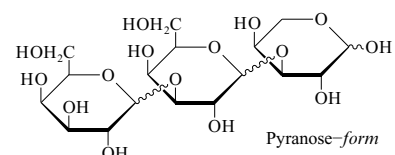
 $C_{17}H_{30}O_{15}$ 474.415Isol. from the hydrolysate of Marike gum from *Anogeissus schimperi* and from gum ghatti. Cryst. ($EtOH$ aq.).Mp 190-191°. $[\alpha]_D +39$ (c, 0.91 in H_2O).

[101996-67-2]

Aspinall, G.O. *et al.*, *J.C.S.*, 1958, 4408; 1961, 3461 (*isol*)Karkkainen, J. *et al.*, *Carbohydr. Res.*, 1971, **17**, 11 (*glc, ms*)Gerali, G. *et al.*, *Gazz. Chim. Ital.*, 1985, **115**, 523 (*ord*)**D-Galactopyranosyl-(1 \rightarrow 3)-D-
galactopyranosyl-(1 \rightarrow 3)-L-arabinose,
9CI**

G-82

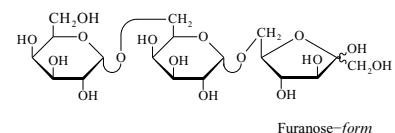
[79043-15-5]



Pyranose-form

 $C_{17}H_{30}O_{15}$ 474.415Isol. from the hydrolysate of the gum of *Spondias dulcis* (ambarella) (Anacardiaceae). The exudate gum is used as an Indian medication. $[\alpha]_D^{24} +56$ (c, 0.5 in H_2O).Basu, S. *et al.*, *Carbohydr. Res.*, 1981, **94**, 215 **α -D-Galactopyranosyl-(1 \rightarrow 6)-
 α -D-galactopyranosyl-(1 \rightarrow 6)-D-
fructose**

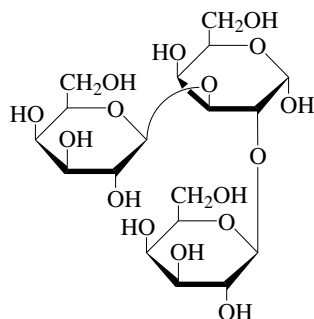
G-83

6- α -Galactosylplanteobiose

Furanose-form

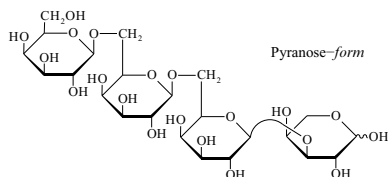
 $C_{18}H_{32}O_{16}$ 504.441Reducing trisaccharide. $[\alpha]_D +119$ (H_2O).De Grandchamp-Chaudun, A. *et al.*, *Bull. Soc. Chim. Biol.*, 1960, **42**, 227 (*synth*)

β-D-Galactopyranosyl-(1 → 2)- G-84
O-[β-D-galactopyranosyl-(1 → 3)]-α-D-
galactopyranose, 9CI
α-Kolomiktriase
 [145265-22-1]



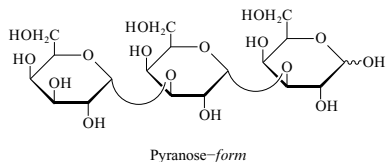
C₁₈H₃₂O₁₆ 504.441
 Constit. of the roots of *Actinidia kolomikta*.
 Li, P. et al., *CA*, 1993, **118**, 35868w (*isol*)

β-D-Galactopyranosyl-(1 → 6)- G-85
β-D-galactopyranosyl-(1 → 6)-β-D-
galactopyranosyl-(1 → 3)-L-arabinose



C₂₃H₄₀O₂₀ 636.557
 Isol. from partial acid hydrolysates of
 ghatti and *Anogeissus schimperi* gums.
 Mp 171°. [α]_D²⁰ +26 (H₂O).
 Aspinall, G.O. et al., *J.C.S.*, 1961, 3461; 1958,
 4408 (*isol*)

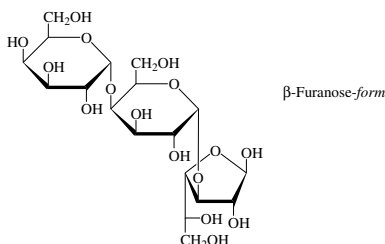
α-D-Galactopyranosyl-(1 → 3)- G-86
α-D-galactopyranosyl-(1 → 3)-D-galac-
tose
 [88262-62-8]



C₁₈H₃₂O₁₆ 504.441
 Isolated from the partial acetolysate of
 λ-carrageenan. Cryst. (MeOH aq.).
 Mp 237-239° dec. [α]_D²⁵ +146 (c, 0.5 in
 H₂O).

Undeca-Ac:
 C₄₀H₅₄O₂₇ 966.85
 Mp 275-277°. [α]_D +106 (CHCl₃).
 Morgan, K. et al., *Can. J. Chem.*, 1959, **37**, 1201
 (*isol*)

α-D-Galactopyranosyl-(1 → 4)- G-87
α-D-galactopyranosyl-(1 → 3)-D-galac-
tose, 9CI

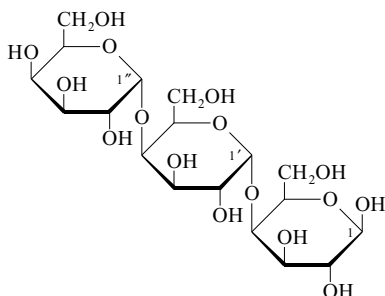


C₁₈H₃₂O₁₆ 504.441
 Repeating unit in the O-specific polysac-
 charide of *Serratia marcescens* serogroups
 024, 016 and in 020.

β-Furanose-form [125342-55-4]
 Syrup.

Oxley, D. et al., *Carbohydr. Res.*, 1989, **195**, 117
 (*isol*, *cmr*)

α-D-Galactopyranosyl-(1 → 4)- G-88
α-D-galactopyranosyl-(1 → 4)-D-galac-
tose



C₁₈H₃₂O₁₆ 504.441

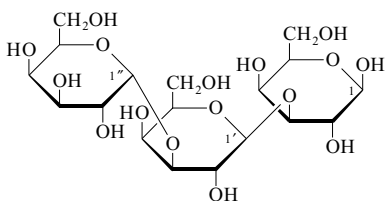
β-Pyranose-form

tert-Butyldiphenylsilyl glycoside,
 2,2',2'',3,3',3'',4''-heptabenzyl: [129729-
 23-3]
 C₈₃H₉₂O₁₆Si 1373.716
 Syrup. [α]_D²⁰ +47 (c, 0.6 in CHCl₃).

tert-Butyldiphenylsilyl glycoside,
 2,2',2'',3,3',3'',4''-heptabenzyl, 6,6',6''-
 tri-Ac: [129729-19-7]
 C₈₉H₉₈O₁₉Si 1499.827
 Syrup. [α]_D²⁰ +40 (c, 0.5 in CHCl₃).

Nakahara, Y. et al., *Carbohydr. Res.*, 1990, **200**,
 363 (β-silyl pyr derivs, *pmr*, *cmr*)

α-D-Galactopyranosyl-(1 → 3)- G-89
β-D-galactopyranosyl-(1 → 3)-D-galac-
tose, 9CI



C₁₈H₃₂O₁₆ 504.441

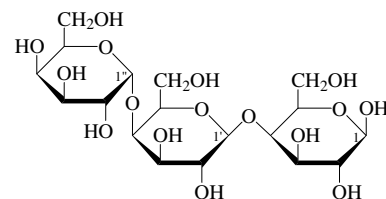
β-Pyranose-form

Undecabenzoyl: [131057-54-0]
 C₉₅H₇₆O₂₇ 1649.629
 Syrup. [α]_D +87.3 (c, 0.6 in CHCl₃).

Me glycoside, 3''-benzyl,
 2,2',2'',4,4',4'',6,6',6''-nonabenzoyl:
 [99605-98-8]
 C₈₉H₇₆O₂₅ 1545.564
 Syrup. [α]_D +96 (CHCl₃).

Kovac, P. et al., *J.O.C.*, 1985, **50**, 5323 (β-*Me*
pyr deriv, *cmr*, *pmr*)
 Ziegler, T. et al., *J. Carbohydr. Chem.*, 1990, **9**,
 135 (β-undecabenzoyl, *pmr*, *cmr*)

α-D-Galactopyranosyl-(1 → 4)- G-90
β-D-galactopyranosyl-(1 → 4)-D-galac-
tose, 9CI



β-Pyranose-form

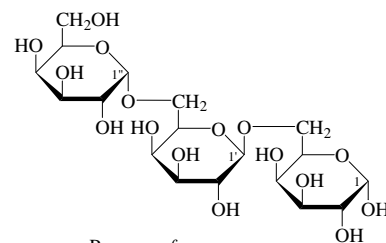
C₁₈H₃₂O₁₆ 504.441

β-Pyranose-form

tert-Butyldiphenylsilyl glycoside,
 2,2',2'',3,3',3'',4''-heptabenzyl, 6,6',6''-
 tri-Ac: [129729-20-0]
 C₈₉H₉₈O₁₉Si 1499.827
 Syrup + H₂O. [α]_D²⁰ +37 (c, 0.4 in
 CHCl₃).

Nakahara, Y. et al., *Carbohydr. Res.*, 1990, **200**,
 363 (β-silyl pyr tri-Ac deriv, *pmr*, *cmr*)

α-D-Galactopyranosyl-(1 → 6)- G-91
β-D-galactopyranosyl-(1 → 6)-D-galac-
tose, 9CI



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

1,2:3,4:3',4'-Tri-O-isopropylidene,
 2'',3'',4'',6''-tetrabenzyl, 2'-Ac: [125392-
 64-5]
 C₅₇H₇₀O₁₇ 1027.17
 Syrup.

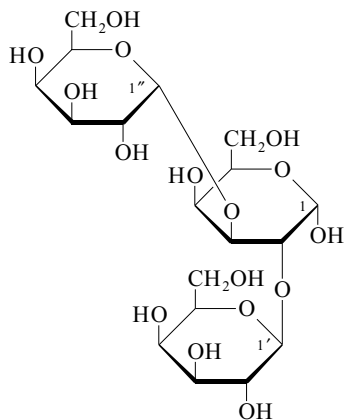
β-Pyranose-form

Allyl glycoside, deca-Ac: [110236-45-8]
 C₄₁H₅₆O₂₆ 964.878
 Syrup. [α]_D +44 (CHCl₃).

Nashed, E.M. et al., *Carbohydr. Res.*, 1986, **158**,
 125 (β-allyl pyr deca-Ac, *pmr*, *cmr*)

Konradsson, P. *et al.*, *Chem. Comm.*, 1989, 1124
(*α*-triisopropylidene deriv)

**β-D-Galactopyranosyl-(1 → 2)-
[α-D-galactopyranosyl-(1 → 3)]-D-
galactose, 9C1** G-92



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

3-Methoxycarbonylpropyl glycoside:

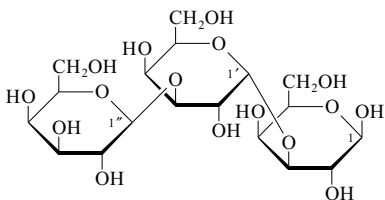
[86783-27-9]

C₂₃H₄₀O₁₈ 604.558

Cryst. + 3H₂O. Mp 108-112°. [α]_D²⁶ +131
(c, 0.9 in MeOH).

Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1983, 927
(*α*-methoxycarbonylpropyl pyr, pmr, cmr)

**β-D-Galactopyranosyl-(1 → 3)-
α-D-galactopyranosyl-(1 → 3)-D-galac-
tose, 9C1** G-93



C₁₈H₃₂O₁₆ 504.441

β-Pyranose-form

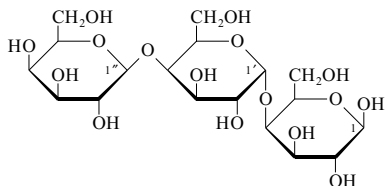
Undecabenzoyl: [131057-53-9]

C₉₅H₇₆O₂₇ 1649.629

Syrup. [α]_D +87.3 (c, 0.6 in CHCl₃).

Ziegler, T. *et al.*, *J. Carbohydr. Chem.*, 1900, 9,
135 (undecabenzoyl, pmr, cmr)

**β-D-Galactopyranosyl-(1 → 4)-
α-D-galactopyranosyl-(1 → 4)-D-galac-
tose, 9C1** G-94



C₁₈H₃₂O₁₆ 504.441

β-Pyranose-form

tert-Butyldiphenylsilyl glycoside,

2,2',2'',3,3',3'',4''-heptabenzyl: [129729-
27-7]

C₈₃H₉₂O₁₆Si 1373.716

Syrup. [α]_D²⁴ +45 (c, 0.6 in CHCl₃).

tert-Butyldiphenylsilyl glycoside,

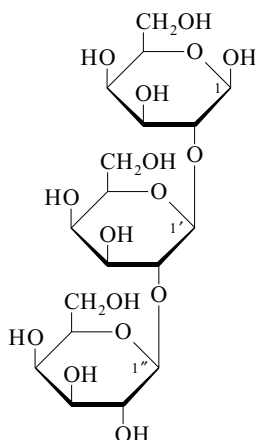
2,2',2'',3,3',3'',4''-heptabenzyl, 6,6',6''-
tri-Ac: [129729-21-1]

C₈₉H₉₈O₁₉Si 1499.827

Syrup. [α]_D²⁰ +39 (c, 1.3 in CHCl₃).

Nakahara, Y. *et al.*, *Carbohydr. Res.*, 1990, 200,
363 (β-silyl pyr heptabenzyl derivs, pmr, cmr)

**β-D-Galactopyranosyl-(1 → 2)-
β-D-galactopyranosyl-(1 → 2)-D-galac-
tose, 9C1** G-95



C₁₈H₃₂O₁₆ 504.441

β-Pyranose-form

Me glycoside: [78120-16-8]

C₁₉H₃₄O₁₆ 518.468

Solid + 3H₂O. [α]_D²⁵ +19.3 (c, 1.0 in
H₂O).

Me glycoside, nonabenzyl, 2''-benzoyl:

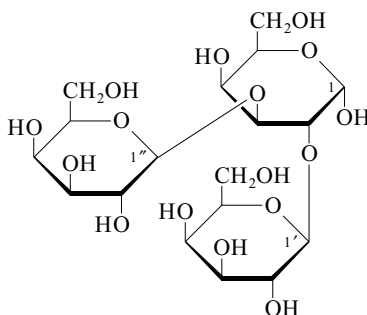
[78130-00-4]

C₈₉H₉₂O₁₇ 1433.696

Oil. [α]_D²⁵ +2.2 (c, 1.0 in CHCl₃).

Eby, R. *et al.*, *Carbohydr. Res.*, 1981, 92, 149 (β-
Me pyr derivs, cmr)

**β-D-Galactopyranosyl-(1 → 2)-
[β-D-galactopyranosyl-(1 → 3)]-D-galac-
tose, 9C1** G-96



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

3-Methoxycarbonylpropyl glycoside:

[86734-87-4]

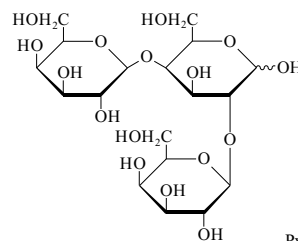
C₂₃H₄₀O₁₈ 604.558

Cryst. + 3H₂O. Mp 128-130°. [α]_D²⁶
+57.9 (c, 0.7 in MeOH).

Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1983, 927
(*α*-methoxycarbonylpropyl pyr, pmr, cmr)

**β-D-Galactopyranosyl-(1 → 2)-
[β-D-galactopyranosyl-(1 → 4)]-D-galac-
tose, 9C1** G-97

[83788-45-8]



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

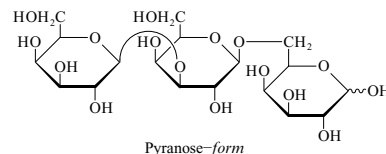
Isolated from the partial acid hydrolysate
of cambium polysaccharides of Bael

(*Aegle marmelos*).

[α]_D²⁴ +45.4 (H₂O).

Basak, R.K. *et al.*, *Carbohydr. Res.*, 1982, 110,
145

**β-D-Galactopyranosyl-(1 → 3)-
β-D-galactopyranosyl-(1 → 6)-D-galac-
tose, 9C1** G-98



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isol. from the partial acid hydrolysates of
the gums of *Chorisia*, *Prunus persica* and
Opuntia ficus-indica (Indian fig).

[α]_D +27.9 (c, 0.5 in H₂O).

Kubala, J. *et al.*, *Coll. Czech. Chem. Comm.*,
1977, 42, 2809

Kardosova, A. *et al.*, *Coll. Czech. Chem.*

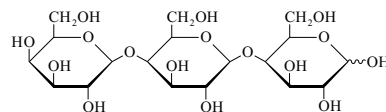
Comm., 1978, 43, 3428 (isol, glc, ms)

McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, 94,
57

Difabio, J.L. *et al.*, *Carbohydr. Res.*, 1982, 99,
41 (isol)

**β-D-Galactopyranosyl-(1 → 4)-
β-D-galactopyranosyl-(1 → 4)-D-galac-
tose, 9C1** G-99

[6118-87-2]



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isolated from the partial acid hydrolysate of Norwegian spruce (*Picea abies*) galactan and from the cambium polysaccharides of Bael (*Aegle marmelos*).
[α]_D +58 (+50) (H₂O).

α-Pyranose-form

Allyl glycoside, 3,3',3'',6,6',6''-hexabenzyl, 2,2',2''-tribenzoyl, 4''-Ac: [93495-79-5]
C₈₆H₈₆O₂₀ 1439.613
Mp 126-127°. [α]_D +70.5 (CHCl₃).

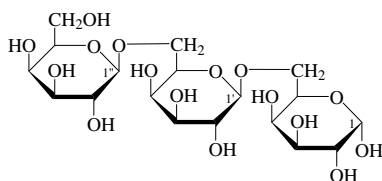
β-Pyranose-form

tert-Butyldiphenylsilyl glycoside, 2,2',2'',3,3',3'',4''-heptabenzyl, 6,6',6''-tri-Ac: [129729-22-2]
C₈₉H₉₈O₁₉Si 1499.827
Syrup + H₂O. [α]_D²⁵ +22.5 (c, 0.5 in CHCl₃).

Bouvang, H.O. *et al.*, *Acta Chem. Scand.*, 1959, **13**, 1884
Basak, R.K. *et al.*, *Carbohydr. Res.*, 1982, **110**, 145
El Shenawy, H.A. *et al.*, *Carbohydr. Res.*, 1984, **131**, 239 (α-allyl pyr, pmr, cmr)
Nakano, H. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 3005 (enzymic synth)
Nakahara, Y. *et al.*, *Carbohydr. Res.*, 1990, **200**, 363 (β-silyl pyr, pmr, cmr)

β-D-Galactopyranosyl-(1→6)- G-100
β-D-galactopyranosyl-(1→6)-D-galactose, 9CI

[28245-12-7]



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441
Isolated from partial acid hydrolysates of *Virgilia oroboides*, *Anogeissus schimperi*, *Prunus persica*, *Opuntia ficus-indica* (Indian fig) gums and *Larix decidua* e-galactan and *Larix laricina* arabogalactan. Needles (MeOH aq.).
Mp 158-163° (137-142°, 152-155°). [α]_D¹⁸ +22 (c, 0.5 in H₂O) (+13).

β-Pyranose-form

Me glycoside: [77735-11-6]
C₁₉H₃₄O₁₆ 518.468
Cryst. (EtOH aq.). Mp 203-205°. [α]_D +38.1 (c, 1.0 in H₂O). [α]_D -10 (c, 0.8 in H₂O).

Me glycoside, decabenzoyl: [109022-60-8]
C₈₉H₇₄O₂₆ 1559.548
Mp 250-251°. [α]_D +115 (CHCl₃).

Me glycoside, 6''-bromoacetyl, nonabenzoyl: [101802-84-0]
C₈₄H₇₁BrO₂₆ 1576.373
Cryst. (CH₂Cl₂/MeOH). Mp 233-234°. [α]_D +162 (c, 0.8 in CHCl₃).

Me glycoside, 6''-chloroacetyl, nona-Ac: [100741-00-2]
C₃₉H₅₃ClO₂₆ 973.285
Foam. [α]_D -9 (c, 0.8 in CHCl₃).

Allyl glycoside, deca-Ac: [110236-46-9]

C₄₁H₅₆O₂₆ 964.878

Syrup. [α]_D -18.2 (c, 0.9 in CHCl₃).

Allyl glycoside, 6''-bromoacetyl, nona-Ac: [110236-47-0]

C₄₁H₅₅BrO₂₆ 1043.774

Syrup. [α]_D -13.5 (c, 1.0 in CHCl₃).

Aspinall, G.O. *et al.*, *J.C.S.*, 1958, 4408; 1961, 3461; 1965, 2685

Bailey, R.W. *et al.*, *Oligosaccharides*, Pergamon Press, London, 1965, 50 (occur)

Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1970, **12**, 143

Kubala, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1977, **42**, 2809 (isol)

Srivastava, V.K. *et al.*, *Carbohydr. Res.*, 1980, **86**, 203 (Me gly, cmr)

Asp, W.G. *et al.*, *Food Chem.*, 1980, **5**, 147 (synth)

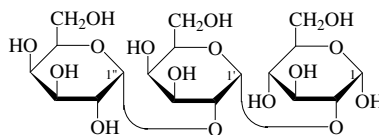
Bhattacharjee, A.K. *et al.*, *Carbohydr. Res.*, 1981, **89**, 249 (synth)

McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol)

Kovac, P. *et al.*, *Carbohydr. Res.*, 1985, **140**, 277; 1986, **153**, 237 (Me gly, deriv, synth, pmr, cmr)

Nashed, E.M. *et al.*, *Carbohydr. Res.*, 1986, **158**, 125 (allyl gly deriv, synth, pmr, cmr)

α-D-Galactopyranosyl-(1→2)- G-101
α-D-galactopyranosyl-(1→2)-D-glucose, 9CI



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Constit. of the outer core oligosaccharide which constitutes part of the *Shigella sonnei*, *Shigella flexneri* 6 and *Escherichia coli* C lipopolysaccharide.

α-Pyranose-form

Undeca-Ac: [93495-97-7]

C₄₀H₅₄O₂₇ 966.85

Viscous syrup. [α]_D¹⁹ +149 (c, 1.0 in CHCl₃).

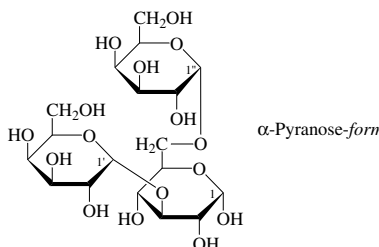
2'',3'',4'',6''-Tetrabenzyl, 1,3,3',4,4',6,6'-hepta-Ac: [93495-96-6]

C₆₀H₇₀O₂₃ 1159.199

Syrup. [α]_D⁹ +91 (c, 1.0 in CHCl₃).

Doboszewski, B. *et al.*, *Carbohydr. Res.*, 1984, **132**, 29 (undeca-Ac, hepta-Ac deriv, pmr, cmr)

α-D-Galactopyranosyl-(1→3)- G-102
[α-D-galactopyranosyl-(1→6)]-D-glucose, 9CI



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Constit. of the lipopolysaccharide of *Salmonella* bacteria. Acts as a phage G13 carbohydrate receptor.

α-Pyranose-form

Me glycoside: [118349-66-9]

C₁₉H₃₄O₁₆ 518.468

Amorph. [α]_D +214 (c, 1.0 in H₂O).

Me glycoside, 2,2',2'',3',3'',4',4'',6',6''-nonabenzyl, 4-Ac: [118349-64-7]

C₈₄H₉₀O₁₇ 1371.625

Syrup. [α]_D +49 (c, 1.0 in CHCl₃).

Octyl glycoside: [118349-67-0]

C₂₆H₄₈O₁₆ 616.656

Amorph. [α]_D +184 (c, 1.0 in H₂O).

8-Methoxycarbonyloctyl glycoside, decabenzyl: [81413-18-5]

C₉₈H₁₁₀O₁₈ 1575.936

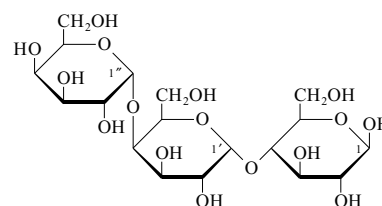
[α]_D +53.1 (c, 1.4 in CHCl₃).

Iversen, T. *et al.*, *Can. J. Chem.*, 1982, **60**, 299 (methoxycarbonyl gly decabenzyl)

Norberg, T. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 283 (α-Me pyr deriv, α-octyl pyr, pmr, cmr)

Wollin, R. *et al.*, *J. Mol. Recognit.*, 1989, **2**, 37; CA, 1990, **112**, 4110q (biochem)

α-D-Galactopyranosyl-(1→4)- G-103
α-D-galactopyranosyl-(1→4)-D-glucose, 9CI



C₁₈H₃₂O₁₆ 504.441

β-Pyranose-form

2-Bromoethyl glycoside, 2,3,6-tribenzyl, hepta-Ac: [90214-79-2]

C₅₅H₆₇BrO₂₃ 1176.024

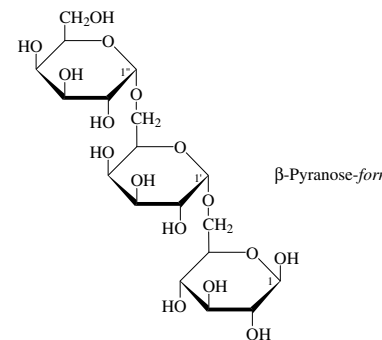
Amorph. [α]_D¹ +122 (c, 1.3 in CHCl₃).

Dahmen, J. *et al.*, *Carbohydr. Res.*, 1984, **127**, 15 (β-bromoethyl pyr deriv, pmr, cmr)

α-D-Galactopyranosyl-(1→6)- G-104
α-D-galactopyranosyl-(1→6)-D-glucose

Manninotriose. Mnt

[13382-86-0]



β-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Synth. by the transferase action of yeast, bacterial and other α -galactosidases on melibiose. Formed by the action of α -galactosidase of *Absidia corymbifera* on 6-O- α -D-Galactopyranosyl-D-glucose, G-145. Found free in cocoa beans, hazelnuts and in various plant mannans. Selectively utilised by bifidobacteria in the intestine but hardly utilised by other microorganisms. Increases faecal bifidobacteria and decreases Clostridia. $[\alpha]_D^{25} +167$ (H₂O).

Phenylsazone: Mp 122°.

β -Pyranose-form

Undeca-Ac: [64544-38-3]

C₄₀H₅₄O₂₇ 966.85

Cryst. (EtOH). Mp 106-107.5°. $[\alpha]_D^{21} +132.7$ (c, 0.98 in CHCl₃).

French, D. *et al.*, *Adv. Carbohydr. Chem.*, 1954, **4**, 149 (synth)

Bailey, R.W. *et al.*, *Biochem. J.*, 1963, **85**, 509 (synth)

Lombard, A. *et al.*, *CA*, 1976, **85**, 59634t (isol)
Adachi, R. *et al.*, *Bull. Chem. Soc. Jpn.*, 1977, **50**, 1901 (β -Ac synth, pmr)

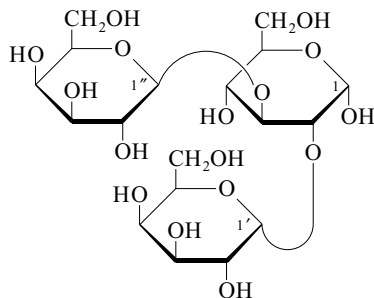
Aamen, P. *et al.*, *J. Sci. Food Agric.*, 1979, **30**, 869 (isol)

Wight, A.W. *et al.*, *Food Chem.*, 1986, **21**, 167 (hplc)

Sugawara, S. *et al.*, *Agric. Biol. Chem.*, 1990, **54**, 211 (enzym synth, cmr)

Wada, K. *et al.*, *CA*, 1991, **115**, 204361w (synth)

α -D-Galactopyranosyl-(1 \rightarrow 2)- [β -D-galactopyranosyl-(1 \rightarrow 3)]-D-glucose, 9CI



C₁₈H₃₂O₁₆ 504.441

α -Pyranose-form

Me glycoside: [84049-74-1]

C₁₉H₃₄O₁₆ 518.468

Syrup. $[\alpha]_D^{25} +107$ (c, 0.85 in H₂O).

Me glycoside, deca-Ac: [84039-38-3]

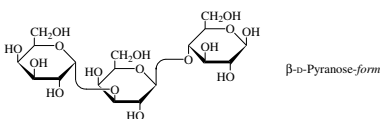
C₃₉H₅₄O₂₆ 938.84

Amorph. $[\alpha]_D^{25} +95$ (c, 0.6 in CHCl₃).

Temeriusz, A. *et al.*, *Carbohydr. Res.*, 1982, **108**, 298 (α -Me pyr derivs, pmr)

α -D-Galactopyranosyl-(1 \rightarrow 3)- [β -D-galactopyranosyl-(1 \rightarrow 4)]-D-glucose

[41744-59-6]



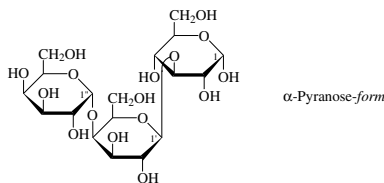
C₁₈H₃₂O₁₆ 504.441

Major component of the milk of the brown bear *Ursus arctos yessoensis* and constit. of colostrum of goat and sheep. $[\alpha]_D^{25} +79$ (c, 0.7 in H₂O).

Sarkar, A.R. *et al.*, *Carbohydr. Res.*, 1992, **233**, 245-250 (pyr-form, synth)

Urashima, T. *et al.*, *Biochim. Biophys. Acta*, 1997, **1334**, 247-255 (isol)

α -D-Galactopyranosyl-(1 \rightarrow 4)- [β -D-galactopyranosyl-(1 \rightarrow 3)]-D-glucose, 9CI



C₁₈H₃₂O₁₆ 504.441

α -Pyranose-form

Undeca-Ac: [69283-30-3]

C₄₀H₅₄O₂₇ 966.85

Cryst. (diisopropyl ether/C₆H₆). Mp 124° (sinters at 116°). $[\alpha]_D^{25} +135$ (c, 1.0 in CHCl₃).

β -Pyranose-form

1,6-Anhydro, nona-Ac: [69283-25-6]

C₃₆H₄₈O₂₄ 864.761

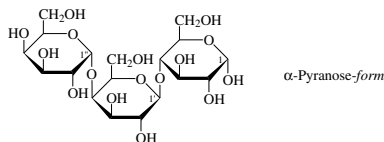
Cryst. (diisopropyl ether/C₆H₆). Mp 105-108°. $[\alpha]_D^{25} +110$ (c, 1.0 in CHCl₃).

Shapiro, D. *et al.*, *Chem. Phys. Lipids*, 1978, **22**, 197 (α -undeca-Ac, β -anhydro nona-Ac, pmr)

α -D-Galactopyranosyl-(1 \rightarrow 4)- [β -D-galactopyranosyl-(1 \rightarrow 4)]-D-glucose, 9CI

Globotriose

[66580-68-5]



C₁₈H₃₂O₁₆ 504.441

Trisaccharide constit. of the human P^K-antigenic determinant. Sweetener in bakery and confectionery. P^K-antigen (trihexosylceramide) is associated with Fabry disease and urinary tract infection. Amorph. $[\alpha]_D^{21} +101$ (c, 0.5 in H₂O).

α -Pyranose-form

1,2,2',3,3',6,6'-Heptabenzoyl: [101561-37-9]

C₆₇H₆₀O₂₃ 1233.197

Amorph. $[\alpha]_D^{21} +124$ (c, 1.0 in CHCl₃).

2'',3'',4'',6''-Tetrabenzyl, 1,2,2',3,3',6,6'-heptabenzoyl: [101615-02-5]

C₉₅H₈₄O₂₃ 1593.695

Amorph. $[\alpha]_D^{21} +93$ (c, 1.0 in CHCl₃).

β -Pyranose-form

1,2,2',3,3',6,6'-Heptabenzoyl: [101561-38-0]

Amorph. $[\alpha]_D^{21} +71$ (c, 1.0 in CHCl₃).

Me glycoside: [67561-82-4]

C₁₉H₃₄O₁₆ 518.468

Glass. $[\alpha]_D^{21} +65$ (c, 1.0 in H₂O). $[\alpha]_D^{20} +63$ (c, 1.2 in H₂O).

Me glycoside, deca-Ac: [67561-85-7]

C₃₉H₅₄O₂₆ 938.84

Glass. $[\alpha]_D^{21} +42$ (c, 0.85 in CHCl₃).

Me glycoside, decabenzoyl:

C₈₉H₇₄O₂₆ 1559.548

Cryst. (EtOH). Mp 223-224°. $[\alpha]_D^{21} +70$ (c, 1.0 in CHCl₃).

Et glycoside: [90214-85-0]

C₂₀H₃₆O₁₆ 532.495

Syrup. $[\alpha]_D^{21} +71$ (c, 0.5 in H₂O).

Et glycoside, deca-Ac: [90214-84-9]

C₄₀H₅₆O₂₆ 952.867

Amorph. $[\alpha]_D^{21} +41$ (c, 1.0 in CHCl₃).

Cox, D.D. *et al.*, *Carbohydr. Res.*, 1978, **63**, 139 (β -Me pyr derivs, cmr)

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1982, **110**, 261 (β -Me pyr, cmr)

Dahmen, J. *et al.*, *Carbohydr. Res.*, 1984, **127**, 15 (β -Et pyr, cmr, pmr)

Jacquinet, J.C. *et al.*, *Carbohydr. Res.*, 1985, **143**, 143 (synth, pmr)

Koike, K. *et al.*, *Carbohydr. Res.*, 1987, **163**, 189 (synth)

Karlsson, H. *et al.*, *J. High Resolut. Chromatogr. Commun.*, 1988, **11**, 820 (glc, ms)

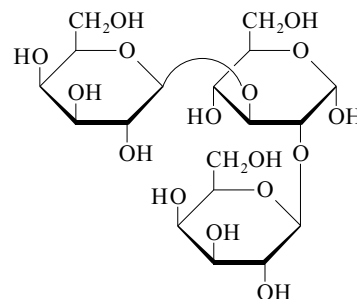
Japan. Pat., 1989, 01 86 857; *CA*, **111**, 56168p (use)

Myers, R.L. *et al.*, *Anal. Biochem.*, 1991, **192**, 156 (hplc)

Mueller, D. *et al.*, *J.C.S. Perkin 1*, 1998, 2287-2294 (synth, bibl)

Zhang, J. *et al.*, *Carbohydr. Res.*, 2002, **337**, 969-976 (synth)

β -D-Galactopyranosyl-(1 \rightarrow 2)- [β -D-galactopyranosyl-(1 \rightarrow 3)]-D-glucose, 9CI



C₁₈H₃₂O₁₆ 504.441

α -Pyranose-form

[20184-06-9]

Me glycoside: [84039-40-7]

C₁₉H₃₄O₁₆ 518.468

Cryst. Mp 247°. $[\alpha]_D^{25} +60$ (c, 0.85 in H₂O).

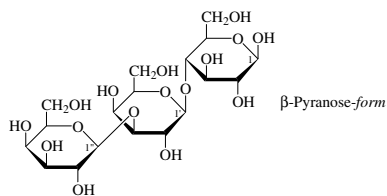
Me glycoside, deca-Ac: [84049-76-3]

C₃₉H₅₄O₂₆ 938.84

Amorph. $[\alpha]_D^{25} +22$ (c, 1.36 in CHCl₃).

Temeriusz, A. *et al.*, *Carbohydr. Res.*, 1982, **108**, 298 (α -Me pyr derivs, pmr)

**β-D-Galactopyranosyl-(1→3)-
β-D-galactopyranosyl-(1→4)-D-glucose, 9CI**
3'-Galactosyllactose
[32694-82-9]



C₁₈H₃₂O₁₆ 504.441
Isol. from human milk, urine and from bovine colostrum. Prod. from lactose by *Streptococcus thermophilus* induced transgalactosylation. Solid (H₂O/EtOH/MeOH).
Mp 200-202° dec. [α]_D²³ +48 (c, 0.75 in H₂O) (+26.1).

β-Pyranose-form

Undeca-Ac: [18404-80-3]
C₄₀H₅₄O₂₇ 966.85
Cryst. (EtOH aq.). Mp 108-110°. [α]_D¹⁵ +17.2 (c, 0.61 in CHCl₃).

Benzyl glycoside: [18404-78-9]
C₂₅H₃₈O₁₆ 594.566
Hygroscopic powder + H₂O. [α]_D²⁰ +17.9 (c, 0.95 in H₂O).

Benzyl glycoside, 2,2'',2'',3,3'',4'',6,6',6''-nona-Ac: [18404-76-7]
C₄₃H₅₆O₂₅ 972.9
Syrup. [α]_D²⁵ -5.2 (c, 0.81 in CHCl₃).

Benzyl glycoside, deca-Ac: [18404-77-8]
C₄₅H₅₈O₂₆ 1014.938
Syrup. [α]_D²⁰ +3.6 (c, 0.99 in CHCl₃).

Beith-Halahmi, D. *et al.*, *Carbohydr. Res.*, 1967, **5**, 25 (β-undeca-Ac, β-benzyl pyr derivs)

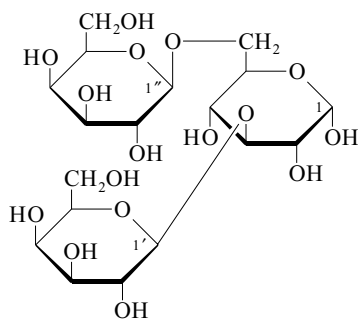
Saito, T. *et al.*, *Carbohydr. Res.*, 1987, **165**, 43 (isol, cmr)

Donald, A.S.R. *et al.*, *Carbohydr. Res.*, 1988, **178**, 79 (isol)

Dumortier, V. *et al.*, *Carbohydr. Res.*, 1990, **201**, 115 (isol, enzymic synth, chromatog)

Perrin, V. *et al.*, *Carbohydr. Res.*, 2000, **325**, 202-210 (isol, pmr)

**β-D-Galactopyranosyl-(1→3)-
[β-D-galactopyranosyl-(1→6)]-D-glucose, 9CI**



C₁₈H₃₂O₁₆ 504.441

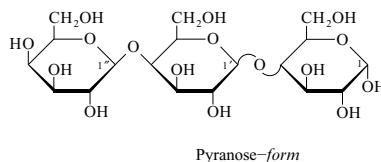
α-Pyranose-form

Me glycoside: [84039-41-8]

C₁₉H₃₄O₁₆ 518.468
Cryst. Mp 244-246°. [α]_D +60 (c, 1.0 in H₂O).

Temeriusz, A. *et al.*, *Carbohydr. Res.*, 1982, **108**, 298 (α-Me pyr, pmr)

**β-D-Galactopyranosyl-(1→4)-
β-D-galactopyranosyl-(1→4)-D-glucose**
4'-Galactosyllactose
[6587-31-1]



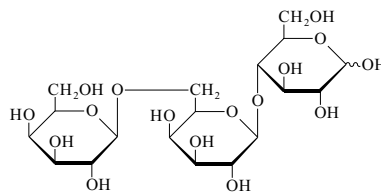
C₁₈H₃₂O₁₆ 504.441
Synth. by enzymic transglycosylation from lactose by immobilised cells of *Cryptococcus laurenti*. Sol. H₂O.
Mp 229-231°. Stable on heating for 15 min at pH 3 at 120°. Sweet taste (25% of sucrose).

► LZ7170000

Ozawa, O. *et al.*, *CA*, 1988, **109**, 169020m; 1991, **114**, 14149z (synth, rev)

Spengler, B. *et al.*, *Anal. Chem.*, 1990, **62**, 1731 (ms)

**β-D-Galactopyranosyl-(1→6)-
β-D-galactopyranosyl-(1→4)-D-glucose**
6'-Galactosyllactose
[32581-31-0]



Pyranose-form

C₁₈H₃₂O₁₆ 504.441
Formed by the transferase action on lactose of the β-galactosidases from *Saccharomyces fragilis*, *Aspergillus flavus* and *Penicillium chrysogenum*. Isol. from human milk and from the urine of blood group O, nonsecretor women during pregnancy and lactation. Powder.
Mp 187° (sinters at 167°). [α]_D²² +36 (c, 1.0 in H₂O).

Phenylosazone: [68067-46-9]

Yellow needles (EtOH aq.). Mp 229-231°.

Pazur, J.H. *et al.*, *J. Biol. Chem.*, 1954, **208**, 439
Ballio, A. *et al.*, *Tetrahedron*, 1960, **9**, 125 (isol)
Yamashita, K. *et al.*, *Arch. Biochem. Biophys.*, 1974, **161**, 164 (isol)

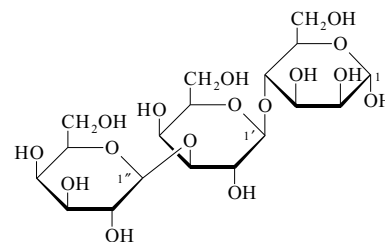
Hallgren, P. *et al.*, *J. Biol. Chem.*, 1977, **252**, 1014; 1034 (isol)

Chung, T.G. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 2147 (synth)

Asp, N.G. *et al.*, *Food Chem.*, 1980, **5**, 147 (synth)

Donald, A.S.R. *et al.*, *Carbohydr. Res.*, 1988, **178**, 79 (isol, struct)
Urashima, T. *et al.*, *Biochim. Biophys. Acta*, 1989, **992**, 375 (cmr)
Deya, E. *et al.*, *CA*, 1991, **115**, 27841e (enzymic synth)

**β-D-Galactopyranosyl-(1→3)-
β-D-galactopyranosyl-(1→4)-D-mannose, 9CI**



C₁₈H₃₂O₁₆ 504.441

α-D-Pyranose-form

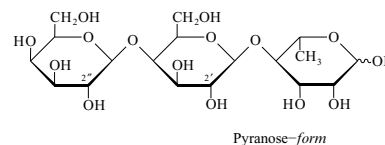
1-Phosphate: [130689-61-1]

C₁₈H₃₃O₁₉P 584.421

Constit. of the heterogeneous lipophosphoglycan found as a major cell surface glyconjugate of the parasitic protozoan *Leishmania major*. Syrup.

McConville, M.J. *et al.*, *J. Biol. Chem.*, 1990, **265**, 19611 (occur, phosphate, pmr, cmr, ms)

**β-D-Galactopyranosyl-(1→4)-
β-D-galactopyranosyl-(1→4)-L-rhamnose**



Pyranose-form

C₁₈H₃₂O₁₅ 488.442

2',2''-Di-O-Me: 3-O-Methyl-β-D-galactopyranosyl-(1→4)-3-O-methyl-β-D-galactopyranosyl-(1→4)-L-rhamnose
[35949-94-1]

C₂₀H₃₆O₁₅ 516.495

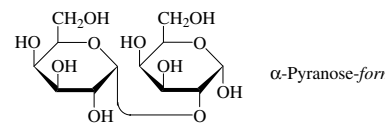
Constit. of the mucilaginous polysaccharide from the bark of *Ulmus fulva* (slippery elm).

[α]_D²³ +13 (c, 1.0 in H₂O).

Beveridge, R.J. *et al.*, *Carbohydr. Res.*, 1971, **9**, 107 (isol, synth)

2-O-α-D-Galactopyranosyl-D-galactose, 9CI

[93601-68-4]



α-Pyranose-form

C₁₂H₂₂O₁₁ 342.299

Constit. of the repeating unit of *Streptococcus pneumoniae* type 15 antigen. Cryst. (EtOH aq.).

Mp 201-203° (173-175°). $[\alpha]_D^{20} +105$ (c, 2.0 in H₂O). $[\alpha]_D^{20} +159.5 \rightarrow +167.1$ (c, 1.82 in H₂O).

2',3',3',4',4',6,6'-Heptabenzyl: [93495-91-1]
C₆₁H₆₄O₁₁ 973.17
Cryst. (hexane/Et₂O). Mp 125.5-126.5°.
 $[\alpha]_D^{20} +50$ (c, 1.0 in CHCl₃).

α -Pyranose-form

1,3,4,6-Tetra-Ac: [118646-78-9]

C₂₀H₃₀O₁₅ 510.448
 $[\alpha]_D^{21} +154.4$ (c, 1.0 in CHCl₃).

2',3',4',6'-Tetrabenzyl, 1,3,4,6-tetra-Ac: [93495-92-2]
C₄₈H₅₄O₁₅ 870.946
Cryst. (EtOH aq.). Mp 109-110°. $[\alpha]_D^{20} +78.9$ (c, 2.0 in CHCl₃).

β -Pyranose-form

Benzyl glycoside, 2',3',4',6'-tetrabenzyl, 4,6-O-benzylidene, 3-benzoyl:
C₆₁H₆₀O₁₂ 985.138
 $[\alpha]_D^{20} +74$ (c, 0.79 in CHCl₃).

Perry, M.B. *et al.*, *Mol. Immunol.*, 1982, **19**, 235 (occur)

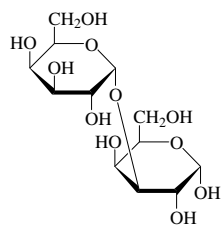
Doboszewski, B. *et al.*, *Carbohydr. Res.*, 1984, **132**, 29 (synth)

Nilsson, K.G.I. *et al.*, *Carbohydr. Res.*, 1987, **167**, 95 (deriv)

Takeo, K. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 309-316 (synth, pmr, α -D-pyr tetra-Ac)

3-O- α -D-Galactopyranosyl-D-galactose, 9CI, 8CI

[13168-24-6]



α -Pyranose-form

C₁₂H₂₂O₁₁ 342.299

Isol. from partial acetolysate of λ -carrageenan. Constit. of the products obt. by partial acetolysis of the algae galactans from *Aeodes ulvoidea* and *Pachymenia carnosa*. Constit. of the repeating unit of *Klebsiella* antigens.

$[\alpha]_D^{20} +184$ (c, 1.25 in H₂O). $[\alpha]_D^{26} +149$ (c, 1.0 in H₂O).

α -Pyranose-form [7313-98-6]

Octa-Ac: [56994-14-0]

C₂₈H₃₈O₁₉ 678.597
Mp 97-100°. $[\alpha]_D^{23} +137$ (c, 2.0 in CHCl₃).

Me glycoside: Methyl 3-O- α -D-galactopyranosyl- α -D-galactopyranoside, 9CI [104420-77-1]
C₁₃H₂₄O₁₁ 356.326
Mp 227-228°. $[\alpha]_D^{21} +252$ (c, 1.0 in H₂O).

4-Nitrophenyl glycoside: [110891-71-9]
Cryst + $\frac{1}{2}$ H₂O. Mp 217°. $[\alpha]_D^{21} +298$ (c, 0.3 in MeOH aq.).

β -Pyranose-form [72597-57-0]

Octa-Ac: Mp 155-156°. $[\alpha]_D^{25} +110.8$ (c, 0.71 in CHCl₃).

Me glycoside: Methyl 3-O- α -D-galactopyranosyl- β -D-galactopyranoside, 9CI [18449-79-1]

C₁₃H₂₄O₁₁ 356.326
Mp 199°. $[\alpha]_D^{21} +142$ (c, 0.5 in H₂O).

Me glycoside, heptabenzoyl:

C₆₂H₅₂O₁₈ 1085.082
 $[\alpha]_D^{20} +131.9$ (c, 0.9 in CHCl₃).

Morgan, K. *et al.*, *Can. J. Chem.*, 1959, **37**, 1201
Farrant, A.J. *et al.*, *Carbohydr. Res.*, 1972, **25**, 283; 1971, **19**, 161 (occur)

Alsobrook, A.J.R. *et al.*, *Carbohydr. Res.*, 1975, **40**, 337 (acetolysis)

Chacon-Fuertes, M. *et al.*, *Carbohydr. Res.*, 1975, **43**, 51 (synth)

Kenne, L. *et al.*, *The Polysaccharides*, Acad. Press, London and New York (Ed. Aspinall, G.O.), 1983, **2**, 307; 323 (occur)

Nilsson, K.G.I. *et al.*, *Carbohydr. Res.*, 1987, **167**, 95 (Me gly)

Takeo, K. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 309-316 (synth)

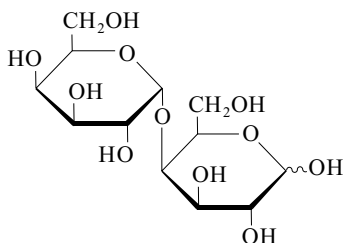
Stortz, C.A. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 235-247 (conformn)

Sakamoto, I. *et al.*, *Biosci., Biotechnol., Biochem.*, 2000, **64**, 1974-1977 (synth)

4-O- α -D-Galactopyranosyl-D-galactose, 9CI, 8CI

Galabiose. Urobiose

[13117-26-5]



C₁₂H₂₂O₁₁ 342.299

The terminal disaccharide of the ceramide trihexoside isol. from normal human kidney and erythrocytes; a degradn. prod. of mucilage from common okra (*Hibiscus esculentus*); formed by the action of β -galactosidase on D-galactose. The simplest structural unit capable of bacterial fimbriae binding associated with initiation of bacterial infections. Cryst. (MeOH/1-butanol/H₂O).

Mp 212-213°. $[\alpha]_D^{26} +170$ (c, 1.0 in H₂O).

α -Pyranose-form

Octa-Ac:

C₂₈H₃₈O₁₉ 678.597
Cryst. (EtOH). Mp 153-154°. $[\alpha]_D^{24} +138$ (c, 2.0 in CHCl₃).

Whistler, R.L. *et al.*, *J.A.C.S.*, 1954, **76**, 1673 (isol)

Clancy, M.J. *et al.*, *Arch. Biochem. Biophys.*, 1967, **118**, 724

Chacón-Fuertes, M.E. *et al.*, *Carbohydr. Res.*, 1975, **43**, 51 (synth)

Dahmén, J. *et al.*, *Carbohydr. Res.*, 1983, **113**, 219 (synth)

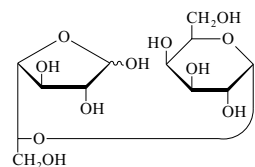
Svensson, G. *et al.*, *Carbohydr. Res.*, 1986, **146**, 29 (cryst struct)

Frejd, T. *et al.*, *Carbohydr. Res.*, 1988, **176**, 253; 271 (pmr, cmr, conformn, derivs)

Mueller, D. *et al.*, *J.C.S. Perkin 1*, 1998, 2287-2294 (synth)

5-O- α -D-Galactopyranosyl-D-galactose, 8CI

[13117-27-6]



Furanose-form

C₁₂H₂₂O₁₁ 342.299

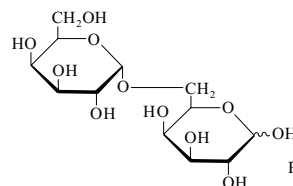
$[\alpha]_D^{20} +133$ (H₂O).

Clancy, M.J. *et al.*, *Arch. Biochem. Biophys.*, 1967, **118**, 724

6-O- α -D-Galactopyranosyl-D-galactose, 9CI, 8CI

Galactobiose. Swietenose

[13117-25-4]



Pyranose-form

C₁₂H₂₂O₁₁ 342.299

Formed by the action of α -galactosidase of fresh brewer's yeast on D-galactose.

Isol. reported from polysaccharides of *Schrebera swietenoides*. Hygroscopic powder.

Mp 83-84°. $[\alpha]_D^{20} +149$ (c, 0.73 in H₂O).

Phenylosazone: Mp 183-185°.

α -Pyranose-form

Octa-Ac: 1,2,3,4-Tetra-O-acetyl-6-O-(2,3,4,6-tetra-O-acetyl- α -D-galactopyranosyl)- α -D-galactopyranose. Octa-O-acetyl- α -galactobiose

C₂₈H₃₈O₁₉ 678.597

Mp 223-227°. $[\alpha]_D^{20} +186$ (c, 0.5 in CHCl₃).

β -Pyranose-form

Octa-Ac: 1,2,3,4-Tetra-O-acetyl-6-O-(2,3,4,6-tetra-O-acetyl- β -D-galactopyranosyl)- β -D-galactopyranose. Octa-O-acetyl- β -galactobiose

C₂₈H₃₈O₁₉ 678.597

$[\alpha]_D^{20} +111$ (c, 0.5 in CHCl₃).

Turton, C.N. *et al.*, *J.A.C.S.*, 1955, **77**, 2565 (isol, α -pyr-octa-Ac)

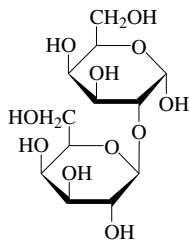
Ingle, T.R. *et al.*, *J. Indian Chem. Soc.*, 1958, **35**, 516 (isol)

Clancy, M.J. *et al.*, *Arch. Biochem. Biophys.*, 1967, **118**, 724 (enzymic synth)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1973, **51**, 42 (synth)

2-O-β-D-Galactopyranosyl-D-galactose, 9CI

G-121



α-Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299
 Plates (EtOH aq.). Mp 195-196° (164-167°). $[\alpha]_D^{13} +86.4 \rightarrow +63$ (c, 1.4 in H_2O).
 $[\alpha]_D^{22} +71.9 \rightarrow +56.1$ (c, 1.6 in H_2O).

α-Pyranose-form

2',3',4',6'-Tetrabenzyl, 1,3,4,6-tetra-Ac:
 [93495-93-3]
 $C_{48}H_{54}O_{15}$ 870.946
 $[\alpha]_D +61$ (c, 1.0 in $CHCl_3$).

β-Pyranose-form

Benzyl glycoside:
 $C_{19}H_{28}O_{11}$ 432.424
 Mp 189-190°. $[\alpha]_D^{25} -1.3$ (c, 1.5 in H_2O).
 Benzyl glycoside, 4,6-O-benzylidene:
 $C_{26}H_{32}O_{11}$ 520.532
 Cryst. (EtOH). Mp 262-263°. $[\alpha]_D^{26} -5.9$ (c, 1.0 in DMF).
 Benzyl glycoside, 4,6-O-benzylidene, penta-Ac:
 $C_{36}H_{42}O_{16}$ 730.718
 Needles or prisms (EtOH). Mp 120-130°
 Mp 193-194° (double Mp). $[\alpha]_D^{25} +14.7$ (c, 1.9 in $CHCl_3$).

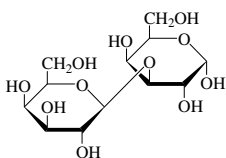
[72244-38-3]

Toba, T. *et al.*, *Carbohydr. Res.*, 1979, **75**, C24 (synth)
 Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **112**, 158 (benzyl gly)
 Doboszewski, B. *et al.*, *Carbohydr. Res.*, 1984, **132**, 29

3-O-β-D-Galactopyranosyl-D-galactose, 9CI, 8CI

G-122

[5188-48-7]



α-Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299
 Constit. of the hydrolysate of cashew nut shells and gums of an *Acacia* spp. (gum arabic) and *Rhizophora mangle*. Isol. from chondromucoprotein of bovine nasal septum.
 Mp 225° (198-200°, 159-170°). $[\alpha]_D^{18} +50$ (c, 0.2 in H_2O). $[\alpha]_D^{26} +71 \rightarrow +62$ (c, 1.0 in H_2O).

α-Pyranose-form

Octa-Ac:
 $C_{28}H_{38}O_{19}$ 678.597
 Cryst. (EtOAc). Mp 189-190°.

$[\alpha]_D^{22} +53.8$ (c, 0.4 in $CHCl_3$). β-Anomer also obt., probably noncryst.

β-Pyranose-form

Me glycoside: [81131-46-6]
 $C_{13}H_{24}O_{11}$ 356.326
 Mp 203-204°. $[\alpha]_D^{21} +25$ (c, 0.9 in H_2O).

Me glycoside, hepta-Ac: [102854-37-5]
 $C_{27}H_{38}O_{18}$ 650.586
 Mp 189.5-190°. $[\alpha]_D -7.7$ (c, 0.8 in $CHCl_3$).

Me glycoside, heptabenzoyl: [98056-61-2]
 $C_{62}H_{52}O_{18}$ 1085.082
 $[\alpha]_D +91$ (c, 1.5 in $CHCl_3$).

2-Propenyl glycoside: [120094-96-4]
 $C_{15}H_{26}O_{11}$ 382.364
 Mp 213-215°. $[\alpha]_D^{21} +11$ (c, 1.2 in H_2O).

Benzyl glycoside: [84553-71-9]
 $C_{19}H_{28}O_{11}$ 432.424
 Cryst. (MeOH). Mp 162-163°. $[\alpha]_D^{25} -4.2$ (c, 1.8 in H_2O).

Benzyl glycoside, 4,6-O-benzylidene:
 [84553-70-8]
 $C_{26}H_{32}O_{11}$ 520.532
 Mp 263-264°. $[\alpha]_D^{25} +57$ (c, 1.4 in DMF).

Benzyl glycoside, 4,6-O-benzylidene, penta-Ac: [84558-11-2]
 $C_{36}H_{42}O_{16}$ 730.718
 Cryst. (Et₂O/petrol). Mp 114-116°. $[\alpha]_D^{26} -13.4$ (c, 1.5 in $CHCl_3$).

Hirst, E.L. *et al.*, *J.C.S.*, 1954, 2622 (isol)
 Rodén, L. *et al.*, *J. Biol. Chem.*, 1966, **241**, 5949 (isol)

Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1968, **7**, 421 (isol)

Sarkar, M. *et al.*, *Indian J. Chem.*, 1974, **11**, 1129 (isol)

Chacón-Fuertes, M.E. *et al.*, *Carbohydr. Res.*, 1975, **43**, 51 (synth)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **112**, 158 (benzyl gly)

Nilsson, K.G.I. *et al.*, *Carbohydr. Res.*, 1987, **167**, 95; 1988, **180**, 53 (glycosides)

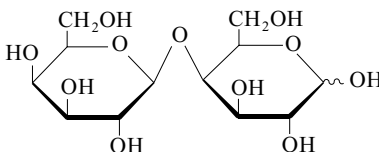
Ziegler, T. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 135 (Me gly)

Wang, L.X. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 349-361 (octa-Ac)

4-O-β-D-Galactopyranosyl-D-galactose, 9CI, 8CI

G-123

[6206-28-6]



$C_{12}H_{22}O_{11}$ 342.299
 Obt. by hydrol. of galactan from white birch wood (*Betula papyrifera*), white lupin seeds (*Lupinus albus*), aeodan (*Aeodes orbitosa*), flowers of *Bombax malabaricum* and of soya beans (*Glycine max*).
 Mp 204°. $[\alpha]_D^{20} +68$ (c, 1.0 in H_2O).

α-Pyranose-form

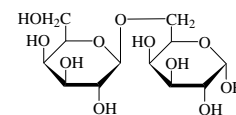
Octa-Ac:
 $C_{28}H_{38}O_{19}$ 678.597
 Mp 189-190°. $[\alpha]_D^{25} +54$ (c, 1.8 in $CHCl_3$).

Curtis, E.J.C. *et al.*, *Can. J. Chem.*, 1965, **43**, 2508 (synth)
 Agrawal, G.D. *et al.*, *Planta Med.*, 1972, **21**, 293; *CA*, **77**, 48734j (isol)
 Chacon-Fuertes, M.E. *et al.*, *Carbohydr. Res.*, 1975, **43**, 51 (synth)

6-O-β-D-Galactopyranosyl-D-galactose, 9CI, 8CI

G-124

[5077-31-6]



α-Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299
 Isol. from partial acid hydrolysates of the gums of *Anogeissus schimperi*, *Albizia zygia*, *Virgilia oroboides*, *Spondias cytheraea* (ambarella), *Opuntia ficus-indica* (Indian fig), *Prunus persica* and *Chorisia speciosa*. Also from the partial acid hydrolysates of snail-egg galactogen, *Larix decidua* e-galactan and the arabinogalactans of *Larix laricina* and *Larix occidentalis*.
 $[\alpha]_D +39$ (c, 0.53 in H_2O).

Phenylosazone: Mp 180-182°.

α-Pyranose-form

1,2:3,4-Di-O-isopropylidene, tetra-Ac:
 $C_{26}H_{38}O_{15}$ 590.577
 Syrup. $[\alpha]_D -47$ (c, 0.61 in $CHCl_3$).

β-Pyranose-form

Allyl glycoside:
 $C_{15}H_{26}O_{11}$ 382.364
 Cryst. + H_2O . Mp 134-135°. $[\alpha]_D^{21} -14.5$ (c, 1.0 in H_2O).

Benzyl glycoside: Benzyl 6-O-β-D-galactopyranosyl-β-D-galactopyranoside
 $C_{19}H_{28}O_{11}$ 432.424
 $[\alpha]_D^{21} -27$ (c, 0.7 in 50% MeOH aq.).

Pazur, J.H. *et al.*, *J.A.C.S.*, 1958, **80**, 119 (synth)
 Aspinall, G.O. *et al.*, *J.C.S.*, 1961, 3461; 1958, 593 (isol)

Bailey, R.W. *et al.*, *Oligosaccharides*, Pergamon, London, 1965, 50 (occur)

Kochetkov, N.K. *et al.*, *Tetrahedron*, 1967, **23**, 693 (α-deriv)

Hellerqvist, C.G. *et al.*, *Acta Chem. Scand.*, 1971, **25**, 743 (pmr)

Kamerling, J.P. *et al.*, *Tetrahedron*, 1971, **27**, 4275 (ms)

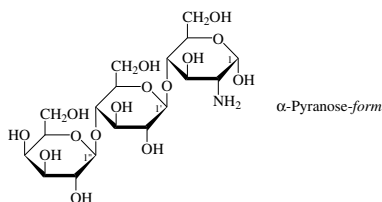
McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol)

Lipkind, G.M. *et al.*, *Carbohydr. Res.*, 1988, **175**, 59 (cmr)

Nilsson, K.G.I. *et al.*, *Carbohydr. Res.*, 1988, **180**, 53 (β-deriv)

**β-D-Galactopyranosyl-(1→4)-
β-D-glucopyranosyl-(1→4)-2-amino-2-
deoxy-D-glucose, 9CI**

G-125



C₁₈H₃₃NO₁₅ 503.456

N-Ac: [67535-75-5]

C₂₀H₃₅NO₁₆ 545.494

Amorph. [α]_D²¹ +24 → +15 (c, 0.35 in H₂O).

α-Pyranose-form

Benzyl glycoside, N-Ac: [67535-74-4]

C₂₇H₄₁NO₁₆ 635.618

Cryst. + H₂O (dec.). Mp 310-311°.

[α]_D²¹ +76 (c, 0.44 in H₂O).

Benzyl glycoside, deca-Ac: [67535-73-3]

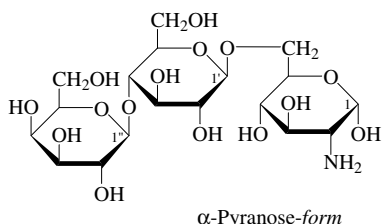
C₄₃H₅₉NO₂₅ 1013.953

[α]_D²¹ +41 (c, 0.77 in CHCl₃).

Zurabian, S.E. et al., *Bioorg. Khim.*, 1978, **4**, 654; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1978, **4**, 476 (N-Ac, α-benzyl pyr derivs)

**β-D-Galactopyranosyl-(1→4)-
β-D-glucopyranosyl-(1→6)-2-amino-2-
deoxy-D-glucose, 9CI**

G-126



C₁₈H₃₃NO₁₅ 503.456

Constit. of the repeating unit of the polysaccharide antigen isol. from type III group B *Streptococcus*.

α-Pyranose-form

Benzyl glycoside, 3-benzyl, nona-Ac:

[59541-15-0]

C₅₀H₆₃NO₂₄ 1062.04

Cryst. (EtOH). Mp 198-199°. [α]_D²⁰ +34 (c, 0.77 in CHCl₃).

β-Pyranose-form

(7-Methoxycarbonyl-3,6-dioxahexyl) glycoside, 3-benzyl, 2N,2',2'',3',3'',4'',6',6''-octa-Ac: [106256-82-0]

C₄₈H₆₇NO₂₇ 1090.048

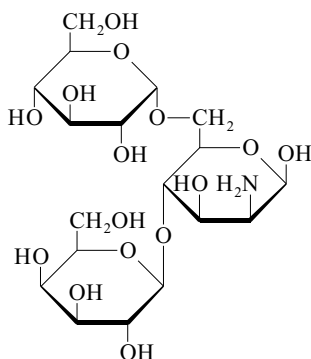
Spacer arm glycoside suitable for conjugation to proteins. Amorph. [α]_D -23 (c, 1.4 in CHCl₃).

Zurabian, S.E. et al., *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1976, 1421; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1976, 1363 (α-benzyl pyr benzyl nona-Ac)

Amvam-Zollo, P.H. et al., *Carbohydr. Res.*, 1986, **150**, 199 (β-methoxycarbonyl-dioxahexyl pyr benzyl octa-Ac)

**β-D-Galactopyranosyl-(1→4)-
[α-D-glucopyranosyl-(1→6)]-2-amino-2-
deoxy-D-mannose, 9CI**

G-127



C₁₈H₃₃NO₁₅ 503.456

β-Pyranose-form

N-Ac: [133943-53-0]

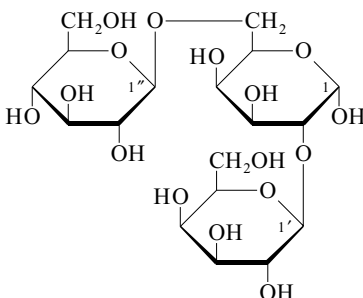
C₂₀H₃₅NO₁₆ 545.494

Repeating unit of the glycan chain from the surface layer glycoprotein of *Bacillus alvei* CCM 2051. Liq.

Altman, E. et al., *Biochem. Cell Biol.*, 1991, **69**, 72 (occur, pmr>)

**β-D-Galactopyranosyl-(1→2)-
[β-D-glucopyranosyl-(1→6)]-D-galactose**

G-128



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

Me glycoside, 3,4-O-isopropylidene, octa-Ac:

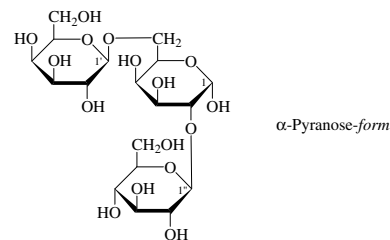
C₃₈H₅₄O₂₄ 894.83

Cryst. (EtOH). Mp 201°. [α]_D²⁰ +36.2 (c, 1.2 in CHCl₃).

Koeners, H.J. et al., *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1981, **100**, 65 (α-Me pyr deriv, pmr, cmr)

**β-D-Galactopyranosyl-(1→6)-
[β-D-glucopyranosyl-(1→2)]-D-galactose**

G-129



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

Me glycoside, 3,4-O-isopropylidene, 2',3',3'',4',4'',6',6''-hepta-Ac: [78283-71-3]

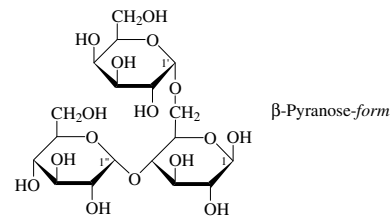
C₃₆H₅₂O₂₃ 852.793

Cryst. (Et₂O). Mp 108°. [α]_D +43.1 (c, 1.0 in CHCl₃).

Koeners, H.J. et al., *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1981, **100**, 118 (α-Me pyr deriv, pmr)

**α-D-Galactopyranosyl-(1→6)-
[α-D-glucopyranosyl-(1→4)]-D-glucose, 9CI**

G-130



C₁₈H₃₂O₁₆ 504.441

Hygroscopic amorph. powder +H₂O. [α]_D²¹ +155 (c, 1.76 in MeOH).

β-Pyranose-form

Undeca-Ac: [69359-19-9]

C₄₀H₅₄O₂₇ 966.85

Needles + 0.5H₂O (EtOH). Mp 148-149°. [α]_D²² +114.1 (c, 0.65 in CHCl₃).

2',3',4',6'-Tetrabenzyl, hepta-Ac: [69359-18-8]

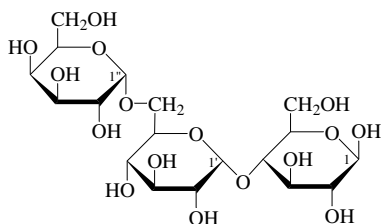
C₆₀H₇₀O₂₃ 1159.199

Amorph. powder. [α]_D²² +55.8 (c, 1.22 in CHCl₃).

Chung, T.G. et al., *Chem. Pharm. Bull.*, 1978, **26**, 3562 (synth, undeca-Ac, hepta-Ac deriv, pmr)

**α -D-Galactopyranosyl-(1 \rightarrow 6)-
 α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose,
9CI**

[63425-95-6]

 β -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
Amorph. powder. $[\alpha]_D^{24} +159.2$ (c, 0.85 in H_2O).

Pyranose-form

Undeca-Ac: [63492-74-0]
 $C_{40}H_{54}O_{27}$ 966.85
Amorph. powder. $[\alpha]_D^{25} +131.9$ (c, 1.0 in $CHCl_3$).

 β -Pyranose-form

1,6-Anhydro: [63425-93-4]
 $C_{18}H_{30}O_{15}$ 486.426
Amorph. powder. $[\alpha]_D^{24} +148.4$ (c, 1.0 in H_2O).

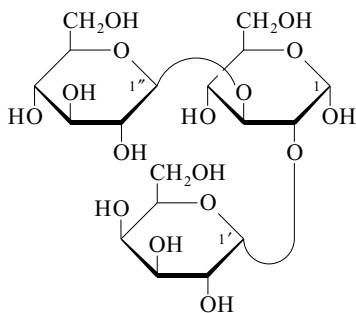
1,6-Anhydro, nona-Ac: [63425-92-3]
 $C_{36}H_{48}O_{24}$ 864.761
Amorph. powder. $[\alpha]_D^{21} +83.1$ (c, 1.0 in $CHCl_3$).

1,6-Anhydro, 2'',3'',4'',6''-tetrabenzyl, penta-Ac: [63425-91-2]
 $C_{56}H_{64}O_{20}$ 1057.11
Cryst. Mp 59-60°. $[\alpha]_D^{22} +48.2$ (c, 1.1 in $CHCl_3$).

1,6-Anhydro, nona-Me: [63425-94-5]
 $C_{27}H_{48}O_{15}$ 612.667
Syrup. $[\alpha]_D^{25} +116.4$ (c, 0.4 in $CHCl_3$).

[63640-29-9]

Gi, C.T. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 464 (*synth, anhydro derivs, pmr*)

 **α -D-Galactopyranosyl-(1 \rightarrow 2)-
[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-glucose,
9CI**

$C_{18}H_{32}O_{16}$ 504.441
Trisaccharide constit. of the R-1 core

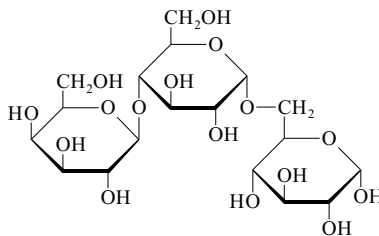
antigen of enterobacteria.

 α -Pyranose-form

Me glycoside: [131614-86-3]
 $C_{19}H_{34}O_{16}$ 518.468
Amorph. powder. $[\alpha]_D^{30} +56$ (c, 5.0 in H_2O).

Me glycoside, decabenzyl: [131550-12-4]
 $C_{89}H_{94}O_{16}$ 1419.712
Syrup. $[\alpha]_D^{30} +36$ (c, 4.0 in $CHCl_3$).

Basu, S. *et al.*, *Carbohydr. Res.*, 1990, **208**, 241 (*α -Me pyr derivs, pmr, cmr*)

 **β -D-Galactopyranosyl-(1 \rightarrow 4)-
 α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose,
9CI**

$C_{18}H_{32}O_{16}$ 504.441

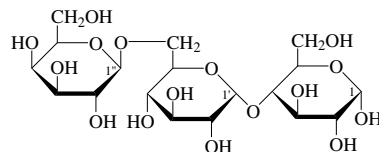
 α -Pyranose-form

Undecabenzyl: [84396-53-2]
 $C_{95}H_{98}O_{16}$ 1495.81
Syrup. $[\alpha]_D +53$ (c, 1.0 in $CHCl_3$).

Koto, S. *et al.*, *Nippon Kagaku Kaishi*, 1982, 1651 (*undecabenzyl, pmr*)

 **β -D-Galactopyranosyl-(1 \rightarrow 6)-
 α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose,
9CI**

[63425-90-1]

 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
Amorph. powder + $2H_2O$. $[\alpha]_D^{22} +85$ (c, 0.8 in H_2O).

Pyranose-form

Undeca-Ac: [63492-73-9]
 $C_{40}H_{54}O_{27}$ 966.85
Amorph. $[\alpha]_D^{21} +67$ (c, 0.8 in $CHCl_3$).

 α -Pyranose-form

Undeca-Ac: [63425-89-8]
Amorph. $[\alpha]_D^{25} +76.5$ (c, 1.3 in $CHCl_3$).

 β -Pyranose-form

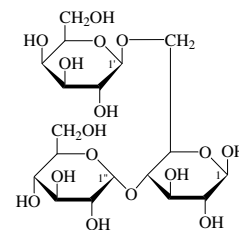
1,6-Anhydro: [63425-88-7]
 $C_{18}H_{30}O_{15}$ 486.426
Amorph. powder. $[\alpha]_D^{27} +40$ (c, 0.63 in H_2O).

1,6-Anhydro, nona-Ac: [63425-87-6]
 $C_{36}H_{48}O_{24}$ 864.761
Cryst. (EtOH). Mp 217-218°. $[\alpha]_D^{22} +19.7$ (c, 0.9 in $CHCl_3$).

Gi, C.T. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 464 (*synth, anhydro derivs, pmr*)

 **β -D-Galactopyranosyl-(1 \rightarrow 6)-
[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-glucose,
9CI**

[69401-49-6]

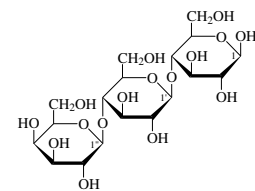
 β -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
Cryst. + $0.5H_2O$ (MeOH). Mp 168-170°. $[\alpha]_D^{22} +91$ (c, 1.0 in H_2O).

 β -Pyranose-form

Undeca-Ac: [69401-48-5]
 $C_{40}H_{54}O_{27}$ 966.85
Cryst. (EtOH aq.). Mp 175-176°. $[\alpha]_D^{21} +46.2$ (c, 2.4 in $CHCl_3$).

Chung, T. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 3562 (*synth, undeca-Ac, pmr*)

 **β -D-Galactopyranosyl-(1 \rightarrow 4)-
 β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose,
9CI** β -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

 β -Pyranose-form

Benzyl glycoside, 2,3,6-tribenzyl, hepta-Ac: [107877-74-7]
 $C_{60}H_{70}O_{23}$ 1159.199
Syrup. $[\alpha]_D -12$ (c, 1.0 in $CHCl_3$).

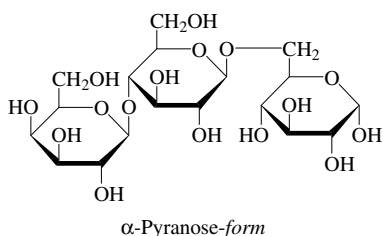
Benzyl glycoside, deca-Ac: [287731-80-0]
 $C_{45}H_{58}O_{26}$ 1014.938
 $[\alpha]_D^{25} -31.5$ (c, 1.33 in $CHCl_3$).

Sato, S. *et al.*, *Carbohydr. Res.*, 1986, **155**, C6 (*β -benzyl pyr deriv, pmr*)

Fort, S. *et al.*, *J.A.C.S.*, 2000, **122**, 5429-5437 (*β -pyr benzyl glycoside deca-Ac, synth, cmr*)

**β-D-Galactopyranosyl-(1→4)-
β-D-glucopyranosyl-(1→6)-D-glucose,
9CI**

G-137



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

Benzyl glycoside, decabenzyl: [84396-54-3]
C₉₅H₉₈O₁₆ 1495.81
Syrup. [α]_D²⁰ +32 (c, 1.0 in CHCl₃).

β-Pyranose-form

Benzyl glycoside: [87924-23-0]
C₂₅H₃₈O₁₆ 594.566
Cryst. Mp 144-145°. [α]_D -23.4 (c, 1.0 in H₂O).
Benzyl glycoside, 2,3,4-tribenzoyl, hepta-Ac: [87924-25-2]
C₆₀H₆₄O₂₆ 1201.15
Cryst. (EtOH). Mp 204-206°. [α]_D -25.5 (c, 1.18 in CHCl₃).

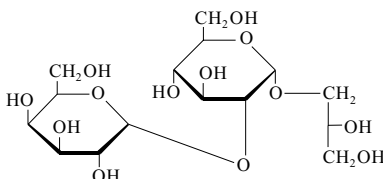
[87924-23-0]

Koto, S. *et al.*, *Nippon Kagaku Kaishi*, 1982, 1651 (α-benzyl pyr decabenzyl, cmr)
Neszmelyi, A. *et al.*, *Acta Chim. Hung.*, 1983, 113, 431 (β-benzyl pyr derivs)

**O-α-D-Galactopyranosyl-(1→
2)-O-α-D-glucopyranosyl-(1→1)-D-
glycerol**

G-138

2,3-Dihydroxypropyl 2-O-α-D-galactopyranosyl-(1→1)-D-glucopyranoside
[19427-29-3]



C₁₅H₂₈O₁₃ 416.378

Glycoside produced by deacylation of the main glycolipid from the rough strain of *Pneumococcus* Type 1. Constit. of the glycolipid of *Lactobacillus casei*.
Mp 171°. [α]_D +170 (c, 0.4 in H₂O).

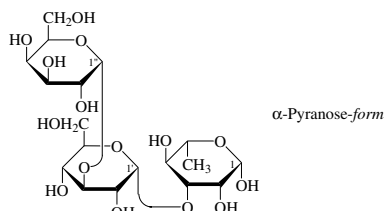
Nona-Ac: Mp 97°. [α]_D +145 (c, 0.5 in CHCl₃).

Shaw, N. *et al.*, *Biochem. J.*, 1968, **107**, 491 (isol)
Brundish, D.E. *et al.*, *Carbohydr. Res.*, 1968, **8**, 308 (synth)

**α-D-Galactopyranosyl-(1→3)-
α-D-glucopyranosyl-(1→3)-L-rham-
nose**

G-139

α-D-Galactopyranosyl-(1→3)-α-D-glucopyranosyl-(1→3)-6-deoxy-L-mannose, 9CI



C₁₈H₃₂O₁₅ 488.442

Reducing trisaccharide. Constit. of the repeating unit of the capsular polysaccharide of *Streptococcus pneumoniae* types 6A and 6B.

[α]_D +1 (c, 1 in H₂O). Dihydrate.

α-Pyranose-form

2,2',2'',3'',4,4',4'',6',6''-Nona-Ac: [131328-64-8]
C₃₆H₅₀O₂₄ 866.777
[α]_D +102 (c, 1 in CHCl₃).
1,2,2',2'',3'',4,4',4'',6',6''-Deca-Ac:
[131328-63-7]
C₃₈H₅₂O₂₅ 908.814
[α]_D +97 (c, 1 in CHCl₃).

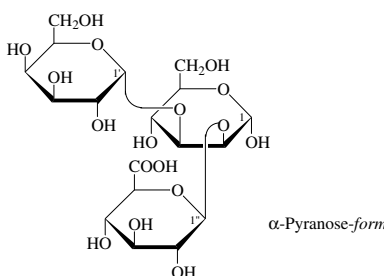
Benzyl glycoside, 2,2',2'',3'',4,4',4'',6',6''-nonabenzyl: [131328-61-5]
C₈₈H₉₂O₁₅ 1389.686
Syrup. [α]_D²⁰ +38 (c, 1.0 in CHCl₃).

[131328-62-6, 131328-73-9]

Slaghek, T.M. *et al.*, *Carbohydr. Res.*, 1990, **207**, 237 (deriv, synth, pmr, cmr)

**α-D-Galactopyranosyl-(1→3)-
β-D-glucopyranuronosyl-(1→2)]-D-
mannose, 9CI**

G-140



C₁₈H₃₀O₁₇ 518.425

Constit. of the repeating unit of *Klebsiella* K-10 antigen.

α-Pyranose-form

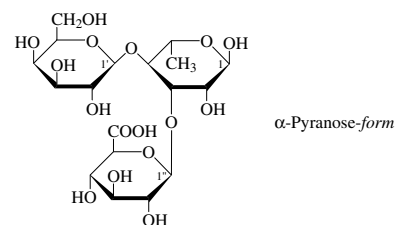
Me glycoside: [125365-17-5]
C₁₉H₃₂O₁₇ 532.452
Syrup. [α]_D²⁵ +128 (c, 0.85 in H₂O).
Me glycoside, 2',3',4,4',6,6'-hexabenzyl, 6''-Me, 2'',3'',4''-tri-Ac: [125365-16-4]
C₆₈H₇₆O₂₀ 1213.336
Cryst. (EtOH/EtOAc 9:1). Mp 141-142°. [α]_D²⁵ +40 (c, 2.5 in CHCl₃).

Sarkar, A.K. *et al.*, *Carbohydr. Res.*, 1989, **190**, 181 (occur, α-Me pyr derivs, pmr)

**β-D-Galactopyranosyl-(1→4)-
[β-D-glucopyranuronosyl-(1→3)]-L-
rhamnose**

G-141

β-D-Galactopyranosyl-(1→4)-[β-D-glucopyranuronosyl-(1→3)]-6-deoxy-L-mannose, 9CI



C₁₈H₃₀O₁₆ 502.425

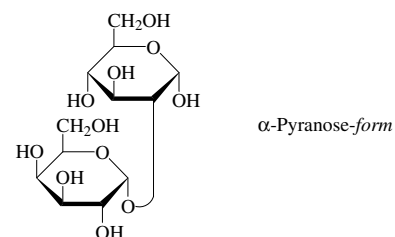
Constit. of the repeating unit of *Klebsiella* K-47 antigen.

α-Pyranose-form

Me glycoside: [125362-81-4]
C₁₉H₃₂O₁₆ 516.452
Syrup. [α]_D²⁴ -16.8 (c, 1.2 in H₂O).
Me glycoside, 2,2',3',4',6'-pentabenzyl, 6''-Me, 2'',3'',4''-tri-Ac: [125338-90-1]
C₆₁H₇₀O₁₉ 1107.213
Cryst. (EtOH/EtOAc). Mp 180-182°. [α]_D²⁴ -36.6 (c, 1.1 in CHCl₃).
Bjorndat, H. *et al.*, *Carbohydr. Res.*, 1973, **27**, 373 (occur)
Fugedi, P. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 377 (occur)
Ray, A.K. *et al.*, *J. Carbohydr. Chem.*, 1989, **8**, 357 (α-Me pyr derivs, pmr)

**2-O-α-D-Galactopyranosyl-D-
glucose**

G-142



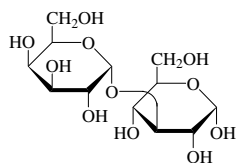
C₁₂H₂₂O₁₁ 342.299

α-Pyranose-form

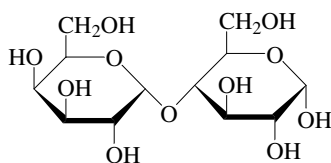
[7286-57-9]
[α]_D +170 (c, 1 in H₂O).
Octa-Ac: [53777-20-1]
C₂₈H₃₈O₁₉ 678.597
Cryst. (EtOH). Mp 175-177°. [α]_D +176 (c, 1 in CHCl₃).
Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425 (cmr)
Dick, W.E. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319 (synth)
Huh, K.T. *et al.*, *Food Chem.*, 1991, **39**, 39

3-O- α -D-Galactopyranosyl-D-glucose, 9CI

[40592-72-1]

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Reducing disaccharide. Amorph. powder. $[\alpha]_D^{22} +159$ (c, 1 in H_2O).Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1973, **51**, 42Serge, D. *et al.*, *J.C.S. Perkin 1*, 1976, 1831 (synth, pmr)**4-O- α -D-Galactopyranosyl-D-glucose**

[56907-30-3]

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Reducing disaccharide. Cryst. (MeOH) or powder. Mp 227-229° dec. $[\alpha]_D^{26} +159.6$ (c, 1.02 in H_2O). **α -Pyranose-form**

Octa-Ac: [56907-29-0]

 $C_{28}H_{38}O_{19}$ 678.597Amorph. powder. $[\alpha]_D^{27} +117$ (c, 1.14 in $CHCl_3$). **β -Pyranose-form**

1,6-Anhydro: [56907-28-9]

 $C_{12}H_{20}O_{10}$ 324.284Cryst. (MeOH/ Me_2CO). Mp 197-200°. $[\alpha]_D^{26} +104.7$ (c, 1.41 in H_2O).

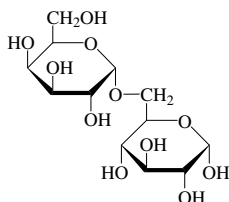
1,6-Anhydro, hexa-Ac: [56907-27-8]

 $C_{24}H_{32}O_{16}$ 576.507Cryst. (EtOH). Mp 132-133°. $[\alpha]_D^{23} +54.5$ (c, 1.1 in $CHCl_3$).Mori, M. *et al.*, *Chem. Pharm. Bull.*, 1975, **23**, 1480 (synth)Oshima, R. *et al.*, *J. Chromatogr.*, 1980, **192**, 452 (hplc)Motawia, M.S. *et al.*, *Carbohydr. Res.*, 2001, **330**, 309-318 (synth, pmr, cmr)

G-143

6-O- α -D-Galactopyranosyl-D-glucose, 9CI**Melibiose, 8CI**

[585-99-9]

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Occurs free in wild mallow. Also isol. from coffee beans, *Corylus* spp., *Aconitum napellus*, apple (*Pyrus malus*) and other plants. Sol. H_2O .Mp 85° dec. (dihydrate) Mp 179-181° (monohydrate). Approx. one-third as sweet as sucrose. Dihydrate reported to be β -anomer; monohydrate the α -anomer.► LD₅₀ (mus, ivn) 1000-3000 mg/kg.Phenylosazone: Mp 176-178°. $[\alpha]_D^{21} +43.2$ (Py). **α -Pyranose-form** $[\alpha]_D^{20} +134$ (c, 4 in H_2O).Me glycoside, hepta-Me: Methyl hepta-O-methyl- α -D-galactopyranosyl- α -D-glucopyranoside $C_{20}H_{38}O_{11}$ 454.514

Mp 122-123°.

1-Chloro-1-deoxy, hepta-Ac: Acetochloro-melibiose

 $C_{26}H_{35}ClO_{17}$ 655.005Mp 127°. $[\alpha]_D^{20} +192.5$ ($CHCl_3$).

1-Bromo-1-deoxy, hepta-Ac: Acetobromo-melibiose

 $C_{26}H_{35}BrO_{17}$ 699.456Mp 116°. $[\alpha]_D^{20} +209.9$ ($CHCl_3$). **β -Pyranose-form**

Octa-Ac: [29873-67-4]

 $C_{28}H_{38}O_{19}$ 678.597Mp 177°. $[\alpha]_D^{20} +102.5$ ($CHCl_3$).Me glycoside: Methyl β -melibioside $C_{13}H_{24}O_{11}$ 356.326Cryst. + $1H_2O$. Mp 102-105°. $[\alpha]_D^{21} +84$ (c, 1.9 in H_2O).

Me glycoside, 2,3,4,2',3',4'-hexa-Ac:

 $C_{25}H_{36}O_{17}$ 608.549Cryst. (EtOH). Mp 160-161.5°. $[\alpha]_D^{27} +107$ (c, 1.0 in $CHCl_3$).Me glycoside, hepta-Ac: Methyl hepta-O-acetyl- α -D-galactopyranosyl- β -D-glucopyranoside $C_{27}H_{38}O_{18}$ 650.586Cryst. (EtOH). Mp 150°. $[\alpha]_D^{23} +90.5$ ($CHCl_3$).Me glycoside, heptabenzoyl: Methyl hepta-O-benzoyl- α -D-galactopyranosyl- β -D-glucopyranoside $C_{62}H_{52}O_{18}$ 1085.082Cryst. (EtOH/EtOAc). Mp 165-166°. $[\alpha]_D^{27} +136$ (c, 2.0 in $CHCl_3$).Me glycoside, hepta-Me: Methyl hepta-O-methyl- α -D-galactopyranosyl- β -D-glucopyranoside $C_{20}H_{38}O_{11}$ 454.514

G-145

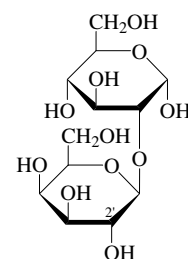
Cryst. (petrol). Mp 106-107°. $[\alpha]_D +97.8$ (c, 1.0 in H_2O).Benzyl glycoside: Benzyl β -melibioside $C_{19}H_{28}O_{11}$ 432.424Monohydrate. $[\alpha]_D^{31} +44.9$ (c, 1.0 in H_2O).Benzyl glycoside, hepta-Ac: Benzyl hepta-O-acetyl- α -D-galactopyranosyl- β -D-glucopyranoside $C_{33}H_{42}O_{18}$ 726.684Glass. $[\alpha]_D^{31} +50.2$ (c, 1.0 in $CHCl_3$).Benzyl glycoside, heptabenzoyl: Benzyl hepta-O-benzoyl- α -D-galactopyranosyl- β -D-glucopyranoside $C_{68}H_{56}O_{18}$ 1161.18Mp 143-146°. $[\alpha]_D^{29} +116$ (c, 1.0 in $CHCl_3$).

[66009-10-7]

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 309C (nmr)Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 196C (ir)Pictet, A. *et al.*, *Helv. Chim. Acta*, 1926, **9**, 806 (synth, dihydrate, β -pyr octa-Ac)Charlton, W. *et al.*, *J.C.S.*, 1927, 1527 (struct, β -Me pyr hepta-Me)Helferich, B. *et al.*, *Annalen*, 1928, **465**, 166 (β -pyr octa-Ac)Levene, P.A. *et al.*, *J. Biol. Chem.*, 1930, **86**, 403 (struct, β -pyr octa-Ac, β -Me pyr hepta-Ac, synth)Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 460 (rev)Witonsky, P. *et al.*, *J.O.C.*, 1959, **24**, 124 (monohydrate, synth)Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 366 (enzymic synth)Breitmaier, E. *et al.*, *Chimia*, 1971, **25**, 362 (cmr)de Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1975, **84**, 407 (pmr)Kanters, J.A. *et al.*, *Acta Cryst. B*, 1976, **32**, 2830 (cryst struct)Bradbury, J.H. *et al.*, *Carbohydr. Res.*, 1979, **71**, 15 (pmr)Otani, S. *et al.*, *Carbohydr. Res.*, 1986, **156**, 218 (Me, benzyl gly. synth, β -Me pyr heptabenzoyl, β -Me pyr, β -Me pyr hexa-Ac, β -benzyl glycosides, pmr)**2-O- β -D-Galactopyranosyl-D-glucose**

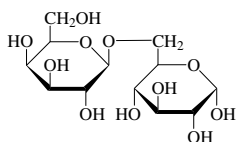
G-146

[28447-37-2]

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Reducing disaccharide. Cryst. + H_2O . Mp 173°. $[\alpha]_D -12.5$ (H_2O). **α -Pyranose-form**

Me glycoside, 4,6-O-benzylidene, 2',3',4',6'-tetra-Ac: [52560-14-2]

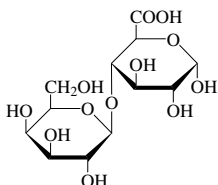
Mp 197-198°. $[\alpha]_D^{25} +50.1$ (c, 0.55 in $CHCl_3$).

β-Pyranose-form*Octa-Ac:*C₂₈H₃₈O₁₉ 678.597Cryst. (EtOH). Mp 150-151°. [α]_D²⁵ +17.6 (c, 1 in CHCl₃).Gakhokidze, A.M. *et al.*, *CA*, 1956, **50**, 10657 (*synth*)Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425 (*cmr*)Dick, W.E. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319 (*β-Ac*)Hanessian, S. *et al.*, *Carbohydr. Res.*, 1977, **53**, C13 (*Me gly*)**6-O-β-D-Galactopyranosyl-D-glucose** **G-147**
Allolactose
[28447-39-4]

α-Pyranose-form

C₁₂H₂₂O₁₁ 342.299Reducing disaccharide. Isol. from human milk. Formed from lactose by microbial β-galactosidases. Isol. from *Phaseolus atropurpureum*. Cryst. (EtOH). Mp 174-176° dec. [α]_D +30.7 (H₂O).*Phenylosazone:*Fine needles (H₂O). Mp 188-189° dec. [α]_D -51.6 (H₂O).**β-Pyranose-form** [65207-30-9]*Octa-Ac:* [41545-70-4]C₂₈H₃₈O₁₉ 678.597Mp 159-169°. [α]_D²⁰ +1.8 (c, 1.9 in CHCl₃).

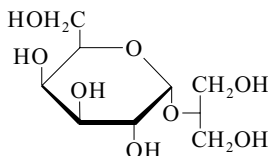
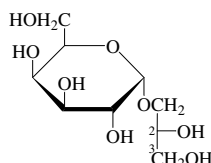
[645-03-4]

Polonowski, M. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1931, **192**, 1319 (*isol*)Helfferich, B. *et al.*, *Ber.*, 1933, **66**, 806 (*synth*)Zemplén, G. *et al.*, *Acta Chim. Hung.*, 1951, **1**, 245; *CA*, **46**, 7053iKuhn, R. *et al.*, *Chem. Ber.*, 1955, **88**, 1713 (*synth*)Wallenfels, K. *et al.*, *Adv. Carbohydr. Chem.*, 1961, **16**, 239 (*deriv*)Pazur, J.H. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 303 (*enzymic synth*)Ford, C.W. *et al.*, *Aust. J. Chem.*, 1972, **25**, 889 (*isol*)Suami, T. *et al.*, *Carbohydr. Res.*, 1973, **26**, 234 (*synth*)Kochetkov, N.K. *et al.*, *Tet. Lett.*, 1977, **41**, 3681 (*deriv*)**4-O-β-D-Galactopyranosyl-D-glucuronic acid** **G-148**
Pseudolactobiuronic acid

α-Pyranose-form

C₁₂H₂₀O₁₂ 356.283Cryst. (MeOH/EtOH/H₂O). Mp 177-180° (159-160°). [α]_D +28.9 (c, 0.8 in H₂O). [α]_D+45.5 (c, 1.11 in H₂O). Obt. as a mixt. of anomers (α:β 45:55 before crystallisation).*Me ester:*C₁₃H₂₂O₁₂ 370.31Syrup. [α]_D +38 (c, 1.0 in MeOH).

Approx. 1:1 mixt. of anomers.

Attolino, E. *et al.*, *Carbohydr. Res.*, 2002, **337**, 991-996; 1791 (*synth, cmr, bibl*)**2-O-α-D-Galactopyranosyl-glycerol** **G-149**
2-Hydroxy-1-(hydroxymethyl)ethyl α-D-galactopyranoside, 9CI. 2-Glyceryl α-D-galactopyranoside. Floridoside
[534-68-9]C₉H₁₈O₈ 254.236Constit. of many red algae and the hydrolysate from *Bacillus coagulans* cell walls. The main reserve carbohydrate in most red algae. Prob. intracellular osmotic regulator.Mp 128.5° Mp 86-87° (monohydrate). [α]_D +165 (c, 3.35 in H₂O).*Hexa-Ac:* [3879-82-1]C₂₁H₃₀O₁₄ 506.46Constit. of *Ruellia brittoniana*.Mp 101°. [α]_D +114 (c, 3.0 in Me₂CO).*Hexa-Me:*C₁₅H₃₀O₈ 338.397Syrup. [α]_D +156 (c, 2.86 in H₂O).Putman, E.W. *et al.*, *J.A.C.S.*, 1954, **76**, 2221 (*struct*)Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1955, **9**, 1097; 1323 (*isol*)Aplin, R.T. *et al.*, *J.C.S. (C)*, 1967, 1346 (*pmr, ms*)London, R.E. *et al.*, *J.A.C.S.*, 1975, **97**, 3565 (*cmr*)Impellizzeri, G. *et al.*, *Phytochemistry*, 1975, **14**, 1549 (*isol*)Meng, J. *et al.*, *Carbohydr. Res.*, 1987, **161**, 171 (*pmr, cmr, ms, glc*)Ahmad, V.U. *et al.*, *J. Nat. Prod.*, 1990, **53**, 960 (*isol, hexa-Ac, pmr, cmr, cryst struct*)Abreu, P.M. *et al.*, *Phytochemistry*, 1997, **45**, 1601 (*isol, pmr, cmr*)Simon-Colin, C. *et al.*, *Carbohydr. Res.*, 2002, **337**, 279-280; 2003, **338**, 2413-2416 (*purifn, pmr, cmr, cryst struct*)**1-O-Galactopyranosylglycerol** **G-150**
2,3-Dihydroxypropyl galactopyranoside, 9CI. Glyceryl galactopyranoside
[7420-23-7]

α-D-(2R)-form

C₉H₁₈O₈ 254.236**α-D-(2R)-form***Isofloridoside*

[23202-76-8]

Constit. of various marine red algae.

Cryst. (EtOH/MeOH).

Mp 150-152°. [α]_D²⁰ +158 (c, 1.8 in H₂O).**β-D-(2R)-form** [16232-91-0]Isol. from wheat flour lipids and the brown alga *Sargassum thumbergii*.

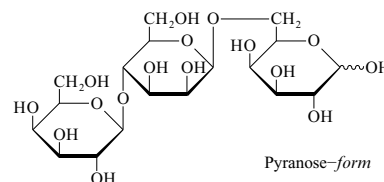
Cryst. (MeOH).

Mp 140.5-141.5°. [α]_D¹⁵ -9 (c, 0.6 in H₂O).**α-D-(2S)-form** [38841-15-5]Constit. of a red alga *Porphyra* sp.

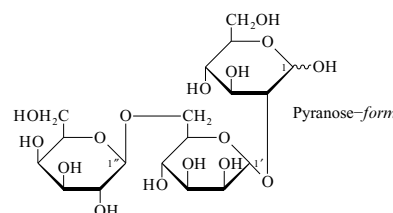
Cryst.

Mp 104-107°. [α]_D²⁰ +2 (c, 2 in H₂O).

[42869-31-8]

Carter, H.E. *et al.*, *J.A.C.S.*, 1956, **78**, 3735-3738 (*β-D-2R-form, isol*)Wickberg, B. *et al.*, *Acta Chem. Scand.*, 1958, **12**, 1187-1201 (*β-D-2R-form, β-D-2S-form, synth, ir*)Silhavy, T.J. *et al.*, *J. Biol. Chem.*, 1973, **248**, 6571-6574 (*synth*)Gent, P.A. *et al.*, *J.C.S. Perkin 1*, 1975, 364-370 (*synth*)Impellizzeri, G. *et al.*, *Phytochemistry*, 1975, **14**, 1549-1557 (*isol*)Beier, R.C. *et al.*, *Can. J. Chem.*, 1980, **58**, 2800-2804 (*cmr*)Beier, R.C. *et al.*, *Carbohydr. Res.*, 1981, **93**, 141-143 (*synth*)Boos, W. *et al.*, *Methods Enzymol.*, 1982, **89D**, 59-64 (*synth*)Michelsen, P. *et al.*, *Chem. Scr.*, 1985, **25**, 217-218 (*ord, cd*)Meng, J. *et al.*, *Carbohydr. Res.*, 1987, **161**, 171-180 (*isol, pmr, cmr, abs config, bibl*)Son, B.W. *et al.*, *Bull. Korean Chem. Soc.*, 1992, **13**, 584-586 (*β-D-2R-form, isol*)**β-D-Galactopyranosyl-(1 →4)-β-D-mannopyranosyl-(1 →6)-D-galactose, 9CI** **G-151**
[98832-48-5]

Pyranose-form

C₁₈H₃₂O₁₆ 504.441Cryst. Mp 210° dec. [α]_D²⁰ +17.7 (c, 1.0 in DMSO).Lichtenthaler, F.W. *et al.*, *Annalen*, 1985, 1659 (*synth, cmr, pmr*)**β-D-Galactopyranosyl-(1 →6)-α-D-mannopyranosyl-(1 →2)-D-glucose, 9CI** **G-152**

Pyranose-form

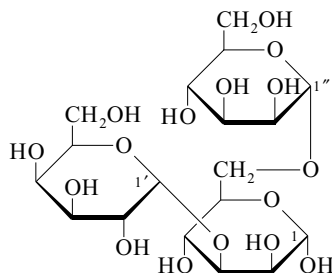
C₁₈H₃₂O₁₆ 504.441

Constit. of the cell membrane of halophilic bacteria e.g. *Halobacterium cutirubrum*, present as phytanylglycerol deriv.

[83916-10-3, 95188-72-0]

Van Boeckel, C.A.A. *et al.*, *Carbohydr. Res.*, 1984, **133**, 219 (*occur, cmr*)

**α -D-Galactopyranosyl-(1 \rightarrow 3)-
[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-man-
nose, 9CI**

C₁₈H₃₂O₁₆ 504.441

α -Pyranose-form

Me glycoside: [129939-86-2]

C₁₉H₃₄O₁₆ 518.468

Syrup + H₂O. [α]_D +118 (c, 1.1 in H₂O).

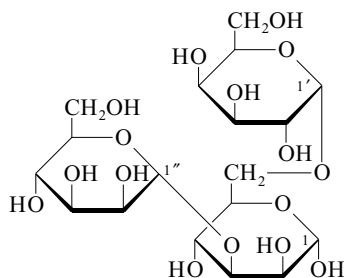
Me glycoside, 2'',3'',4'',6''-tetrabenzoyl, 2,4-di-Ac: [129870-12-8]

C₇₉H₇₈O₂₂ 1379.472

Syrup. [α]_D +4 (c, 1.0 in CHCl₃).

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1990, **200**, 475 (α -Me pyr deriv, *cmr*)

**α -D-Galactopyranosyl-(1 \rightarrow 6)-
[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-man-
nose, 9CI**

C₁₈H₃₂O₁₆ 504.441

α -Pyranose-form

Me glycoside: [129939-88-4]

C₁₉H₃₄O₁₆ 518.468

Syrup + 1.5 H₂O. [α]_D +184 (c, 0.9 in H₂O).

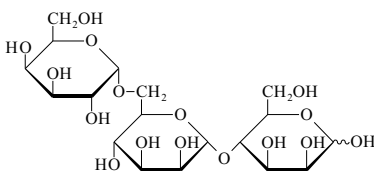
Me glycoside, 2,2',3',4',6'-pentabenzoyl, 2'',3'',4'',6''-tetrabenzoyl: [129891-64-1]

C₈₂H₈₀O₂₀ 1385.522

Syrup. [α]_D +10 (c, 0.7 in CHCl₃).

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1990, **200**, 475 (α -Me pyr deriv, *cmr*)

**α -D-Galactopyranosyl-(1 \rightarrow 6)-
 α -D-mannopyranosyl-(1 \rightarrow 4)-D-man-
nose, 9CI**



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isol. from seeds of *Cassia auriculata*.

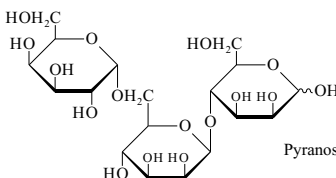
Syrup.

Srivastava, C.H. *et al.*, *CA*, 1986, **108**, 38235s (*isol*)

**α -D-Galactopyranosyl-(1 \rightarrow 6)-
 β -D-mannopyranosyl-(1 \rightarrow 4)-D-man-
nose**

Galactosylmannobiose

[50728-36-4]



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isol. from the partial acid hydrolysates of galactomannans from guar (*Cyamopsis tetragonoloba*), *Cassia occidentalis*, *Sesbania aegyptiaca* and *Ipomoea fistulosa*. Isol. from seed galactomannan of *Cassia javanica*, *Cassia marylandica* and *Cassia auriculata*. Cryst. + H₂O (EtOH). Mp 227-230°. [α]_D²⁵ +93 (c, 1.0 in H₂O). [α]_D²⁴ +31 (c, 0.4 in H₂O). [α]_D²⁵ +93.3 \rightarrow +98.4 (c, 1.2 in H₂O, 12 hr).

[58214-47-4]

Whistler, R.L. *et al.*, *J.A.C.S.*, 1952, **74**, 5140 (*isol*)

Gupta, D.S. *et al.*, *Indian J. Chem.*, 1975, **13**, 1152

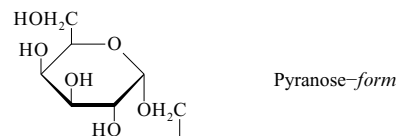
Gupta, O.C.D. *et al.*, *Carbohydr. Res.*, 1979, **73**, 145

McCleary, B.V. *et al.*, *Carbohydr. Res.*, 1982, **104**, 285 (*isol*)

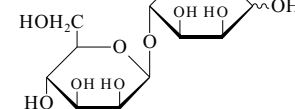
Singh, R.B. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1983, **57**, 1263 (*isol*)

Srivastava, C.H. *et al.*, *CA*, 1988, **108**, 38236t (*isol*)

**α -D-Galactopyranosyl-(1 \rightarrow 6)-
[β -D-mannopyranosyl-(1 \rightarrow 4)]-D-man-
nose, 9CI**



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isol. from partial acid hydrolysates of *Cassia tora*, lucerne (*Medicago sativa*) and from the galactomannan of *Leucaena leucocephala*; from enzymatic hydrolysates of guar (*Cyamopsis tetragonoloba*), carob (*Ceratonia siliqua*) galactomannans. Cryst. + 1½H₂O (MeOH).

Mp 182-184°. [α]_D +119 (c, 1.2 in H₂O).

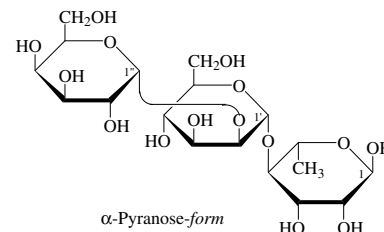
[82220-78-8]

Varshney, S.C. *et al.*, *J.C.S. Perkin 1*, 1976, 1621
Shimizu, K. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 949

McCleary, B.V. *et al.*, *Carbohydr. Res.*, 1983, **118**, 91; 1982, **104**, 285 (*occur, isol*)

**α -D-Galactopyranosyl-(1 \rightarrow 2)-
 α -D-mannopyranosyl-(1 \rightarrow 4)-L-rham-
nose**

α -D-Galactopyranosyl-(1 \rightarrow 2)- α -D-manno-
pyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, 9CI

 α -Pyranose-formC₁₈H₃₂O₁₅ 488.442

Constit. of the O-specific determinant of *Salmonella* serogroup B.

α -Pyranose-form

p-Nitrophenyl glycoside, 2,3-O-benzylidene, heptabenzyl: [74801-30-2]

Syrup. [α]_D²¹ +16 (c, 1.1 in CHCl₃).

p-Trifluoroacetamidophenyl glycoside: [74801-31-3]

Syrup. [α]_D²¹ +36 (c, 0.9 in CHCl₃).

8-Methoxycarbonyloctyl glycoside, 3',4',6'-tribenzyl, 3'',4''-dibenzoyl, 2,2'',3,6''-tetra-Ac: [91887-38-6]

C₇₁H₈₄O₂₃ 1305.431

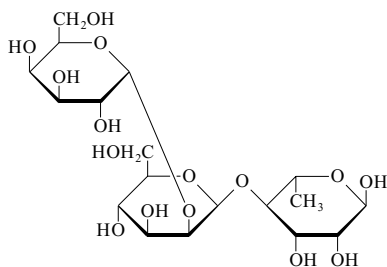
Syrup. [α]_D²⁰ +76.2 (c, 1.6 in CHCl₃).

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1980, **83**, 157 (α -Ph pyr deriv)

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1984, **38**, 71 (α -methoxycarbonyloctyl pyr tetra-Ac deriv, *pmr*)

α -D-Galactopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-L-rhamnose

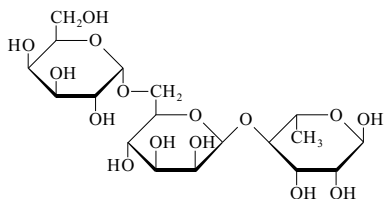
G-159

 α -D-Galactopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, 9CI $C_{18}H_{32}O_{15}$ 488.442 **α -Pyranose-form**

8-Methoxycarbonyloctyl glycoside: [90662-49-0]

 $C_{28}H_{50}O_{17}$ 658.693Syrup. $[\alpha]_D^{23} +0.2$ (c, 3.0 in H_2O).Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1983, **37**, 775 (α -methoxycarbonyloctyl pyr, cmr, pmr) **α -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-L-rhamnose**

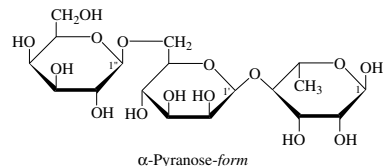
G-160

 α -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, 9CI $C_{18}H_{32}O_{15}$ 488.442 **α -Pyranose-form**

6''-Ac: [126713-00-6]

 $C_{20}H_{34}O_{16}$ 530.479Constit. of the O-specific polysaccharide of *Salmonella anatum*. Syrup.L'vov, V.L. *et al.*, *Bioorg. Khim.*, 1989, **15**, 1660; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 906 (isol, pmr, cmr) **β -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-L-rhamnose**

G-161

 β -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, 9CI α -Pyranose-form $C_{18}H_{32}O_{15}$ 488.442Constit. of the O-antigenic polysaccharide attached to the cell wall of *Salmonella* bacteria serogroup E₂. **α -Pyranose-form**

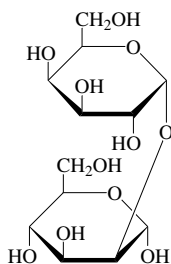
4-Trifluoroacetamidophenyl glycoside:

[87757-40-2]

 $C_{26}H_{36}F_3NO_{16}$ 675.563Amorph. solid. $[\alpha]_D$ -68 (c, 0.5 in H_2O).4-Trifluoroacetamidophenyl glycoside, 2,3-O-isopropylidene, 2',3',4'-tribenzyl, 2'',3'',4'',6''-tetra-benzoyl: [87735-65-7] Syrup. $[\alpha]_D$ -16 (c, 0.5 in $CHCl_3$).Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1983, **119**, 95 (α -Ph pyr derivs, cmr)**2-O- α -D-Galactopyranosyl-D-mannose, 9CI, 8CI**

G-162

[33530-07-3]

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Constit. of the lichen polysaccharide in *Cetraria islandica* (iceland moss), *Ramalina usnea* and in the seed galactomannan of *Cassia marylandica*. $[\alpha]_D^{25} +70$ (c, 0.4 in H_2O). $[\alpha]_D +76$ (H_2O). **α -Pyranose-form**

p-Nitrophenyl glycoside: [79580-50-0]

 $C_{18}H_{25}NO_{13}$ 463.394Syrup. $[\alpha]_D +129$ (c, 1.0 in H_2O).

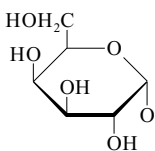
p-Nitrophenyl glycoside, 4,6-O-benzylidene, 3-benzoyl, tetra-Ac: [79580-53-3]

 $C_{40}H_{41}NO_{18}$ 823.76Cryst. (EtOH). Mp 112-114°. $[\alpha]_D +115$ (c, 3.0 in $CHCl_3$).Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1969, **47**, 3569Williams, T.J. *et al.*, *Arch. Biochem. Biophys.*, 1981, **209**, 555Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1984, **128**, 119**6-O- α -D-Galactopyranosyl-D-mannose, 9CI, 8CI**

G-163

Epimelibiase

[17296-19-4]



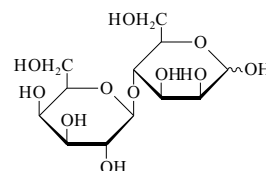
Pyranose-form

 $C_{12}H_{22}O_{11}$ 342.299Repeating unit in plant galactomannans. Isol. from partial acid hydrolysates of lucerne (*Medicago sativa*), fenugreek (*Trigonella foenum-graecum*), Palmyra palm nut (*Borassus flabellifer*), spruce-wood, seeds of *Anthyllis vulneraria*, *Sesbania aegyptiaca* and from the enzymic hydrolysate of guaran (*Cyamopsis tetragonoloba*). Cryst. (EtOH aq.). Mp 201-202°. $[\alpha]_D^{23} +120$ (c, 1.0 in H_2O). $[\alpha]_D^{30} +124$ (H_2O).Whistler, R.L. *et al.*, *J.A.C.S.*, 1951, **73**, 4189; 1952, **74**, 3795 (isol)Jones, J.K.N. *et al.*, *J.C.S.*, 1954, 295 (synth)Courtois, J.E. *et al.*, *Bull. Soc. Chim. Biol.*, 1957, **39**, 715 (isol)Meier, H. *et al.*, *Acta Chem. Scand.*, 1960, **14**, 749 (isol)Mukherjee, A.K. *et al.*, *Can. J. Chem.*, 1961, **39**, 1408 (isol)Somme, R. *et al.*, *Acta Chem. Scand.*, 1967, **21**, 685 (isol)Helferich, B. *et al.*, *Annalen*, 1974, 1514 (synth)Voelter, W. *et al.*, *Tet. Lett.*, 1974, 3597 (synth)Bhattacharyya, S.B. *et al.*, *Phytochemistry*, 1983, **22**, 161 (isol)**4-O- β -D-Galactopyranosyl-D-mannose, 9CI**

G-164

Epilactose

[50468-56-9]



Pyranose-form

 $C_{12}H_{22}O_{11}$ 342.299Isolated from the acid hydrolysate of a polysaccharide from the seeds of *Caisas grandis*. $[\alpha]_D^{30} +16.1$ (c, 0.25 in H_2O). $[\alpha]_D^{23} +26.5$ (c, 1.0 in H_2O) (3h). $[\alpha]_D +30$ (H_2O). **α -Pyranose-form**

Monohydrate. Mp 150-160°.

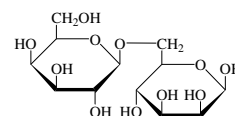
Me glycoside: Methyl 4-O- β -D-galactopyranosyl- α -D-mannopyranoside $C_{13}H_{24}O_{11}$ 356.326Mp 201°. $[\alpha]_D +66$ (H_2O). **β -Pyranose-form**

Mp 196-197°.

Haskins, W.T. *et al.*, *J.A.C.S.*, 1942, **64**, 1852 (synth)Voelter, W. *et al.*, *Coll. Czech. Chem. Comm.*, 1973, **38**, 2054 (cmr)Bose, S. *et al.*, *Indian J. Chem., Sect. B*, 1978, **16**, 966 (isol, struct)Kovac, P. *et al.*, *Chem. Zvesti*, 1979, **33**, 365 (synth)**6-O- β -D-Galactopyranosyl-D-mannose, 8CI**

G-165

[34097-00-2]

 β -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Constit. of the cell-wall lipopolysaccharide of *Salmonella newington*. $[\alpha]_D +6$ (c, 1.0 in H_2O). $[\alpha]_D +9.3$ (c, 3.3 in H_2O).

Pyranose-form

Benzyl glycoside: Benzyl 6-O-β-D-galactopyranosyl-D-mannopyranoside
C₁₉H₂₈O₁₁ 432.424
[α]_D²⁰ +48 (c, 0.9 in H₂O).

β-Pyranose-form [33428-65-8]

Cryst. (MeOH/EtOH). Mp 123-128° (softens at 112°). [α]_D²⁰ +7 → +9.3 (equilib.) (c, 3.3 in H₂O).

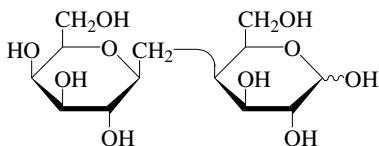
Octa-Ac: 1,2,3,4-Tetra-O-acetyl-6-O-(2,3,4,6-tetra-O-acetyl-β-D-galactopyranosyl)-β-D-mannopyranose
[33585-14-7]
C₂₈H₃₈O₁₉ 678.597
Prisms (MeOH). Mp 162-163°. [α]_D²⁰ -18 (c, 3.3 in CHCl₃).

Lonngren, J. et al., *Acta Chem. Scand.*, 1971, **25**, 1155 (*synth*)

Jeanloz, R.W. et al., *Biochemistry*, 1971, **10**, 1803 (*synth*)

β-D-Galactopyranosylmethyl- (1→4)-4-deoxy-D-galactose G-166

4-C-(2,6-Anhydro-1-deoxy-D-glycero-L-manno-heptitol-1-yl)-4-deoxy-D-galactose



C₁₃H₂₄O₁₀ 340.327

The entry name used here is not strictly authentic but is simpler than the IUPAC name.

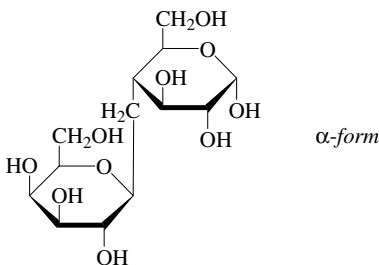
Octa-Ac:

C₂₉H₄₀O₁₈ 676.624
[α]_D²⁰ +53.5 (c, 2.2 in EtOAc). Inseparable 1:1 mixt. of anomers.

Preuss, R. et al., *J. Carbohydr. Chem.*, 1991, **10**, 887-900 (*octa-Ac, synth, pmr*)

β-D-Galactopyranosylmethyl- (1→4)-4-deoxy-D-glucose G-167

4-C-(2,6-Anhydro-7-deoxy-L-glycero-L-galacto-heptitol-7-yl)-4-deoxy-α-D-glucose. C-Lactose
[175656-65-2]



C₁₃H₂₄O₁₀ 340.327

The entry name used here is not strictly authentic but is simpler than the IUPAC name. Powder. [α]_D²⁰ +33.5 (c, 1 in MeOH). Mixt. of anomers α:β 7:1.

Octa-Ac: [164323-37-9]

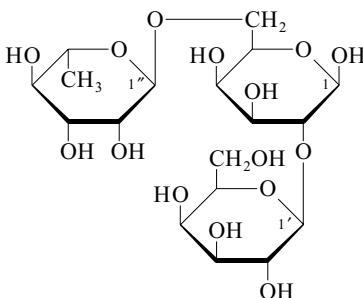
C₂₉H₄₀O₁₈ 676.624
Syrup. Mixt. of anomers α:β 1:2.

[164215-23-0, 164323-35-7]

Dietrich, H. et al., *Annalen*, 1994, 975 (*synth, pmr, octa-Ac*)
Espinosa, J.F. et al., *Angew. Chem., Int. Ed.*, 1996, **35**, 303

β-D-Galactopyranosyl-(1→2)-[α-L-rhamnopyranosyl-(1→6)]-D-galactose G-168

β-D-Galactopyranosyl-(1→2)-[6-deoxy-α-L-mannopyranosyl-(1→6)]-D-galactose



C₁₈H₃₂O₁₅ 488.442

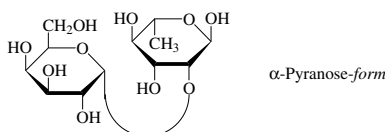
β-Pyranose-form

Benzyl glycoside, 2',3,3',4,4',6'-hexabenzyl, 2'',3'',4''-tri-Ac: [64020-97-9]
C₇₃H₈₀O₁₈ 1245.424
Cryst. Mp 52°. [α]_D²⁰ -34.1 (c, 1.0 in CHCl₃).

Liptak, A. et al., *Tet. Lett.*, 1977, 921 (*β-benzyl pyr tri-Ac deriv*)

2-O-α-D-Galactopyranosyl-L-rhamnose G-169

[67508-21-8]



C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Isol. from the gum of *Rhizophora* sp. Constit. in the repeating unit of the O-antigen from *Pseudomonas cepacia* (strain IMV 598/2).
[α]_D³⁰ +105 (+94) (H₂O).

α-Pyranose-form [94061-76-4]

Benzyl glycoside, 3,4-dibenzoyl, tetrabenzyl: [105285-87-8]
C₆₁H₆₀O₁₂ 985.138
[α]_D²⁰ +54 (c, 0.5 in CHCl₃).

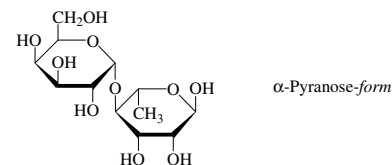
Sarkar, M. et al., *Indian J. Chem., Sect. B*, 1978, **16**, 369 (*isol*)

Lipkind, G.M. et al., *Bioorg. Khim.*, 1984, **10**, 1670; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1984, **10**, 912 (*conform, pmr*)

Norberg, T. et al., *Carbohydr. Res.*, 1986, **152**, 301 (*synth*)

4-O-α-D-Galactopyranosyl-L-rhamnose G-170

6-Deoxy-4-O-α-D-galactopyranosyl-L-mannose



C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Constit. of the repeating unit of the O-antigen of *E. coli* 075 and of the type specific antigen of *Streptococcus pneumoniae* type 27.
Mp 138°. [α]_D²⁰ +116.9 (c, 0.63 in H₂O).

α-Pyranose-form [74608-71-2]

Hepta-Ac: [79733-82-7]

C₂₆H₃₆O₁₇ 620.56
[α]_D²⁰ +57.7 (c, 1.28 in CHCl₃).

Benzyl glycoside, 2,3-O-benzylidene, tetrabenzyl: [74545-17-8]

C₅₄H₅₆O₁₀ 865.03
Cryst. (CHCl₃/hexane). Mp 88-89°. [α]_D²⁰ +15.5 (c, 2 in CHCl₃).

Benzyl glycoside, 2'-benzyl:

C₂₆H₃₄O₁₀ 506.549
[α]_D²⁰ +37.5 (c, 1.26 in MeOH).

Benzyl glycoside, 2',3,3',4',6'-pentabenzyl:
[74545-18-9]

C₅₄H₅₈O₁₀ 867.046
Syrup. [α]_D²⁰ +3 (c, 1 in CHCl₃).

[74608-72-3]

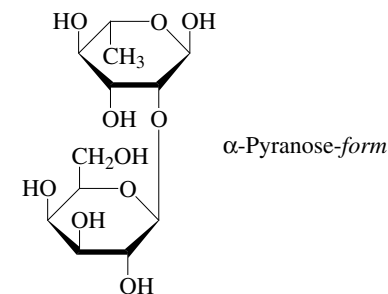
Erbing, C. et al., *Carbohydr. Res.*, 1978, **60**, 400 (*occur*)

Fugedi, P. et al., *Carbohydr. Res.*, 1980, **80**, 233 (*synth*)

Paulsen, H. et al., *Chem. Ber.*, 1981, **114**, 3079 (*synth*)

2-O-β-D-Galactopyranosyl-L-rhamnose G-171

[13295-87-9]



C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Constit. of the repeating unit of the capsular antigen of *Klebsiella* K53. Syrup. [α]_D²⁴ -7.5 (c, 2 in H₂O).

α-Pyranose-form

Benzyl glycoside, hexa-Ac: [55018-85-4]

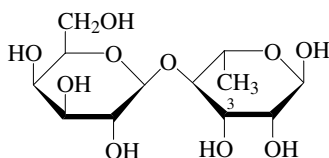
C₃₁H₄₀O₁₆ 668.647
Cryst. (Et₂O). Mp 154-155°. [α]_D²⁴ -54.2 (c, 1 in CHCl₃).

King, R.R. *et al.*, *Can. J. Chem.*, 1974, **52**, 3913 (synth)
 Colson, P. *et al.*, *Carbohydr. Res.*, 1976, **47**, 1 (cmr)
 Dutton, G.G.S. *et al.*, *Carbohydr. Res.*, 1980, **87**, 107
 Lipkind, G.M. *et al.*, *Bioorg. Khim.*, 1984, **10**, 1670; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1984, **10**, 912 (conformn)

4-O-β-D-Galactopyranosyl-L-rhamnose

G-172

6-Deoxy-4-O-β-D-galactopyranosyl-L-mannose
 [52482-68-5]



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Constit. of the repeating unit of the capsular antigen of *Klebsiella* K47, K83 and in the type specific antigen of *Streptococcus pneumoniae* type 23F.
 [α]_D²⁴ -4.2 (c, 2 in EtOH).

α-Pyranose-form

Hepta-Ac: [55057-36-8]

C₂₆H₃₆O₁₇ 620.56
 [α]_D²³ -55 (c, 2 in CHCl₃).

Me glycoside: [55018-75-2]

C₁₃H₂₄O₁₀ 340.327
 [α]_D²³ -49 (c, 1.6 in MeOH).

Me glycoside, 2,3-O-isopropylidene,

tetra-Ac: [55018-72-9]

C₂₄H₃₆O₁₄ 548.54

Cryst. (EtOH). Mp 192-193°. [α]_D²³ -24.4 (c, 2.05 in CHCl₃).

Benzyl glycoside: [52482-73-2]

C₁₉H₂₈O₁₀ 416.424

Amorph. [α]_D²⁴ -61.7 (c, 1 in Me₂CO).

Benzyl glycoside, 2',3',4',6'-tetra-Ac:

C₂₇H₃₆O₁₄ 584.573

Powder. [α]_D²⁴ -38.2 (c, 1 in CHCl₃).

Benzyl glycoside, 2,3-O-isopropylidene,

2',3',4',6'-tetra-Ac:

C₃₀H₄₀O₁₄ 624.638

Cryst. (Et₂O). Mp 132-134°. [α]_D²⁴ -18.7 (c, 1 in CHCl₃).

3'-Me: 4-O-(3-O-Methyl-β-D-galactopyranosyl)-L-rhamnose

[35949-92-9]

C₁₃H₂₄O₁₀ 340.327

Constit. of the mucilaginous polysaccharide from the bark of *Ulmus fulva* (slippery elm).

[α]_D²³ +8 (c, 0.7 in H₂O).

Beveridge, R.J. *et al.*, *Carbohydr. Res.*, 1971, **19**, 107 (3-Me)

Lindberg, B. *et al.*, *Carbohydr. Res.*, 1973, **27**, 373; 1976, **48**, 81 (occur)

Dutton, G.G.S. *et al.*, *Can. J. Chem.*, 1974, **52**, 3844 (synth)

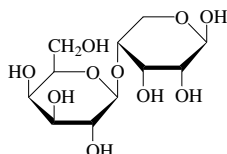
King, R.R. *et al.*, *Carbohydr. Res.*, 1974, **32**, 239 (benzyl gly)

Colson, P. *et al.*, *Carbohydr. Res.*, 1976, **47**, 1 (cmr)

Debrun, A. *et al.*, *Carbohydr. Res.*, 1976, **47**, 158 (pmr)

4-O-β-D-Galactopyranosyl-D-ribose

G-173



β-Pyranose-form

C₁₁H₂₀O₁₀ 312.273

β-Pyranose-form

2,3-Anhydro, benzyl glycoside: Benzyl 2,3-anhydro-4-O-β-D-galactopyranosyl-β-D-ribose, 9CI

C₁₈H₂₄O₉ 384.383

Amorph. powder. [α]_D²² -8 (c, 0.5 in H₂O).

2,3-Anhydro, benzyl glycoside, 2',3',4',6'-tetrabenzoyl: Benzyl 2,3-anhydro-4-O-(2,3,4,6-tetra-O-benzoyl-β-D-galactopyranosyl)-β-D-ribose, 9CI

[67412-72-0]

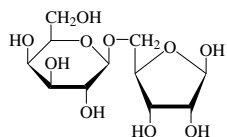
C₄₆H₄₀O₁₃ 800.814
 Mp 152-153°. [α]_D²² +89 (c, 0.5 in CHCl₃).

Erbing, B. *et al.*, *Acta Chem. Scand., Ser. B*, 1978, **32**, 308

Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1979, **33**, 116 (synth, tetrabenzoyl)

5-O-β-D-Galactopyranosyl-D-ribose

G-174



β-Furanose-form

C₁₁H₂₀O₁₀ 312.273

β-Furanose-form

Hepta-Ac: [78416-61-2]

C₂₅H₃₄O₁₇ 606.533

Mp 121-122°. [α]_D²⁰ -26 (c, 0.5 in CHCl₃).

Benzyl glycoside, 2,3-O-isopropylidene:

Benzyl 5-O-β-D-galactopyranosyl-2,3-O-isopropylidene-β-D-ribofuranoside, 9CI

[78416-59-8]

C₂₁H₃₀O₁₀ 442.462

Needles (butanone). Mp 87-89°. [α]_D²⁰ -50 (c, 0.8 in MeOH).

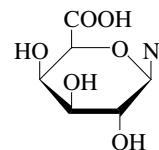
Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1966, **44**, 2083

Kraska, B. *et al.*, *Chem. Ber.*, 1981, **114**, 1636 (synth, deriv)

Galactopyranosyluronic acid azide

G-175

1-Deoxygalactopyranosyl azide uronic acid. (Galactopyranosyl azide)uronate



C₆H₉N₃O₆ 219.154

β-D-form

1-Azido-1-deoxy-β-D-galactopyranuronic acid

[362599-18-6]

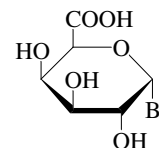
Solid. [α]_D²⁶ -31.9 (c, 0.8 in H₂O).

Ying, L. *et al.*, *Carbohydr. Res.*, 2003, **338**, 835-841 (β-D-form, synth, pmr, cmr)

Galactopyranosyluronic acid bromide

G-176

(Galactopyranosyl bromide)uronate. 1-Deoxygalactopyranosyl bromide uronic acid



C₆H₉BrO₆ 257.038

α-D-form

Tri-Ac, benzyl ester: Benzyl 2,3,4-tri-O-acetyl-1-bromo-1-deoxy-α-D-galactopyranuronate. Benzyl (2,3,4-tri-O-acetyl-α-D-galactopyranosyl bromide)uronate

[141990-01-4]

C₁₉H₂₁BrO₉ 473.274

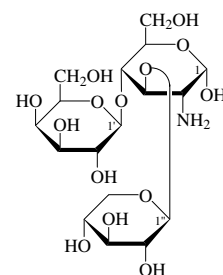
Foam. [α]_D²² +179.2 (c, 0.55 in CHCl₃).

Vogel, C. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 287-303 (D-form, tri-Ac benzyl ester, synth, pmr, cmr)

β-D-Galactopyranosyl-(1→4)-[β-D-xylopyranosyl-(1→3)]-2-amino-2-deoxy-D-glucose, 9CI

G-177

3-O-β-D-Xylopyranosyllactosamine



α-Pyranose-form

C₁₇H₃₁NO₁₄ 473.43

N-Ac: [73715-17-0]

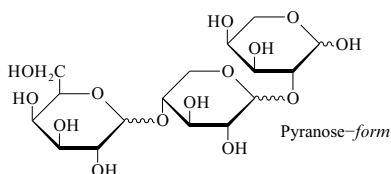
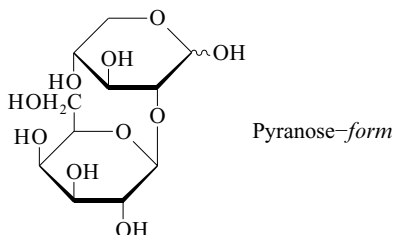
C₁₉H₃₃NO₁₅ 515.467

Powder + H₂O (MeOH/Me₂CO). [α]_D²² +23.8 (c, 0.2 in H₂O).

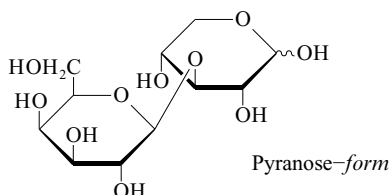
α-Pyranose-form

Benzyl glycoside, 6-benzoyl, octa-Ac:

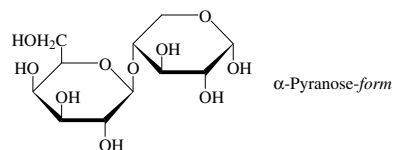
[73706-06-6]

C₄₇H₅₇NO₂₃ 1003.96Needles (MeOH). Mp 226-227.5°. [α]_D¹⁹ +14.1 (c, 0.94 in CHCl₃).Oguri, S. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 35 (N-Ac, α-benzyl pyr octa-Ac deriv, pmr)**D-Galactopyranosyl-(1→4)-D-xylopyranosyl-(1→2)-L-arabinose** **G-178**C₁₆H₂₈O₁₄ 444.389Isol. from the roots of perennial ryegrass (*Lolium perenne*).[α]_D¹⁸ +20 (c, 0.2 in H₂O).Aspinall, G.O. *et al.*, *J.C.S.*, 1963, 1721 (*isol*)**2-O-β-D-Galactopyranosyl-D-xylose** **G-179**C₁₁H₂₀O₁₀ 312.273Isol. from the partial acid hydrolysate of *Tamarindus* amyloid and gum tragacanth, the exudate from various species of *Astragalus*.[α]_D +30 (H₂O).Kooiman, P. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1961, **80**, 849Aspinall, G.O. *et al.*, *J.C.S.*, 1963, 1702 (*isol*)Aragón, J.J. *et al.*, *Carbohydr. Res.*, 1996, **290**, 209-216 (*synth*, pmr, cmr)**3-O-β-D-Galactopyranosyl-D-xylose, 8CI** **G-180**

[14087-18-4]

C₁₁H₂₀O₁₀ 312.273Cryst. (MeOH). Mp 194-197°. [α]_D²⁰ +12 (c, 0.7 in H₂O) (equilb.).Lindberg, B. *et al.*, *Carbohydr. Res.*, 1966, **2**, 413Aragón, J.J. *et al.*, *Carbohydr. Res.*, 1996, **290**, 209-216 (*synth*, pmr, cmr)**4-O-β-D-Galactopyranosyl-D-xylose, 9CI**

[14087-31-1]

C₁₁H₂₀O₁₀ 312.273

Isol. from partial acid hydrolysate of corn-hull hemicellulose and from bean cell wall.

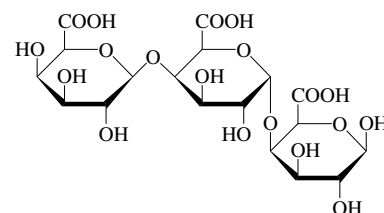
Constit. of the oligosaccharides from the linkage region of chondroitin 4-sulfate. Mp 201-211°. [α]_D²² +18 (c, 0.5 in H₂O) (+15).**α-Pyranose-form**

Benzyl glycoside: Benzyl 4-O-β-D-galactopyranosyl-α-D-xylopyranoside

C₁₈H₂₆O₁₀ 402.397Solid. [α]_D²⁰ +63.7 (c, 1.0 in H₂O).**β-Pyranose-form**

Benzyl glycoside: Benzyl 4-O-β-D-galactopyranosyl-β-D-xylopyranoside

[67412-74-2]

C₁₈H₂₆O₁₀ 402.397Mp 40-42°. [α]_D²² -38 (c, 0.5 in H₂O).Montgomery, R. *et al.*, *J.A.C.S.*, 1957, **79**, 698 (*isol*)Aspinall, G.O. *et al.*, *Adv. Carbohydr. Chem.*, 1959, **14**, 429Lindberg, B. *et al.*, *Carbohydr. Res.*, 1966, **2**, 413Erbing, B. *et al.*, *Acta Chem. Scand., Ser. B*, 1978, **32**, 308Gunnarsson, A. *et al.*, *Carbohydr. Res.*, 1984, **133**, 75Aragón, J.J. *et al.*, *Carbohydr. Res.*, 1996, **290**, 209-216 (*synth*, pmr, cmr)Fessner, W.D. *et al.*, *Can. J. Chem.*, 2002, **80**, 739-742 (*synth*)**β-D-Galactopyranuronosyl-(1→4)-α-D-galactopyranuronosyl-(1→4)-D-galactouronic acid** **G-182**C₁₈H₂₆O₁₉ 546.392**Pyranose-form**

Syrup.

β-Pyranose-form

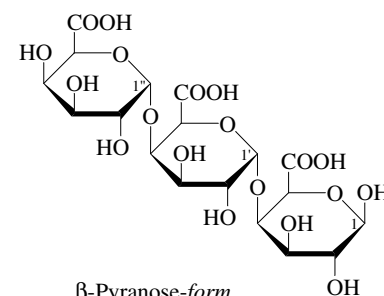
tert-Butyldiphenylsilyl glycoside,

2,2',2'',3,3',3'',4''-heptabenzyl: [129729-28-8]

C₈₃H₈₆O₁₉Si 1415.666Syrup. [α]_D²⁴ +75 (c, 1.1 in MeOH).**G-181**

tert-Butyldiphenylsilyl glycoside,

2,2',2'',3,3',3'',4''-heptabenzyl, tri-Me ester: [129729-29-9]

C₈₆H₉₂O₁₉Si 1457.747Syrup. [α]_D²⁵ +73 (c, 0.6 in CHCl₃).Nakahara, Y. *et al.*, *Carbohydr. Res.*, 1990, **200**, 363 (β-silyl pyr heptabenzyl derivs, pmr, cmr)Japan. Pat., 1991, 03 90 094; CA, **115**, 92833t (β-silyl pyr heptabenzyl derivs)**α-D-Galactopyranuronosyl-(1→4)-α-D-galactopyranuronosyl-(1→4)-D-galacturonic acid, 9CI, 8CI** **G-183**C₁₈H₂₆O₁₉ 546.392Isol. from enzymic hydrolysates (yeast or mould pectinases) of pectic acid. Also from partial acid hydrol. of *Medicago sativa* (lucerne) pectin. Possible plant wound hormone.Mp 139-145° dec. [α]_D²⁷ +185 (c, 0.12 in H₂O).**Pyranose-form**

Ca salt:

Cryst. + 1 or 7H₂O. Mp 145-155° (monohydrate). [α]_D +154 (H₂O) (heptahydrate). Turns deep pink on melting.**β-Pyranose-form**

tert-Butyldiphenylsilyl glycoside,

2,2',2'',3,3',3'',4''-heptabenzyl: [129729-25-5]

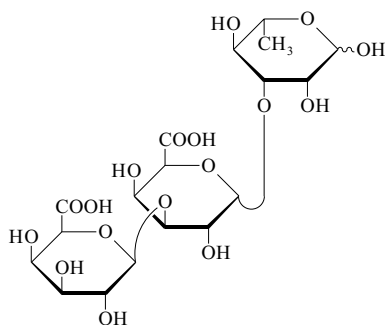
Syrup + H₂O. [α]_D²⁰ +93 (c, 0.3 in H₂O).

tert-Butyldiphenylsilyl glycoside, 2,2',2'',3,3',3'',4''-heptabenzyl, tri-Me ester: [129729-26-6]

Syrup + H₂O. [α]_D²⁵ +66 (c, 0.8 in CHCl₃).Phaff, H.J. *et al.*, *Arch. Biochem. Biophys.*, 1954, **51**, 114; 1952, **36**, 231McCready, R.M. *et al.*, *J.A.C.S.*, 1954, **76**, 3035Aspinall, G.O. *et al.*, *J.C.S.*, 1961, 4215 (*isol*)Jones, J.K.N. *et al.*, *J.C.S.*, 1964, 1361Banerji, N. *et al.*, *Cellul. Chem. Technol.*, 1968, **2**, 655; CA, **71**, 82805h (*isol*)Nakahara, Y. *et al.*, *Carbohydr. Res.*, 1990, **200**, 1363 (*deriv*, *synth*, pmr, cmr)

**β-D-Galactopyranuronosyl-
(1 → 3)-β-D-galactopyranuronosyl-
(1 → 3)-L-rhamnose**

G-184



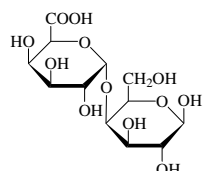
C₁₈H₂₈O₁₇ 516.409

Isol. from the hydrolysate of the gum of *Rhizophora mangle*.
[α]_D³⁰ +120 (c, 0.1 in H₂O).

Sarkar, M. *et al.*, *Indian J. Chem.*, 1973, **11**,
1129 (*isol*)

4-O-α-D-Galactopyranuronosyl-D-galactose, 9CI

G-185



β-Pyranose-form

C₁₂H₂₀O₁₂ 356.283

Constit. of *Sterculia urens* (karaya gum).

β-Pyranose-form

Me glycoside, 6'-Me ester, hexa-Ac:

Cryst. (EtOH). Mp 228.7-229.4°. [α]_D^{22.5}
+95.9 (c, 0.73 in CHCl₃).

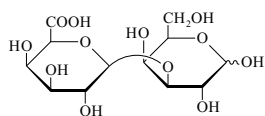
Bajpai, K.S. *et al.*, *Indian J. Chem.*, 1970, **8**, 48
(*isol*)

Fujiwara, T. *et al.*, *Carbohydr. Res.*, 1982, **101**,
305

3-O-β-D-Galactopyranuronosyl-D-galactose, 9CI

G-186

[7268-75-9]



Pyranose-form

C₁₂H₂₀O₁₂ 356.283

Isol. from the partial acid hydrolysate of *Rhizophora mangle* gum and from *Spondias dulcis* (ambarella) gum (Anacardiaceae).
[α]_D +56.2 (H₂O).

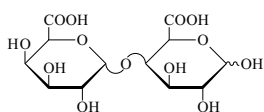
Parikh, V.M. *et al.*, *Can. J. Chem.*, 1966, **44**, 327
Sarkar, M. *et al.*, *Indian J. Chem.*, 1974, **11**,
1129 (*isol*)

Roy, A. *et al.*, *Carbohydr. Res.*, 1975, **41**, 219
Basu, S. *et al.*, *Carbohydr. Res.*, 1981, **94**, 215
(*isol*)

4-O-α-D-Galactopyranuronosyl-D-galacturonic acid

G-187

[5894-59-7]



Pyranose-form

C₁₂H₁₈O₁₃ 370.266

Prepd. from pectin by enzymic hydrol. using yeast or mould pectinases or by acid hydrol. Sole or major repeating unit of the pectin class of polysaccharides.

Ca salt:

Cryst. + 5H₂O. Mp 130° (part. melt).
[α]_D +119 (H₂O). Becomes dark pink at 130-140°.

Pyranose-form

Me glycoside, 6,6'-di-Me ester:

C₁₅H₂₄O₁₃ 412.347

Mp 120-122°. [α]_D +162 (H₂O).

Phaff, H.J. *et al.*, *Arch. Biochem. Biophys.*, 1952,
36, 231; 1954, **51**, 102

Derungs, R. *et al.*, *Helv. Chim. Acta*, 1954, **37**,
657 (*isol*)

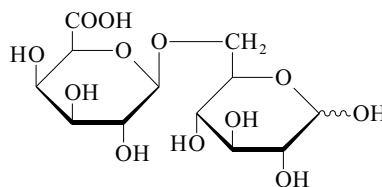
Gee, M. *et al.*, *J.O.C.*, 1958, **23**, 620 (*Me gly*)

Aspinall, G.O. *et al.*, *J.C.S.*, 1961, 4215 (*isol*)

Jones, J.K.N. *et al.*, *J.C.S.*, 1964, 1361

6-O-β-D-Galactopyranuronosyl-D-glucose

G-188



C₁₂H₂₀O₁₂ 356.283

β-Pyranose-form

Hepta-Ac, Me ester: [79291-98-8]

C₂₇H₃₆O₁₉ 664.57

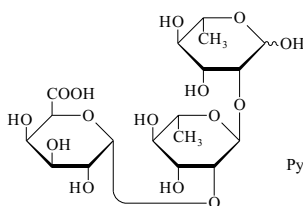
[α]_D²³ +14 (c, 2.7 in CHCl₃).

Aspinall, G.O. *et al.*, *J.C.S.*, 1960, 2503 (*isol*)

Betaneli, V.I. *et al.*, *Carbohydr. Res.*, 1981, **94**,
C1 (*synth*)

**α-D-Galactopyranuronosyl-
(1 → 2)-α-L-rhamnopyranosyl-(1 → 2)-
L-rhamnose**

G-189



Pyranose-form

C₁₈H₃₀O₁₅ 486.426

Isol. from the partial acid hydrolysate of Panniculatan, a mucilaginous polysaccharide obt. from the inner bark of *Panniculata dryangia*.

[α]_D²⁰ +80.3 (c, 0.3 in H₂O).

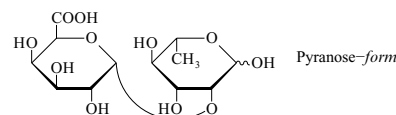
[65562-06-3]

Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1977,
25, 2910 (*isol*)

2-O-α-D-Galactopyranuronosyl-L-rhamnose

G-190

Aldobiouronic acid B. 6-Deoxy-2-O-α-D-galactopyranuronosyl-L-mannose, 9CI
[6118-79-2]



Pyranose-form

C₁₂H₂₀O₁₁ 340.283

Reducing disaccharide. Widespread as the aldobiouronic acid unit of plant polysaccharides, particularly of plant mucilages and gums. e.g. *isol.* from or detected in partial acid hydrolysates of *Linum usitatissimum* (flax), *Ulmus fulva* (slippery elm), *Plantago* seed, *Hibiscus esculentus* (okra), *Salvia aegyptica* mucilages and others. Amorph. [α]_D²⁸ +50.8 (H₂O). [α]_D²⁰ +96.1 (c, 0.4 in H₂O). [α]_D²⁰ +105.5 (c, 1.06 in H₂O).

Ca salt: [α]_D +92 (H₂O).

Ba salt: [69842-92-8]

Powder. [α]_D²⁰ +75.3 (c, 0.24 in H₂O).

Pyranose-form [16749-72-7]

Me glycoside, penta-Me, Me ester:

C₁₉H₃₄O₁₁ 438.471

Mp 93-94°. [α]_D +129 (CHCl₃).

[65942-34-9]

Bailey, R.W. *et al.*, *Oligosaccharides*, Pergamon Press, 1965, 132 (*occur*)

Bajpai, K.S. *et al.*, *Indian J. Chem.*, 1969, **7**, 780
(*Me deriv*)

Sarkar, M. *et al.*, *Indian J. Chem.*, 1973, **11**,
1129 (*isol*)

Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1977,
25, 2910; 1979, **27**, 1651 (*isol*)

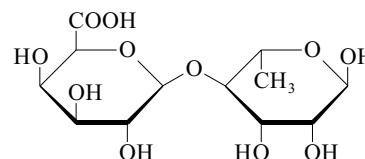
Tomoda, M. *et al.*, *Carbohydr. Res.*, 1986, **151**,
29; 1989, **190**, 323

Shigeru, E. *et al.*, *Carbohydr. Res.*, 1986, **158**,
205

4-O-β-D-Galactopyranuronosyl-L-rhamnose

G-191

6-Deoxy-4-O-β-D-galactopyranuronosyl-L-mannose



C₁₂H₂₀O₁₁ 340.283

α-Pyranose-form

Me glycoside, 2,3-O-isopropylidene, tri-Ac, Me ester: [79292-00-5]

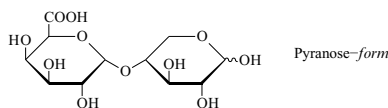
C₂₃H₃₄O₁₄ 534.513

Powder. [α]_D²³ -8.9 (c, 2.5 in CHCl₃).

Betaneli, V.I. *et al.*, *Carbohydr. Res.*, 1981, **94**,
C1

4-O- α -D-Galactopyranuronosyl-D-xylose, 8CI

Aldobiouronic acid D₂
[10347-13-4]



$C_{11}H_{18}O_{11}$ 326.257

Isol. from the partial acid hydrolysate of maritime pine (*Pinus pinaster*) hemicellulose.

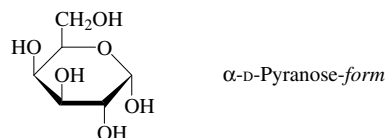
$[\alpha]_D^{20} +67$ (c, 0.37 in H_2O).

Roudier, A.J. *et al.*, *Bull. Soc. Chim. Fr.*, 1960, **28**, 2074 (isol)

Kawabata, Y. *et al.*, *Biosci., Biotechnol., Biochem.*, 1994, **58**, 1463 (synth)

Galactose, 9CI, 8CI, USAN

Cerebrose
[26566-61-0]



$C_6H_{12}O_6$ 180.157

An aq. soln. at 31° contains 30% α -pyr, 64% β -pyr, 2.5% α -fur, 3.5% β -fur and 0.02% aldehyde. Active ingredient of LevovistTM, used in echo-enhancement in sonographic Doppler-B-mode imaging. Ultrasound contrast medium.

D-form [59-23-4]

The free sugar has been detected in ivy berries, some fruits and heartwood of *Chamaecyparis lawsonia*. It is a constit. of the oligosaccharides Lactose, L-13, 6-O- α -D-Galactopyranosyl-D-glucose, G-145 and Raffinose, R-1, the glycosides Idacine and Myrtilin and the cerebroside and gangliosides of brain and nerve tissue. It is one of the few sugars, other than D-Glucose and 2-Deoxy-D-ribose, found to any great extent in the animal kingdom, a common constit. of glycoproteins and the galactans of beef lung, frog spawn and snail (*Helix pomatia*) albumin gland. Polysaccharides agar, gum arabic, mesquite gum, western larch gum and many plant mucilages and gums contain galactose. Can be prepd. by acid hydrol. of lactose, being isol. after the glucose has been removed by yeast fermentation. Inexpensive starting material for synthesis.

Mp 118-120° (monohydrate). pK_{a1} 12.35 (25°). Sweet taste, sweetness = 0.33 \times sucrose.

► Exp. reprod. and teratogenic effects (large doses). LW5490000

Phenylhydrazones: [18841-76-4]

Mp 159-160°. $[\alpha]_D^{20} -21.6$ (H_2O).

Di-Et dithioacetal: See Galactose diethyl dithioacetal, G-195

1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-D-galactose

[13996-89-9]

$C_{14}H_{20}O_{10}$ 348.306

$[\alpha]_D^{20} +63.9$ (c, 1 in $CHCl_3$).

6-Tosyl: 6-O-Tosyl-D-galactose

$C_{13}H_{18}O_8S$ 334.346

Mp 130°. $[\alpha]_D^{18} +31$ (c, 1.0 in Py).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-D-galactose

[56543-08-9]

$C_9H_{16}O_6$ 220.222

Cryst. (EtOAc). Mp 100-102°. $[\alpha]_D^{22} +86$ (c, 0.5 in MeOH).

4,6-O-Isopropylidene: 4,6-O-Isopropylidene-D-galactose

[56543-09-0]

$C_9H_{16}O_6$ 220.222

Mp 141-143°. $[\alpha]_D^{22} +153$ (c, 0.5 in MeOH).

5,6-O-Isopropylidene: 5,6-O-Isopropylidene-D-galactose

[56543-07-8]

$C_9H_{16}O_6$ 220.222

Mp 83-84°. $[\alpha]_D^{22} -23$ (c, 2 in MeOH).

2,3:4,6-Di-O-isopropylidene: 2,3:4,6-Di-O-isopropylidene-D-galactopyranose

$C_{12}H_{20}O_6$ 260.286

$[\alpha]_D^{20} -10.7$ (c, 1.0 in $CHCl_3$).

2-Benzyl: 2-O-Benzyl-D-galactose

[53685-09-9]

$C_{13}H_{18}O_6$ 270.282

Mp 63-65° Mp 143-144° (dimorph.).

$[\alpha]_D^{25} +58.5 \rightarrow +61.5$ (44 h) (c, 10.2 in H_2O) (low-melting form). $[\alpha]_D^{20} +47.1 \rightarrow +64.4$ (44 h) (c, 0.8 in H_2O) (high-melting form).

2-Benzyl, 1,3,4,6-tetrakis(4-nitrobenzoyl):

Mp 205-206°. $[\alpha]_D^{20} +75.4$ (c, 0.8 in CH_2Cl_2).

2,3-Dibenzyl: 2,3-Di-O-benzyl-D-galactose

[53685-14-6]

$C_{20}H_{24}O_6$ 360.406

Mp 74-76°. $[\alpha]_D^{20} +5.3$ (c, 2 in $CHCl_3$).

2,3,6-Tribenzyl: 2,3,6-Tri-O-benzyl-D-galactose

[55697-59-1]

$C_{27}H_{30}O_6$ 450.53

Syrup. $[\alpha]_D^{25} +13.5$ (c, 2.7 in $CHCl_3$).

2,4,6-Tribenzyl: 2,4,6-Tri-O-benzyl-D-galactose

$C_{27}H_{30}O_6$ 450.53

Mp 123-124°. $[\alpha]_D^{22} +40.4 \rightarrow +37.6$ (24 h) (c, 1 in $CHCl_3$).

Dibenzyl dithioacetal, 4,5-O-isopropylidene: See Galactose dibenzyl dithioacetal, G-194

Phenylsazone: See Hexose phenylsazones, H-90

α -D-Pyranose-form [3646-73-9]

Mp 167°. $[\alpha]_D^{22} +150.7 \rightarrow +80.2$ (H_2O).

1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-

α -D-galactopyranose

$C_{14}H_{20}O_{10}$ 348.306

Mp 145-147°. $[\alpha]_D^{20} +145$ ($CHCl_3$).

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-

α -D-galactopyranose

[22554-70-7]

$C_{14}H_{20}O_{10}$ 348.306

Mp 143-146° (133°). $[\alpha]_D^{22} +135 \rightarrow +69.5$ (48 h) (c, 2 in EtOH aq.).

Penta-Ac: See 1,2,3,4,6-Penta-O-acetylgalactose, P-16

1,2-O-Isopropylidene: See 1,2-O-Isopropylidenegalactopyranose, I-65

4,6-O-Ethylidene: 4,6-O-Ethylidene- α -D-galactopyranose

[13224-97-0]

$C_8H_{14}O_6$ 206.195

Cryst. (EtOH). Mp 185°. $[\alpha]_D^{23} +122 \rightarrow +96$ (c, 2.0 in H_2O).

1,2:3,4-Di-O-cyclohexylidene, 6-tosyl:

1,2:3,4-Di-O-cyclohexylidene-6-O-tosyl- α -D-galactopyranose

[33159-46-5]

$C_{25}H_{34}O_8S$ 494.605

Mp 45-60°. $[\alpha]_D^{20} -43.2$ ($CHCl_3$).

4,6-O-Benzylidene: 4,6-O-Benzylidene- α -D-galactopyranose

[20771-09-9]

$C_{13}H_{16}O_6$ 268.266

Cryst. (butanone). Mp 192-194°. $[\alpha]_D^{20} +127.5 \rightarrow +96.9$ (6 h) (c, 0.5 in H_2O).

4,6-O-Benzylidene, 2,3-dibenzyl: 2,3-Di-O-benzyl-4,6-O-benzylidene- α -D-galactopyranose

$C_{27}H_{28}O_6$ 448.515

Needles (C_6H_6). Mp 153-155°. $[\alpha]_D^{20} +78.4$ (c, 0.5 in $CHCl_3$).

2,3,4-Tribenzyl: 2,3,4-Tri-O-benzyl- α -D-galactopyranose

[42864-00-6]

$C_{27}H_{30}O_6$ 450.53

Mp 70-71°. $[\alpha]_D^{20} +72.5$ (c, 0.8 in Et_2O).

2-Benzyl, 1,3,4,6-tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-O-benzyl- α -D-galactopyranose

[53872-77-8]

$C_{21}H_{26}O_{10}$ 438.43

$[\alpha]_D^{25} +87$ (c, 0.83 in $CHCl_3$).

Me glycoside: See Methyl α -D-galactopyranoside, M-185

Ph glycoside: See Phenyl galactopyranoside, P-56

Allyl glycoside: See Allyl galactopyranoside, A-93

β -D-Pyranose-form [7296-64-2]

Mp 143-145°. $[\alpha]_D^{22} +52.8 \rightarrow +80.2$ (H_2O).

1-Ac: 1-O-Acetyl- β -D-galactopyranose

$C_8H_{14}O_7$ 222.194

Cryst. (MeOH/EtOAc). Mp 186-191° (partial dec.). $[\alpha]_D^{30} +15.6$ (c, 1.5 in MeOH).

1,2,6-Tri-Ac: 1,2,6-Tri-O-acetyl- β -D-galactopyranose

[55639-96-8]

$C_{12}H_{18}O_9$ 306.269

Mp 100-120°. $[\alpha]_D^{20} +40$ (c, 3.52 in $CHCl_3$).

1,2,3,6-Tetra-Ac: 1,2,3,6-Tetra-O-acetyl- β -D-galactopyranose

[20721-61-3]

$C_{14}H_{20}O_{10}$ 348.306

Mp 139-140°. $[\alpha]_D^{20} +36$ (c, 0.2 in $CHCl_3$).

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-galactopyranose

$C_{14}H_{20}O_{10}$ 348.306

Cryst. or syrup. Mp 112°. $[\alpha]_D^{20} +31.1 \rightarrow +79.9$ ($CHCl_3$).

Penta-Ac: See 1,2,3,4,6-Penta-*O*-acetylga-
lactose, P-16

2,3,4,6-Tetrabenzoyl, 1-Ac: 1-*O*-Acetyl-
2,3,4,6-tetra-*O*-benzoyl- β -*D*-galactopyra-
nose
[50820-75-2]
 $C_{36}H_{30}O_{11}$ 638.626
Syrup. $[\alpha]_D^{20} +62.3$ (c, 2.16 in $CHCl_3$).

2,6-Dibenzyl: 2,6-Di-*O*-benzyl- β -*D*-galac-
topyranose
 $C_{20}H_{24}O_6$ 360.406
Cryst. (CH_2Cl_2 /MeOH). Mp 142-144°.
 $[\alpha]_D^{22} +18.9 \rightarrow +22.9$ (2 d) (c, 2.89 in
MeOH).

2,3-Dibenzyl, 1,4,6-tris(4-nitrobenzoyl):
Amorph. $[\alpha]_D -9.1$ (c, 2.5 in $CHCl_3$).

2,3,4-Tribenzyl, 1,6-bis(4-nitrobenzoyl):
Mp 152-153°. $[\alpha]_D -6.6$ (c, 2 in $CHCl_3$).

Me glycoside: See Methyl β -*D*-galactopyr-
anoside, M-186

Ph glycoside: See Phenyl galactopyrano-
side, P-56

Allyl glycoside: See Allyl galactopyrano-
side, A-93

Benzyl glycoside: See Benzyl galactopyr-
anoside, B-15

α -D-Furanose-form [36468-82-3]

Penta-Ac: See 1,2,3,4,6-Penta-*O*-acetylga-
lactose, P-16

Pentabenzoyl: 1,2,3,5,6-Penta-*O*-benzoyl-
 α -*D*-galactofuranose
 $C_{41}H_{32}O_{11}$ 700.697
Needles (MeOH/Me₂CO). Mp 168-
169°. $[\alpha]_D +56$ (c, 1 in $CHCl_3$). Formerly
incorrectly descr. as penta-*O*-benzoyl-
 β -*D*-galactopyranose.

1,2-O-Isopropylidene: See 1,2-*O*-Isopro-
pylidene-galactofuranose, I-64

Me glycoside: See Methyl galactofurano-
side, M-184

β -D-Furanose-form [7045-51-4]

Penta-Ac: See 1,2,3,4,6-Penta-*O*-acetylga-
lactose, P-16

2,3-Dibenzyl, tris(4-nitrobenzoyl): [55656-
69-4]
Amorph. powder. $[\alpha]_D -5.5$ (c, 2 in
 $CHCl_3$).

Pentabenzoyl: 1,2,3,5,6-Penta-*O*-benzoyl-
 β -*D*-galactofuranose
 $C_{41}H_{32}O_{11}$ 700.697
Needles (Me₂CO). Mp 162-164°. $[\alpha]_D -$
30 (c, 1 in $CHCl_3$).

Me glycoside: See Methyl galactofurano-
side, M-184

1-Phosphate: β -*D*-Galactofuranose 1-phos-
phate. β -*D*-Galactofuranose 1-(dihydro-
genphosphate)
[39697-83-1]
 $C_6H_{13}O_9P$ 260.137
Gum. $[\alpha]_D^{22} +15.5$ (c, 1 in H_2O).

L-form [15572-79-9]

Occurs in agar-agar, chagual gum, red
algae, flaxseed mucilage and a snail
galactan. The L-galactose obt. from the
hydrolysates of these polysaccharides can
be freed from the enantiomer present by
fermentation of the D-form.
Mp 163-165°. $[\alpha]_D^{22} -78$ (H_2O).

Phenylhydrazone: Mp 158-160°. $[\alpha]_D +21.6$
(H_2O).

2-Methyl-2-phenylhydrazone: Mp 189°.
 $[\alpha]_D -23$ (MeOH).

DL-form

Obt. by hydrol. of various polysacchar-
ides.

Prisms. Mp 161°.

[4198-47-4, 41846-88-2, 41846-89-3, 42789-83-3]

Aldrich Library of FT-IR Spectra, 1st edn., 1985,

1, 192A (ir)

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, 1, 298B; 298C (nmr)

Wolfrom, M.L. et al., *Methods Carbohydr.*

Chem., 1962, 1, 120 (synth, D-form)

Methods Carbohydr. Chem., 1962, 1, 120; 122;

127 (D-form, L-form)

Araki, C. et al., *Methods Carbohydr. Chem.*,

1962, 1, 122 (synth, L-form)

Frush, H.L. et al., *Methods Carbohydr. Chem.*,

1962, 1, 127 (synth, L-form)

Ball, D.H. et al., *J.O.C.*, 1966, 31, 220 (4,6-

ethylidene- α -D-pyr)

Grigg, R. et al., *J.C.S. (C)*, 1968, 1903 (α -D-pyr

benzylidene, α -D-pyr benzylidene dibenzyl)

Jochims, J.C. et al., *Chem. Ber.*, 1970, 103, 448

(α -D-pyr diisopropylidene Ac, pmr, cmr)

Chittenden, G.J.F. et al., *Carbohydr. Res.*, 1972,

25, 35 (β -D-fur phosphate)

Stothers, J.B. et al., *Carbon-13 NMR*

Spectroscopy, Academic Press, 1972,

Schaffer, R. et al., *The Carbohydrates*, 1972, 1A,

69 (occur)

Schneider, J. et al., *Carbohydr. Res.*, 1974, 36,

159 (D-2-benzyl, β -D-2,6-dibenzyl)

Morgenlie, S. et al., *Acta Chem. Scand.*, Ser. B,

1975, 29, 367 (D-pyr-4,6-isopropylidene, D-fur-

5,6-isopropylidene, D-pyr-3,4-isopropylidene)

Dmietriev, B.A. et al., *Izv. Akad. Nauk SSSR*,

Ser. Khim., 1975, 142

D'Accorso, N.B. et al., *Carbohydr. Res.*, 1983,

124, 177 (α -D-fur pentabenzoyl, β -D-fur

pentabenzoyl)

Ko, S.Y. et al., *Science (Washington, D.C.)*,

1983, 220, 949 (total synth, L-form)

Angyal, S.J. et al., *Adv. Carbohydr. Chem.*

Biochem., 1984, 42, 15 (equilib comp)

Mikamo, M. et al., *Carbohydr. Res.*, 1989, 191,

150 (synth, bibl, α -D-pyr tetra-Ac, β -D-pyr

tetra-Ac)

Sturgeon, R.J. et al., *Carbohydr. Res.*, 1990, 200,

499 (occur, enantiomers)

Vogt, D.C. et al., *Carbohydr. Res.*, 1990, 206,

333 (pmr, cmr)

Martindale, *The Extra Pharmacopoeia*, 30th

edn., Pharmaceutical Press, 1993, 774

Binch, H. et al., *Carbohydr. Res.*, 1998, 306,

409-419 (synth, L-form)

Kroger, K. et al., *Eur. J. Ultrasound*, 1998, 8, 17-

24 (use)

Gómez, A.M. et al., *Carbohydr. Res.*, 1999, 320,

138-142 (2,3:4,6-diisopropylidene)

Takeuchi, M. et al., *Synthesis*, 1999, 341-354

(L-form, synth)

Zinin, A.I. et al., *Carbohydr. Res.*, 2002, 337,

635-642 (β -D-pyr 1-Ac)

Lewis, R.J. et al., *Sax's Dangerous Properties of*

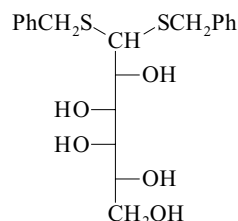
Industrial Materials, 8th edn., Van Nostrand

Reinhold, 1992, GAV000

**Galactose dibenzyl dithioace-
tal**

G-194

Galactose dibenzyl mercaptal



$C_{20}H_{26}O_5S_2$ 410.554

D-form [40733-07-1]

Cryst. (EtOH). Mp 144-146°. $[\alpha]_D^{20} -26.4$
(Py).

4,5-Isopropylidene: 4,5-*O*-Isopropylidene-
D-galactose dibenzyl dithioacetal

$C_{23}H_{30}O_5S_2$ 450.619

Needles (EtOH). Mp 102.5-103°. $[\alpha]_D^{20}$
+31 ($CHCl_3$).

Pacsu, E. et al., *Ber.*, 1929, 62, 3008-3012

(D-form, synth)

Pacsu, E. et al., *J.A.C.S.*, 1939, 61, 2444-2448

(D-isopropylidene)

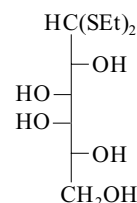
Fernández Bolaños, J. et al., *An. Quim.*, 1973,

69, 263-265 (D-form, synth)

Galactose diethyl dithioacetal

G-195

Galactose diethylmercaptopal, 8CI



$C_{10}H_{22}O_5S_2$ 286.413

D-form [5463-33-2]

Cryst. (H_2O). Mp 142-143°. $[\alpha]_D -4.8$
(H_2O). $[\alpha]_D +6$ (EtOH). $[\alpha]_D -3.5$ (py).

2,3,4,5,6-Penta-Ac: 2,3,4,5,6-Penta-*O*-
acetyl-*D*-galactose diethyl dithioacetal

[6935-10-0]

$C_{20}H_{32}O_{10}S_2$ 496.599

Mp 111-112°. $[\alpha]_D +13.6$ ($CHCl_3$).

5,6-O-Ethylidene: 5,6-*O*-Ethylidene-*D*-
galactose diethyl dithioacetal

[27539-51-1]

$C_{12}H_{24}O_5S_2$ 312.451

Mp 120°. $[\alpha]_D^{20} +72$ (c, 1.3 in $CHCl_3$).

4,5-Isopropylidene: 4,5-*O*-Isopropylidene-
D-galactose diethyl dithioacetal

[64609-11-6]

$C_{13}H_{26}O_5S_2$ 326.477

Mp 85-86.5° (82-83°). $[\alpha]_D^{24} +22$ (c, 1.06

in MeOH) (+19).

4,6-Isopropylidene: 4,6-*O*-Isopropylidene-
D-galactose diethyl dithioacetal

[99773-31-6]

$C_{13}H_{26}O_5S_2$ 326.477

Syrup. $[\alpha]_D^{24} +19$ (c, 1.44 in $CHCl_3$).

5,6-Isopropylidene: 5,6-*O*-Isopropylidene-
D-galactose diethyl dithioacetal

[99773-30-5]

$C_{13}H_{26}O_5S_2$ 326.477

Cryst. (CH₂Cl₂/petrol). Mp 84.5°. [α]_D²⁴ +15 (c, 2.04 in MeOH).

4,6-Cyclohexylidene: 4,6-O-Cyclohexylidene-D-galactose diethyl dithioacetal [99773-25-8]

C₁₆H₃₀O₅S₂ 366.542

Syrup. [α]_D²⁵ -3 (c, 1.33 in CHCl₃).

5,6-Cyclohexylidene: 5,6-O-Cyclohexylidene-D-galactose diethyl dithioacetal [99773-23-6]

C₁₆H₃₀O₅S₂ 366.542

Mp 101-101.5°. [α]_D²⁴ +63 (c, 1.00 in CHCl₃).

3,6-Cyclohexylidene: 3,6-O-Cyclohexylidene-D-galactose diethyl dithioacetal [99773-24-7]

C₁₆H₃₀O₅S₂ 366.542

Some nmr data presented. Obtained as a mixture of products.

(R)-4,5-Benzylidene: (R)-4,5-O-Benzylidene-D-galactose diethyl dithioacetal [106450-95-7]

C₁₇H₂₆O₅S₂ 374.521

Cryst. (CH₂Cl₂/petrol). Mp 106-107°. [α]_D²⁰ +5 (c, 3.72 in MeOH).

(S)-4,5-Benzylidene: (S)-4,5-O-Benzylidene-D-galactose diethyl dithioacetal [106450-96-8]

C₁₇H₂₆O₅S₂ 374.521

Cryst. (CH₂Cl₂/petrol). Mp 85-86°. [α]_D²⁰ +13 (c, 3.08 in MeOH).

5,6-Benzylidene: 5,6-O-Benzylidene-D-galactose diethyl dithioacetal [106450-87-7, 106450-88-8]

C₁₇H₂₆O₅S₂ 374.521
Cryst. (CH₂Cl₂/petrol). Mp 106-107°. [α]_D²⁴ +66 (c, 3.53 in CHCl₃). Mixture of (R) and (S)-epimers.

2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-isopropylidene-D-galactose diethyl dithioacetal [6207-30-3]

C₁₆H₃₀O₅S₂ 366.542

Syrup. [α]_D²² -67.7 (c, 3.9 in CHCl₃).

Fischer, E. *et al.*, *Ber.*, 1894, **27**, 673-679 (*synth*)
Wolf from, M.L. *et al.*, *J.A.C.S.*, 1930, **52**, 2464-2473 (*synth*)

Kochetkov, N.K. *et al.*, *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1962, 977-983 (*diisopropylidene*)

Wolf from, M.L. *et al.*, *Carbohydr. Res.*, 1969, **11**, 547 (*ethylidene*)

Wander, J.D. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1976, **32**, 15-123 (*rev*)

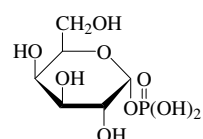
Grindley, T.B. *et al.*, *Carbohydr. Res.*, 1985, **140**, 215 (*isopropylidene, cyclohexylidene derivs*)

Grindley, T.B. *et al.*, *Can. J. Chem.*, 1986, **64**, 2388-2396; 2397-2403 (*benzylidene*)

Horton, D. *et al.*, *Preparative Carbohydrate Chemistry*, (ed. Hanessian, S.), Dekker, 1997, 45

Galactose 1-dihydrogen phosphate, 8CI

Galactose-1-phosphate



α -Pyranose-form

C₆H₁₃O₉P 260.137

pK_{a1} 1; pK_{a2} 6.17.

α -D-Pyranose-form [2255-14-3]

Occurs in liver, milk, and yeasts.

[α]_D²⁵ +143 (H₂O). Yeast or bacterial preparations reversibly convert α -Galactose 1-phosphate into Glucose 6-phosphate via α -Glucose 1-phosphate.

Ba salt: [α]_D +92 (H₂O).

Di-K salt: [19046-60-7]

[α]_D²⁵ +100 (c, 1.57 in H₂O).

Dicyclohexylammonium salt: Mp 147-153°.

[α]_D²⁶ +78.5 (H₂O).

β -D-Pyranose-form [2520-52-7]

Ba salt: [α]_D +31.2 (H₂O).

Dicyclohexylammonium salt: Mp 145-151°.

[α]_D²⁶ +21 (H₂O).

Biochem. Prep., 1955, **4**, 1 (*synth*)

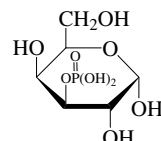
Putman, E.W. *et al.*, *J.A.C.S.*, 1957, **79**, 5057

MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (*rev*)

Lee, C. *et al.*, *Biochemistry*, 1976, **15**, 697 (*conformn, pmr*)

Galactose 3-dihydrogen phosphate

Galactose-3-phosphate



α -D-Pyranose-form

C₆H₁₃O₉P 260.137

D-form

Ba salt: [21063-51-4]

[α]_D²⁵ +43.3 (c, 0.46 in H₂O).

Di-K salt: [α]_D¹⁸ +25.2 (c, 0.81 in H₂O).

α -D-Pyranose-form

1,2-O-Isopropylidene, 4,6-O-ethylidene:

C₁₁H₁₉O₉P 326.239

[α]_D¹⁸ -41.5 (c, 0.77 in H₂O).

1,2-O-Isopropylidene, 4,6-O-ethylidene, Ba salt: [α]_D²⁰ -24 (c, 1.4 in H₂O).

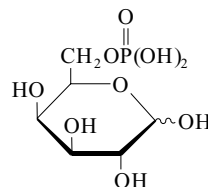
Foster, A.B. *et al.*, *J.C.S.*, 1951, 980

Chittenden, G.J.F. *et al.*, *Biochem. J.*, 1968, **109**, 597 (*synth*)

MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (*rev*)

Galactose 6-dihydrogen phosphate, 9CI, 8CI

Galactose-6-phosphate



Pyranose-form

C₆H₁₃O₉P 260.137

D-form [6665-00-5] Metabolite or component of many organisms. [α]_D²⁰ +36.5 (c, 0.6 in H₂O). Preparations have

frequently contained the isomeric 3- and 5-phosphates as impurities; these were incorrectly identified as 6-phosphate furanose forms.

Ba salt: [α]_D²⁵ +24.5 (H₂O).

α -D-Pyranose-form

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene- α -D-galactopyranose 6-dihydrogen phosphate

C₁₂H₂₁O₉P 340.266

[α]_D²⁰ -17.9 (c, 1.6 in H₂O).

Foster, A.B. *et al.*, *J.C.S.*, 1951, 980 (*synth*)

Todd, A.R. *et al.*, *CA*, 1953, **47**, 6436 (*synth*)

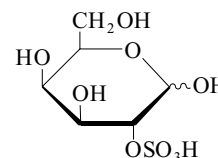
MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (*rev*)

Costello, A.J.R. *et al.*, *Carbohydr. Res.*, 1975, **42**, 23 (*nmr*)

Wenger, W.C. *et al.*, *Carbohydr. Res.*, 1981, **88**, 267 (*synth, purifn, bibl*)

Galactose 2-sulfate

G-199



C₆H₁₂O₉S 260.221

D-form

1,3,4,6-Tetra-Ac:

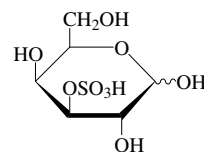
C₁₄H₂₀O₁₃S 428.37

Mp 144-146°.

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177 (*synth, cmr*)

Galactose 3-sulfate

G-200



α -D-Pyranose-form

C₆H₁₂O₉S 260.221

D-form [17112-77-5]

1,2:5,6-Di-O-isopropylidene: [78880-28-1]

C₁₂H₂₀O₉S 340.351

CAS no. refers to Ba salt.

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177-190 (*1,2:5,6 diisopropylidene, synth, cmr*)

Koshy, K.M. *et al.*, *Carbohydr. Res.*, 1997, **297**, 93-99 (*pmr, cmr, ir*)

Galactose 4-sulfate

G-201

C₆H₁₂O₉S 260.221

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177 (*cmr*)

Galactose 6-sulfate

G-202

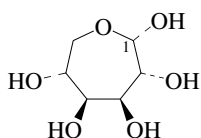
C₆H₁₂O₉S 260.221

The L-enantiomer is a component of the polysaccharides of *Porphyra umbilicalis*.

Peat, S. *et al.*, *J.C.S.*, 1960, 4761 (*synth*)

Turvey, J.R. *et al.*, *Nature (London)*, 1961, **189**, 831 (*isol*)

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177 (cmr)

Galactoseptanose**G-203** α -D-formC₆H₁₂O₆ 180.157 **α -D-form**

1,2-O-Isopropylidene: 1,2-O-Isopropylidene- α -D-galactoseptanose

C₉H₁₆O₆ 220.222

Prisms (C₆H₆/petrol). Mp 102-103°. [α]_D²⁰ +18.9 (c, 0.5 in CHCl₃).

1,2-O-Isopropylidene, tri-Ac: 3,4,5-Tri-O-acetyl-1,2-O-isopropylidene- α -D-galactoseptanose

C₁₅H₂₂O₉ 346.333

Needles (petrol). Mp 103-104°. [α]_D +27.6 (c, 1.55 in CHCl₃).

1,2:4,5-Di-O-isopropylidene, 3-Ac: 3-O-Acetyl-1,2:4,5-di-O-isopropylidene- α -D-galactoseptanose

C₁₄H₂₂O₇ 302.324

Needles (petrol). Mp 118-121°. [α]_D²³ -65.3 (c, 0.45 in CHCl₃).

1,2:3,4-Di-O-isopropylidene, 5-Ac: 5-O-Acetyl-1,2:3,4-di-O-isopropylidene- α -D-galactoseptanose

C₁₄H₂₂O₇ 302.324

Cryst. or needles (petrol). Mp 103-104°.

Me glycoside, tetra-Ac: Methyl 2,3,4,5-tetra-O-acetyl- α -D-galactoseptanoside

[74761-33-4]

C₁₅H₂₂O₁₀ 362.333

Needles (C₆H₆/petrol). Mp 110°. [α]_D²³ +18 (c, 1.4 in CHCl₃).

 β -D-form

Me glycoside, tetra-Ac: Methyl 2,3,4,5-tetra-O-acetyl- β -D-galactoseptanoside

[204331-85-1]

C₁₅H₂₂O₁₀ 362.333

Characterised spectroscopically.

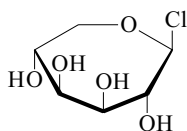
Choong, W. *et al.*, *Aust. J. Chem.*, 1980, **33**, 979-985 (α -D-gly tetra-Ac, *cryst struct*)

James, V.J. *et al.*, *Carbohydr. Res.*, 1980, **82**, 167-174 (1,2:3,4-diisopropylidene 5-Ac, *cryst struct*)

McAuliffe, J.C. *et al.*, *Synlett*, 1998, 307-309

(β -D-Me gly tetra-Ac)

Driver, G.E. *et al.*, *Carbohydr. Res.*, 2001, **334**, 81-89 (1,2-isopropylidene, 1,2-isopropylidene tri-Ac, 1,2:4,5-diisopropylidene 3-Ac)

Galactoseptanosyl chloride**G-204**C₆H₁₁ClO₅ 198.603

In view of the age of the work the reported *struct.* may be unreliable.

 β -D-form

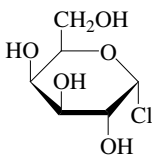
Syrup. [α]_D¹⁹ -79.5 (CHCl₃).

Tetra-Ac: 2,3,4,5-Tetra-O-acetyl- β -D-galactoseptanosyl chloride

C₁₄H₁₉ClO₉ 366.751

Cryst. (Et₂O). Mp 108°. [α]_D²⁰ +170 (c, 1.0 in CHCl₃).

Micheel, F. *et al.*, *Annalen*, 1933, **507**, 138-143

Galactosyl chloride**G-205** α -D-Pyranose-formC₆H₁₁ClO₅ 198.603 **α -D-Pyranose-form**

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -D-galactopyranosyl chloride

C₁₂H₁₇ClO₈ 324.714

Mp 132°. [α]_D²¹ +207.8 (CHCl₃).

3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl- α -D-galactopyranosyl chloride

[51295-69-3]

C₁₂H₁₇ClO₈ 324.714

Syrup. [α]_D +157 (c, 1.0 in CHCl₃).

2,3,4-Tri-Ac, 6-tosyl: 2,3,4-Tri-O-acetyl-6-O-tosyl- α -D-galactopyranosyl chloride

C₁₉H₂₃ClO₁₀S 478.903

Mp 120°. [α]_D¹⁹ +134.5 (CHCl₃).

3,4,6-Tri-Ac, 2-trichloroacetyl: 3,4,6-Tri-O-acetyl-2-O-(trichloroacetyl)- α -D-galactopyranosyl chloride

[51295-67-1]

C₁₄H₁₆Cl₄O₉ 470.086

[α]_D +132 (c, 1.0 in CHCl₃).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-galactopyranosyl chloride

[14227-87-3]

C₁₄H₁₉ClO₉ 366.751

Mp 75-76° (82-83°). [α]_D²⁰ +212.3 (CHCl₃).

2-Benzyl, 3,4,6-tri-Ac: 3,4,6-Tri-O-acetyl-2-O-benzyl- α -D-galactopyranosyl chloride

[55287-61-1]

C₁₉H₂₃ClO₈ 414.839

Syrup. [α]_D²³ +110.4 (c, 0.7 in CHCl₃).

3,4,6-Tribenzyl, 2-Ac: 2-O-Acetyl-3,4,6-tri-O-benzyl- α -D-galactopyranosyl chloride

C₂₉H₃₁ClO₆ 511.013

Syrup. [α]_D²⁰ +126.5 (c, 0.82 in CHCl₃).

Tetrazabenzyl: 2,3,4,6-Tetra-O-benzoyl- α -D-galactopyranosyl chloride

[41110-63-8]

C₃₄H₃₅ClO₅ 559.1

[α]_D +147 (c, 2.0 in C₆H₆).

 β -D-Pyranose-form

3,4,6-Tri-Ac, 2-benzyl: 3,4,6-Tri-O-acetyl-2-O-benzyl- β -D-galactopyranosyl chloride

[55287-66-6]

C₁₉H₂₃ClO₈ 414.839

[α]_D²⁴ +45.8 (c, 0.6 in CHCl₃).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-galactopyranosyl chloride

[14227-88-4]

C₁₄H₁₉ClO₉ 366.751

Mp 93-94° dec. [α]_D²⁰ +5.8 (CHCl₃).

3,4,6-Tri-Ac, 2-(trichloroacetyl): [51295-68-2]

Needles (Et₂O/petrol). Mp 120-121°.

[α]_D +14 (c, 1 in CHCl₃).

 β -D-Furanose-form

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl- β -D-galactofuranosyl chloride

[53765-89-2]

C₁₄H₁₉ClO₉ 366.751

Mp 67° dec. [α]_D²⁰ -79.1 (CHCl₃).

Fischer, E. *et al.*, *Ber.*, 1902, **35**, 836 (α -tetra-Ac)

Schlubach, H.H. *et al.*, *Ber.*, 1930, **63**, 2295;

2298 (β -pyr, β -fur, tetra-Ac)

Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1955, **10**, 207 (rev)

Austin, P.W. *et al.*, *J.C.S.*, 1965, 1419

Suami, T. *et al.*, *Carbohydr. Res.*, 1973, **26**, 234

(tetraabenzyl)

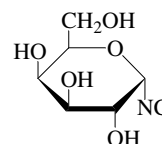
Collins, P.M. *et al.*, *Carbohydr. Res.*, 1973, **31**, 1

(α and β tri-Ac)

Igarashi, K. *et al.*, *Carbohydr. Res.*, 1974, **38**, 312

Kong, F. *et al.*, *Carbohydr. Res.*, 1987, **162**, 217

(tribenzyl)

Galactosyl isocyanide**G-206** α -D-Pyranose-formC₇H₁₁NO₅ 189.168 **α -D-Pyranose-form**

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-galactopyranosyl isocyanide

[66118-21-6]

C₁₅H₁₉NO₉ 357.316

Syrup.

 β -D-Pyranose-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-galactopyranosyl isocyanide

[66118-20-5]

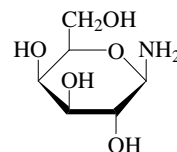
C₁₅H₁₉NO₉ 357.316

Cryst. (MeOH). Mp 164-165°. [α]_D²⁵ +32

(c, 1.5 in CHCl₃).

Martin-Lomas, M. *et al.*, *Carbohydr. Res.*, 1977, **59**, 604-606 (tetra-Ac)

Witczak, Z.J. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 359-380 (tetra-Ac, rev, bibl)

Galactosylamine**G-207** β -Pyranose-formC₆H₁₃NO₅ 179.172

D-form [50444-86-5]

Mp 141° dec. $[\alpha]_D +64.1 \rightarrow +58.1$ (H₂O).

 α -D-Pyranose-form [61138-98-5]

N-Ac: N-Acetyl- α -D-galactopyranosylamine. N- α -D-galactopyranosylacetamide, 9CI

[15354-92-4]

C₈H₁₅NO₆ 221.21

Mp 179-180°. $[\alpha]_D +194.9$ (c, 2.0 in H₂O).

N,2,3,4,6-Penta-Ac: N-Acetyl-2,3,4,6-tetra-O-acetyl- α -D-galactopyranosylamine [35923-05-8]

C₁₆H₂₃NO₁₀ 389.358

Cryst. (EtOH). Mp 172-173°. $[\alpha]_D +117.4$ (c, 2.0 in CHCl₃).

N-Ph: N-Phenyl- α -D-galactopyranosylamine

C₁₂H₁₇NO₅ 255.27

Mp 141-143°. $[\alpha]_D -22.1 \rightarrow -40.3$ (MeOH).

N-Ph, 2,3,4,6-tetra-Ac: 2,3,4,6-Tetra-O-acetyl-N-phenyl- α -D-galactopyranosylamine

[42891-86-1]

C₂₀H₂₅NO₉ 423.419

Cryst. (MeOH). Mp 175-176°. $[\alpha]_D^{15} +202$ (c, 1.0 in CHCl₃).

 β -D-Pyranose-form [6318-23-6]

Prisms. $[\alpha]_D +62.2$ (c, 2.0 in H₂O).

N-Ac: N-Acetyl- β -D-galactopyranosylamine. N- β -D-Galactopyranosylacetamide, 9CI

[15354-93-5]

C₈H₁₅NO₆ 221.21

Mp 233°. $[\alpha]_D +9.8$ (H₂O).

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-galactopyranosylamine

[58484-22-3]

C₁₄H₂₁NO₉ 347.321

Mp 139°. $[\alpha]_D +26.7$ (MeOH).

N,2,3,4,6-Penta-Ac: N-Acetyl-2,3,4,6-tetra-O-acetyl- β -D-galactopyranosylamine

[35923-06-9]

Cryst. (EtOH). Mp 173°. $[\alpha]_D +34.7$

(c, 2.0 in CHCl₃).

N-Ph: N-Phenyl- β -D-galactopyranosylamine

[131176-28-8]

C₁₂H₁₇NO₅ 255.27

Mp 157-159°. $[\alpha]_D -114.7 \rightarrow -56$ (Py).

N-Ph, 2,3,4,6-tetra-Ac: 2,3,4,6-Tetra-O-acetyl-N-phenyl- β -D-galactopyranosylamine

[42891-47-4]

C₂₀H₂₅NO₉ 423.419

Mp 120-121°. $[\alpha]_D -31.4$ (CHCl₃).

N-(4-Methylphenyl): [35946-71-5]

Mp 162-163°. $[\alpha]_D -46 \rightarrow +10$ (MeOH).

N-(4-Nitrophenyl): [25876-26-0]

Mp 218-219° dec. $[\alpha]_D^{26} -187 \rightarrow -248$ (c, 1.0 in Py).

N-(4-Nitrophenyl), 2,3,4,6-tetra-Ac:

[38730-24-4]

Mp 98-100°. $[\alpha]_D -68$ (c, 1.1 in CHCl₃).

Butler, K. *et al.*, *J.C.S.*, 1949, 3371 (tetra-Ac anilides)

Frush, H.L. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1951, **47**, 239 (β -D-form, α -D-penta-Ac, β -D-penta-Ac)

Ellis, G.P. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 95 (β -D-form, derivs, rev)

Magnin, A.A. *et al.*, *Tetrahedron*, 1972, **28**, 3069 (nitrophenyl tetra-Ac)

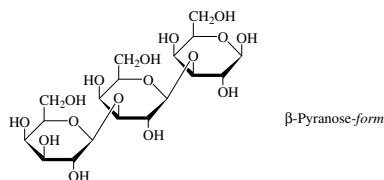
Samudzi, C.T. *et al.*, *Carbohydr. Res.*, 1985, **142**, 39 (cryst struct)

Lubineau, A. *et al.*, *Carbohydr. Res.*, 1995, **266**, 211-219 (*synth*)

Isac-Garcia, J. *et al.*, *Eur. J. Org. Chem.*, 2001, 383-390 (α -D-penta-Ac, β -D-penta-Ac)

Galactotriose**G-208**

O- β -D-Galactopyranosyl-(1 \rightarrow 3)-O- β -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI [5077-30-5]



C₁₈H₃₂O₁₆ 504.441

Present in the partial hydrolysate of an arabinogalactan from Tamarack (*Larix laricina*); isol. from subabul (*Leucaena leucocephala*) gum. Constit. of the hydrolysate of a cashew-nut shell polysaccharide.

Mp 240-245° (216°). $[\alpha]_D +58$ (+51) (H₂O).

 α -Pyranose-form

Allyl glycoside, 2,4,4',4'',6,6',6''-heptabenzyl, 2',2'',3'''-tribenzoyl: [106238-79-3]

C₉₁H₉₀O₁₉ 1487.701

Syrup. $[\alpha]_{436} +1.7$ (CHCl₃).

Allyl glycoside, 2,2',4,4',4'',6,6',6''-octabenzyl, 2'',3'''-dibenzoyl: [106375-17-1]

C₉₁H₉₂O₁₈ 1473.717

Syrup. $[\alpha]_D +26$ (CHCl₃).

 β -Pyranose-form

Undecabenzoyl: [130651-32-0]

C₉₅H₇₆O₂₇ 1649.629

Syrup. $[\alpha]_D +68.8$ (c, 0.5 in CHCl₃).

Me glycoside: [99606-03-8]

C₁₉H₃₄O₁₆ 518.468

Cryst. Mp 233-235°. $[\alpha]_D +31.4$ (H₂O).

Me glycoside, 3'''-benzyl, nonabenzoyl:

[99605-99-9]

C₈₉H₇₆O₂₅ 1545.564

Syrup. $[\alpha]_D +58.3$ (CHCl₃).

[71595-31-8]

Aspinall, G.O. *et al.*, *J.C.S.*, 1958, 593

Bouveng, H.O. *et al.*, *Acta Chem. Scand.*, 1959, **13**, 1884

Haq, S. *et al.*, *Can. J. Chem.*, 1961, **39**, 1563

Bose, S. *et al.*, *J. Indian Chem. Soc.*, 1972, **49**, 593

Honda, M.K. *et al.*, *CA*, 1979, **91**, 153145e

Kovac, P. *et al.*, *J.O.C.*, 1985, **50**, 5323 (β -Me gly, *synth*, *pmr*, *cmr*)

Chowdhary, M.S. *et al.*, *Carbohydr. Res.*, 1986, **150**, 173 (α -allyl gly, *synth*, *pmr*, *cmr*)

Ziegler, T. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 135 (*undecabenzoyl synth*, *pmr*, *cmr*)

Soni, P.S. *et al.*, *Indian J. Chem., Sect. B*, 1991, **30**, 843 (*isol*)

Galacturonan, 8CI**G-209**

Homogalacturonan

[9046-38-2]

[\rightarrow 4)- α -D-GalAp-(1 \rightarrow 4)- α -D-GalAp-(1 \rightarrow 4)- α -D-GalAp-(1 \rightarrow)]

A polysaccharide contg. linear chains of (1 \rightarrow 4)-linked α -D-galacturonic acid residues. Isol. as a subfraction of pectic acid preparations. Found as the major acidic polysaccharide in pectic complexes of sunflower heads. Occurs in pear juice (*Pyrus communis*), partly esterified.

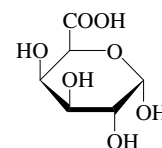
Aspinall, G.O. *et al.*, *The Carbohydrates*, 2nd edn. (Eds. Pigman W. *et al.*), Academic Press, 1970, **2B**, 515 (rev)

Ovodov, Y.S. *et al.*, *Khim. Prir. Soedin.*, 1975, **11**, 300; *Chem. Nat. Compd. (Engl. Transl.)*, 1975, **11**, 319 (rev)

Dick, A.J. *et al.*, *Plant Physiol.*, 1989, **89**, 1394 (*occur*)

Galacturonic acid, 9CI, 8CI**G-210**

[14982-50-4]



C₆H₁₀O₇ 194.141

D-form [685-73-4]

Obt. from the hydrol. prods. of polymers of pectic substances.

Monohydrate.

Mp 156-159° dec. (sinters at 110°). $[\alpha]_D^{20} +98 \rightarrow +50.9$ (H₂O). Exists mostly in α -pyranose-form.

4-Bromophenylhydrazone: Mp 145-146°. $[\alpha]_D +9$ (c, 0.7 in MeOH).

2,4-Dinitrophenylhydrazone: Mp 158° dec.

Me ester: Methyl D-galactopyranosuronate [18486-47-0]

C₇H₁₂O₇ 208.168

Mp 147°. $[\alpha]_D^{25} +94 \rightarrow +34$ (c, 1.9 MeOH).

Di-Et dithioacetal:

C₁₀H₂₀O₆S₂ 300.396

Mp 132.5°. $[\alpha]_D^{27} +17$ (MeOH).

2,3-Di-Me: 2,3-Di-O-methyl-D-galacturonic acid

[4060-32-6]

C₈H₁₄O₇ 222.194

Syrup. $[\alpha]_D +62$ (H₂O).

2,4-Di-Me: 2,4-Di-O-methyl-D-galacturonic acid

C₈H₁₄O₇ 222.194

Syrup. $[\alpha]_D +93$ (H₂O).

3,4-Di-Me: 3,4-Di-O-methyl-D-galacturonic acid

[58920-45-9]

C₈H₁₄O₇ 222.194

Syrup. $[\alpha]_D +93$ (H₂O). $[\alpha]_D +37$ (EtOH).

Lactone: See 1,4-Galactonolactone, G-24

2,3,4-Tri-Me: 2,3,4-Tri-O-methyl-D-galacturonic acid

[4239-86-5]

C₉H₁₆O₇ 236.221

Mp 98-99° (hydrate). $[\alpha]_D^{20} +120 \rightarrow +104$ (H₂O).

α -D-Pyranose-form [6294-16-2]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- α -D-galactopyranuronic acid
C₁₄H₁₈O₁₁ 362.29

Cryst. (EtOAc/heptane). Mp 162-164°. $[\alpha]_D^{21} +124.9$ (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, Me ester:

C₁₀H₁₆O₇ 248.232

Cryst. (EtOAc/heptane). Mp 92°. $[\alpha]_D^{22} -11.7$ (c, 1.0 in CHCl₃).

1,2:3,4-Di-O-isopropylidene, Me ester:

Methyl 1,2:3,4-di-O-isopropylidene- α -D-galactopyranosuronate
[18524-41-9]

C₁₃H₂₀O₇ 288.297

Mp 54-58°.

1,2:3,4-Di-O-benzylidene: [17120-57-9]

C₂₀H₁₈O₇ 370.358

Mp 199-201°. CAS no. refers to Na salt (a syrup).

1,2:3,4-Di-O-benzylidene, Me ester:

Methyl 1,2:3,4-di-O-benzylidene- α -D-galactopyranosuronate
[17120-58-0]

C₂₁H₂₀O₇ 384.385

Mp 148-150° (165°). $[\alpha]_D^{18} -168$ (CHCl₃). $[\alpha]_D^{25} -126$ (c, 1.0 in CHCl₃).

Me glycoside: See Methyl galactopyranosiduronic acid, M-187

β -D-Pyranose-form [18968-14-4]

Mp 160° dec. $[\alpha]_D^{20} +27 \rightarrow +55.6$ (H₂O).

Me glycoside: See Methyl galactopyranosiduronic acid, M-187

Benzyl glycoside: *Benzyl β -D-galactopyranosuronide*

C₁₃H₁₆O₇ 284.265

Powder. $[\alpha]_D^{22} -50.2$ (c, 1.0 in MeOH).

Benzyl glycoside, 2,3-dibenzyl: *Benzyl 2,3-di-O-benzyl- β -D-galactopyranosiduronic acid*
[17120-54-6]

C₂₇H₂₈O₇ 464.514

Mp 150-152°. $[\alpha]_D^{25} -33.2$ (c, 0.72 in CHCl₃).

6 \rightarrow 1-Lactone, tri-Ac: 2,3,4-Tri-O-acetyl- β -D-galactopyranurono-1,4-lactone

C₁₂H₁₄O₉ 302.237

Cryst. (EtOH). Mp 99-100°. $[\alpha]_D^{20} -11.5$ (c, 1.0 in CHCl₃).

β -D-Furanose-form

Me glycoside, 2,3-di-Me, Me ester: *Methyl (methyl 2,3-di-O-methyl- β -D-galactofuranosid)uronate*

C₁₀H₁₈O₇ 250.248

Syrup. $[\alpha]_D -64$ (H₂O).

Me glycoside, 2,3,5-tri-Me, Me ester:

Methyl (methyl 2,3,5-tri-O-methyl- β -D-galactofuranosid)uronate

C₁₁H₂₀O₇ 264.275

Mp 43°. $[\alpha]_D -129$ (MeOH).

[17120-55-7]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 525C (ir)

Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, Leipzig, 1935, 357 (rev)

Aspinall, G.O. et al., *Adv. Carbohydr. Chem.*, 1954, 9, 131 (Me ethers, rev)

McCready, R.M. et al., *Methods Carbohydr. Chem.*, 1963, 2, 27; 57 (α -D-pyr, α -D-pyr Me gly)

Shah, R.H. et al., *Carbohydr. Res.*, 1967, 4, 401 (α -D-benzyl pyr 2,3-dibenzyl)

David, S. et al., *Carbohydr. Res.*, 1967, 5, 234 (α -D-pyr diisopropylidene Me ester)

Rees, D.A. et al., *J.C.S. (B)*, 1971, 1366 (conformn, pmr)

Vogel, C. et al., *J. Carbohydr. Chem.*, 1992, 11, 287-303 (6,1-lactone tri-Ac, synth, cryst struct)

Vogel, C. et al., *Liebigs Ann./Recl.*, 1997, 737-743 (α -D-pyr tetra-Ac, β -D-pyr benzyl gly)

Vogel, C. et al., *Liebigs Ann./Recl.*, 1997, 1425-1428 (Me ester isopropylidene)

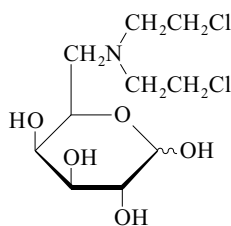
Tang, H.R. et al., *Carbohydr. Res.*, 2001, 330, 391-399 (cmr, cryst struct)

Merck Index, 13th edn., 2001, No. 4358 (bibl)

Galamustine, INN

G-211

6-[Bis(2-chloroethyl)amino]-6-deoxy-D-galactopyranose, 9CI. C6-Galactose mustard. C6-GLM
[105618-02-8]



C₁₀H₁₉Cl₂NO₅ 304.169

Antineoplastic agent (alkylating agent).

Log P -1.57 (calc). Compd. exists as β -anomer chair conformn., α -anomer chair conformn. and several equilibrating boat conformns.

Hydrochloride: [107811-63-2]

Hygroscopic solid. $[\alpha]_D^{23} +53 \rightarrow +57$.

► LD₅₀ (mus, ipr) 15.5 mg/kg. LW5437000

[103626-20-6, 103626-21-7]

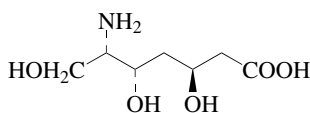
Schein, P.S. et al., *Cancer Res.*, 1987, 47, 696 (pharmacol)

Schein, P.S. et al., *J. Pharm. Sci.*, 1989, 78, 918 (synth, pmr, pharmacol)

Galantinic acid

G-212

6-Amino-2,4,6-trideoxy-L-xylo-heptonic acid, 9CI. 6-Amino-3,5,7-trihydroxyheptanoic acid
[78330-63-9]



C₇H₁₅NO₅ 193.199

Formerly represented as cyclic anhydro ether. Struct. revised to acyclic form in 1990. Constit. amino acid of Galantin I. Cryst. (MeOH aq.).

Mp 125-130° dec. $[\alpha]_D^{25} -29.4$ (c, 0.5 in H₂O).

[130914-23-7]

Ando, T. et al., *Pept. Chem.*, 1980, 113

Wakamiya, T. et al., *Bull. Chem. Soc. Jpn.*, 1984, 57, 142 (isol, cd, pmr, cmr)

Ohfuné, Y. et al., *Tet. Lett.*, 1984, 25, 1587 (synth, pmr)

Golebiowski, A. et al., *Tet. Lett.*, 1989, 30, 7103 (synth)

Sakai, N. et al., *J.A.C.S.*, 1992, 114, 998-1010 (synth, struct)

Kumar, J.S.R. et al., *Tet. Lett.*, 1999, 40, 1381-1384 (synth)

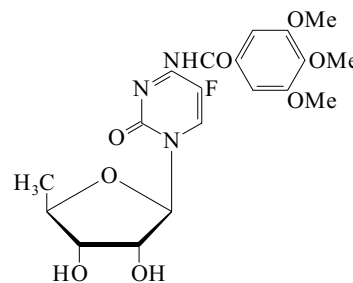
Moreau, X. et al., *Tet. Lett.*, 2001, 42, 4467-4469 (synth)

Pandey, S.K. et al., *Tet. Lett.*, 2004, 45, 5877-5879 (synth)

Galocitabine, INN

G-213

5'-Deoxy-5-fluoro-N-(3,4,5-trimethoxybenzoyl)cytidine, 9CI. Ro 09-1390
[124012-42-6]



C₁₉H₂₂FN₃O₈ 439.396

Antineoplastic agent. Cryst. (EtOAc/Et₂O). Mp 170-171°. Log P -1.56 (calc).

Prodrug of 2'-Deoxy-5-fluorouridine, D-114.

Eur. Pat., 1989, 316 704, (Hoffmann-La Roche); CA, 112, 7857z (synth, pharmacol)

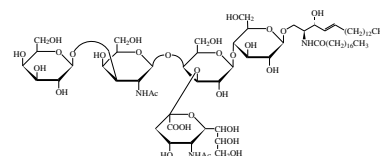
Miwa, M. et al., *Chem. Pharm. Bull.*, 1990, 38, 998 (pharmacol)

Nio, Y. et al., *Anti-Cancer Drugs*, 1992, 3, 387 (pharmacol)

Funaki, T. et al., *J. Pharm. Biomed. Anal.*, 1993, 11, 379 (hplc)

Gangliosides

G-214



A large class of glycosphingolipids composed of hexoses, Sphingosine, fatty acids and sialic acids. The differences between the gangliosides are mainly in the carbohydrate moieties. Four major gangliosides referred to as GM₁ (illus.), DD_{1a}, GD_{1b}, GT_{1b}. Found in the CNS and widely distributed in other tissues. Gangliosides are the main cause of cell surface negative charge. They are also thought to be involved in many different cell functions e.g. metabolism, growth and malignant transformation. A monoganglioside prep. has been used in the treatment of cerebrovascular disorders.

Ganglioside GM₁

Ganglioside G₁. Siagosome. Sygen
[37758-47-7]

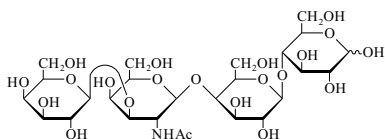
C₇₃H₁₃₁N₃O₃₁ 1546.839

Isol. from bovine brain. Constit. of mammalian vertebrate cell membranes. Particularly abundant in the central and peripheral nervous systems. Used in the treatment of peripheral neuropathies, cerebrovascular disorders and spinal cord injury. Positive effects still need to be confirmed. Now used in the treatment of Parkinson's disease.

[19553-76-5, 19600-01-2, 54827-14-4, 59247-13-1, 62010-37-1, 69345-49-9, 71012-19-6, 85305-87-9, 85305-88-0, 89678-50-2]

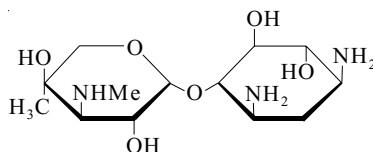
- Kuhn, R. *et al.*, *Chem. Ber.*, 1963, **96**, 866-880 (isol, struct)
 Klenk, E. *et al.*, *Prog. Chem. Fats Other Lipids*, 1970, **10**, 411
 Gigg, R.H. *et al.*, *Rodd's Chem. Carbon Compd.* (3rd edn.), 1976, **1E**, 394
 Sillerud, L.O. *et al.*, *Carbohydr. Res.*, 1983, **113**, 173-188 (cmr)
 Fishman, P.H. *et al.*, *Chem. Phys. Lipids*, 1986, **42**, 137-151 (rev, props)
 Sonnino, S. *et al.*, *Adv. Exp. Med. Biol.*, 1988, **228**, 437 (rev)
 Jack, D.B. *et al.*, *J. Clin. Pharm. Ther.*, 1990, **15**, 233 (rev)
 Skaper, S.D. *et al.*, *Adv. Exp. Med. Biol.*, 1991, **296**, 257-266 (rev)
 Rost, K.L. *et al.*, *Clin. Pharmacol. Ther. (St. Louis)*, 1991, **50**, 141-149 (pharmacokinetic)
 Rodden, F.A. *et al.*, *J. Neurosurg.*, 1991, **74**, 606 (rev)
 Sandhoff, K. *et al.*, *Adv. Lipid Res.*, 1993, **26**, 119 (rev, metab, biosynth)
 Hasegawa, A. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 703-718 (synth, GMI)
 Walker, J.B. *et al.*, *Neurosci. Lett.*, 1993, **161**, 174-178 (bibl)
 Nobile-Orazio, E. *et al.*, *Drugs*, 1994, **47**, 576-585 (rev, struct, pharmacol, tox)
 Schneider, J.S. *et al.*, *Neurology*, 1995, **45**, 1149-1154 (anti-Parkinsonian pilot study)
 Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1708
 Ishida, H. *et al.*, *J. Carbohydr. Chem.*, 1997, **16**, 413-428 (synth)
 Duclos, R.I. *et al.*, *Carbohydr. Res.*, 2000, **328**, 489-507 (synth, GMI)
 Bhattacharya, S.K. *et al.*, *J.O.C.*, 2000, **65**, 144-151 (synth, GMI)
 Ito, H. *et al.*, *J. Carbohydr. Chem.*, 2001, **20**, 207-225 (synth)

Gangliotetraose **G-215**
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy- β -D-galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose.
 β -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-N-acetylgalactosamine-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose
 [75645-24-8]



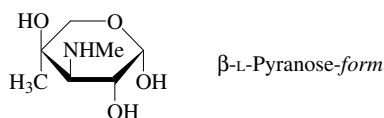
- $C_{26}H_{45}NO_{21}$ 707.636
 Principal neutral oligosaccharide of brain gangliosides in higher animals. Syrup.
 $[\alpha]_D^{25} +17$ (c, 0.5 in MeOH).
 Paulsen, H. *et al.*, *Carbohydr. Res.*, 1985, **137**, 39 (synth, pmr)
 Davidsson, P. *et al.*, *J. Chromatogr.*, 1989, **496**, 279 (gangliotetraose, gangliosides, anal)
 Pat. Coop. Treaty (WIPO), 1991, 9 108 748; CA, **115**, 270663x (synth)

Garamine **G-216**
 2-Deoxy-6-O-[3-deoxy-4-C-methyl-3-(methylamino)- β -L-arabinopyranosyl]-D-streptamine, 9CI
 [49751-51-1]



- $C_{13}H_{27}N_3O_6$ 321.373
 Component of Sisomicin, S-45. Sol. H_2O ; fairly sol. MeOH; poorly sol. butanol, hexane. $[\alpha]_D^{26} +135.4$ (H_2O).
 ▶ LD₅₀ (mus, ivn) 220 mg/kg.
 Kugelman, M. *et al.*, *J. Antibiot.*, 1973, **26**, 394
 Umezawa, S. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1974, **30**, 111 (rev)
 Daniels, P. *et al.*, *J.C.S. Perkin 1*, 1976, 1078 (ms)

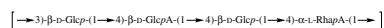
Garosamine **G-217**
 3-Deoxy-4-C-methyl-3-(methylamino)-arabinose, 9CI, 8CI



- $C_7H_{15}NO_4$ 177.2
L-form [29914-71-4]
 Sugar component of Gentamicin C, G-227, an antibiotic complex isol. from fermentations of *Micromonospora*.

- β -L-Pyranose-form**
Me glycoside, N-Ac:
 $C_{10}H_{19}NO_5$ 233.264
 Cryst. (EtOH). Mp 190-196°. $[\alpha]_D^{26} +217$ (c, 0.3 in H_2O).
Me glycoside, N-benzoyl:
 $C_{15}H_{21}NO_5$ 295.335
 $[\alpha]_D^{20} +178.5$ (c, 0.5 in $CHCl_3$).
Me glycoside: Methyl 3-deoxy-4-C-methyl-3-(methylamino)- β -L-arabinopyranoside. Methyl β -garosamide
 $C_8H_{17}NO_4$ 191.227
 $[\alpha]_D^{26} +209$ (c, 0.3 in H_2O).
 Cooper, D.J. *et al.*, *J.C.S. (C)*, 1971, 960 (struct, abs config, Me gly N-Ac)
 Morton, J.B. *et al.*, *J.A.C.S.*, 1973, **95**, 7464 (cmr)
 Wright, J.J. *et al.*, *J.O.C.*, 1978, **43**, 1968 (synth)
 Pauls, H.W. *et al.*, *Can. J. Chem.*, 1984, **62**, 1532 (synth)

Gellan **G-218**
 PS60. Gel-Gro. Gelrite. Kelcogel. Phytigel. E418
 [71010-52-1]



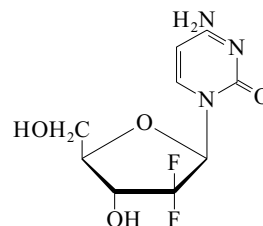
Polysaccharide. Struct. of backbone shown: also contains ca. 1Ac per repeating unit as well as some

L-glycerate and poly(β -hydroxybutyrate) repeating units. Polysaccharide prod. by *Pseudomonas elodea*. Shows useful rheological props. Thickener and stabiliser for foods, also used in cell and tissue cultures.
 Samples contain variable amounts of cations, props. vary with degree of salt formn.

- O'Neill, M.A. *et al.*, *Carbohydr. Res.*, 1983, **124**, 123
 Jansson, P.E. *et al.*, *Carbohydr. Res.*, 1983, **124**, 135
 Talashek, T.A. *et al.*, *Carbohydr. Res.*, 1987, **160**, 303 (props)
 Chandrasekaran, R. *et al.*, *Carbohydr. Res.*, 1988, **175**, 1; **181**, 23 (cryst struct)
 Doner, L.W. *et al.*, *Carbohydr. Res.*, 1995, **273**, 225-233 (purifn, props)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1169-1170 (props)

Gemcitabine, BAN, INN, USAN **G-219**

2'-Deoxy-2',2'-difluorocytidine, 9CI. LY 188011. dFdC
 [95058-81-4]



- $C_9H_{11}F_2N_3O_4$ 263.2
 Antineoplastic agent (alkylating agent), antiviral agent, antimetabolite. Antineoplastic agent for treatment of lung and pancreatic tumours. Nucleoside transporter substrate. Launched 1995 (South Africa, Netherlands). Worldwide 66th best selling prescription drug as Gemzar (\$0.88 bn, 2002) (Eli Lilly) (Med Ad News). Cryst. $[\alpha]_D +71.51$ (c, 0.96 in MeOH). Log P -1.54 (calc).

Hydrochloride: Gemcitabine hydrochloride, USAN. Gemzar

- [122111-03-9]
 Cryst. (H_2O). Mp 287-292°.
 ▶ Exp. reprod. and fetotoxic effects. HA3840000
 [95058-85-8, 122111-03-9, 122111-04-0, 134790-42-4]

- Hertel, L.W. *et al.*, *J.O.C.*, 1988, **53**, 2406 (synth, pmr, cmr)
 Plunkett, W. *et al.*, *Nucleosides Nucleotides*, 1988, **8**, 775 (rev)
 Baker, C.H. *et al.*, *J. Med. Chem.*, 1991, **34**, 1879 (pharmacol)
 Chou, T.S. *et al.*, *Synthesis*, 1992, 565 (synth, ir, uv, cmr, bibl)
 Lund, B. *et al.*, *Cancer Treat. Rev.*, 1993, **19**, 45 (use, rev)
 Huang, P. *et al.*, *Cancer Chemother. Pharmacol.*, 1995, **36**, 181 (pharmacol)
 Freeman, K.B. *et al.*, *J. Chromatogr. B: Biomed. Appl.*, 1995, **665**, 171 (hplc)
 Kawai, M. *et al.*, *Xenobiotica*, 1995, **25**, 405 (metab, rat, dog)

► WK1974100 Launched 1988

l-N-[(S)-3-Amino-2-hydroxypropanoyl]:
Isepamicin, BAN, INN, USAN. *Isepacin.*
Sch 21420. Antibiotic *Sch* 21420.

HAPA-B

[58152-03-7]

C₂₂H₄₃N₅O₁₂ 569.608

Semisynthetic. Shows clinical potential; has increased activity with lower toxicity than Gentamicin B. Powder + 2H₂SO₄. [α]_D²⁵ +110.9 (c, 1 in H₂O).

Log P -7 (uncertain value) (calc).

► LD₅₀ (mus, ipr) 5000 mg/kg. WK1973000

3',4'-Dideoxy: Gentoximicin A

[67777-28-0]

C₁₉H₃₈N₄O₈ 450.531

Prod. by *Micromonospora purpurea nigrescens*. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.

► LD₅₀ (mus, ipr) 200 mg/kg.

[1405-41-0]

Waitz, J.A. et al., *Antimicrob. Agents*

Chemother., 1972, **2**, 464

U.S. Pat., 1975, 3 915; *CA*, **84**, 29191 (*synth. pharmacol*)

Finland, M. et al., *J. Infect. Dis.*, 1976, **134**, 57 (*pharmacol*)

Nagabhushan, T.L. et al., *J. Antibiot.*, 1978, **31**, 681; 688 (*deriv*)

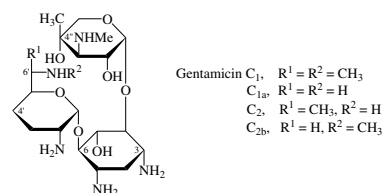
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 174

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AKJ000

Gentamicin C

G-227

Garamycin. Gentiomycin C



Aminoglycoside antibiotic complex.

Consists of a mixt. of closely related and structurally similar components of which the most important are Gentamicins C₁, C_{1a}, C₂ and C_{2b}. Isol. from *Micromonospora* spp. Broad-spectrum antibiotic. Most extensively clinically used aminoglycoside antibiotic.

Gentamicin, BAN, INN is a mixt. of components.

► Ototoxic, nephrotoxic effects and other adverse effects reported when used therapeutically.

Gentamicin C₁ [25876-10-2]

C₂₁H₄₃N₅O₇ 477.6

Sol. H₂O, Py, AcOH; fairly sol. MeOH; poorly sol. butanol, hexane. Mp 94-100°. [α]_D²⁵ +158 (H₂O).

► LD₅₀ (mus, ivn) 88 mg/kg. LY2468000

Tri-Ac: Mp 206-225°. [α]_D²⁵ +143 (MeOH).

4''-Demethyl: 4''-Demethylgentamicin C₁

[66322-28-9]

C₂₀H₄₁N₅O₇ 463.573

From *Micromonospora purpurea-nigrescens*. Active against gram-positive and -negative bacteria, and mycobacteria.

Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²⁵ +142 (H₂O).

► LD₅₀ (mus, ivn) 75 mg/kg. WK2191000Gentamicin C_{1a} [26098-04-4]

C₁₉H₃₉N₅O₇ 449.546

Sol. H₂O, AcOH, Py; fairly sol. MeOH; poorly sol. butanol, hexane.

► LD₅₀ (mus, ivn) 70 mg/kg. WK2290000

l-N-Et: l-N-Ethylgentamicin C_{1a}

Antibiotic 89-07

[59711-96-5]

C₂₁H₄₃N₅O₇ 477.6

Prod. by *Micromonospora echinospora*.

Active against gram-positive and -negative bacteria. Powder. Sol. H₂O. λ_{max} 200 (H₂O).

3''-N-De-Me: 3''-N-Demethylgentamicin C_{1a}

[59864-29-8]

C₁₈H₃₇N₅O₇ 435.52

Prod. by *Micromonospora sagamiensis*.

Active against gram-positive and -negative bacteria. Powder. Sol. H₂O. λ_{max} 200 (H₂O).

4''-Demethyl: 4''-Demethylgentamicin C_{1a}

[61769-70-8]

C₁₈H₃₇N₅O₇ 435.52

From *Micromonospora purpurea-nigrescens*.

Active against gram-positive and -negative bacteria, and mycobacteria.

Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²⁵ +144 (H₂O).

Gentamicin C₂ [25876-11-3]

C₂₀H₄₁N₅O₇ 463.573

Sol. H₂O, AcOH, Py; fairly sol. MeOH; poorly sol. butanol, hexane. Mp 107-124°. [α]_D²⁵ +160 (H₂O).

► LD₅₀ (mus, ivn) 70 mg/kg. LY2840000

Tri-Ac: Mp 206-222°. [α]_D²⁵ +151 (MeOH).

3''-N-De-Me: See Antibiotic Y 02077H₇, A-780

6'-Epimer: Gentamicin C_{2a}

[59751-72-3]

C₂₀H₄₁N₅O₇ 463.573

From *Micromonospora* spp. Sol. H₂O; poorly sol. Me₂CO, hexane.

4''-Demethyl: 4''-Demethylgentamicin C₂

[66277-10-9]

C₁₉H₃₉N₅O₇ 449.546

From *Micromonospora purpurea-nigrescens*.

Active against gram-positive and -negative bacteria, and mycobacteria.

[α]_D²⁵ +148 (H₂O).

► WK2231100

Gentamicin C_{2b} *Micronomicin, INN, JAN.*

Sagamicin. Santemycin. KW 1062.

XK 62-2. Antibiotic *KW* 1062. Antibiotic *XK* 62-2

[52093-21-7]

C₂₀H₄₁N₅O₇ 463.573

Amorph. solid + ½H₂O. Mp 260° dec. [α]_D²⁵ +116 (c, 1 in H₂O). Log P -4.08 (uncertain value) (calc).

► LD₅₀ (mus, orl) 15600 mg/kg. Exp. reprod. and teratogenic effects (large dose).

WK2180000

Hemipentasulfate: Micronomicin sulfate

3''-N-De-Me: 3''-N-Demethylsagamicin.

XK 62-5. Antibiotic *XK* 62-5

[59864-28-7]

C₁₉H₃₉N₅O₇ 449.546

From *Micromonospora sagamiensis nonreducans*. Powder. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. butanol, hexane.

5-Deoxy: 5-Deoxygentamicin C_{2b}

[88416-32-4]

C₂₀H₄₁N₅O₆ 447.574

Prod. by *Micromonospora purpurea* in the presence of D-Streptamine. Active against gram-positive and -negative bacteria. Sol. H₂O.

5-Deoxy, 6'-N-Me:

C₂₁H₄₃N₅O₆ 461.601

Prod. by *Micromonospora purpurea*.

Active against gram-positive and -negative bacteria. Sol. H₂O.

2-Hydroxy: 2-Hydroxysagamicin

[77052-96-1]

C₂₀H₄₁N₅O₈ 479.573

Prod. by *Micromonospora sagamiensis* and *Micromonospora purpurea*. Shows broad spectrum antibacterial activity. Powder + H₂O.

Mp 102-112° dec. [α]_D²⁵ +158 (c, 0.5 in H₂O).

► WK2195500

2-Hydroxy, 6'-N-Me: [88426-42-0]

C₂₁H₄₃N₅O₈ 493.599

Prod. by *Micromonospora purpurea* in the presence of D-Streptamine. Active against gram-positive and -negative bacteria. Solid + 1.75H₂SO₄ + 4.5H₂O.

Mp 244-246°.

[1403-66-3, 1405-41-0]

Weinstein, M.J. et al., *J. Med. Chem.*, 1963, **6**, 463 (*isol*)

Cooper, D.J. et al., *J.C.S. (C)*, 1971, 2876; 3126 (*isol, ms, nmr, struct*)

Morton, J.B. et al., *J.A.C.S.*, 1973, **95**, 7464 (*cmr*)

Okachi, R. et al., *J. Antibiot.*, 1974, **27**, 793 (*isol, uv, ir, pmr*)

Egan, R.S. et al., *J. Antibiot.*, 1975, **28**, 29 (*struct*)

Daniels, P.J.L. et al., *J. Antibiot.*, 1975, **28**, 35 (*isol, struct, ir, pmr*)

Testa, R.T. et al., *J. Antibiot.*, 1976, **29**, 140 (*isol, biosynth*)

Daniels, P.J.L. et al., *J.C.S. Perkin I*, 1976, 1078 (*ms*)

Berdy, J. et al., *J. Antibiot.*, 1977, **30**, 945 (*deriv*)

Nagabhushan, T.L. et al., *J. Antibiot.*, 1978, **31**, 43 (*deriv*)

Rosenkrantz, B.E. et al., *Anal. Profiles Drug Subst.*, 1980, **9**, 295 (*rev*)

Japan. Pat., 1980, 80 50 896; *CA*, **93**, 184271 (*XK* 62-5)

Berdy, J. et al., *CA*, 1981, **95**, 78387 (*deriv*)

Davies, D.H. et al., *J.C.S. Perkin I*, 1981, 2151 (*deriv*)

Japan. Pat., 1981, 81 01 892; *CA*, **95**, 40840s (*3''-N-Demethylgentamicin C1a*)

Ohkoshi, M. et al., *Jpn. J. Antibiot.*, 1982, **35**, 691 (*Micronomicin*)

Odakura, Y. et al., *J. Antibiot.*, 1983, **36**, 125 (*biosynth, isol*)

Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 6413 (*synonyms*)

Shepherd, M.J. et al., *Food Contaminants: Sources and Surveillance*, Royal Society of Chemistry, London, 1991, 123 (*anal, rev*)

Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **2**, 904 (*rev, aminoglycosides*)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 169; 182

- Lesniak, W. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2853-2862 (*purifn*)
 Deubner, R. *et al.*, *Magn. Reson. Chem.*, 2003, **41**, 589-598 (*pmr, cmr*)
 Unwin, J. *et al.*, *J. Antibiot.*, 2004, **57**, 436-445 (*biosynth*)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MQS579

Gentamicin G 418 **G-228**

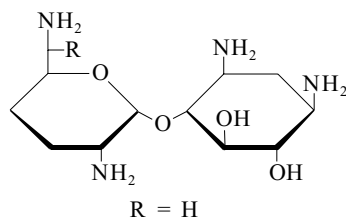
Geneticin. Gentiomycin G 418. G 418. Antibiotic G 418
 [49863-47-0]
 As Gentamicin B, G-226 with
 $R_1 = OH$, $R_2 = CH_3$, $R_3 = NH_2$
 $C_{20}H_{40}N_4O_{10}$ 496.557
 Prod. by *Micromonospora* spp. Shows broad-spectrum activity. Amorph. powder. Sol. H_2O ; fairly sol. MeOH; poorly sol. butanol, hexane.
 Mp 138-144°. $[\alpha]_D^{26} +149$ (c, 0.3 in H_2O).
 ▶ LD₅₀ (mus, ivn) 140 mg/kg, LD₅₀ (mus, ivn) 260 mg/kg, LD₅₀ (mus, scu) 1000 mg/kg. WK2132600
 [49662-05-7]
 Wagman, G.H. *et al.*, *Antimicrob. Agents Chemother.*, 1974, **6**, 144 (*struct*)
 Testa, R.T. *et al.*, *J. Antibiot.*, 1975, **28**, 573 (*struct*)
 Daniels, P.J.L. *et al.*, *J.C.S. Perkin 1*, 1976, 1078 (*ms*)
 Berdy, J. *et al.*, *J. Antibiot.*, 1977, **30**, 945 (*isol*)
 Kase, H. *et al.*, *J. Antibiot.*, 1982, **35**, 1 (*isol*)

Gentamicin X₂ **G-229**

Gentiomycin X₂
 [36889-17-5]
 As Gentamicin B, G-226 with
 $R_1 = OH$, $R_2 = H$, $R_3 = NH_2$
 $C_{19}H_{38}N_4O_{10}$ 482.53
 Aminoglycoside antibiotic. Prod. by *Micromonospora purpurea* and *Micromonospora echinospora*. Sol. H_2O ; fairly sol. MeOH; poorly sol. butanol, hexane. $[\alpha]_D^{20} +77$ (c, 0.78 in H_2O). Major component of Gentamicin X complex.
 ▶ LD₅₀ (mus, ivn) 225 mg/kg, LD₅₀ (mus, ipr) 1800 mg/kg. WK1973500
 Waitz, J.A. *et al.*, *Antimicrob. Agents Chemother.*, 1972, **2**, 464
 Daniels, P.J.L. *et al.*, *J.C.S. Perkin 1*, 1976, 1078 (*ms*)
 Kugelman, M. *et al.*, *J.C.S. Perkin 1*, 1976, 1097 (*synth*)
 Berdy, J. *et al.*, *J. Antibiot.*, 1977, **30**, 945 (*isol*)
 Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 322 (*synth*)
 Kase, H. *et al.*, *J. Antibiot.*, 1982, **35**, 1 (*isol*)

Gentamine C_{1a} **G-230**

3',4'-Dideoxyneamine. 3',4'-Dideoxyneomycin A. VII-6
 [35025-95-7]



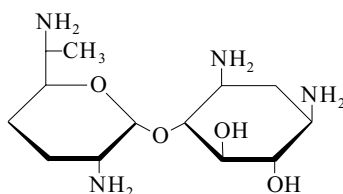
$C_{12}H_{26}N_4O_4$ 290.362

Aminoglycoside antibiotic. Isol. from *Micromonospora purpurea-nigrescens*. Degradn. prod. of Gentamicin C_{1a}. Active against gram-positive bacteria. Sol. H_2O ; fairly sol. MeOH; poorly sol. EtOH, hexane. $[\alpha]_D^{20} +102$ (c, 1 in H_2O).

- Copper, D.J. *et al.*, *J.C.S. (C)*, 1971, 3126 (*struct*)
 Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1973, **46**, 3507 (*synth*)
 Morton, J.B. *et al.*, *J.A.C.S.*, 1973, **95**, 7464 (*cmr*)
 Daniels, P.J.L. *et al.*, *J.C.S. Perkin 1*, 1976, 1078; 1981, 2209 (*cmr, ms*)
 Berdy, J. *et al.*, *J. Antibiot.*, 1977, **30**, 945 (*isol*)
 Reid, R.J. *et al.*, *J. Med. Chem.*, 1981, **24**, 1487 (*synth, cmr*)
 Barton, D.H.R. *et al.*, *J. Carbohydr. Chem.*, 1982, **1**, 105 (*synth*)

Gentamine C₂

[51053-38-4]



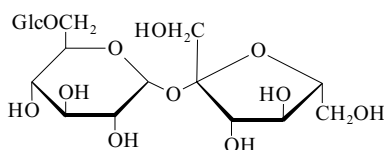
$C_{13}H_{28}N_4O_4$ 304.389

Aminoglycoside antibiotic. Isol. from *Micromonospora purpurea-nigrescens*. Degradn. prod. of Gentamicin C₂. Active against gram-positive bacteria. Sol. H_2O ; fairly sol. MeOH; poorly sol. butanol, hexane. $[\alpha]_D^{20} +92$ (H_2O).
 ▶ LD₅₀ (mus, ivn) 225 mg/kg.

- N⁶-Me: *Gentamine C₁*
 [51053-37-3]
 $C_{14}H_{30}N_4O_4$ 318.415
 Isol. from *Micromonospora purpurea-nigrescens*. Degradn. prod. of Gentamicin C₁. Active mainly against gram-positive bacteria. Sol. H_2O ; fairly sol. MeOH; poorly sol. EtOH, hexane. $[\alpha]_D^{20} +88$ (H_2O).
 ▶ LD₅₀ (mus, ivn) 250 mg/kg.
 Copper, D.J. *et al.*, *J.C.S. (C)*, 1971, 3126 (*struct*)
 Morton, J.B. *et al.*, *J.A.C.S.*, 1973, **95**, 7464 (*cmr*)
 Daniels, P.J.L. *et al.*, *J.C.S. Perkin 1*, 1976, 1078; 1981, 2209 (*cmr, ms*)
 Berdy, J. *et al.*, *J. Antibiot.*, 1977, **30**, 945 (*isol*)
 Ikeda, D. *et al.*, *J. Antibiot.*, 1979, **32**, 1357 (*synth*)

Gentianose**G-232**

β -D-Fructofuranosyl O- β -D-glucopyranosyl-(1→6)- α -D-glucopyranoside, 9CI, 8CI.
 β -D-Glucopyranosyl-(1→6)- α -D-glucopyranosyl-(1→2)- β -D-fructofuranoside [25954-44-3]



$C_{18}H_{32}O_{16}$ 504.441

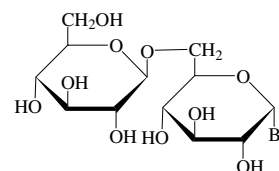
Occurs in roots of various spp. of gentian (*Gentiana lutea* (yellow gentian), *Gentiana purpurea*, *Gentiana asclepiadea*, *Gentiana punctata*, *Gentiana cruciata*). Formed by the action of levansucrase on 6-O- β -D-glucopyranosyl-D-glucose, G-410 and Sucrose, S-92.
 Mp 212°. $[\alpha]_D^{25} +30.8$ (c, 0.5 in H_2O).

Undeca-Ac:

$C_{40}H_{54}O_{27}$ 966.85
 Mp 80-93°. $[\alpha]_D^{20} +32.2$ (c, 0.85 in $CHCl_3$).
 Haworth, W.N. *et al.*, *J.C.S.*, 1923, 3120
 Suami, T. *et al.*, *Carbohydr. Res.*, 1972, **21**, 451 (*synth, pmr*)
 Samuelson, O. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 66 (*chromatog*)

Gentiobiosyl bromide **G-233**

6-O- β -D-glucopyranosyl- α -D-glucopyranosyl bromide



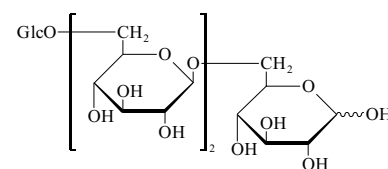
$C_{12}H_{21}BrO_{10}$ 405.196

 α -D-form

Hepta-Ac: Hepta-O-acetylgentiobiosyl bromide. Acetobromogentiobiose
 [14187-83-8]
 $C_{26}H_{35}BrO_{17}$ 699.456
 Mp 144°. $[\alpha]_D^{20} +108$ (c, 1.25 in $CHCl_3$).
 Takiura, K. *et al.*, *Chem. Pharm. Bull.*, 1972, **20**, 438 (*synth*)
 Excoffier, G. *et al.*, *Carbohydr. Res.*, 1976, **46**, 207 (*synth, pmr*)

Gentioteetraose, 8CI **G-234**

β -D-Glucopyranosyl-(1→6)-[β -D-glucopyranosyl-(1→6)]₂-D-glucose, 9CI
 [37796-39-7]



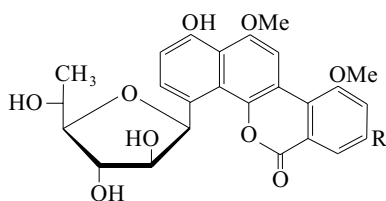
$C_{24}H_{42}O_{21}$ 666.583
 Formed in the hydrolysates of Pustulan, P-112, lutean, gyrophoran and gentio-oligosaccharides.
 $[\alpha]_D -14.5$ (c, 2 in H_2O).

 β -Pyranose-form

Tetradeca-Ac: Mp 211-213° (135°). $[\alpha]_D^{20} -10$ (c, 1.0 in $CHCl_3$).
Trideca-Ac, 6'''-trichloroacetyl: Mp 176-177°. $[\alpha]_D^{20} -6$ (c, 2.0 in $CHCl_3$).
 Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 985 (*isol*)
 McGrath, D. *et al.*, *Carbohydr. Res.*, 1969, **11**, 453
 Shibata, Y. *et al.*, *CA*, 1973, **79**, 14893m (*synth*)
 Excoffier, G. *et al.*, *Carbohydr. Res.*, 1976, **46**, 201 (*synth, pmr*)

Gilvocarcin E

Toromycin C. Anandimycin C
[80937-34-4]



R = CH₂CH₃

C₂₇H₂₈O₉ 496.513

Glycoside antibiotic. Isol. from *Streptomyces anandii* ssp. *araffinosus*. Poorly sol. hexane.

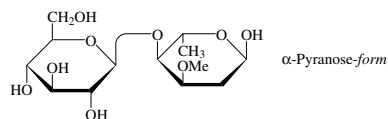
Mp 210-212°. Strain also produces Gilvocarcins V and M. λ_{\max} 243; 265; 274; 305; 327; 382 (MeOH) (Berdy).

Tetra-Ac: Mp 207-208°.

Balitz, D.M. *et al.*, *J. Antibiot.*, 1981, **34**, 1544

Glucobiose
G-236

4-O- β -D-Glucopyranosyl-2,6-dideoxy-3-O-methyl-L-ribo-hexose. 4-O- β -D-Glucopyranosyl-L-cymarose
[85571-31-9]



C₁₃H₂₄O₉ 324.327

$[\alpha]_D$ -72.6 (c, 0.81 in H₂O) (-67.1).

 α -Pyranose-form

Me glycoside: Methyl α -glucobioside
[85571-33-1]

C₁₄H₂₆O₉ 338.354

Needles. Mp 143-145°. $[\alpha]_D$ -156 (c, 1 in MeOH).

 β -Pyranose-form

Me glycoside: Methyl β -glucobioside
[85571-32-0]

C₁₄H₂₆O₉ 338.354

Needles. Mp 95-98°. $[\alpha]_D^{16}$ -30 (c, 0.36 in MeOH).

Penta-Ac: [85571-34-2]

C₂₃H₃₄O₁₄ 534.513

Mp 163-165.5°. $[\alpha]_D$ -33.2 (c, 1.71 in CHCl₃).

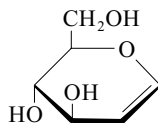
Nakagawa, T. *et al.*, *Tet. Lett.*, 1982, **23**, 5431-5434 (*isol*, *Me glycosides*, *cmr*)

Nakagawa, T. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 2244-2253 (*isol*, *penta-Ac*)

Tsukamoto, S. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 4807-4814 (*isol*, *Me glycosides*)

Glucal

1,5-Anhydro-2-deoxy-arabino-hex-1-enitol, 9CI. 1,2-Dideoxy-arabino-hex-1-enopyranose, 8CI. Mannal



C₆H₁₀O₄ 146.143

D-form [13265-84-4]

Cryst. Mp 57-59°. $[\alpha]_D^{20}$ -10.2 (c, 1.9 in H₂O).

Tri-Ac: 3,4,6-Tri-O-acetyl-D-glucal

[2873-29-2]

C₁₂H₁₆O₇ 272.254

Mp 54-55°. $[\alpha]_D$ -16 (EtOH).

Tripivaloyl: [104445-19-4]

C₂₁H₃₄O₇ 398.495

Mp 100-103°. $[\alpha]_D$ -31 (c, 1.01 in CHCl₃) (room temp.).

Tribenzoyl: 3,4,6-Tri-O-benzoyl-D-glucal

[13322-90-2]

C₂₇H₂₂O₇ 458.467

$[\alpha]_D^{22}$ -8.1 (c, 5 in CHCl₃).

3-Me: 3-O-Methyl-D-glucal

C₇H₁₂O₄ 160.169

Mp 62-63°. $[\alpha]_D$ +14 (CHCl₃).

3-Me, 4,6-di-Ac: 4,6-Di-O-acetyl-3-O-methyl-D-glucal

[60584-32-9]

C₁₁H₁₆O₆ 244.244

$[\alpha]_D$ -33 (CHCl₃).

Tri-Me: 3,4,6-Tri-O-methyl-D-glucal

[16740-98-0]

C₉H₁₆O₄ 188.223

$[\alpha]_D$ +20 (H₂O).

Tribenzyl: 3,4,6-Tri-O-benzyl-D-glucal

[55628-54-1]

C₂₇H₂₈O₄ 416.516

Mp 55°. $[\alpha]_D^{22}$ -2.7 (c, 16.5 in CHCl₃).

L-form

3,6-Dibenzyl: [547763-60-0]

C₂₀H₂₂O₄ 326.391

Oil. $[\alpha]_D^{20}$ +35 (c, 1 in CHCl₃).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 625B (*ir*)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1057B; **2**, 213C (*nmr*)

Bergmann, M. *et al.*, *Ber.*, 1921, **54**, 440-455

(*synth*, *struct*)

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1930, **88**, 513; 1931, **90**, 89 (*tri-Ac*, 3-Me)

Hirst, E.L. *et al.*, *J.C.S.*, 1931, 1131-1137

(*struct*)

Lundt, I. *et al.*, *Acta Chem. Scand.*, 1966, **20**, 1369-1375 (*D-tribenzoyl*)

Descotes, G. *et al.*, *J. Het. Chem.*, 1975, **12**, 91-93 (*ptribenzyl*)

Guthrie, R.D. *et al.*, *Aust. J. Chem.*, 1980, **33**, 1037 (*cmr*)

Yoelter, W. *et al.*, *Angew. Chem., Int. Ed.*, 1981, **20**, 1042 (*cryst struct*)

Czernecki, S. *et al.*, *J.O.C.*, 1986, **51**, 5472-5475 (*synth*)

Shull, B.K. *et al.*, *J. Carbohydr. Chem.*, 1996, **15**, 955-964 (*tri-Ac*, *!synth*)

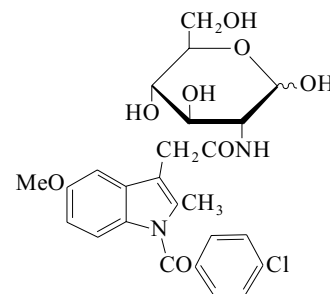
Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1999, **72**, 751-756 (*D-tri-Ac*, *D-tribenzyl*)

Kovács, G. *et al.*, *Tetrahedron*, 1999, **55**, 5253-5264 (*triesters*, *synth*, *pmr*)

Boulineau, F.P. *et al.*, *J.O.C.*, 2004, **69**, 3391-3399 (*L-3,6-dibenzyl*, *synth*, *pmr*, *cmr*)

Glucametacin, INN
G-238

2-[[[1-(4-Chlorobenzoyl)-5-methoxy-2-methyl-1H-indol-3-yl]acetyl]amino]-2-deoxyglucose, 9CI. Indometacin glucosamide. Euminex. Eutrivin. Indicin. Indoglu-
cin. Indosamide. Teorema. Teoremac.
Teoremin
[52443-21-7]



C₂₅H₂₇ClN₂O₈ 518.95

Antiinflammatory, antipyretic agent. Log P 1.13 (uncertain value) (calc).

► LZ6775000

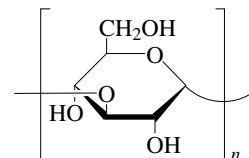
Ger. Pat., 1973, 2 223 051; *CA*, **80**, 88529e (*synth*, *tox*, *pharmacol*)

Paroli, E. *et al.*, *Arzneim.-Forsch.*, 1978, **28**, 819 (*pharmacol*)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 17

 α -D-(1 \rightarrow 3)-Glucan
G-239

[9051-95-0]



Prod. by *Streptococcus mutans*, the fungus *Piptoporus betulinus*, the bracket fungus *Laetiporus sulphureus*, the basidiomycete *Grifola frondosa*, the yeast *Schizosaccharomyces pombe* and many other bacteria, fungi and yeasts.

Manners, D.J. *et al.*, *Carbohydr. Res.*, 1977, **57**, 189-203 (*isol*)

Ogawa, K. *et al.*, *Carbohydr. Res.*, 1979, **75**, C13-C16 (*cryst struct*)

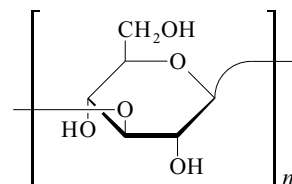
Kato, K. *et al.*, *Carbohydr. Res.*, 1990, **198**, 149-152 (*isol*)

James, P.G. *et al.*, *Carbohydr. Res.*, 1990, **206**, 167-172 (*isol*, *cmr*, *bibl*)

Tylianakis, M. *et al.*, *Carbohydr. Res.*, 1999, **315**, 16-34 (*cmr*)

 β -D-(1 \rightarrow 3)-Glucan
G-240

Pachyman. Callose. Paramylon
[51052-65-4]



Isol. from many fungi, bacteria, plants and algae. A practical laboratory source is the fungus *Poria cocos* (94% of dry weight). Synthetic source of 3-O-β-D-Glucopyranosyl-D-glucose, G-408, Laminaritriose, L-22 and higher homologues. Sol. H₂O. Curdlan below is a well-studied variant having n = 540. Also closely related is Laminarin, L-20 which has a limited amount of chain branching.

Curdlan

Curdlan. *Kerdlan*. *TAK-N*

[54724-00-4]

Extracellular polysaccharide prod. by *Alcaligenes faecalis* var. *myxogenes*, structural or reserve polysaccharide of yeasts, fungi and higher plants. Gelling agent for foods. Claimed to show anti-HIV activity by inhibiting attachment of the virus to T-cells. Insol. H₂O but absorbs H₂O. Suspensions heated >54° form a firm gel. Phase I clinical trials (1995)

Sulfate: *Curdlan sulfate*

[115743-28-7] Semisynthetic polysaccharide. Used in the treatment of AIDS myelopathy, dementia.

Wheeler, W.J. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 330 (isol, bibl)

Harada, T. *et al.*, *ACS Symp. Ser.*, 1977, **45**, 265 (rev, synth, props, use)

Marchenault, R.H. *et al.*, *Carbohydr. Res.*, 1979, **75**, 231-242 (struct)

Deslandes, Y. *et al.*, *Macromolecules*, 1980, **13**, 1466 (cryst struct, bibl)

Saito, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 1986, **59**, 2093; 1987, **60**, 4259; 1989, **62**, 392 (conformn, cmr)

Okuyama, K. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 645-656 (*Curdlan*, struct)

Kirk-Othmer *Encycl. Chem. Technol.*, 4th edn., Wiley, 1991, **16**, 595

Demleitner, S. *et al.*, *Carbohydr. Res.*, 1992, **226**, 239; 247 (synth, pharmacol)

Kai, A. *et al.*, *Carbohydr. Res.*, 1993, **240**, 153 (bibl, biosynth)

Gordon, M. *et al.*, *J. Med. (Westbury, N.Y.)*, 1994, **25**, 163-180; 1995, **26**, 97-131; 1997, **28**, 108-128 (pharmacol, curdlan sulfate)

Yoshida, T. *et al.*, *Carbohydr. Res.*, 1995, **276**, 425 (*curdlan sulfate*)

Alban, S. *et al.*, *Thromb. Res.*, 1995, **78**, 201 (*curdlan sulfate*)

Kulicke, W.M. *et al.*, *Carbohydr. Res.*, 1997, **297**, 135-143 (struct, props)

Müller, A. *et al.*, *Carbohydr. Res.*, 1997, **299**, 203-208 (isol, purifn)

Masili, K.N. *et al.*, *Int. J. Immunopharmacol.*, 1997, **19**, 463-468 (*curdlan sulfate*)

Tylianakis, M. *et al.*, *Carbohydr. Res.*, 1999, **315**, 16-34 (cmr)

Shimizu, J. *et al.*, *Biosci., Biotechnol., Biochem.*, 2001, **65**, 466-469 (*curdlan*)

Naito, T. *et al.*, *J. Acquir. Immune Defic. Syndr.*, 2001, **26**, 512-513 (*curdlan sulfate*)

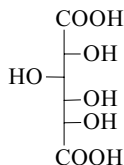
Glucaric acid, 9CI, 8CI

Saccharic acid. *Glucosaccharic acid*.

Hydroxalic acid. *Metatartaric acid*†.

Gularic acid

[25525-21-7]



C₆H₁₀O₈ 210.14

For stereoisomers see Galactaric acid, G-2, Allaric acid, A-74, Idaric acid, I-1 and Mannaric acid, M-23.

D-form

D-Glucaric acid. *L-Gularic acid*

[87-73-0]

Readily obt. from glucose, obt. comly. by HNO₃ oxidn. (40%) yield).

A normal minor constit. of mammalian urine. Present in apples and grapefruit. Inexpensive starting material for industrial and laboratory synthesis, e.g. of biodegradable detergents. Used by glucuronyl transferase in glucuronidation pathway in mammals. Shows antitumour and hypocholesterolaemic props. V. sol. H₂O.

Mp 125-126°. [α]_D¹⁹ +6.9 → +20.6 (18 d) (H₂O). pK_a 5. Delequescens, free acid difficult to crystallise.

Mono-K salt: [576-42-1]

Mp 188° dec. [α]_D²¹ +5 (c, 1 in H₂O).

Di-K salt: [84864-60-8]

[α]_D +12.6 (H₂O).

Dicyclohexylammonium salt: [19139-85-6]

Cryst. (2-propanol aq.). Mp 191-192°.

Bisphenylhydrazide: [7404-38-8]

Mp 212°.

Di-Me ester: *Dimethyl D-glucarate*

[3868-17-5]

C₈H₁₄O₈ 238.194

Cryst. (EtOAc). Mp 162-163°. [α]_D²⁰ +53 (c, 1.0 in MeOH).

Diamide: *Glucaric diamide*. *Glucaramide*

[6614-50-2]

C₆H₁₂N₂O₆ 208.171

Mp 172-173°. [α]_D²⁰ +13.3 (H₂O).

Bis(methylamide): *N,N'-Dimethyl-D-glucaranide*. *Glucaric bis(methylamide)*

C₈H₁₆N₂O₆ 236.224

Solid. Mp 188-191°.

Tetra-Ac, di-Me ester: *Dimethyl 2,3,4,5-tetra-O-acetyl-D-glucarate*

C₁₆H₂₂O₁₂ 406.343

Cryst. (EtOH). Mp 112-114°. [α]_D²⁰ +30 (c, 1.0 in MeOH).

3,4-O-Isopropylidene, di-Me ester:

Dimethyl 3,4-O-isopropylidene-D-glucarate

C₁₁H₁₈O₈ 278.258

[α]_D +18.8 (c, 1.05 in CHCl₃).

3,4-O-Isopropylidene, diamide: *3,4-O-Isopropylidene-D-glucaric diamide*

C₉H₁₆N₂O₆ 248.235

Mp 186-187°. [α]_D +28 (c, 2 in H₂O).

G-241

2,4-O-Benzylidene, di-Me ester: *Dimethyl*

2,4-O-benzylidene-D-glucarate

C₁₅H₁₈O₈ 326.302

Cryst. (EtOH). Mp 143-144°. [α]_D²⁷ +72.6 (c, 1 in Py).

2,4-O-Benzylidene, diamide: *2,4-O-Benzylidene-D-glucaric diamide*

C₁₃H₁₆N₂O₆ 296.279

Mp 214-216° dec.

2,4-O-Benzylidene, 5-Ac, di-Me ester:

Dimethyl 5-O-acetyl-2,4-O-benzylidene-D-glucarate

[25873-87-4]

C₁₇H₂₀O₉ 368.34

Cryst. (EtOH). Mp 185-186°. [α]_D²⁷ +34.3 (c, 1.05 in CHCl₃).

2,4-O-Benzylidene, 3,5-di-Ac, di-Me ester:

Dimethyl 3,5-di-O-acetyl-2,4-O-benzylidene-D-glucarate

[25873-91-0]

C₁₉H₂₂O₁₀ 410.377

Cryst. (EtOH). Mp 150-151°. [α]_D²⁷ +19.6 (c, 1.02 in CHCl₃).

2,4-O-Benzylidene, 5-benzoyl, 3-Ac, di-Me ester:

Dimethyl 3-O-acetyl-5-O-benzoyl-2,4-O-benzylidene-D-glucarate

[25873-94-3]

C₂₄H₂₄O₁₀ 472.448

Cryst. (EtOH aq.). Mp 75-78°. [α]_D²⁷ -28 (c, 1.01 in CHCl₃).

2,3,4,5-Di-O-Benzylidene, di-Me ester:

Dimethyl 2,3,4,5-di-O-benzylidene-D-glucarate

C₂₂H₂₂O₈ 414.411

Mp 135-144°. [α]_D +22 (c, 2.0 in Me₂CO).

2,3,4,5-Tetra-Me, di-Me ester: *Dimethyl*

2,3,4,5-tetra-O-methyl-D-glucarate

C₁₂H₂₂O₈ 294.301

Mp 77-78°. [α]_D +10.3 (H₂O).

2,5-Di-Me, 3,4-O-isopropylidene, di-Me ester:

Dimethyl 3,4-O-isopropylidene-2,5-di-O-methyl-D-glucarate

C₁₃H₂₂O₈ 306.312

Bp_{0.01} 105-110°. [α]_D +20 (c, 1.0 in CHCl₃).

2,5-Di-Me, 3,4-O-benzylidene, di-Me ester:

Dimethyl 3,4-O-benzylidene-2,5-di-O-methyl-D-glucarate

C₁₇H₂₂O₈ 354.356

Bp_{0.01} 174-178°. [α]_D +45.9 (c, 2.2 in CHCl₃).

2,5-Di-Me, 3,4-O-isopropylidene, diamide:

3,4-O-Isopropylidene-2,5-di-O-methyl-D-glucaric diamide

C₁₁H₂₀N₂O₆ 276.289

Mp 207-208°. [α]_D +24 (c, 2.2 in H₂O).

1,4-Lactone: See 1,4-Glucarolactone, G-244

1,4:6,3-Dilactone: See 1,4:6,3-Glucarodilactone, G-242

1,5:6,3-Dilactone: See 1,5:6,3-Glucarodilactone, G-243

[5793-88-4]

Aldrich Library of NMR Spectra, 2nd edn., 1983,

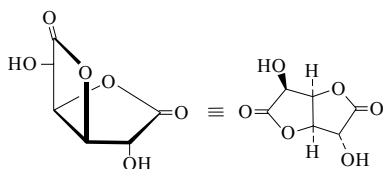
1, 460A (pmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985,

1, 554B (ir)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 1943, 288

Mehlretter, C.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 46 (*D*-form, *synth*)
 Bird, T.P. *et al.*, *J.C.S.*, 1964, 4512 (*D*-di-Me ester isopropylidene, *D*-di-Me ester isopropylidene di-Me, *D*-di-Me ester benzylidene di-Me, diamide derivs)
 Hirasaka, Y. *et al.*, *Chem. Pharm. Bull.*, 1965, **13**, 325 (*di*-Me ester, *tetra*-Ac di-Me ester)
 Fish, D.C. *et al.*, *Methods Enzymol.*, (Wood, W.A., Ed.), 1966, **9**, 53 (*D*-dicyclohexylammonium salt)
 Ide, J. *et al.*, *Yakugaku Zasshi*, 1966, **86**, 1057; *CA*, **66**, 85977j (*D*-benzylidene diamide)
 Matsunaga, I. *et al.*, *Chem. Pharm. Bull.*, 1969, **17**, 1383; 1972, **20**, 284 (*D*-form, *D*-di-Me ester benzylidene, *glc*)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 95 (*pmr*, *cmr*, *conformn*)
 Marsh, C.A. *et al.*, *Carbohydr. Res.*, 1986, **153**, 119 (*biosynth*)
 Merboub, N. *et al.*, *Carbohydr. Res.*, 2001, **336**, 75-78 (*synth*)
 Ibert, M. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1059-1063 (*manuf*, *bibl*)
 Styron, S.D. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 27-51 (*diamide*, *bismethylamide*, *conformn*, *cryst struct*)
 Merboub, N. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 65-77 (*synth*)

1,4:6,3-Glucarodilactone**G-242**C₆H₆O₆ 174.11**D-form** [826-91-5][α]_D¹⁸ +155 → +43.5 (32 hr.) (c, 1.0 in H₂O).

Di-Ac: 2,5-Di-O-acetyl-*D*-1,4:6,3-glucarodilactone. **Aceglatone**, **INN**, **JAN**.
Glucaron

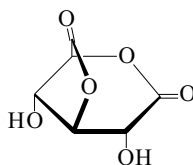
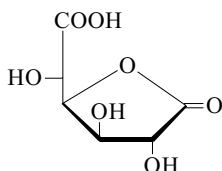
[642-83-1]

C₁₀H₁₀O₈ 258.184

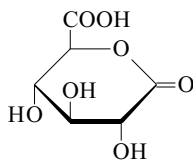
β-Glucuronidase inhibitor, antiinflammatory action. Use experimentally to facilitate glucuronodation of carcinogens and inhibit neoplasm formation. Insol. H₂O. Mp 185-186°. Log P -1.04 (calc).

▶ LZ3990000

Di-Me: 2,5-Di-O-methyl-*D*-1,4:6,3-glucarodilactone

C₈H₁₀O₆ 202.163Mp 50-51°. [α]_D +179 (5 m) → +62 (22 hr.) (6 d).Smith, F. *et al.*, *J.C.S.*, 1944, 633Hirasaka, Y. *et al.*, *Chem. Pharm. Bull.*, 1965, **13**, 325Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 95 (*pmr*, *cmr*, *conformn*)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 454**1,5:6,3-Glucarodilactone****G-243**C₆H₆O₆ 174.11**D-form**Mp 133°. [α]_D²⁶ +167 → +43.5 (90 hr.) (c, 1.0 in H₂O).Smith, F. *et al.*, *J.C.S.*, 1944, 633**1,4-Glucarolactone****G-244***Saccharolactone**D-form*C₆H₈O₇ 192.125**D-form** [389-36-6]

Strong inhibitor of β-glucuronidase. Has been used to treat bladder cancer. Mp 98° (sinters 85°). [α]_D²⁰ +34 → +20 (22 d) (c, 1.5 in H₂O).

2,3,5-Tri-Me, *Me ester*:C₁₀H₁₆O₇ 248.232Mp 74-76° (79°). [α]_D -14.5 (H₂O).*Aldrich Library of 13C and 1H FT NMR**Spectra*, 1992, **1**, 1144C (*nmr*)*Aldrich Library of FT-IR Spectra*, 1st edn., 1985, **1**, 706C (*ir*)Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edward Bros., Inc., Ann Arbor, 1943, 288 (*rev*, *derivs*)Smith, F. *et al.*, *J.C.S.*, 1944, 633 (*tri*-Me, *Me ester*)Boyland, E. *et al.*, *Biochem. J.*, 1956, **64**, 578 (*pharmacol*)Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 95 (*pmr*, *cmr*, *conformn*)**1,5-Glucarolactone****G-245**C₆H₈O₇ 192.125**D-form**

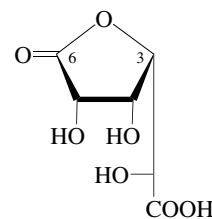
2,3,4-Tri-Me:

C₉H₁₄O₇ 234.205[α]_D²⁰ +69.2 → +51.2 (EtOH aq.).

6-Me ester, 2,3,4-tri-Me:

C₁₀H₁₆O₇ 248.232Mp 107°. [α]_D²² +104.3 (EtOH). [α]_D²² +146.5 (C₆H₆).

6-Benzyl ester, 2,3,4-tribenzyl: [53754-28-2]

C₃₄H₃₂O₇ 552.623[α]_D +45.2 (CHCl₃).Pravdić, N. *et al.*, *Carbohydr. Res.*, 1974, **36**, 167 (*benzyl ester tribenzyl*)**6,3-Glucarolactone****G-246**C₆H₈O₇ 192.125**D-form** [2782-04-9]Cryst (Me₂CO/petrol). Mp 149°. [α]_D²⁰ +45 → +32.4 (60d) (c, 0.9 in H₂O).*Na salt*:

Solid. Mp 180° (dec.).

l-Me ester, 2,4-O-methylene:C₈H₁₀O₇ 218.163Mp 209-211°. [α]_D +134 (c, 0.87 in H₂O).*l*-Me ester, 2,4-O-benzylidene:C₁₄H₁₄O₇ 294.26

Mp 235-236°.

l-Me ester, 2,4-O-benzylidene, 5-Ac:C₁₆H₁₆O₈ 336.298

Mp 210-211°.

l-Me ester, 2,4-O-benzylidene, 5-tosyl:C₂₁H₂₀O₉S 448.45Cryst (MeOH). Mp 190-191°. [α]_D²⁷ +119.6 (c, 1.02 in Py).*l*-Et ester, 2,4-O-methylene:C₉H₁₂O₇ 232.19Mp 195-196°. [α]_D +143 → +137 (12d) (c, 1.0 in H₂O).*l*-Et ester, 2,4-O-benzylidene:C₁₅H₁₆O₇ 308.287Mp 232-234°. [α]_D +147 (c, 0.5 in Py).*l*-Et ester, 2,4-O-benzylidene, 5-Ac:C₁₇H₁₈O₈ 350.324

Mp 233-235°.

l-Et ester, 2,4-O-benzylidene, 5-benzoyl:C₂₂H₂₀O₈ 412.395

Mp 146-148°.

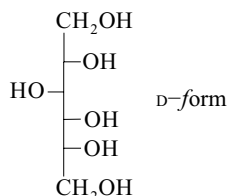
l-Amide, 2,4-O-benzylidene:C₁₃H₁₃NO₆ 279.249

Mp 229-231° dec.

Smith, F. *et al.*, *J.C.S.*, 1944, 633Mehlretter, C.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 46Ide, J. *et al.*, *Yakugaku Zasshi*, 1966, **86**, 1057; *CA*, **66**, 85977j (*Et ester benzylidene derivs*, *Me ester benzylidene*, *Me ester benzylidene**Ac*, *amide benzylidene*)Matsunaga, I. *et al.*, *Chem. Pharm. Bull.*, 1969, **17**, 1383; 1972, **20**, 284 (*Me ester benzylidene tosyl*, *glc*)Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 95 (*pmr*, *cmr*, *conformn*)Chen, L. *et al.*, *J.O.C.*, 1996, **61**, 5847 (*synth*, *ir*, *pmr*, *cmr*)

Glucitol, 9CI, 8CI**G-247**

Sorbitol. Gultol. gulo-Hexitol. gluco-Hexitol. E420
[26566-34-7]



$\text{C}_6\text{H}_{14}\text{O}_6$ 182.173

For stereoisomers see Allitol, A-75, Galactitol, G-4, Iditol, I-3, Mannitol, M-25 and Talitol, T-3. Sorbitol is a common trivial name for glucitol but is imprecise and should be discouraged. Reduction of sorbose can produce either glucitol or iditol. Furthermore, D-glucitol is usually referred to as D-sorbitol whereas reduction of D-sorbose gives L-glucitol.

D-form

D-Glucitol. L-Gulitol. FEMA 3029. Many other names
[50-70-4]

Occurs widely in plants ranging from algae to the higher orders. Fruits of the plant family Rosaceae, which include apples, pears, cherries, apricots, contain appreciable amounts. Rich sources are the fruits of the *Sorbus* and *Crataegus* spp. Used for manuf. of sorbose, propylene glycol, ascorbic acid, resins, plasticisers and as antifreeze mixts. with glycerol or glycol. Tablet diluent, sweetening agent and humectant, other food uses. Used in photometric detn. of Ru(VI) and Ru(VIII); in acid-base titration of borate.

Needles + $\frac{1}{2}$ or H_2O (EtOH) with sweet taste (60% of sucrose). Freely sol. H_2O ; fairly sol. hot EtOH; spar. sol. cold EtOH. Mp 92° (labile form) Mp 97° (stable form) Mp 110-112° (anhyd.). $[\alpha]_{\text{D}} +7$ (borax). $[\alpha]_{\text{D}} +31$ (molybdate). pK_a 13 (60°). The name D-Sorbitol has been used for this compound but should not be employed (see above). Several polymorphs known.

- Gastrointestinal effects by ingestion, LD_{50} (rat, orl) 15900 mg/kg. LZ4290000

Fe(III) complex, compd. with citric acid: Iron sorbitex, USAN. Jectofer
[1338-16-5] Haematinic. A colloidal soln. containing Fe(III), sorbitol and citrate stabilised with dextrin.

- NO8350000

Hexa-Ac: 1,2,3,4,5,6-Hexa-O-acetyl-D-glucitol
[7208-47-1]
 $\text{C}_{18}\text{H}_{26}\text{O}_{12}$ 434.396
Mp 99° (120°). $[\alpha]_{\text{D}}^{18} +6.8$ (Me_2CO).

Mono-9-octadecenoyl(Z-): Sorbitol oleate
[1333-68-2]
 $\text{C}_{24}\text{H}_{46}\text{O}_7$ 446.623

Non-ionic surfactant, emulsifier. Isomer composition not specified, presumably a mixture.

6-Benzoyl: 6-O-Benzoyl-D-glucitol. 1-O-Benzoyl-L-gulitol

[14200-62-5]
 $\text{C}_{13}\text{H}_{18}\text{O}_7$ 286.281
Cryst. (MeOH). Mp 141-143°. $[\alpha]_{\text{D}}^{20} +18.2$ (c, 0.42 in H_2O).

1,2,4,6-Tetrabenzoyl: 1,2,4,6-Tetra-O-benzoyl-D-glucitol
[20869-36-7]

$\text{C}_{34}\text{H}_{30}\text{O}_{10}$ 598.605
Needles (EtOH). Mp 164-166°. $[\alpha]_{\text{D}}^{18} +16.8$ (c, 1.08 in DMF).

1,2,5,6-Tetrabenzoyl: 1,2,5,6-Tetra-O-benzoyl-D-glucitol
[20963-95-5]

$\text{C}_{34}\text{H}_{30}\text{O}_{10}$ 598.605
Needles (EtOH). Mp 169-171°. $[\alpha]_{\text{D}}^{18} -27.6$ (c, 0.87 in DMF).

Hexabenzoyl: 1,2,3,4,5,6-Hexa-O-benzoyl-D-glucitol
[20869-38-9]

$\text{C}_{48}\text{H}_{38}\text{O}_{12}$ 806.821
Mp 128-130°. $[\alpha]_{\text{D}}^{18} +28$ (c, 1.1 in CHCl_3).

1-O-(4-Hydroxy-3-methoxycinnamoyl): 1-Feruloyl-D-glucitol. Sibirate

[152338-47-1]
 $\text{C}_{16}\text{H}_{22}\text{O}_9$ 358.344

Constit. of *Sibiraea angustata*.

Hexakis(3-pyridinecarboxylate):

D-Glucitol hexanicoxinate, 8CI. Sorbinicate, INN. Nicosorbine. Nicosterolo
[6184-06-1]

$\text{C}_{42}\text{H}_{32}\text{N}_6\text{O}_{12}$ 812.748
Drug for treatment of circulatory disorders. Coronary vasodilator. Mp 210-211.5°. Log P 1.71 (calc).

1,3:2,4:5,6-Tri-O-methylene: 1,3:2,4:5,6-Tri-O-methylene-D-glucitol. 1,2:3,5:4,6-Tri-O-methylene-L-gulitol

$\text{C}_9\text{H}_{14}\text{O}_6$ 218.206
Mp 212-216°. $[\alpha]_{\text{D}} -30.8$ (CHCl_3).

4,6-O-Ethylidene: 4,6-O-Ethylidene-D-glucitol. 1,3-O-Ethylidene-L-gulitol

$\text{C}_8\text{H}_{16}\text{O}_6$ 208.211
Mp 99-100°. $[\alpha]_{\text{D}} -44.4$ (H_2O).

1,3:2,4-Di-O-ethylidene: 1,3:2,4-Di-O-ethylidene-D-glucitol

$\text{C}_{10}\text{H}_{18}\text{O}_6$ 234.249
Mp 212-214°. $[\alpha]_{\text{D}} -11.1$ (H_2O).

3,4-Isopropylidene: 3,4-O-Isopropylidene-D-glucitol

[33493-69-5]
 $\text{C}_9\text{H}_{18}\text{O}_6$ 222.238
Cryst. (Me_2CO). Mp 88-90°. $[\alpha]_{\text{D}}^{20} +31$ (c, 4.9 in MeOH).

3,5-Isopropylidene: 3,5-O-Isopropylidene-D-glucitol

[144664-16-4]
 $\text{C}_9\text{H}_{18}\text{O}_6$ 222.238
Syrup. $[\alpha]_{\text{D}}^{20} -1.3$ (c, 1.0 in MeOH).

3,5-Isopropylidene, tetrabenzoyl: 1,2,4,6-Tetra-O-benzoyl-3,5-O-isopropylidene-D-glucitol

[144522-52-1]
 $\text{C}_{37}\text{H}_{34}\text{O}_{10}$ 638.67
 $[\alpha]_{\text{D}}^{20} +12.5$ (c, 1.0 in CHCl_3).

1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-D-glucitol

$\text{C}_{12}\text{H}_{22}\text{O}_6$ 262.302

Hexagonal prisms (petrol). Mp 95-95.5°. $[\alpha]_{\text{D}}^{25} -0.25$ (c, 1.0 in Py).

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene-D-glucitol

$\text{C}_{12}\text{H}_{22}\text{O}_6$ 262.302
Syrup. $[\alpha]_{\text{D}}^{20} -15.5$ (CHCl_3).

3,4:5,6-Di-O-isopropylidene: 3,4:5,6-Di-O-isopropylidene-D-glucitol. 1,2:3,4-Di-O-isopropylidene-L-gulitol

[58846-25-6]
 $\text{C}_{12}\text{H}_{22}\text{O}_6$ 262.302
Cryst. + $\frac{1}{2}\text{H}_2\text{O}$ (Et_2O /petrol). Mp 55-56°. $[\alpha]_{\text{D}}^{19} +25.2$ (c, 1.4 in Et_2O).

3,4:5,6-Di-O-isopropylidene, 1-tosyl: 3,4:5,6-Di-O-isopropylidene-1-O-tosyl-D-glucitol. 1,2:3,4-Di-O-isopropylidene-6-O-tosyl-L-gulitol

[104527-46-0]
 $\text{C}_{19}\text{H}_{28}\text{O}_8\text{S}$ 416.491
Cryst. (hexane/diisopropyl ether). Mp 66-68°. $[\alpha]_{\text{D}}^{20}$ 0 (c, 1 in CHCl_3).

3,4:5,6-Di-O-isopropylidene, 2-tosyl: 3,4:5,6-Di-O-isopropylidene-2-O-tosyl-D-glucitol. 1,2:3,4-Di-O-isopropylidene-5-O-tosyl-L-gulitol

[125126-05-8]
 $\text{C}_{19}\text{H}_{28}\text{O}_8\text{S}$ 416.491
Cryst. (petrol/diisopropyl ether). Mp 97.5-105°. $[\alpha]_{\text{D}}^{20} +29$ (c, 1 in CHCl_3).

1,2:3,4:5,6-Tri-O-isopropylidene:

1,2:3,4:5,6-Tri-O-isopropylidene-D-glucitol
[33377-66-1]
 $\text{C}_{15}\text{H}_{26}\text{O}_6$ 302.367

Needles (Me_2CO aq./ NH_3). Mp 48° (45-46°). $[\alpha]_{\text{D}} +14.3$ (EtOH).

2,4-Benzylidene(S-): 2,4-O-Benzylidene-D-glucitol

[61340-09-8]
 $\text{C}_{13}\text{H}_{18}\text{O}_6$ 270.282
Needles (EtOH). Mp 176-178°. $[\alpha]_{\text{D}} -1.1$ (c, 1.0 in H_2O).

4,6-Benzylidene: 4,6-O-Benzylidene-D-glucitol. 1,3-O-Benzylidene-L-gulitol

[95341-76-7]
 $\text{C}_{13}\text{H}_{18}\text{O}_6$ 270.282
Mp 132-133°. $[\alpha]_{\text{D}} -40.7$ (H_2O).

2,4:3,5-Dibenzylidene: 2,4:3,5-Di-O-benzylidene-D-glucitol

[13265-76-4]
 $\text{C}_{20}\text{H}_{22}\text{O}_6$ 358.39
Mp 208°. $[\alpha]_{\text{D}} -14.8$ (Me_2CO).

1,3:2,4-Di-O-benzylidene: 1,3:2,4-Di-O-benzylidene-D-glucitol. Denon YK1

[19046-64-1]
[32647-67-9]
 $\text{C}_{20}\text{H}_{22}\text{O}_6$ 358.39
Chiral gelator forming gels with a wide variety of org. solvs. Mp 220-221°. $[\alpha]_{\text{D}} +21.6$ (Py).

1,3:2,4:5,6-Tri-O-benzylidene: 1,3:2,4:5,6-Tri-O-benzylidene-D-glucitol.

1,2:3,5:4,6-Tri-O-benzylidene-L-gulitol
[4148-67-8]
 $\text{C}_{27}\text{H}_{26}\text{O}_6$ 446.499
Mp 185° (203°). $[\alpha]_{\text{D}} +30$ (CHCl_3).

2,4-Dibenzyl, 3,5-isopropylidene: 2,4-Di-O-benzyl-3,5-O-isopropylidene-D-glucitol

$\text{C}_{23}\text{H}_{30}\text{O}_6$ 402.486
Mp 65°. $[\alpha]_{\text{D}}^{20} +6.1$ (c, 1.0 in MeOH).

2,3,4,6-Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl-D-glucitol. 1,3,4,5-Tetra-O-benzyl-L-gulitol
[14233-48-8]
C₃₄H₃₈O₆ 542.671
Viscous oil. $[\alpha]_D^{25} +14.7$ (c, 2.4 in CHCl₃).

1,3:2,4-Bis(4-methylbenzylidene): [81541-12-0]

C₂₂H₂₆O₆ 386.444

Cryst. nucleation agent for polymers. No phys. props. accessible.

L-form

L-Glucitol. L-Sorbitol. D-Gulitol

[6706-59-8]

Unknown in nature. Mp 89-91°. $[\alpha]_D +1.7$ (H₂O).

DL-form

Mp 136-138°.

[45007-61-2]

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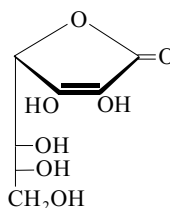
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Glucoascorbic acid

arabino-Hept-2-enonic acid 1,4-lactone, 9CI



D-form

C₇H₁₀O₇ 206.152

D-form [528-88-1]

Monohydrate. Mp 101-105° Mp 140° (hydrate) Mp 192° dec. (anhyd.). $[\alpha]_D^{14} -37.8$ (c, 2.41 in 0.01N HCl). $[\alpha]_D^{20} -22$ (c, 1.0 in H₂O) (hydrate). pK_a 11.58.

3-Me: 3-O-Methyl-D-arabino-hept-2-enono-1,4-lactone

C₈H₁₂O₇ 220.179

Cryst. (Me₂CO/petrol). Mp 142°. $[\alpha]_D^{20} -25$ (c, 0.8 in H₂O).

2,3-Di-Me: 2,3-Di-O-methyl-D-arabino-hept-2-enono-1,4-lactone

C₉H₁₄O₇ 234.205

Cryst. (Me₂CO/petrol). Mp 94°. $[\alpha]_D^{20} -22$ (c, 4.0 in H₂O). $[\alpha]_D^{20} -7$ (c, 0.8 in MeOH).

Penta-Me: 2,3,5,6,7-Penta-O-methyl-D-arabino-hept-2-enono-1,4-lactone

C₁₂H₂₀O₇ 276.286

Mp 80°. $[\alpha]_D^{21} -5$ (MeOH). $[\alpha]_D^{21} +21$ (CCl₄).

L-form

Mp 140° (hydrate). $[\alpha]_D^{22} +24$ (c, 0.7 in H₂O).

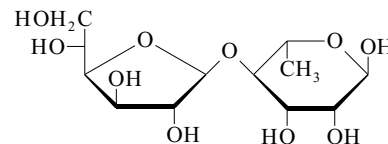
[26566-39-2]

Reichstein, T. et al., *Helv. Chim. Acta*, 1934, 17, 510 (synth)

Haworth, W.N. et al., J.C.S., 1937, 549 (synth, Me ethers)

4-O-β-D-Glucofuranosyl-L-rhamnose

G-249



C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide.

α-Pyranose-form

Me glycoside, 2,3-O-isopropylidene, tetra-Ac: [97321-43-2]

C₂₄H₃₆O₁₄ 548.54

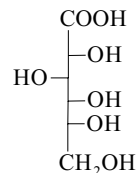
Syrup. $[\alpha]_D -57$ (c, 1.8 in CHCl₃).

Bakinovskii, L.V. et al., *Carbohydr. Res.*, 1985, 138, 41

Gluconic acid, 9CI, 8CI

gluco-Hexonic acid. E574 [133-42-6]

G-250



C₆H₁₂O₇ 196.157

D-form [526-95-4]

Used as an aq. soln. for photometric detn. of Mn. Inexpensive synthetic starting material available on industrial scale. Dietary supplement.

Needles. Sol. H₂O. Mp 130-132°. $[\alpha]_D^{20} -6.7 \rightarrow +11.7$ (H₂O, 5 d). pK_a 3.76 (17°).

► LZ5057100

Na salt: Sodium gluconate. E576

[14906-97-9]

[527-07-1] Flavouring ingredient. Mp 206° dec. $[\alpha]_D^{23} +12.1$ (c, 1.75 in H₂O).

► LZ5235000

K salt: Potassium gluconate. E577

[299-27-4] Dietary supplement. Mp 183° dec. $[\alpha]_D^{20} +11.7$ (c, 1.2 in H₂O).

► LZ5230000

NH₄ salt: [2554-04-3] Sequestrant used in foods.

Deliquescent needles.

Mg salt: Magnesium gluconate. Almora.

Ultra-Mg

[3632-91-5] Mg replenisher. Hydrate. Mp 200° dec. $[\alpha]_D^{20} +11$ (c, 1.8 in H₂O).

Ca salt: Calcium gluconate, USAN.

Calcol. Calglucon. E578

[299-28-5]

[66905-23-5]

Food additive: firming agent, sequestrant, stabiliser. Electrolyte replenisher. $[\alpha]_D^{20} +8.5$ (c, 3.0 in H₂O). Component of Calcet.

► Human (infant) adverse systemic effects when used therapeutically. LD₅₀ (mus, ipr) 2200 mg/kg. EW2100000

Zn(II) salt: Bis(D-gluconato-O¹,O²)zinc, 9CI. Zinc(II) gluconate
[4468-02-4]
C₁₂H₂₂O₁₄Zn 455.687
Dietary zinc supplement. Powder.

Fe(II) salt: Ferrous gluconate, USAN. Bis(D-gluconato-O¹,O²)iron. Iron(II) gluconate. Acroferon. Enteron. Fergon. Ferrose. Glucoferron. Haemex-G. Ironate. Neoferron. E579. Many other names

[299-29-6]
[6047-12-7, 12389-15-0, 18829-42-0, 22830-45-1, 25126-39-0, 38658-53-6, 101197-68-6]
C₁₂H₂₂FeO₁₄ 446.144
Corrosion inhibitor, plasticiser. Haematinic. Dietary supplement. Yellow-grey powder + 2H₂O. Sol. H₂O, insol. EtOH.

► LD₅₀ (rat, orl) 2237 mg/kg. LZ5150000 Approved by FDA (1999)

Fe(III)-Na salt: Sodium ferric gluconate complex, USAN. Ferrlecit
[34089-81-1] Dietary supplement. Used for the treatment of iron deficiency.

Cu(II) salt: Bis(D-gluconato)copper. Copper(II) gluconate
[527-09-3]
[13005-35-1] Mp 155-157°. [α]_D²⁶ +15 (c, 1 in H₂O).

Mn(II) salt: [6485-39-8] Dietary supplement. Slightly pink-coloured powder.

Antimonic acid ester, Na salt: Sodium [D-gluconato(4-)]antimonate(1-), 9CI. Sodium antimonyl gluconate. Triostam. Triostib
[12550-17-3]
C₆H₈NaO₇Sb 336.865
Anthelmintic.

Antimonic acid diester, tri-Na salt: Sodium stibogluconate, BAN. Pentostam. Solus-tibosan
[16037-91-5]
[100817-46-7]

C₁₂H₁₇Na₃O₁₇Sb₂ 745.726
Antiprotozoal agent. Used clinically for the treatment of leishmaniasis. Nonahydrate. Reportedly a complex mixt.

Polymer with D-glucitol, Fe(III) salt: Glusoferron, INN
[56959-18-3]

6-Phosphate: [921-62-0]
[2464-13-3, 37399-28-3, 53411-70-4, 65445-43-4, 74129-00-3, 108347-81-5]

C₆H₁₃O₁₀P 276.137
Important intermed. in the pentose-phosphate cycle. Cryst. (EtOH aq.) (as tri-Na salt). [α]_D²⁵ +1.9 (c, 5 in H₂O) (tri-Na salt). Other salts known.

Et ester: Ethyl D-gluconate
[74421-63-9]
C₈H₁₆O₇ 224.21
Mp 62-63°.

Amide: D-Gluconamide
[3118-85-2]
C₆H₁₃NO₆ 195.172
Mp 143-144°. [α]_D²⁶ +31.2 (H₂O).

Phenylhydrazide: Mp 200°. [α]_D²⁰ +12 (H₂O).

Nitrile: D-Glucononitrile
[52387-29-8]
C₆H₁₁NO₅ 177.157
Mp 115-120°. [α]_D²¹ +8.8 (H₂O).

Lactone: See 1,5-Gluconolactone, G-252

2,3,4,6-Tetra-Ac, Me ester: Methyl 2,3,4,6-tetra-O-acetyl-D-gluconate
[6067-21-6]
C₁₅H₂₂O₁₁ 378.332
Cryst. (MeOH). Mp 114-116°. [α]_D²¹ +20.6 (c, 1 in CHCl₃).

2,3,4,5,6-Penta-Ac: 2,3,4,5,6-Penta-O-acetyl-D-gluconic acid
C₁₆H₂₂O₁₂ 406.343
Mp 109-111°. [α]_D +11.2.

2,3,4,5,6-Penta-Ac, Me ester: Methyl 2,3,4,5,6-penta-O-acetyl-D-gluconate
C₁₇H₂₄O₁₂ 420.369
Mp 124°.

2,3,4,5,6-Penta-Ac, amide: 2,3,4,5,6-Penta-O-acetyl-D-gluconamide
C₁₆H₂₃NO₁₁ 405.358
Cryst. (EtOH). Mp 184-185°. [α]_D²⁵ +23.6 (c, 0.9 in CHCl₃).

2,3,4,5,6-Penta-Ac, nitrile: 2,3,4,5,6-Penta-O-acetyl-D-glucononitrile
[6272-51-1]
C₁₆H₂₁NO₁₀ 387.343
Mp 83-84°. [α]_D²² +46.2 (CHCl₃).

2,3,4,6-Tetrabenzoyl, Me ester: Methyl 2,3,4,6-tetra-O-benzoyl-D-gluconate
[29014-96-8]
C₃₅H₃₀O₁₁ 626.615
[α]_D²³ +20.2 (c, 1.0 in CHCl₃).

2,3,4,6-Tetrabenzoyl, Et ester: Ethyl 2,3,4,6-tetra-O-benzoyl-D-gluconate
[29014-97-9]
C₃₆H₃₂O₁₁ 640.642
[α]_D²⁰ +14.8 (c, 0.8 in CHCl₃).

2,3,5,6-Tetrabenzoyl, Me ester: Methyl 2,3,5,6-tetra-O-benzoyl-D-gluconate
[29014-98-0]
C₃₅H₃₀O₁₁ 626.615
Mp 182-183°. [α]_D²⁰ +35.5 (c, 1.0 in CHCl₃).

2,3,5,6-Tetrabenzoyl, Et ester: Ethyl 2,3,5,6-tetra-O-benzoyl-D-gluconate
[29014-99-1]
C₃₆H₃₂O₁₁ 640.642
Mp 175°. [α]_D²³ +30.7 (c, 0.8 in CHCl₃).

2,3,4,5,6-Pentabenzoyl, amide: 2,3,4,5,6-Penta-O-benzoyl-D-gluconamide
[29556-77-2]
C₄₁H₃₃NO₁₁ 715.712
Mp 101-102°. [α]_D²⁰ +30.2 (c, 1.0 in CHCl₃).

2,3,4,5,6-Pentabenzoyl, nitrile: 2,3,4,5,6-Penta-O-benzoyl-D-glucononitrile
[29505-20-2]
C₄₁H₃₁NO₁₀ 697.697
Mp 116-117°. [α]_D²⁰ +16.4 (c, 1.0 in CHCl₃).

2,3,4,5-Tetra-Me: 2,3,4,5-Tetra-O-methyl-D-gluconic acid
C₁₀H₂₀O₇ 252.264
Oil. [α]_D +25 (c, 1.2 in CHCl₃).

2,3,4,5-Tetra-Me, 6-trityl: 2,3,4,5-Tetra-O-methyl-6-O-trityl-D-gluconic acid
C₂₉H₃₄O₇ 494.583
Syrup. [α]_D -2 (c, 1.2 in CHCl₃).

2,3,4,6-Tetra-Me, amide: 2,3,4,6-Tetra-O-methyl-D-gluconamide
C₁₀H₂₁NO₆ 251.279
Mp 68°. [α]_D +60.4 (Me₂CO).

2,3,4,6-Tetra-Me, nitrile: 2,3,4,6-Tetra-O-methyl-D-glucononitrile
[155936-40-6]
C₁₀H₁₉NO₅ 233.264
Mp 68°. [α]_D +60.4 (Me₂CO).

2,3,5,6-Tetra-Me, amide: 2,3,5,6-Tetra-O-methyl-D-gluconamide
C₁₀H₂₁NO₆ 251.279
Mp 91°. [α]_D²⁴ +39.2 (H₂O).

2,3,5,6-Tetra-Me, nitrile: 2,3,5,6-Tetra-O-methyl-D-glucononitrile
C₁₀H₁₉NO₅ 233.264
Mp 91°. [α]_D⁴⁰ +39.2 (H₂O).

3,4:5,6-Di-O-isopropylidene: 3,4:5,6-Di-O-isopropylidene-D-gluconic acid
[52326-97-3]
C₁₂H₂₀O₇ 276.286
Cryst. (Et₂O/hexane). Mp 154-156°. [α]_D +13 (c, 1 in CHCl₃).

3,4:5,6-Di-O-isopropylidene, Me ester: Methyl 3,4:5,6-di-O-isopropylidene-D-gluconate
[114743-85-0]
C₁₃H₂₂O₇ 290.313
Syrup. [α]_D²⁰ +10 (c, 1.0 in CHCl₃).

3,4:5,6-Di-O-isopropylidene, 2-Ac, Me ester: Methyl 2-O-acetyl-3,4:5,6-di-O-isopropylidene-D-gluconate
[114743-86-1]
C₁₅H₂₄O₈ 332.35
Mp 73-74°. [α]_D²⁰ +15 (c, 1.0 in CHCl₃).

3,4:5,6-Di-O-isopropylidene, 2-tosyl, Me ester: Methyl 3,4:5,6-di-O-isopropylidene-2-O-tosyl-D-gluconate
[114743-87-2]
C₂₀H₂₈O₉S 444.502
Mp 92-94°. [α]_D²⁰ +34 (c, 1.0 in CHCl₃).

1,2:3,4:5,6-Triisopropylidene: 1,2:3,4:5,6-Tri-O-isopropylidene-D-gluconic acid
C₁₅H₂₄O₇ 316.35
Cryst. Mp 111°. [α]_D +37.5 (c, 0.2 in CHCl₃).

[921-62-0, 18016-24-5, 57775-17-4]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 553D; 554A; 2, 1287B (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 856B; 856C (nmr)

Robison, R. *et al.*, *Biochem. J.*, 1931, **25**, 323 (6-phosphate)

Robbins, G.B. *et al.*, *J.A.C.S.*, 1938, **60**, 1788 (D-amide penta-Ac)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 1943, 285

Green, J.W. *et al.*, *Adv. Carbohydr. Chem.*, 1948, **3**, 153 (rev)

Seegmüller, J.E. *et al.*, *J. Biol. Chem.*, 1951, **192**, 175-180 (6-phosphate salts, 1synth)

Org. Synth., Coll. Vol., 3, 1955, 690 (D-nitrile penta-Ac)

Scott, D.B.M. *et al.*, *Biochem. J.*, 1957, **65**, 686 (6-phosphate)

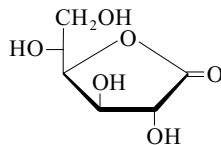
Chyan, W.-H. *et al.*, *CA*, 1958, **52**, 9963d (triostam, synth)

Tanabe, H. *et al.*, *CA*, 1962, **58**, 8617ef (Fe complexes)

Frush, H.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 14 (synth, Ca salt)

Fisch, D.C. *et al.*, *Methods Enzymol.*, 1966, **9**, 53 (cyclohexylammonium salt)

Humphlett, W.J. *et al.*, *Carbohydr. Res.*, 1967, **4**, 175 (esters)
 Zhadanov, Y.A. *et al.*, *Zh. Obshch. Khim.*, 1969, **39**, 1128
 Campello, A. *et al.*, *Biochem. Pharmacol.*, 1970, **19**, 1615-1619 (tristam, pharmacol)
 de Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1970, **13**, 9 (*D*-tetraabenzoyl esters)
 Deferrari, J.O. *et al.*, *Carbohydr. Res.*, 1970, **14**, 103 (*D*-amide, *D*-amide pentabenzoyl)
 Schmitz, H. *et al.*, *Arzneim.-Forsch.*, 1971, **21**, 509 (*Fe* salt, pharmacol)
 Samochowiec, L. *et al.*, *Clin. Ter. (Rome)*, 1971, **56**, 341; *CA*, **75**, 61780z (metab)
 Bermejo Martinez, F. *et al.*, *Mikrochim. Acta*, 1971, **1**, 489 (detn, Mn)
 U.K. Pat., 1972, 1 269 023, (Joh Benckiser); *CA*, **77**, 34855n (*Fe* salt, synth)
 Harvey, D.J. *et al.*, *J. Chromatogr.*, 1973, **76**, 51 (6-phosphate Na salt, ms, gc)
 Smith, G.D. *et al.*, *Acta Cryst. B*, 1974, **30**, 1760-1766 (6-phosphate, cryst struct)
 Lembeck, F. *et al.*, *Arzneim.-Forsch.*, 1975, **25**, 1570 (pharmacol)
 London, R.E. *et al.*, *J. Magn. Reson.*, 1975, **18**, 557 (6-phosphate, cmr)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1983, **119**, 263 (pmr, cmr, conformn)
 Lis, T. *et al.*, *Carbohydr. Res.*, 1983, **122**, 23 (cryst struct)
 Regeling, H. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1987, **106**, 461 (*D*-diisopropylidene Me ester, pmr)
 Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, CAS750
 Herwalt, B.L. *et al.*, *Am. J. Trop. Med. Hyg.*, 1992, **46**, 296-306 (rev, Sodium stibogluconate)
 Olafsdottir, E.S. *et al.*, *Phytochemistry*, 1992, **31**, 4129 (biosynth)
 Jarosz, S. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 1223-1228 (triisopropylidene)
 Fürstner, A. *et al.*, *Angew. Chem.*, 1994, **33**, 751 (nitrile penta-Ac, synth, pmr, cmr)
 Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, (*Fe* salt, synonyms)
 Coldwell, S.E. *et al.*, *Am. J. Physiol.*, 1996, **271**, R1-R10 (*Ferrlecit*)
Food Chemicals Codex, 4th. Ed., 1996, 443-445 (*Zn* complex)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 137; 386-388; 1110-1111; 1204-1205; 1623-1624; 1654-1655; 2297-2298; 2559-2560 (salts, use)
 Köll, P. *et al.*, *Carbohydr. Res.*, 1998, **305**, 147-154 (cryst struct, penta-Ac)
 Nissenon, A.R. *et al.*, *Am. J. Kidney Dis.*, 1999, **33**, 464-470; 471-482 (*Ferrlecit*)
 Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 578
 Merck Index, 13th edn., 2001, No. 707; No. 4081; No. 4469 (sodium stibogluconate, ferrous gluconate, bibl)
 Joseph, C.C. *et al.*, *Tetrahedron*, 2002, **58**, 6907-6911 (2,3,4,6-tetra-Ac Me ester)
 Molina Pinilla, I. *et al.*, *Carbohydr. Res.*, 2003, **338**, 549-555 (2,3,4,5-tetra Me, 2,3,4,5-tetra-Me-6-trityl)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, PLG800; SHK800

1,4-GluconolactoneGluconic acid γ -lactone, 9CI $C_6H_{10}O_6$ 178.141**D-form** [1198-69-2]

Prod. from glucose by *Pseudomonas fragi*.
 Mp 132-135°. $[\alpha]_D^{20} +68 \rightarrow +18$ (14 d) (c, 5.0 in H_2O).

2,3,5,6-Tetra-Ac: 2,3,5,6-Tetra-O-acetyl-D-glucono-1,4-lactone
 $C_{14}H_{18}O_{10}$ 346.29

Mp 103°. $[\alpha]_D^{20} +13.5$ (MeOH) (Me₂CO aq.).

2,3,5,6-Tetraabenzoyl: 2,3,5,6-Tetra-O-benzoyl-D-glucono-1,4-lactone
 [29014-95-7]

$C_{34}H_{26}O_{10}$ 594.573
 $[\alpha]_D^{20} +44.5$ (c, 0.6 in 90% Me₂CO aq.).

2,3,5,6-Tetra-Me: 2,3,5,6-Tetra-O-methyl-D-glucono-1,4-lactone
 $C_{10}H_{18}O_6$ 234.249

Mp 26-27°. Bp_{0.05} 97°. $[\alpha]_D^{16} +63.2 \rightarrow +40.9$ (20 d) (H_2O).

3-Benzyl: 3-O-Benzyl-D-glucono-1,4-lactone
 $C_{13}H_{16}O_6$ 268.266

$[\alpha]_D^{20} +34.4$ (c, 1.15 in MeOH).

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 1943, 279 (derivs)

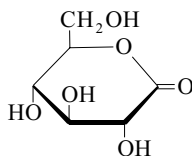
Isbell, H.S. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 17 (*D*-form, synth)

Sawyer, D.T. *et al.*, *Anal. Chem.*, 1966, **38**, 192 (pmr)

de Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1970, **13**, 9 (*D*-tetraabenzoyl)

Walaszek, Z. *et al.*, *Carbohydr. Res.*, 1987, **105**, 131 (pmr, cmr, conformn)

Long, D.D. *et al.*, *J.C.S. Perkin 1*, 2002, 1982-1998 (3-benzyl, synth, ir, pmr, cmr)

1,5-GluconolactoneGluconic acid δ -lactone, 9CI. E575 $C_6H_{10}O_6$ 178.141**D-form**

Fujiglucon

[90-80-2]

A component of many coml. cleaning compds. Food additive uses include acidifier, pH control agent, sequestrant. Inexpensive starting material for synthesis. Chelating agent.

Mp 150-152°. $[\alpha]_D^{20} +66 \rightarrow +9$ (1 d) (c, 5.0 in H_2O).

► LZ5184000

6-Phosphate: [2641-81-8]

 $C_6H_{11}O_9P$ 258.121**G-251**

Formed by enzymic dehydrogenation of D-glucose-6-phosphate.

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-D-glucono-1,5-lactone

 $C_{14}H_{18}O_{10}$ 346.29

Syrup. $[\alpha]_D^{20} +64.4 \rightarrow 0$ (48 h) (MeOH aq.).

2,3,4,6-Tetraabenzoyl: 2,3,4,6-Tetra-O-benzoyl-D-glucono-1,5-lactone

[29014-94-6]

 $C_{34}H_{26}O_{10}$ 594.573

Needles (C_6H_6). Mp 178-179°. $[\alpha]_D^{19} +112.9$ (6 m) $\rightarrow +90$ (4 h) (2 d).

4,6-O-Ethylidene: 4,6-O-Ethylidene-D-glucono-1,5-lactone

 $C_8H_{12}O_6$ 204.179

Cryst. (CHCl₃). Mp 136-141°. $[\alpha]_D^{20} +19$ (c, 0.5 in CHCl₃).

4,6-O-Isopropylidene: 4,6-O-Isopropylidene-D-glucono-1,5-lactone

 $C_9H_{14}O_6$ 218.206

Amorph. solid. $[\alpha]_D^{20} +23$ (c, 2 in CHCl₃).

4,6-O-Benzylidene: 4,6-O-Benzylidene-D-glucono-1,5-lactone

 $C_{13}H_{14}O_6$ 266.25

Cryst. (EtOAc). Mp 190°. $[\alpha]_D +33$ (c, 1.0 in Me₂CO).

2,3,4,6-Tetra-Me: 2,3,4,6-Tetra-O-methyl-D-glucono-1,5-lactone

 $C_{10}H_{18}O_6$ 234.249

Bp_{0.06} 101°. $[\alpha]_D^{18} +101.1 \rightarrow +29.6$ (8 hr.) (H_2O).

Tetraabenzoyl: 2,3,4,6-Tetra-O-benzyl-D-glucono-1,5-lactone

[13096-62-3]

 $C_{34}H_{34}O_6$ 538.639

Syrup. $[\alpha]_D^{25} +79$ (c, 1 in CHCl₃).

Tetrakis(tert-butylidimethylsilyl): 2,3,4,6-Tetrakis(tert-butylidimethylsilyl)-D-glucono-1,5-lactone

 $C_{30}H_{66}O_6Si_4$ 635.19

$[\alpha]_D^{25} +55$ (c, 5.4 in CHCl₃).

L-form [52153-09-0]Mp 142-144°. $[\alpha]_D^{25} -54$ (c, 1 in H_2O).Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1153C (nmr)

Aldrich Library of Infrared Spectra, 3rd edn., 1981, 411H (ir)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros., Ann Arbor, 1943, 279 (rev, derivs)

Isbell, H.S. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 16 (*D*-form, synth)

Kuzuhara, H. *et al.*, *J.O.C.*, 1967, **32**, 2531 (tetraabenzoyl)

de Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1970, **13**, 9 (*D*-tetraabenzoyl)

Hackert, M.L. *et al.*, *Acta Cryst. B*, 1971, **27**, 203 (cryst struct)

Morgenlie, S. *et al.*, *Acta Chem. Scand., Ser. B*, 1977, **31**, 63 (*D*-benzylidene, *D*-ethylidene, *D*-isopropylidene)

Nelson, C.R. *et al.*, *Carbohydr. Res.*, 1982, **106**, 155 (synth, conformn, tetra-Ac)

Walaszek, Z. *et al.*, *Carbohydr. Res.*, 1982, **106**, 193 (pmr, cmr, conformn)

Bauer, H.P. *et al.*, *Eur. J. Biochem.*, 1983, **133**, 163-168 (6-phosphate)

Rajanikanth, B. *et al.*, *Tet. Lett.*, 1989, **30**, 755 (tetraabenzoyl)

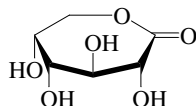
Fang, J.-M. *et al.*, *J.C.S. Perkin 1*, 1995, 967 (butylidimethylsilyl, pmr, cmr)

G-252

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1205-1207 (props, use)
 Joseph, C.C. *et al.*, *Tetrahedron*, 2002, **58**, 6907-6911 (*D*-form, tetra-Ac)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, GFA200

1,6-Gluconolactone

G-253

C₆H₁₀O₆ 178.141**D-form**

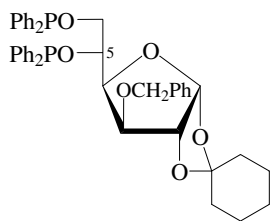
Tetra-O-Me: 2,3,4,5-Tetra-O-methyl-D-glucono-1,6-lactone
 [541550-97-4]
 C₁₀H₁₈O₆ 234.249
 Cryst. Mp 62-63°. [α]_D -12 (c, 1.2 in CHCl₃).

Molina Pinilla, I. *et al.*, *Carbohydr. Res.*, 2003, **338**, 549-555 (*D*-form, tetra-Me)

Glucophinite

G-254

3-O-Benzyl-1,2-O-cyclohexylidene-D-glucopyranose 5,6-bis(diphenylphosphinite)
 [72206-42-9]

C₄₃H₄₄O₆P₂ 718.765

Ligand for Rh-catalysed asym. hydrogenations. Cryst. (EtOH). Mp 87-92°. [α]_D²⁵ -21.5 (c, 0.4 in CHCl₃).

5-Epimer: 3-O-Benzyl-1,2-O-cyclohexylidene- α -L-idofuranose 5,6-bis(diphenylphosphinite). *Idophinite*
 [72206-44-1]
 C₄₃H₄₄O₆P₂ 718.765

Rh complex used in enantioselective hydrogenations. Cryst. (EtOH). Mp 103-105°. [α]_D²⁵ +78.4 (c, 0.6 in CHCl₃).

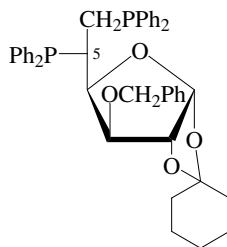
Johnson, T.H. *et al.*, *J. Mol. Catal.*, 1980, **9**, 307-311 (*Rh* complex, use)

Johnson, T.H. *et al.*, *J.O.C.*, 1980, **45**, 62-65 (synth, ir, pmr)

Glucophos

G-255

3-O-Benzyl-1,2-O-cyclohexylidene-5,6-dideoxy-5,6-bis(diphenylphosphino)- α -D-glucopyranose
 [72206-46-3]

C₄₃H₄₄O₄P₂ 686.766

Rh complex used in asymmetric hydrogenations. Cryst. Mp 162-165°. [α]_D²⁵ +112 (c, 0.4 in CHCl₃).

5-Epimer: 3-O-Benzyl-1,2-O-cyclohexylidene-5,6-dideoxy-5,6-bis(diphenylphosphino)- β -L-idofuranose. *Idophos*
 [72206-41-8]
 C₄₃H₄₄O₄P₂ 686.766

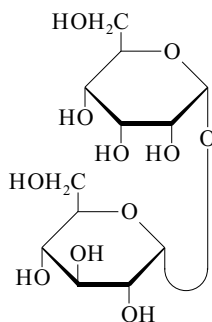
Cryst. (EtOH). Mp 104-108°. [α]_D²⁵ +54.2 (c, 0.6 in CHCl₃).

Johnson, T.H. *et al.*, *J.O.C.*, 1980, **45**, 62-65 (synth, pmr, use)

 α -D-Glucopyranosyl α -D-allopyranoside, 9CI

G-256

α -D-Allopyranosyl α -D-glucopyranoside
 [58716-73-7]

C₁₂H₂₂O₁₁ 342.299

Non-reducing disaccharide. Cryst. + 1½H₂O. Mp 120-122° (anhyd.). [α]_D²² +151 (c, 1.0 in H₂O).

Bis-4,6-O-benzylidene, tri-Ac: [58691-33-1]
 C₃₂H₃₆O₁₄ 644.628
 Mp 114-115°. [α]_D²² +76 (c, 1.0 in CHCl₃).

Bis-4,6-O-benzylidene, tribenzoyl: [72173-50-3]

C₄₇H₄₂O₁₄ 830.84
 Mp 215-217°. [α]_D +159 (c, 0.3 in CHCl₃).

Bis-4,6-O-benzylidene, dibenzoyl: [60967-07-9]

C₄₀H₃₈O₁₃ 726.732
 Cryst. (EtOH). Mp 229-231°. [α]_D +153 (c, 0.34 in CHCl₃).

Bar-Guilloux, E. *et al.*, *Carbohydr. Res.*, 1975, **45**, 217 (synth)

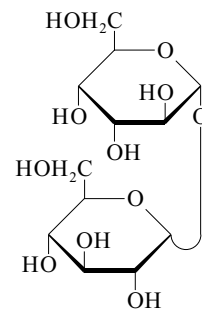
Birch, G.G. *et al.*, *Carbohydr. Res.*, 1976, **49**, 153

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1979, **75**, 175

 α -D-Glucopyranosyl α -D-altropyranoside

G-257

α -D-Altropyranosyl α -D-glucopyranoside

C₁₂H₂₂O₁₁ 342.299

Bis-4,6-O-benzylidene:

C₂₆H₃₀O₁₁ 518.516
 Cryst. (Me₂CO). Mp 247-251° dec. [α]_D²⁵ +68 (c, 0.8 in CHCl₃).

Bis-4,6-O-benzylidene, 2,2'-di-O-benzyl:

C₄₀H₄₂O₁₁ 698.765
 Cryst. (MeOH). Mp 197-199°. [α]_D +94.7 (c, 0.5 in CHCl₃).

Bis-4,6-O-benzylidene, 2',3-di-O-benzyl:

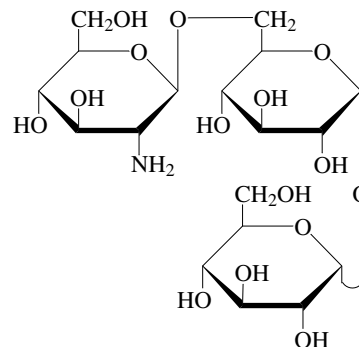
C₄₀H₄₂O₁₁ 698.765
 Cryst. (MeOH). Mp 190.5-192.5°. [α]_D +93.2 (c, 0.7 in CHCl₃).

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1984, **128**, 165; 1985, **136**, 335 (synth, pmr)

 α -D-Glucopyranosyl 2-amino-2-deoxy- β -D-glucopyranosyl-(1→6)- α -D-glucopyranoside

G-258

2-Amino-2-deoxy- β -D-glucopyranosyl-(1→6)- α -D-trehalose

C₁₈H₃₃NO₁₅ 503.456

N-Hydroxymethyl: Lysodektose. Lysodektose

[126077-90-5]
 C₁₉H₃₅NO₁₆ 533.483

Prod. by *Micrococcus lysodeikticus*. Free radical forming substance.

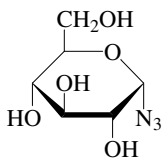
Binyukov, V.I. *et al.*, *BioFactors*, 1989, **2**, 95-97 (isol, struct)

Binyukov, V. *et al.*, *Bioorg. Khim.*, 1990, **16**, 1073-1079 (isol, pmr, cmr)

Stepanov, S.I. *et al.*, *Mikrobiologiya*, 1992, **61**, 369-376 (props)

Glucopyranosyl azide, 9CI**G-259**

[122407-77-6]

 α -D-Pyranose-form $C_6H_{11}N_3O_5$ 205.17 **α -D-Pyranose-form** [20379-60-6]Cryst. (MeCN/EtOH). Mp 181.5-182.5° (176-178°). $[\alpha]_D^{25} +258$ (c, 1.13 in H_2O).**Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- α -D-glucopyranosyl azide

[20379-61-7]

 $C_{14}H_{19}N_3O_9$ 373.319Cryst. (EtOH). Mp 100-101°. $[\alpha]_D^{21} +191.7$ (c, 0.532 in $CHCl_3$).**2,3,4-Tribenzyl:** 2,3,4-Tri-O-benzyl- α -D-glucopyranosylazide

[87216-68-0]

 $C_{27}H_{29}N_3O_5$ 475.543Mp 68-69°. $[\alpha]_D +96.87$ (c, 2.6 in $CHCl_3$). **β -D-Pyranose-form** [20379-59-3]Cryst. Mp 89° (86-88°). $[\alpha]_D^{22} -28.5$ (c, 1.34 in H_2O).**Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranosyl azide

[13992-25-1]

 $C_{14}H_{19}N_3O_9$ 373.319Cryst. (diisopropyl ether). Mp 129-130° (124-125°). $[\alpha]_D^{24} -29$ (c, 1 in $CHCl_3$).**Tetra-Me:** 2,3,4,6-Tetra-O-methyl- β -D-glucopyranosyl azide

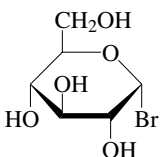
[155936-39-3]

 $C_{10}H_{19}N_3O_5$ 261.277 $[\alpha]_D^{20} -22$ (c, 2.0 in $CHCl_3$).Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 1568

(tetra-Ac, synth, pmr)

Györgydeák, Z. *et al.*, *Annalen*, 1987, 235

(synth, tetra-Ac)

Fürstner, A. *et al.*, *Angew. Chem., Int. Ed.*, 1994, **33**, 751 (tetra-Me, pmr, cmr)Zhang, H. *et al.*, *Liebigs Ann./Recl.*, 1997, 1871-1876 (tribenzyl)Masuda, M. *et al.*, *J. Carbohydr. Chem.*, 1998, **17**, 405-416 (β -D-form tetra-Ac)**Glucopyranosyl bromide****G-260** α -form $C_6H_{11}BrO_5$ 243.054 **α -D-form****Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- α -D-glucopyranosyl bromide. Acetobromoglucose

[572-09-8]

 $C_{14}H_{19}BrO_9$ 411.203Cryst. (Et_2O). Mp 88-89°. $[\alpha]_D^{20} +194$ (c, 3.9 in $CHCl_3$).**2,3,4-Tribenzoyl:** 2,3,4-Tri-O-benzoyl- α -D-glucopyranosyl bromide

[20226-69-1]

 $C_{27}H_{23}BrO_8$ 555.378Cryst. (Et_2O /petrol). Mp 163-164°. $[\alpha]_D^{25} +194$ ($CHCl_3$).**2,3,4,6-Tetrabenzoyl:** 2,3,4,6-Tetra-O-benzoyl- α -D-glucopyranosyl bromide

[14218-11-2]

 $C_{34}H_{27}BrO_9$ 659.486Cryst. (Et_2O /pentane). Mp 129°. $[\alpha]_D^{27} +123$ ($CDCl_3$).**2,3,4,6-Tetra-Me:** 2,3,4,6-Tetra-O-methyl- α -D-glucopyranosyl bromide $C_{10}H_{19}BrO_5$ 299.161Bp_{0.5} 109°. $[\alpha]_D^{25} +205$ (c, 1.0 in $CHCl_3$).**2,3,4,6-Tetrabenzyl:** 2,3,4,6-Tetra-O-benzyl- α -D-glucopyranosyl bromide, 9CI

[4196-35-4]

 $C_{34}H_{35}BrO_5$ 603.551 $[\alpha]_D^{24} +105$ (c, 2.7 in $CHCl_3$).**2-Benzyl, 3,4,6-tris-(4-nitrobenzoyl):** 2-O-Benzyl-3,4,6-tris-O-(4-nitrobenzoyl)- α -D-glucopyranosyl bromide

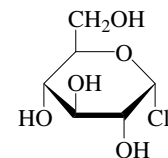
[18933-77-2]

Cryst. (CH_2Cl_2/Et_2O). Mp 150-151°. $[\alpha]_D^{30} +72.9$ (c, 2.0 in $CHCl_3$). **β -D-form****Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranosyl bromide

[6919-96-6]

 $C_{14}H_{19}BrO_9$ 411.203Mp 92°. $[\alpha]_D^{20} -16 \rightarrow +77$ ($CHCl_3$).**2-Benzyl, 3,4,6-tris-(4-nitrobenzoyl):** 2-O-Benzyl-3,4,6-tris-O-(4-nitrobenzoyl)- β -D-glucopyranosyl bromide

[18933-70-5]

Plates (CH_2Cl_2/Et_2O). Mp 143-144°. $[\alpha]_D^{20} +2.4$ (c, 2.1 in $CHCl_3$). **α -L-form****Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- α -L-glucopyranosyl bromide $C_{14}H_{19}BrO_9$ 411.203Mp 88°. $[\alpha]_D^{17.5} -192.7$ (Et_2O). **α -DL-form****Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- α -DL-glucopyranosyl bromide $C_{14}H_{19}BrO_9$ 411.203Cryst. (Et_2O). Mp 87°.*Aldrich Library of 13C and 1H FT NMR**Spectra*, 1992, **2**, 1284B (nmr)Bárczai-Martos, M. *et al.*, *Nature (London)*, 1950, **165**, 369 (α -DL-tetra-Ac)Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 207 (tetra-Ac, rev)Weygand, F. *et al.*, *Chem. Ber.*, 1958, **91**, 2534(α -D-pyr tetra-Ac, β -D-pyr tetra-Ac)Rhind-Tutt, A.J. *et al.*, *J.C.S.*, 1960, 4637(α -D-tetra-Me)Lemieux, R.U. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 221 (α -D-tetra-Ac)Wadsworth, W.W. *et al.*, *J.C.S. (C)*, 1968, 1008(α -D-tribenzoyl, α -D-tetrabenzoyl)Ishikawa, T. *et al.*, *J.O.C.*, 1969, **34**, 563(α -D-benzyl trisnitrobenzoyl, β -D-benzyl trisnitrobenzoyl)Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 1041 (pmr)Bock, K. *et al.*, *J.C.S. Perkin 2*, 1974, 293 (cmr)Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4056(α -D-tetrabenzyl)Bates, H.A. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 273-275 (tetra-Me, *isynth*)Kantha, K.P.R. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 777-781 (*synth, bibl*)Mani, N.S. *et al.*, *Synth. Commun.*, 1992, **22**, 2175 (α -D-tetra-Ac)**Glucopyranosyl chloride****G-261** α -form $C_6H_{11}ClO_5$ 198.603 **α -D-form****3,4,6-Tri-Ac:** 3,4,6-Tri-O-acetyl- β -D-glucopyranosyl chloride

[4451-37-0]

 $C_{12}H_{17}ClO_8$ 324.714Solid. Mp 156-158°. $[\alpha]_D^{20} +29$ (c, 1 in $CHCl_3$).**2,3,4,6-Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- α -D-glucopyranosyl chloride

[4451-35-8]

 $C_{14}H_{19}ClO_9$ 366.751Mp 75-76°. $[\alpha]_D^{20} +166$ ($CHCl_3$).**2,3,4,6-Tetrabenzoyl:** 2,3,4,6-Tetra-O-benzoyl- α -D-glucopyranosyl chloride

[15067-04-6]

 $C_{34}H_{27}ClO_9$ 615.035Mp 116-118°. $[\alpha]_D^{20} +109$ (c, 0.98 in $CHCl_3$).**2,3,4,6-Tetramesyl:** 2,3,4,6-Tetra-O-mesyl- α -D-glucopyranosyl chloride $C_{10}H_{19}ClO_{13}S_4$ 510.969Mp 168-169°. $[\alpha]_D^{20} +110$ ($EtOAc$).**2,3,4-Tribenzyl, 6-Ac:** 6-O-Acetyl-2,3,4-tri-O-benzyl- α -D-glucopyranosyl chloride $C_{29}H_{31}ClO_6$ 511.013 $[\alpha]_D^{23} +88.5$ (c, 2.0 in $CHCl_3$).**2,3,4,6-Tetrabenzyl:** 2,3,4,6-Tetra-O-benzyl- α -D-glucopyranosyl chloride

[25320-59-6]

 $C_{34}H_{35}ClO_5$ 559.1 $[\alpha]_D^{24} +93$ (c, 3.2 in C_6H_6). **β -form****2,3,4,6-Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranosyl chloride

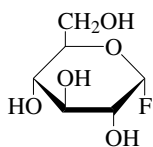
[4451-36-9]

 $C_{14}H_{19}ClO_9$ 366.751Mp 98-99°. $[\alpha]_D^{23} -18.6$ (CCl_4).**2,3,4,6-Tetrabenzoyl:** 2,3,4,6-Tetra-O-benzoyl- β -D-glucopyranosyl chloride

[27530-87-6]

 $C_{34}H_{27}ClO_9$ 615.035Cryst. (Et_2O /petrol). Mp 109-111°. $[\alpha]_D +45.7$ ($MeCN$).**2-O-Trichloroacetyl, 3,4,6-tri-Ac:** 3,4,6-Tri-O-acetyl-2-O-trichloroacetyl- β -D-glucopyranosyl chloride $C_{14}H_{16}Cl_4O_9$ 470.086Mp 142°. $[\alpha]_D^{14} +3$ ($EtOAc$).Zemplén, G. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1954, **4**, 73 (β -D-tetra-Ac)Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 207 (rev, derivs)Lemieux, R.U. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 400 (3,4,6-tri-Ac)

Csuros, Z. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1969, **62**, 121 (β -D-tetra-benzoyl)
Fréchet, J.M. *et al.*, *J.A.C.S.*, 1972, **94**, 604
(α -D-tribenzyl Ac)
Bock, K. *et al.*, *J.C.S. Perkin 2*, 1974, 293 (*cmr*)
Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4056
(α -D-tetra-benzyl)
Granata, A. *et al.*, *Carbohydr. Res.*, 1980, **86**, 305 (α -D-tetra-benzyl)

Glucopyranosyl fluoride**G-262** α -D-form $C_6H_{11}FO_5$ 182.148 **α -D-form** [2106-10-7]Mp 118-125°. $[\alpha]_D^{24} +97.6$ (c, 1.5 in H_2O).2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -D-glucopyranosyl fluoride
[181138-19-2] $C_{12}H_{17}FO_8$ 308.26Mp 93°. $[\alpha]_D +90.6$ (c, 1.55 in $CHCl_3$).2,3,6-Tri-Ac: 2,3,6-Tri-O-acetyl- α -D-glucopyranosyl fluoride $C_{12}H_{17}FO_8$ 308.26Syrup. $[\alpha]_D +67.1$ (c, 1.42 in $CHCl_3$).Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-glucopyranosyl fluoride

[3934-29-0]

 $C_{14}H_{19}FO_9$ 350.297Mp 108°. $[\alpha]_D^{20} +90.1$ ($CHCl_3$).Tetra-benzoyl: 2,3,4,6-Tetra-O-benzoyl- α -D-glucopyranosyl fluoride

[4163-39-7]

 $C_{34}H_{27}FO_9$ 598.58Mp 110-112°. $[\alpha]_D^{22} +110$ (Py).6-Trityl: 6-O-Trityl- α -D-glucopyranosyl fluoride $C_{25}H_{25}FO_5$ 424.468Mp 140°. $[\alpha]_D^{14} +58.4$ ($CHCl_3$).6-Trityl, tri-Ac: 2,3,4-Tri-O-acetyl-6-O-trityl- α -D-glucopyranosyl fluoride $C_{31}H_{31}FO_8$ 550.579Mp 147-148°. $[\alpha]_D^{20} +119.6$ ($CHCl_3$).6-Trityl, tribenzoyl: 2,3,4-Tri-O-benzoyl-6-O-trityl- α -D-glucopyranosyl fluoride

[179090-75-6]

 $C_{46}H_{37}FO_8$ 736.792Amorph. $[\alpha]_D^{18} +75.1$ (Py). **β -D-form** [7617-95-0] $[\alpha]_D^{18} +33.3$ (c, 0.5 in H_2O). $[\alpha]_D^{22} +25$ (c, 1 in H_2O).Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranosyl fluoride

[2823-46-3]

 $C_{14}H_{19}FO_9$ 350.297Cryst. (Et_2O). Mp 98° (83-86°, 89°). $[\alpha]_D^{18} +21.9$ ($CHCl_3$).2,3,4-Tribenzyl: 2,3,4-Tri-O-benzyl- α -D-glucopyranosyl fluoride

[428816-53-9]

 $C_{27}H_{29}FO_5$ 452.522Solid. Mp 112-113°. $[\alpha]_D^{20} +27.3$ (c, 1.0 in $CHCl_3$).2,3,6-Tribenzyl: 2,3,6-Tri-O-benzyl- β -D-

glucopyranosyl fluoride, 8CI

[24679-81-0]

 $C_{27}H_{29}FO_5$ 452.521Mp 62°. $[\alpha]_D^{18} +11.8$ (c, 1.0 in $CHCl_3$).Tetra-benzyl: 2,3,4,6-Tetra-O-benzyl- β -D-glucopyranosyl fluoride

[78153-79-4]

 $C_{34}H_{35}FO_5$ 542.646Mp 42-44°. $[\alpha]_D^{24} +31$ (c, 1.0 in $CHCl_3$).Brauns, D.H. *et al.*, *J.A.C.S.*, 1923, **45**, 833-835;(α -tetra-Ac)Helferich, B. *et al.*, *Annalen*, 1926, **447**, 27-37

(synth)

Sharp, V.E. *et al.*, *J.C.S.*, 1951, 285-288(β -tetra-Ac)Micheel, F. *et al.*, *Chem. Ber.*, 1952, **85**, 187-188(β -form)Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem.**Biochem.*, 1955, **10**, 207-255 (rev)Micheel, F. *et al.*, *Annalen*, 1969, **722**, 228-231(β -tribenzyl)Bock, K. *et al.*, *Anal. Chem. Symp. Ser.*, 1973,**27**, 2701-2709; *Acta Chem. Scand.*, 1975, **29**,682-686 (*pmr*, *cmr*)Wray, V. *et al.*, *J.C.S. Perkin 2*, 1976, 1598-1605(*cmr*)Mukaiyama, T. *et al.*, *Chem. Lett.*, 1981, 431-432 (β -tetra-benzyl)Kitahata, S. *et al.*, *J. Biol. Chem.*, 1981, **256**,

6017-6026 (synth)

Thiem, J. *et al.*, *Carbohydr. Res.*, 1993, **249**, 197-

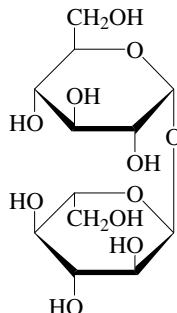
205 (2,3,4-tri-Ac, 2,3,6-tri-Ac)

Horneman, A.M. *et al.*, *J. Carbohydr. Chem.*,1995, **14**, 1-6 (α -form, synth, *pmr*, *cmr*, *bibl*)Caddick, S. *et al.*, *Tetrahedron*, 1996, **52**, 149-

156 (tetra-Ac)

Takanashi, S. *et al.*, *Liebigs Ann./Recl.*, 1997,1081-1084 (α -tetra-Ac)Chiba, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 2003, **76**,1629-1644 (α -D-2,3,4-tribenzyl) **α -D-Glucopyranosyl****G-263** **α -L-glucopyranoside**

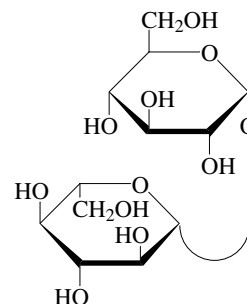
[74496-96-1]

 $C_{12}H_{22}O_{11}$ 342.299Mp 279° dec. $[\alpha]_D^{22} 0$ (c, 0.2 in H_2O).

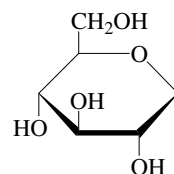
Octa-Ac: [162601-97-0]

 $C_{28}H_{38}O_{19}$ 678.597Cryst. (Et_2O /petrol). Mp 115-117°. $[\alpha]_D^{22} 0$ (c, 0.8 in H_2O).Ronnnow, R.E.C.L. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 197-211 (synth, *pmr*, *cmr*, octa-Ac) **α -D-Glucopyranosyl
 β -L-glucopyranoside****G-264**

[74496-97-2]

 $C_{12}H_{22}O_{11}$ 342.299Mp 128-132°. $[\alpha]_D^{22} +106$ (c, 0.5 in H_2O).

Octa-Ac: [162601-96-9]

 $C_{28}H_{38}O_{19}$ 678.597Amorph. powder. Mp 68-70°. $[\alpha]_D^{22} +91.4$ (c, 0.9 in $CHCl_3$). Incorrect MF given in the paper.Ronnnow, T.E.C.L. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 197-211 (synth, *pmr*, *cmr*, octa-Ac)**Glucopyranosyl iodide****G-265** $C_6H_{11}IO_5$ 290.054 **α -D-form**

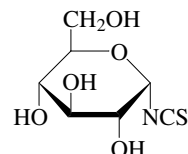
2,3,4,6-Tetra-Ac: [13035-49-9]

 $C_{14}H_{19}IO_9$ 458.203Solid (hexane/ $EtOAc$). Mp 108°. $[\alpha]_D^{20} +233$ (c, 1.0 in $CHCl_3$).

2,3,4,6-Tetra-benzoyl: [14262-85-2]

 $C_{34}H_{27}IO_9$ 706.486Cryst. (pentane/ Et_2O). Mp 141-142° (132-134° dec.). $[\alpha]_D^{29} +169.2$ (c, 1.1 in $CHCl_3$).

2,3,4,6-Tetra-benzyl: [53008-62-1]

 $C_{34}H_{35}IO_5$ 650.552Amorph. mass. $[\alpha]_D^{25} +100.4$ (c, 1.2 in $CHCl_3$).Ness, R.K. *et al.*, *J.A.C.S.*, 1950, **72**, 2200-2205 (tetra-benzoyl)Thiem, J. *et al.*, *Chem. Ber.*, 1980, **113**, 3075-3085 (tetra-Ac)Caputo, R. *et al.*, *Eur. J. Org. Chem.*, 1999, 3147-3150 (tetra-Ac, tetra-benzoyl, tetra-benzyl)**Glucopyranosyl isothiocyanate****G-266** α -D-form $C_7H_{11}NO_5S$ 221.234

α -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-glucopyranosyl isothiocyanate
 $C_{15}H_{19}NO_9S$ 389.382
 Mp 92-94°. $[\alpha]_D +114.5$ ($CHCl_3$).

 β -D-form

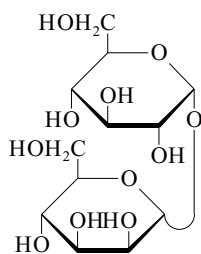
Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranosyl isothiocyanate. TAGIT
 [14152-97-7]
 $C_{15}H_{19}NO_9S$ 389.382
 Derivatisation reagent for the resoln. of amino acids by hplc. Mp 112-113°. $[\alpha]_D +5$ (c, 1 in $CHCl_3$).
 [18866-59-6]

Aldrich Library of ^{13}C and 1H FT NMR Spectra, 1992, **1**, 1412B (nmr)
 Müller, A. *et al.*, *Ber.*, 1941, **74**, 698 (synth)
 Nimura, N. *et al.*, *J. Chromatogr.*, 1980, **202**, 375; 1981, **210**, 77; 1984, **316**, 547 (use)
 Gal, J. *et al.*, *J. Liq. Chromatogr.*, 1984, **7**, 2307; 1986, **9**, 673 (use)
 Camarasa, M.J. *et al.*, *Synthesis*, 1984, 509 (synth)
 Lindhorst, T.K. *et al.*, *Synthesis*, 1995, 1228 (α -Tetra Ac pmr, cmr)

 **α -D-Glucopyranosyl
 α -D-mannopyranoside**

G-267

α -D-Mannopyranosyl α -D-glucopyranoside, 9CI
 [58769-00-9]



$C_{12}H_{22}O_{11}$ 342.299

Non-reducing disaccharide. Mono- or hemihydrate. Mp 120-125° (monohydrate) Mp 126-134° (hemihydrate). $[\alpha]_D^{22} +110$ (c, 1.0 in H_2O). $[\alpha]_D^{22} +162$ (c, 0.5 in H_2O).

Octa-Ac: [58691-31-9]
 $C_{28}H_{38}O_{19}$ 678.597
 $[\alpha]_D^{22} +116$ (c, 1.8 in $CHCl_3$).

2,3-Anhydro, bis-4,6-O-benzylidene: 4,6-O-Benzylidene- α -D-glucopyranosyl 2,3-anhydro-4,6-O-benzylidene- α -D-mannopyranoside
 [32849-13-1]
 $C_{26}H_{28}O_{10}$ 500.501
 Cryst. (EtOH). Mp 152-155°. $[\alpha]_D +88.5$ (c, 1.1 in $CHCl_3$).

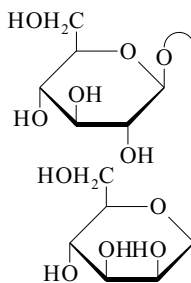
Richardson, A.C. *et al.*, *J.C.S. (C)*, 1971, 1090
 Bar-Guilloux, E. *et al.*, *Carbohydr. Res.*, 1975, **45**, 217 (synth)
 Ronnow, T.E.C.L. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 197-211 (synth, pmr, cmr)

 β -D-Glucopyranosyl

G-268

 β -D-mannopyranoside

β -D-Mannopyranosyl β -D-glucopyranoside, 9CI
 [58768-98-2]



$C_{12}H_{22}O_{11}$ 342.299

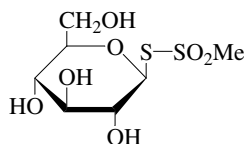
Mp 122-128° (anhyd.). $[\alpha]_D^{22} +52$ (c, 1.0 in H_2O) (+44).

Octa-Ac: [58691-32-0]
 $C_{28}H_{38}O_{19}$ 678.597
 $[\alpha]_D^{22} +40$ (c, 0.5 in $CHCl_3$).

Bar-Guilloux, E. *et al.*, *Carbohydr. Res.*, 1975, **45**, 217 (synth)

**Glucopyranosyl methanethio-
 sulfonate**

G-269



$C_7H_{14}O_7S_2$ 274.315

 β -D-Pyranose-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranosyl methanethiosulfonate
 [219668-45-8]

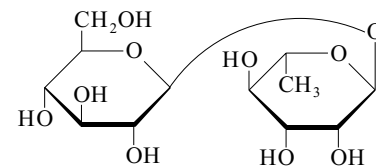
$C_{15}H_{22}O_{11}S_2$ 442.464
 Reagent for glycosylation of proteins. Cryst. (Et₂O). Mp 151-152° dec.

Davis, B.G. *et al.*, *Tetrahedron: Asymmetry*, 2000, **11**, 245-262 (synth, pmr, cmr, use)

 **β -D-Glucopyranosyl
 α -L-rhamnopyranoside**

G-270

[20337-19-3]



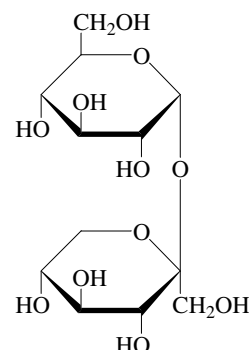
$C_{12}H_{22}O_{10}$ 326.3

Non-reducing disaccharide. Cryst. + $\frac{1}{4}H_2O$. Mp 285°. $[\alpha]_D^{20} -83.5$ (c, 2.35 in H_2O).

Birkofer, L. *et al.*, *Annalen*, 1973, 731 (synth)

 **α -D-Glucopyranosyl
 β -D-sorbosepyranoside**

G-271

Digobiose

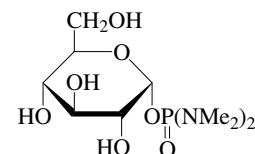
$C_{12}H_{22}O_{11}$ 342.299

Constit. of the fern *Macrothelypteris digophlebia* var. *elegans*. Cryst. (EtOH). Mp 180°. $[\alpha]_D^{23} +68.6$ (c, 0.005 in H_2O).

Qiu, M.H. *et al.*, *Chin. Chem. Lett.*, 2000, **11**, 1063-1064

**Glucopyranosyl N,N,N',N'-
 tetramethylphosphoramidate**

G-272

 α -D-form

$C_{10}H_{23}N_2O_7P$ 314.275

 α -D-form

Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl- α -D-glucopyranosyl N,N,N',N'-tetramethylphosphoramidate
 [143520-19-8]

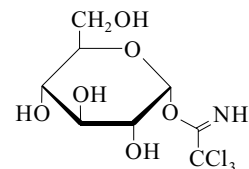
$C_{38}H_{47}N_2O_7P$ 674.772
 Glycosylating agent. Oil. $[\alpha]_D^{23} +62.3$ (c, 1.05 in $CHCl_3$).

 β -D-form

Tetrabenzyl: [143520-27-8]
 $C_{38}H_{47}N_2O_7P$ 674.772
 Glycosylating agent. Needles (hexane). Mp 93-94°. $[\alpha]_D^{23} +19.4$ (c, 1.05 in $CHCl_3$).
 Hashimoto, S. *et al.*, *Tet. Lett.*, 1992, **33**, 3523 (α -D-tetrabenzyl, β -D-tetrabenzyl)

**O-Glucopyranosyl trichloroa-
 cetimidate**

G-273

1-O-Trichloroacetimidylglucopyranose

$C_8H_{12}Cl_3NO_6$ 324.544

α-D-form

Derivs. are glucosyl donors in synth.

2,3,4,6-Tetra-Ac: O-(2,3,4,6-Tetra-O-acetyl-α-D-glucopyranosyl)trichloroacetimidate
[74808-10-9]
C₁₆H₂₀Cl₃NO₁₀ 492.693
[α]_D²⁰ +103 (c, 1.2 in CHCl₃).

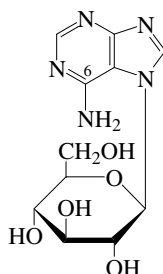
2,3,4,6-Tetrabenzyl: O-(2,3,4,6-Tetra-O-benzyl-α-D-glucopyranosyl)trichloroacetimidate
[74808-09-6]
C₃₆H₃₆Cl₃NO₆ 685.042
[α]_D²⁰ +61.5 (c, 1.0 in CHCl₃).

Schmidt, R.R. *et al.*, *Annalen*, 1983, 1249; 1984, 1343 (synth, use)

Schmidt, R.R. *et al.*, *J. Carbohydr. Chem.*, 1985, 4, 141-169 (use)

7-β-D-Glucopyranosyladenine, 9CI G-274

7-β-D-Glucopyranosyl-7H-purin-6-amine, 9CI
[67010-96-2]



C₁₁H₁₅N₅O₅ 297.27
Cryst. (H₂O). Mp 299-300°.

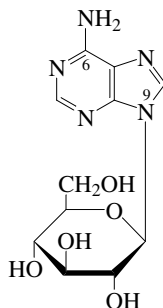
6-N-Benzyl: [56159-42-3]
C₁₈H₂₁N₅O₅ 387.394
Widely distributed in plants. Cryst. (MeOH aq.).
Mp 308-310°.

Latham, D.S. *et al.*, *Biochim. Biophys. Acta*, 1975, 399, 61-70 (N-benzyl, isol)
Cowley, D.E. *et al.*, *Aust. J. Chem.*, 1978, 31, 1095-1111 (synth, N-benzyl, uv, pmr, ms, bibl)
Duke, C.C. *et al.*, *Aust. J. Chem.*, 1978, 31, 2219-2223 (N-benzyl, cmr)

9-β-D-Glucopyranosyladenine G-275

9-β-D-Glucopyranosyl-9H-purin-6-amine, 9CI

[3181-39-3]



C₁₁H₁₅N₅O₅ 297.27
Cryst. (H₂O). Mp 242-243°.

Picrate: Mp 252°.

Penta-Ac:

C₂₁H₂₅N₅O₁₀ 507.456
Cryst. (EtOH). Mp 226-229°.

6-N-Benzoyl: 2',3',4',6'-tetra-Ac: [3624-39-3]

C₂₆H₂₇N₅O₁₀ 569.527
Cryst. (Et₂O). Mp 176-179°.

6-N-Benzyl: [4294-17-1]

C₁₈H₂₁N₅O₅ 387.394

Widely distributed in plants. Cryst. (EtOH).

Mp 179-181°. [α]_D²⁷ +1.4 (c, 5.0 in Me₂SO).

Davoll, J. *et al.*, *J.A.C.S.*, 1951, 73, 1650-1655 (synth, penta-Ac)

Prystas, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, 36, 1472-1481 (synth, N-benzoyl-tetra-Ac)

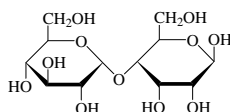
Latham, D.S. *et al.*, *Biochim. Biophys. Acta*, 1975, 399, 61-70 (N-benzyl, isol)

Cowley, D.E. *et al.*, *Aust. J. Chem.*, 1978, 31, 1095-1111 (N-benzyl, synth, uv, pmr, ms, bibl)

Duke, C.C. *et al.*, *Aust. J. Chem.*, 1978, 31, 2219-2223 (N-benzyl, cmr)

4-O-α-D-Glucopyranosyl-D-allose, 9CI G-276

[66101-72-2]



β-Pyranose-form

C₁₂H₂₂O₁₁ 342.299
Amorph. [α]_D²⁴ +118.9 (c, 3.0 in H₂O).

β-Pyranose-form

Octabenzoyl: [66101-71-1]

C₆₈H₅₄O₁₉ 1175.163
Cryst. (EtOH/Me₂CO). Mp 154-155°.
[α]_D²⁴ +45.2 (c, 1.4 in CHCl₃).

Me glycoside, 3-benzoyl, hexa-Ac: Methyl 2,6-di-O-acetyl-3-O-benzoyl-4-O-(2,3,4,6-tetra-O-acetyl-α-D-glucopyranosyl)-β-D-allopyranoside [52538-75-7]

C₃₂H₄₀O₁₈ 712.657
Cryst. (EtOH). Mp 75-78°. [α]_D²⁴ +30 (c, 0.7 in CHCl₃).

Durette, P.L. *et al.*, *J.C.S. Perkin 1*, 1974, 88

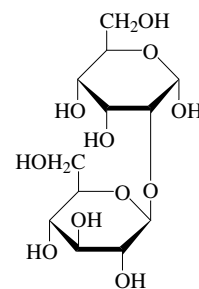
Takeo, K. *et al.*, *Carbohydr. Res.*, 1977, 59, 379 (synth)

Adelhurst, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1988, 42, 196 (Me gly, cmr)

Kitahata, S. *et al.*, *Agric. Biol. Chem.*, 1989, 53, 2661 (synth)

2-O-β-D-Glucopyranosyl-D-allose, 9CI G-277

[82443-88-7]



α-Pyranose-form

C₁₂H₂₂O₁₁ 342.299
Syrup. [α]_D -22.5 (c, 1.03 in H₂O).

α-Pyranose-form

Me glycoside, hepta-Ac: Methyl 2-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-3,4,6-tri-O-acetyl-α-D-allopyranoside [82411-26-5]
C₂₇H₃₈O₁₈ 650.586
Mp 134-135°. [α]_D +42.5 (c, 0.94 in CHCl₃).

Me glycoside: Methyl 2-O-β-D-glucopyranosyl-α-D-allopyranoside [82411-25-4]
C₁₃H₂₄O₁₁ 356.326
Amorph. [α]_D +34.5 (c, 1.1 in H₂O).

β-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-O-β-D-glucopyranosyl-β-D-allopyranoside [84730-88-1]
C₂₀H₂₈O₁₁ 444.435
Cryst. (EtOH). Mp 233-234.5°. [α]_D²⁰ -97 (c, 0.9 in Py).

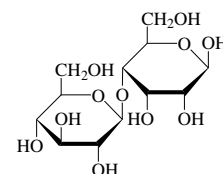
Me glycoside, 4,6-O-benzylidene, 3-benzoyl, 2',3',4',6'-tetra-Ac: Methyl 3-O-benzoyl-4,6-benzylidene-2-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-β-D-allopyranoside [84730-87-0]
C₃₅H₄₀O₁₆ 716.691
Amorph. [α]_D²⁰ -38.4 (c, 0.8 in CHCl₃).

Temeriusz, A. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1981, 55, 783; *CA*, 97, 56154y (synth)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, 112, 73

4-O-β-D-Glucopyranosyl-D-allose G-278

lose



β-Pyranose-form

C₁₂H₂₂O₁₁ 342.299

β-Pyranose-form

Me glycoside: Methyl 4-O-β-D-glucopyranosyl-β-D-allopyranoside [66101-75-5]

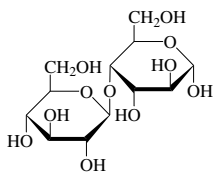
C₁₃H₂₄O₁₁ 356.326
Mp 208–209°. [α]_D²⁴ –17.7 (c, 1.6 in H₂O).

Me glycoside, heptabenzoyl: [66073–31–2]
C₆₂H₅₂O₁₈ 1085.082
Mp 105–110° (softens). [α]_D²⁴ –17.2 (c, 1.9 in CHCl₃).

Takeo, K. *et al.*, *Carbohydr. Res.*, 1977, **59**, 379 (synth)

4-*O*-β-D-Glucopyranosyl-D-al-trose

Celltrobiose



α -Pyranose-form

C₁₂H₂₂O₁₁ 342.299
Mp 133–148° (hydrate). [α]_D +13.6 (H₂O).

α -Pyranose-form

Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-*O*-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-α-D-altropyranoside
C₂₈H₃₈O₁₉ 678.597
Mp 112° Mp 129–130°. [α]_D +48 (CHCl₃).

β-Pyranose-form

Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-*O*-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-β-D-altropyranoside
C₂₈H₃₈O₁₉ 678.597
Mp 113–114° (103–105°). [α]_D –13 (CHCl₃).

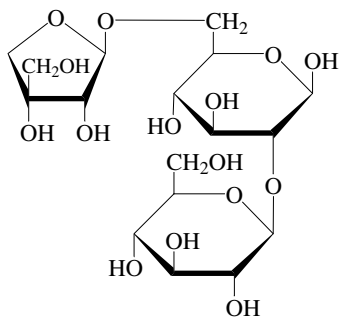
Richtmyer, N.K. *et al.*, *J.A.C.S.*, 1936, **58**, 2534 (synth)

Richtmyer, N.K. *et al.*, *Adv. Carbohydr. Chem.*, 1945, **1**, 37 (rev)

Percy, A. *et al.*, *Carbohydr. Res.*, 1998, **305**, 543–548 (synth, pmr, cmr)

β-D-Glucopyranosyl-(1 → 2)-[β-D-apiofuranosyl(1 → 6)]-D-glucose

G-280



C₁₇H₃₀O₁₅ 474.415

β-Pyranose-form

Benzyl glycoside:

C₂₄H₃₆O₁₅ 564.539

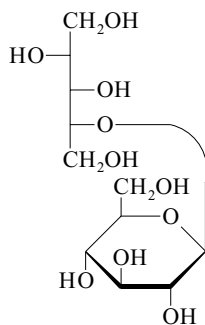
Constit. of *Pyrus bourgaeana*. Pale yellow powder. [α]_D –103.2 (c, 1.2 in MeOH).

Bilia, A.R. *et al.*, *Planta Med.*, 1994, **60**, 568

4-*O*-β-D-Glucopyranosyl-L-arabinitol

G-281

2-*O*-β-D-Glucopyranosyl-D-lyxitol



C₁₁H₂₂O₁₀ 314.289

Octa-Ac:

C₂₇H₃₈O₁₈ 650.586

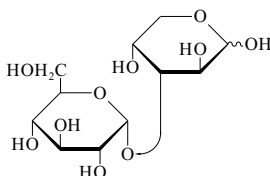
Mp 108°. [α]_D –13 (CHCl₃).

Davidson, E.A. *et al.*, *J.A.C.S.*, 1955, **77**, 4796 (synth, Ac)

3-*O*-α-D-Glucopyranosyl-D-arabinose, 9CI, 8CI

G-282

[23103–02–8]



Pyranose-form

C₁₁H₂₀O₁₀ 312.273

[α]_D²⁰ +49 (c, 4.0 in H₂O).

Phenyllosazone: Mp 195–200°.

α -Pyranose-form [23846–22–2]

Monohydrate. Mp 120–121°. [α]_D²⁰ +53.7 → +47 (c, 4.0 in H₂O; equilib.).

Hepta-Ac: 1,2,4-Tri-O-acetyl-3-*O*-(2,3,4,6-tetra-O-acetyl-α-D-glucopyranosyl)-α-D-arabinopyranose, 9CI, 8CI [23846–24–4]

C₂₅H₃₄O₁₇ 606.533

Mp 127–128°. [α]_D²⁰ +62.4 (c, 2.5 in CHCl₃).

β-Pyranose-form [126107–70–8]

Cryst. (MeOH/2-propanol). Mp 155–157°. [α]_D²⁰ +14.2 → +49.2 (c, 4.0 in H₂O; equilib.).

Hepta-Ac: 1,2,4-Tri-O-acetyl-3-*O*-(2,3,4,6-tetra-O-acetyl-α-D-glucopyranosyl)-β-D-arabinopyranose, 9CI, 8CI [23846–25–5]

C₂₅H₃₄O₁₇ 606.533

Mp 194.5–195.5°. [α]_D²⁰ +13.4 (c, 2.5 in CHCl₃).

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 821 (synth)

Whistler, R.L. *et al.*, *J.O.C.*, 1961, **26**, 1050 (synth)

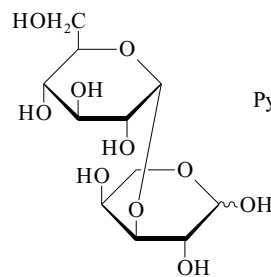
Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, Sect. A, 1968, **72**, 769 (synth)

Furda, I. *et al.*, *Can. J. Chem.*, 1969, **47**, 2891 (synth)

Bilik, V. *et al.*, *Chem. Zvesti.*, 1981, **35**, 829; CA, **96**, 123144q (synth)

3-*O*-α-D-Glucopyranosyl-L-arabinose

G-283



Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Synth. by the action of *Pseudomonas saccharophila* phosphorylase on α-glucose 1-phosphate plus L-arabinose. Dihydrate. [α]_D +156 (c, 2.0 in H₂O).

Phenylsotriazole: Mp 126.5°. [α]_D +80 (c, 2.0 in H₂O).

Hepta-Ac:

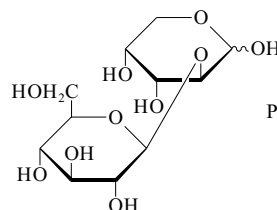
C₂₅H₃₄O₁₇ 606.533

[α]_D +111 (c, 2.0 in CHCl₃).

Hassid, W.Z. *et al.*, *J.A.C.S.*, 1948, **70**, 306

2-*O*-β-D-Glucopyranosyl-D-arabinose

G-284



Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Cryst. (MeOH). Mp 189–190°. [α]_D²⁰ –96 → –67 (0.5h; c, 1.0 in H₂O).

β-Pyranose-form [68070–16–6]

Benzyl glycoside, 3,4-O-isopropylidene, 2',3',4',6'-tetra-Ac: *Benzyl 3,4-O-isopropylidene-2-O*-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-β-D-arabinopyranoside [68044–28–0]

C₂₉H₃₈O₁₄ 610.611

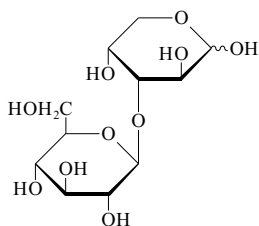
Mp 154°. [α]_D²⁰ –105 (c, 1.5 in CHCl₃).

Weissmann, B. *et al.*, *J.A.C.S.*, 1954, **76**, 1753 (synth)

Sarfati, R.S. *et al.*, *Carbohydr. Res.*, 1978, **65**, 11 (synth)

3-*O*-β-D-Glucopyranosyl-D-arabinose, 9CI

[5077-26-9]



Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273
 $[\alpha]_D^{20}$ -79 (c, 1.0 in H_2O). $[\alpha]_D$ -53.5 (c, 5.2 in H_2O). The early lit. gives Mp 161° and $[\alpha]_D$ -94° (H_2O). These values are not found in the recent lit.

α-Furanose-form

Hepta-Ac: 1,2,5-Tri-O-acetyl-3-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-α-D-arabinofuranose, 9CI
 [77790-36-4]
 $C_{25}H_{34}O_{17}$ 606.533
 Needles (2-propanol). Mp 127-128°. $[\alpha]_D$ -7.1 (c, 0.4 in $CHCl_3$).

β-Furanose-form

Hepta-Ac: 1,2,5-Tri-O-acetyl-3-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-β-D-arabinofuranose
 [77735-23-0]
 $C_{25}H_{34}O_{17}$ 606.533
 Mp 154-155°. $[\alpha]_D$ -36 (c, 0.5 in $CHCl_3$).

α-Pyranose-form

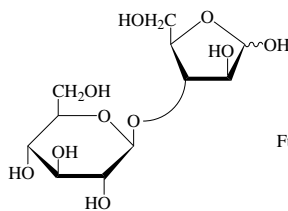
Hepta-Ac: 1,2,4-Tri-O-acetyl-3-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-α-D-arabinopyranose, 9CI
 [77790-34-2]
 $C_{25}H_{34}O_{17}$ 606.533
 Rectangular plates or needles (MeOH). Mp 161-162° Mp 196-197° (double Mp). $[\alpha]_D^{20}$ -16.9 (c, 0.98 in $CHCl_3$) (lit. gives a temp. range).

β-Pyranose-form

Hepta-Ac: 1,2,4-Tri-O-acetyl-3-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-β-D-arabinopyranose, 9CI
 [77790-35-3]
 $C_{25}H_{34}O_{17}$ 606.533
 Mp 139-140°. $[\alpha]_D$ -85.4 (c, 0.14 in $CHCl_3$).

Zemplen, G. *et al.*, *Ber.*, 1926, **59**, 1254
 Gakhokidze, A.M. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1946, **16**, 1914
 Szarek, W.A. *et al.*, *Tetrahedron*, 1978, **34**, 1427 (synth)
 Gelpi, M.E. *et al.*, *Carbohydr. Res.*, 1981, **88**, 277 (Ac, pmr)
 Bilik, V. *et al.*, *Chem. Zvesti*, 1981, **35**, 829; *CA*, **96**, 123144q (synth)
 Mizutani, K. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 2266

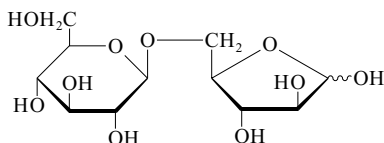
G-285

4-*O*-β-D-Glucopyranosyl-D-arabinose

Furanose-form

 $C_{11}H_{20}O_{10}$ 312.273

Percy, A. *et al.*, *Carbohydr. Res.*, 1998, **305**, 543-548 (synth, pmr, cmr)

5-*O*-β-D-Glucopyranosyl-D-arabinose

Furanose-form

 $C_{11}H_{20}O_{10}$ 312.273**Furanose-form** $[\alpha]_D$ -3.14 (H_2O).

Phenylosazone: Mp 209-210°.

McDonald, N.S. *et al.*, *J.A.C.S.*, 1942, **64**, 2731 (synth)

G-286

α-Pyranose-form [86117-06-8]

Me glycoside: Methyl 2-O-β-D-glucopyranosyl-α-L-arabinopyranoside
 [89734-26-9]
 $C_{12}H_{22}O_{10}$ 326.3
 Needles (MeOH/EtOAc). Mp 193-194°. $[\alpha]_D^{20}$ -36.8 (c, 0.8 in H_2O).

tert-Butyl glycoside: tert-Butyl 2-O-β-D-glucopyranosyl-α-L-arabinopyranoside, 9CI
 [101305-01-5]
 $C_{15}H_{28}O_{10}$ 368.38
 Powder. $[\alpha]_D^{15}$ -3.8 (c, 0.67 in Py).

β-Pyranose-form [86117-14-8]

Me glycoside: Methyl 2-O-β-D-glucopyranosyl-β-L-arabinopyranoside
 [89734-30-5]
 Powder. $[\alpha]_D^{20}$ +91.7 (c, 0.69 in H_2O).

Benzyl glycoside: [27539-69-1]
 $C_{18}H_{26}O_{10}$ 402.397
 Mp 199-200° (194-195°). $[\alpha]_D^{22}$ +132 (H_2O).

[86049-04-9]

Ekborg, G. *et al.*, *Acta Chem. Scand.*, 1969, **23**, 2914 (synth, isol)

Kamerling, J.P. *et al.*, *Tetrahedron*, 1971, **27**, 4275 (ms)

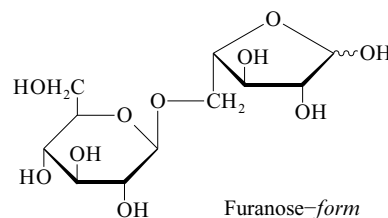
Erbing, B. *et al.*, *CA*, 1976, **84**, 122160g (synth)

Liptak, A. *et al.*, *Tetrahedron*, 1982, **38**, 3489 (synth, pmr, cmr, benzyl gly)

Mizutani, K. *et al.*, *Carbohydr. Res.*, 1984, **126**, 177; 1989, **185**, 27 (Me fur, Me py, synth, pmr)

5-*O*-β-D-Glucopyranosyl-L-arabinose

G-289



Furanose-form

 $C_{11}H_{20}O_{10}$ 312.273**α-Furanose-form**

Me glycoside: Methyl 5-O-β-D-glucopyranosyl-α-L-arabinofuranoside, 9CI
 [121949-56-2]
 $C_{12}H_{22}O_{10}$ 326.3
 Syrup. $[\alpha]_D^{21}$ -54.5 (c, 2.8 in H_2O).

β-Furanose-form

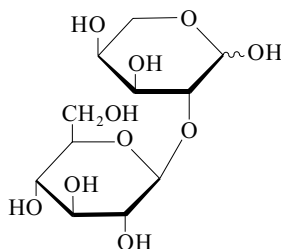
Me glycoside: Methyl 5-O-β-D-glucopyranosyl-β-L-arabinofuranoside
 [121949-57-3]
 $C_{12}H_{22}O_{10}$ 326.3
 Powder. $[\alpha]_D^{21}$ +239.7 (c, 0.34 in H_2O).

Mizutani, K. *et al.*, *Carbohydr. Res.*, 1989, **185**, 27 (synth, pmr)

2-*O*-β-D-Glucopyranosyl-L-arabinose, 9CI, 8CI

[27539-70-4]

G-288

 $C_{11}H_{20}O_{10}$ 312.273

Isol. from a *Malaxis* spp. (Orchidaceae). $[\alpha]_D^{20}$ +29 (c, 0.5 in H_2O).

α-Furanose-form [86049-24-3]

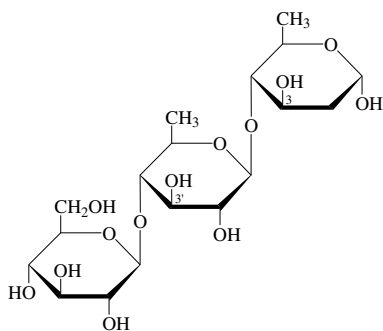
Me glycoside: Methyl 2-O-β-D-glucopyranosyl-α-L-arabinofuranoside, 9CI
 [121949-60-8]
 $C_{12}H_{22}O_{10}$ 326.3
 Syrup. $[\alpha]_D^{21}$ -92.6 (c, 1.24 in H_2O).

β-Furanose-form [86049-25-4]

Me glycoside: Methyl 2-O-β-D-glucopyranosyl-β-L-arabinofuranoside
 [121949-61-9]
 $C_{12}H_{22}O_{10}$ 326.3
 Syrup. $[\alpha]_D^{21}$ +16.3 (c, 1.0 in H_2O).

β-D-Glucopyranosyl-(1→4)-6-deoxy-β-D-glucopyranosyl-(1→4)-2,6-dideoxy-D-arabino-hexose

G-290



C₁₈H₃₂O₁₃ 456.443

α-Pyranose-form

Me glycoside, 3,3'-di-Me: Dresitrioside

[130855-20-8]

C₂₁H₃₈O₁₃ 498.523

Constit. of the roots of *Dregea sinensis*.

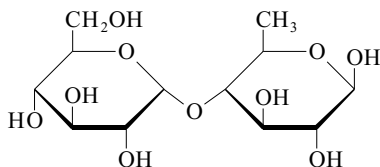
Shen, X. *et al.*, *Huaxue Xuebao*, 1990, **48**, 709; *CA*, **114**, 3446h (*isol*)

4-O-α-D-Glucopyranosyl-6-deoxy-D-glucose

G-291

4-O-α-D-Glucopyranosyl-D-quinovose

[67831-17-8]



C₁₂H₂₂O₁₀ 326.3

β-Pyranose-form

Me glycoside: [69988-41-6]

C₁₃H₂₄O₁₀ 340.327

Cryst. (EtOH). Mp 194-195°. [α]_D²⁴ +74.6 (c, 0.5 in H₂O).

Me glycoside, hexa-Ac: [25787-35-3]

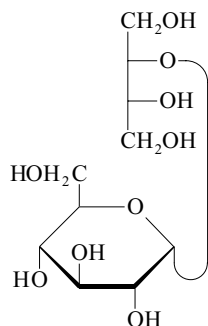
C₂₅H₃₆O₁₆ 592.55

Cryst. (EtOH). Mp 121-122°. [α]_D²⁴ +46.6 (c, 1.2 in CHCl₃).

Takeo, K. *et al.*, *Carbohydr. Res.*, 1979, **69**, 272

2-O-α-D-Glucopyranosyl-D-erythritol

G-292



C₁₀H₂₀O₉ 284.263

Mp 147°. [α]_D +130 (H₂O).

Hepta-Ac:

C₂₄H₃₄O₁₆ 578.523

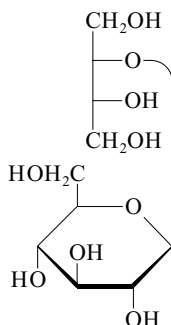
Mp 97-98°. [α]_D +105 (CHCl₃).

[22160-28-7]

Charlson, A.J. *et al.*, *Can. J. Chem.*, 1956, **34**, 1200 (*synth*)

2-O-β-D-Glucopyranosyl-D-erythritol

G-293



C₁₀H₂₀O₉ 284.263

Mp 185°. [α]_D -17 (H₂O).

Hepta-Ac:

C₂₄H₃₄O₁₆ 578.523

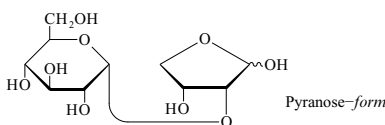
Mp 116°. [α]_D -1.4 (CHCl₃).

[22263-58-7]

Conchie, J. *et al.*, *Adv. Carbohydr. Chem.*, 1957, **12**, 157 (*synth*)

2-O-α-D-Glucopyranosyl-D-erythrose

G-294



C₁₀H₁₈O₉ 282.247

Reducing disaccharide. Mp 141°. [α]_D +87.5 (H₂O).

Hexa-Ac:

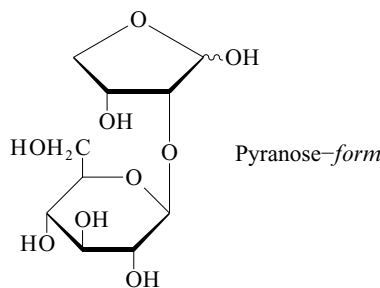
C₂₂H₃₀O₁₅ 534.47

Mp 127°.

Haskins, W.T. *et al.*, *J.A.C.S.*, 1942, **64**, 1852 (*synth*)

2-O-β-D-Glucopyranosyl-D-erythrose

G-295



C₁₀H₁₈O₉ 282.247

Reducing disaccharide. Mp 149-150°. [α]_D +36.8 (H₂O).

Hexa-Ac:

C₂₂H₃₀O₁₅ 534.47

Mp 128-131°.

Montgomery, E.M. *et al.*, *J.A.C.S.*, 1930, **52**, 2101

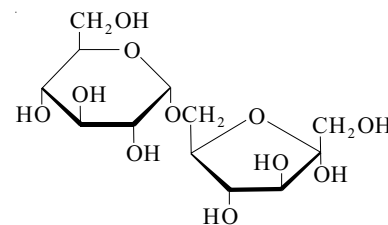
Curtis, E.J.C. *et al.*, *Can. J. Chem.*, 1959, **37**, 358 (*synth*)

6-O-α-D-Glucopyranosyl-D-fructofuranose

G-296

Isomaltulose. Palatinose

[13718-94-0]



C₁₂H₂₂O₁₁ 342.299

An aq. soln. at 20° contains 19.7% α-fur and 80.3% β-fur forms. Isol. from *Streptococcus bovis*. Formed by the action of Enterobacteriaceae on sucrose. Inexpensive bulk-scale carbohydrate. [α]_D +97.2 (H₂O).

Phenylosazone: Mp 173-175°.

Bourne, E.J. *et al.*, *Biochem. J.*, 1961, **79**, 549 (*isol*)

Whyte, J.N.C. *et al.*, *Anal. Biochem.*, 1971, **42**, 476 (*pmr*)

Kamerling, J.P. *et al.*, *Tetrahedron*, 1972, **28**, 3037 (*pmr*)

Dreissig, W. *et al.*, *Acta Cryst. B*, 1973, **29**, 514 (*cryst struct*)

Mauch, W. *et al.*, *Z. Zuckerind.*, 1976, **26**, 21 (*synth*)

Jarrell, H.C. *et al.*, *Carbohydr. Res.*, 1979, **76**, 45-47 (*cmr*)

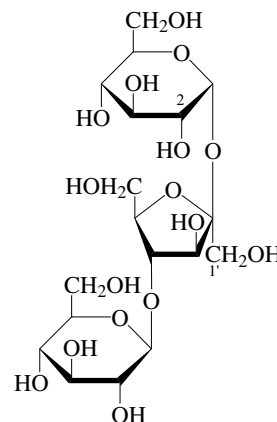
Lichtenthaler, F.W. *et al.*, *J.C.S. Perkin 2*, 1990, 1489 (*equilib*)

Tanaka, M. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 49-61 (*use, bibl*)

Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1998, **313**, 69-89 (*rev, use*)

β-D-Glucopyranosyl-(1→4)-β-D-fructofuranosyl α-D-glucopyranoside

G-297

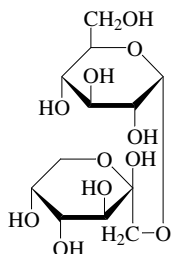


C₁₈H₃₂O₁₆ 504.441

3-*O*-(4-Hydroxy-*E*-cinnamoyl), 2'-*O*-*E*-cinnamoyl, 6-*Ac*: **Dalmatose A**
 $C_{38}H_{46}O_{20}$ 822.769
 Constit. of the roots of *Polygala dalmatiana*. Amorph. powder. $[\alpha]_D^{23}$ -5.8 (c, 0.77 in MeOH). λ_{max} 224 (log ϵ 4.43); 284 (log ϵ 4.46); 317 (log ϵ 4.29) (MeOH).

Kobayashi, S. *et al.*, *J. Nat. Prod.*, 2002, **65**, 319-328 (*isol*, *pmr*, *cmr*)

1-*O*- α -D-Glucopyranosyl-D-fructose, 9CI **G-298**
Trehalulose
 [51411-23-5]



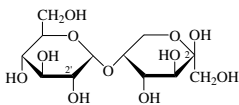
β -Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299
 Found (50% total carbohydrate content) in the honeydew produced by the sweet potato whitefly (*Bemisia tabaci*). Synthesised by the transferase action of yeast α -glucosidase on sucrose plus fructose. Anticaries sweetening agent. Amorph. powder.
 Mp 90-95°. $[\alpha]_D^{20}$ +50 (c, 1.0 in H_2O).

β -Pyranose-form [90689-37-5]
 2',3',4',6'-Tetrabenzyl, 2,3:4,5-di-*O*-isopropylidene: [74024-22-9]
 $C_{46}H_{54}O_{11}$ 782.926
 $[\alpha]_D^{22}$ +22.5 (c, 1.3 in $CHCl_3$).

Avigad, G. *et al.*, *Biochem. J.*, 1959, **73**, 587 (*synth*)
 Pavia, A.A. *et al.*, *Carbohydr. Res.*, 1980, **79**, 79 (*deriv*)
 Munir, M. *et al.*, *Carbohydr. Res.*, 1987, **164**, 477 (*synth*)
 Bates, R.B. *et al.*, *Carbohydr. Res.*, 1990, **201**, 342 (*isol*, *cmr*, *pmr*)

5-*O*- α -D-Glucopyranosyl-D-fructose, 9CI, 8CI **G-299**
Leucrose
 [7158-70-5]



β -D-Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299
 An aq. soln. at 20° conts. 1.9% α -pyr. and 98.1% β -pyr. forms. Produced by *Leuconostoc mesenteroides*. Also in pollen of *Typha latifolia*. Non-cariogenic sweetening agent with approx. 40-50% of the sweetening power of sucrose.
 Mp 161-163° (156°). $[\alpha]_D^{25}$ -8.2 \rightarrow +7.6 (c, 4 in H_2O).

Phenylosazone: Mp 186-188°.

Phenylosotriazole: Mp 108-109°.

Phenylosotriazole, hepta-Ac: Mp 150-151°.

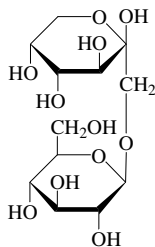
β -Pyranose-form

Benzyl glycoside, 2',3',4',6'-tetrabenzyl:
Benzyl 5-O-(2,3,4,6-tetra-O-benzyl- α -D-glucopyranosyl)- β -D-fructopyranoside
 $C_{47}H_{52}O_{11}$ 792.921
 Syrup. $[\alpha]_D^{20}$ -8.5 (c, 0.7 in $CHCl_3$).

Benzyl glycoside, 1,3,4-tribenzoyl, 2',3',4',6'-tetrabenzyl: *Benzyl 1,3,4-tri-O-benzoyl-5-O-(2,3,4,6-tetra-O-benzyl- α -D-glucopyranosyl)- β -D-fructopyranoside*
 $C_{68}H_{64}O_{14}$ 1105.245
 Mp 45°. $[\alpha]_D^{20}$ -56.5 (c, 1.0 in $CHCl_3$).

Stodola, F.H. *et al.*, *J.A.C.S.*, 1952, **74**, 3202; 1956, **78**, 2514 (*isol*, *struct*, *synth*)
 Watanabe, T. *et al.*, *CA*, 1962, **56**, 5228 (*isol*)
 Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1971, **35**, 1292 (*enzymatic synth*)
 de Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1975, **84**, 799 (*pmr*)
 Thiem, J. *et al.*, *Carbohydr. Res.*, 1989, **189**, 65; 1990, **205**, 333 (*synth*, *cmr*, *cryst struct*)
 Lichtenthaler, F.W. *et al.*, *J.C.S. Perkin 2*, 1990, 1489 (*equilib*)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1569-1570

1-*O*- β -D-Glucopyranosyl-D-fructose **G-300**
 [20221-15-2]



β -Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299
 Cryst. + 2 H_2O . Mp 132-135°. $[\alpha]_D$ -59.2 (H_2O).

β -Pyranose-form

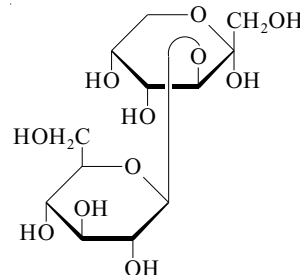
2,3:4,5-Di-*O*-isopropylidene, 2',3',4',6'-tetrabenzyl: [74080-45-8]
 $C_{46}H_{54}O_{11}$ 782.926
 $[\alpha]_D^{22}$ -6.25 (c, 1.35 in $CHCl_3$).

Helferich, B. *et al.*, *Chem. Ber.*, 1958, **91**, 1794 (*synth*)

Kamerling, J.P. *et al.*, *Tetrahedron*, 1972, **28**, 4375 (*ms*)

Pavia, A.A. *et al.*, *Carbohydr. Res.*, 1980, **79**, 79 (*deriv*)

3-*O*- β -D-Glucopyranosyl-D-fructose, 9CI **G-301**
Laminarabulose
 [84986-84-5]



$C_{12}H_{22}O_{11}$ 342.299

Five tautomers possible; 2 furanoses and the β -pyranose detected at equilib. Present in polysaccharides of the fungus *Cyttraria johowii* (Discomycetes).
 $[\alpha]_D^{20}$ -43 (c, 0.5 in H_2O).

β -Pyranose-form

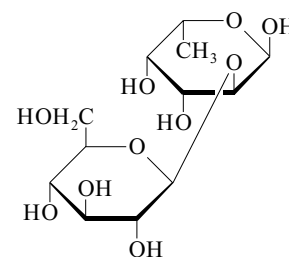
1,2:4,5-Di-*O*-isopropylidene:

$C_{18}H_{30}O_{11}$ 422.428
 Cryst. (C_6H_6). Mp 103-104°. $[\alpha]_D^{20}$ -112 (c, 0.7 in $CHCl_3$).

1,2:4,5-Di-*O*-isopropylidene, tetra-*Ac*:
 $C_{26}H_{38}O_{15}$ 590.577
 Cryst. (2-propanol). Mp 149-151°. $[\alpha]_D^{20}$ -81.5 (c, 0.8 in CH_2Cl_2).

De Lederkremer, R.M. *et al.*, *Carbohydr. Res.*, 1983, **113**, 331; 1984, **126**, 313 (*isol*, *synth*)

2-*O*- β -D-Glucopyranosyl-L-fucose **G-302**
 6-Deoxy-2-*O*- β -D-glucopyranosyl-L-mannose. 2-*O*- β -D-glucopyranosyl-6-deoxy-L-mannose



$C_{12}H_{22}O_{10}$ 326.3

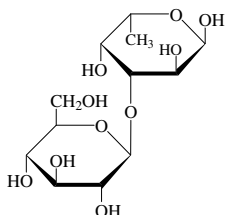
α -Pyranose-form

Me glycoside, 2',3',4',6'-tetra-Ac, 4-(2-nitrobenzoyl): [79258-26-7]
 $[\alpha]_D^{22}$ +7 (c, 1.4 in $CHCl_3$).

Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1983, 921

3-O- β -D-Glucopyranosyl-L-fucose

3-O- β -D-Glucopyranosyl-6-deoxy-L-galactose. 6-Deoxy-3-O- β -D-glucopyranosyl-L-galactose

 α -Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3

Reducing disaccharide. Constit. of the repeating unit of a mucous polysaccharide produced by enterobacteria.

2,2',3',4,4',6'-Hexabenzyl: [62396-61-6]

$C_{54}H_{58}O_{10}$ 867.046

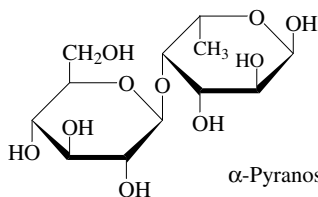
Syrup. $[\alpha]_D$ -9 (c, 0.5 in $CHCl_3$).

Garegg, P.J. *et al.*, *Acta Chem. Scand.*, 1971, **25**, 1185; 2103 (occur)

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1976, **52**, 235

4-O- β -D-Glucopyranosyl-L-fucose

6-Deoxy-4-O- β -D-glucopyranosyl-L-mannose. 4-O- β -D-Glucopyranosyl-6-deoxy-L-mannose

 α -Pyranose-form

$C_{12}H_{22}O_{10}$ 326.3

Reducing disaccharide. Isol. from the partial acid hydrolysate of the extracellular polysaccharide from *Corynebacterium insidiosum*. $[\alpha]_D$ -71 (H_2O).

Hepta-Ac:

$C_{26}H_{36}O_{17}$ 620.56

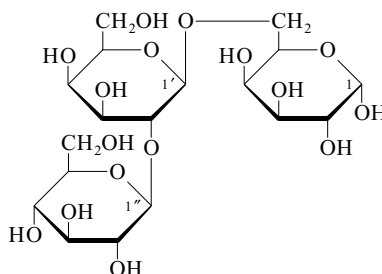
Mp 228-230°. $[\alpha]_D$ -59 ($CHCl_3$).

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1961, **39**, 2275 (isol)

Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1980, **79**, 313 (occur)

Percy, A. *et al.*, *Carbohydr. Res.*, 1998, **305**, 543-548 (synth, pmr, cmr)

G-303

 β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 6)-D-galactose, 9CI

$C_{18}H_{32}O_{16}$ 504.441

α -Pyranose-form

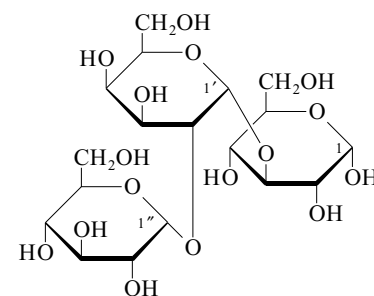
1,2:3,4-Di-O-isopropylidene, hepta-Ac:

[78174-48-8]

$C_{38}H_{54}O_{23}$ 878.831

Cryst. (2-propanol). Mp 156-160°. $[\alpha]_D^{20}$ -23 (c, 1.2 in $CHCl_3$).

Koeners, H.J. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1981, **100**, 65 (diisopropylidene hepta-Ac, pmr)

 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)-D-glucose, 9CI

$C_{18}H_{32}O_{16}$ 504.441

Used for probing the carbohydrate-binding specificity of bacteriophages.

α -Pyranose-form

Me glycoside: [104992-71-4]

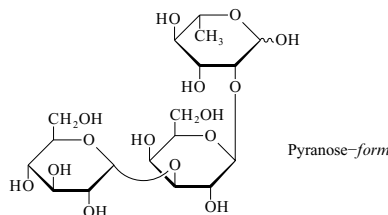
$C_{19}H_{34}O_{16}$ 518.468

Syrup. $[\alpha]_D$ +217 (c, 1.0 in H_2O).

Norberg, T. *et al.*, *Glycoconjugate J.*, 1986, **3**, 135 (α -Me pyr, cmr)

 α -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 2)-L-rhamnose

[67109-67-5]



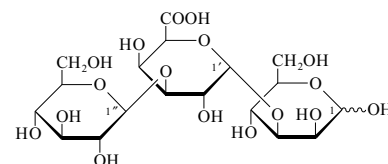
Pyranose-form

G-305

$C_{18}H_{32}O_{15}$ 488.442

Constit. of the repeating unit of the capsular antigen of *Klebsiella* serotype K70. $[\alpha]_D$ +10 (H_2O).

Dutton, G.G.S. *et al.*, *Carbohydr. Res.*, 1978, **62**, 321

 β -D-Glucopyranosyl-(1 \rightarrow 3)- α -D-galactopyranuronosyl-(1 \rightarrow 3)-D-mannose, 9CI

Pyranose-form

$C_{18}H_{30}O_{17}$ 518.425

4'-Ac: β -D-Glucopyranosyl-(1 \rightarrow 3)-4-O-acetyl- α -D-galactopyranosyl-(1 \rightarrow 3)-D-mannose, 9CI

[87810-45-5]

$C_{20}H_{32}O_{18}$ 560.462

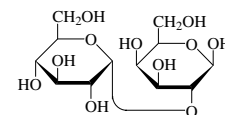
Constit. of the repeating unit of an extracellular polysaccharide of *Rhizobium japonicum* strain 311b 138. May play a role in recognition place between the bacteria legumes in the establishment of nitrogen fixing symbiosis. Syrup.

Mort, A.J. *et al.*, *J. Biol. Chem.*, 1982, **257**, 1870 (struct, pmr, cmr, chromatog)

Mort, A.J. *et al.*, *Carbohydr. Res.*, 1983, **121**, 221 (occur, pmr, cmr)

2-O- α -D-Glucopyranosyl-D-galactose, 9CI, 8CI

[23178-92-9]

 β -Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299

Isol. from the body wall glycoprotein of the leech, *Hirudo medicinalis* and from the partial acid hydrolysate of the specific substance S34 of *Pneumococcus* type 34.

β -Pyranose-form

Me glycoside: Methyl 2-O- α -D-glucopyranosyl- β -D-galactopyranoside [101072-32-6]

$C_{13}H_{24}O_{11}$ 356.326

$[\alpha]_D$ +111 (c, 1.0 in H_2O).

Me glycoside, 2',3',4,4',6,6'-hexabenzyl:

$C_{55}H_{60}O_{11}$ 897.072

Mp 148-149°. $[\alpha]_D^{24}$ +42 (c, 1.0 in $CHCl_3$).

[7368-73-2]

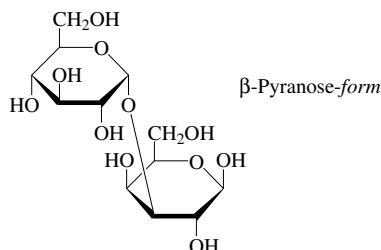
Dixon, J.R. *et al.*, *Carbohydr. Res.*, 1968, **8**, 262 (isol)

Biswas, T. *et al.*, *Carbohydr. Res.*, 1978, **63**, 173 (isol)

Nechaev, O.A. *et al.*, *Bioorg. Khim.*, 1988, **14**, 1224; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 666 (Me gly)

Lipkind, G.M. *et al.*, *Bioorg. Khim.*, 1989, **15**, 1366; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 755 (*cmr, conformn*)

3-O- α -D-Glucopyranosyl-D-galactose, 9CI, 8CI **G-310**
[69854-70-2]



$C_{12}H_{22}O_{11}$ 342.299
[α]_D²⁵ +138 (c, 1.29 in H₂O).

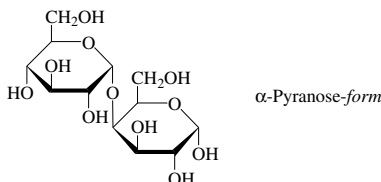
β-Pyranose-form

Me glycoside: Methyl 3-O- α -D-glucopyranosyl- β -D-galactopyranoside, 9CI
[101144-27-8]
 $C_{13}H_{24}O_{11}$ 356.326
Mp 224-225°. [α]_D +104 (c, 0.5 in H₂O).

Me glycoside, hepta-Ac:
 $C_{27}H_{38}O_{18}$ 650.586
[α]_D +8 (c, 1.1 in CHCl₃).

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1971, **18**, 211 (*synth*)
Temeriusz, A. *et al.*, *Carbohydr. Res.*, 1985, **142**, 146 (*Me gly*)
Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2153 (*Me gly, pmr, cmr, conformn*)

4-O- α -D-Glucopyranosyl-D-galactose, 9CI **G-311**
[14722-76-0]



$C_{12}H_{22}O_{11}$ 342.299
Isol. from the partial acid hydrolysate of type VIII *Pneumococcus* specific polysaccharide. Constit. of the repeating unit of the O-antigen of *Salmonella muenster* E₁ and of the O-antigen of *E. coli* serotype 0111.
[α]_D²⁰ +118 (c, 1.0 in H₂O). [α]_D²⁰ +74.5 (c, 8.0 in H₂O). [α]_D²⁵ +140 (H₂O).

α-Pyranose-form

1-Phosphate:
 $C_{12}H_{23}O_{14}P$ 422.279
[α]_D²⁰ +121.5 (c, 3.3 in H₂O).

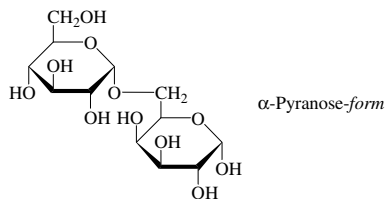
Me glycoside: Methyl 4-O- α -D-glucopyranosyl- α -D-galactopyranoside
[127253-90-1]
 $C_{13}H_{24}O_{11}$ 356.326
Amorph. powder. [α]_D²⁰ +116 (H₂O). [α]_D²² +210 (c, 1.0 in H₂O).

β-Pyranose-form

Benzyl glycoside, 2,2',3',4',6,6'-hexabenzyl:
 $C_{61}H_{64}O_{11}$ 973.17
[α]_D²⁰ +30 (c, 1.0 in CHCl₃).

Jones, J.K.N. *et al.*, *J.A.C.S.*, 1957, **79**, 2787 (*isol*)
Sloneker, J.H. *et al.*, *Can. J. Chem.*, 1968, **46**, 3353
Kenne, L. *et al.*, *The Polysaccharides*, Acad. Press, New York and London (Ed. Aspinall, G.O.), 1983, **2**, 300 (*occur*)
Torgov, V.I. *et al.*, *Carbohydr. Res.*, 1987, **161**, 97 (*synth, deriv*)
Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*, 1988, **26**, 735 (*cmr*)
Liotta, L.J. *et al.*, *Carbohydr. Res.*, 2001, **331**, 247-253 (*Me α -gly, synth, pmr, cmr, bibl*)

6-O- α -D-Glucopyranosyl-D-galactose, 9CI **G-312**
[21216-58-0]



$C_{12}H_{22}O_{11}$ 342.299
Needles (EtOH aq.). Mp 106-108°. [α]_D²² +127 (c, 0.69 in H₂O).

2'-Benzyl: 6-O-(2-O-Benzyl- α -D-glucopyranosyl)-D-galactose
[33801-72-8]

$C_{19}H_{28}O_{11}$ 432.424
Oil. [α]_D²⁵ +68 (c, 0.96 in H₂O).

3',6'-Anhydro: 6-O-(3,6-Anhydro- α -D-glucopyranosyl)-D-galactose
 $C_{12}H_{20}O_{10}$ 324.284
[α]_D +75 (c, 0.4 in H₂O).

α-Pyranose-form

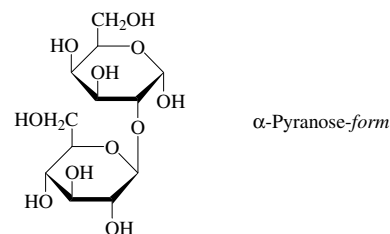
1,2:3,4-Di-O-isopropylidene:
 $C_{18}H_{30}O_{11}$ 422.428
Oil. [α]_D²⁵ +29.2 (c, 0.92 in CHCl₃).

1,2:3,4-Di-O-isopropylidene, tetra-Ac:
 $C_{26}H_{38}O_{15}$ 590.577
Oil. [α]_D²⁵ +47 (c, 3.3 in CHCl₃).

[34674-94-7]

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1971, **18**, 211 (*synth, 2'-benzyl*)
Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1973, **51**, 42 (*α -pyr diisopropylidene, α -pyr diisopropylidene tetra-Ac*)
Helferich, B. *et al.*, *Chem. Ber.*, 1973, **106**, 941 (*synth*)
Huh, K.T. *et al.*, *Food Chem.*, 1991, **39**, 39 (*occur*)

2-O- β -D-Glucopyranosyl-D-galactose, 9CI **G-313**
[101144-30-3]



$C_{12}H_{22}O_{11}$ 342.299
Constit. of the repeating unit of the capsular antigen of *Klebsiella* K60.
Mp 163-164° (171-172°). [α]_D +52 → +33 (c, 0.5 in H₂O). [α]_D +42.6 (H₂O).

Phenylosazone: Mp 181°.

α-Pyranose-form

Octa-Ac: [101311-41-5]
 $C_{28}H_{38}O_{19}$ 678.597
[α]_D +39 (c, 1.0 in CHCl₃).

β-Pyranose-form

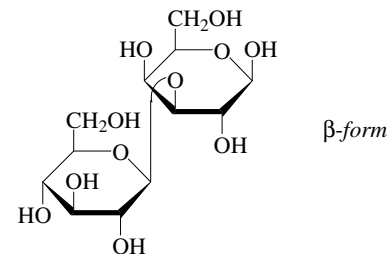
Me glycoside: Methyl 2-O- β -D-glucopyranosyl- β -D-galactopyranoside, 9CI
[101072-36-0]
 $C_{13}H_{24}O_{11}$ 356.326
Mp 112-115°. [α]_D -13 (c, 1.0 in H₂O) (-6).

Me glycoside, hepta-Ac:
 $C_{27}H_{38}O_{18}$ 650.586
Amorph. [α]_D -12 (c, 1.0 in CHCl₃).

Me glycoside, 2',3',4',6,6'-hexabenzyl:
 $C_{55}H_{60}O_{11}$ 897.072
Mp 92-93°. [α]_D²⁴ -3 (c, 1.0 in CHCl₃).

Gakhokidze, A.M. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1952, **22**, 139 (*synth*)
Kawasako, T. *et al.*, *Chem. Pharm. Bull.*, 1963, **11**, 1221
Dutton, G.G.S. *et al.*, *Carbohydr. Res.*, 1980, **87**, 129 (*occur*)
Temeriusz, A. *et al.*, *Carbohydr. Res.*, 1985, **142**, 146 (*synth*)
Nechaev, O.A. *et al.*, *Bioorg. Khim.*, 1988, **14**, 1224; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1988, **14**, 666 (*Me gly, synth, cmr*)

3-O- β -D-Glucopyranosyl-D-galactose, 8CI **G-314**
Solabiose
[16741-21-2]



$C_{12}H_{22}O_{11}$ 342.299
From Solanidine. Also obt. by partial hydrol. of polysaccharides of *Xanthomonas stewartii*.
Mp 203-205°. [α]_D²² +40 (c, 0.8 in H₂O).

Phenylosazone: Mp 225° dec.

Octa-Ac:

C₂₈H₃₈O₁₉ 678.597

Mp 75°. [α]_D²⁰ +27 (EtOH).

β-Pyranose-form

Me glycoside: [15038-72-9]

C₁₃H₂₄O₁₁ 356.326

Syrup. [α]_D²⁵ +8.3 (c, 0.6 in MeOH).

Me glycoside, hepta-Me:

C₂₀H₃₈O₁₁ 454.514

Cryst. (hexane). Mp 95-97°. [α]_D²⁴ -7.4 (c, 0.6 in CHCl₃).

Benzyl glycoside: [16741-20-1]

C₁₉H₂₈O₁₁ 432.424

Needles (EtOH). Mp 200-202°. [α]_D²⁵ -20.7 (c, 0.9 in H₂O).

Kühn, R. et al., *Chem. Ber.*, 1955, **88**, 1492 (*isol. phenylosazone, octa-Ac*)

Gorin, P.A.J. et al., *Can. J. Chem.*, 1961, **39**, 2282 (*isol*)

Briggs, L.H. et al., *J.C.S.*, 1963, 2848 (*occur*)

Flowers, H.M. et al., *Carbohydr. Res.*, 1967, **4**, 312 (*synth. β-benzyl gly*)

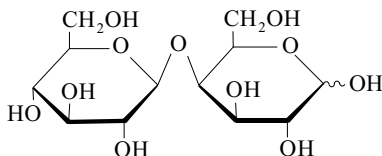
Stoffyn, A. et al., *J.O.C.*, 1967, **32**, 4001

(*β-Me gly, β-hepta-Me Me gly*)

4-O-β-D-Glucopyranosyl-D-galactose, 8CI

Lycobiose

[22412-72-2]



C₁₂H₂₂O₁₁ 342.299

Occurs in polysaccharides of *Arthrobacter viscosus* and in partial hydrol. of α-tomatine.

Mp 246-247°. [α]_D²⁰ +70 → +41.5 (c, 1 in H₂O). Crystallizes in α-form.

Phenylosazone: Mp 205-210° dec. (sinters at 140°).

Octa-Ac:

C₂₈H₃₈O₁₉ 678.597

Mp 165-166°. [α]_D²⁰ +26.8 (EtOH).

Kuhn, R. et al., *Chem. Ber.*, 1953, **86**, 1027 (*isol. octa-Ac*)

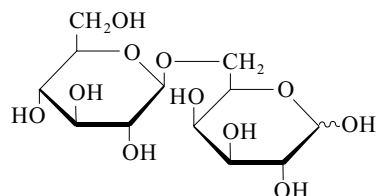
Kuhn, R. et al., *Chem. Ber.*, 1957, **90**, 203

(*struct*)

Sloneker, J.M. et al., *Can. J. Chem.*, 1968, **46**, 3353 (*isol*)

6-O-β-D-Glucopyranosyl-D-galactose, 8CI

[5188-47-6]



C₁₂H₂₂O₁₁ 342.299

Acid hydrol. prod. of the *Lactobacillus*

casei cell wall polysaccharide; an enzymic prod. of *Aspergillus niger*. Also in plant polysaccharides, e.g. from *Acacia* sp. [α]_D²⁰ +15 (c, 2.0 in H₂O).

α-Pyranose-form

Also in plant polysaccharides, e.g. *Acacia* sp.

1,2:3,4-Di-O-isopropylidene:

C₁₈H₃₀O₁₁ 422.428

Mp 84-88°. [α]_D -67.5 (H₂O).

1,2:3,4-Di-O-isopropylidene, tetra-Ac:

C₂₆H₃₈O₁₅ 590.577

Mp 140-142°. [α]_D -54.5 (c, 0.46 in CHCl₃).

Freudenberg, K. et al., *Ber.*, 1928, **61**, 1743 (*synth*)

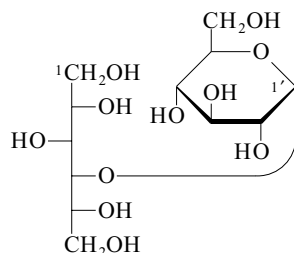
Knox, K.W. et al., *Biochem. J.*, 1965, **94**, 534 (*enzymic synth*)

Flowers, H.M. et al., *Carbohydr. Res.*, 1971, **18**, 211 (*synth, pmr*)

4-O-α-D-Glucopyranosyl-D-glucitol, 9CI

Maltitol. E965

[585-88-6]



C₁₂H₂₄O₁₁ 344.315

Used in blood preservatives, cosmetics emulsions and moisturisers, pharmaceuticals and adhesives for medical uses.

Permitted bulk sweetener for foods.

Mp 149-152°. [α]_D²¹ +107 (c, 10 in H₂O).

Use as bulk sweetener currently (1997) not permitted in USA.

► LZ4394000

Nona-Ac: [41897-24-9]

C₃₀H₄₂O₂₀ 722.65

[α]_D +8.6 (c, 1.0 in CHCl₃).

1,2:5,6-Di-O-isopropylidene: [122204-87-9]

C₁₈H₃₂O₁₁ 424.444

Oil. [α]_D²⁶ +62 (c, 0.2 in CHCl₃/MeOH 1:1).

1,2:5,6-Di-O-isopropylidene, 2',3,3',4',6'-

penta-Ac: [122204-91-5]

C₂₈H₄₂O₁₆ 634.63

Oil. [α]_D²⁵ +85.3 (c, 1.0 in CHCl₃).

2,3:5,6-Di-O-isopropylidene, 1,2',3',4',6'-

penta-Ac: [122204-92-6]

C₂₈H₄₂O₁₆ 634.63

Oil. [α]_D²⁴ +69.8 (c, 1.13 in CHCl₃).

1,2:4',6':5,6-Tri-O-isopropylidene:

[122204-85-7]

C₂₁H₃₆O₁₁ 464.509

[α]_D²¹ +70.1 (c, 1.0 in CHCl₃).

2,3:4',6':5,6-Tri-O-isopropylidene:

[122204-86-8]

C₂₁H₃₆O₁₁ 464.509

[α]_D²¹ +55.4 (c, 1.0 in CHCl₃).

2,3:4',6':5,6-Tri-O-isopropylidene, 1,2',3'-

tri-Ac: [122204-90-4]

C₂₇H₄₂O₁₄ 590.62

Oil. [α]_D²⁵ +56.9 (c, 0.76 in CHCl₃).

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **1**, 308A (*nmr*)

Aldrich Library of NMR Spectra, **1**, 308A (*pmr*)

Karrer, P. et al., *Helv. Chim. Acta*, 1937, **20**, 88 (*synth*)

Hoffman, R.E. et al., *Magn. Reson. Chem.*, 1988, **26**, 425 (*pmr, cmr*)

Shinohara, Y. et al., *Yakugaku Zasshi*, 1988, **108**, 1046 (*synth, deriv*)

Japan. Pat., 1990, 0 242 997; CA, **113**, 4712h

(*enzym synth*)

Paskach, T.J. et al., *Carbohydr. Res.*, 1991, **215**, 1 (*hplc*)

Hedin, P.A. et al., *J. Agric. Food Chem.*, 1991, **39**, 1106 (*ms*)

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. et al.), American Pharmaceutical Association/Pharmaceutical Press, 1994, 287-288

Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1371

Schouten, A. et al., *Carbohydr. Res.*, 1999, **322**, 298-302 (*cryst struct*)

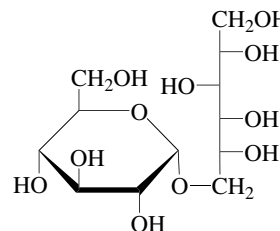
6-O-α-D-Glucopyranosyl-D-glucitol, 9CI, 8CI

G-318

6-O-α-D-Glucopyranosyl-D-sorbitol.

Isomaltitol. E953

[534-73-6]



C₁₂H₂₄O₁₁ 344.315

Prepd. on a large scale by hydrogenation of 6-O-α-D-Glucopyranosyl-D-fructofuranose, G-296 as a 1:1 mixture (isomalt) with its C-5 epimer. Mixts. with the epimer are known as Palatinit or Isomalt and used as reduced-calorie sugar substitutes. Low nutritive sweetener with half the sweetness of sucrose. Mixts. with the epimer are known as Palatinit or Isomalt and used as reduced-calorie sugar substitutes. Cryst. (MeOH) or needles. Mp 165.5-167°. [α]_D²⁸ +89 (c, 4 in H₂O).

Nona-Ac: [41897-25-0]

C₃₀H₄₂O₂₀ 722.65

Cryst. (EtOH). Mp 114-115°. [α]_D²⁹ +70 (c, 1 in CHCl₃).

Wolfson, M.L. et al., *J.A.C.S.*, 1952, **74**, 1062-1064 (*nona-O-Ac, synth*)

Manners, D.J. et al., *Carbohydr. Res.*, 1968, **7**, 291-298 (*synth*)

Hellerquist, C.G. et al., *Acta Chem. Scand.*, 1971, **25**, 243-244 (*synth, pmr*)

Govorchenko, V.I. et al., *Carbohydr. Res.*, 1973, **29**, 421-425 (*synth*)

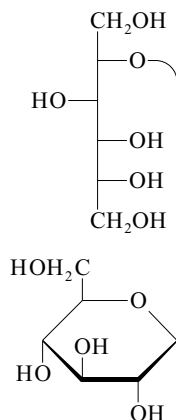
Lichtenthaler, F.W. et al., *Annalen*, 1981, 2372-2383 (*cryst struct*)

Shimamura, A. et al., *Carbohydr. Res.*, 1991, **220**, 243-248 (*synth, cmr*)

Willibald-Ettle, I. et al., *Advances in Sweeteners*, (ed. Grenby, T.H.), Blackie, 1996, 134-149 (*rev, isomalt, use, props*)

Cataldi, T.R.I. *et al.*, *J. Agric. Food Chem.*, 1999, **47**, 157-163

2-O-β-D-Glucopyranosyl-D-glucitol, 9CI **G-319**
Sophoritol
 [31281-78-4]



$C_{12}H_{24}O_{11}$ 344.315
 Amorph. $[\alpha]_D^{26}$ -18.6 (c, 0.75 in H_2O).

Nona-Ac:

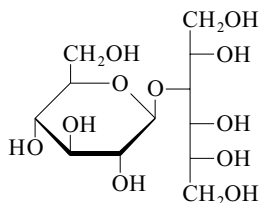
$C_{30}H_{42}O_{20}$ 722.65
 Cryst. (EtOH). Mp 151-152°. $[\alpha]_D^{20}$ -21 (c, 2.5 in $CHCl_3$).

Clancy, M.J. *et al.*, *J.C.S.*, 1960, 4213 (*synth*)
 Govorchenko, V.I. *et al.*, *Carbohydr. Res.*, 1973, **29**, 421 (*nona-Ac*)

Angus, H.G.F. *et al.*, *Carbohydr. Res.*, 1978, **66**, 25 (*chromatog*)

Helm, R.F. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 569 (*glc*)

3-O-β-D-Glucopyranosyl-D-glucitol, 9CI **G-320**
Laminaribiitol
 [499-16-1]



$C_{12}H_{24}O_{11}$ 344.315

Nona-Ac: [41897-23-8]

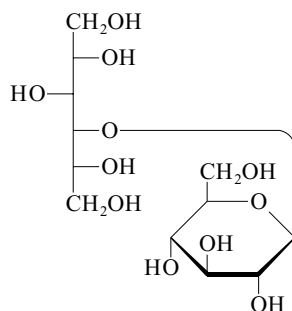
$C_{30}H_{42}O_{20}$ 722.65
 Cryst. (EtOH). Mp 108-109°. $[\alpha]_D^{18}$ -10.8 (c, 0.53 in $CHCl_3$).

Peat, S. *et al.*, *J.C.S.*, 1958, 729 (*synth, struct*)
 Karkkainen, J. *et al.*, *Carbohydr. Res.*, 1970, **14**, 27 (*ms*)

Ueno, Y. *et al.*, *CA*, 1973, **79**, 18976p (*synth*)

Helm, R.F. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 569 (*glc*)

4-O-β-D-Glucopyranosyl-D-glucitol, 9CI **G-321**
2-O-β-D-Glucopyranosyl-L-glucitol
Cellobiitol
 [535-94-4]



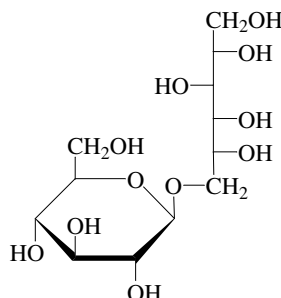
$C_{12}H_{24}O_{11}$ 344.315
 Cryst. Mp 142-143°. $[\alpha]_D$ -8.3 (H_2O).

Wolfrom, M.L. *et al.*, *Tappi*, 1958, **41**, 204; *CA*, **52**, 15066e (*synth*)

Gaykema, W.P.J. *et al.*, *Acta Cryst. B*, 1979, **35**, 1156 (*cryst struct*)

Lowary, T.L. *et al.*, *Carbohydr. Res.*, 1990, **198**, 79 (*synth, cmr*)

6-O-β-D-Glucopyranosyl-D-glucitol, 9CI **G-322**
6-O-β-D-Glucopyranosyl-D-sorbitol
Gentiobiitol
 [31282-09-4]



$C_{12}H_{24}O_{11}$ 344.315
 Amorph. solid. Mp 90° (swells and browns). $[\alpha]_D^{25}$ -24 (c, 1.0 in H_2O).

Nona-Ac: [37091-06-8]

$C_{30}H_{42}O_{20}$ 722.65
 Needles (EtOH) or cryst. Mp 88-89.5° (80.5-81°). $[\alpha]_D^{26}$ -11 (c, 5.0 in $CHCl_3$).

6'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl): Globularitol

$C_{22}H_{32}O_{14}$ 520.486
 Constit. of the underground parts of *Globularia orientalis*. Amorph. yellow solid. $[\alpha]_D^{20}$ -22 (c, 0.1 in MeOH). λ_{max} 217; 235; 295 (sh); 323 (MeOH).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1943, **65**, 750 (*synth*)

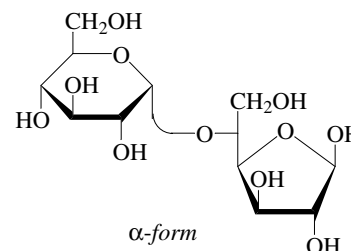
Hellerquist, C.G. *et al.*, *Acta Chem. Scand.*, 1971, **25**, 243-244

Govorchenko, V.I. *et al.*, *Carbohydr. Res.*, 1973, **29**, 421-425 (*synth, nona-Ac*)

Lichtenthaler, F.W. *et al.*, *Annalen*, 1981, 2372 (*conformn*)

Calis, I. *et al.*, *Z. Naturforsch., C*, 2002, **57**, 591-596 (*Globularitol*)

5-O-α-D-Glucopyranosyl-D-glucofuranose **G-323**
 [67006-26-2]



$C_{12}H_{22}O_{11}$ 342.299
 $[\alpha]_D$ +69.5 (c, 2 in H_2O).

α-form

1,2-O-Cyclopentylidene: [67006-24-0]

$C_{17}H_{28}O_{11}$ 408.402
 Amorph. $[\alpha]_D$ +81 (c, 1.5 in H_2O).

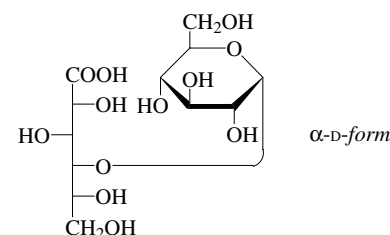
1,2-O-Cyclopentylidene, 3,6,2',3',4',6'-hexa-Ac: [67006-22-8]

$C_{29}H_{40}O_{17}$ 660.625
 Brittle foam. $[\alpha]_D$ +50 (c, 2.5 in $CHCl_3$).

[78339-99-8]

Van Heeswijk, W.A.R. *et al.*, *Carbohydr. Res.*, 1978, **62**, 281 (*synth*)

4-O-Glucopyranosyl-D-gluconic acid, 9CI, 8CI **G-324**



$C_{12}H_{22}O_{12}$ 358.299

α-D-form

Maltobionic acid. Maltonic acid
 [534-42-9]

Formed by oxidative enzymic action of *Pseudomonas graveolens* on maltose. Used as an additive in instant food preparations. $[\alpha]_D^{20}$ +98.3 (H_2O).

Ca salt: $[\alpha]_D^{20}$ +97.5 (H_2O).

Octa-Me, Me ester: Methyl octa-O-methylmaltobionate
 $C_{21}H_{40}O_{12}$ 484.54
 Bp_{0.05} 170-173°. $[\alpha]_D$ +120.8 ($CHCl_3$).

β-D-form Cellobionic acid

[534-41-8]
 $[\alpha]_D^{22}$ -3.6 (c, 3 in H_2O). Ba salts also known.

Na salt (1:1): [55697-48-8]

Mp 158°.

Me ester: [43169-30-8]

$C_{13}H_{24}O_{12}$ 372.325
 Syrup.

Octa-Ac: [105001-04-5]

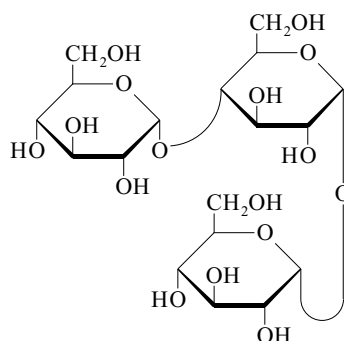
$C_{28}H_{38}O_{20}$ 694.596
 Cryst. ($CHCl_3$ /petrol). Mp 138°. $[\alpha]_D$ +8.9 (c, 1.7 in $CHCl_3$).

Octa-Ac, Me ester: $C_{29}H_{40}O_{20}$ 708.623Cryst. (EtOH). Mp 178.5-179.5°. $[\alpha]_D^{20} +6$.*1,5-Lactone:* [52762-22-8] $C_{12}H_{20}O_{11}$ 340.283Formed by microbial degradation of D-cellobiose. Potent inducer of cellulase in *Trichoderma reesei*. Cryst. (EtOH).Mp 204-205°. $[\alpha]_D^{20} +35.6$ (extrapolated) $\rightarrow +33.2$ (5 min). $[\alpha]_D^{20} +27.4$ (20 min) $\rightarrow +0.8$ (8 and 24h, equil) (c, 1 in H_2O).

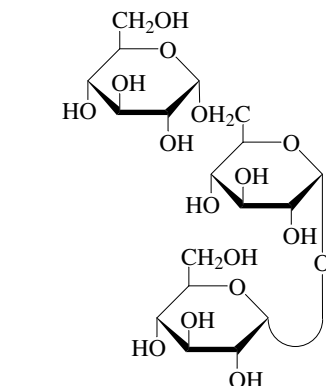
[75348-32-2]

Glattfeld, J.K.E. *et al.*, *J.A.C.S.*, 1918, **40**, 973 (α -D-form, *synth*)Haworth, W.N. *et al.*, *J.C.S.*, 1926, 3094(α -D-form, *Me ester octa-Me*)Leoene, P.A. *et al.*, *J. Biol. Chem.*, 1928, **27**,671-683 (β -D-form, *synth, salts*)Antoniani, C. *et al.*, *Biochem. Z.*, 1934, **273**,219-222; *CA*, 1935, **29**, 189 (β -D-form, *synth*)Bognar, R. *et al.*, *Chem. Ber.*, 1963, **96**, 689(β -D-form, *octa-Ac*)Carlsson, B. *et al.*, *Anal. Chim. Acta*, 1968, **43**,47 (α -D-form, *chromatog*)Govorchenko, V.I. *et al.*, *Carbohydr. Res.*, 1973, **29**,421-425 (β -D-form, *Me ester, synth*)*Japan. Pat.*, 1973, 20 314, (*Hayashibara*); *CA*,**80**, 26091g (α -D-form, *synth, use*)Diehl, H.W. *et al.*, *Carbohydr. Res.*, 1974, **38**,364-368 (β -D-form, *1,5-lactone*)Dutta, S.K. *et al.*, *Indian J. Chem.*, 1975, **13**,192-193 (β -D-form, *synth*)Higham, C.W. *et al.*, *FEBS Lett.*, 1994, **351**,128-132 (β -D-form, *1,5-lactone, bibl*)Moe, S.T. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**,513-520 (β -D-form, *synth, pmr, cmr*) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl α -D-glucopyranoside Bemisiose**

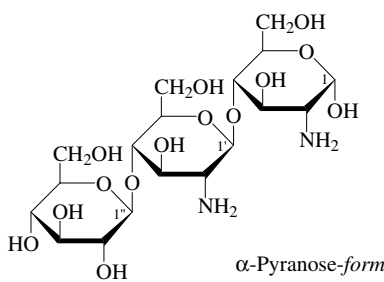
G-325

 $C_{18}H_{32}O_{16}$ 504.441Isol. from honeydew from the silverleaf whitefly *Bemisia argentifolii*.Hendrix, D.L. *et al.*, *Carbohydr. Res.*, 1994, **253**, 329 (*isol, struct*) **α -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl α -D-glucopyranoside α -Isomaltosyl α -D-glucopyranoside. Isobemisiose**

G-326

 $C_{18}H_{32}O_{16}$ 504.441Isol. from the silverleaf whitefly *Bemisia argentifolii*. Amorph. solid.Ajisaka, K. *et al.*, *Carbohydr. Res.*, 1990, **199**, 227-234 (*synth, cmr*)Hendrix, D.L. *et al.*, *J. Insect Physiol.*, 2001, **47**, 423-432 (*isol*) **β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, 9CI**

G-327

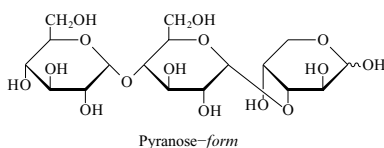
 $C_{18}H_{33}NO_{15}$ 503.456

N-Ac: [56981-21-6]

 $C_{20}H_{35}NO_{16}$ 545.494Amorph. $[\alpha]_D^{21} +30$ (c, 0.29 in H_2O). **α -Pyranose-form***Benzyl glycoside, deca-Ac:* [56981-20-5] $C_{45}H_{59}NO_{25}$ 1013.953Cryst. (Me_2CO/Et_2O /hexane). Mp 179-180°. $[\alpha]_D^{21} +35$ ($CHCl_3$).Khorlin, A.Y. *et al.*, *Carbohydr. Res.*, 1975, **43**, 69 (*N-Ac, alpha-benzyl pyr deca-Ac*) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-arabinose, 9CI**

G-328

[119167-26-9]

 $C_{17}H_{30}O_{15}$ 474.415

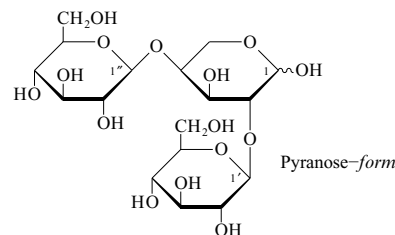
Syrup.

Pazur, J.H. *et al.*, *Anal. Biochem.*, 1988, **174**, 46 (*enzymic synth, glc, ms, chromatog*) **β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose, 8CI**

G-329

Cyclamotriose B

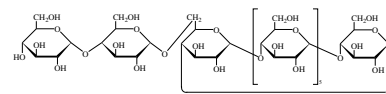
[23655-52-9]

 $C_{17}H_{30}O_{15}$ 474.415Constit. of the triterpene glycoside Cyclamin, isol. from the bulbs of *Cyclamen europaeum*. Syrup.Tschesche, R. *et al.*, *Annalen*, 1969, **721**, 194 (*occur, isol, chromatog*) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 6 α)- β -cyclodextrin, 9CI**

G-330

6-O- α -Maltosyl- β -cyclodextrin

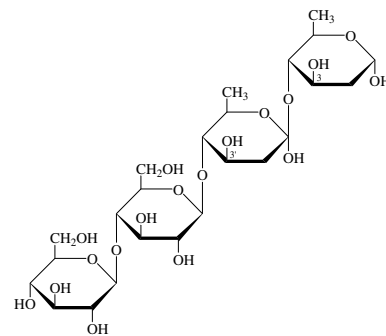
[104723-60-6]

 $C_{54}H_{90}O_{45}$ 1459.278

Cryst. (MeOH).

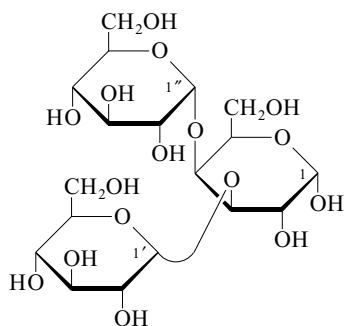
Abe, J. *et al.*, *Carbohydr. Res.*, 1986, **154**, 81-92 (*synth, cmr*)Koizuma, K. *et al.*, *J. Chromatogr.*, 1986, **360**, 397-406 (*hplc, tlc*)Shiraishi, T. *et al.*, *Agric. Biol. Chem.*, 1989, **53**,2181-2188 (*synth, bibl*)Ishizuka, Y. *et al.*, *J. Carbohydr. Chem.*, 1991,**10**, 583-592 (*pmr*)Hizukuri, S. *et al.*, *Methods Carbohydr. Chem.*,1994, **10**, 277-284 (*synth, bibl*) **β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-6-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-D-arabino-hexose**

G-331

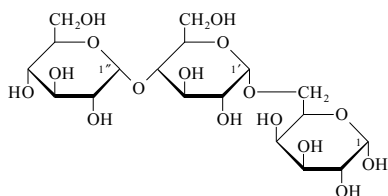
 $C_{24}H_{42}O_{18}$ 618.585

α -D-Pyranose-form

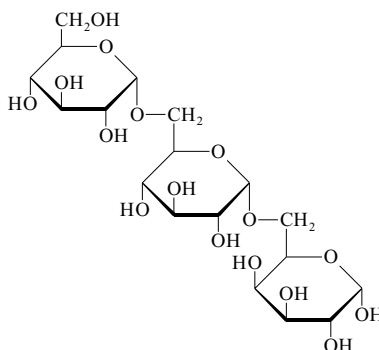
Me glycoside, 3,3'-di-Me: Dresitetraoside
[130774-27-5]
 $C_{27}H_{48}O_{18}$ 660.665
Constit. of the roots of *Dregea sinensis*.
Shen, X. *et al.*, *Huaxue Xuebao*, 1990, **48**, 709;
CA, **114**, 3446h (*isol*)

 **α -D-Glucopyranosyl-(1 \rightarrow 3)-
[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galac-** G-332
tose, 9CI
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form**

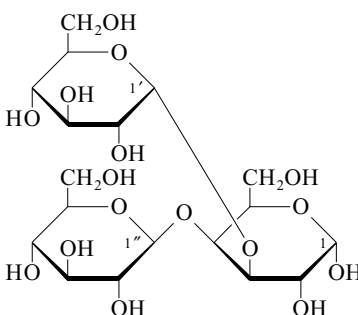
Me glycoside: [127641-12-7]
 $C_{19}H_{34}O_{16}$ 518.468
Syrup. $[\alpha]_{D}^{25} +22.3$ (c, 0.9 in H_2O).
Me glycoside, 2,2',2'',3',3'',4',4'',6,6',6''-deca-Me:
 $C_{29}H_{54}O_{16}$ 658.736
Syrup.
Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145;
2153 (α -Me pyr derivs, cmr, pmr, conformn)

 α -D-Glucopyranosyl-(1 \rightarrow 4)- α - G-333
D-glucopyranosyl-(1 \rightarrow 6)-D-galactose,
9CI
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form**

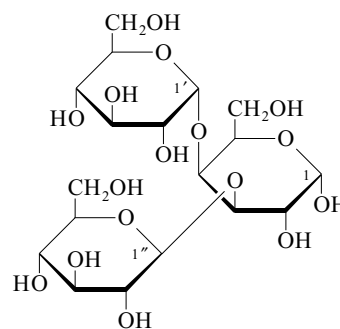
1,2:3,4-Di-O-isopropylidene, 2',2'',3',3'',4'',6',6''-heptabenzyl:
[136984-88-8]
 $C_{73}H_{82}O_{16}$ 1215.441
Syrup. $[\alpha]_{D}^{25} +25.2$ (c, 1.0 in $CHCl_3$).
Mereyala, H.B. *et al.*, *Tetrahedron*, 1991, **47**,
6435 (*diisopropylidene heptabenzyl, pmr, cmr*)

 α -D-Glucopyranosyl-(1 \rightarrow 6)- α - G-334
D-glucopyranosyl-(1 \rightarrow 6)-D-galactose,
9CI
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form**

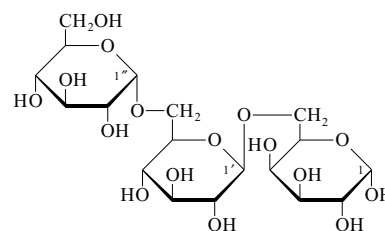
1,2:3,4-Di-O-isopropylidene, heptabenzyl:
[115828-44-9]
 $C_{73}H_{82}O_{16}$ 1215.441
Syrup.
Mootoo, D.R. *et al.*, *J.A.C.S.*, 1988, **110**, 5583
(*diisopropylidene heptabenzyl*)

 α -D-Glucopyranosyl-(1 \rightarrow 3)- G-335
[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galac-
tose, 9CI
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form**

Me glycoside: [127641-13-8]
 $C_{19}H_{34}O_{16}$ 518.468
Syrup. $[\alpha]_{D}^{25} +160$ (c, 1.1 in H_2O).
Me glycoside, 2,2',3',4',6,6'-hexabenzyl, 2'',3'',4'',6''-tetrabenzoyl: [127563-90-0]
 $C_{89}H_{86}O_{20}$ 1475.646
Syrup.
Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145;
2153 (α -Me pyr derivs, cmr, pmr, conformn)

 α -D-Glucopyranosyl-(1 \rightarrow 4)- G-336
[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galac-
tose, 9CI
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form**

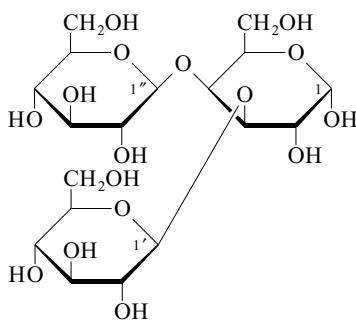
Me glycoside: [127641-14-9]
 $C_{19}H_{34}O_{16}$ 518.468
Syrup. $[\alpha]_{D}^{25} +150$ (c, 1.0 in H_2O).
Me glycoside, 2,2'',3'',4'',6,6''-hexabenzyl, 2',3',4',6'-tetrabenzoyl: [127563-91-1]
 $C_{89}H_{86}O_{20}$ 1475.646
Syrup.
Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145;
2153 (α -Me pyr derivs, cmr, pmr, conformn)

 α -D-Glucopyranosyl-(1 \rightarrow 6)- β - G-337
D-glucopyranosyl-(1 \rightarrow 6)-D-galactose,
9CI
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form**

1,2:3,4-Di-O-isopropylidene, 2',2'',3',3'',4'',6',6''-heptabenzyl:
[115828-45-0]
 $C_{73}H_{82}O_{16}$ 1215.441
Syrup.
Mootoo, D.R. *et al.*, *J.A.C.S.*, 1988, **110**, 5583
(*diisopropylidene heptabenzyl, pmr*)

**β -D-Glucopyranosyl-(1 \rightarrow 3)-
[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose, 9CI**

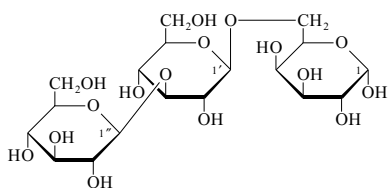
G-338

 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form***Me glycoside*: [127641-15-0] $C_{19}H_{34}O_{16}$ 518.468Syrup. $[\alpha]_D^{25} +76$ (c, 1.0 in H_2O).*Me glycoside*, 2,6-dibenzyl, 2',2'',3',3'',4',4'',6',6''-octabenzoyl: [127563-92-2] $C_{89}H_{78}O_{24}$ 1531.581

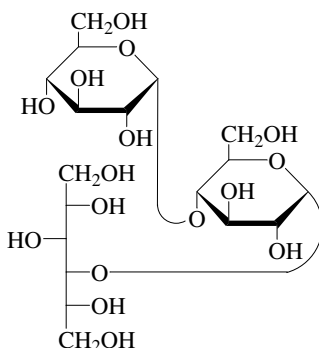
Syrup.

Baumann, H. *et al.*, *J.C.S. Perkin 1*, 1989, 2145; 2153 (α -Me pyr derivs, cmr, pmr, conformn) **β -D-Glucopyranosyl-(1 \rightarrow 3)- β -
D-glucopyranosyl-(1 \rightarrow 6)-D-galactose, 9CI**

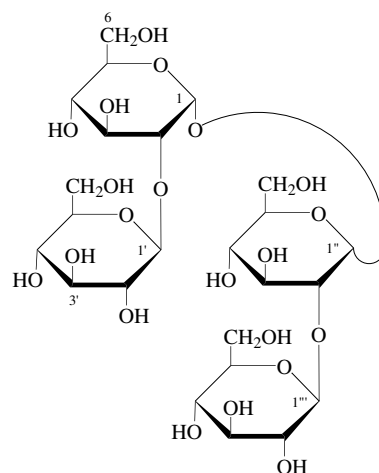
G-339

 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form***4',6'-O-Ethylidene*, 1,2:3,4-di-O-isopropylidene, 2'-benzoyl, 2'',3'',4'',6''-tetra-Ac: [116731-66-9] $C_{41}H_{54}O_{21}$ 882.865Syrup. $[\alpha]_D -8$ ($CHCl_3$).Collins, P.M. *et al.*, *Chem. Comm.*, 1988, 272 (ethylidene tetra-Ac deriv, pmr, cmr) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -
D-glucopyranosyl-(1 \rightarrow 4)-D-glucitol
*Maltotriitol***

G-340

 $C_{18}H_{34}O_{16}$ 506.457Impurity in coml. maltitol, prod. by redn. of coml. high-maltose glucose syrups. Cryst. (H_2O). Mp 187-189°.Schouten, A. *et al.*, *Carbohydr. Res.*, 1999, **322**, 274-278 (*cryst struct, bibl*) **β -D-Glucopyranosyl-(1 \rightarrow 2)- α -
D-glucopyranosyl- β -D-glucopyranosyl-
(1 \rightarrow 2)- α -D-glucopyranoside
2,2'-Di- β -D-glucopyranosyl- α,α -trehalose.
*Actinotetraose***

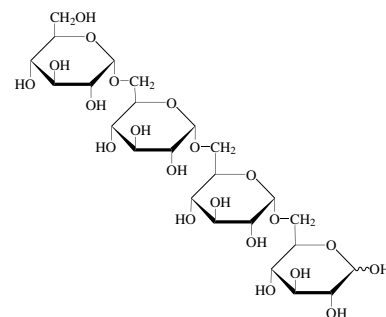
G-341

 $C_{24}H_{42}O_{21}$ 666.583

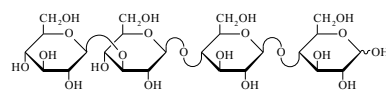
Parent not known.

3',3''',4',4''',6,6''-Hexatigloyl: **Tigloside** [216590-44-2] $C_{54}H_{78}O_{27}$ 1159.194Metab. of *Amycolatopsis* sp. NN0 21702 and *Actinomyces* sp. A499. Amorph. solid + 1 H_2O . $[\alpha]_D^{24} +52$ (c, 0.7 in MeOH). $[\alpha]_D^{23} +29.2$ (c, 1 in CH_2Cl_2). λ_{max} 222 (no solvent reported).Breinholt, J. *et al.*, *Acta Chem. Scand.*, 1998, **52**, 1239-1242 (*isol, uv, ir, pmr, cmr*)Rickards, R.W. *et al.*, *J. Antibiot.*, 1998, **51**, 1093-1098 (*isol, pmr, cmr, ms*) **α -D-Glucopyranosyl-(1 \rightarrow 6)- α -
D-glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-
D-glucose
Isomaltotetraose
[35997-20-7]**

G-342

 $C_{24}H_{42}O_{21}$ 666.583Hygroscopic glass. $[\alpha]_D^{25} +148$ (c, 0.5 in H_2O).*Tetradecabenzoyl*: $C_{122}H_{98}O_{35}$ 2124.095Mp 140.5-145.5°. $[\alpha]_D^{25} +167$ (c, 0.3 in $CHCl_3$).Taylor, P.M. *et al.*, *Biochem. Prep.*, 1963, **10**, 86-90 (*synth*)Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1973, **46**, 2520-2523 (*synth*)Friebolin, H. *et al.*, *Makromol. Chem.*, 1976, **177**, 845-858 (*cmr*) **β -D-Glucopyranosyl-(1 \rightarrow 3)- β -
D-glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-
D-glucose
3- β -Glucosylcellotriose. 4- β -Laminaribiosylcellobiose
[58484-04-1]**

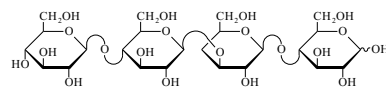
G-343



Pyranose-form

 $C_{24}H_{42}O_{21}$ 666.583Isol. from cellulase hydrolysates of lichenin and oat β -glucan (see Lichenan, L-39). Mp 221-224°. $[\alpha]_D +10.6$ (in H_2O).*Dihydrate*: Mp 187-188°.Parrish, F.W. *et al.*, *Can. J. Chem.*, 1960, **38**, 2094 (*isol*)Perlin, A.S. *et al.*, *Can. J. Chem.*, 1962, **40**, 50 (*isol*)Luchsinger, W.W. *et al.*, *Carbohydr. Res.*, 1976, **46**, 1Takeo, K. *et al.*, *Carbohydr. Res.*, 1986, **147**, 265 (*synth, pmr, cmr*) **β -D-Glucopyranosyl-(1 \rightarrow 4)- β -
D-glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 4)-
D-glucose
3- β -Cellobiosylcellobiose
[103762-93-2]**

G-344



Pyranose-form

 $C_{24}H_{42}O_{21}$ 666.583

Isol. from cellulase hydrolysates of lichenin and oat β -glucan (see Lichenan, L-39). Mp 223-226°. $[\alpha]_D^{20} +19.8$ (H₂O).

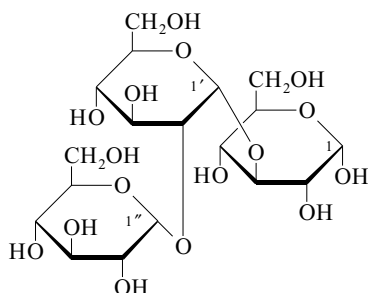
Parrish, F.W. *et al.*, *Can. J. Chem.*, 1960, **38**, 2094 (*isol*)

Perlin, A.S. *et al.*, *Can. J. Chem.*, 1962, **40**, 50 (*isol*)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1986, **147**, 265 (*synth*, *pmr*, *cmr*)

α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose, 9CI

[112302-51-9]



C₁₈H₃₂O₁₆ 504.441

α -Pyranose-form

Me glycoside: [136597-19-8]

C₁₉H₃₄O₁₆ 518.468

Syrup. $[\alpha]_D^{25} +191$ (c, 1.0 in H₂O).

Me glycoside, 4,6:4',6'-di-O-benzylidene, 2,2'',3'',4'',6''-pentabenzyl, 3'-Ac: [136597-26-7]

C₇₀H₇₄O₁₇ 1187.344

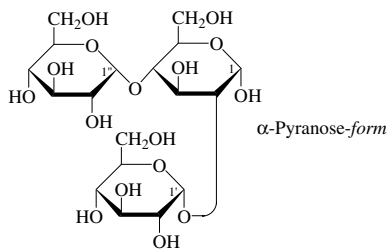
Syrup. $[\alpha]_D^{22} +73$ (c, 1.0 in CHCl₃).

Adeyeye, A. *et al.*, *J.C.S. Perkin 2*, 1991, 963 (α -Me pyr derivs, conformn, *pmr*, *cmr*)

α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-glucose, 9CI

Centose

[34174-65-7]



C₁₈H₃₂O₁₆ 504.441

Constit. of honey. Patented for food use and caries prevention. $[\alpha]_D^{15} +142.3$ (c, 0.59 in H₂O).

β -Pyranose-form [29581-60-0]

Undeca-Ac: [29581-59-7]

C₄₀H₅₄O₂₇ 966.85

$[\alpha]_D^{15} +103$ (c, 2.5 in CHCl₃).

Undeca-Me:

C₂₉H₅₄O₁₆ 658.736

$[\alpha]_D^{25} +113$ (c, 1.5 in CHCl₃).

[19774-14-2]

Siddiqui, I.R. *et al.*, *Carbohydr. Res.*, 1968, **6**, 250 (*isol*)

Koeppen, B.H. *et al.*, *Carbohydr. Res.*, 1970, **13**, 417 (*synth*)

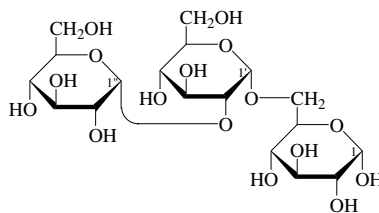
Nishi, K. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 737 (*synth*)

Japan. Pat., 1988, 63 240 756; 63 240 757; 63 261 492; *CA*, **110**, 74132f; 74133g; 152832a (*use, enzymic manuf*)

α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose, 9CI

6- α -Kojibiosylglucose

[40983-69-5]



α -Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isol. from acetylated Dextran obt. from *Leuconostoc mesenteroides* strain NRRL B1397. Amorph. powder. $[\alpha]_D +150.5$ (c, 0.8 in H₂O) (+144).

α -Pyranose-form

Benzyl glycoside, *decabenzyl*: [83921-64-6]

C₉₅H₉₈O₁₆ 1495.81

Syrup. $[\alpha]_D^{20} +86$ (c, 3.5 in CHCl₃).

β -Pyranose-form

Benzyl glycoside, 2,3,4-tribenzyl, *hepta-Ac*: [71978-83-1]

C₆₀H₇₀O₂₃ 1159.199

Syrup. $[\alpha]_D +86.5$ (c, 1.5 in CHCl₃).

Sakakibara, K. *et al.*, *Carbohydr. Res.*, 1972, **25**, 443

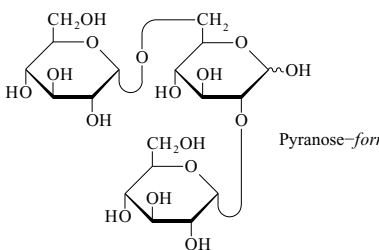
Pozsgay, V. *et al.*, *Carbohydr. Res.*, 1979, **75**, 310 (*synth*, β -benzyl gly *synth*, *cmr*)

Watanabe, T. *et al.*, *Carbohydr. Res.*, 1980, **83**, 119

Morishima, N. *et al.*, *Chem. Lett.*, 1983, 1982 (α -benzyl gly)

α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose, 9CI

[40983-71-9]



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Product from acetylated dextran obt. from *Leuconostoc mesenteroides* strain NRRL B1397.

$[\alpha]_D^{24} +153$ (H₂O).

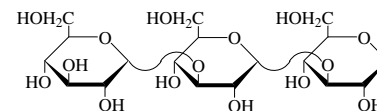
Sakakibara, K. *et al.*, *Carbohydr. Res.*, 1972, **25**, 443

Watanabe, T. *et al.*, *Carbohydr. Res.*, 1980, **83**, 119

α -D-Glucopyranosyl-(1 \rightarrow 3)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose, 8CI

Nigerotriose

[23393-12-6]



β -Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isol. from the acetolysate of D-glucan from the bracket fungus *Leatiporus sulphureus* and from *Leuconostoc mesenteroides* B dextran. Amorph. powder. $[\alpha]_D^{17} +182.7$ (c, 1.1 in H₂O). $[\alpha]_D^{14} +159$ (c, 1.2 in H₂O).

β -Pyranose-form

Undeca-Ac:

C₄₀H₅₄O₂₇ 966.85

Cryst. (EtOH). Mp 188-189°. $[\alpha]_D^{22} +105.9$ (c, 1.1 in CHCl₃).

Me glycoside:

C₁₉H₃₄O₁₆ 518.468

Cryst. (EtOH). Mp 214-215°. $[\alpha]_D^{19} +137.6$ (c, 1.6 in H₂O).

Me glycoside, *deca-Ac*:

C₃₉H₅₄O₂₆ 938.84

Cryst. (EtOH). Mp 183-186°. $[\alpha]_D^{19} +89.4$ (c, 1.6 in CHCl₃).

Peat, S. *et al.*, *J.C.S.*, 1961, 623

Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 103 (*isol*)

Shida, M. *et al.*, *Carbohydr. Res.*, 1978, **60**, 117

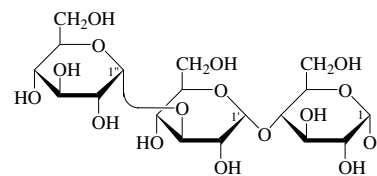
Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **113**, 281 (*isol*, *synth*)

Medakovic, D. *et al.*, *Carbohydr. Res.*, 1990,

198, 15 (*struct*, *synth*)

α -D-Glucopyranosyl-(1 \rightarrow 3)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI

[69924-34-1]



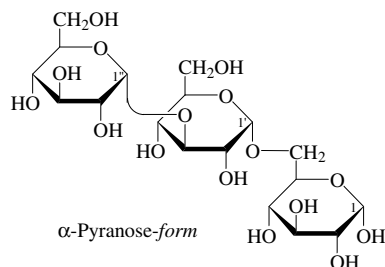
α -Pyranose-form

C₁₈H₃₂O₁₆ 504.441

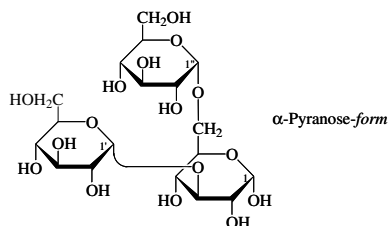
Formed by partial acid hydrolysis of nigeran and isolichenin and by enzymic hydrol. of elsinan. Possibly present in floridean starch. Powder. $[\alpha]_D^{25} +169.5$ (c, 1.25 in H₂O).

α -Pyranose-form*Me glycoside*: [114055-10-6]C₁₉H₃₄O₁₆ 518.468Amorph. [α]_D²⁶ +203.5 (c, 0.9 in H₂O).*Me glycoside, deca-Ac*: [114055-09-3]C₃₉H₅₄O₂₆ 938.84Amorph. powder. [α]_D²⁶ +144 (c, 2.2 in CHCl₃).*Me glycoside, decabenzyl*: [114055-08-2]C₈₉H₉₄O₁₆ 1419.712Syrup. [α]_D²⁶ +57 (c, 1.2 in CHCl₃).Barker, S.A. *et al.*, *J.C.S.*, 1957, 2448Peat, S. *et al.*, *J.C.S.*, 1961, 623Lukomskaia, I.S. *et al.*, *Enzymologia*, 1962, **14**, 327 (*synth*)Tsumuraya, Y. *et al.*, *J. Appl. Biochem.*, 1979, **1**, 235 (*synth*)Takeo, K. *et al.*, *Carbohydr. Res.*, 1987, **165**, 123 (*Me gly synth, cmr*) **α -D-Glucopyranosyl-(1 \rightarrow 3)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose, 8CI***6- α -Nigerosylglucose*

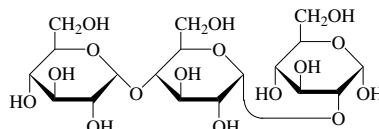
[23477-45-4]

C₁₈H₃₂O₁₆ 504.441Formed by acetolysed fragmentation of a dextran from *Leuconostoc mesenteroides* B₄.[α]_D¹⁴ +153 (c, 2.5 in H₂O). **α -Pyranose-form***Benzyl glycoside, decabenzyl*: [83921-67-9]C₉₅H₉₈O₁₆ 1495.81Syrup. [α]_D³⁰ +80 (c, 3.9 in CHCl₃).Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 103; 1295 (*isol*)Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383 (*benzyl gly deriv synth*) **α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose 3,6-Di- α -glucosylglucose**

[23393-11-5]

C₁₈H₃₂O₁₆ 504.441Prod. formed by acetolysed fragmentation of a dextran from *Leuconostoc mesenteroides* B. Foam + 1½H₂O. [α]_D¹⁴ +133 (c, 0.7 in H₂O) (+120). **α -Pyranose-form***Benzyl glycoside, 2,2',2'',3',3'',4,4',4''-octabenzyl*: [85207-02-9]C₈₁H₈₆O₁₆ 1315.561Syrup. [α]_D²⁵ +82.2 (CHCl₃).*Benzyl glycoside, decabenzyl*: [83945-61-3]C₉₅H₉₈O₁₆ 1495.81Syrup. [α]_D²⁰ +79 (CHCl₃).Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 103 (*isol*)Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1982, **55**, 2995 (*synth, cmr*)Ogawa, T. *et al.*, *Carbohydr. Res.*, 1982, **110**, C12 (*di-Ac synth, cmr*) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-D-glucose 4- α -Glucosylkojibiose**

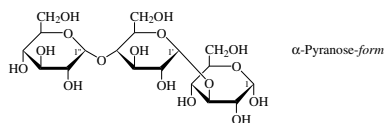
[58274-01-4]

C₁₈H₃₂O₁₆ 504.441Constit. of honey. Transglycosylation product formed when cyclodextrin glycosyltransferase from *Bacillus megaterium* strain 5 is grown in a kojibiose medium. [α]_D²² +162 (c, 0.5 in H₂O). **α -Pyranose-form***Undeca-Ac*:C₄₀H₅₄O₂₇ 966.85Mp 105-106°. [α]_D²² +163 (c, 0.5 in CHCl₃).

[21291-38-3]

Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 2353 **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose, 9CI***3- α -Maltosylglucose*

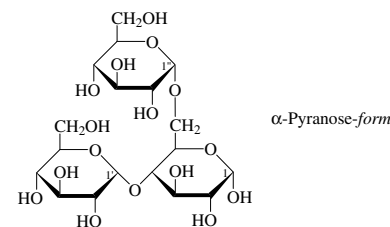
[69924-35-2]

C₁₈H₃₂O₁₆ 504.441

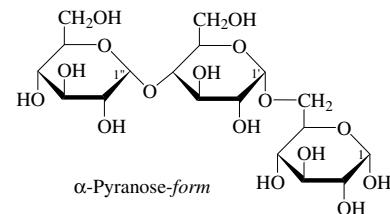
Isol. from the partial acid hydrolysate of nigeran and isolichenin.

 α -Pyranose-form*Me glycoside*: [114055-07-1]C₁₉H₃₄O₁₆ 518.468Amorph. powder. [α]_D²⁶ +200.5 (c, 1.9 in H₂O).*Me glycoside, deca-Ac*: [114055-06-0]C₃₉H₅₄O₂₆ 938.84Amorph. [α]_D²⁶ +150 (c, 1.7 in CHCl₃).*Me glycoside, decabenzyl*: [114055-05-9]C₈₉H₉₄O₁₆ 1419.712Syrup. [α]_D²⁶ +72 (c, 1.3 in CHCl₃).Barker, S.A. *et al.*, *J.C.S.*, 1957, 2448 (*isol*)Peat, S. *et al.*, *J.C.S.*, 1961, 623Takeo, K. *et al.*, *Carbohydr. Res.*, 1987, **165**, 123 (*Me gly, Me gly derivs, synth, cmr*) **α -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose, 9CI***4,6-Di-O-(α -D-glucopyranosyl)-D-glucose.**6-O-Glucosylmaltose*

[25218-29-5]

C₁₈H₃₂O₁₆ 504.441Isol. from the partial acid hydrolysate of amylopectin (waxy rice starch). Syrup. [α]_D²² +139 (c, 0.3 in H₂O) (+125). **α -Pyranose-form***Benzyl glycoside, decabenzyl*: [82807-87-2]C₉₅H₉₈O₁₆ 1495.81Syrup. [α]_D²⁰ +82 (c, 1.7 in CHCl₃). **β -Pyranose-form***Me glycoside*: [97672-52-1]C₁₉H₃₄O₁₆ 518.468Syrup. [α]_D +85.4 (H₂O).de Souza, R. *et al.*, *Tet. Lett.*, 1964, 1215 (*synth, struct*)Ogawa, K. *et al.*, *CA*, 1970, **72**, 117 680z (*isol*)Eby, R. *et al.*, *Carbohydr. Res.*, 1980, **79**, 53 (*synth*)Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1039 (*benzyl gly deriv, cmr*)Koto, S. *et al.*, *Carbohydr. Res.*, 1984, **130**, 73 (*synth, cmr*)Bock, K. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 581 (*Me gly, cmr*) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose 6- α -Maltosylglucose. Isopanose**

[32581-33-2]

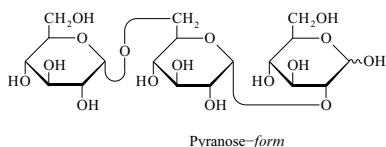
C₁₈H₃₂O₁₆ 504.441Formed by acid or enzymatic hydrol. of, Glycogen, G-555, Pullulan, P-110 and floridean starch. Present in honey. [α]_D +128 (H₂O). **α -Pyranose-form***Benzyl glycoside, decabenzyl*: [83921-71-5]C₉₅H₉₈O₁₆ 1495.81Syrup. [α]_D²⁰ +74 (c, 1.0 in CHCl₃).

[3810-66-0]

Peat, S. *et al.*, *J.C.S.*, 1959, 3223 (*isol*)
 Pazur, J.H. *et al.*, *J. Biol. Stand.*, 1960, **235**, 297 (*synth*)
 Siddiqui, I.R. *et al.*, *CA*, 1968, **69**, 95213h (*isol*)
 Bethgate, G.N. *et al.*, *Chem. Ind. (London)*, 1969, 520 (*isol*)
 Ogawa, K. *et al.*, *CA*, 1970, **72**, 117680z
 Sakano, Y. *et al.*, *Carbohydr. Res.*, 1978, **61**, 175
 Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383 (*benzyl gly deriv*)

α -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 2)-D-glucose, 9CI

2- α -Isomaltosylglucose
 [40983-70-8]



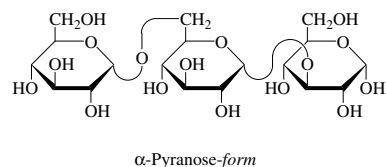
$C_{18}H_{32}O_{16}$ 504.441
 Isol. from acetylated dextran obt. from *Leuconostoc mesenteroides* strain NRRL B1397. Isol. from sake. Formed when *Leuconostoc mesenteroides* was grown on a medium containing (1 \rightarrow 2) linked glucobiose.
 $[\alpha]_D^{12} +148$ (c, 1.8 in H_2O).

[25242-83-5, 55177-32-7]

Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 1295 (*synth*)
 Sakakibara, K. *et al.*, *Carbohydr. Res.*, 1972, **25**, 443 (*synth*)
 Baba, S. *et al.*, *CA*, 1975, **82**, 153725h (*isol*)
 Watanabe, T. *et al.*, *Carbohydr. Res.*, 1980, **83**, 119

α -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose, 8CI

3- α -Isomaltosylglucose
 [23393-10-4]



$C_{18}H_{32}O_{16}$ 504.441
 Formed by acetolysed fragmentation of *Leuconostoc mesenteroides* B dextran formed when *L. mesenteroides* NRRL B-512 was grown on a sucrose medium containing $\alpha(1\rightarrow3)$ linked glucobiose as an acceptor. Synth. enzymically by the action of potato T-enzyme on 3-O- α -D-glucopyranosyl-D-glucose, G-405. Present in honey.
 $[\alpha]_D^{12} +155$ (c, 0.7 in H_2O).

α -Pyranose-form

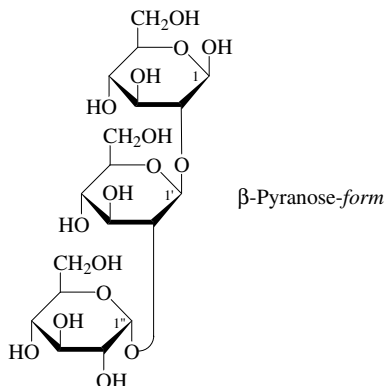
Undeca-Ac:
 $C_{40}H_{54}O_{27}$ 966.85
 Cryst. (EtOH). Mp 120°. $[\alpha]_D^{22} +111$ (c, 2.3 in $CHCl_3$).

[21291-02-1]

Abdullah, M. *et al.*, *J.C.S.*, 1962, 176 (*synth*)
 Siddiqui, I.R. *et al.*, *CA*, 1968, **69**, 95213h (*isol*)
 Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 103; 1295 (*isol*)

α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-glucose, 9CI

[76790-52-8]



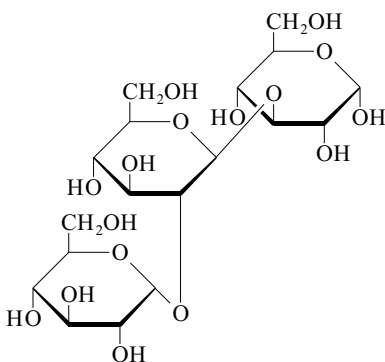
$C_{18}H_{32}O_{16}$ 504.441
 Cryst. + H_2O (MeOH aq.). Mp 182-183° dec. $[\alpha]_D +78.5 \rightarrow +72.8$ (c, 1.4 in H_2O).

β -Pyranose-form

Undeca-Ac: [76790-51-7]
 $C_{40}H_{54}O_{27}$ 966.85
 Cryst. (EtOH). Mp 179-180°. $[\alpha]_D^{25} +78.5$ (c, 1.7 in $CHCl_3$).

Takeo, K. *et al.*, *Carbohydr. Res.*, 1981, **88**, 158 (*synth, undeca-Ac*)

α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose, 9CI



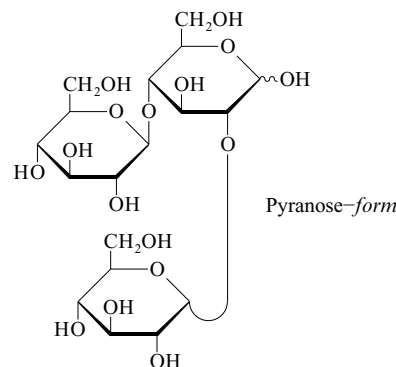
$C_{18}H_{32}O_{16}$ 504.441

α -Pyranose-form

Me glycoside: [136597-20-1]
 $C_{19}H_{34}O_{16}$ 518.468
 Syrup. $[\alpha]_D^{22} +119$ (c, 1.0 in H_2O).
 Me glycoside, 4,6-O-benzylidene, octabenzyl: [136597-29-0]
 $C_{82}H_{86}O_{16}$ 1327.572
 Syrup. $[\alpha]_D^{22} +52$ (c, 1.0 in $CHCl_3$).
 Adeyee, A. *et al.*, *J.C.S. Perkin 2*, 1991, 963 (α -Me pyr derivs, conformn, pmr, cmr)

α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose

G-361



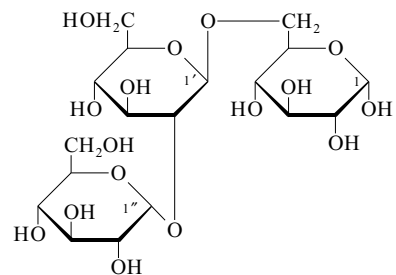
$C_{18}H_{32}O_{16}$ 504.441
 Formed when *Leuconostoc mesenteroides* (NRRLB-512) was grown on a medium containing $\beta(1\rightarrow4)$ linked glucobiose.
 $[\alpha]_D^{12} +98$ (c, 0.9 in H_2O).

[25193-54-8]

Bailey, R.W. *et al.*, *J.C.S.*, 1958, 1895
 Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 1295
 Morales, M.A.A. *et al.*, *Carbohydr. Res.*, 2001, **331**, 403-411 (*enzymic synth*)

α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose

G-362



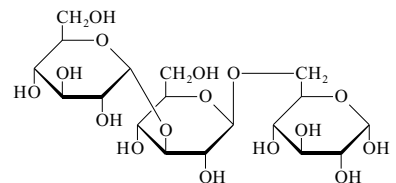
$C_{18}H_{32}O_{16}$ 504.441

α -Pyranose-form

Benzyl glycoside, decabenzyl: [83921-65-7]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +67$ (c, 0.6 in $CHCl_3$).
 Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383 (*synth*)
 Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1985, **58**, 120 (α -benzyl pyr decabenzyl, pmr)

α -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose, 9CI

G-363



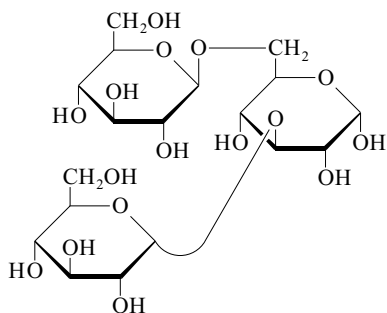
$C_{18}H_{32}O_{16}$ 504.441

α -Pyranose-form

Benzyl glycoside, decabenzyl: [83921-68-0]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +56$ (c, 3.7 in $CHCl_3$).
 Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383
 (α -benzyl pyr decabenzyl)

 **α -D-Glucopyranosyl-(1 \rightarrow 3)-
 $[\beta$ -D-glucopyranosyl-(1 \rightarrow 6)]-D-
 glucose, 9CI**

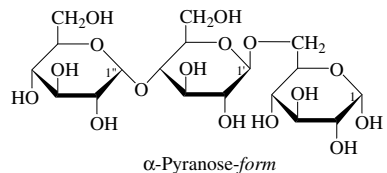
G-364


 $C_{18}H_{32}O_{16}$ 504.441
 α -Pyranose-form

Benzyl glycoside, decabenzyl: [77988-18-2]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +59$ (c, 1.4 in $CHCl_3$).
 Koto, S. *et al.*, *Can. J. Chem.*, 1981, **59**, 255
 (α -benzyl pyr decabenzyl, cmr)

 **α -D-Glucopyranosyl-(1 \rightarrow 4)- β -
 D-glucopyranosyl-(1 \rightarrow 6)-D-glucose,
 9CI**

G-365

 α -Pyranose-form
 $C_{18}H_{32}O_{16}$ 504.441
 Amorph. $[\alpha]_D +62$ (H_2O).
 α -Pyranose-form

Benzyl glycoside, decabenzyl: [83921-72-6]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +51$ (c, 0.5 in $CHCl_3$).

 β -Pyranose-form [59685-19-7]

Undeca-Ac: [14260-09-4]
 $C_{40}H_{54}O_{27}$ 966.85
 Cryst. (EtOH). Mp 242.7° (241°). $[\alpha]_D$
 +42.5 (c, 1.0 in $CHCl_3$).

Benzyl glycoside, 2,3,4-tribenzyl, hepta-Ac:
 [59647-87-9]
 $C_{60}H_{70}O_{23}$ 1159.199
 Cryst. Mp 146-147°. $[\alpha]_D +33.6$
 ($CHCl_3$).

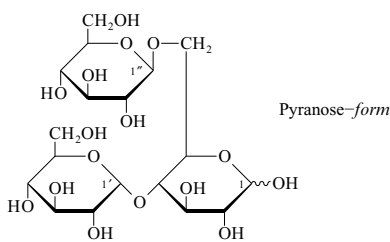
Kochetkov, N.K. *et al.*, *Tetrahedron*, 1967, **23**,
 693 (β -undeca-Ac)

Nanasi, P. *et al.*, *Acta Chim. Acad. Sci. Hung.*,
 1976, **88**, 155 (synth, β -benzyl pyr hepta-Ac
 deriv)

Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383
 (α -benzyl pyr decabenzyl)

 α -D-Glucopyranosyl-(1 \rightarrow 4)-

G-366

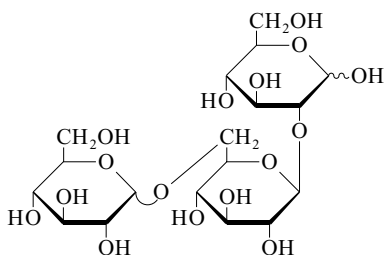
 **$[\beta$ -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose
 [101541-07-5]**


Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
 Syrup. $[\alpha]_D^{20} +84$ (+79) (H_2O).
 Goldstein, I.J. *et al.*, *Acta Chem. Scand.*, 1962,
16, 383 (synth)
 Cottaz, S. *et al.*, *Synthesis*, 1989, 755 (synth)

 **α -D-Glucopyranosyl-(1 \rightarrow 6)- β -
 D-glucopyranosyl-(1 \rightarrow 2)-D-glucose
 2- β -Isomaltosylglucose**

G-367



Pyranose-form

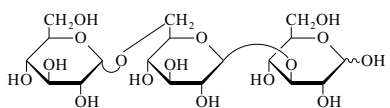
$C_{18}H_{32}O_{16}$ 504.441
 Formed when *Leuconostoc mesenteroides*
 (NRRL B-512) was grown on a medium
 containing β (1 \rightarrow 2) linked glucobiose.
 $[\alpha]_D^{12} +81$ (c, 0.4 in H_2O).

[25193-52-6]

Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969,
33, 1295

 **α -D-Glucopyranosyl-(1 \rightarrow 6)- β -
 D-glucopyranosyl-(1 \rightarrow 3)-D-glucose
 3- β -Isomaltosylglucose**

G-368



Pyranose-form

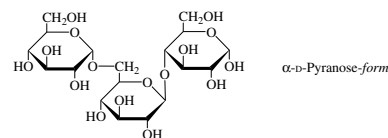
$C_{18}H_{32}O_{16}$ 504.441
 Product formed when *Leuconostoc mesen-*
teroides (NRRL-B512) was grown on a
 medium containing β (1 \rightarrow 3) linked gluco-
 biose. Trace component of hydrolysate of
 "insoluble" seaweed laminarin.
 $[\alpha]_D^{12} +88$ (c, 0.7 in H_2O) (+67).

[25242-84-6]

Peat, S. *et al.*, *J.C.S.*, 1958, 729 (*isol*)
 Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969,
33, 1295 (synth)

 α -D-Glucopyranosyl-(1 \rightarrow 6)- β -

G-369

D-glucopyranosyl-(1 \rightarrow 4)-D-glucose
 α -D-Pyranose-form

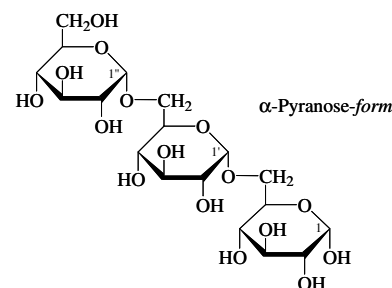
$C_{18}H_{32}O_{16}$ 504.441
 Obt. by enzymic transglycosylation bet-
 ween Sucrose, S-92 and Cellobiose, C-38.

Morales, M.A.A. *et al.*, *Carbohydr. Res.*, 2001,
331, 403-411 (synth, pmr, cmr)

 **α -D-Glucopyranosyl-(1 \rightarrow 6)- β -
 D-glucopyranosyl-(1 \rightarrow 6)-D-glucose,
 9CI**

G-370

6- β -Isomaltosylglucose
 [73912-50-2]

 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
 Product formed when *Leuconostoc mesen-*
teroides (NRRL B-512) was grown on a
 sucrose medium containing β (1 \rightarrow 6) linked
 glucobiose. Constit. of nephritogenic
 glycopeptide from rat glomerular base-
 ment membrane.
 $[\alpha]_D^{12} +65$ (c, 1.8 in H_2O).

 α -Pyranose-form

Benzyl glycoside, decabenzyl: [83921-76-0]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +58$ (c, 1.0 in $CHCl_3$).

[25193-56-0]

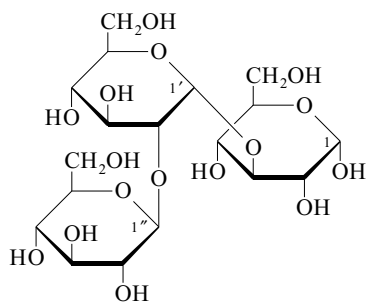
Yamauchi, F. *et al.*, *Agric. Biol. Chem.*, 1969,
33, 1295 (synth)

Shibata, S. *et al.*, *Carbohydr. Res.*, 1980, **81**, 345
 Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383
 (α -benzyl gly synth)

Ogawa, T. *et al.*, *Agric. Biol. Chem.*, 1983, **47**,
 1213 (*occur*)

Shibata, S. *et al.*, *Nephron*, 1987, **47**, 101; *CA*,
108, 20076f (*occur*)

β-D-Glucopyranosyl-(1→2)-α-D-glucopyranosyl-(1→3)-D-glucose, 9CI G-371



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

Me glycoside: [136597-21-2]

C₁₉H₃₄O₁₆ 518.468

Syrup.

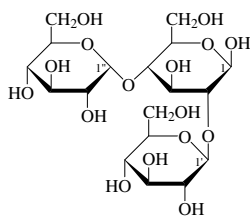
Me glycoside, 4,6:4',6'-di-O-benzylidene, 2-benzyl, 2'',3'',4'',6''-tetra-Ac: [136597-32-5]

C₄₈H₅₆O₂₀ 952.958

Syrup.

Adeyeye, A. *et al.*, *J.C.S. Perkin 2*, 1991, 963
(*α-Me pyr derivs, pmr, cmr*)

β-D-Glucopyranosyl-(1→2)-[α-D-glucopyranosyl-(1→4)]-D-glucose, 9CI G-372



β-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

β-Pyranose-form

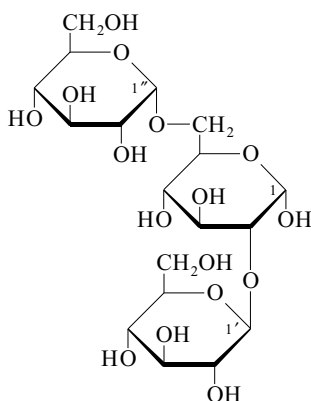
Undeca-Ac: [29581-61-1]

C₄₀H₅₄O₂₇ 966.85

Cryst. Mp 195-186°. [α]_D +46.5 (CHCl₃).

Koeppen, B.H. *et al.*, *Carbohydr. Res.*, 1970, **13**, 417 (*undeca-Ac*)

β-D-Glucopyranosyl-(1→2)-[α-D-glucopyranosyl-(1→6)]-D-glucose, 9CI G-373



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

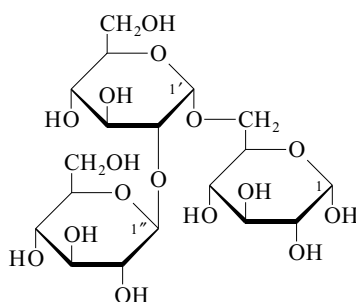
Benzyl glycoside, 4-allyl, nonabenzyl: [120330-84-9]

C₉₁H₉₆O₁₆ 1445.75

Syrup. [α]_D²⁰ +69 (c, 1.7 in CHCl₃).

Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1183
(*α-benzyl pyr deriv, cmr*)

β-D-Glucopyranosyl-(1→2)-α-D-glucopyranosyl-(1→6)-D-glucose, 9CI G-374



C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

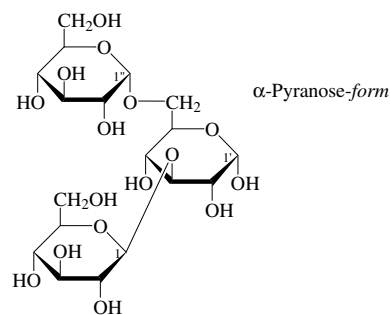
Benzyl glycoside, decabenzyl: [83932-08-5]

C₉₅H₉₈O₁₆ 1495.81

Syrup. [α]_D +59 (c, 1.0 in CHCl₃).

Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383
(*α-benzyl pyr decabenzyl*)

β-D-Glucopyranosyl-(1→3)-[α-D-glucopyranosyl-(1→6)]-D-glucose, 9CI G-375



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

Benzyl glycoside, decabenzyl: [83945-62-4]

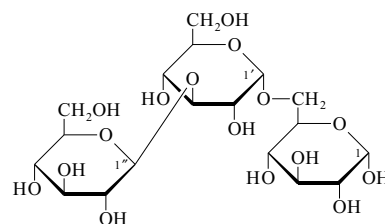
C₉₅H₉₈O₁₆ 1495.81

Syrup. [α]_D²⁰ +66 (c, 0.7 in CHCl₃).

Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1982, **55**, 2995 (*α-benzyl pyr decabenzyl, cmr*)

β-D-Glucopyranosyl-(1→3)-α-D-glucopyranosyl-(1→6)-D-glucose, 9CI G-376

[84396-55-4]



C₁₈H₃₂O₁₆ 504.441

Cryst. Mp 149-150°. [α]_D +48 → +57 (H₂O).

α-Pyranose-form

Benzyl glycoside, decabenzyl: [83921-69-1]

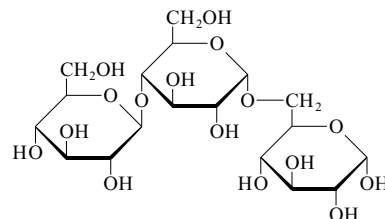
C₉₅H₉₈O₁₆ 1495.81

Syrup. [α]_D²⁰ +67 (CHCl₃).

Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383
(*synth. α-benzyl pyr decabenzyl*)

Koto, S. *et al.*, *Nippon Kagaku Kaishi*, 1982, 1651 (*synth. α-benzyl pyr decabenzyl, cmr*)

β-D-Glucopyranosyl-(1→4)-α-D-glucopyranosyl-(1→6)-D-glucose, 9CI G-377

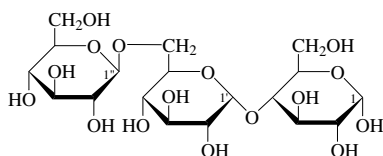


C₁₈H₃₂O₁₆ 504.441

α -Pyranose-form

Benzyl glycoside, decabenzyl: [83921-73-7]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +62$ (c, 1.7 in $CHCl_3$).
 Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383
 (α -benzyl pyr decabenzyl)
 Koto, S. *et al.*, *Nippon Kagaku Kaishi*, 1982,
 1651 (α -benzyl pyr decabenzyl, *pmr*)

β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI, 8CI G-378
Sorborose
 [7485-51-0]

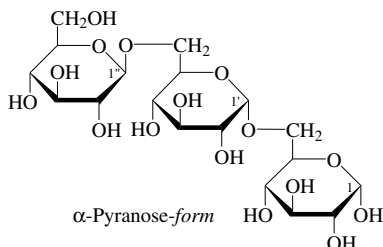
 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
 Amorph. $[\alpha]_D^{20} +70$ (c, 0.6 in H_2O).

 α -Pyranose-form

Benzyl glycoside, decabenzyl: [85011-48-9]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +57$ (c, 1.0 in $CHCl_3$).
 Wolfram, M.L. *et al.*, *J.O.C.*, 1967, **32**, 656
 (*synth*)
 Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1983, **56**,
 188 (α -benzyl pyr decabenzyl, *pmr*, *cmr*)

β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose, 9CI G-379
 [41897-94-3]

 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
 Syrup. $[\alpha]_D +71.9$ (H_2O).

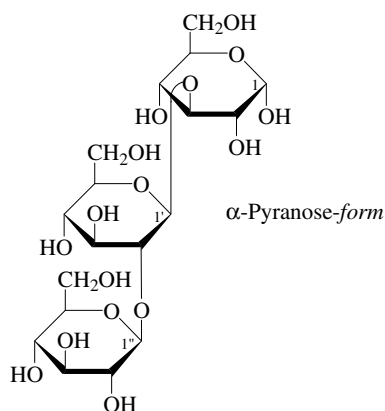
 α -Pyranose-form

Benzyl glycoside, decabenzyl: [83921-77-1]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +53$ (c, 2.3 in $CHCl_3$).

 β -Pyranose-form

2''-Benzyl, 3'',4'',6''-tris-(p-nitrobenzoyl), 1,2,2',3,3',4,4'-hepta-Ac: [41897-91-0]
 Syrup. $[\alpha]_D +46.5$ (c, 1.29 in $CHCl_3$).
 Takiura, K. *et al.*, *Chem. Pharm. Bull.*, 1973,
21, 523 (*synth*, β -benzyl hepta-Ac deriv)
 Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383
 (α -benzyl pyr decabenzyl)

β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose, 9CI G-380

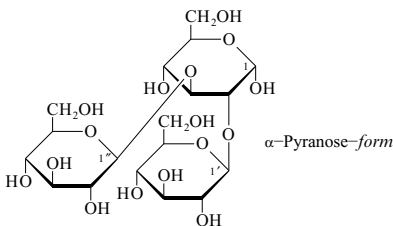
 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

 α -Pyranose-form

Me glycoside: [136597-22-3]
 $C_{19}H_{34}O_{16}$ 518.468
 Syrup.
Me glycoside, 4,6-O-benzylidene, 2,3',4',6'-tetrabenzyl, tetrabenzoyl: [136597-33-6]
 $C_{82}H_{78}O_{20}$ 1383.506
 Syrup. $[\alpha]_{H_2O}^{22} +15$ (c, 1.0 in $CHCl_3$).
 Adeyeye, A. *et al.*, *J.C.S. Perkin 2*, 1991, 963
 (α -Me pyr derivs, *pmr*, *cmr*)

β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)]-D-glucose, 9CI G-381

 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

 α -Pyranose-form

Me glycoside: [89016-56-8]
 $C_{19}H_{34}O_{16}$ 518.468
 Amorph. powder. $[\alpha]_D +34.8$ (H_2O).

 β -Pyranose-form

Me glycoside: [76790-44-8]
 Cryst. (EtOH). Mp 249-251°. $[\alpha]_D^{20} -32$
 (c, 1.0 in H_2O).

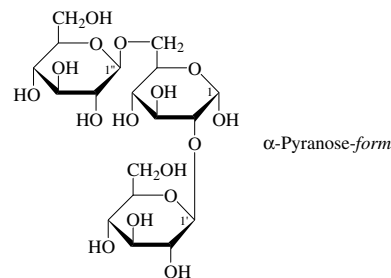
Me glycoside, 4,6-O-benzylidene: [76990-43-7]
 $C_{26}H_{38}O_{16}$ 606.577
 Cryst. (EtOH). Mp 280-282°. $[\alpha]_D^{20} -44.5$
 (c, 1.2 in DMF).

Me glycoside, 4,6-O-benzylidene, octa-Ac:
 [76790-42-6]
 $C_{42}H_{54}O_{24}$ 942.874
 Syrup. $[\alpha]_D^{20} -29.1$ (c, 1.8 in $CHCl_3$).

Takeo, K. *et al.*, *Carbohydr. Res.*, 1980, **87**, 147
 (β -Me pyr derivs, *pmr*)

Temeriusz, A. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1982, **56**, 141 (α -Me pyr, *cmr*)

β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose, 9CI G-382
Neopolitanose
 [90366-13-5]

 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
 Present as glycosyl esters in stigmas of
Crocus neapolitanus.

1-O-Octanoyl: [255904-23-5]

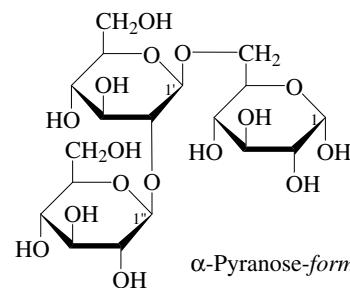
$C_{26}H_{46}O_{17}$ 630.639
 Constit. of the fruit of Indian mulberry
 (*Morinda citrifolia*). Powder.

 α -Pyranose-form

Undeca-Ac: [90332-61-9]
 $C_{40}H_{54}O_{27}$ 966.85
 Cryst. (EtOH). Mp 188-190°. $[\alpha]_D +28.4$ (H_2O).
Me glycoside: [88988-42-5]
 $C_{19}H_{34}O_{16}$ 518.468
 Cryst. Mp 262-265°.

Temeriusz, A. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1982, **56**, 141 (α -Me gly *synth*)
 Pychener, M. *et al.*, *Helv. Chim. Acta*, 1984, **67**,
 386 (*isol*, *pmr*, *ms*)
 Wang, M. *et al.*, *J. Agric. Food Chem.*, 1999, **47**,
 4880-4882 (*1-octanoyl*)

β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose G-383
 [96345-60-7]

 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441
 Glass. $[\alpha]_D -1$ (c, 1.0 in H_2O).

 α -Pyranose-form

Benzyl glycoside, 2,3,3',3'',4,4',4'',6',6''-nonabenzyl, 2''-Ac:
 $C_{90}H_{94}O_{17}$ 1447.722
 Syrup. $[\alpha]_D^{20} +28$ (c, 3.4 in $CHCl_3$).
Benzyl glycoside, decabenzyl: [83921-66-8]
 $C_{95}H_{98}O_{16}$ 1495.81
 Syrup. $[\alpha]_D^{20} +34$ (c, 2.6 in $CHCl_3$).

β-Pyranose-form

Undeca-Ac: [89945-12-0]

C₄₀H₅₄O₂₇ 966.85

Cryst. Mp 188-189°. [α]_D²⁵ +20.2 (c, 1.0 in CHCl₃).

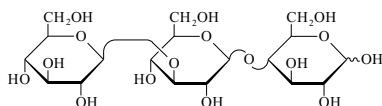
Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383 (α-benzyl gly)

Rychener, M. *et al.*, *Helv. Chim. Acta*, 1984, **67**, 378 (β-undeca-Ac synth, pmr)

Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1985, **58**, 120 (α-benzyl gly, synth, cmr)

β-D-Glucopyranosyl-(1→3)-β-D-glucopyranosyl-(1→4)-D-glucose, 9CI

4-β-Laminaribiosylglucose
[32581-38-7]



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Present in the partial acid hydrolysates of lichenin and oat β-glucan. Cryst. (EtOH aq.).

Mp 229-231°. [α]_D²⁵ +13 (c, 1.4 in H₂O).

Undeca-Ac:

C₄₀H₅₄O₂₇ 966.85

Cryst. (EtOH). Mp 120-122°. [α]_D -20 (CHCl₃).

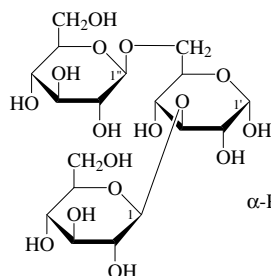
Peat, S. *et al.*, *J.C.S.*, 1957, 3916

Parrish, F.W. *et al.*, *Can. J. Chem.*, 1960, **38**, 2094 (isol)

Perlin, A.S. *et al.*, *Can. J. Chem.*, 1962, **40**, 50 (isol)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1986, **147**, 265 (synth)

β-D-Glucopyranosyl-(1→3)-[β-D-glucopyranosyl-(1→6)]-D-glucose, 9CI



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Constit. of the repeating unit of the extracellular polysaccharides of *Sclerotinia libertiana*, *Porodiscus pendulus*, *Schizophyllum commune* and *Grifora umbellata*. Powder (EtOH).

Mp 197-199° (183-188°). [α]_D -13 → +6.8 (H₂O). [α]_D²⁰ -1.1 (c, 1.5 in H₂O) (-0.6).

Pyranose-form

Undeca-Ac: [78006-45-8]

C₄₀H₅₄O₂₇ 966.85

Cryst. (EtOH). Mp 233-235°. [α]_D²⁰ -2.1 (c, 0.7 in CHCl₃).

α-Pyranose-form [78039-04-0]

Me glycoside: [82186-17-2]

C₁₉H₃₄O₁₆ 518.468

Amorph. [α]_D²⁵ +28.5 (c, 0.5 in MeOH).

Benzyl glycoside, 2,4-dibenzyl, octa-Ac:

[82186-23-0]

C₅₅H₆₆O₂₄ 1111.112

Syrup. [α]_D²⁵ +12.8 (c, 0.58 in CHCl₃).

Benzyl glycoside, decabenzyl: [78039-03-9]

C₉₅H₉₈O₁₆ 1495.81

Syrup. [α]_D²⁰ +38 (c, 0.6 in CHCl₃).

β-Pyranose-form [78039-05-1]

Me glycoside:

Cryst. Mp 144-146°. [α]_D -38.4 (H₂O).

Me glycoside, 2',2'',3',3'',4',4'',6',6''-octa-Ac: [72489-05-5]

C₃₅H₅₀O₂₄ 854.766

Cryst. Mp 226-228°. [α]_D -30.5 (CHCl₃).

Benzyl glycoside, 2,4-dibenzyl, octabenzoyl:

[103078-29-1]

C₉₅H₈₂O₂₄ 1607.678

Syrup. [α]_D +7 (CHCl₃).

Klemer, A. *et al.*, *Chem. Ber.*, 1961, **94**, 2747

(synth)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1979, **7**, 131; 1986, **145**, 293 (β-Me pyr derivs, β-benzyl pyr octabenzoyl deriv, cmr, occur)

Ueno, Y. *et al.*, *Carbohydr. Res.*, 1980, **85**, 151 (isol)

Koto, S. *et al.*, *Can. J. Chem.*, 1981, **59**, 255

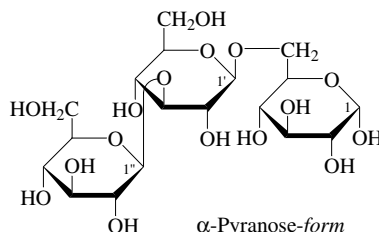
(synth, α-benzyl pyr decabenzyl, cmr)

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1982, **103**, 53

(synth, α-Me pyr, α-benzyl pyr octa-Ac deriv, cmr, occur)

β-D-Glucopyranosyl-(1→3)-β-D-glucopyranosyl-(1→6)-D-glucose, 9CI

6-β-Laminaribiosylglucose. 3-β-Glucosyl-gentiobiose
[32581-37-6]



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Isol. from partial acid hydrol. of insoluble laminarin and yeast β-glucan. Amorph. [α]_D -6 (H₂O).

α-Pyranose-form

Benzyl glycoside, decabenzyl: [83921-70-4]

C₉₅H₉₈O₁₆ 1495.81

Syrup. [α]_D²⁰ +42 (c, 2.0 in CHCl₃).

β-Pyranose-form

Undeca-Ac: [89367-11-3]

C₄₀H₅₄O₂₇ 966.85

Needles (EtOH). Mp 216-217°.

[α]_D -27.4 (CHCl₃).

Peat, S. *et al.*, *J.C.S.*, 1958, 724; 3862; 1960, 175

(isol, synth)

Handa, N. *et al.*, *Nature (London)*, 1961, **192**, 1078 (isol)

Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383

(α-benzyl gly synth)

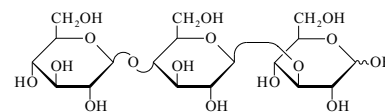
Rychener, M. *et al.*, *Helv. Chim. Acta*, 1984, **67**, 378 (β-undeca-Ac synth, pmr)

Ossowski, P. *et al.*, *J. Biol. Chem.*, 1984, **259**, 11337 (α-fur deriv synth)

β-D-Glucopyranosyl-(1→4)-β-D-glucopyranosyl-(1→3)-D-glucose, 9CI, 8CI

3-β-Cellobiosylglucose

[32581-36-5]



Pyranose-form

C₁₈H₃₂O₁₆ 504.441

Obtd. from partial acid and enzymic hydrol. of lichenin, oat β-glucan, barley β-glucan and from the cell-wall of bamboo. Cryst. (EtOH aq.). Mp 236-239°. [α]_D²⁵ +11.7 (c, 1.5 in H₂O).

Undeca-Ac:

C₄₀H₅₄O₂₇ 966.85

Cryst. Mp 108-110°. [α]_D -8.3 (CHCl₃).

Peat, S. *et al.*, *J.C.S.*, 1957, 3916 (isol)

Moscattelli, E.A. *et al.*, *J. Biol. Chem.*, 1961, **236**, 2858

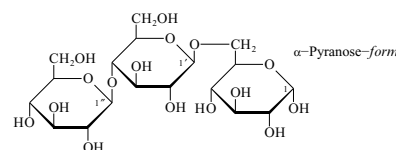
Perlin, A.S. *et al.*, *Can. J. Chem.*, 1962, **40**, 50 (isol)

Yamamoto, R. *et al.*, *Carbohydr. Res.*, 1978, **67**, 275

Kato, Y. *et al.*, *Carbohydr. Res.*, 1982, **109**, 233

Takeo, K. *et al.*, *Carbohydr. Res.*, 1986, **147**, 265 (synth)

β-D-Glucopyranosyl-(1→4)-β-D-glucopyranosyl-(1→6)-D-glucose, 9CI



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

α-Pyranose-form

Undeca-Ac: [55286-99-2]

C₄₀H₅₄O₂₇ 966.85

Needles (EtOH). Mp 190-191°.

[α]_D -17.5 (c, 2.5 in CHCl₃).

Benzyl glycoside, decabenzyl: [83921-74-8]

C₉₅H₉₈O₁₆ 1495.81

Cryst. Mp 122-123°. [α]_D²⁰ +48 (c, 0.4 in CHCl₃).

β-Pyranose-form

Undeca-Ac: [55287-00-8]

Needles (EtOH). Mp 245-247° (195-

195.5°). [α]_D²⁰ -9.7 (c, 1.0 in CHCl₃)

(-30.9).

Hall, D.M. *et al.*, *Carbohydr. Res.*, 1974, **38**, 359

(α-undeca-Ac, β-undeca-Ac, pmr)

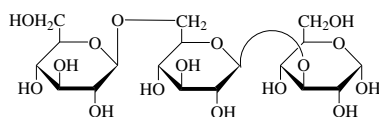
Morishima, N. *et al.*, *Chem. Lett.*, 1982, 1383

(α-benzyl pyr decabenzyl)

Koto, S. *et al.*, *Nippon Kagaku Kaishi*, 1982, 1631 (*α*-benzyl pyr decabenzyl)
Rychener, M. *et al.*, *Helv. Chim. Acta*, 1984, **67**, 378 (*β*-undeca-Ac, pmr, ms)

β-D-Glucopyranosyl-(1→6)-β-D-glucopyranosyl-(1→3)-D-glucose, 9CI

3-β-Gentiobiosylglucose
[32581-32-1]



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441
Isol. from the partial acid hydrolysates of sclerotia from *Sclerotinia libertiana*, laminarin, "insoluble" laminarin, and yeast β-glucan. Constit. in the carbohydrate moiety of a highly toxic saponin of Lucerne *Medicago sativa*. Repeating unit of the extracellular β-D-glucan from the fungus *Botrytis cinerea* responsible for clarification difficulties in wine technology. Prisms + 2H₂O. Mp 223-223° dec. [α]_D¹⁵ -4.35 → +1.58 (c, 1.0 in H₂O).

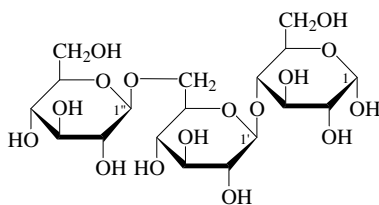
α-Pyranose-form

Undeca-Ac:
C₄₀H₅₄O₂₇ 966.85
Cryst. (EtOH). Mp 179-180°. [α]_D¹⁵ -11 (CHCl₃).

β-Pyranose-form [47751-20-2]

Undeca-Ac:
Prisms (EtOH). Mp 169-170°. [α]_D¹⁵ -27.9 (CHCl₃).
[34213-21-3]
Peat, S. *et al.*, *J.C.S.*, 1960, 175; 1958, 3862 (*isol*, *synth*)
Turvey, J.R. *et al.*, *J.C.S.*, 1960, 2366 (*synth*)
Handa, N. *et al.*, *Nature (London)*, 1961, **192**, 1078 (*isol*)
Gestetner, B. *et al.*, *Phytochemistry*, 1971, **10**, 2221 (*isol*)
Ueno, Y. *et al.*, *Carbohydr. Res.*, 1973, **28**, 140 (*isol*)
Dubourdieu, D. *et al.*, *Carbohydr. Res.*, 1981, **93**, 294 (*isol*)

β-D-Glucopyranosyl-(1→6)-β-D-glucopyranosyl-(1→4)-D-glucose 4-β-Gentiobiosylglucose
[100676-05-9]



α-Pyranose-form

C₁₈H₃₂O₁₆ 504.441

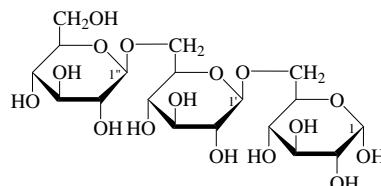
Prod. by transferase action on cellobiose of β-glucosides of *Aspergillus niger*, barley (*Hordeum vulgare*) and *Neurospora crassa*. Constit. of exopolysaccharide from *Rhizobium* sp. strain ANU280. Host specificity determinant in *R. sp.* Claimed use as low-calorie flavouring agent in food, beverages, medicines. Promotes growth of beneficial intestinal flora. [α]_D +10.2 (H₂O).

Undeca-Ac:

C₄₀H₅₄O₂₇ 966.85
Cryst. Mp 205°. [α]_D -13 (CHCl₃).
Crook, E.M. *et al.*, *Biochem. J.*, 1957, **65**, 1 (*isol*)
Anderson, F.B. *et al.*, *Biochem. J.*, 1959, **71**, 407 (*isol*)
Berger, L.S. *et al.*, *Biochem. Biophys. Res. Commun.*, 1961, **6**, 62 (*isol*)
Djordjevic, S.P. *et al.*, *Carbohydr. Res.*, 1986, **148**, 87 (*isol*, *cmr*)
Eur. Pat., 1991, 415 720; *CA*, **115**, 181869b (*use*)

β-D-Glucopyranosyl-(1→6)-β-D-glucopyranosyl-(1→6)-D-glucose, 9CI

Gentiotriose, 8CI
[32590-17-3]



α-Pyranose-form

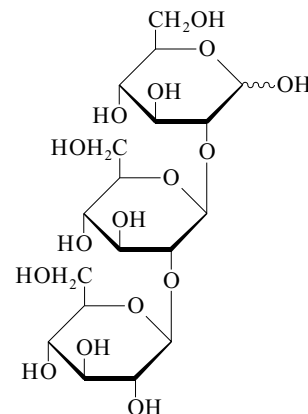
C₁₈H₃₂O₁₆ 504.441
Isol. from the partial hydrolyd. of Pustulan, P-112. Low-calorie flavouring agent in food, beverages and medicines. Promotes growth of beneficial intestinal flora. [α]_D -6.5 (c, 2.0 in H₂O).

β-Pyranose-form

Undeca-Ac:
C₄₀H₅₄O₂₇ 966.85
Mp 220-221°. [α]_D²⁰ -7 (c, 1.0 in CHCl₃).
6'''-Trichloroacetyl, deca-Ac:
C₄₀H₅₁Cl₃O₂₇ 1070.185
Mp 200°. [α]_D²⁰ -3 (c, 1.96 in CHCl₃).
Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 985
McGrath, D. *et al.*, *Carbohydr. Res.*, 1969, **11**, 453
Excoffier, G. *et al.*, *Carbohydr. Res.*, 1976, **46**, 201 (*synth*, *pmr*)
Daniel, P.F. *et al.*, *Methods Enzymol.*, 1987, **138**, 94 (*anal*, *hplc*)
Japan. Pat., 1989, 01 222 779; *CA*, **112**, 117369z (*manuf*)
Eur. Pat., 1991, 415 720; *CA*, **115**, 181869b (*use*)
Zhu, Y. *et al.*, *Carbohydr. Res.*, 2001, **332**, 1-21 (*synth*)

β-D-Glucopyranosyl-(1→2)-β-D-glucopyranosyl-(1→2)-β-D-glucose, 9CI

Sophorotriose
[32581-40-1]

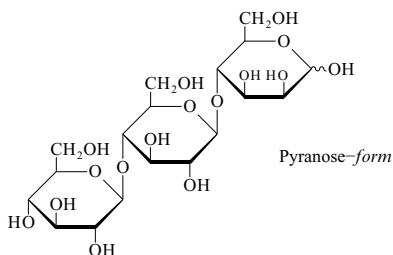


C₁₈H₃₂O₁₆ 504.441
Constit. of glycosides from *Solanum* potato seed, *Pisum sativum* leaf and an extracellular polysaccharide of the pathogen *Agrobacterium radiobacter*. Present in major antigenic determinants on lipoglycens of *Acholeplasma granularum* and *Acholeplasma axanthum*. Inhibitor of haemagglutination in sheep. Cryst. (MeOH aq.). Mp 218-223°. [α]_D +16 → +11 (c, 1.0 in H₂O, 18h).

β-Pyranose-form

1-O-(3,4-Dihydroxycinnamoyl): 1-O-Caffeoyl-β-sophorotriose
C₂₇H₃₈O₁₉ 666.586
Constit. of the moss *Mnium hornum*.
Allyl glycoside, 2''-Ac, nonabenzyl: [88988-49-2]
C₈₆H₉₂O₁₇ 1397.663
Syrup. [α]_D²⁵ -0.56 (c, 1.0 in CHCl₃).
[50906-47-3]
Gorin, P.A.T. *et al.*, *Can. J. Chem.*, 1961, **39**, 1067 (*constit*)
Furuya, M. *et al.*, *Nature (London)*, 1962, **193**, 456 (*constit*)
Karkkainen, J. *et al.*, *Carbohydr. Res.*, 1971, **17**, 11 (*glc*, *ms*)
Schmid, R.D. *et al.*, *Phytochemistry*, 1973, **12**, 2269 (*isol*, *ms*)
Ogawa, T. *et al.*, *Carbohydr. Res.*, 1983, **123**, C16 (*β*-allyl *gly*)
Al-Samarrai, T.H. *et al.*, *Infect. Immun.*, 1983, **40**, 629 (*constit*)
Allen, P.Z. *et al.*, *Mol. Immunol.*, 1988, **25**, 1011 (*immunol*)
Brinkmeier, E. *et al.*, *Phytochemistry*, 1999, **52**, 297-302 (*Caffeoylsophorotriose*)

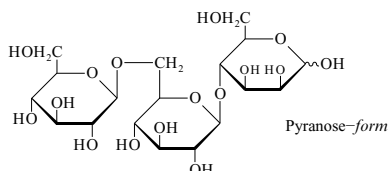
β-D-Glucopyranosyl-(1→4)-β-D-glucopyranosyl-(1→4)-D-mannose, 9CI
[28072-83-5]



C₁₈H₃₂O₁₆ 504.441
Isol. from the hydrolysates of konjac glucomannan (*Amorphophallus konjac*), mucous polysaccharides of *Bletilla striata* and the glucomannan in the tubers of *Arum maculatum*. Isol. from *Asparagus officinalis* seeds.
Mp 249-251° (257°). [α]_D +8.5 → -4.3 (c, 1.4 in H₂O).

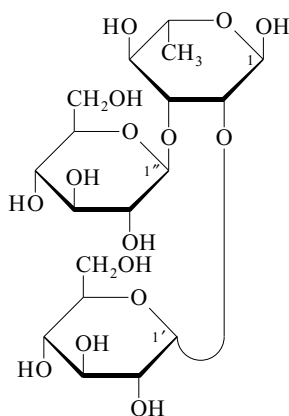
Kato, K. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 1446 (isol)
Takahashi, R. *et al.*, *Agric. Biol. Chem.*, 1984, **48**, 2943 (isol)
Koleva, M. *et al.*, *CA*, 1984, **100**, 20436h
Kusakabe, I. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 519 (synth)
Goldberg, R. *et al.*, *Carbohydr. Res.*, 1991, **210**, 263 (isol, pmr, hplc)

β-D-Glucopyranosyl-(1→6)-β-D-glucopyranosyl-(1→4)-D-mannose, 9CI
[61237-56-7]



C₁₈H₃₂O₁₆ 504.441
Isol. from partial acid hydrolysates of *Cassia tora* (charota).
Mp 176-180°. [α]_D -11.8 (c, 0.57 in H₂O).
Varshney, S.C. *et al.*, *J.C.S. Perkin 1*, 1976, 1621

α-D-Glucopyranosyl-(1→2)-[β-D-glucopyranosyl-(1→3)]-L-rhamnose
α-D-Glucopyranosyl-(1→2)-[β-D-glucopyranosyl-(1→3)]-6-deoxy-L-mannose, 9CI



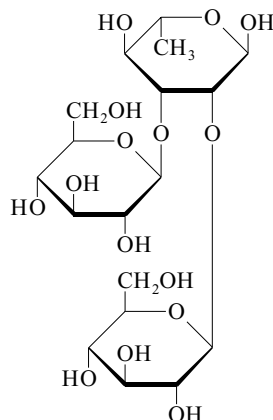
C₁₈H₃₂O₁₅ 488.442
Constit. of the repeating unit of the capsular polysaccharide of *Klebsiella* type 23.

α-Pyranose-form

Me glycoside: [128706-94-5]
C₁₉H₃₄O₁₅ 502.469
Syrup. [α]_D²⁴ +34 (c, 1.1 in H₂O).
Me glycoside, 2',2'',3',3'',4,4',4'',6''-octabenzyl: [128643-90-3]
C₇₅H₈₂O₁₅ 1223.464
Syrup. [α]_D²⁴ +41 (c, 1.1 in CHCl₃).
Me glycoside, 2',2'',3',3'',4,4',4'',6''-octabenzyl, 6'-Ac: [128643-89-0]
C₇₇H₈₄O₁₆ 1265.501
Cryst. (EtOH/EtOAc). Mp 156-157°. [α]_D²⁴ +25 (c, 1.2 in CHCl₃).

Ray, A.K. *et al.*, *Carbohydr. Res.*, 1990, **196**, 95 (isol, α-Me pyr derivs, pmr)

β-D-Glucopyranosyl-(1→2)-[β-D-glucopyranosyl-(1→3)]-L-rhamnose
β-D-Glucopyranosyl-(1→2)-[β-D-glucopyranosyl-(1→3)]-6-deoxy-L-mannose, 9CI

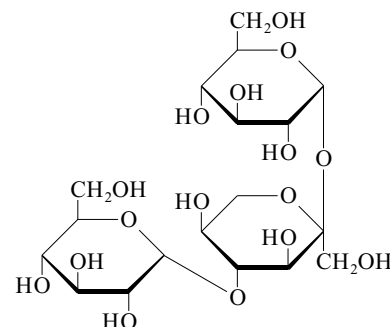


C₁₈H₃₂O₁₅ 488.442

α-Pyranose-form

Me glycoside: [130062-85-0]
C₁₉H₃₄O₁₅ 502.469
Syrup. [α]_D²⁸ -10 (c, 1.1 in CHCl₃).
Me glycoside, nonabenzoyl: [135129-58-7]
C₈₂H₇₀O₂₄ 1439.441
Syrup. [α]_D²⁸ +26.5 (c, 1.65 in CHCl₃).
Nifantev, P.E. *et al.*, *Bioorg. Khim.*, 1991, **17**, 517; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1991, **17**, 292 (α-Me pyr derivs, pmr, cmr)

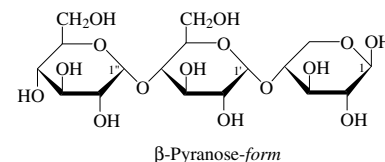
α-D-Glucopyranosyl-(1→2)-[α-D-glucopyranosyl-(1→4)]-α-L-sorbosepyranose
[56287-12-8]



C₁₈H₃₂O₁₆ 504.441
Non-reducing trisaccharide. Formed by the transglucosylation reaction of brewers yeast α-glucosidase. [α]_D +96 (c, 0.5 in H₂O).

Matsusaka, K. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 725

α-D-Glucopyranosyl-(1→4)-α-D-glucopyranosyl-(1→4)-D-xylose, 9CI



C₁₇H₃₀O₁₅ 474.415

Pyranose-form [23259-52-1]
Amorph. [α]_D²³ +141.5 (c, 1.1 in H₂O).

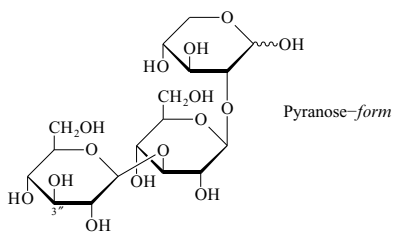
β-Pyranose-form

Benzyl glycoside, 2',2'',3,3',3'',4'',6',6''-octabenzyl: [132627-99-7]
C₈₀H₈₄O₁₅ 1285.535
Syrup. [α]_D²⁵ +33 (c, 1.5 in CHCl₃).
[132627-89-5]

Chirva, V.Y. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1968, 2541; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1968, 2405 (occur)
Tako, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167 (synth, β-benzyl pyr octabenzyl, pmr, cmr)

β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-xylose, 9CI

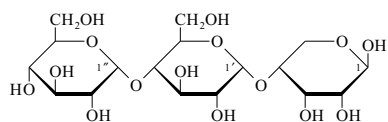
G-399

Roy, N. *et al.*, *Carbohydr. Res.*, 1968, **6**, 475 (deca-Ac Me ester) $C_{17}H_{30}O_{15}$ 474.415Constit. of Holotoxin A and B, isol. from sea cucumber *Stichopus japonicus*.**Pyranose-form***Me glycoside, nona-Me*: [55727-75-8] $C_{27}H_{50}O_{15}$ 614.683Amorph. $[\alpha]_D^{28} +2$ (c, 0.3 in $CHCl_3$).*3''-Me, nona-Ac*: [55762-44-2] $C_{36}H_{50}O_{24}$ 866.777

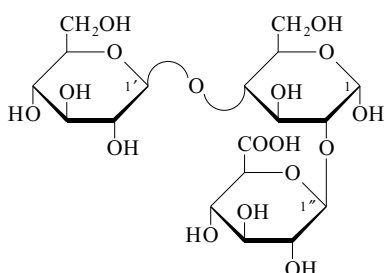
Amorph.

Kitagawa, I. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 275 (constit. Me pyr deriv, nona-Ac deriv, ir, pmr) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-ribose, 9CI**

G-400

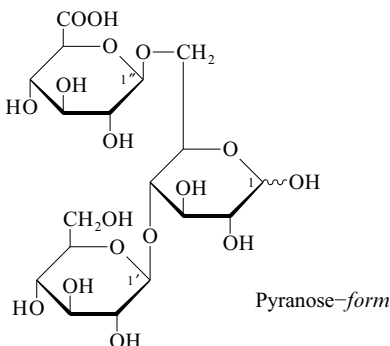
 $C_{17}H_{30}O_{15}$ 474.415 **β -Pyranose-form***Benzyl glycoside, 2,3-anhydro, heptabenzyl*: [132627-98-6] $C_{73}H_{76}O_{14}$ 1177.395Syrup. $[\alpha]_D^{25} +52$ (c, 1.2 in $CHCl_3$).Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167 (synth, cmr) **β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranuronosyl-(1 \rightarrow 2)]-D-glucose, 8CI**

G-401

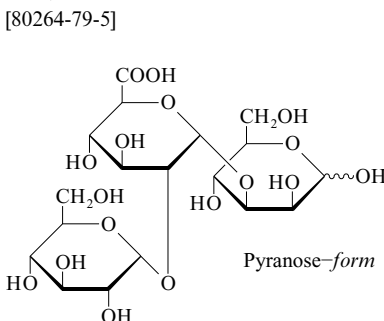
 $C_{18}H_{30}O_{17}$ 518.425 **α -Pyranose-form***Deca-Ac, Me ester*: [21216-47-7] $C_{39}H_{52}O_{27}$ 952.824Cryst. Mp 272-276°. $[\alpha]_D +11.4$ (c, 1.0 in $CHCl_3$). **β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranuronosyl-(1 \rightarrow 6)]-D-glucose, 8CI**

G-402

[20429-77-0]

 $C_{18}H_{30}O_{17}$ 518.425Syrup. $[\alpha]_D^{25} +3.3$ (c, 2.0 in H_2O).Roy, N. *et al.*, *Carbohydr. Res.*, 1968, **6**, 475 (synth) **α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranuronosyl-(1 \rightarrow 3)-D-mannose, 9CI**

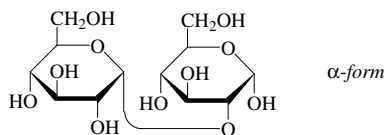
G-403

 $C_{18}H_{30}O_{17}$ 518.425Constit. of the repeating unit of the capsular polysaccharide of *Klebsiella* K4. Syrup. $[\alpha]_D +48$ (H_2O) (impure).Merrifield, E.H. *et al.*, *Carbohydr. Res.*, 1981, **96**, 113 (occur, struct, pmr)**2-O- α -D-Glucopyranosyl-D-glucose, 9CI, 8CI**

G-404

Kojibiose

[2140-29-6]

 $C_{12}H_{22}O_{11}$ 342.299Occurs in saké, honey and in the cell membrane of *Streptococcus faecalis*; formed by the action of glucosidase transglucosylation on starch. Prisms. Mp 187-188°. $[\alpha]_D^{18} +162 \rightarrow +137$ (c, 2.1 in H_2O). **α -Pyranose-form** [37169-66-7]*Octa-Ac*:

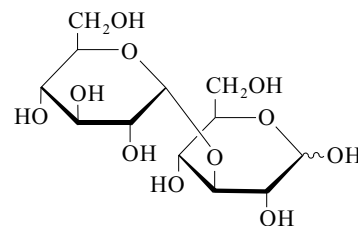
[20970-96-1]

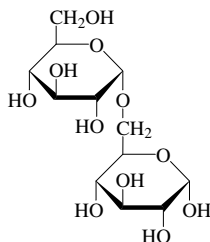
 $C_{28}H_{38}O_{19}$ 678.597Mp 167-168°. $[\alpha]_D^{17} +152$ (c, 1.5 in $CHCl_3$). **β -Pyranose-form** [37169-67-8]*Octa-Ac*: [31873-02-6]Mp 118°. $[\alpha]_D +112$ ($CHCl_3$).Yamauchi, F. *et al.*, *Nature (London)*, 1961, **189**, 753 (isol)Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425-2432 (cmr)Usui, T. *et al.*, *Carbohydr. Res.*, 1974, **33**, 105-116 (pmr)Dick, W.E. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319-329 (synth, octa-Ac)Ganfield, M.-C. *et al.*, *J. Biol. Chem.*, 1975, **250**, 702-709 (isol)Bradbury, J.H. *et al.*, *Carbohydr. Res.*, 1979, **71**, 15-24 (pmr)Watanabe, T. *et al.*, *Carbohydr. Res.*, 1982, **110**, 170-175 (isol)Takeo, K. *et al.*, *Carbohydr. Res.*, 1987, **162**, 95-109 (α -octa-Ac)**3-O- α -D-Glucopyranosyl-D-glucose, 9CI, 8CI**

G-405

Nigerose. Sakebiose

[497-48-3]

 $C_{12}H_{22}O_{11}$ 342.299A product of the partial hydrolysis of Nigeran, N-48. It has been detected in saké. Can be obt. preparatively by hydrolysis of the D-glucan from fruiting bodies of the bracket fungus *Laetiporus sulphureus* (sulphur polypore) (Takeo *et al.*). Mp 156°. $[\alpha]_D^{20} +125 \rightarrow +138$ (c, 2 in H_2O). **β -Pyranose-form***Octa-Ac*: [22352-62-1] $C_{28}H_{38}O_{19}$ 678.597Needles (Et_2O). Mp 152-153°. $[\alpha]_D^{12} +83$ (c, 2.1 in $CHCl_3$).Stacey, M. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 339 (isol)Yamachi, F. *et al.*, *Nature (London)*, 1964, **204**, 1088 (isol)Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1973, **51**, 42 (α -D-pyr, synth)Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425 (cmr)de Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1975, **84**, 721 (pmr)Igarashi, K. *et al.*, *Carbohydr. Res.*, 1975, **39**, 341 (β -D-pyr octa-Ac)Excoffier, G. *et al.*, *Carbohydr. Res.*, 1976, **51**, 280 (β -D-pyr octa-Ac, pmr)Neuman, A. *et al.*, *Carbohydr. Res.*, 1980, **80**, 15 (*Me gly, cryst struct*)Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **113**, 281 (isol)

6-O- α -D-Glucopyranosyl-D-glucose, 9CI**Isomaltose, Brachiose**
[499-40-1] α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299

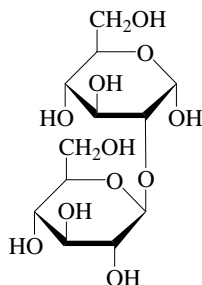
Isolated from partial hydrolysates of amylopectin and dextrans. Prod. by *Bacillus polymyxa* and *Streptomyces* spp. Active against *E. coli* only. Sol. H_2O ; poorly sol. MeOH, C_6H_6 , butanol. Mp 120°. $[\alpha]_D^{+20}$ +120 (H_2O).

 α -Pyranose-form*Me glycoside: Methyl α -maltoside* $C_{13}H_{24}O_{11}$ 356.326Amorph. solid. $[\alpha]_D^{+20}$ +107 (c, 0.18 in EtOH). **β -Pyranose-form***Octa-Ac: [22352-61-0]* $C_{28}H_{38}O_{19}$ 678.597Prisms (EtOH). Mp 143-144°. $[\alpha]_D^{+25}$ +97 (c, 2.7 in $CHCl_3$).*Octakis(4-nitrobenzoyl):* Mp 188°. $[\alpha]_D^{+22}$ (2,5-hexanedione).*Me glycoside: Methyl β -isomaltoside* $C_{13}H_{24}O_{11}$ 356.326 $[\alpha]_D^{+20}$ +53.2 (+50) (H_2O).

[24822-33-1]

Georges, L.W. *et al.*, *J.A.C.S.*, 1947, **69**, 473(β -D-pyr-octa-Ac)Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1949, **3**, 1355 (β -D-pyr-octa-Ac)Montgomery, E.M. *et al.*, *J.A.C.S.*, 1949, **71**, 1682 (*isol*)Janes, A. *et al.*, *J.A.C.S.*, 1953, **75**, 5911 (*isol*)
Takasawa, A. *et al.*, *J. Antibiot., Ser. A*, 1954, **7**, 51 (*isol*)Turvey, J.R. *et al.*, *Biochem. J.*, 1957, **67**, 49 (*isol*, β -octa-Ac)Wolfson, M.L. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 316; 1963, **2**, 341 (*synth*)Pazur, J.H. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 319 (*synth*)Ninomiya, E. *et al.*, *CA*, 1971, **74**, 86374 (*isol*)Takiura, K. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 523 (*synth*)Helferich, B. *et al.*, *Annalen*, 1974, 1514 (*synth*)
Berry, J.M. *et al.*, *Carbohydr. Res.*, 1974, **38**, 339 (*synth*)Colson, P. *et al.*, *J.A.C.S.*, 1974, **96**, 8081 (*conformn*, *cmr*)Bradbury, J.H. *et al.*, *Carbohydr. Res.*, 1979, **71**, 15 (*pmr*)Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1982, **55**, 2995 (*cmr*)Hamann, C.H. *et al.*, *Carbohydr. Res.*, 1994, **265**, 1 (*Me glycosides*)

G-406

2-O- β -D-Glucopyranosyl-D-glucose, 9CI**Sophorose**
[534-46-3] α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299

Disaccharide from *Sophora japonica*, obt. by hydrol. of Stevioside or Kaempferol-sophoroside. Also occurs as glycosides in *Torulopsis magnoliae* and prod. by various *Acetobacter* spp. Needles (MeOH aq.). Mp 196-198°. $[\alpha]_D^{+20}$ +33 \rightarrow +19.1 (c, 1.2 in H_2O).

 α -Pyranose-form [20880-64-2]*Octa-Ac: Octa-O-acetyl- α -sophoropyranose*

[38358-39-3]

 $C_{28}H_{38}O_{19}$ 678.597Mp 111°. $[\alpha]_D^{+25}$ +45 ($CHCl_3$).*Benzyl glycoside: Benzyl 2-O- β -D-glucopyranosyl- α -D-glucopyranoside. Benzyl α -D-sophoropyranoside* $C_{19}H_{28}O_{11}$ 432.424Cryst. (EtOH). Mp 214-215°. $[\alpha]_D^{+25}$ +90.6 (c, 1.6 in H_2O).*1-Bromo, hepta-Ac: Acetobromosophorose* $C_{26}H_{35}BrO_{17}$ 699.456Mp 194° dec. $[\alpha]_D^{+20}$ +95.6 ($CHCl_3$).*6-O-(3,4-Dihydroxy-E-cinnamoyl): 6-O-Caffeoylsophorose* $C_{21}H_{28}O_{14}$ 504.444

Isol. from red vinegar by fermented purple-fleshed sweet potato (*Ipomoea batatas*). α -Glucosidase inhibitor. Antioxidant.

 β -Pyranose-form [26887-94-5]*Octa-Ac: Octa-O-acetyl- β -sophoropyranoside*

[20880-63-1]

 $C_{28}H_{38}O_{19}$ 678.597Mp 193-194°. $[\alpha]_D^{+18}$ -3.2 (c, 2.5 in $CHCl_3$).*Me glycoside: Methyl 2-O- β -D-glucopyranosyl- α -D-glucopyranoside. Methyl β -D-sophoropyranoside*

[16790-34-4]

 $C_{13}H_{24}O_{11}$ 356.326Mp 195-196° (189-190°). $[\alpha]_D^{+20}$ -28 (c, 0.2 in H_2O). $[\alpha]_D^{+25}$ -38.4 (c, 1.5 in H_2O).*Benzyl glycoside: Benzyl 2-O- β -D-glucopyranosyl- β -D-glucopyranoside. Benzyl β -sophoropyranoside. Zizybeoside I*

[76819-28-8]

 $C_{19}H_{28}O_{11}$ 432.424

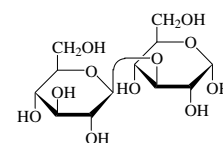
Isol. from *Zizyphus jujuba* (Chinese date). Needles (MeOH aq.).

Mp 192-193°. $[\alpha]_D^{+23}$ -32.6 (c, 1.03 in H_2O).

G-407

Walker, T.K. *et al.*, *Arch. Biochem. Biophys.*, 1959, **83**, 161 (*isol*)Clancy, M.J. *et al.*, *J.C.S.*, 1960, 4213 (*isol*, β -pyr octa-Ac)Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1961, **39**, 846 (*isol*)Coxon, B. *et al.*, *J.O.C.*, 1961, **26**, 2893 (*synth*, α -pyr-bromo hepta-Ac)Clancy, M.J. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 345 (*isol*)Schmidt, O.T. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 349 (*isol*, *synth*)Finan, P.A. *et al.*, *J.C.S.*, 1963, 5229 (*synth*, β -pyr octa-Ac, β -Me pyr)Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425 (*cmr*)Dick, W.E. Jr. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319 (*synth*, β -pyr octa-Ac)de Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1975, **84**, 721 (*pmr*)Takeo, K. *et al.*, *Carbohydr. Res.*, 1980, **86**, 151 (α -benzyl pyr, β -benzyl pyr)Okamura, N. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 3507 (*Zizybeoside I*)Ikegami, M. *et al.*, *Carbohydr. Res.*, 1995, **271**, 137-150 (*cryst struct*, β -pyr octa-Ac, β -Me gly hepta-Ac)Andre, I. *et al.*, *New J. Chem.*, 1995, **19**, 331 (*pmr*, *cmr*, *conformn*)Matsui, T. *et al.*, *Biosci., Biotechnol., Biochem.*, 2004, **68**, 2239-2246 (6-Caffeoylsophorose)**3-O- β -D-Glucopyranosyl-D-glucose, 9CI**

G-408

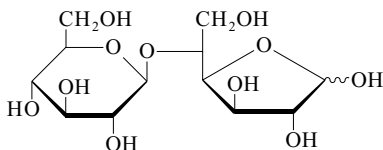
Laminaribiose, 8CI. Laminaribiose
[34980-39-7] α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299

Constit. of pine needles, seeds of *Cycas revoluta*, laminaran, pachyman, yeast glucans and seaweed lichenans. Mp 205° (90°). $[\alpha]_D^{+20}$ +18 (c, 2.0 in H_2O).

Phenylosazone: Mp 195°. $[\alpha]_D^{+10}$ -79.6 (EtOH). **α -Pyranose-form***Octa-Ac: 3-O-Tetra-O-acetyl- β -D-glucopyranosyl tetra-O-acetyl- α -D-glucopyranoside* $C_{28}H_{38}O_{19}$ 678.597Mp 77-78°. $[\alpha]_D^{+20}$ +20 ($CHCl_3$).*Benzyl glycoside: Benzyl 3-O- β -D-glucopyranosyl- α -D-glucopyranoside* $C_{19}H_{28}O_{11}$ 432.424 $[\alpha]_D^{+20}$ +77.2 (c, 1.8 in H_2O).*1-Bromo, 1-deoxy, hepta-Ac: Acetobromolaminaribiose* $C_{26}H_{35}BrO_{17}$ 699.456Mp 180.5-182°. $[\alpha]_D^{+18}$ +85 ($CHCl_3$). **β -Pyranose-form***Octa-Ac: 3-O-Tetra-O-acetyl- β -D-glucopyranosyl tetra-O-acetyl- β -D-glucopyranoside* $C_{28}H_{38}O_{19}$ 678.597Mp 161°. $[\alpha]_D^{+18}$ -29 (c, 2.5 in $CHCl_3$).*Me glycoside: Methyl 3-O- β -D-glucopyranosyl- β -D-glucopyranoside* $C_{13}H_{24}O_{11}$ 356.326Mp 165-166°. $[\alpha]_D^{+20}$ -28 (H_2O).

- Bächli, P. *et al.*, *J.C.S.*, 1952, 1243 (*synth, β-pyr octa-Ac*)
 Barry, V.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 328 (*isol*)
 Pazur, J.H. *et al.*, *The Carbohydrates*, Academic Press, 2nd Ed., 1970, 69 (*rev*)
 Matsui, M. *et al.*, *Chem. Pharm. Bull.*, 1971, **19**, 395 (*pmr*)
 Colson, P. *et al.*, *J.A.C.S.*, 1974, **96**, 8081 (*cmr*)
 Villa, T.G. *et al.*, *Carbohydr. Res.*, 1979, **74**, 369-370 (*enzymic synth*)
 Takeo, K. *et al.*, *Carbohydr. Res.*, 1979, **77**, 131; 245; 1980, **86**, 151; 1981, **93**, 157 (*synth, derivs*)
 Lambda, D. *et al.*, *Carbohydr. Res.*, 1986, **153**, 205 (*cryst struct, octa-Ac*)
 Wang, L.X. *et al.*, *Carbohydr. Res.*, 1991, **219**, 133 (*enzymic synth, octa-Ac*)
 Noguchi, K. *et al.*, *Carbohydr. Res.*, 1992, **237**, 33 (*cryst struct, β-Me gly*)
 Ikegami, M. *et al.*, *Carbohydr. Res.*, 1994, **253**, 29 (*cryst struct, α-Me gly hepta-Ac*)

5-O-β-D-Glucopyranosyl-D-glucose **G-409**
 [67006-27-3]

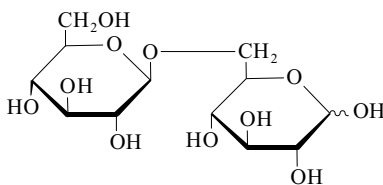


$C_{12}H_{22}O_{11}$ 342.299
 Reducing disaccharide. $[\alpha]_D$ -28 (c, 2 in H_2O).
 4-Methylbenzenesulfonylhydrazone: Mp 178-179° dec. $[\alpha]_D$ -21 (60% Py aq.).

α-Furanose-form

1,2-O-Cyclopentylidene: [67006-25-1]
 $C_{17}H_{28}O_{11}$ 408.402
 $[\alpha]_D$ +3 (c, 1.5 in H_2O).
 1,2-O-Cyclopentylidene, 3,6,2',3',4',6'-hexa-Ac: [67006-23-9]
 $C_{29}H_{40}O_{17}$ 660.625
 Cryst. (Et_2O). Mp 111-113°. $[\alpha]_D$ -16 (c, 3 in $CHCl_3$).
 Van Heeswijk, W.A.R. *et al.*, *Carbohydr. Res.*, 1978, **62**, 281 (*synth*)

6-O-β-D-Glucopyranosyl-D-glucose, 9CI **G-410**
Gentiobiose, 8CI. *Amygdalose*
 [554-91-6]



$C_{12}H_{22}O_{11}$ 342.299
 Formed by the hydrol. of Gentiatiobetene, Crocetin and 2-Hydroxy-2-phenylacetone. Occurs free in roots of *Gentiana* spp. and a few other plants, prod. by *Acetobacter* spp.
 Phenyllosazone: Mp 184-186° (162-167° dec.). $[\alpha]_D^{20}$ -14.8 (Py).

1-O-(3,4-Dihydroxycinnamoyl):
1-O-Caffeoylgentiobiose
 $C_{21}H_{28}O_{14}$ 504.444
 Isol. from flowers of *Petunia hybrida*.
 Anomeric config. not detd.

α-Pyranose-form [5995-99-3]
 Mp 189-195° (anhyd.). $[\alpha]_D$ +31 → +9.6 (H_2O).

Octa-Ac: Octa-O-acetyl-α-gentiobiose
 $C_{28}H_{38}O_{19}$ 678.597
 Mp 188-189°. $[\alpha]_D^{20}$ +52.3 ($CHCl_3$).

Me glycoside: Methyl α-gentiobioside
 [58462-70-7]
 $C_{13}H_{24}O_{11}$ 356.326
 Mp 102°. $[\alpha]_D^{25}$ +61.8 (H_2O).

Me glycoside, hepta-Ac: Methyl hepta-O-acetyl-α-gentiobioside
 $C_{27}H_{38}O_{18}$ 650.586
 Mp 82°. $[\alpha]_D^{20}$ -18.8 ($CHCl_3$).

1-Bromo, hepta-Ac: See Gentiobiosyl bromide, G-233

1-Chloro, hepta-Ac: Acetochlorogentiobiose
 $C_{26}H_{35}ClO_{17}$ 655.005
 Mp 142-143°. $[\alpha]_D^{20}$ +89.2 ($CHCl_3$).

β-Pyranose-form [5996-00-9]
 Mp 190-195°. $[\alpha]_D^{22}$ -0.8 → +10 (c, 3.0 in H_2O).

Octa-Ac: Octa-O-acetyl-β-gentiobiose
 [4613-78-9]
 $C_{28}H_{38}O_{19}$ 678.597
 Mp 196°. $[\alpha]_D^{20}$ -5.3 ($CHCl_3$).

1,2-Bis-O-(4-hydroxy-3,5-dimethoxycinnamoyl): 1,2-Disinapoylgentiobiose
 $C_{34}H_{42}O_{19}$ 754.694
 Constit. of broccoli florets (*Brassica oleracea* var. *italica*). Oil. λ_{max} 227; 240; 262; 330 (No solvent reported).

1-O-(4-Hydroxy-3,5-dimethoxycinnamoyl), 2-O-(4-hydroxy-3-methoxycinnamoyl): 2-Feruloyl-1-sinapoylgentiobiose
 $C_{33}H_{40}O_{18}$ 724.668
 Constit. of broccoli florets (*Brassica oleracea* var. *italica*). Oil. λ_{max} 223; 241; 330 (no solvent reported).

1,2'-Bis-O-(4-hydroxy-3,5-dimethoxycinnamoyl), 2-O-(4-hydroxy-3-methoxycinnamoyl): 2-Feruloyl-1,2'-disinapoylgentiobiose
 $C_{44}H_{50}O_{22}$ 930.866
 Constit. of broccoli florets (*Brassica oleracea* var. *italica*). Oil. λ_{max} 256; 268; 355 (No solvent reported).

1,2,2'-Tris-O-(4-hydroxy-3,5-dimethoxycinnamoyl): 1,2,2'-Trisinapoylgentiobioside
 [155380-01-1]
 $C_{45}H_{52}O_{23}$ 960.892
 Constit. of *Boreava orientalis* seeds and broccoli florets. Pale yellow powder.
 Mp 155-158°.

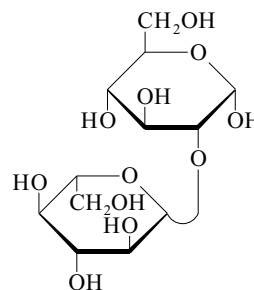
Me glycoside: Methyl β-gentiobioside
 [52485-12-8]
 $C_{13}H_{24}O_{11}$ 356.326
 Mp 98°. $[\alpha]_D^{20}$ -36 ($CHCl_3$).

Me glycoside, hepta-Ac: Methyl hepta-O-acetyl-β-gentiobioside
 $C_{27}H_{38}O_{18}$ 650.586
 Mp 113-115°. $[\alpha]_D^{27}$ +2.9 ($CHCl_3$).

Harborne, J.B. *et al.*, *Biochem. J.*, 1961, **81**, 242 (*1-O-Caffeoylgentiobiose*)

- Stefanović, V. *et al.*, *Chem. Ber.*, 1961, **94**, 2359 (*β-pyr form, synth*)
 Goldstein, I.J. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 313 (*synth*)
 Talley, E.A. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 337 (*synth*)
 Badenhuizen, N. *et al.*, *J.O.C.*, 1964, **29**, 2079 (*isol*)
 Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425 (*cmr*)
 Usui, T. *et al.*, *Carbohydr. Res.*, 1974, **33**, 105 (*pmr*)
 King, R.R. *et al.*, *Can. J. Chem.*, 1975, **53**, 1970 (*synth*)
 Piekarska, B. *et al.*, *Pol. J. Chem. (Roc. Chem.)*, 1975, **49**, 1919 (*methyl gentiobioside*)
 Bradbury, J.H. *et al.*, *Carbohydr. Res.*, 1979, **71**, 15 (*pmr*)
 Rohrer, D.C. *et al.*, *Acta Cryst. B*, 1980, **36**, 650 (*cryst struct*)
 Melberg, S. *et al.*, *Carbohydr. Res.*, 1980, **78**, 215 (*conform, β-form*)
 Sakushima, A. *et al.*, *Phytochemistry*, 1994, **35**, 1481 (*Trisinapoylgentiobioside*)
 Price, K.R. *et al.*, *Phytochemistry*, 1997, **45**, 1683 (*cinnamoylgentiobioses*)
 Zhu, Y. *et al.*, *Carbohydr. Res.*, 2001, **332**, 1-21 (*synth*)

2-O-β-L-Glucopyranosyl-D-glucose **G-411**

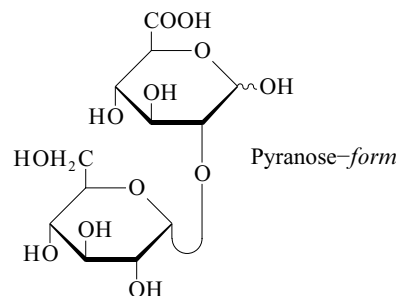


$C_{12}H_{22}O_{11}$ 342.299

α-Pyranose-form

Octa-Ac: [67337-80-8]
 $C_{28}H_{38}O_{19}$ 678.597
 Cryst. ($EtOH$). Mp 198-200°. $[\alpha]_D^{13}$ -72 (c, 2 in $CHCl_3$).
 Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1978, **42**, 941 (*synth, pmr*)

2-O-α-D-Glucopyranosyl-D-glucuronic acid **G-412**



$C_{12}H_{20}O_{12}$ 356.283

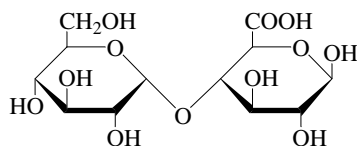
Reducing disaccharide. Synth. in an *Aspergillus niger* culture containing Maltose, M-15 and Glucuronic acid, G-538 by transglucosidase action.

Na salt: $[\alpha]_D^{25} +89$ (H₂O).

Barker, S.A. *et al.*, *J.C.S.*, 1959, 3264

4-O- α -D-Glucopyranosyl-D-glucuronic acid G-413

Pseudomaltobiuronic acid



C₁₂H₂₀O₁₂ 356.283

Solid. Mp 126-129° dec. (as Na salt). $[\alpha]_D^{25} +73.5$ (c, 0.3 in H₂O).

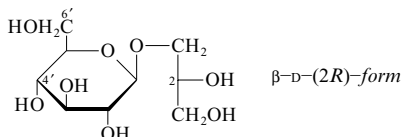
Yoshinobo, H. *et al.*, *Chem. Pharm. Bull.*, 1965, 13, 176 (*synth*)

Govorchenko, V.I. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1972, 8, 257 (*synth*)

1-O-Glucopyranosylglycerol G-414

2,3-Dihydroxypropyl β -D-glucopyranoside, 9CI

[22160-25-4]



C₉H₁₈O₈ 254.236

β -D-(2R)-form

3-O- β -D-Glucopyranosyl-sn-glycerol.

Lilioside C

[23202-73-5]

Constit. of *Lilium lancifolium*.

Viscous oil. $[\alpha]_D^{25} -31.5$ (c, 1.27 in H₂O).

3-Ac: *Lilioside E*

[92122-76-4]

C₁₁H₂₀O₉ 296.274

Constit. of *Lilium japonicum*. Viscous film. $[\alpha]_D^{20} -23$ (c, 0.43 in H₂O).

2',3',4',6'-Tetra-Ac:

C₁₇H₂₆O₁₂ 422.385

Needles (hexane/Et₂O/Me₂CO).

Mp 113-115° (107-109°). $[\alpha]_D^{20} -14.2$ (c, 1.06 in CHCl₃). $[\alpha]_D^{25} -8.8$ (c, 0.62 in CHCl₃).

Hexa-Ac: [23202-78-0]

C₂₁H₃₀O₁₄ 506.46

Needles (hexane/Et₂O). Mp 115-116°.

$[\alpha]_D^{16} -14.9$ (c, 0.47 in CHCl₃).

3'-O-(3,4-Dihydroxycinnamoyl): 1-O- β -D-(3-O-Caffeoylglucopyranosyl)glycerol [151750-85-5]

C₁₈H₂₄O₁₁ 416.381

Constit. of *Frullania muscicola*. Tentative C-2 config.

4'-O-(3,4-Dihydroxycinnamoyl): 1-O- β -D-(4-O-Caffeoylglucopyranosyl)glycerol [151750-84-4]

C₁₈H₂₄O₁₁ 416.381

Constit. of *Frullania muscicola*. Tentative C-2 config.

6'-O-(3,4-Dihydroxycinnamoyl): 1-O-(6-O-Caffeoylglucopyranosyl)glycerol [151750-83-3]

C₁₈H₂₄O₁₁ 416.381

Constit. of *Frullania muscicola*. Tentative C-2 config.

α -D-(2S)-form

1-O- β -D-Glucopyranosyl-sn-glycerol.

Lilioside D

[23202-75-7]

Constit. of *Lilium japonicum*.

Viscous oil. $[\alpha]_D^{15} -30.1$ (c, 1.23 in H₂O).

2',3',4',6'-Tetra-Ac: [60619-59-2]

C₁₇H₂₆O₁₂ 422.385

Cryst. (EtOH/diisopropyl ether). Mp 75-76.5°. $[\alpha]_D^{20} -12.5$ (c, 2.4 in CHCl₃).

2',3',4',6'-Tetra-Ac, 3-O-4-methylbenzenesulfonyl: [130678-87-4]

Cryst. (EtOAc/petrol). Mp 125-126°.

$[\alpha]_D -6.6$ (CHCl₃).

Hexa-Ac: [42794-04-7]

Needles (hexane/Et₂O). Mp 107-108°.

$[\alpha]_D^{25} -35.3$ (c, 0.71 in CHCl₃).

Brundish, D.E. *et al.*, *Carbohydr. Res.*, 1968, 8, 308 (*synth*)

Batrakov, S.G. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1976, 25, 643; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1976,

25, 626 (*tetra-Ac, synth, ir*)

Kaneda, M. *et al.*, *Phytochemistry*, 1982, 21,

891; 1984, 23, 795 (*Liliosides*)

Van Boeckel, C.A.A. *et al.*, *Tetrahedron*, 1985,

41, 4557 (*synth*)

Shimomura, H. *et al.*, *Chem. Pharm. Bull.*,

1988, 36, 4841 (*pmr, cmr*)

Rodriguez, E.B. *et al.*, *Aust. J. Chem.*, 1990, 43,

1391 (*synth*)

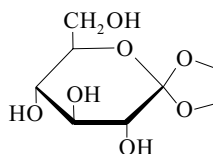
Gurjar, M.K. *et al.*, *Tetrahedron: Asymmetry*,

1992, 3, 21 (*synth*)

Kraut, L. *et al.*, *Phytochemistry*, 1993, 34, 211;

1999, 52, 749 (*caffeoyl esters*)

1,2-O-(Glucopyranosylidene)ethanediol G-415



C₈H₁₄O₇ 222.194

D-form

2,3,4,6-Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl-1,2-O-(D-glucopyranosylidene)ethanediol. 1,5-Anhydro-1,1-C-[1,2-ethanediylbis(oxy)]-2,3,4,6-tetrakis-O-(phenylmethyl)-D-glucitol, 9CI

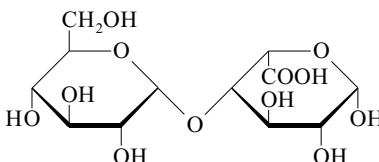
[77855-89-1]

C₃₆H₃₈O₇ 582.692

Mp 51-52°.

Horito, S. *et al.*, *Carbohydr. Res.*, 1983, 121, 175

4-O- α -D-Glucopyranosyl- α -L-idopyranosiduronic acid G-416



C₁₂H₂₀O₁₂ 356.283

α -Pyranose-form

Me glycoside, 2,2'-disulfate: Methyl 2-O-sulfo-4-O-(2'-O-sulfo- α -D-glucopyranosyl)- α -L-idopyranosiduronic acid

C₁₃H₂₂O₁₈S₂ 530.438

$[\alpha]_D^{22} +28.1$ (c, 0.26 in H₂O) (as tri-Na salt).

Me glycoside, 3,3',4',6'-tetra-Ac, Me ester:

Methyl (methyl 3-O-acetyl-4-O-(3,4,6-tri-O-acetyl- α -D-glucopyranosyl)- α -L-idopyranosid)uronate

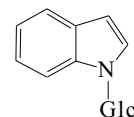
C₂₂H₃₂O₁₆ 552.485

$[\alpha]_D^{22} +61.7$ (c, 0.9 in CHCl₃).

Davis, N.J. *et al.*, *J.C.S. Perkin 1*, 1994, 359

(*synth, pmr, cmr*)

1-Glucopyranosyl-1H-indole, 9CI G-417



C₁₄H₁₇NO₅ 279.292

β -D-form [5059-37-0]

$[\alpha]_D -28$ (c, 3.5 in H₂O). λ_{\max} 288

(ϵ 3 000), 280 (4 600), 277 (4 900), 264 (6 000) and 218 nm (33 000) (H₂O).

Cushley, R.J. *et al.*, *Chem. Comm.*, 1968, 1611 (*conform, pmr*)

Walton, E. *et al.*, *J.O.C.*, 1968, 33, 192 (*synth, pmr*)

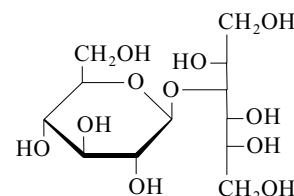
Magnin, A.A. *et al.*, *Tetrahedron*, 1970, 26,

4019 (*ms*)

Jasinska, J. *et al.*, *CA*, 1973, 78, 97955m (*synth, struct*)

3-O- β -D-Glucopyranosyl-D-mannitol G-418

[33904-37-9]



C₁₂H₂₄O₁₁ 344.315

Isol. from the lichens *Peltigera aphthosa* and *Peltigera nigripunctata*.

Mp 97-100°. $[\alpha]_D^{20} -6$ (c, 2.0 in H₂O).

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1963,

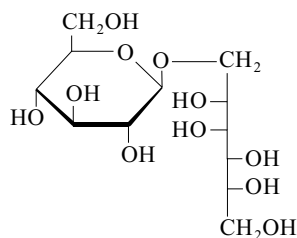
17, 1348 (*isol, synth*)

Holligan, P.M. *et al.*, *CA*, 1971, 75, 31241g (*glc*)

Nishikawa, Y. *et al.*, *Chem. Pharm. Bull.*, 1973, 21, 1014

1-O-D-Glucopyranosyl-D-mannitol, 8CI

[28971-30-4]

C₁₂H₂₄O₁₁ 344.315**α-form**

E953

[20942-99-8]

Prepd. on large scale from sucrose. Low nutritive sweetener with half sweetness of sucrose. Mp 122-125°. [α]_D²⁰ +87.3 (c, 0.2 in H₂O).

β-form

Constit. of *Fucus vesiculosus* and other brown algae.

Mp 140-141°. [α]_D²⁰ -18 (c, 2.0 in H₂O).

[64519-82-0]

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1953, **7**, 1119; 1218; 1954, **8**, 817; 1547; 1955, **9**, 168 (isol, synth, β-form)

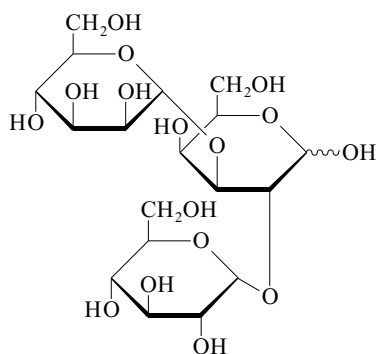
Manners, D.J. *et al.*, *Carbohydr. Res.*, 1968, **7**, 291-298 (α-form, synth)

Helferich, B. *et al.*, *Chem. Ber.*, 1973, **106**, 2508-2512 (α-form, synth)

Lindner, H.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 1315 (cryst struct)

α-D-Glucopyranosyl-(1 →2)-[α-D-mannopyranosyl-(1 →3)]-D-galactose, 9CI

G-420

C₁₈H₃₂O₁₆ 504.441**Pyranose-form**

1-Dihydrogen phosphate: [118447-76-0]

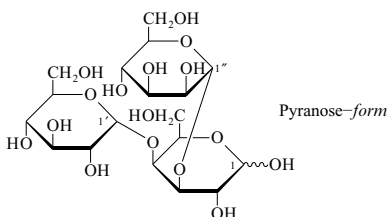
C₁₈H₃₃O₁₉P 584.421

Syrup.

Nechaev, O.A. *et al.*, *Bioorg. Khim.*, 1988, **14**, 1290; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1988, **14**, 714 (phosphate, cmr)

α-D-Glucopyranosyl-(1 →4)-[α-D-mannopyranosyl-(1 →3)]-D-galactose, 9CI

[105761-57-7]

C₁₈H₃₂O₁₆ 504.441Syrup. [α]_D²⁰ +14.9 (c, 1.0 in H₂O).**Pyranose-form**

Undeca-Ac: [111304-02-0]

C₄₀H₅₄O₂₇ 966.85Syrup. [α]_D²⁰ +74 (c, 1.0 in CHCl₃).**α-Pyranose-form**

1-Dihydrogen phosphate: [105678-01-1]

C₁₈H₃₃O₁₉P 584.421Oil. [α]_D²⁰ +115 (c, 1.2 in H₂O).**β-Pyranose-form**

Benzyl glycoside, 2,2',3',3'',4',4'',6,6',6''-nonabenzyl: [105814-38-8]

C₈₈H₉₂O₁₆ 1405.685Syrup. [α]_D²⁰ +59 (c, 1.0 in CHCl₃).

Benzyl glycoside, 2,2',3',3'',4',4'',6,6',6''-nonabenzyl, 2''-Ac: [105677-96-1]

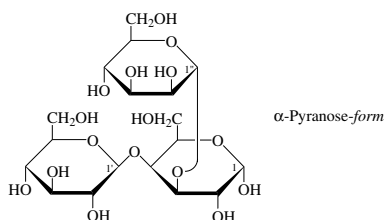
C₉₀H₉₄O₁₇ 1447.722Syrup. [α]_D²⁰ +46 (c, 1.0 in CHCl₃).

[111407-86-4]

Torgov, V.I. *et al.*, *Carbohydr. Res.*, 1987, **161**, 97 (undeca-Ac, phosphate, β-benzyl pyr nonabenzyl derivs, pmr)

β-D-Glucopyranosyl-(1 →4)-[α-D-mannopyranosyl-(1 →3)]-D-galactose, 9CI

[105761-58-8]

C₁₈H₃₂O₁₆ 504.441Syrup. [α]_D²⁰ +71 (c, 1.0 in H₂O).**Pyranose-form**

Undeca-Ac: [111407-87-5]

C₄₀H₅₄O₂₇ 966.85[α]_D²⁰ +37 (c, 1.0 in CHCl₃).**α-Pyranose-form**

1-Dihydrogen phosphate: [105761-62-4]

C₁₈H₃₃O₁₉P 584.421Syrup. [α]_D²⁰ +68 (c, 4.8 in H₂O).

G-421

β-Pyranose-form

Benzyl glycoside, 2,2',3',3'',4',4'',6,6',6''-nonabenzyl: [105677-97-2]

C₈₈H₉₂O₁₆ 1405.685Syrup. [α]_D²⁰ +18 (c, 1.0 in CHCl₃).

Benzyl glycoside, 2,2',3',3'',4',4'',6,6',6''-nonabenzyl, 2''-Ac: [105761-55-5]

C₉₀H₉₄O₁₇ 1447.722Syrup. [α]_D²⁰ +15 (c, 1.0 in CHCl₃).

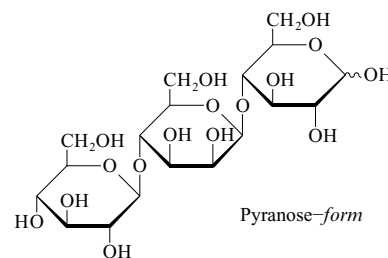
[111407-88-6]

Torgov, V.I. *et al.*, *Carbohydr. Res.*, 1987, **161**, 97 (undeca-Ac, phosphate, β-benzyl pyr nonabenzyl derivs, pmr)

β-D-Glucopyranosyl-(1 →4)-β-D-mannopyranosyl-(1 →4)-D-glucose, 9CI

G-423

[59905-64-5]

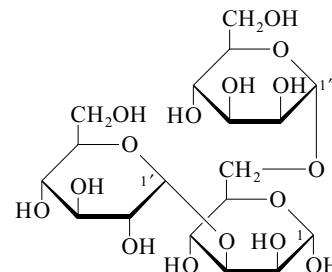
C₁₈H₃₂O₁₆ 504.441

Isol. from the glucomannan from the fibres of Sunn hemp (*Crotalaria juncea*). [α]_D²⁰ -8 (c, 0.6 in H₂O).

Das-gupta, P.C. *et al.*, *Carbohydr. Res.*, 1976, **48**, 73 (isol)

α-D-Glucopyranosyl-(1 →3)-[α-D-mannopyranosyl-(1 →6)]-D-mannose

G-424

C₁₈H₃₂O₁₆ 504.441**α-Pyranose-form**

Me glycoside: [129939-87-3]

C₁₉H₃₄O₁₆ 518.468Syrup. [α]_D +111 (c, 1.2 in H₂O).

Me glycoside, 2',3',4',6'-tetraabenzyl, 2'',3'',4'',6''-tetraabenzoyl, 2,4-di-Ac: [129939-85-1]

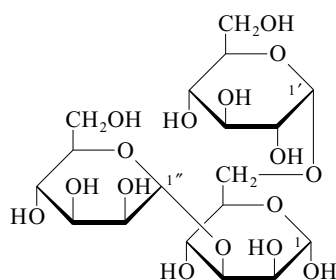
C₇₉H₇₈O₂₂ 1379.472

Cryst. (toluene/petrol). Mp 78-79°. [α]_D +6 (c, 1.0 in CHCl₃).

Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1990, **200**, 475 (α-Me pyr derivs, cmr)

**α -D-Glucopyranosyl-(1 \rightarrow 6)-
[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-mannose, 9CI**

G-425

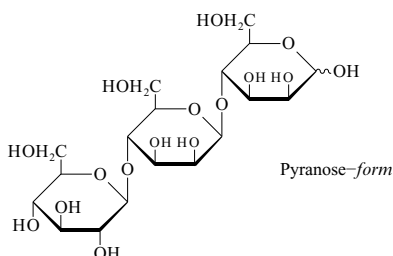
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form***Me glycoside*: [129939-89-5] $C_{19}H_{34}O_{16}$ 518.468Syrup + 0.5 H₂O. $[\alpha]_D^{20} +122$ (c, 1.2 in H₂O).*Me glycoside*, 2,2',3',4',6'-pentabenzyl,

2'',3'',4'',6''-tetrabenzoyl: [129941-08-8]

 $C_{82}H_{80}O_{20}$ 1385.522Syrup. $[\alpha]_D^{20} +21$ (c, 0.8 in CHCl₃).Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1990, **200**, 475 (*α -Me pyr derivs, cmr*) **β -D-Glucopyranosyl-(1 \rightarrow 4)- β -
D-mannopyranosyl-(1 \rightarrow 4)-D-mannose, 9CI, 8CI**

G-426

[28072-82-4]



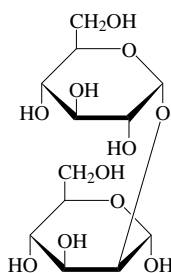
Pyranose-form

 $C_{18}H_{32}O_{16}$ 504.441Isol. from the hydrolysates of Larch wood glucumannan (*Larix decidua*), konjac glucumannan (*Amorphophallus konjac*), mucous polysaccharides of *Bletilla striata* and from the mucilage in the bulbs of Suisen (*Narcissus tazetta*). Isol. from *Nyctanthes arbor-tristis* seed glucumannan. Cryst. (MeOH).Mp 174-176° (160-162°). $[\alpha]_D^{25} -16$ (c, 0.5 in H₂O). $[\alpha]_D^{24} -7.8$ (H₂O).

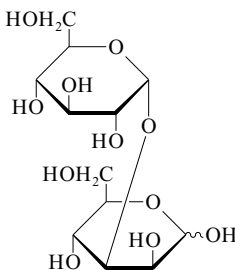
[94799-30-1]

Perila, O. *et al.*, *Can. J. Chem.*, 1961, **39**, 815Aspinall, G.O. *et al.*, *J.C.S.*, 1962, 214Kato, K. *et al.*, *Carbohydr. Res.*, 1973, **29**, 469(*struct*)Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 1807 (*isol*)Shimizu, K. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 949 (*isol*)Takahashi, R. *et al.*, *Agric. Biol. Chem.*, 1984, **48**, 2943Kusakabe, I. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 519 (*synth*)Singh, R.B. *et al.*, *J. Indian Chem. Soc.*, 1989, **66**, 258 (*isol, struct*)**2-O- α -D-Glucopyranosyl-D-mannose, 8CI**

G-427

Episophorose
[42859-28-9] α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Constit. of the glucumannan isol. from the cells of the fungus *Ceratocystis brunnea*. $[\alpha]_D^{20} +72$ (H₂O). **α -Pyranose-form***p*-Nitrophenyl glycoside: [79580-51-1] $C_{18}H_{25}NO_{13}$ 463.394 $[\alpha]_D^{20} +135$ (c, 2.0 in H₂O).*p*-Nityrophenylglucoside, 3-benzoyl, tetra-Ac: [79595-88-3] $[\alpha]_D^{20} +108$ (c, 2.0 in CHCl₃).Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1970, **13**, 339 (*occur*)Kawamura, S. *et al.*, *Nippon Kagaku Kaishi*, 1973, **47**, 285; *CA*, **79**, 53680j (*synth*)Williams, T.J. *et al.*, *Arch. Biochem. Biophys.*, 1981, **209**, 555 (*deriv*)Jansson, P.E. *et al.*, *J.C.S. Perkin 1*, 1990, 2011 (*Me gly, cmr*)**3-O- α -D-Glucopyranosyl-D-mannose, 9CI, 8CI**

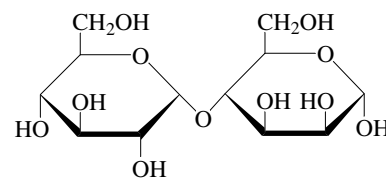
G-428

Epiginerose
[24808-66-0]

Pyranose-form

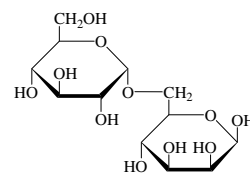
 $C_{12}H_{22}O_{11}$ 342.299Occurs in the hexasaccharide repeating unit in *Salmonella* serogroup C.Mp 138-140°. $[\alpha]_D^{20} +87$ (c, 0.2 in H₂O). $[\alpha]_D^{20} +96$ (H₂O).*Phenylosazone*: Mp 203-205°.Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 807 (*synth*)Hellerqvist, C.G. *et al.*, *Carbohydr. Res.*, 1970, **14**, 17 (*occur*)Alfredsson, G. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 2531 (*synth*)**4-O- α -D-Glucopyranosyl-D-mannose**

G-429

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Mp 214-215°. $[\alpha]_D^{20} +113.8$ (H₂O). **α -Pyranose-form***Octa-Ac*: 4-O-(2,3,4,6-Tetra-O-acetyl- α -D-glucopyranosyl)-1,2,3,6-tetra-O-acetyl- α -D-mannopyranose $C_{28}H_{38}O_{19}$ 678.597Rods (EtOH). Mp 157°. $[\alpha]_D^{17} +117$ (c, 1.2 in CHCl₃).*Ph glycoside*: Phenyl 4-O- α -D-glucopyranosyl- α -D-mannopyranoside
[32345-15-6] $C_{18}H_{26}O_{11}$ 418.397Amorph. powder. $[\alpha]_D^{20} +166$ (c, 1.07 in H₂O).*Ph glycoside, hepta-Ac*: Phenyl 4-O-(2,3,4,6-tetra-O-acetyl- α -D-glucopyranosyl)-2,3,6-tri-O-acetyl- α -D-mannopyranoside
[32447-70-4] $C_{32}H_{40}O_{18}$ 712.657Amorph. powder. $[\alpha]_D^{20} +122$ (c, 1.07 in CHCl₃).Haworth, W.N. *et al.*, *J.C.S.*, 1934, 302 (*synth*)
Hudson, C.S. *et al.*, *J.O.C.*, 1944, **9**, 470 (*synth*)
Arita, H. *et al.*, *J. Biochem. (Tokyo)*, 1971, **69**, 401 (*Ph gly*)Voelter, W. *et al.*, *Coll. Czech. Chem. Comm.*, 1973, **38**, 2054 (*config*)Usui, T. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 863 (*cmr*)**6-O- α -D-Glucopyranosyl-D-mannose, 9CI, 8CI**

G-430

[4233-70-9]

 β -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Constit. of the cell-wall proteoheteroglycan from *Piricularia oryzae*. Amorph. powder. $[\alpha]_D^{20} +76.5$ (H₂O). $[\alpha]_D^{20} +96$ (c, 0.5 in H₂O).*Phenylosazone*: Mp 171-173° (160°).**Pyranose-form***Octa-Ac*: [55286-92-5] $C_{28}H_{38}O_{19}$ 678.597 $[\alpha]_D^{20} +74$ (c, 3.1 in CHCl₃).*2-Benzyl, hepta-Ac*: $C_{33}H_{42}O_{18}$ 726.684 $[\alpha]_D^{22} +69$ (c, 2.3 in CHCl₃).

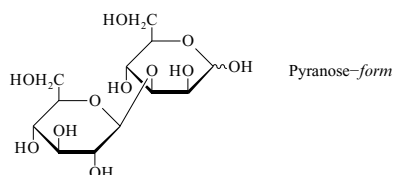
β-Pyranose-form2-(*Trichloroacetyl*), *hepta-Ac*:C₂₈H₃₅Cl₃O₁₈ 765.932Mp 168°. [α]_D +65 (c, 1.69 in CHCl₃).

[95463-59-5]

Bredereck, H. *et al.*, *Chem. Ber.*, 1962, **95**, 3064Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 807 (*synth*)Helferich, B. *et al.*, *Chem. Ber.*, 1973, **106**, 2508 (*synth*)Berry, J.M. *et al.*, *Carbohydr. Res.*, 1974, **38**, 339 (*synth*)Nakajima, T. *et al.*, *J. Biochem. (Tokyo)*, 1977, **82**, 1657 (*occur*)**3-O-β-D-Glucopyranosyl-D-mannose, 9CI**

G-431

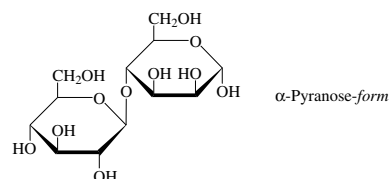
[37085-18-0]

C₁₂H₂₂O₁₁ 342.299Constit. of the capsular antigen of certain types of *Klebsiella* where the mannose unit contains a 4,6-pyruvic acetal, e.g. K5.Also present in the repeating unit of the acidic polysaccharide from *Mycobacterium lacticolum* where the mannose unit is substituted at O(4) by a (*S*)-1-carboxyethyl group.Mp 195-197°. [α]_D -10.5 (5 min) → +26.2 (equilib.) (c, 2.0 in H₂O).Lange, A.B. *et al.*, *Indian J. Chem.*, 1970, **8**, 588Alfredsson, G. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 3431 (*synth*)Kenne, L. *et al.*, *The Polysaccharides*, (Ed. Aspinall, G.O.), Academic Press, 1983, **2**, 317; 344 (*occur*)**4-O-β-D-Glucopyranosyl-D-mannose, 9CI, 8CI**

G-432

Epicellobiose. Glucosidomannose

[15761-61-2]

C₁₂H₂₂O₁₁ 342.299Structural unit in the glucomannans of plant hemicelluloses. Isol. from the partial acid hydrolysates of the glucomannans from *Amorphophallus* spp., white spruce (*Pinus glauca*), western hemlock (*Tsuga heterophylla*), red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), larch (*Larix decidua*), jack pine (*Pinus banksiana*) and from *Narcissus tazetta*; from hemicelluloses of loblolly pine (*Pinus taeda*) and in trace amounts from the acetolysates of the α-celluloses from white birch (*Betula papyrifera*) and slash pine

(Pinus caribaea). Cryst.

Mp 135-138° (anhyd.) Mp 179-182°. [α]_D²⁰ +11 → +6 (H₂O). [α]_D 0 (H₂O).**α-Pyranose-form***Octa-Ac*: 1,2,3,6-Tetra-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-α-D-mannopyranoseC₂₈H₃₈O₁₉ 678.597Mp 202-204°. [α]_D +36 (CHCl₃).*Me glycoside, hepta-Ac*: Methyl 4-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-2,3,6-tri-O-acetyl-α-D-mannopyranosideC₂₇H₃₈O₁₈ 650.586Mp 184°. [α]_D +30 (CHCl₃).**β-Pyranose-form***Octa-Ac*: 1,2,3,6-Tetra-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl)-β-D-mannopyranoseC₂₈H₃₈O₁₉ 678.597Mp 165°. [α]_D -13 (CHCl₃).

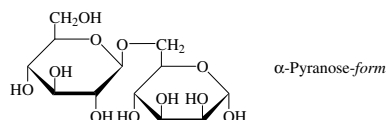
[94799-29-8, 102046-24-2]

Haworth, W.N. *et al.*, *J.C.S.*, 1930, 2326; 2636 (α,β-forms, *Ac. synth*)Haskins, W.T. *et al.*, *J.A.C.S.*, 1941, **63**, 1724 (*synth*)Smith, F. *et al.*, *J.A.C.S.*, 1956, **78**, 1404 (*isol*)Mian, J. *et al.*, *Can. J. Chem.*, 1960, **38**, 1511 (*isol*)Tyminski, A. *et al.*, *J.A.C.S.*, 1960, **82**, 2823 (*isol*)Perila, O. *et al.*, *Can. J. Chem.*, 1961, **39**, 815 (*isol*)Alexander, J.K. *et al.*, *Arch. Biochem. Biophys.*, 1968, **123**, 240 (*synth*)Kato, K. *et al.*, *Carbohydr. Res.*, 1973, **29**, 469 (*struct*)Das-Gupta, P.C. *et al.*, *Carbohydr. Res.*, 1976, **48**, 73Usui, T. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 863 (*cmr*)**6-O-β-D-Glucopyranosyl-D-mannose**

G-433

Epigentiobiose

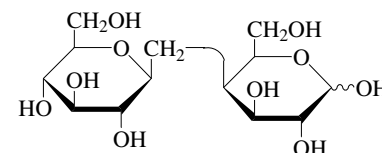
[25538-26-5]

C₁₂H₂₂O₁₁ 342.299Occurs in the free state in various seaweeds, e.g. *Pelvetia canaliculata*, *Laminaria cloustoni* and *Fucus spiralis*. Also isol. from the partial acid hydrolysate of "insoluble laminarin". Cryst. + H₂O. Mp 137-138°. [α]_D -11 (H₂O).*Phenylosazone*: Mp 166-170°.**α-Pyranose-form***Octa-Ac*:C₂₈H₃₈O₁₉ 678.597Mp 110-112°. [α]_D +26 (CHCl₃).**β-Pyranose-form***Octa-Ac*: Mp 132-140°. [α]_D -20.6 (CHCl₃).2-(*Trichloroacetyl*), *hepta-Ac*:C₂₈H₃₅Cl₃O₁₈ 765.932Mp 185°. [α]_D²¹ -7.2 (c, 1.2 in CHCl₃).Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1953, **7**, 1218; 1218; 1954, **8**, 817; 1547 (*occur, synth*)Bouveng, H.O. *et al.*, *Acta Chem. Scand.*, 1955, **9**, 168 (*occur*)Peat, S. *et al.*, *J.C.S.*, 1958, 729; 1960, 175 (*isol, synth*)Bredereck, H. *et al.*, *Chem. Ber.*, 1960, **93**, 1201; 1962, **95**, 3064 (*synth, Ac*)**β-D-Glucopyranosylmethyl-**

G-434

(1 → 4)-4-deoxy-D-galactose

4-C-(2,6-Anhydro-1-deoxy-D-glycero-D-gulo-heptitol-1-yl)-4-deoxy-D-galactose. C-Lycobiose

C₁₃H₂₄O₁₀ 340.327

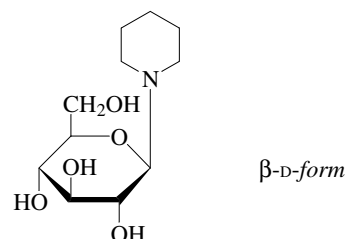
The entry name used here is not strictly authentic but is simpler than the IUPAC name.

Octa-Ac:

[138709-54-3, 138809-34-4]

C₂₉H₄₀O₁₈ 676.624[α]_D²⁰ +49.5 (c, 1.0 in EtOAc). Inseparable mixt. of anomers.Preuss, R. *et al.*, *J. Carbohydr. Chem.*, 1991, **10**, 887-900 (*octa-Ac, synth, pmr*)**1-Glucopyranosylpiperidine**

G-435

C₁₁H₂₁NO₅ 247.291**D-form**Mp 115°. [α]_D -43 → -13 (Py).*Tetra-Ac*: 1-(2,3,4,6-Tetra-O-acetyl-D-glucopyranosyl)piperidineC₁₉H₂₉NO₉ 415.439

Mp 123°.

β-D-form

3,4,6-Tri-Ac: 1-(3,4,6-Tri-O-acetyl-β-D-glucopyranosyl)piperidine

[52389-39-6]

C₁₇H₂₇NO₈ 373.402Mp 125° dec. [α]_D +31.6 (CHCl₃).Baker, J.W. *et al.*, *J.C.S.*, 1929, 1205 (*tetra-Ac*)
Hodge, J.E. *et al.*, *J.A.C.S.*, 1952, **74**, 1494; 1498 (*synth, tri-Ac*)

1-(Glucopyranosyl)pyridinium(1+)

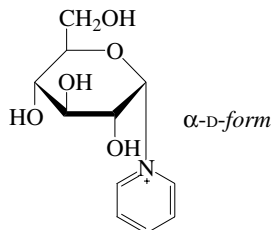
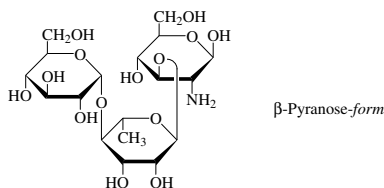
G-436

 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxyglucose

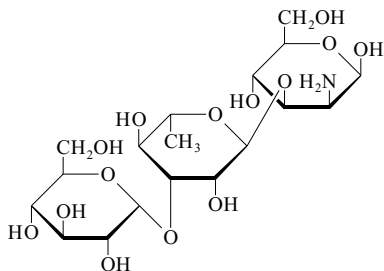
G-437

 β -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose
 β -D-Glucopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy-D-galactose, 9CI

G-439

 $C_{11}H_{16}NO_5^+$ 242.251 **α -D-form****Bromide:** $C_{11}H_{16}BrNO_5$ 322.155Mp 145-147°. $[\alpha]_D +52.5$ (c, 1 in H_2O).**2',3',4',6'-Tetra-Ac:** $C_{19}H_{24}NO_9^+$ 410.4Cryst. (Et_2O/Me_2CO) (as bromide).Mp 127-128° (bromide). $[\alpha]_D +19.2$ (c, 1 in $CHCl_3$).**4-Me:** $C_{12}H_{18}NO_5^+$ 256.278Mp 127-128° (as bromide). $[\alpha]_D +57.3$ (c, 0.8 in H_2O).**4-Me, 2',3',4',6'-tetra-Ac:** $C_{20}H_{26}NO_9^+$ 424.427Cryst. ($EtOAc/EtOH$) (as bromide).Mp 175° (168-169°) (bromide). $[\alpha]_D +43$ (c, 1.0 in H_2O). $[\alpha]_D +25.3$ (c, 1.0 in $CHCl_3$). **β -D-form****Bromide:**Cryst. ($EtOH$ aq.). Mp 176-177°. $[\alpha]_D +45.5$ (c, 1.2 in H_2O).**2',3',4',6'-Tetra-Ac:** [4768-55-2]Mp 170° (as bromide). $[\alpha]_D -5.9$ (c, 1.0 in H_2O).**4-Me:**Cryst. ($EtOH/EtOAc$) (as bromide). Mp 162-162.5° (bromide). $[\alpha]_D +38.3$ (c, 1.2 in $MeOH$).**4-Me, 2',3',4',6'-tetra-Ac:** Mp 207-208.5° (as bromide). $[\alpha]_D -10.2$ (c, 1.0 in H_2O).**O-Tetrabenzyl:** $C_{39}H_{40}NO_5^+$ 602.749Mp 151-152° (as iodide) Mp 151-151.5° (as trifluoromethanesulfonate). $[\alpha]_D -19$ (c, 3.1 in $CHCl_3$).Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1965, **43**, 2205; 2214 (synth, β -D-form, β -D-tetra-Ac, β -D-4-Me, β -D-4-Me tetra-Ac)Bock, K. *et al.*, *J.C.S. Perkin 2*, 1974, 293 (cmr)Leroux, J. *et al.*, *Carbohydr. Res.*, 1978, **67**, 163 (tetrabenzyl)Hosie, L. *et al.*, *J.C.S. Perkin 2*, 1984, 1121(α -D-form, α -D-tetra-Ac, α -D-4-Me, α -D-4-Me tetra-Ac) $C_{18}H_{33}NO_{14}$ 487.457**N-Ac:** $C_{20}H_{35}NO_{15}$ 529.494Fragment of *Shigella flexneri* serotype 2a O-antigen. **β -D-Pyranose-form****Me glycoside, N-Ac:** $C_{21}H_{37}NO_{15}$ 543.521 $[\alpha]_D +4$ (c, 1.0 in H_2O).Mulard, L.A. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 849-877 (β -D-Me pyr N-Ac) **α -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-mannose**

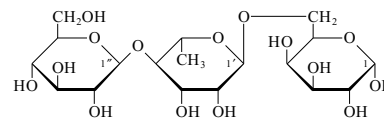
G-438

 α -D-Glucopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-mannose, 9CI $C_{18}H_{33}NO_{14}$ 487.457 **β -Pyranose-form****8-Methoxycarbonyloctyl glycoside, N-Ac:** $C_{30}H_{53}NO_{17}$ 699.745Syrup. $[\alpha]_D -1.2$ (c, 1.0 in $MeOH$).Paulsen, H. *et al.*, *Tet. Lett.*, 1985, 6043(β -methoxycarbonyloctyl pyr N-Ac) $C_{18}H_{32}O_{14}$ 472.442 **α -Pyranose-form****Me glycoside, 2',2'',3,3'',4,4',4'',6''-octa-Me:** [96553-18-3] $C_{27}H_{50}O_{14}$ 598.684

Syrup.

Higuchi, R. *et al.*, *Phytochemistry*, 1987, **26**, 229 (α -Me pyr octa-Me, *ir*, *pmr*) **β -D-Glucopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 6)-D-galactose**

G-440

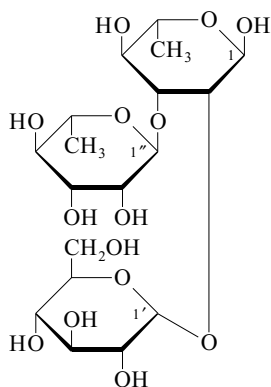
 β -D-Glucopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 6)-D-galactose, 9CI $C_{18}H_{32}O_{15}$ 488.442 **α -Pyranose-form****1,2:3,4-Di-O-isopropylidene, hexa-Ac:** [55864-92-1] $C_{36}H_{52}O_{21}$ 820.794Syrup. $[\alpha]_D -57$ ($CHCl_3$).**1,2:2',3':3,4-Tri-O-isopropylidene, tetra-Ac:** [126841-32-5] $C_{35}H_{52}O_{19}$ 776.784

Syrup.

Torgov, V.I. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1975, 445 (diisopropylidene hexa-Ac, *pmr*)Collins, P.M. *et al.*, *Tet. Lett.*, 1989, **30**, 4721 (triisopropylidene tetra-Ac)

α -D-Glucopyranosyl-(1 \rightarrow 2)- G-441**[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose**

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-
[α -D-glucopyranosyl-(1 \rightarrow 2)]-6-deoxy-L-mannose



$C_{18}H_{32}O_{14}$ 472.442

Constit. of the antigenic repeating unit of *Streptococcus pneumoniae* type II.

 α -Pyranose-form

Me glycoside: [73113-85-6]

$C_{19}H_{34}O_{14}$ 486.469

Amorph. powder + 1.5 H_2O . Mp 157-158.5°. $[\alpha]_D^{20} +15.3$ (c, 1.0 in H_2O).

Me glycoside, 2'',3'',4,4''-tetraabenzyl, 2'',3'',4,4''-tetra-Ac: [73113-83-4]

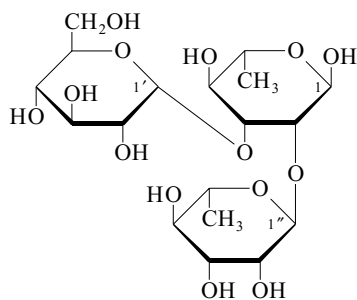
$C_{55}H_{66}O_{18}$ 1015.116

Syrup. $[\alpha]_D^{20} +2.4$ (c, 1.1 in $CHCl_3$).

Schwarzenbach, D. et al., *Carbohydr. Res.*, 1979, 77, C5; 1981, 90, 193 (α -Me pyr derivs)

 α -D-Glucopyranosyl-(1 \rightarrow 3)- G-442**[α -L-rhamnopyranosyl-(1 \rightarrow 2)]-L-rhamnose**

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-
[α -D-glucopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose



$C_{18}H_{32}O_{14}$ 472.442

Constit. of *Shigella flexneri* O-specific polysaccharides of serotype 5a and 5b.

 α -Pyranose-form

Me glycoside: [97859-05-7]

$C_{19}H_{34}O_{14}$ 486.469

Syrup. $[\alpha]_D^{20} +21.8$ (c, 1.1 in MeOH).

Me glycoside, 2'',3'',4,4',4'',6'-hexabenzyl, 2'',3''-di-Ac: [90164-79-7]

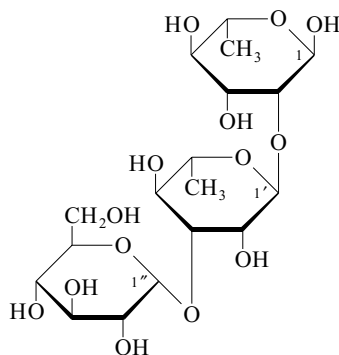
$C_{65}H_{74}O_{16}$ 1111.29

Syrup. $[\alpha]_D^{20} +5.3$ (c, 1.3 in $CHCl_3$).

Backinowsky, L.V. et al., *Bioorg. Khim.*, 1984, 10, 79; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1984, 10, 49 (α -Me pyr derivs, pmr, cmr, occur)

 α -D-Glucopyranosyl-(1 \rightarrow 3)- α - G-443**L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose**

α -D-Glucopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

Constit. of *Shigella flexneri* O-specific polysaccharide.

 α -Pyranose-form

Me glycoside: [97837-50-8]

$C_{19}H_{34}O_{14}$ 486.469

Amorph. powder. $[\alpha]_D^{20} +34$ (c, 0.8 in MeOH).

Me glycoside, 2'',3'',4,4',4'',6'-hexabenzyl, 3-benzoyl, 2'-Ac: [97837-55-3]

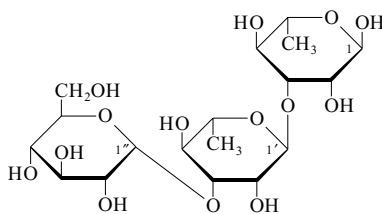
$C_{70}H_{76}O_{16}$ 1173.361

Syrup. $[\alpha]_D^{20} +45$ (c, 1.0 in $CHCl_3$).

Backinowsky, L.V. et al., *Bioorg. Khim.*, 1985, 11, 254; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1985, 11, 134 (α -Me pyr derivs, occur)

 α -D-Glucopyranosyl-(1 \rightarrow 3)- α - G-444**L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose**

α -D-Glucopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

Constit. of the O-specific polysaccharides of *Shigella flexneri*.

 α -Pyranose-form

Me glycoside: [105213-49-8]

$C_{19}H_{34}O_{14}$ 486.469

Effective inhibitor of passive haemagglutination reaction in *S. flexneri* O-factor V-anti-V system. Amorph. powder. $[\alpha]_D^{20} +15$ (c, 1.1 in MeOH).

Me glycoside, 2'',3'',4,4',4'',6'-hexabenzyl, 2-benzoyl: [105213-56-7]

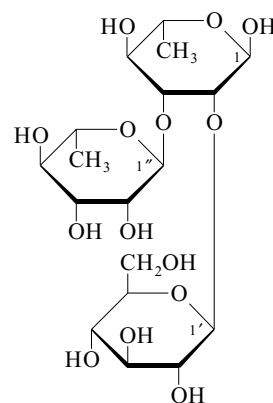
$C_{68}H_{74}O_{15}$ 1131.324

Syrup. $[\alpha]_D^{20} +45$ (c, 1.2 in $CHCl_3$).

Backinowsky, L.V. et al., *Bioorg. Khim.*, 1985, 11, 1562; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1985, 11, 834 (α -Me pyr derivs, pmr, cmr, occur)

 β -D-Glucopyranosyl-(1 \rightarrow 2)- G-445**[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose**

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-
[β -D-glucopyranosyl-(1 \rightarrow 2)]-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

 α -Pyranose-form

Me glycoside: [73174-65-9]

$C_{19}H_{34}O_{14}$ 486.469

Amorph. powder + 0.75 H_2O . Mp 156-158°. $[\alpha]_D^{20} -31$ (c, 0.9 in H_2O).

Me glycoside, 2'',3'',4,4'-tetraabenzyl, 2'',3'',4,4'-tetra-Ac: [73174-63-7]

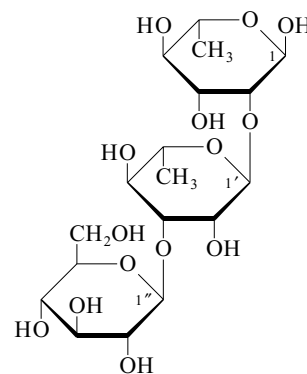
$C_{55}H_{66}O_{18}$ 1015.116

Amorph. powder. Mp 49-50.5°. $[\alpha]_D -13.2$ (c, 1.3 in $CHCl_3$).

Schwarzenbach, D. et al., *Carbohydr. Res.*, 1979, 77, C5; 1981, 90, 193 (α -Me pyr derivs, pmr)

 β -D-Glucopyranosyl-(1 \rightarrow 3)- α - G-446**L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose**

β -D-Glucopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{14}$ 472.442

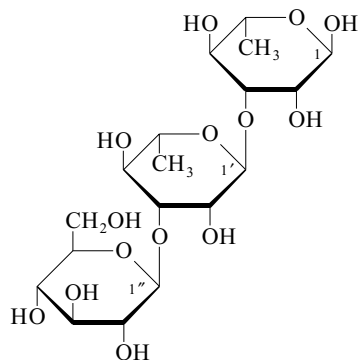
α-Pyranose-form

Me glycoside, 2'',3'',4,4',4'',6''-hexabenzyl:
[97837-58-6]
C₆₁H₇₀O₁₄ 1027.216
Syrup. [α]_D²⁰ -13 (c, 1.2 in CHCl₃).

Backinowsky, L.V. *et al.*, *Bioorg. Khim.*, 1985,
11, 254; *Sov. J. Bioorg. Chem. (Engl. Transl.)*,
1985, 11, 134 (α-Me pyr hexabenzyl, pmr, cmr)

β-D-Glucopyranosyl-(1→3)-α-L-rhamnopyranosyl-(1→3)-L-rhamnose

β-D-Glucopyranosyl-(1→3)-6-deoxy-α-L-mannopyranosyl-(1→3)-6-deoxy-L-mannose, 9CI



C₁₈H₃₂O₁₄ 472.442

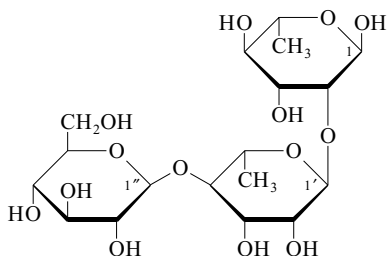
α-Pyranose-form

Me glycoside, 2'',3'',4,4',4'',6''-hexabenzyl,
2-benzoyl: [105213-57-8]
C₆₈H₇₄O₁₅ 1131.324
Syrup. [α]_D²⁰ +10 (CHCl₃).

Backinowsky, L.V. *et al.*, *Bioorg. Khim.*, 1985,
11, 1562; *Sov. J. Bioorg. Chem. (Engl. Transl.)*,
1985, 11, 834 (α-Me pyr deriv, pmr, cmr)

β-D-Glucopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-L-rhamnose

β-D-Glucopyranosyl-(1→4)-6-deoxy-α-L-mannopyranosyl-(1→2)-6-deoxy-L-mannose, 9CI



C₁₈H₃₂O₁₄ 472.442

α-Pyranose-form

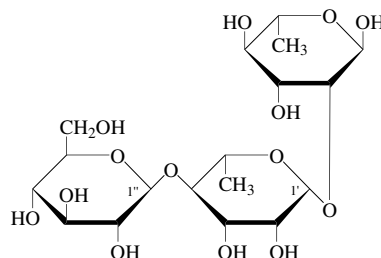
2',3,3'-Tri-Me: [112296-31-8]
C₂₁H₃₈O₁₄ 514.523
Syrup.

2',3,3',6''-Tetra-Me: [112288-89-8]
C₂₂H₄₀O₁₄ 528.55
Syrup.

2',3,3',3'',6''-Penta-Me: [87317-93-9]
C₂₃H₄₂O₁₄ 542.576
Syrup. [α]_D²⁰ -25.8 (c, 0.093 in MeOH).
Fujiwara, T. *et al.*, *Carbohydr. Res.*, 1987, 163,
41 (Me derivs, pmr, cmr)

β-D-Glucopyranosyl-(1→4)-β-L-rhamnopyranosyl-(1→2)-L-rhamnose

β-D-Glucopyranosyl-(1→4)-6-deoxy-β-L-mannopyranosyl-(1→2)-6-deoxy-L-mannose, 9CI



C₁₈H₃₂O₁₄ 472.442

α-Pyranose-form

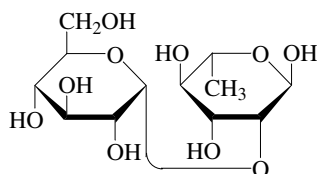
2',3,3'-Tri-Me: [112288-88-7]
C₂₁H₃₈O₁₄ 514.523
Syrup.

2',3,3',6''-Tetra-Me: [112288-90-1]
C₂₂H₄₀O₁₄ 528.55
Syrup.

2',3,3',3'',6''-Penta-Me: [112327-78-3]
C₂₃H₄₂O₁₄ 542.576
Syrup. [α]_D²⁰ +44.4 (c, 0.036 in MeOH).
Fujiwara, T. *et al.*, *Carbohydr. Res.*, 1987, 163,
41 (synth, pmr, cmr)

2-O-α-D-Glucopyranosyl-L-rhamnose

[30868-26-9]



α-Pyranose-form

C₁₂H₂₂O₁₀ 326.3

Reducing disaccharide. Isol. from a partial
acid hydrolysate of *Brachychiton diversifolium* (*Sterculia caudata*) gum. [α]_D²⁵
+84 (c, 0.7 in MeOH).

α-Pyranose-form [119720-47-7]

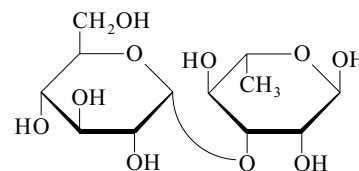
Benzyl glycoside, 3,4,2',3',4'-pentabenzyl:
[128500-19-6]
C₅₄H₅₈O₁₀ 867.046
Oil. [α]_D²⁵ +45.4 (c, 1.6 in CHCl₃).

Benzyl glycoside, pentabenzyl, 6'-Ac:
[128500-18-5]
C₅₆H₆₀O₁₁ 909.083
Oil. [α]_D²⁵ +46.2 (c, 1.3 in CHCl₃).

Hirst, E.L. *et al.*, *J.C.S.*, 1958, 1942 (isol)
Ciuffreda, P. *et al.*, *J. Carbohydr. Chem.*, 1989,
8, 805 (synth)

3-O-α-D-Glucopyranosyl-L-rhamnose

G-451



C₁₂H₂₂O₁₀ 326.3

α-Pyranose-form [69557-93-3]

Constit. of the capsular antigen of
Klebsiella K12, K18, K41; type specific
antigen of *Streptococcus pneumoniae* type
2, type 6A; O-antigen of *Serratia marcescens*;
extracellular polysaccharide from
Mycobacterium album B-88; in operculinic
acid (see 3,12-Dihydroxyhexadecanoic
acid) formed from the resin of *Ipomoea*
operculata.

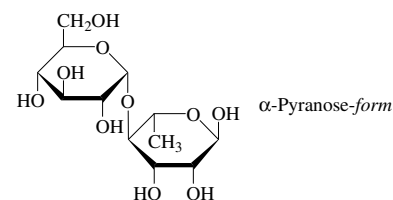
Kenne, L. *et al.*, *The Carbohydrates*, Academic
Press, Ed., Aspinall, G.O., 1983, 2, 309
(occur)

Bock, K. *et al.*, *J.C.S. Perkin 2*, 1986, 1711
(cmr)

4-O-α-D-Glucopyranosyl-L-rhamnose

G-452

4-O-α-D-Glucopyranosyl-6-deoxy-L-man-
nose. 6-Deoxy-4-O-α-D-glucopyranosyl-
L-mannose
[31007-98-4]



C₁₂H₂₂O₁₀ 326.3

Fragment of *Shigella flexneri* antigen.
[α]_D²⁰ +10 (c, 1 in H₂O).

Pyranose-form

Hepta-Ac: [52389-40-9]
C₂₆H₃₆O₁₇ 620.56
Syrup. [α]_D²⁰ +55 (c, 2 in CHCl₃).

α-Pyranose-form [69610-07-7]

Me glycoside: [52327-21-6]
C₁₃H₂₄O₁₀ 340.327
[α]_D²⁰ +43 (c, 1.2 in MeOH).

Me glycoside, 2,3-O-isopropylidene:
[52327-20-5]
C₁₆H₂₈O₁₀ 380.391
[α]_D²⁰ +73 (c, 2 in MeOH).

Me glycoside, hexa-Ac: [52327-23-8]
C₂₅H₃₆O₁₆ 592.55
Cryst. (EtOH). Mp 136-137°. [α]_D²⁰ +62.3
(c, 2.6 in CHCl₃).

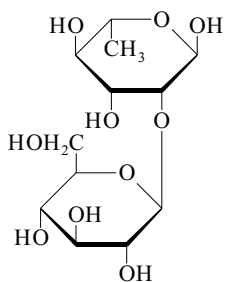
Berry, J.M. *et al.*, *Can. J. Chem.*, 1974, 52, 68
(synth)

Kenne, L. *et al.*, *Eur. J. Biochem.*, 1978, 91, 279
Mulard, L.A. *et al.*, *J. Carbohydr. Chem.*, 2000,
19, 849-877 (Me α-gly, synth)

2-O-β-D-Glucopyranosyl-L-rhamnose

G-453

[55018-83-2]

 α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3

Constit. in the repeating unit of the capsular antigen of *Klebsiella* K17.
 $[\alpha]_D^{24}$ +9.5 (c, 2.0 in H_2O).

 α -Pyranose-form

Benzyl glycoside: [55018-80-9]

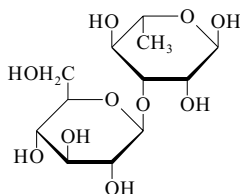
 $C_{19}H_{28}O_{10}$ 416.424Syrup. $[\alpha]_D^{24}$ -48.8 (c, 1.0 in EtOH).

Benzyl glycoside, hexa-Ac:

 $C_{31}H_{40}O_{16}$ 668.647Mp 147-148°. $[\alpha]_D^{24}$ -46.6 (c, 1.0 in $CHCl_3$).King, R.R. *et al.*, *Can. J. Chem.*, 1974, **52**, 3913 (synth)Colson, P. *et al.*, *Carbohydr. Res.*, 1976, **47**, 1 (cmr)Dutton, G.G.S. *et al.*, *Carbohydr. Res.*, 1980, **80**, 147 (occur)Eriksson, L. *et al.*, *Acta Cryst. C*, 2002, **58**, o328-o329 (Me glycoside, cryst struct)**3-O-β-D-Glucopyranosyl-L-rhamnose**

G-454

[55018-84-3]

 α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3

Constit. of the repeating unit of the capsular antigens of *Klebsiella* K23, K48 and in the repeating unit of a teichuronic acid isol. from the cell walls of *Bacillus megaterium*.
 $[\alpha]_D^{24}$ -11.4 (c, 2.0 in H_2O).

 α -Pyranose-form

Benzyl glycoside: [55018-78-5]

 $C_{19}H_{28}O_{10}$ 416.424Syrup. $[\alpha]_D^{24}$ -68.4 (c, 1.0 in EtOH).

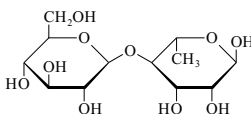
Benzyl glycoside, 2',3',4',6'-tetra-Ac:

 $C_{27}H_{36}O_{14}$ 584.573Mp 138-139°. $[\alpha]_D^{24}$ -37.4 (c, 1.0 in $CHCl_3$).

[81689-25-0]

King, R.R. *et al.*, *Can. J. Chem.*, 1974, **52**, 3913 (synth)Colson, P. *et al.*, *Carbohydr. Res.*, 1976, **47**, 1 (cmr)Gagnaire, D.Y. *et al.*, *Macromolecules*, 1982, **15**, 126 (nmr)Kenne, L. *et al.*, *The Polysaccharides*, Academic Press, ed. Aspinall, G.O., 1983, **2**, 320; 323; 340 (occur)Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*, 1988, **26**, 735 (conform)**4-O-β-D-Glucopyranosyl-L-rhamnose**

G-455

Scillabiose
[40525-07-3] α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3

Isol. from the partial acid hydrolysate of glycosides from *Scilla maritima*; constit. in the repeating unit of the capsular antigen of *Klebsiella* K55.
 $[\alpha]_D$ -24.2 (c, 1.1 in H_2O).

Phenylosazone: Mp 164°.

 α -Pyranose-form

Hepta-Ac: [39687-44-0]

 $C_{26}H_{36}O_{17}$ 620.56Cryst. (2-propanol). Mp 139-140°. $[\alpha]_D$ -62.3 (c, 2.6 in $CHCl_3$).

Me glycoside: [39687-45-1]

 $C_{13}H_{24}O_{10}$ 340.327 $[\alpha]_D$ -57.5 (c, 1.5 in MeOH).

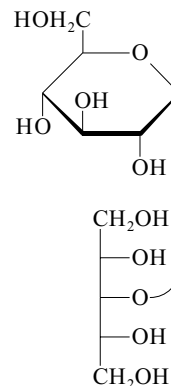
Me glycoside, 2,3-O-isopropylidene, tetra-Ac: [39687-43-9]

 $C_{24}H_{36}O_{14}$ 548.54Cryst. (EtOH). Mp 158.5-159°. $[\alpha]_D$ -30.6 (c, 1.7 in $CHCl_3$). **β -Pyranose-form**

1,2-Methylorthoacetate, penta-Ac:

Cryst. (Et_2O /petrol). Mp 206°. $[\alpha]_D^{20}$ +1.03 (c, 1.65 in $CHCl_3$).Stoll, A. *et al.*, *Helv. Chim. Acta*, 1952, **35**, 2495 (isol)Bebault, G.M. *et al.*, *Can. J. Chem.*, 1972, **50**, 3373 (synth)Torgov, V.I. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1975, 455; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1975, 385 (β -form deriv)Bebault, G.M. *et al.*, *Carbohydr. Res.*, 1978, **64**, 199 (occur)Shashkov, A.S. *et al.*, *Magn. Reson. Chem.*, 1988, **26**, 735 (cmr)**3-O-α-D-Glucopyranosylribitol**

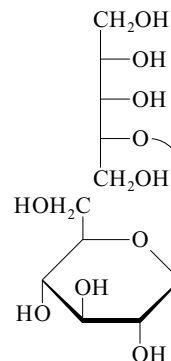
G-456

 $C_{11}H_{22}O_{10}$ 314.289

Isol. from the hydrolysate (alkaline followed by phosphorylase) of *Lactobacillus arabinosaceus* teichoic acid.
 $[\alpha]_D$ +78 (H_2O).

Archibald, A.R. *et al.*, *Biochem. J.*, 1961, **81**, 124 (isol)**4-O-β-D-Glucopyranosyl-D-ribose, 9CI**

G-457

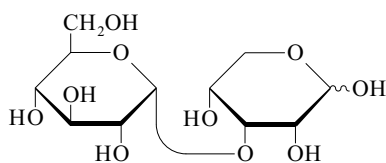
2-O-β-D-Glucopyranosyl-L-ribitol
[63526-06-7] $C_{11}H_{22}O_{10}$ 314.289

Isol. from the hydrolysate (alkaline followed by phosphorylase) of *Bacillus subtilis* teichoic acid. Constit. in the capsular antigen of *Haemophilus influenzae* type A.
Mp 137-138°. $[\alpha]_D$ -28.6 (H_2O).

Armstrong, J.J. *et al.*, *Biochem. J.*, 1961, **80**, 254; 1960, **76**, 610 (isol)Baddiley, J. *et al.*, *J.C.S.*, 1961, 2180 (synth)Branfords-Helander, P. *et al.*, *Carbohydr. Res.*, 1977, **56**, 117Tarelli, E. *et al.*, *Carbohydr. Res.*, 1979, **75**, 31 (cmr)Grzeszczuk, B. *et al.*, *Carbohydr. Res.*, 1988, **175**, 215 (synth)

3-*O*- α -D-Glucopyranosyl-D-ribose, 8CI

[25541-65-5]

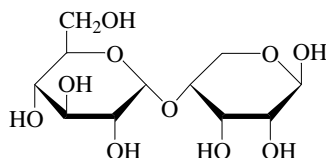


Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273
Syrup. $[\alpha]_D^{20}$ +90.5 (c, 3.0 in H_2O).

Hepta-Ac: [25541-68-8]
 $C_{25}H_{34}O_{17}$ 606.533
 $[\alpha]_D^{20}$ +77.2 (c, 1.2 in H_2O).

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1966, **44**, 2083
Furda, I. *et al.*, *Can. J. Chem.*, 1969, **47**, 2891
(*synth*)

4-*O*- α -D-Glucopyranosyl-D-ribose β -Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273

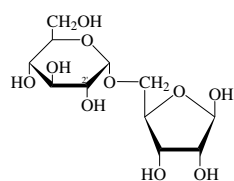
 β -Pyranose-form

2,3-Anhydro, benzyl glycoside, 2',3',4',6'-
tetrabenzyl: Benzyl 2,3-anhydro-4-O-
(2,3,4,6-tetra-O-benzyl- α -D-glucopyra-
nosyl)- β -D-ribofuranoside, 9CI
[130738-61-3]
 $C_{46}H_{48}O_9$ 744.88
Cryst. (Et_2O /hexane). Mp 83-84°. $[\alpha]_D^{25}$
+48 (c, 1.2 in $CHCl_3$).

Hashimoto, S. *et al.*, *Tet. Lett.*, 1990, **31**, 4769
(*synth*)
Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167
(*synth*, *pmr*)

5-*O*- α -D-Glucopyranosyl-D-ribose, 9CI

[78416-64-5]

 β -Furanose-form

$C_{11}H_{20}O_{10}$ 312.273

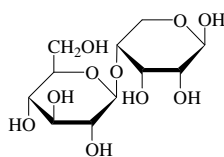
Furanose-form

$[\alpha]_D^{20}$ +74 (c, 0.5 in H_2O).

 β -Furanose-form [61272-23-9]

Hepta-Ac: 1,2,3-Tri-O-acetyl-5-O-
(2,3,4,6-tetra-O-acetyl- α -D-glucopyra-
nosyl)- β -D-ribofuranose, 9CI
[78432-72-1]
 $C_{25}H_{34}O_{17}$ 606.533
Needles (Et_2O). Mp 170-172°. $[\alpha]_D^{20}$ +61
(c, 0.5 in $CHCl_3$).

Benzyl glycoside, 2'-benzyl, 2,3,3',4',6'-
penta-Ac: Benzyl 2,3-di-O-acetyl-5-O-
(3,4,6-tri-O-acetyl-2-O-benzyl- α -D-glu-
copyranosyl)- β -D-ribofuranoside, 9CI
[78416-63-4]
 $C_{35}H_{42}O_{15}$ 702.708
Syrup. $[\alpha]_D^{20}$ +64 (c, 0.8 in $CHCl_3$).
Sharma, N.K. *et al.*, *J. Inst. Chem. (India)*,
1976, **48**, 129; *CA*, **86**, 16853s
Kraska, B. *et al.*, *Chem. Ber.*, 1981, **114**, 1636
(*synth*, *pmr*, *cmr*)

4-*O*- β -D-Glucopyranosyl-D-ribose β -Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273

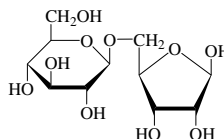
 β -Pyranose-form

2,3-Anhydro, benzyl glycoside, 2',3',4',6'-
tetrabenzyl: Benzyl 2,3-anhydro-4-O-
(2,3,4,6-tetra-O-benzyl- β -D-glucopyra-
nosyl)- β -D-ribofuranoside, 9CI
[125325-75-9]
 $C_{46}H_{48}O_9$ 744.88
Cryst. ($EtOH$). Mp 127-128°. $[\alpha]_D^{25}$ +6
(c, 1.0 in $CHCl_3$).

Hashimoto, S. *et al.*, *Tet. Lett.*, 1990, **31**, 4769
(*synth*)
Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167
(*synth*, *pmr*)

5-*O*- β -D-Glucopyranosyl-D-ribose, 9CI

[78416-58-7]

 β -Furanose-form

$C_{11}H_{20}O_{10}$ 312.273

Furanose-form

Syrup. $[\alpha]_D^{20}$ +7 (c, 0.2 in H_2O).

 β -Furanose-form

Hepta-Ac: 1,2,3-Tri-O-acetyl-5-O-
(2,3,4,6-tetra-O-acetyl- β -D-glucopyra-
nosyl)- β -D-ribofuranose, 9CI
[78416-57-6]
 $C_{25}H_{34}O_{17}$ 606.533
Mp 101-102°. $[\alpha]_D^{20}$ -24 (c, 0.6 in $CHCl_3$).
Me glycoside, 2,3-O-isopropylidene: Methyl
5-O- β -D-glucopyranosyl-2,3-O-isopropyl-
idene- β -D-ribofuranose
[95335-93-6]
 $C_{15}H_{26}O_{10}$ 366.364

Hygroscopic oil (monohydrate). $[\alpha]_D^{20}$
-44.4 (c, 1.0 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene,
2',3',4',6'-tetra-Ac: Methyl 2,3-O-isopropylidene-5-O-(2,3,4,6-tetra-O-acetyl- β -D-glucopyranosyl)- β -D-ribofuranoside,
9CI
[62774-23-6]
 $C_{23}H_{34}O_{14}$ 534.513
Mp 108°. $[\alpha]_D^{20}$ -57.9 (c, 1.0 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene,
2',3',4',6'-tetrabenzyl: Methyl 2,3-O-isopropylidene-5-O-(2,3,4,6-tetra-O-benzyl- β -D-glucopyranosyl)- β -D-ribofuranoside, 9CI
[67525-70-6]
 $C_{43}H_{50}O_{10}$ 726.862
Mp 56°. $[\alpha]_D^{20}$ +15.6 (c, 1.0 in $CHCl_3$).

Benzyl glycoside, 2,3-O-isopropylidene:
Benzyl 5-O- β -D-glucopyranosyl-2,3-O-isopropylidene- β -D-ribofuranoside, 9CI
[78416-56-5]
 $C_{21}H_{30}O_{10}$ 442.462
Needles. Mp 185-186°. $[\alpha]_D^{20}$ -76 (c, 0.75 in $MeOH$).

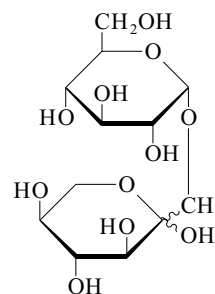
Benzyl glycoside, 2,3-O-isopropylidene,
2',3',4',6'-tetra-Ac: Benzyl 2,3-O-isopropylidene-5-O-(2,3,4,6-tetra-O-acetyl- β -D-glucopyranosyl)- β -D-ribofuranoside,
9CI
[78416-55-4]
 $C_{29}H_{38}O_{14}$ 610.611
Cryst. (Et_2O). Mp 107°. $[\alpha]_D^{20}$ -40 (c, 0.8 in $CHCl_3$).

Benzyl glycoside, hexa-Ac: Benzyl 2,3-di-O-acetyl-5-O-(2,3,4,6-tetra-O-acetyl- β -D-glucopyranosyl)- β -D-ribofuranoside,
9CI
[78420-93-6]
 $C_{30}H_{38}O_{16}$ 654.621
Amorph. powder. $[\alpha]_D^{20}$ -40 (c, 0.5 in $CHCl_3$).

Kraska, B. *et al.*, *Chem. Ber.*, 1981, **114**, 1636
(*benzyl gly*)
Schmidt, R.R. *et al.*, *J. Carbohydr. Chem.*, 1984,
3, 67 (*Me gly*)

1-*O*- α -D-Glucopyranosyl-L-sorbose, 9CI

[35826-44-9]



Pyranose-form

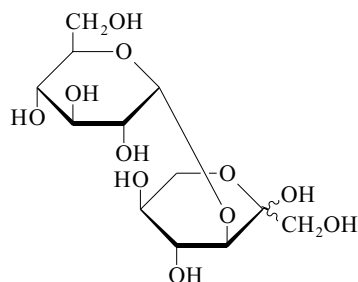
$C_{12}H_{22}O_{11}$ 342.299

Non-reducing disaccharide. Formed by the transglucosidation reaction of brewers yeast α -glucosidase. Syrup. $[\alpha]_D$ +89 (c, 1 in H_2O) (+72).

Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1971, **35**, 1363
Fujii, S. *et al.*, *CA*, 1986, **105**, 222353t

3-*O*- α -D-Glucopyranosyl-L-sorbose, 9CI

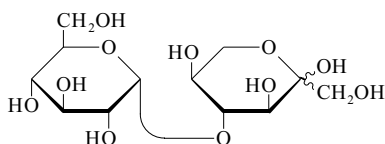
[35752-39-7]

C₁₂H₂₂O₁₁ 342.299Reducing disaccharide. $[\alpha]_D^{+69.1}$ (c, 1 in H₂O).

Phenylosazone: Mp 183-185°.

Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1971, **35**, 1363Kitahara, S. *et al.*, *J. Biochem. (Tokyo)*, 1976, **79**, 641**4-*O*- α -D-Glucopyranosyl-L-sorbose, 9CI**

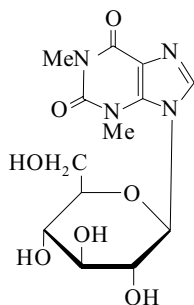
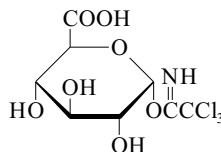
[35752-40-0]

C₁₂H₂₂O₁₁ 342.299Reducing disaccharide. $[\alpha]_D^{+81}$ (c, 1 in H₂O).

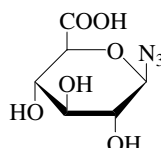
Phenylosazone: Mp 194-196°.

Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1971, **35**, 1363**9-Glucopyranosyltheophylline, 8CI**

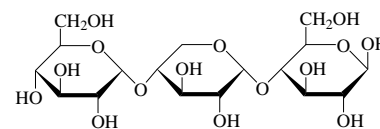
1,3-Dimethyl-9-glucopyranosylxanthine

C₁₃H₁₈N₄O₇ 342.308 **β -D-form** [13922-68-4]Mp 218-220°. $[\alpha]_D^{25}$ -42 (H₂O). λ_{\max} 266 and 238 nm (H₂O).Bühler, E. *et al.*, *Angew. Chem., Int. Ed.*, 1964, **3**, 638Bühler, E. *et al.*, *Chem. Ber.*, 1967, **100**, 492 (synth)**G-464 (Glucopyranosyltrichloroacetimidate)uronic acid**C₈H₁₀Cl₃NO₇ 338.528 **α -D-form**Tri-Ac, Me ester: Methyl (2,3,4-tri-O-acetyl- α -D-glucopyranosyltrichloroacetimidate)uronate [92420-89-8]C₁₅H₁₈Cl₃NO₁₀ 478.666Mp 106-107°. $[\alpha]_D^{+93}$ (c, 1.0 in CHCl₃).Jacquinet, J.-C. *et al.*, *Carbohydr. Res.*, 1990, **199**, 153Soliman, S.E. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2337-2340**Glucopyranosyluronic acid azide**

1-Deoxyglucopyranosyl azide uronic acid. (Glucopyranosyl azide)uronate

C₆H₉N₃O₆ 219.154 **β -D-form** [357981-14-7]Solid. $[\alpha]_D^{25}$ -22.5 (c, 1.1 in H₂O).Ying, L. *et al.*, *Carbohydr. Res.*, 2003, **338**, 835-841 (β -D-form, synth, pmr, cmr)**G-467** **β -D-Pyranose-form**Tri-Ac, Me ester: Methyl 2,3,4-tri-O-acetyl-1-bromo-1-deoxy- β -D-glucopyranuronate. Methyl (2,3,4-tri-O-acetyl- β -D-glucopyranosyl)uronate bromide C₁₃H₁₇BrO₉ 397.176 Cryst. Mp 138-140°. $[\alpha]_D^{20}$ -22 (c, 5.1 in C₆H₆).Bollenback, G.N. *et al.*, *J.A.C.S.*, 1955, **77**, 3310 (synth)Heyns, K. *et al.*, *Chem. Ber.*, 1966, **99**, 1183 (synth)Emiliozzi, R. *et al.*, *Bull. Soc. Chim. Fr.*, 1968, 738 (synth)Doherty, R.M. *et al.*, *Carbohydr. Res.*, 1983, **116**, 150 (cryst struct) **α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-xylopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI**

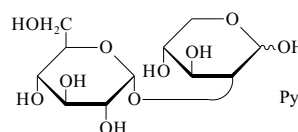
[132627-90-8]

 β -Pyranose-formC₁₇H₃₀O₁₅ 474.415Amorph. $[\alpha]_D^{25}$ +142 (c, 1.4 in H₂O). **β -Pyranose-form**

Benzyl glycoside, 2,2'',3,3',3'',4'',6,6''-octabenzyl: [132628-08-1]

C₈₀H₈₄O₁₅ 1285.535Syrup. $[\alpha]_D^{25}$ +21 (c, 1.4 in CHCl₃).Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167 (synth, β -benzyl pyr octabenzyl, pmr, cmr)**2-*O*- α -D-Glucopyranosyl-D-xylose, 9CI**

[54173-01-2]



Pyranose-form

C₁₁H₂₀O₁₀ 312.273 $[\alpha]_D^{23}$ +102.5 (c, 1.0 in H₂O).4-Me: 2-O-(4-O-Methyl- α -D-glucopyranosyl)-D-xylose

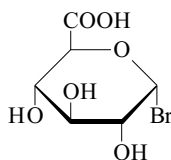
[20550-20-3]

C₁₂H₂₂O₁₀ 326.3Constit. of willow wood (*Salix viminalis*). Cryst. + 3H₂O.Mp 95-105°. $[\alpha]_D^{26}$ +114 (c, 2.0 in H₂O).

[24807-62-3]

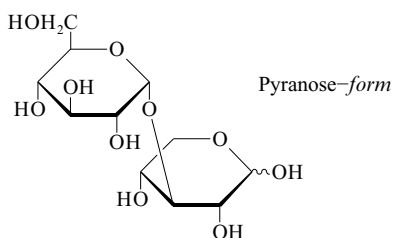
Adams, G.A. *et al.*, *Can. J. Chem.*, 1959, **37**, 29Timell, T.E. *et al.*, *Can. J. Chem.*, 1959, **37**, 893Timell, T.E. *et al.*, *J.A.C.S.*, 1959, **81**, 4989Das Gupta, P.C. *et al.*, *J.C.S.*, 1961, 5262Timell, T.E. *et al.*, *Carbohydr. Res.*, 1966, **3**, 246 (deriv)**G-469 Glucopyranosyluronic acid bromide**

(Glucopyranosyl bromide)uronate

C₆H₉BrO₆ 257.037 **α -D-Pyranose-form**Tri-Ac, Me ester: Methyl 2,3,4-tri-O-acetyl-1-bromo-1-deoxy- α -D-glucopyranuronate, 8CI. Methyl (2,3,4-tri-O-acetyl- α -D-glucopyranosyl)uronate bromide [21085-72-3]C₁₃H₁₇BrO₉ 397.176Glycosidation reagent in synth. of glucuronides. Cryst. (EtOH). Mp 106-107°. $[\alpha]_D^{25}$ +197 (c, 1 in CHCl₃).

3-*O*- α -D-Glucopyranosyl-D-xylose, 8CI

[24934-64-3]

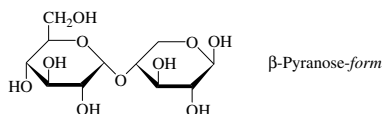


$C_{11}H_{20}O_{10}$ 312.273
 $[\alpha]_D^{20} +101.6$ (c, 1.5 in H_2O). $[\alpha]_D +87.5$ (H_2O).

Barker, S.A. *et al.*, *J.C.S.*, 1961, 3995
 Barker, S.A. *et al.*, *Nature (London)*, 1961, **189**, 138 (*synth*)
 Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 813 (*synth*)
 Kitahata, S. *et al.*, *J. Biochem. (Tokyo)*, 1976, **79**, 641

4-*O*- α -D-Glucopyranosyl-D-xylose, 9CI

[24809-09-4]



$C_{11}H_{20}O_{10}$ 312.273
 Amorph. powder. Mp 78°. $[\alpha]_D +95$ (c, 0.6 in H_2O).

 β -Pyranose-form

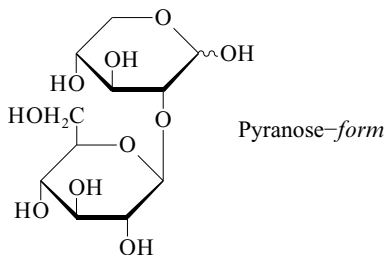
Hepta-Ac: 4-*O*-(2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl)-1,2,3-tri-*O*-acetyl- β -D-xylopyranose
 $C_{25}H_{34}O_{17}$ 606.533
 Cryst. (MeOH). Mp 174-175°. $[\alpha]_D^{25} +62$ (c, 1.6 in $CHCl_3$).

Benzyl glycoside, 2',3,3',4',6'-pentabenzyl: *Benzyl* 3-*O*-benzyl-4-*O*-(2,3,4,6-tetra-*O*-benzyl- α -D-glucopyranosyl)- β -D-xylopyranoside
 $C_{53}H_{56}O_{10}$ 853.019
 Cryst. (Et_2O /hexane). Mp 83-85°. $[\alpha]_D^{25} +12$ (c, 0.8 in $CHCl_3$).

[32352-61-7]

Putman, E.W. *et al.*, *J.A.C.S.*, 1955, **77**, 4351 (*synth*)
 Chiba, S. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 813 (*synth*)
 Kitahata, S. *et al.*, *J. Biochem. (Tokyo)*, 1976, **79**, 641
 Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167 (*benzyl gly*)

G-472

2-*O*- β -D-Glucopyranosyl-D-xylose

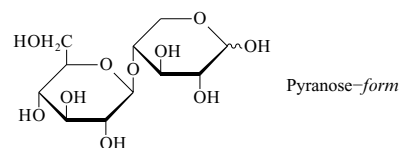
$C_{11}H_{20}O_{10}$ 312.273
 Mp 200-202°. $[\alpha]_D$ 0 (H_2O).

Me glycoside: *Methyl* 2-*O*- β -D-glycopyranosyl-D-xylopyranoside
 $C_{12}H_{22}O_{10}$ 326.3
 $[\alpha]_D^{20} +47$ (c, 0.4 in H_2O).
 Jones, J.K.N. *et al.*, *Can. J. Chem.*, 1960, **38**, 944 (*synth*)
 Bowering, W.D.S. *et al.*, *J.A.C.S.*, 1960, **82**, 2827 (*Me gly*)

G-474

4-*O*- β -D-Glucopyranosyl-D-xylose, 8CI

Securidabiose
 [16462-45-6]



$C_{11}H_{20}O_{10}$ 312.273
 Constit. of securidabiose, isol. from seeds of *Securigera securidaca*. Amorph. powder. $[\alpha]_D^{22} -27.3$ (c, 1.18 in H_2O). Rapidly resinifies in the air.

Osazone: Mp 178-179°.

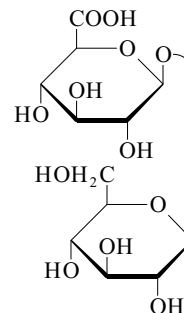
Pyranose-form [18354-18-2]

Hepta-Ac: 1,2,3-Tri-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)-D-xylopyranose
 $C_{25}H_{34}O_{17}$ 606.533
 Cryst. (Me_2CO). Mp 154-157°. $[\alpha]_D^{22} -18.2$ (c, 0.98 in $CHCl_3$).

Zatula, V.V. *et al.*, *Khim. Prir. Soedin.*, 1967, **3**, 167; *Chem. Nat. Compd. (Engl. Transl.)*, 1967, **3**, 138 (*isol*)
 Alexander, J.K. *et al.*, *Arch. Biochem. Biophys.*, 1968, **123**, 240 (*synth*)

 β -D-Glucopyranuronosyl β -D-glucopyranoside

G-477



$C_{12}H_{20}O_{12}$ 356.283
 Non-reducing disaccharide.

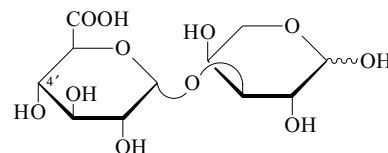
Hepta-Ac, Me ester:
 $C_{27}H_{36}O_{19}$ 664.57
 Mp 205°. $[\alpha]_D -22.5$ ($CHCl_3$).

6'-Amide:
 $C_{12}H_{21}NO_{11}$ 355.298
 Mp 230-231°. $[\alpha]_D -58.8$ (H_2O).

Helferich, B. *et al.*, *Chem. Ber.*, 1957, **90**, 2492 (*synth*)

3-*O*- α -D-Glucopyranuronosyl-L-arabinose

G-478

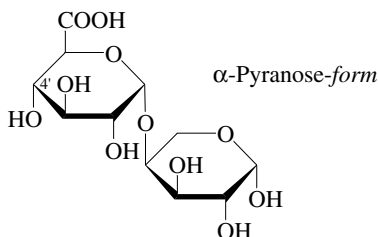


$C_{11}H_{18}O_{11}$ 326.257

*O*⁴-Me: 3-O-(4-O-Methyl- α -D-glucopyranuronosyl)-L-arabinose
 $C_{12}H_{20}O_{11}$ 340.283
 Isol. from the autohydrolysate of golden apple (*Spondias cytherea*) gum.
 $[\alpha]_D^{20} +123$ (H₂O).

Lindgren, B.O. *et al.*, *Acta Chem. Scand.*, 1957, **11**, 1365 (*isol*)

4-O- α -D-Glucopyranuronosyl-L-arabinose **G-479**



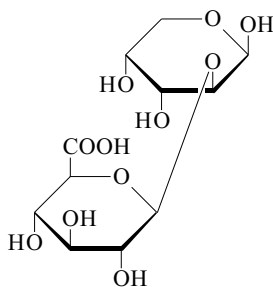
$C_{11}H_{18}O_{11}$ 326.257

4'-Me: 4-O-(4-O-Methyl- α -D-glucopyranuronosyl)-L-arabinose
 $C_{12}H_{20}O_{11}$ 340.283
 Isol. from the partial hydrolysates of lemon gum. Based on paper chromatographic evidence only, reported present in the hydrolysates of gums from several *Prunus* and *Citrus* spp.
 $[\alpha]_D^{20} +134$ (H₂O).

Andrews, P. *et al.*, *J.C.S.*, 1954, 1724 (*isol*)

Guzman, E. *et al.*, *Rev. Esp. Fisiol.*, 1960, **16**, 331

2-O- β -D-Glucopyranuronosyl-D-arabinose **G-480**



$C_{11}H_{18}O_{11}$ 326.257

β -Pyranose-form

*NH*₄ salt: [68070-17-7]

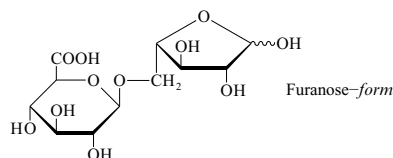
$C_{11}H_{21}NO_{11}$ 343.287

Cryst. + H₂O. $[\alpha]_D^{20} -78$ (c, 0.7 in H₂O).

Sarfati, R.S. *et al.*, *Carbohydr. Res.*, 1978, **65**, 11 (*synth*)

5-O- β -D-Glucopyranuronosyl-L-arabinose, 9CI

[43179-88-0]



$C_{11}H_{18}O_{11}$ 326.257

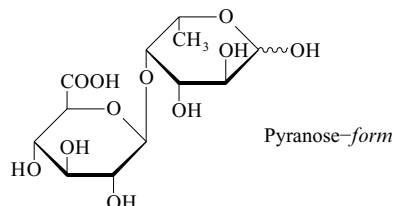
Reducing disaccharide. Isol. from the partial acid hydrolysate from *Plantago major*.

$[\alpha]_D^{20} +148.8$ (c, 1 in H₂O).

Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 989 (*isol*)

4-O- β -D-Glucopyranuronosyl-L-fucose **G-482**

[16749-74-9]



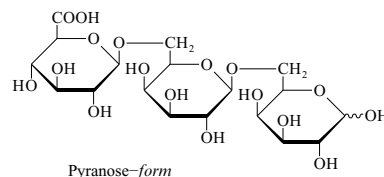
$C_{12}H_{20}O_{11}$ 340.283

Reducing disaccharide. Isol. from the partial acid hydrolysate of tragacanthic acid, the major polysaccharide component of tragacanth gum.
 $[\alpha]_D^{20} -18$ (c, 1.5 in H₂O).

Aspinall, G.O. *et al.*, *J.C.S. (C)*, 1967, 1086 (*isol*)

β -D-Glucopyranuronosyl-(1 → 6)- β -D-galactopyranosyl-(1 → 6)-D-galactose, 9CI **G-483**

[7101-24-8]



$C_{18}H_{30}O_{17}$ 518.425

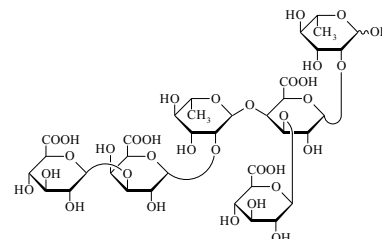
Constituent of the gum exudate of *Chorisia speciosa* (Bombacaceae).

$[\alpha]_D^{20} -30$ (H₂O).

DiFabio, J.L. *et al.*, *Carbohydr. Res.*, 1982, **99**, 41

β -D-Glucopyranuronosyl-(1 → 3)- α -D-galactopyranuronosyl-(1 → 2)- α -L-rhamnopyranosyl-(1 → 4)-[β -D-glucopyranuronosyl-(1 → 3)]- α -D-galactopyranuronosyl-(1 → 2)-L-rhamnopyranose **G-484**

[71562-84-0]

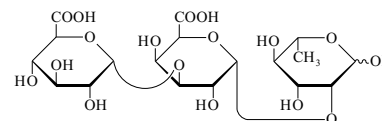


$C_{36}H_{54}O_{33}$ 1014.803

Isol. from the hydrolysate of the mucilage in the roots of *Abelmoschus manihot* (aibika), *Althaea officinalis* (marsh mallow) and from the inner bark of *Hydrangea paniculata*. Powder.
 Mp 172-176° dec. $[\alpha]_D^{20} +81.4$ (c, 1.4 in H₂O).

Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 1357; 2910; 1979, **27**, 1651; 1980, **28**, 824

α -D-Glucopyranuronosyl-(1 → 3)- α -D-galactopyranuronosyl-(1 → 2)-L-rhamnose **G-485**



Pyranose-form

$C_{18}H_{28}O_{17}$ 516.409

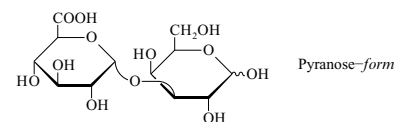
Isol. from the partial acid hydrolysate of Panniculatan, a mucilaginous polysaccharide obt. from the inner bark of *Hydrangea paniculata*.
 $[\alpha]_D^{20} +79.4$ (c, 1.2 in H₂O).

[65562-08-5]

Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 2910 (*isol*)

3-O- α -D-Glucopyranuronosyl-D-galactose, 9CI **G-486**

[96688-25-4]



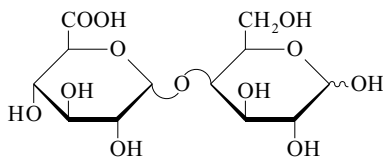
$C_{12}H_{20}O_{12}$ 356.283

Isol. from the partial acid hydrolysates of ketha (*Feronia elephantum*) gum and mesquite (*Prosopis juliflora*) gum (probably present in the original polymer as a 4-Me deriv.).

Me glycoside, hexa-Me ether, Me ester: Bp_{0.2} 175°.

White, E.V. *et al.*, *J.A.C.S.*, 1947, **69**, 2264
Mathur, G.P. *et al.*, *J. Sci. Ind. Res., Sect. B*, 1954, **13**, 452 (*isol*)

4-O- α -D-Glucopyranuronosyl-D-galactose G-487
[14402-41-6]



C₁₂H₂₀O₁₂ 356.283

Isol. from partial acid hydrolysates of *Acacia karoo*, neem (*Melia azadirachta*), *Terminalia tomentosa* gums and from tragacanthic acid, the major polysaccharide component of gum tragacanth.
[α]_D +87 (c, 1.4 in H₂O). [α]_D²⁰ +58 (c, 1.2 in H₂O).

Ba salt: [α]_D +110 (+67) (H₂O).

Me glycoside, hexa-Me, Me ester:

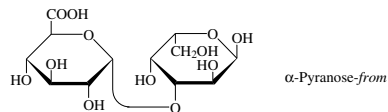
C₂₀H₃₆O₁₂ 468.497

Bp_{0.75} 195-225° (bath) (*lit.* gives a pressure range).

Mukherjee, S.H. *et al.*, *J.A.C.S.*, 1955, **77**, 422
Charlson, A.J. *et al.*, *J.C.S.*, 1955, 1428 (*isol*)
Aspinall, G.O. *et al.*, *J.C.S.(C)*, 1967, 1086 (*isol*)

Audichya, J.D. *et al.*, *Indian J. Chem., Sect. B*, 1976, **14**, 601 (*isol*)

3-O- α -D-Glucopyranuronosyl-L-galactose G-488
[62069-78-7]



C₁₂H₂₀O₁₂ 356.283

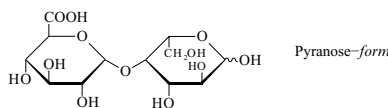
Isol. from unicellular red alga *Rhodella reticulata* and of the polysaccharide of hornwort *Anthoceros caucasicus*. No phys. props. reported.

Jaseja, M. *et al.*, *Carbohydr. Res.*, 1989, **186**, 313 (*pmr, cmr*)

Geresh, S. *et al.*, *Carbohydr. Res.*, 1990, **208**, 301 (*Rhodella reticulata* constit, *isol, struct*)

Popper, Z.A. *et al.*, *Phytochemistry*, 2003, **64**, 325-335 (*Anthoceros caucasicus* constit, *isol, pmr, cmr*)

4-O- α -D-Glucopyranuronosyl-L-galactose, 9CI G-489
[50692-51-8]



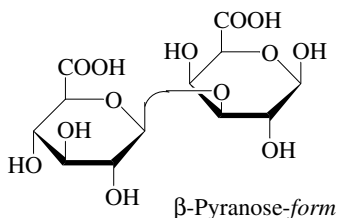
C₁₂H₂₀O₁₂ 356.283

Isol. from the partial acid hydrolysate of the polysaccharide from the red alga *Anatheca dentata*.

[α]_D²⁰ +24 (c, 0.5 in H₂O).

Nunn, J.R. *et al.*, *Carbohydr. Res.*, 1973, **29**, 281

3-O- β -D-Glucopyranuronosyl-D-galactose, 9CI, 8CI G-490
[14446-49-2]



C₁₂H₂₀O₁₂ 356.283

Constit. of Chondroitin sulfate, C-125 and *isol.* from the partial acid hydrolysate of the capsular polysaccharides of *Escherichia coli* K12, *Klebsiella* K type 20 and from *Terminalia tomentosa* gum.
[α]_D³⁰ +11.8 (c, 1.7 in H₂O).

6'-Me ester: [16741-26-7]

Syrup. [α]_D²⁵ -5.5 (c, 0.55 in H₂O).

β-Pyranose-form

Benzyl glycoside: [16741-24-5]

Prisms (EtOH). Mp 160-162° dec. [α]_D²⁵ -41.3 (c, 1.0 in H₂O).

Benzyl glycoside, Me ester: [16741-23-4]

C₂₀H₂₈O₁₂ 460.434
Cryst. (EtOH). Mp 205-207°. [α]_D²² -38.5 (c, 1.0 in H₂O).

Benzyl glycoside, hexa-Ac, Me ester:

C₃₂H₄₀O₁₈ 712.657
Mp 154-155°. [α]_D³⁰ -43.3 (c, 0.9 in CHCl₃).

[4343-50-4, 16741-22-3]

Roden, L. *et al.*, *Biochim. Biophys. Acta*, 1966, **127**, 252 (*isol*)

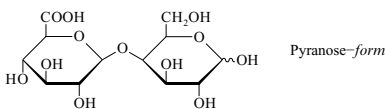
Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1967, **4**, 312 (*synth*)

Choy, Y.M. *et al.*, *J. Bacteriol.*, 1972, **112**, 635 (*occur*)

Audichya, T.D. *et al.*, *Indian J. Chem., Sect. B*, 1976, **14**, 601

Rohrmann, K. *et al.*, *Eur. J. Biochem.*, 1985, **148**, 463 (*occur*)

4-O- β -D-Glucopyranuronosyl-D-galactose G-491



C₁₂H₂₀O₁₂ 356.283

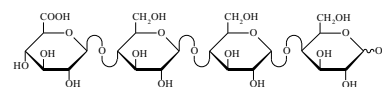
Isol. from the partial acid hydrolysate of the extracellular polysaccharide from *Xanthomonas stewartii*.
[α]_D +15 (H₂O).

[29388-50-9]

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1961, **39**, 2282 (*isol*)

Bajpai, K.S. *et al.*, *Carbohydr. Res.*, 1970, **14**, 259 (*ir*)

β-D-Glucopyranuronosyl-(1 → 4)-β-D-glucopyranosyl-(1 → 4)-α-D-glucopyranosyl-(1 → 4)-D-galactose G-492



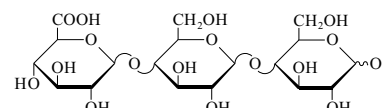
Pyranose-form

C₂₄H₄₀O₂₂ 680.567

Isol. from the partial acid hydrolysate of *Pneumococcus* type VIII capsular polysaccharide.
[α]_D +65 (H₂O).

Jones, J.K.N. *et al.*, *J.A.C.S.*, 1957, **79**, 2787

β-D-Glucopyranuronosyl-(1 → 4)-β-D-glucopyranosyl-(1 → 4)-D-glucose G-493



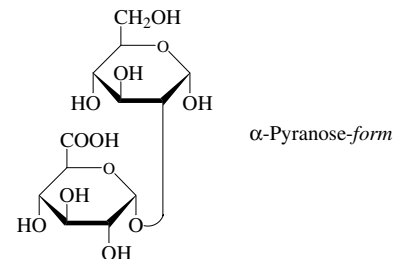
Pyranose-form

C₁₈H₃₀O₁₇ 518.425

Isol. from the partial acid hydrolysate of *Pneumococcus* type VIII capsular polysaccharide.
[α]_D +12 (H₂O).

Jones, J.K.N. *et al.*, *J.A.C.S.*, 1957, **79**, 2787

2-O- α -D-Glucopyranuronosyl-D-glucose, 9CI G-494
Aldobiouronic acid I
[77881-19-7]



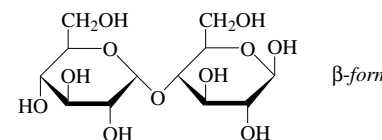
α-Pyranose-form

C₁₂H₂₀O₁₂ 356.283

Reducing disaccharide. Oxidn. product of a *Leuconostoc mesenteroides* dextran.
[α]_D²⁵ +65 (H₂O).

Bhatnagar, R. *et al.*, *Carbohydr. Res.*, 1981, **89**, 346

4-O- α -D-Glucopyranuronosyl-D-glucose G-495
Maltobiouronic acid, 8CI



β-form

C₁₂H₂₀O₁₂ 356.283

Cryst. + 1H₂O. $[\alpha]_D^{25} +116$ (c, 2.52 in H₂O).

Na salt: Mp 106-109° dec.

Hepta-Ac, Me ester:

C₂₇H₃₆O₁₉ 664.57

Mp 197-198°. $[\alpha]_D^{25} +77$ (c, 0.54 in CHCl₃).

β -form

Benzyl glycoside, hexa-Ac, Me ester:

C₃₂H₄₀O₁₈ 712.657

Mp 164-165°. $[\alpha]_D^{25} +33.8$ (c, 2.04 in CHCl₃).

Dutton, G.G.S. *et al.*, *Can. J. Chem.*, 1964, **42**, 1110 (synth)

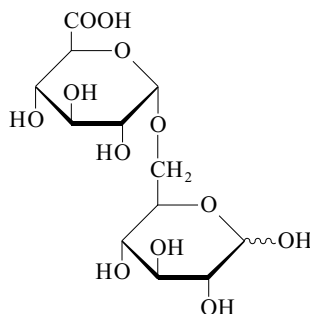
Japan. Pat., 1967, 67 7 372, (Chugai Pharm); CA, **67**, 82374v (synth)

Roy, N. *et al.*, *J.O.C.*, 1968, **33**, 1559 (synth)

Govorchenko, V.I. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1972, **8**, 257 (synth)

6-O- α -D-Glucopyranuronosyl- D-glucose, 9CI

Aldobiouronic acid II. Isomalturonic acid [25520-30-3]



C₁₂H₂₀O₁₂ 356.283

Reducing disaccharide. Oxidn. product of a dextran synth. by *Leuconostoc mesenteroides*. $[\alpha]_D^{25} +57$ (H₂O).

α -Pyranose-form

Me glycoside, hexabenzyl, Me ester:

[75336-67-3]

C₃₆H₆₀O₁₂ 925.083

$[\alpha]_D^{25} +43.8$ (c, 1 in CHCl₃).

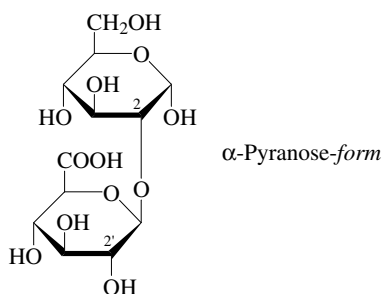
Schmidt, R.R. *et al.*, *Tet. Lett.*, 1980, **21**, 1421 (synth)

Bhatnagar, R. *et al.*, *Carbohydr. Res.*, 1981, **89**, 346

2-O- β -D-Glucopyranuronosyl- D-glucose

Sophorobiuronic acid

[20550-22-5]



C₁₂H₂₀O₁₂ 356.283
 $[\alpha]_D^{25} -1.6$ (c, 2.0 in H₂O).

α -Pyranose-form

Me glycoside, 3-Me, 2',3',4'-tri-Ac, 6'-Me ester: [64951-60-6]

C₂₁H₃₂O₁₅ 524.475

Cryst. (Me₂CO). Mp 197-198°. $[\alpha]_D^{22} +26$ (c, 1 in CHCl₃).

Me glycoside, 3,4,6-tri-Me, 2',3',4'-tri-Ac, 6'-Me ester: [64951-61-7]

C₂₃H₃₆O₁₅ 552.528

Cryst. (Et₂O). Mp 112.5-114.5°. $[\alpha]_D^{22} +26$ (c, 1 in CHCl₃).

Me glycoside, 3,4,6,2',3',4'-hexa-Me, 6'-Me ester: [64650-01-7]

C₂₀H₃₆O₁₂ 468.497

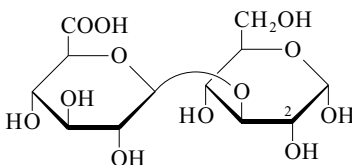
Cryst. (hexane). Mp 70.5-72°. $[\alpha]_D^{23} +45$ (c, 1 in CHCl₃).

Nirmolendu, R. *et al.*, *Carbohydr. Res.*, 1968, **6**, 475; 488 (synth)

Kovac, P. *et al.*, *Carbohydr. Res.*, 1977, **58**, 327 (synth)

Alfoldi, J. *et al.*, *Chem. Zvesti.*, 1984, **34**, 679; CA, 1981, **94**, 121835a (cmr)

3-O- β -D-Glucopyranuronosyl- D-glucose



C₁₂H₂₀O₁₂ 356.283

α -Pyranose-form

Me glycoside, 2,4,6-tri-Me, 2',3',4'-tri-Ac, Me ester: [64951-62-8]

C₂₃H₃₆O₁₅ 552.528

Cryst. (Et₂O). Mp 110.5-112.5°. $[\alpha]_D^{21} +46$ (CHCl₃).

Me glycoside, 2,4,6,2',3',4'-hexa-Me, 6'-Me ester: [64850-66-4]

C₂₀H₃₆O₁₂ 468.497

Cryst. (Et₂O). Mp 110-111.5°. $[\alpha]_D^{22} +66$ (c, 1.0 in CHCl₃).

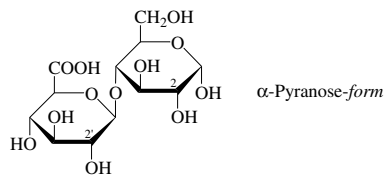
Kovac, P. *et al.*, *Carbohydr. Res.*, 1977, **58**, 327 (synth)

Alfoldi, J. *et al.*, *Chem. Zvesti.*, 1980, **34**, 679; CA, 1981, **94**, 121835a (cmr)

4-O- β -D-Glucopyranuronosyl- D-glucose, 9CI, 8CI

Cellobiuronic acid

[5551-59-7]



C₁₂H₂₀O₁₂ 356.283

Reducing disaccharide. Isol. from the partial acid hydrolysates of *Pneumococcus* type III and type VIII capsular polysaccharides. Constit. of an extracellular polysaccharide of some *Rhizobium* spp.

Mp 189°. $[\alpha]_D^{25} +7.6$ (H₂O). $[\alpha]_D^{25} +14.7$ (H₂O).

Hepta-Ac:

C₂₆H₃₄O₁₉ 650.543

Mp 239°. $[\alpha]_D^{25} +32.9$ (H₂O). $[\alpha]_D^{25} +52.9$ (CHCl₃).

Hepta-Ac, Me ester:

C₂₇H₃₆O₁₉ 664.57

Mp 251-254°. $[\alpha]_D^{25} +42$ (CHCl₃).

2,2',3,3',4',6-Hexa-Me, Me ester:

C₁₉H₃₄O₁₂ 454.47

Mp 114°. $[\alpha]_D^{25} -32$ (H₂O).

α -Pyranose-form

Me glycoside, 2,3,6-tri-Me, 2',3',4'-tri-Ac, Me ester: [64951-63-9]

C₂₃H₃₆O₁₅ 552.528

Cryst. (Et₂O). Mp 119.5-120.5°. $[\alpha]_D^{22} +58$ (c, 1 in CHCl₃).

Me glycoside, 2,3,6,2',3',4'-hexa-Me, Me ester: [64850-67-5]

C₂₀H₃₆O₁₂ 468.497

Cryst. (diisopropyl ether). Mp 77.5-79.5°. $[\alpha]_D^{22} +68$ (c, 1 in CHCl₃).

β -Pyranose-form

Me glycoside, hexa-Me:

C₁₉H₃₄O₁₂ 454.47

Mp 113°. $[\alpha]_D^{25} -32$ (H₂O).

Me glycoside, hexa-Me, Me ester: Mp 171-172°. $[\alpha]_D^{25} -32$ (CHCl₃).

Goebel, W.F. *et al.*, *J. Biol. Chem.*, 1935, **110**, 391 (isol)

Hotchkiss, R.D. *et al.*, *J. Biol. Chem.*, 1937, **121**, 195 (β -Me gly)

Jones, J.K.N. *et al.*, *J.A.C.S.*, 1957, **79**, 2787 (isol)

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1960, **14**, 1051 (synth)

Jayme, G. *et al.*, *Chem. Ber.*, 1960, **95**, 356 (synth)

Soemme, R. *et al.*, *Carbohydr. Res.*, 1975, **43**, 145 (isol)

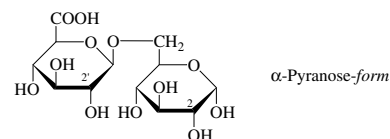
Kovac, P. *et al.*, *Carbohydr. Res.*, 1977, **58**, 327 (α -Me gly)

Mopper, K. *et al.*, *Anal. Biochem.*, 1978, **86**, 597 (chromatog)

Alfoldi, J. *et al.*, *Chem. Zvesti.*, 1980, **34**, 679; CA, 1981, **94**, 121835a (cmr, α -Me gly)

6-O- β -D-Glucopyranuronosyl- D-glucose

Gentiobiuronic acid



C₁₂H₂₀O₁₂ 356.283

α -Pyranose-form

Hepta-Ac, Me ester:

C₂₇H₃₆O₁₉ 664.57

Mp 201-202°. $[\alpha]_D^{25} +48.4$ (CHCl₃).

Me glycoside, 2,3,4-tri-Me, 2',3',4'-tri-Ac, Me ester: [64951-64-0]

C₂₃H₃₆O₁₅ 552.528

Cryst. (Et₂O). Mp 124-126°. $[\alpha]_D^{24} +46$ (c, 1 in CHCl₃).

Me glycoside, hexa-Me, Me ester: [64850-68-6]

$C_{20}H_{36}O_{12}$ 468.497
Cryst. (Et₂O/diisopropyl ether). Mp
108-109°. $[\alpha]_D^{22} +53$ (c, 1 in CHCl₃).

 β -Pyranose-form

Hepta-Ac, Me ester: [15811-31-1]
Mp 200-202° (198-199°). $[\alpha]_D^{23} -8.5$
(c, 2.3 in CHCl₃). $[\alpha]_D^{20} -11$ (c, 0.1 in
CHCl₃).

Me glycoside, hexa-Ac, Me ester: [78103-
20-5]
Cryst. (EtOH). Mp 174-175°. $[\alpha]_D -23.8$
(c, 3.2 in CHCl₃).

Me glycoside, hexa-Me: [78103-21-6]
 $C_{19}H_{34}O_{12}$ 454.47
Cryst. (Et₂O-petrol). Mp 123-124°.

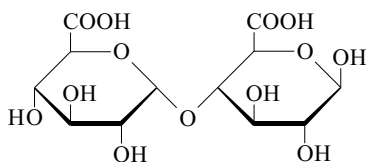
Me glycoside, hexa-Me, Me ester: [78112-
05-7]
Cryst. (Et₂O/petrol). Mp 174-175°. $[\alpha]_D$
-44 (c, 0.85 in CHCl₃).

Helferich, B. *et al.*, *Chem. Ber.*, 1957, **90**, 2492
(*synth*)

Kovac, P. *et al.*, *Carbohydr. Res.*, 1977, **58**, 327
(α -Me gly)

Aspinall, G.O. *et al.*, *Can. J. Chem.*, 1981, **59**,
935 (β -Me gly)

Betaneli, V.I. *et al.*, *Carbohydr. Res.*, 1981, **94**,
C1 (β -pyranose)

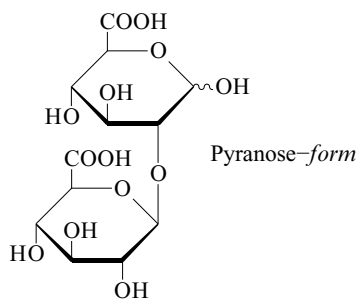
**4-O- α -D-Glucopyranuronosyl- G-501
D-glucuronic acid**

$C_{12}H_{18}O_{13}$ 370.266

 β -Pyranose-form

Cyclohexyl glycoside, 2,3,2',3',4'-penta-Ac:
 $C_{28}H_{38}O_{18}$ 662.597
Mp 185-187°. $[\alpha]_D +47$ (CHCl₃).

Lythgoe, B. *et al.*, *J.C.S.*, 1950, 1983

**2-O- β -D-Glucopyranuronosyl- G-502
D-glucuronic acid, 9CI
[102865-75-8]**

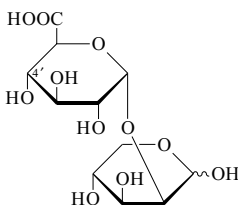
$C_{12}H_{18}O_{13}$ 370.266

Ba salt: $[\alpha]_D -5.2$ (H₂O).

Me glycoside, 6,6'-di-Me ester:
 $C_{15}H_{24}O_{13}$ 412.347
Mp 223°. $[\alpha]_D +26.5$ (H₂O).

Voss, W. *et al.*, *Ber.*, 1937, **70**, 132 (*Ba salt*)
Lythgoe, B. *et al.*, *J.C.S.*, 1950, 1983 (*Me gly*)

Marsh, C.A. *et al.*, *Biochem. J.*, 1956, **63**, 9

**2-O- α -D-Glucopyranuronosyl- G-503
D-lyxose, 9CI, 8CI**

Pyranose-form

$C_{11}H_{18}O_{11}$ 326.257

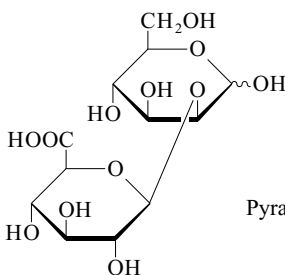
*4'-O-Me: 2-O-(4-O-Methyl- α -D-glucopyr-
anuronosyl)-D-lyxose*
[15408-01-2]

$C_{12}H_{20}O_{11}$ 340.283
Isol. from partial acid hydrolysates of
maritime pine (*Pinus pinaster*), birch
(*Betula verrucosa*) and scandinavian
spruce (*Picea abies*) hemicelluloses.
 $[\alpha]_D +60$ (H₂O).

Roudier, A. *et al.*, *Bull. Soc. Chim. Fr.*, 1960, **28**,
2074 (*isol*)

Samuelson, O. *et al.*, *CA*, 1966, **66**, 47471g

Carlsson, B. *et al.*, *CA*, 1970, **73**, 26781n
Johansson, M.H. *et al.*, *Wood Sci. Technol.*,
1977, **11**, 251; *CA*, **88**, 154551j

**2-O- β -D-Glucopyranuronosyl- G-504
D-mannose, 8CI
[4539-91-7]**

Pyranose-form

$C_{12}H_{20}O_{12}$ 356.283

Present as a structural unit in plant gums,
e.g. damson (*Prunus insitia*), cherry
(*Prunus cerasus*), *Anogeissus laticifolia*
(gum ghatti), *Anogeissus schimperi*, *Hakea*
acicularis, *Virgilia oroboides*, *Albizia*
zygia, and *Asparagus filicinus*. Also isol.
from the partial acid hydrolysates of the
extracellular polysaccharides of
Xanthomonas oryzae and *Xanthomonas*
campestris.
 $[\alpha]_D -32$ (H₂O).

Ba salt: $[\alpha]_D -30$ (H₂O).

Me glycoside, hexa-Me, 6'-Me ester:
[70051-79-5]

$C_{20}H_{36}O_{12}$ 468.497
Mp 141°. $[\alpha]_D -22$ (CHCl₃).

[52554-63-9, 52554-64-0]

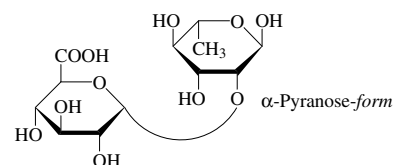
Stephen, A.M. *et al.*, *J.C.S.*, 1956, 4487

Drummond, D.W. *et al.*, *J.C.S.*, 1961, 3908
(*isol*)

Smith, F. *et al.*, *J.C.S.*, 1961, 4892 (*isol, Me gly*)

Sloneker, J.H. *et al.*, *Can. J. Chem.*, 1962, **40**,
2066 (*isol*)

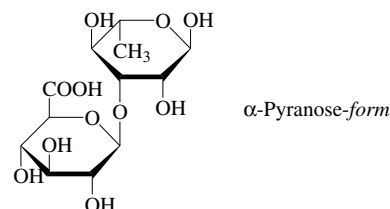
Misaki, A. *et al.*, *Can. J. Chem.*, 1962, **40**, 2204
(*isol*)

**2-O- α -D-Glucopyranuronosyl- G-505
L-rhamnose
[56586-63-1]**

$C_{12}H_{20}O_{11}$ 340.283

Isol. from the gum exudate of *Brachychi-
ton diversifolium* (*Sterculia caudata*).
 $[\alpha]_D^{18} +63$ (c, 1.5 in H₂O).

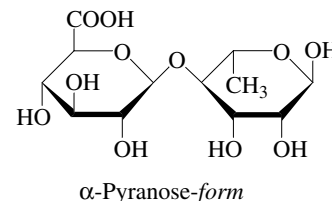
Hirst, E.L. *et al.*, *J.C.S.*, 1958, 1942-1950 (*isol*)

**3-O- β -D-Glucopyranuronosyl- G-506
L-rhamnose**

$C_{12}H_{20}O_{11}$ 340.283

Isol. from the K54 antigen polysaccharide
of *Escherichia coli* O6:K54:H10.
 $[\alpha]_D^{25} -41$ (c, 0.06 in H₂O).

Hofmann, P. *et al.*, *Carbohydr. Res.*, 1985, **139**,
261-271 (*isol, pmr, cmr*)

**4-O- β -D-Glucopyranuronosyl- G-507
L-rhamnose
[67109-66-4]**

$C_{12}H_{20}O_{11}$ 340.283

Reducing disaccharide. Isol. from partial
acid hydrolysate from the seaweeds
Acrosiphonia centralis and *Ulva lactuca*.
Constit. of the repeating unit of the
capsular antigen of *Klebsiella* K70 and
capsular antigen of *E. coli* O6:K54:H10.
 $[\alpha]_D -41$ (-30) (H₂O).

 α -Pyranose-form

*Me glycoside, 2,3-O-isopropylidene, tri-Ac,
Me ester*: [79291-99-9]

$C_{23}H_{34}O_{14}$ 534.513
Powder. $[\alpha]_D^{23} -33.5$ (c, 2.1 in CHCl₃).

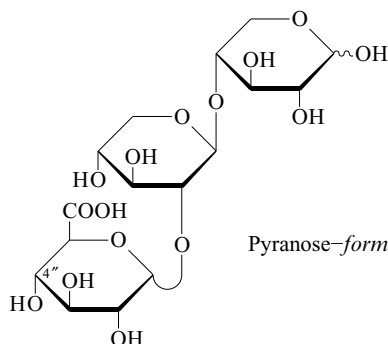
[84366-53-0]

O'Donnell, J.J. *et al.*, *J.C.S.*, 1959, 2168 (*isol*)

McKinnell, P.J. *et al.*, *J.C.S.*, 1962, 2082

Dutton, G.G.S. *et al.*, *Carbohydr. Res.*, 1978, **62**, 321 (*isol*, *pmr*)
 Betanelli, V.I. *et al.*, *Carbohydr. Res.*, 1981, **94**, C1 (*deriv*, *cmr*)
 Hofmann, P. *et al.*, *Carbohydr. Res.*, 1985, **139**, 261 (*isol*, *cmr*, *pmr*)

α -D-Glucopyranuronosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose **G-508**



$C_{16}H_{26}O_{15}$ 458.372

O^{4'}-Me: 4-O-Methyl- α -D-glucopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose

[10365-86-3]

$C_{17}H_{28}O_{15}$ 472.399

Isol. from the partial acid hydrolysates of white spruce (*Picea glauca*), western hemlock (*Tsuga heterophylla*), jute fibre, maritime pine (*Pinus pinaster*), aspen (*Populus tremuloides*) hemicelluloses. Prob. also from white elm (*Ulmus americana*), milkweed (*Asclepias syriaca*) floss and oat hull hemicelluloses. Cryst. + 3H₂O.

Mp 180-187°. [α]_D +59 (H₂O).

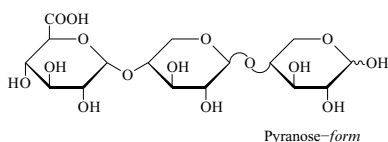
Hamilton, J.K. *et al.*, *J.A.C.S.*, 1957, **79**, 6464 (*isol*)

Roudier, A.J. *et al.*, *Bull. Soc. Chim. Fr.*, 1960, **28**, 2074 (*isol*)

Srivastava, H.C. *et al.*, *J.O.C.*, 1961, **26**, 3958 (*isol*)

Timell, T.E. *et al.*, *J.O.C.*, 1962, **27**, 1804

α -D-Glucopyranuronosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose **G-509**



$C_{16}H_{26}O_{15}$ 458.372

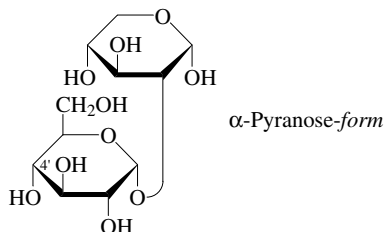
Isol. from the partial acid hydrolysate of corn-hull hemicellulose. [α]_D +38 (H₂O).

Whistler, R.L. *et al.*, *J.A.C.S.*, 1955, **77**, 2212 (*isol*)

2-O- α -D-Glucopyranuronosyl-D-xylose, 9CI, 8CI

Aldobiouronic acid D₃

[17676-51-6]



$C_{11}H_{18}O_{11}$ 326.257

Isol. from partial acid hydrolysates of gum chagual (*Puya* spp.) and the hemicelluloses from corn hulls, wheat straw, wheat bran and maritime pine (*Pinus pinaster*). Amorph. [α]_D²⁰ +101 (88) (H₂O).

Me glycoside, Me ester:

$C_{13}H_{22}O_{11}$ 354.31

Syrup. [α]_D²² +98.5 (c, 3.9 in MeOH).

Me glycoside, penta-Ac, Me ester:

$C_{23}H_{32}O_{16}$ 564.496

Mp 178°. [α]_D²² +163 (c, 1.0 in CHCl₃).

4'-Me: 2-O-(4-O-Methyl- α -D-glucopyranuronosyl)-D-xylose, 9CI, 8CI

[7382-52-7]

Important aldobiouronic acid that occurs as a structural unit of polysaccharides. Widely distributed in plant materials, found mainly in the woody tissues. Amorph. powder. [α]_D²⁰ +108 (c, 1.0 in H₂O). Opt. rotns. reported vary between +70 and +110.

4'-Me, Me ester:

$C_{13}H_{22}O_{11}$ 354.31

Cryst. (EtOH). Mp 174-176°.

Me glycoside, 4'-Me, Me ester: [36205-30-8]

$C_{14}H_{24}O_{11}$ 368.337

Fluffy powder. [α]_D²⁰ +77 (c, 1.5 in H₂O).

[1693-81-8, 29412-02-0]

Jones, J.K.N. *et al.*, *J.C.S.*, 1952, 2750; 3389;

1957, 669; 1958, 1059 (*isol*, 4'-Me)

Dutton, G.G.S. *et al.*, *J.A.C.S.*, 1956, **78**, 2505; 1958, **80**, 4420 (*isol*)

Montgomery, R. *et al.*, *J.A.C.S.*, 1956, **78**, 2837; 6169 (*isol*, penta-Ac Me gly Me ester)

Adams, G.A. *et al.*, *J.A.C.S.*, 1956, **78**, 2842 (*isol*)

Hamilton, J.K. *et al.*, *J.A.C.S.*, 1957, **79**, 443 (*isol*, Me gly Me ester)

Timell, T.E. *et al.*, *Can. J. Chem.*, 1959, **37**, 827 (*isol*, 4'-Me, 4'-Me Me gly Me ester)

Roudier, A.J. *et al.*, *Bull. Soc. Chim. Fr.*, 1960, **28**, 2074 (*isol*)

Pazur, J.H. *et al.*, *The Carbohydrates*, 1970, 120 (4'-Me, rev)

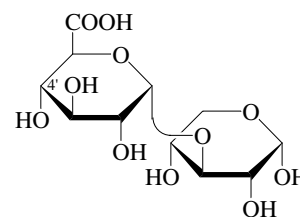
Maekawa, E. *et al.*, *Agric. Biol. Chem.*, 1973, **37**, 2073 (*isol*)

Kováč, P. *et al.*, *Carbohydr. Res.*, 1981, **93**, 144 (4'-Me, 4'-Me Me ester, *cmr*)

G-510

3-O- α -D-Glucopyranuronosyl-D-xylose, 9CI

[85269-45-0]



$C_{11}H_{18}O_{11}$ 326.257

Isol. from partial acid hydrolysates of sunflower (*Helianthus annuus*) head hemicellulose, from pear cell-wall xylan, from various wheat-straw preparations and from corn hulls. [α]_D +18 (H₂O).

Pyranose-form

4'-Me: 3-O-(4-O-Methyl- α -D-glucopyranuronosyl)-D-xylose, 9CI

[66634-88-6]

$C_{12}H_{20}O_{11}$ 340.283

Minor component of *Pinus radiata* hemicellulose, may be present in trace amts. in other hemicelluloses. [α]_D +65 (H₂O).

Hexa-Me:

$C_{17}H_{30}O_{11}$ 410.417

[α]_D +12.4 (H₂O).

Chanda, S.K. *et al.*, *J.C.S.*, 1951, 1240

Adams, G.A. *et al.*, *Can. J. Chem.*, 1952, **30**, 698; 1953, **31**, 134 (*isol*)

Bishop, C.T. *et al.*, *Can. J. Chem.*, 1953, **31**, 134; 1955, **33**, 1521 (*isol*)

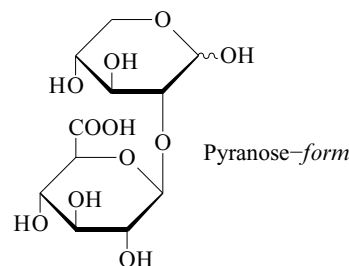
Aspinall, G.O. *et al.*, *J.C.S.*, 1954, 1731 (*isol*)

Brasch, D.J. *et al.*, *Tappi*, 1956, **39**, 581; 768 (*isol*, *deriv*)

Bailey, R.W. *et al.*, *Oligosaccharides*, Pergamon, 1965, **4**, 137 (*occur*, *deriv*)

Yoshida, S. *et al.*, *Agric. Biol. Chem.*, 1990, **54**, 1319 (*isol*)

2-O- β -D-Glucopyranuronosyl-D-xylose **G-512**



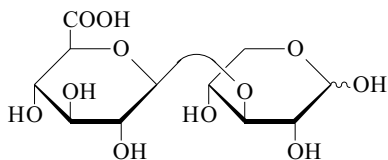
$C_{11}H_{18}O_{11}$ 326.257

Reducing disaccharide. [α]_D +5.7 (H₂O).

Bowering, W.D.S. *et al.*, *J.A.C.S.*, 1960, **82**, 2827 (*synth*)

**3-O-β-D-Glucopyranuronosyl-
D-xylose**

G-513



Pyranose-form

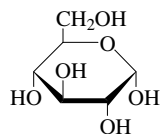
C₁₁H₁₈O₁₁ 326.257Reducing disaccharide. [α]_D +3.7 (in H₂O).**Pyranose-form**

1,2,2',3',4,4'-Hexa-Me:

C₁₇H₃₀O₁₁ 410.417[α]_D +4.8 (in CHCl₃).Bishop, C.T. et al., *Can. J. Chem.*, 1953, **31**, 134 (synth)**Glucose, 9CI, 8CI**

G-514

Dextrose. Grape sugar. Blood sugar. Corn sugar. Cerelease



α-D-Pyranose-form

C₆H₁₂O₆ 180.157

For septanose form see Glucoseptanose, G-527. An aq. soln. contains 37.3% α-pyr, 62.6% β-pyr, 0.1% β-fur and 0.002% aldehyde.

D-form [50-99-7]

[5996-10-1]

Most common sugar, abundant in free and combined form. Occurs free in blood, cerebrospinal fluid, lymph, urine of diabetic subjects, fruits, honey and plant juices. Major component of many oligosaccharides and polysaccharides. Occurs in sucrose combined with fructose. Comly. available by the acid hydrol. of potato starch (Europe) and cornstarch (USA). Fluid and nutrient replenisher. Food additive: nutritive sweetener, humectant. Tablet diluent. pK_{a1} 12.34 (25°). Sweet taste, sweetness = 0.46 × sucrose.

- Reacts violently with Na₂O₂ plus KNO₃, and other strong oxidants. LD₅₀ (rat, orl) 25800 mg/kg. Human and exp. reprod. and teratogenic effects (large doses). LZ6600000

Phenylhydrazone: [3713-25-5]

C₁₂H₁₈N₂O₅ 270.285Three forms obtainable. Mp 115° Mp 142° Mp 160°. [α]_D -47 (H₂O). [α]_D -2. [α]_D -87.

4-Bromophenylhydrazone: [18841-82-2]

Mp 143-146°.

1-Phosphate: See Glucose 1-dihydrogen phosphate, G-517

2-Phosphate: See Glucose 2-dihydrogen phosphate, G-518

3-Phosphate: See Glucose 3-dihydrogen phosphate, G-519

4-Phosphate: See Glucose 4-dihydrogen phosphate, G-520

6-Phosphate: See Glucose 6-dihydrogen phosphate, G-521

Di-Me dithioacetal: [16732-26-6]

C₈H₁₈O₅S₂ 258.359Mp 161°. [α]_D²⁴ -20.8 (1M NaOH).

Di-Et dithioacetal: See Glucose diethyl dithioacetal, G-516

Dibenzyl dithioacetal: See Glucose dibenzyl dithioacetal, G-515

Penta-Ac: 2,3,4,5,6-Penta-O-acetyl-D-glucose. FEMA 2524

[3891-59-6]

C₁₆H₂₂O₁₁ 390.343

Commercial product usually a mixture of 90% β-D and 10% α-D. Bitter flavour.

Mp 114° (α-anomer) Mp 135°

(β-anomer). [α]_D²⁰ +102 (c, 1 in CHCl₃)(α-anomer). [α]_D²⁰ +4.4 (c, 1 in CHCl₃)

(β-anomer).

Penta-Ac, oxime:

C₁₆H₂₃NO₁₁ 405.358Mp 99°. [α]_D²⁴ +57.2 (CHCl₃).

Penta-Ac, di-Me dithioacetal: [74281-92-8]

C₁₈H₂₈O₁₀S₂ 468.545Mp 83°. [α]_D²⁰ +38.7 (C₂H₂Cl₄).

2-Butanoyl: 2-O-Butanoyl-D-glucose

[108535-21-3]

C₁₀H₁₈O₇ 250.248

No phys. props. reported.

3-Butanoyl: 3-O-Butanoyl-D-glucose

[108535-18-8]

C₁₀H₁₈O₇ 250.248[α]_D²⁰ +56.7 (c, 2.5 in H₂O).

6-Butanoyl: 6-O-Butanoyl-D-glucose

[104069-89-8]

C₁₀H₁₈O₇ 250.248

Mp 112-114°.

2,6-Dibutanoyl: 2,6-Di-O-butanoyl-D-glucose

[108535-13-3]

C₁₄H₂₄O₈ 320.339Mp 82-85°. [α]_D²⁰ +50.8 (c, 4.0 in H₂O).

3,6-Dibutanoyl: 3,6-Di-O-butanoyl-D-glucose

[108535-12-2]

C₁₄H₂₄O₈ 320.339Mp 85-89°. [α]_D²⁰ +56 (c, 1.0 in H₂O).

Pentabenzoyl: 2,3,4,5,6-Penta-O-benzoyl-D-glucose

[96810-52-5]

C₄₁H₃₂O₁₁ 700.697Mp 71-81°. [α]_D¹⁷ +37.1 (EtOH).

4,6-Isopropylidene: 4,6-O-Isopropylidene-D-glucose

[53691-70-6]

C₉H₁₆O₆ 220.222Cryst. (Me₂CO). Mp 174-175°. [α]_D²³ +36 → -6.7 (c, 2 in H₂O). Anomeric mixt., α:β approx. 3:1.

2,3,4,6-Di-O-isopropylidene: 2,3,4,6-Di-O-isopropylidene-D-glucopyranose

C₁₂H₂₀O₆ 260.286[α]_D -32.3 (c, 1.0 in CHCl₃).

2-Me: See 2-O-Methylglucose, M-255

3-Me: See 3-O-Methylglucose, M-256

4-Me: See 4-O-Methylglucose, M-257

6-Me: See 6-O-Methylglucose, M-259

2,3-Di-Me: See 2,3-Di-O-methylglucose, D-738

2,4-Di-Me: See 2,4-Di-O-methylglucose, D-739

2,6-Di-Me: See 2,6-Di-O-methylglucose, D-740

3,4-Di-Me: See 3,4-Di-O-methylglucose, D-741

3,6-Di-Me: See 3,6-Di-O-methylglucose, D-743

4,6-Di-Me: See 4,6-Di-O-methylglucose, D-744

2,3,4-Tri-Me: See 2,3,4-Tri-O-methylglucose, T-184

2,3,6-Tri-Me: See 2,3,6-Tri-O-methylglucose, T-186

2,4,6-Tri-Me: See 2,4,6-Tri-O-methylglucose, T-187

3,4,6-Tri-Me: See 3,4,6-Tri-O-methylglucose, T-188

2,3,4,6-Tetra-Me: See 2,3,4,6-Tetra-O-methylglucose, T-43

2,3,5,6-Tetra-Me: See 2,3,5,6-Tetra-O-methylglucose, T-44

2,3,4,5,6-Penta-Me: See 2,3,4,5,6-Penta-O-methylglucose, P-21

2-Benzyl: See 2-O-Benzylglucose, B-24

Phenylosazone: See Hexose phenylosazones, H-90

1,2:3,4:5,6-Triisopropylidene: 1,2:3,4:5,6-Tri-O-isopropylidene-D-glucose

C₁₅H₂₆O₇ 318.366

Obt. as a mixt. of C-1 epimers and characterised as the 1-Ac.

Pentabenzyl: 1,2,3,4,6-Penta-O-benzyl-β-D-glucopyranose

C₃₄H₃₆O₅ 524.655Mp 75-78°. [α]_D -9.1 (CHCl₃).**D-Pyranose-form**

Manuf. on a large scale from starch. Below 50°, α-D-glucose hydrate is the stable cryst. form while above 50° the anhyd. form is obt. At higher temp. β-D-glucose is formed.

6-Ac: See 6-O-Acetylglucose, A-19

4,6-O-Benzylidene: See 4,6-O-Benzylidene-glucopyranose, B-26

2,3,4,6-Tetrabenzyl: See 2,3,4,6-Tetra-O-benzylglucose, T-22

4,6-O-Ethylidene: [13224-99-2]

C₈H₁₄O₆ 206.195Cryst. (Me₂CO/EtOH). Mp 179-182°Mp 166-170°. [α]_D²⁵ +47.3 (2 min.)→ -0.2 (4h) (c, 1.79 in H₂O).**α-D-Pyranose-form** [492-62-6]

[26655-34-5, 31178-74-2]

Cryst. (hot EtOH or H₂O). Mp 146° (anhyd.) Mp 83° (monohyd.). [α]_D²⁰ +111.2 → +52.5 (c, 10 in H₂O).

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-α-D-glucopyranose

[6207-76-7]

C₁₄H₂₀O₁₀ 348.306Mp 113°. [α]_D +142 → +80.3 (CHCl₃).

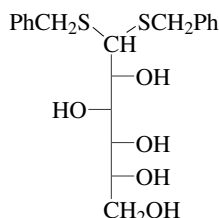
Penta-Ac: See 1,2,3,4,6-Penta-O-acetylglucose, P-17

- 1-Benzoyl, 2,3,4,6-tetra-Ac:** 2,3,4,6-Tetra-O-acetyl-1-O-benzoyl- α -D-glucopyranose [56225-80-0]
C₂₁H₂₄O₁₁ 452.414
Mp 60-63°. [α]_D¹⁸ +113.5 (CHCl₃).
- 2,3-Dibenzoyl, 1,4,6-tri-Ac:** 1,4,6-Tri-O-acetyl-2,3-di-O-benzoyl- α -D-glucopyranose
C₂₆H₂₆O₁₁ 514.485
Mp 167-168°. [α]_D +130.7 (CHCl₃).
- Pentabenzoyl:** 1,2,3,4,6-Penta-O-benzoyl- α -D-glucopyranose [22415-91-4]
C₄₁H₃₂O₁₁ 700.697
Mp 187°. [α]_D²⁰ +138.5 (CHCl₃).
- 1,2-O-Benzylidene:** See 1,2-O-Benzylidene-neglucose, B-27
- 1,2-Methyl orthoacetate:** See 1,2-O-(1-Methoxyethylidene)glucopyranose, M-142
- Me glycoside:** See Methyl α -D-glucopyranoside, M-190
- Me glycoside, 4,6-O-benzylidene:** See Methyl 4,6-O-benzylidene- α -D-glucopyranoside, M-164
- Et glycoside:** See Ethyl glucoside, E-25
- Allyl glycoside:** See Allyl glucopyranoside, A-94
- Benzyl glycoside:** See Benzyl glucopyranoside, B-16
- Ph glycoside:** See Phenyl glucopyranoside, P-58
- β -D-Pyranose-form** [492-61-5]
[28905-12-6, 31258-47-6]
Cryst. (EtOH aq., Py at 0° or hot AcOH aq.). Mp 148-150° (anhyd.). [α]_D²⁰ +17.5 → +52.5 (c, 10 in H₂O).
- 1,2,3,4-Tetra-Ac:** 1,2,3,4-Tetra-O-acetyl- β -D-glucopyranose [13100-46-4]
C₁₄H₂₀O₁₀ 348.306
Cryst. (Et₂O). Mp 128-129°. [α]_D^{16,5} +9.6 (c, 2 in CHCl₃).
- 1,2,3,6-Tetra-Ac:** 1,2,3,6-Tetra-O-acetyl- β -D-glucopyranose [27086-15-3]
C₁₄H₂₀O₁₀ 348.306
Cryst. (C₆H₆). Mp 131-133° (127-127.5°). [α]_D^{21,5} -33.5 (c, 2 in CHCl₃).
- 1,2,4,6-Tetra-Ac:** 1,2,4,6-Tetra-O-acetyl- β -D-glucopyranose [27086-14-2]
C₁₄H₂₀O₁₀ 348.306
Cryst. (CH₂Cl₂/Et₂O). Mp 126-127°. [α]_D¹⁶ -13 (c, 2 in CHCl₃).
- 1,3,4,6-Tetra-Ac:** 1,3,4,6-Tetra-O-acetyl- β -D-glucopyranose [13036-15-2]
C₁₄H₂₀O₁₀ 348.306
Cryst. (Et₂O). Mp 136-137°. [α]_D²⁸ +35.5 (c, 2 in CHCl₃).
- 2,3,4,6-Tetra-Ac:** 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranose [3947-62-4]
C₁₄H₂₀O₁₀ 348.306
Mp 120°. [α]_D +2.2 → +82.7 (CHCl₃).
- Penta-Ac:** See 1,2,3,4,6-Penta-O-acetylglucose, P-17
- 1,6-Bis-O-(3-methylbutanoyl):** 1,6-Diisopentanoylglucose [152502-35-7]
C₁₆H₂₈O₈ 348.392
Constit. of *Centaurea aspera* var. *subinermis*. Viscous gum. [α]_D²¹ -45 (c, 0.14 in CHCl₃).
- 1-Benzoyl:** See 1-O-Benzoylglucose, B-8
- 6-Benzoyl, 1,2,3,4-tetra-Ac:** 1,2,3,4-Tetra-O-acetyl-6-O-benzoyl- β -D-glucopyranose [71208-20-3]
C₂₁H₂₄O₁₁ 452.414
Mp 132°. [α]_D¹ +32.9 (CHCl₃).
- Pentabenzoyl:** 1,2,3,4,6-Penta-O-benzoyl- β -D-glucopyranose [14679-57-3]
C₄₁H₃₂O₁₁ 700.697
Mp 157°. [α]_D²⁰ +24 (CHCl₃).
- 2-O-(4-Hydroxybenzoyl), 1-O-(4-hydroxy-3-methoxybenzoyl):** 2-(4-Hydroxybenzoyl)-1-vanilloyl- β -D-glucopyranose [208107-60-2]
C₂₁H₂₂O₁₁ 450.398
Constit. of the dried fruit of *Vitex rotundifolia*. Amorph. powder. λ_{\max} 217 (sh); 225 (sh); 261; 299 (sh) (MeOH).
- 4-Tosyl, 1,2,3,6-tetra-Ac:** 1,2,3,6-Tetra-O-acetyl-4-O-tosyl- β -D-glucopyranose
C₂₁H₂₆O₁₂S 502.495
Mp 117-118°. [α]_D¹⁸ -19.3 (CHCl₃).
- 6-Tosyl, 1,2,3,4-tetra-Ac:** 1,2,3,4-Tetra-O-acetyl-6-O-tosyl- β -D-glucopyranose [6619-10-9]
C₂₁H₂₆O₁₂S 502.495
Mp 203-205°. [α]_D²⁰ +23.9 (CHCl₃).
- Me glycoside:** See Methyl β -D-glucopyranoside, M-191
- Me glycoside, 4,6-O-benzylidene:** See Methyl 4,6-O-benzylidene- α -D-glucopyranoside, M-164
- Et glycoside:** See Ethyl glucoside, E-25
- Allyl glycoside:** See Allyl glucopyranoside, A-94
- Benzyl glycoside:** See Benzyl glucopyranoside, B-16
- Ph glycoside:** See Phenyl glucopyranoside, P-58
- D-Furanose-form**
- 6-Ac:** See 6-O-Acetylglucose, A-19
- Et glycoside:** See Ethyl glucoside, E-25
- α -D-Furanose-form** [36468-84-5]
- 1,2,3,5,6-Penta-O-propanoyl:** 1,2,3,5,6-Penta-O-propanoyl- α -D-glucofuranose
C₂₁H₃₂O₁₁ 460.477
Comly. available glucofuranosylating agent.
- 1,2-O-Isopropylidene:** See 1,2-O-Isopropylideneglucofuranose, I-66
- 1,2:5,6-Di-O-isopropylidene:** See 1,2:5,6-Di-O-isopropylideneglucofuranose, D-717
- 1,2-O-Cyclohexylidene:** See 1,2-O-Cyclohexylideneglucofuranose, C-190
- 1,2-O-Cyclohexylidene, 3-benzyl:** See 3-O-Benzyl-1,2-O-cyclohexylideneglucofuranose, B-23
- 1,2-O-Isopropylidene, 3,5-O-benzylidene:** See 3,5-O-Benzylidene-1,2-O-isopropylideneglucofuranose, B-28
- 1,2-O-Benzylidene:** See 1,2-O-Benzylideneglucose, B-27
- Me glycoside:** See Methyl glucofuranoside, M-189
- Et glycoside:** See Ethyl glucoside, E-25
- β -D-Furanose-form** [30412-16-9]
- 2,3,5,6-Tetrabenzoyl, 1-Ac:** 1-O-Acetyl-2,3,5,6-tetra-O-benzoyl- β -D-glucofuranose [89825-82-1]
C₃₆H₃₀O₁₁ 638.626
Mp 130.5°. [α]_D -29.5 (c, 1 in CHCl₃).
- Me glycoside:** See Methyl glucofuranoside, M-189
- Et glycoside:** See Ethyl glucoside, E-25
- L-form** [921-60-8]
Isol. from flowers of *Grindelia robusta*. Mp 146-147° (141-143°). [α]_D²⁰ -96 → -51.4 (H₂O).
► LZ6610000
Benzylphenylhydrazone: Mp 163-164°. [α]_D -48 (Py).
- α -L-Pyranose-form** [492-66-0]
Me glycoside: Methyl α -L-glucopyranoside [36191-11-4]
C₇H₁₄O₆ 194.184
Mp 165-166°. [α]_D²⁰ -157 (H₂O).
- DL-form** [58367-01-4]
Isol. from jute leaves. Mp 113°. [815-92-9, 8013-17-0, 39281-65-7, 41846-85-9, 41846-86-0, 53691-70-6, 53691-71-7]
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Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 1943, 208; 211
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Sowden, J.C. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 132-135 (synth, L-form)
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Hough, L. et al., *Rodd's Chem. Carbon Compd. (2nd edn.)*, 1967, **1F**, 237 (occur, isol)
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Schaffer, R. et al., *The Carbohydrates*, (Pigman, W. et al., Ed.), Academic Press, 2nd Ed., 1972, **1A**, 86 (occur)
Jeffrey, G.A. et al., *Carbohydr. Res.*, 1973, **28**, 233-241 (cryst struct, α -D-form)
Wolfrom, M.L. et al., *Carbohydr. Res.*, 1974, **35**, 87-96 (4,6-isopropylidene, D-pyr)
Wander, J.D. et al., *Adv. Carbohydr. Chem. Biochem.*, 1976, **32**, 15-123 (dithioacetals, rev)
Vignon, M.R. et al., *Tet. Lett.*, 1976, 2445-2448 (cmr)
Mathlouthi, M. et al., *Carbohydr. Res.*, 1980, **81**, 203-212; 213-223 (Raman)
Bock, K. et al., *Annu. Rep. NMR Spectrosc.*, (Webb, G.A., ed.), Acad Press, London and New York, 1982, **13**, 37; 41 (pmr, cmr)

Curatolo, W. *et al.*, *Carbohydr. Res.*, 1983, **112**, 297-300 (pmr)
 D'Accorso, N.B. *et al.*, *Carbohydr. Res.*, 1983, **124**, 177-184 (cmr, pentabenzoyl- α -D-pyr, pentabenzoyl- β -D-pyr)
 Decoster, E. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 325-341 (β -D-pyr pentabenzyl)
 Ko, S.Y. *et al.*, *Science (Washington, D.C.)*, 1983, **220**, 949-951 (total synth, L-form)
 Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15-68 (equilib, rev)
 Szarek, W.A. *et al.*, *Can. J. Chem.*, 1984, **62**, 671-674 (synth, L-form)
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 Mikamo, M. *et al.*, *Carbohydr. Res.*, 1989, **191**, 150-153 (synth, bibl, 2,3,4,6-tetra-Ac)
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 Fernandez, I. *et al.*, *Phytochemistry*, 1993, **34**, 733-736 (diisopentanoylglucose)
 Mostad, A. *et al.*, *Acta Chem. Scand.*, 1994, **48**, 276-278 (cryst struct, α -form)
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 Okuyama, E. *et al.*, *Chem. Pharm. Bull.*, 1998, **46**, 655-662 (*Vitex rotundifolia* constit, isol, uv, pmr, cmr)
 Gómez, A.M. *et al.*, *Carbohydr. Res.*, 1999, **320**, 138-141 (2,3,4,6-diisopropylidene)
 Hajkó, J. *et al.*, *Carbohydr. Res.*, 1999, **321**, 116-120 (L-form, !synth)
 Takeuchi, M. *et al.*, *Synthesis*, 1999, 351-354 (D-form, synth)
 Ravindranathan, S. *et al.*, *J.A.C.S.*, 2000, **122**, 1102-1215 (cmr, conformn)
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Glucose dibenzyl dithioacetal

Glucose dibenzyl mercaptal



$C_{20}H_{26}O_5S_2$ 410.554

D-form [6936-67-0]

Cryst. (EtOH). Mp 139°. $[\alpha]_D^{15}$ -98.4 (Py).

Penta-Ac:

$C_{30}H_{36}O_{10}S_2$ 620.74

Mp 64°. $[\alpha]_D^{22}$ +31.8 ($C_2H_5Cl_4$).

2,4-Benzylidene: 2,4-O-Benzylidene-D-glucose dibenzyl dithioacetal

$C_{27}H_{30}O_5S_2$ 498.663

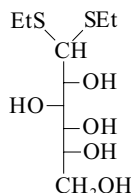
Needles (EtOH or C_6H_6). Mp 149-150° (136°). $[\alpha]_D^{22}$ +5.2 (c, 0.99 in dioxan).

Pacsu, E. *et al.*, *Ber.*, 1924, **57**, 849-853 (D-form, synth)

Zinner, H. *et al.*, *Chem. Ber.*, 1960, **93**, 1597-1608 (D-form, 2,4-benzylidene)

Glucose diethyl dithioacetal

Glucose diethylmercaptal, 9CI, 8CI [1941-52-2]



$C_{10}H_{22}O_5S_2$ 286.413

D-form

Mp 127-128°. $[\alpha]_D$ -29.8 (H_2O).

Penta-Ac: 2,3,4,5,6-Penta-O-acetyl-D-glucose diethyl dithioacetal

[4984-72-9]

$C_{20}H_{32}O_{10}S_2$ 496.599

Mp 46-48°. $[\alpha]_D$ +10.9 ($CHCl_3$).

6-Benzoyl: 6-O-Benzoyl-D-glucose diethyl dithioacetal

[60405-33-6]

$C_{17}H_{26}O_6S_2$ 390.521

Cryst. (EtOAc). Mp 112-113°. $[\alpha]_D^{18}$ +44.2 (c, 2.2 in $CHCl_3$).

6-Benzoyl, 2,3,4,5-di-O-isopropylidene: 6-O-Benzoyl-2,3,4,5-di-O-isopropylidene-D-glucose diethyl dithioacetal

$C_{23}H_{34}O_6S_2$ 470.65

Cryst. (EtOH). Mp 70°. $[\alpha]_D^{20}$ -51.5 (c, 2.3 in $CHCl_3$).

3,5,6-Tribenzoyl: 3,5,6-Tri-O-benzoyl-D-glucose diethyl dithioacetal

[39727-32-7]

$C_{31}H_{34}O_8S_2$ 598.737

$[\alpha]_D$ -17 (c, 1.7 in $CHCl_3$).

3,4,5,6-Tetrabenzoyl: 3,4,5,6-Tetra-O-benzoyl-D-glucose diethyl dithioacetal

G-515

$C_{38}H_{38}O_9S_2$ 702.845

Cryst. ($CHCl_3$ /EtOH). Mp 166-168°. $[\alpha]_D$ +23.5 (c, 1.5 in $CHCl_3$).

2,3-O-Isopropylidene: 2,3-O-Isopropylidene-D-glucose diethyl dithioacetal

[114857-36-2]

$C_{13}H_{26}O_5S_2$ 326.477

Needles (CH_2Cl_2 /petrol). Mp 38-40°.

$[\alpha]_D^{24}$ -40 (c, 2.11 in $CHCl_3$).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-D-glucose diethyl dithioacetal

[114857-35-1]

$C_{13}H_{26}O_5S_2$ 326.477

Syrup. $[\alpha]_D^{23}$ +29.7 (c, 2.05 in $CHCl_3$).

5,6-O-Isopropylidene: 5,6-O-Isopropylidene-D-glucose diethyl dithioacetal

[4258-03-1]

$C_{13}H_{26}O_5S_2$ 326.477

Needles (CH_2Cl_2 /petrol). Mp 72-73°.

$[\alpha]_D$ -11 (c, 1.01 in MeOH).

2,3,4,6-Di-O-isopropylidene: 2,3,4,6-Di-O-isopropylidene-D-glucose diethyl dithioacetal

[114857-37-3]

$C_{16}H_{30}O_5S_2$ 366.542

Syrup. $[\alpha]_D^{24}$ -53.2 (c, 1.165 in $CHCl_3$).

2,3,5,6-Di-O-isopropylidene: 2,3,5,6-Di-O-isopropylidene-D-glucose diethyl dithioacetal

[4258-02-0]

$C_{16}H_{30}O_5S_2$ 366.542

Syrup. $[\alpha]_D^{24}$ -51.2 (c, 2.54 in MeOH).

2,3,5,6-Di-O-isopropylidene, 4-Ac: 4-O-Acetyl-2,3,5,6-di-O-isopropylidene-D-glucose diethyl dithioacetal

[114952-80-6]

$C_{18}H_{32}O_6S_2$ 408.579

Syrup. $[\alpha]_D^{24}$ -34.8 (c, 1.05 in $CHCl_3$).

3,4,5,6-Di-O-isopropylidene: 3,4,5,6-Di-O-isopropylidene-D-glucose diethyl dithioacetal

[4435-02-3]

$C_{16}H_{30}O_5S_2$ 366.542

Syrup. $[\alpha]_D^{23}$ -10 (c, 1.025 in MeOH).

4,6-O-Benzylidene(R-): 4,6-O-Benzylidene-D-glucose diethyl dithioacetal

[106450-94-6]

$C_{17}H_{26}O_5S_2$ 374.521

Cryst. Mp 114-115°. $[\alpha]_D^{20}$ -9 (c, 2.09 in $CHCl_3$).

5,6-O-Benzylidene(R-): 5,6(R)-O-Benzylidene-D-glucose diethyl dithioacetal

[106450-88-8]

$C_{17}H_{26}O_5S_2$ 374.521

Flakes. Mp 108-109°. $[\alpha]_D^{24}$ +28 (c, 4.0 in $CHCl_3$).

5,6-O-Benzylidene(S-): 5,6(S)-O-Benzylidene-D-glucose diethyl dithioacetal

[106450-87-7]

$C_{17}H_{26}O_5S_2$ 374.521

Needles. Mp 91-92°. $[\alpha]_D^{24}$ +65 (c, 4.0 in $CHCl_3$).

6-Trityl: 6-O-Trityl-D-glucose diethyl dithioacetal

$C_{29}H_{36}O_5S_2$ 528.732

Solid. Mp 65-66°. $[\alpha]_D$ +25 (c, 1.2 in $CHCl_3$).

6-Trityl, 2,3,4,5-tetra-Me: 2,3,4,5-Tetra-O-methyl-6-O-trityl-D-glucose dimethyl dithioacetal

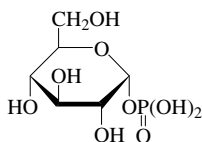
$C_{33}H_{44}O_5S_2$ 584.84

Oil. $[\alpha]_D$ -7 (c, 1.2 in $CHCl_3$).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 276D (ir)
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 445C (nmr)
 Bolliger, H.R. *et al.*, *Helv. Chim. Acta*, 1951, **34**, 1671 (*D*-tetraabenzoyl)
 Bolliger, H.R. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 186 (*D*-tetraabenzoyl)
 Wolfm, M.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 427 (*D*-form, synth, *D*-penta-Ac)
 Bethell, G.S. *et al.*, *J.C.S. Perkin 1*, 1972, 2873 (*D*-tribenzoyl)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1974, **36**, 75 (ms)
 Wander, J.D. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1976, **32**, 15 (rev)
 Ng, C.J. *et al.*, *Methods Carbohydr. Chem.*, 1976, **7**, 7 (*D*-benzoyl, *D*-benzoyl diisopropylidene)
 Grindley, T.B. *et al.*, *Can. J. Chem.*, 1986, **64**, 2388; 2397 (*D*-benzylidene derivs)
 Grindley, T.B. *et al.*, *Carbohydr. Res.*, 1987, **167**, 105 (*D*-isopropylidene derivs)
 Molina Pinilla, I. *et al.*, *Carbohydr. Res.*, 2003, **338**, 549-555 (*D*-trityl derivs)

Glucose 1-dihydrogen phosphate G-517

Glucose-1-phosphate. Cori ester



α -D-Pyranose-form

$C_6H_{13}O_9P$ 260.137

D-form [59-56-3]

Found widely in both plants and animals. A precursor of starch in plants and of glycogen in animals.
 $[\alpha]_D^{25} +120$ (H₂O). pK_{a1} 1.11; pK_{a2} 6.13 (30°).

α -D-Pyranose-form

Ba salt: $[\alpha]_D^{25} +75$ (c, 1.2 in H₂O). Forms a trihydrate.

Di-K salt: [29732-59-0]
 [5996-14-5] $[\alpha]_D^{20} +78$ (c, 4.0 in H₂O). Forms a dihydrate.

Brucine salt: $[\alpha]_D +0.5$ (H₂O).

α -L-Pyranose-form

Ba salt: $[\alpha]_D -73.2$ (c, 1.0 in H₂O).

Di-K salt: $[\alpha]_D -78.2$ (c, 1.0 in H₂O).

Cori, C.F. *et al.*, *J. Biol. Chem.*, 1937, **121**, 465 (isol)

Wolfm, M.L. *et al.*, *J.A.C.S.*, 1942, **64**, 23 (config)

Beevers, C.A. *et al.*, *Acta Cryst.*, 1965, **18**, 232 (cryst struct)

Ho, C. *et al.*, *Biochemistry*, 1969, **8**, 2074 (nmr)

MacDonald, D.L. *et al.*, *The Carbohydrates*, Academic Press, 2nd Ed., 1972, **1A**, 253 (rev)

Volkova, L.V. *et al.*, *Carbohydr. Res.*, 1979, **32**, 165

Salam, M.A. *et al.*, *Carbohydr. Res.*, 1981, **90**, 83

Sugawara, Y. *et al.*, *Acta Cryst. C*, 1984, **40**, 389 (cryst struct)

Narendra, N. *et al.*, *Acta Cryst. C*, 1984, **40**, 1338 (cryst struct)

Glucose 2-dihydrogen phosphate G-518

Glucose-2-phosphate

$C_6H_{13}O_9P$ 260.137

D-form

Di-K salt: $[\alpha]_D +15$ (H₂O).

Farrar, K.R. *et al.*, *J.C.S.*, 1949, 3131

MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (rev)

Glucose 3-dihydrogen phosphate, 9CI, 8CI G-519

Glucose-3-phosphate

$C_6H_{13}O_9P$ 260.137

D-form [20701-41-1]

$[\alpha]_D +39.5$ (H₂O). pK_{a1} 0.84; pK_{a2} 5.67.

Ba salt: $[\alpha]_D +26.5$ (H₂O).

Brucine salt: $[\alpha]_D -14.5$ (Py aq.).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1930, **89**, 479 (synth)

Tabata, S. *et al.*, *CA*, 1972, **76**, 26622y

MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (rev)

Glucose 4-dihydrogen phosphate G-520

Glucose-4-phosphate

$C_6H_{13}O_9P$ 260.137

D-form

Brucine salt: $[\alpha]_D -45.3$ (Py).

Raymond, A.L. *et al.*, *J. Biol. Chem.*, 1936, **113**, 375

MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (rev)

Glucose 6-dihydrogen phosphate, 9CI, 8CI G-521

Glucose-6-phosphate. Robison ester

$C_6H_{13}O_9P$ 260.137

D-form [56-73-5]

[299-31-0, 15209-11-7]

Constit. of resting muscle and of the crude mixt. of hexose phosphates obt. by yeast fermentation.

Mp 204-207° dec. (as Na salt). $[\alpha]_D +35.1$ (H₂O). pK_{a1} 1.5; pK_{a2} 6.22 (20°).

► LZ7160000

Ba salt: [5996-16-7]

[58823-95-3] $[\alpha]_D^{24} +17.9$ (H₂O).

Di-K salt: [5996-17-8]

$[\alpha]_D^{24} +21.2$ (c, 1.3 in H₂O).

[54010-71-8]

Robison, R. *et al.*, *Biochem. J.*, 1931, **25**, 323 (isol)

Biochem. Prep., 1952, **2**, 39 (synth)

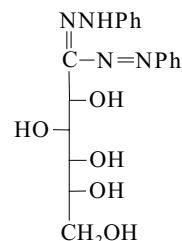
MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (rev)

Harvey, D.J. *et al.*, *J. Chromatogr.*, 1973, **76**, 51 (glc, ms)

Lis, T. *et al.*, *Carbohydr. Res.*, 1985, **135**, 187 (cryst struct)

Merck Index, 13th edn., 2001, No. 4475 (rev)

Glucose diphenylformazan G-522



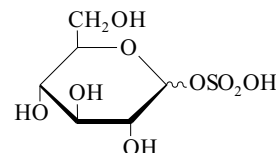
$C_{18}H_{22}N_4O_5$ 374.396

D-form

Mp 177-178°.

Mester, L. *et al.*, *J.A.C.S.*, 1956, **78**, 1403

Glucose 1-sulfate G-523



$C_6H_{12}O_9S$ 260.221

D-form

2,3,4,6-Tetra-O-Ac:

$C_{14}H_{20}O_{13}S$ 428.37

Mp 112-114° (as Py salt).

Penney, C.L. *et al.*, *Carbohydr. Res.*, 1981, **93**, 241

Glucose 2-sulfate G-524

$C_6H_{12}O_9S$ 260.221

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177 (cmr)

Penney, C.L. *et al.*, *Carbohydr. Res.*, 1981, **93**, 241

Glucose 3-sulfate G-525

$C_6H_{12}O_9S$ 260.221

D-form

1,2:5,6-Di-O-isopropylidene:

$C_{12}H_{20}O_9S$ 340.351

Obt. as Na salt. $[\alpha]_D$ 0 (c, 2 in H₂O).

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177 (cmr)

Penney, C.L. *et al.*, *Carbohydr. Res.*, 1981, **93**, 241

Glucose 4-sulfate G-526

$C_6H_{12}O_9S$ 260.221

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177 (cmr)

Penney, C.L. *et al.*, *Carbohydr. Res.*, 1981, **93**, 241

Glucose 6-sulfate G-527

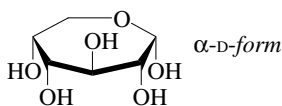
$C_6H_{12}O_9S$ 260.221

Archbald, P.J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 177 (cmr)

Penney, C.L. *et al.*, *Carbohydr. Res.*, 1981, **93**, 241

Glucoseptanose

G-528

 α -D-form $C_6H_{12}O_6$ 180.157 α -D-form [41847-09-0]1,2-O-Isopropylidene: 1,2-O-Isopropylidene- α -D-glucoseptanose [26775-23-5] $C_9H_{16}O_6$ 220.222Mp 168-169°. $[\alpha]_D^{22}$ -55 (c, 1.09 in $CHCl_3$).

1,2-O-Isopropylidene, 3,4,5-tri-Ac: [55726-91-5]

 $C_{15}H_{22}O_9$ 346.333Mp 123-124°. $[\alpha]_D^{22}$ -25.3 (c, 0.9 in $CHCl_3$).1,2-O-Isopropylidene, 3,4,5-tribenzoyl: 3,4,5-Tri-O-benzoyl-1,2-O-isopropylidene- α -D-glucoseptanose [55726-92-6] $C_{30}H_{28}O_9$ 532.546Mp 136-137°. $[\alpha]_D^{22}$ -211 (c, 0.88 in $CHCl_3$).1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene- α -D-glucoseptanose [26775-21-3] $C_{12}H_{20}O_6$ 260.286Mp 146°. $[\alpha]_D^{22}$ -61.3 (c, 1.2 in $CHCl_3$).1,2:3,4-Di-O-isopropylidene, 5-Ac: 5-O-Acetyl-1,2:3,4-di-O-isopropylidene- α -D-glucoseptanose [26775-24-6] $C_{14}H_{22}O_7$ 302.324Mp 150-151°. $[\alpha]_D^{22}$ -83.7 (c, 1.0 in $CHCl_3$).1,2:3,4-Di-O-isopropylidene, 5-benzoyl: 5-O-Benzoyl-1,2:3,4-di-O-isopropylidene- α -D-glucoseptanose [55726-84-6] $C_{19}H_{24}O_7$ 364.394Mp 154-155°. $[\alpha]_D^{22}$ -123.8 (c, 1.1 in $CHCl_3$).

1,2:3,4-Di-O-isopropylidene, 5-(chloroacetyl): [28642-33-3]

Mp 117-118°. $[\alpha]_D^{22}$ -83.4 (c, 1.0 in $CHCl_3$).

1,2:3,4-Di-O-isopropylidene, 5-p-nitrobenzoyl: [55726-85-7]

Mp 205-206°. $[\alpha]_D^{22}$ -119.3 (c, 1.1 in $CHCl_3$).1,2:3,4-Di-O-isopropylidene, 5-mesyl: 1,2:3,4-Di-O-isopropylidene-5-O-mesyl- α -D-glucoseptanose [55726-87-9] $C_{13}H_{22}O_8S$ 338.378Mp 125-126°. $[\alpha]_D^{22}$ -68.9 (c, 0.86 in $CHCl_3$).1,2:3,4-Di-O-isopropylidene, 5-tosyl: 1,2:3,4-Di-O-isopropylidene-5-O-tosyl- α -D-glucoseptanose [55726-86-8] $C_{19}H_{26}O_8S$ 414.476Mp 162-163°. $[\alpha]_D^{22}$ -64.5 (c, 1.34 in $CHCl_3$).1,2:4,5-Di-O-isopropylidene, 3-Ac: 3-O-Acetyl-1,2:4,5-di-O-isopropylidene- α -D-glucoseptanose

[35280-88-7]

 $C_{14}H_{22}O_7$ 302.324Mp 159-160°. $[\alpha]_D^{22}$ -50.4 (c, 0.88 in $CHCl_3$).2,3:4,5-Di-O-isopropylidene, 1-Ac: 1-O-Acetyl-2,3:4,5-di-O-isopropylidene- α -D-glucoseptanose [55726-83-5] $C_{14}H_{22}O_7$ 302.324Mp 114-115°. $[\alpha]_D^{25}$ +121 (c, 1.6 in $CHCl_3$).5-Me, 1,2:3,4-di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-5-O-methyl- α -D-glucoseptanose [55726-88-0] $C_{13}H_{22}O_6$ 274.313Mp 96-98°. $[\alpha]_D^{23}$ -72 (c, 0.82 in $CHCl_3$).Me glycoside: Methyl α -D-glucoseptanoside [55726-94-8] $C_7H_{14}O_6$ 194.184Mp 140-141°. $[\alpha]_D^{20}$ +19.5 (c, 0.9 in H_2O).Me glycoside, tetra-Ac: Methyl 2,3,4,5-tetra-O-acetyl- α -D-glucoseptanoside [52461-65-1] $C_{15}H_{22}O_{10}$ 362.333Mp 137-138°. $[\alpha]_D^{22}$ +41.7 (c, 1.1 in $CHCl_3$).Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene- α -D-glucoseptanoside [178905-77-6] $C_{10}H_{18}O_6$ 234.249Syrup. Bp_{0.05} 100° (bath). $[\alpha]_D^{23}$ +154.6 (c, 1.1 in $CHCl_3$).Me glycoside, 2,3-O-isopropylidene, di-Ac: Methyl 4,5-di-O-acetyl-2,3-O-isopropylidene- α -D-glucoseptanoside [178905-78-7] $C_{14}H_{22}O_8$ 318.323Syrup. Bp_{0.05} 120° (bath). $[\alpha]_D^{20}$ +121.4 (c, 0.8 in $CHCl_3$).Me glycoside, 2,3-O-isopropylidene, dibenzoyl: Methyl 4,5-di-O-benzoyl-2,3-O-isopropylidene- α -D-glucoseptanoside [178905-79-8] $C_{24}H_{26}O_8$ 442.465Cryst. (C_6H_6 /petrol). Mp 184.5°. $[\alpha]_D^{22}$ +100.2 (c, 0.8 in $CHCl_3$).Me glycoside, 3,4-O-isopropylidene: Methyl 3,4-O-isopropylidene- α -D-glucoseptanoside [178812-55-0] $C_{10}H_{18}O_6$ 234.249Prisms (EtOAc). Mp 132-133°. $[\alpha]_D^{22}$ -17.5 (c, 1.1 in H_2O).Me glycoside, 3,4-O-isopropylidene, di-Ac: Methyl 2,5-di-O-acetyl-3,4-O-isopropylidene- α -D-glucoseptanoside [178905-80-1] $C_{14}H_{22}O_8$ 318.323Needles (C_6H_6 /petrol). Mp 85-86°.Me glycoside, 3,4-O-isopropylidene, dibenzoyl: Methyl 2,5-di-O-benzoyl-3,4-O-isopropylidene- α -D-glucoseptanoside [178812-56-1] $C_{24}H_{26}O_8$ 442.465Prisms (EtOAc/petrol). Mp 168°. $[\alpha]_D^{22}$ +25.3 (c, 0.8 in $CHCl_3$).Me glycoside, 4,5-O-isopropylidene: Methyl 4,5-O-isopropylidene- α -D-glucoseptanoside

[55726-95-9]

 $C_{10}H_{18}O_6$ 234.249Needles (EtOAc/petrol). Mp 90-91°. $[\alpha]_D^{22}$ +119.4 (c, 2.1 in H_2O).Me glycoside, 4,5-O-isopropylidene, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,5-O-isopropylidene- α -D-glucoseptanoside [55726-96-0] $C_{14}H_{22}O_8$ 318.323Mp 84-85°. $[\alpha]_D$ +81.9 (c, 1.04 in $CHCl_3$).Me glycoside, 4,5-O-isopropylidene, 2,3-dibenzoyl: Methyl 2,3-di-O-benzoyl-4,5-O-isopropylidene- α -D-glucoseptanoside [55726-97-1] $C_{24}H_{26}O_8$ 442.465Mp 162-163°. $[\alpha]_D^{22}$ +105.1 (c, 0.76 in $CHCl_3$).Me glycoside, 2,3:4,5-di-O-isopropylidene: Methyl 2,3:4,5-di-O-isopropylidene- α -D-glucoseptanoside [26784-78-1] $C_{13}H_{22}O_6$ 274.313Mp 64-65°. $[\alpha]_D^{22}$ +137 (c, 1.5 in $CHCl_3$).5-Benzyl, 1,2-isopropylidene: 5-O-Benzyl-1,2-O-isopropylidene- α -D-glucoseptanose $C_{16}H_{22}O_6$ 310.346Needles (C_6H_6 /petrol). Mp 120-122°. $[\alpha]_D^{23}$ -19.3 (c, 0.21 in $CHCl_3$).5-Benzyl, 1,2:3,4-di-O-isopropylidene: 5-O-Benzyl-1,2:3,4-di-O-isopropylidene- α -D-glucoseptanose $C_{19}H_{26}O_6$ 350.411Needles. Mp 130-131°. $[\alpha]_D^{23}$ -47.1 (c, 1.3 in $CHCl_3$). β -D-form [39963-90-1]2,3:4,5-Di-O-isopropylidene, 1-Ac: 1-O-Acetyl-2,3:4,5-di-O-isopropylidene- β -D-glucoseptanose [26784-77-0] $C_{14}H_{22}O_7$ 302.324Mp 99-100°. $[\alpha]_D^{22}$ -77.7 (c, 1.5 in $CHCl_3$).Me glycoside: Methyl β -D-glucoseptanoside [55726-98-2] $C_7H_{14}O_6$ 194.184Mp 124-126°. $[\alpha]_D^{20}$ -139 (c, 1.2 in H_2O).Me glycoside, tetra-Ac: Methyl 2,3,4,5-tetra-O-acetyl- β -D-glucoseptanoside [33279-41-3] $C_{15}H_{22}O_{10}$ 362.333Mp 96-97°. $[\alpha]_D^{22}$ -82.7 (c, 1.1 in $CHCl_3$).Me glycoside, 4,5-O-isopropylidene, 3-benzoyl: Methyl 3-O-benzoyl-4,5-O-isopropylidene- β -D-glucoseptanoside [124030-43-9] $C_{17}H_{22}O_7$ 338.357Cryst. (C_6H_6). Mp 144°.Me glycoside, 2,3:4,5-di-O-isopropylidene: Methyl 2,3:4,5-di-O-isopropylidene- β -D-glucoseptanoside [26784-79-2] $C_{13}H_{22}O_6$ 274.313Mp 70-71°. $[\alpha]_D^{22}$ -112 (c, 2.0 in $CHCl_3$). α -L-form

2,3:4,5-Di-O-isopropylidene, 1-Ac: [144320-17-2]

 $C_{14}H_{22}O_7$ 302.324

Characterised spectroscopically.

β -L-form

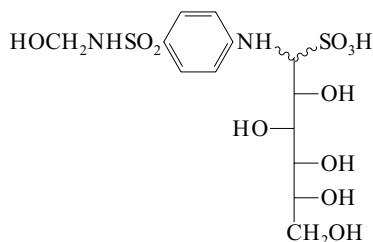
2,3:4,5-Di-O-isopropylidene, 1-Ac:
1-O-Acetyl-2,3:4,5-di-O-isopropylidene- β -L-glucoseptanose
[144320-12-7]
 $C_{14}H_{22}O_7$ 302.324
Foam. $[\alpha]_D^{22} +76$ (c, 1.09 in $CHCl_3$).

[41846-84-8, 41847-07-8]

- Stevens, J.D. *et al.*, *J.C.S. Perkin 2*, 1974, 345
(*Me*- α -D-gly, *cryst struct*)
Stevens, J.D. *et al.*, *Aust. J. Chem.*, 1975, **28**,
525-557 (*diisopropylidene derivs*)
Ng, C.J. *et al.*, *Methods Carbohydr. Chem.*,
1976, **7**, 7-14 (*Me* α -D-gly, *Me* β -D-gly, *synth*)
Foster, S.J. *et al.*, *Acta Cryst. C*, 1983, **39**, 610-
612 (*Me* β -D-gly, *cryst struct*)
Foster, S.J. *et al.*, *Acta Cryst. C*, 1989, **45**, 1329-
1333 (β -D gly, 4,5-isopropylidene 3 benzoyl,
 β -D gly *diisopropylidene, cryst struct*)
Contour, M.-O. *et al.*, *Carbohydr. Res.*, 1990,
201, 150-152 (*synth, pmr, Me gly*
diisopropylidene)
Johnson, C.R. *et al.*, *J.A.C.S.*, 1992, **114**, 9414-
9418 (β -L-isopropylidene, α -L-isopropylidene
derivs)
Ng, C.J. *et al.*, *Carbohydr. Res.*, 1996, **284**, 241-
248 (*isopropylidene derivs*)
Driver, G.E. *et al.*, *Carbohydr. Res.*, 2001, **334**,
81-89 (5-benzyl 1,2-isopropylidene, 5-benzyl
diisopropylidene)

Glucosulfamide, INN**G-529**

1-Deoxy-1-[[4-[(hydroxymethyl)amino]-
sulfonyl]phenyl]amino]-1-sulfoglucitol,
9CI. N^1 -(Hydroxymethyl)sulfamilamide-
 N^4 -glucoside-1-sulfonic acid. Glucosulfami-
nol. Glycosulphamide. Ladogal[®]. Septimax

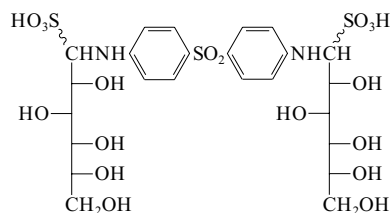


$C_{13}H_{22}N_2O_{11}S_2$ 446.456
Antibacterial agent. Log P -5.36 (uncer-
tain value) (calc).
[7007-76-3, 40892-26-0]

Eiden, F. *et al.*, *Pharm. Ztg.*, 1972, **117**, 1503;
1973, **118**, 638 (*anal*)

Glucosulfone, INN**G-530**

1,1'-[Sulfonylbis(4,1-phenyleneimino)]-
bis[1-deoxy-1-sulfoglucitol]. Solfone.
Protomin. Promin. Promamide. Angeli's
sulfone. Aceprosol. Promamide. Tasmin.
Theramin. SN 166



$C_{24}H_{36}N_2O_{18}S_3$ 736.749 Log P -8.77
(uncertain value) (calc).

D-form

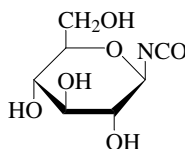
Di-Na salt: [554-18-7] Leprostatic agent.
Amorph. sweet-tasting solid.

► LZ8100000

Swiss Pat., 1944, 234 108; *CA*, **43**, 4297a (*synth*,
pharmacol)
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of*
Industrial Materials, 8th edn., Van Nostrand
Reinhold, 1992, AOO800

Glucosyl isocyanate

[193465-48-4]

G-531

$C_7H_{11}NO_6$ 205.167

 β -D-Pyranose-form [193465-42-8]

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-
glucopyranosyl isocyanate
[104974-80-3]

$C_{15}H_{19}NO_{10}$ 373.316
Cryst. (hexane/toluene or EtOAc/
petrol). Mp 119-120°. $[\alpha]_D^{29} -6.7$ (c, 1.0 in
 $CHCl_3$).

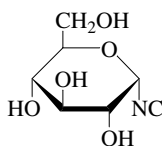
Fisher, E. *et al.*, *Ber.*, 1914, **47**, 1377-1393

(β -D-tetra-Ac, *synth*)

Johnson, T.B. *et al.*, *J.A.C.S.*, 1932, **54**, 3360-
3363 (β -D-tetra-Ac, *synth*)

Piskala, A. *et al.*, *Coll. Czech. Chem. Comm.*,
1964, **29**, 2060-2076 (β -D-tetra-Ac, *synth*)

Ichikawa, Y. *et al.*, *Eur. J. Org. Chem.*, 2004,
586-591 (β -D-tetra-Ac, *synth, ir, pmr, cmr*)

Glucosyl isocyanide**G-532** α -D-Pyranose-form

$C_7H_{11}NO_5$ 189.168

 α -D-Pyranose-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-
glucopyranosyl isocyanide
[66118-23-8]

$C_{15}H_{19}NO_9$ 357.316
Cryst. (EtOH). Mp 107-109°. $[\alpha]_D +99$
(c, 0.12 in $CHCl_3$).

Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl- α -D-
glucopyranosyl isocyanide
[65375-78-2]

$C_{35}H_{27}NO_9$ 605.6
Solid. Mp 54-56°. $[\alpha]_D^{22} +70.4$ (c, 1.5 in
 $CHCl_3$).

Tetra-Me: 2,3,4,6-Tetra-O-methyl- α -D-
glucopyranosyl isocyanide
[71074-67-4]

$C_{11}H_{19}NO_5$ 245.275
 $[\alpha]_D^{20} +28.1$ (c, 1.8 in $CHCl_3$).

Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl- α -D-
glucopyranosyl isocyanide
[62131-06-0]

$C_{33}H_{35}NO_5$ 549.665
 $[\alpha]_D^{26} +52.4$ (c, 3.6 in $CHCl_3$).

 β -D-Pyranose-form [65292-94-6]

Solid.

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-
glucopyranosyl isocyanide
[66118-22-7]

$C_{15}H_{19}NO_9$ 357.316
Cryst. (EtOH). Mp 104-105°. $[\alpha]_D^{20} +6.6$
(c, 1.0 in $CHCl_3$). $[\alpha]_D +4$ (c, 0.11 in
 $CHCl_3$).

Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl- β -D-
glucopyranosyl isocyanide
[65375-79-3]

$C_{35}H_{27}NO_9$ 605.6
Solid. Mp 88-90°. $[\alpha]_D^{22} +44.7$ (c, 2.5 in
 $CHCl_3$).

Tetra-Me: 2,3,4,6-Tetra-O-methyl- β -D-
glucopyranosyl isocyanide
[71074-68-5]

$C_{11}H_{19}NO_5$ 245.275
Mp 85-86°. $[\alpha]_D^{20} +28.1$ (c, 1.8 in
 $CHCl_3$). Identical opt. rotn. given in the
lit. as for the α -anomer; presumed error.

Tetrabenzyl: 2,3,5,6-Tetra-O-benzyl- β -D-
glucopyranosyl isocyanide
[62131-31-1]

$C_{35}H_{35}NO_5$ 549.665
 $[\alpha]_D +22.5$ (c, 2.5 in $CHCl_3$).

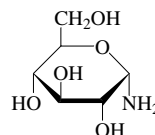
Martin-Lomas, M. *et al.*, *Carbohydr. Res.*,
1977, **59**, 604-606 (*tetra-Ac*)

Nolte, R.J.M. *et al.*, *J.O.C.*, 1978, **43**, 1972-1975
(β -D-pyr, *synth, ir, pmr, α -tetra-benzoyl,*
 β -tetra-benzoyl)

Boullanger, P. *et al.*, *Tetrahedron*, 1979, **35**, 163-
167 (*tetra-Me, tetrabenzyl*)

Witzak, Z.J. *et al.*, *J. Carbohydr. Chem.*, 1984,
3, 359-380 (*tetra-Ac, tetrabenzoyl, tetra-Me,*
tetrabenzyl, rev, bibl)

Prosperi, D. *et al.*, *Eur. J. Org. Chem.*, 2004,
395-405 (β -D-tetra-Ac)

Glucosylamine, 9CI**G-533** α -D-Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form [30104-32-6]

N-Butyl: *N-Butyl-D-glucosylamine*
[29352-40-7]

$C_{10}H_{21}NO_5$ 235.28
Mp 88-90°. $[\alpha]_D -24.2 \rightarrow +7.7$ (H_2O).

N-Benzyl: *N-Benzyl-D-glucosylamine*

$C_{13}H_{19}NO_5$ 269.297
Mp 81-82°. $[\alpha]_D -42.7 \rightarrow -22.7$ (MeOH).

N-Benzyl, 2,3,4,6-tetra-Ac: 2,3,4,6-Tetra-
O-acetyl-N-benzyl-D-glucosylamine

$C_{21}H_{27}NO_9$ 437.446
Mp 110°.

 α -D-Pyranose-form [94131-70-1]

Syrup. $[\alpha]_D^{22} +112.5$ (c, 0.5 in H_2O).

2,3,4,6-Tetra-Ac: [70128-27-7]

$C_{14}H_{21}NO_9$ 347.321
Mp 62.5-63°. $[\alpha]_D^{24} +108.7$ (c, 7.5 in
 $CHCl_3$).

N-Ph: *N-Phenyl- α -D-glucopyranosylamine*
[4196-38-7]

[5154-10-9]

$C_{12}H_{17}NO_5$ 255.27
Mp 149-150°. $[\alpha]_D^{20} +237$ (MeOH).

N-Ph, 2,3,4,6-tetra-Ac: 2,3,4,6-Tetra-O-acetyl-N-phenyl α -D-glucopyranosylamine
[3945-14-0]
 $C_{20}H_{25}NO_9$ 423.419
Mp 149-150°. $[\alpha]_D +185$ (CHCl₃).

N-(4-Methylphenyl): [4103-31-5]
 $C_{13}H_{19}NO_5$ 269.297
Mp 140-141°. $[\alpha]_D^{20} +239$ (MeOH).

N-(4-Methylphenyl), 2,3,4,6-tetra-Ac:
 $C_{21}H_{27}NO_9$ 437.446
Mp 143-144°. $[\alpha]_D +177$ (CHCl₃).

N-(4-Nitrophenyl): [4103-33-7]
 $C_{12}H_{16}N_2O_7$ 300.268
Mp 193-194°. $[\alpha]_D +342$ (MeOH).

N-(4-Nitrophenyl), 2,3,4,6-tetra-Ac:
 $C_{20}H_{24}N_2O_{11}$ 468.416
Mp 168-169°. $[\alpha]_D +300$ (CHCl₃).

β -D-Pyranose-form [7284-37-9]
Mp 128-129°. $[\alpha]_D^{20} +20.2$ (H₂O).

N-Formyl: [65293-32-5]
 $C_7H_{13}NO_6$ 207.183
Mp 182-183° dec. $[\alpha]_D^{20} -2$ (c, 0.5 in H₂O).

N-Ac: N-Acetyl- β -D-glucopyranosylamine.
N- β -Glucopyranosylacetamide, 9CI
[6983-36-4]
 $C_8H_{15}NO_6$ 221.21
Mp 260° (256°). $[\alpha]_D -22.8$ (H₂O).

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-glucopyranosylamine
[51642-81-0]
 $C_{14}H_{21}NO_9$ 347.321
Cryst. (EtOH). Mp 122-124°. $[\alpha]_D +18$ (c, 0.5 in CHCl₃).

2,3,4,6-Tetra-Ac, N-formyl: 2,3,4,6-Tetra-O-acetyl-N-formyl- β -D-glucosylamine
 $C_{15}H_{21}NO_{10}$ 375.332
Solid. Mp 146-148°. $[\alpha]_D^{20} +20.7$ (c, 0.5 in CHCl₃).

N,2,3,4,6-Penta-Ac: N-Acetyl-2,3,4,6-tetra-O-acetyl- β -D-glucopyranosylamine
[6983-35-3]
 $C_{16}H_{23}NO_{10}$ 389.358
Mp 163-164°. $[\alpha]_D +17.4$ (CHCl₃).

N-Benzoyl: N- β -D-Glucopyranosylbenzamide, 9CI
[15354-97-9]
 $C_{13}H_{17}NO_6$ 283.28
Prisms (EtOH). Mp 228°.

N-Me: [114761-39-6]
 $C_7H_{15}NO_5$ 193.199
Mp 79-81°. $[\alpha]_D^{20} -11$ (c, 0.5 in H₂O).

N-Ph: N-Phenyl- β -D-glucopyranosylamine
[4132-46-1]
 $C_{12}H_{17}NO_5$ 255.27
Mp 135-136°. $[\alpha]_D -105$ (MeOH).

N-Ph, 2,3,4,6-tetra-Ac: 2,3,4,6-Tetra-O-acetyl-N-phenyl- β -D-glucopyranosylamine
[42891-46-3]
 $C_{20}H_{25}NO_9$ 423.419
Mp 93-94°. $[\alpha]_D -57.3$ (CHCl₃).

N-(4-Hydroxyphenyl):
 $C_{12}H_{17}NO_6$ 271.269
Mp 149-150°. $[\alpha]_D -102$ (MeOH).

N-(4-Methylphenyl): [3228-62-4]
Mp 112-113°. $[\alpha]_D -102$ (MeOH).

N-(4-Methylphenyl), 2,3,4,6-tetra-Ac:
[3255-90-1]
Mp 150-151°. $[\alpha]_D -50.2$ (CHCl₃).

N-(4-Nitrophenyl): [4192-56-7]
Mp 160-161°. $[\alpha]_D -161$ (MeOH).

N-(4-Nitrophenyl), 2,3,4,6-tetra-Ac:
[26302-39-6]
Mp 180-181°. $[\alpha]_D -119$ (CHCl₃).

Brigl, P. et al., *Hoppe-Seyler's Z. Physiol. Chem.*, 1929, **180**, 38 (*D-penta-Ac*)

Pigman, W.W. et al., *J.A.C.S.*, 1951, **73**, 1976 (*D-form, synth*)

Ellis, G.P. et al., *Adv. Carbohydr. Chem.*, 1955, **10**, 95 (rev. derivs)

Onodera, K. et al., *J.O.C.*, 1960, **25**, 1322-1325 (*N-acyl derivs*)

Capon, B. et al., *J.C.S.*, 1965, 4492 (*N-aryl derivs*)

Takeda, T. et al., *Can. J. Chem.*, 1980, **58**, 2600-2603 (*α -D-tetra-Ac*)

Sawaki, M. et al., *Bull. Chem. Soc. Jpn.*, 1984, **32**, 3698-3701 (*α -D-pyr-form, synth, pmr, cmr*)

Caballero, R.B. et al., *Carbohydr. Res.*, 1986, **154**, 280-288 (*β -D-tetra-Ac*)

Lubineau, A. et al., *Carbohydr. Res.*, 1995, **266**, 211-219 (*synth, β -D-penta-Ac*)

Sriram, D. et al., *Acta Cryst. C*, 1997, **53**, 1075-1077 (*cryst struct, β -D-pyr N-Ac*)

Maunier, V. et al., *J. Carbohydr. Chem.*, 1997, **16**, 231-235 (*N-acyl derivs, synth*)

Sriram, D. et al., *Acta Cryst. C*, 1998, **54**, 1670-1672 (*β -D-Pyr N-benzoyl, synth, pmr, cmr, cryst struct*)

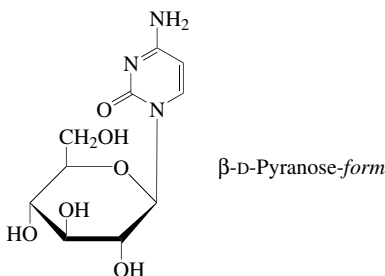
Avalos, M. et al., *Tetrahedron*, 1998, **54**, 615-628 (*β -D-Pyr-form, N-derivs, synth, nmr*)

Isac-Garcia, J. et al., *Eur. J. Org. Chem.*, 2001, 383-390 (*β -D-penta-Ac*)

Prosperi, D. et al., *Eur. J. Org. Chem.*, 2004, 395-405 (*β -D-Pyr tetra-Ac N-formyl*)

1-Glucosylcytosine G-534

4-Amino-1-glucosyl-2(1H)-pyrimidinone, 9CI



$C_{10}H_{15}N_3O_6$ 273.245

α -D-Pyranose-form
4-Amino-1- α -D-glucopyranosyl-2(1H)-pyrimidinone
[59906-10-4]
Mp 238-240°. $[\alpha]_D^{25} +69.2$ (c, 0.7 in H₂O).

4-N,2',3',4',6'-Penta-Ac: [59881-36-6]
 $C_{20}H_{25}N_3O_{11}$ 483.431
Cryst. Mp 175-176°. $[\alpha]_D^{26} -25$ (c, 0.3 in CHCl₃).

β -D-Pyranose-form 4-Amino-1- β -D-glucopyranosyl-2(1H)-pyrimidinone
[3319-89-9]
Hygroscopic prisms (EtOH). Mp 194-195° Mp 197-199° (dimorph.). $[\alpha]_D^{21} +25.6$ (c, 2.0 in H₂O).

Hydrochloride: Mp 200-201° (dec.). $[\alpha]_D^{26} +20$.

Nitrate:
Cryst. + 1H₂O (EtOH aq.). Mp 143°. $[\alpha]_D^{23} +21.3$ (c, 2.3 in H₂O).

Picrate:
Cryst. needles (EtOH). Mp 216-218° (dec.).

4-N,2',3',4',6'-Penta-Ac: [3180-75-4]
Cryst. (EtOH). Mp 225°. $[\alpha]_D^{23} +38.1$ (c, 1.7 in CHCl₃).

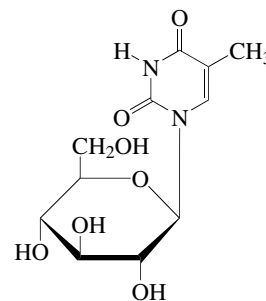
4-N-Benzoyl: [53989-91-6]
 $C_{17}H_{19}N_3O_7$ 377.353
Cryst. (EtOH). Mp 191-192°. $[\alpha]_D^{20} +28$ (c, 1 in DMF).

4',6'-Benzylidene: [53928-66-8]
 $C_{17}H_{19}N_3O_6$ 361.354
Cryst. (MeOH). Mp 270° (dec.). $[\alpha]_D^{20} -48$ (c, 1 in CHCl₃).

Davall, J. et al., *J.C.S.*, 1946, 833 (*synth*)
Lichtenthaler, F.W. et al., *Bull. Chem. Soc. Jpn.*, 1974, **47**, 2304-2310 (*derivs*)
Stevens, C.L. et al., *J. Carbohydr. Nucleosides, Nucleotides*, 1976, **3**, 71-75 (*synth, penta-Ac, uv*)

1-Glucosylthymine G-535

1-Glucosyl-5-methyl-2,4(1H,3H)-pyrimidin-2-one



$C_{11}H_{16}N_2O_7$ 288.257

β -D-Pyranose-form

1- β -D-Glucopyranosyl-5-methyl-2,4(1H,3H)-pyrimidin-2-one, 9CI

[3180-78-7]
Cryst. (EtOH). Mp 271°. $[\alpha]_D +15.7$ (c, 1.00 in H₂O).

2',3',4',6'-Tetra-Ac: [3180-74-3]
 $C_{19}H_{24}N_2O_{11}$ 456.405
Cryst. + 1/2 H₂O (EtOH/Et₂O). Mp 156-158° (hemihydrate). $[\alpha]_D^{20} -14.6$ (c, 2.75 in CHCl₃). $[\alpha]_D^{30} -10$ (c, 1.9 in CHCl₃).

6'-Tosyl: [59148-67-3]
 $C_{18}H_{22}N_2O_9S$ 442.446
Cryst. (EtOH). Mp 213-214°.

2',6'-Ditosyl: [59148-65-1]
 $C_{25}H_{28}N_2O_{11}S_2$ 596.635
Cryst. (2-propanol). Mp 135°.

4',6'-Isopropylidene: [139613-55-1]
 $C_{14}H_{20}N_2O_7$ 328.321
Hemihydrate. Mp 105-107°. $[\alpha]_D^{20} +7.5$ (c, 0.1 in MeOH).

4',6'-Benzylidene: [64096-48-6]
 $C_{18}H_{20}N_2O_7$ 376.365
Mp 297-299° (dec.). $[\alpha]_D^{21} -12$ (c, 1 in DMF).

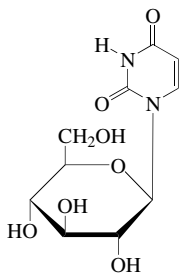
Fox, J.J. et al., *J.A.C.S.*, 1956, **78**, 2117-2122 (*synth*)

Etzold, G. et al., *J. Phys. Chem.*, 1976, **318**, 79-86 (*acyl derivs*)

Chow, K. *et al.*, *J.O.C.*, 1990, **55**, 4211 (*ms*)
Yamazaki, T. *et al.*, *J.C.S. Perkin 1*, 1997, 1654-1659 (β -D-pyr, synth, 4',6'-benzylidene)

1-Glucosyluracil **G-536**

1-Glucosyl-2,4-(1H,3H)-pyrimidinedione,
9CI

 β -D-Pyranose-form

$C_{10}H_{14}N_2O_7$ 274.23

 α -D-Pyranose-form

1- α -D-Glucopyranosyl-2,4-(1H,3H)-pyrimidinedione
[59906-11-5]
Cryst. Mp 208-210°. [α]_D²⁵ +74.

 β -D-Pyranose-form

1- β -D-Glucopyranosyl-2,4-(1H,3H)-pyrimidinedione
[3180-77-6]
Prisms + $\frac{1}{2}$ H₂O (MeOH). Mp 207-209° (anhydr.) Mp ca. ° 200 (hemihydrate). [α]_D¹⁵ +22.2 (c, 1.52 in H₂O). pK_a 9.15 (H₂O). pK_a 10 (50% aq. MeOH).

Picrate: Mp 214° (dec.).

2',3',4',6'-Tetra-Ac: [3180-73-2]
 $C_{18}H_{22}N_2O_{11}$ 442.379
Prisms (EtOH aq.). Mp 154-155°.

4',6'-Isopropylidene:

$C_{13}H_{18}N_2O_7$ 314.294
Cryst. Mp 220-223°. [α]_D²⁰ -2.5 (c, 0.1 in MeOH).

4',6'-Benzylidene: [3493-02-5]

$C_{17}H_{18}N_2O_7$ 362.338
Needles (MeOH). Mp 278-281° (dec.). [α]_D²² -8 (c, 1.0 in DMF).

2'-Deoxy:

$C_{10}H_{14}N_2O_6$ 258.23
Mp 169-170°.

Fox, J.J. *et al.*, *J.A.C.S.*, 1953, **75**, 4315-4317 (synth)

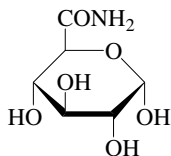
Stevens, C.L. *et al.*, *J. Carbohydr. Nucleosides*, 1976, **3**, 71-75 (α -D-pyr)

Vuilhorgne, M. *et al.*, *Carbohydr. Res.*, 1981, **97**, 19-30 (tetra-Ac)

Glucuronamide, 9CI, BAN, **G-537**

INN

[3789-97-7]

 α -Pyranose-form

$C_6H_{11}NO_6$ 193.156

 α -D-Pyranose-form

α -D-Glucopyranuronamide
[52305-42-7]

Me glycoside, 4-Me: Methyl 4-O-methyl- α -D-glucopyranosiduronamide
 $C_8H_{15}NO_6$ 221.21
Mp 236°. [α]_D +150 (H₂O).

Me glycoside, 3,4-di-Me: Methyl 3,4-di-O-methyl- α -D-glucopyranosiduronamide
 $C_9H_{17}NO_6$ 235.236
Mp 191-193°. [α]_D +100 (H₂O).

Me glycoside, 2,3,4-tri-Me: Methyl 2,3,4-tri-O-methyl- α -D-glucopyranosiduronamide
 $C_{10}H_{19}NO_6$ 249.263
Mp 183°. [α]_D +137.5 (H₂O).

 β -D-Pyranose-form

Guronamin. Rental. Startal
[61914-43-0] Detoxicant.
Cryst. + 1H₂O (MeOH). Mp 168-169° dec Mp 173-174° (anhydr.).

Me glycoside: Methyl β -D-glucopyranosiduronamide
 $C_7H_{13}NO_6$ 207.183
[α]_D -72 (c, 0.4 in MeOH).

Me glycoside, 4-Me: Methyl 4-O-methyl- β -D-glucopyranosiduronamide
 $C_8H_{15}NO_6$ 221.21
Mp 232°. [α]_D -50 (H₂O).

Me glycoside, 2,3,4-tri-Me: Methyl 2,3,4-tri-O-methyl- β -D-glucopyranosiduronamide
 $C_{10}H_{19}NO_6$ 249.263
Mp 193°. [α]_D -47 (H₂O).

 α -D-Furanose-form

1,2-O-Cyclohexylidene: 1,2-O-Cyclohexylidene- α -D-glucopyranuronamide
 $C_{12}H_{19}NO_6$ 273.285
Cryst. (EtOH). Mp 168-169°. [α]_D²⁰ -3.4 (c, 1.0 in MeOH).

1,2-O-Cyclohexylidene, 5-mesyl: 1,2-O-Cyclohexylidene-5-O-mesyl- α -D-glucopyranuronamide
 $C_{13}H_{21}NO_8S$ 351.377
Cryst. (MeOH). Mp 154-157° dec. [α]_D²⁰ -10.3 (c, 1.1 in MeOH).

1,2-O-Cyclohexylidene, 3,5-dimesyl: 1,2-O-Cyclohexylidene-3,5-di-O-mesyl- α -D-glucopyranuronamide
 $C_{14}H_{23}NO_{10}S_2$ 429.468
Mp 153-154°. [α]_D²⁰ -15 (c, 2.4 in MeOH).

Me glycoside, 2,5-di-Me: Methyl 2,5-di-O-methyl- α -D-glucopyranosiduronamide
 $C_9H_{17}NO_6$ 235.236
Cryst. (EtOH/Et₂O/petrol). Mp 121°. [α]_D¹⁶ +149.5 (c, 1.2 in H₂O).

1,2-O-Isopropylidene, 3-Ac: 3-O-Acetyl-1,2-O-isopropylidene- α -D-glucopyranuronamide
[19322-09-9]
 $C_{11}H_{17}NO_7$ 275.258

Cryst. (MeOH). Mp 181° dec. [α]_D²² +23.3 (c, 2 in Py).

 β -D-Furanose-form

Me glycoside, 2,3-di-Ac: Methyl 2,3-di-O-acetyl- β -D-glucopyranosiduronamide
[19325-73-6]
 $C_{11}H_{17}NO_8$ 291.257

Cryst. (EtOAc). Mp 141°. [α]_D²² -44.8 (c, 4 in CHCl₃).

Me glycoside, 2-mesyl: Methyl 2-O-mesyl- β -D-glucopyranosiduronamide
[19325-77-0]
 $C_8H_{15}NO_8S$ 285.274
Cryst. (EtOAc). Mp 104°. [α]_D²² -45 (c, 2 in CHCl₃).

Me glycoside, 5-benzyl: Methyl 5-O-benzyl- β -D-glucopyranosiduronamide
[19322-05-5]
 $C_{14}H_{19}NO_6$ 297.307
Cryst. (Me₂CO/diisopropyl ether). Mp 122°. [α]_D²² -74 (c, 1.6 in H₂O).

Me glycoside, 5-benzyl, 2-Ac: Methyl 2-O-acetyl-5-O-benzyl- β -D-glucopyranosiduronamide
[19322-06-6]
 $C_{16}H_{21}NO_7$ 339.344
Cryst. (EtOAc). Mp 141°. [α]_D²² -32 (c, 2 in CHCl₃).

Me glycoside, 2,5-di-Me: Methyl 2,5-di-O-methyl- β -D-glucopyranosiduronamide
 $C_9H_{17}NO_6$ 235.236
Mp 95°.

Me glycoside, 5-benzyl, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-5-O-benzyl- β -D-glucopyranosiduronamide
[19322-08-8]
 $C_{18}H_{23}NO_8$ 381.382
Cryst. (MeOH). Mp 164°. [α]_D²² -57.4 (c, 2 in CHCl₃).

Smith, F. *et al.*, *J.C.S.*, 1944, 584 (α -D-Me fur di-Me)

Hardegger, E. *et al.*, *Helv. Chim. Acta*, 1950, **33**, 337 (β -D-Me pyr)

Smith, F. *et al.*, *J.C.S.*, 1951, 2646 (α -D-Me pyr Me ethers, β -D-Me pyr Me ethers)

Aspinall, G.O. *et al.*, *Adv. Carbohydr. Chem.*, 1954, **9**, 131 (Me ethers, rev)

Fieser, M. *et al.*, *J.A.C.S.*, 1956, **78**, 2825 (β -D-pyr, synth)

Paulsen, H. *et al.*, *Chem. Ber.*, 1966, **99**, 908 (α -D-fur-cyclohexylidene derivs)

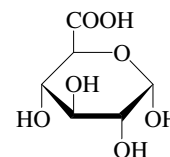
Della Pietra, G. *et al.*, *Biochem. Pharmacol.*, 1967, **16**, 1571 (rev, pharmacol)

Weidmann, H. *et al.*, *Monatsh. Chem.*, 1968, **99**, 509 (1,2-Isopropylidene 3-Ac, Me furanoside 5-benzyl)

Flippin, J.L. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **30**, 537 (α -D-pyr, cryst struct)

Glucuronic acid, 9CI, 8CI**G-538**

Glycuronic acid

 α -Pyranose-form

$C_6H_{10}O_7$ 194.141

D-form [6556-12-3]

Widely distributed in plants, where it occurs in gums, mucilages, saponins and flavone glycosides and in animals as a constit. of mucopolysaccharides. Glycosides are formed in the liver to detoxify poisonous hydroxyl-containing substances. Phenyl, cresyl and indoxyl glycosides are present in normal urine. Used in hplc to determine enantiomeric purity of dopamine agonists.

Mp 165° (146°). $[\alpha]_D^{24} +11.7 \rightarrow +36.3$ (2 d) (H₂O). pK_a 3.18 (20°).

Na salt: [14984-34-0]
Monohydrate. $[\alpha]_D^{20} -0.6 \rightarrow +22.5$ (H₂O).

Ba salt: [29600-83-7]
 $[\alpha]_D^{20} +17.5$ (H₂O).

Hydrazide:
C₆H₁₂N₂O₆ 208.171
 $[\alpha]_D -50$ (c, 0.5 in H₂O).

4-Nitrophenylhydrazide: Mp 224-225°.

Me ester: Methyl glucuronate. Methyl glucopyranuronate
[28905-07-9]
C₇H₁₂O₇ 208.168
Characterised as derivs.

Amide: See Glucuronamide, G-537

6,3-Lactone: See Glucurono-6,3-lactone, G-539

1-Ac: 1-O-Acetyl-D-glucuronic acid
C₈H₁₂O₈ 236.178
 $[\alpha]_D +25$ (c, 1 in H₂O).

2,3,4-Tri-Ac, Me ester: Methyl (2,3,4-tri-O-acetyl- α -D-glucopyranosid)uronate
Mp 98-100°. $[\alpha]_D^{20} +81.2$ (c, 0.105 in CHCl₃).

2-Me: 2-O-Methyl-D-glucuronic acid
C₇H₁₂O₇ 208.168
Component of the glycolipids of *Flavobacterium columnare*.

3-Me: 3-O-Methyl-D-glucuronic acid
C₇H₁₂O₇ 208.168
 $[\alpha]_D +6$ (H₂O).

4-Me: 4-O-Methyl-D-glucuronic acid
[4120-73-4]
C₇H₁₂O₇ 208.168

Common component of plant polysaccharides.
 $[\alpha]_D +45$ (H₂O).

2,3-Di-Me: 2,3-Di-O-methyl-D-glucuronic acid
[16274-04-7]
C₈H₁₄O₇ 222.194
 $[\alpha]_D +42$ (H₂O).

3,4-Di-Me: 3,4-Di-O-methyl-D-glucuronic acid
C₈H₁₄O₇ 222.194
Mp 184°. $[\alpha]_D +60$ (H₂O).

2,3,4-Tri-Me: 2,3,4-Tri-O-methyl-D-glucuronic acid
[20907-95-3]
C₉H₁₆O₇ 236.221
 $[\alpha]_D +58$ (H₂O).

2,3,4-Tribenzyl, benzyl ester: Benzyl 2,3,4-tri-O-benzyl-D-glucuronate
C₃₄H₃₄O₇ 554.638
Mp 124-125°. $[\alpha]_D -12$.

α -D-form

Tetra-Ac, Me ester: Methyl 1,2,3,4-tetra-O-acetyl- α -D-glucopyranuronate
C₁₅H₂₀O₁₁ 376.316
Mp 111-112°. $[\alpha]_D^{24} +98$ (CHCl₃).

1,2-O-Isopropylidene: 1,2-O-Isopropylidene- α -D-glucuronic acid
C₉H₁₄O₇ 234.205
Mp 146-147°. $[\alpha]_D^{20} -7.4$ (c, 2.3 in H₂O).

1,2-O-Isopropylidene, 3,4-dimesyl: 1,2-O-Isopropylidene-3,4-di-O-mesyl- α -D-glucuronic acid

C₁₁H₁₈O₁₁S₂ 390.389
 $[\alpha]_D^{20} -13.4$ (c, 2.6 in MeOH).

1,2-O-Isopropylidene, 3,4-O-benzylidene: 3,4-O-Benzylidene-1,2-O-isopropylidene- α -D-glucuronic acid
C₁₆H₁₈O₇ 322.314
Mp 170°. $[\alpha]_D^{20} +30.3$ (Me₂CO).

1,2-O-Isopropylidene, 3,5-O-benzylidene, benzyl ester: Benzyl 3,5-O-benzylidene-1,2-O-isopropylidene- α -D-gluconate
C₂₃H₂₄O₇ 412.438
Cryst. (cyclohexane). Mp 138-139°. $[\alpha]_D^{20} +16.8$ (c, 2 in CHCl₃).

Me glycoside: See Methyl glucopyranosiduronic acid, M-192

β -D-Pyranose-form

β -D-Glucopyranuronic acid

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- β -D-glucopyranuronate
C₁₄H₁₈O₁₁ 362.29
Fine powder.

Tetra-Ac, Me ester: Methyl 1,2,3,4-tetra-O-acetyl- β -D-glucopyranuronate
[7355-18-2]
C₁₅H₂₀O₁₁ 376.316
Mp 178°. $[\alpha]_D^{24} +8.7$ (CHCl₃).

Me glycoside: See Methyl glucopyranosiduronic acid, M-192

Benzyl glycoside: See Benzyl glucopyranosiduronic acid, B-17

6 \rightarrow 1 Lactone, tri-Ac: 2,3,4-Tri-O-acetyl- β -D-glucopyranurono-6,1-lactone
C₁₂H₁₄O₉ 302.237
Cryst. (EtOH). Mp 127°. $[\alpha]_D^{20} -66$ (c, 2 in CHCl₃).

α -D-Furanose-form

α -D-Glucofuranuronic acid

1,2-O-Isopropylidene: 1,2-O-Isopropylidene- α -D-glucofuranuronic acid
C₉H₁₄O₇ 234.205
Mp 145-146° (140-142°).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 817B (nmr)

Zervas, L. *et al.*, *Ber.*, 1933, **66**, 1326

(*D*-isopropylidene-benzylidene)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 282; 285 (rev)

Mehlretter, C.L. *et al.*, *J.A.C.S.*, 1951, **73**, 2424 (*D*-form, *D*-isopropylidene salts)

Aspinall, G.O. *et al.*, *Adv. Carbohydr. Chem.*, 1954, **9**, 131 (*D*-Me ethers, rev)

Teague, R.S. *et al.*, *Adv. Carbohydr. Chem.*, 1954, **9**, 185 (α -D-tetra-Ac, β -D-tetra-Ac, conjugates, rev)

Pravdić, N. *et al.*, *Tetrahedron*, 1965, **21**, 1897 (esters, *D*-form benzyl ester tribenzyl)

Glucuronic Acid, *Free Comb.* (Dutton, G.J., Ed.), Academic Press, New York, 1966, 629 (book)

Timpe, W. *et al.*, *Carbohydr. Res.*, 1975, **39**, 53 (*D*-isopropylidene-benzylidene benzyl ester)

Kegelević, D. *et al.*, *Carbohydr. Res.*, 1978, **64**, 319 (*D*-form benzyl ester tribenzyl)

Kegelević, D. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1979, **36**, 57 (rev, glucosiduronic acids)

Compennolle, F. *et al.*, *Carbohydr. Res.*, 1980, **83**, 135 (*D*-Ac)

Baggett, N. *et al.*, *Carbohydr. Res.*, 1982, **108**, 59 (α -D-fur isopropylidene)

Tajmir-Riahi, H. *et al.*, *Carbohydr. Res.*, 1983, **122**, 241; 1984, **125**, 13 (*cryst struct, ir*)

Gerding, T.K. *et al.*, *J. Chromatogr.*, 1989, **487**, 125 (use)

Vogel, C. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 287-303 (6,1-lactone tri-Ac)

Davis, N.J. *et al.*, *Tet. Lett.*, 1993, **34**, 1181 (*synth, Me ester*)

Trynda, A. *et al.*, *Carbohydr. Res.*, 2000, **329**, 249-252 (*tri-Ac, Me ester, synth, cryst struct, pmr, cmr*)

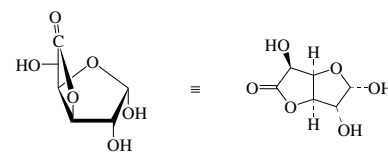
Malkinson, J.P. *et al.*, *J.O.C.*, 2000, **65**, 5249-5252 (*tetra-Ac, synth, ms, pmr*)

Root, Y.Y. *et al.*, *Carbohydr. Res.*, 2002, **337**, 2343-2346 (β -D-Pyr tetra-Ac Me ester, *cryst struct*)

Vinogradov, E. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2653-2658 (2-Me, occur)

Glucurono-6,3-lactone, 9CI, 8CI

Glucurrolactone, INN. Glucuronolactone. Dicurone. Glucoxyguanosan. Glucurone. Many other names
[63-29-6]



α -D-Furanose-form

C₆H₈O₆ 176.126

Antiarthritic drug, detoxicant.

D-form [32449-92-6]

Found in many plant gums in polymeric combination with other carbohydrates. Important structural constituent of practically all fibrous and connective tissues in the animal organism. Readily obt. from glucose. Inexpensive starting material for synthesis.

Mp 177°. $[\alpha]_D^{22} +19.4$ (H₂O).

► LD₅₀ (rat, ori) 10700 mg/kg. LZ8930000

Oxime:

C₆H₉NO₆ 191.14

Mp 151°. $[\alpha]_D +14.4$ (H₂O).

5-Benzyl: 5-O-Benzyl-D-glucurono-6,3-lactone

C₁₃H₁₄O₆ 266.25
Mp 98-99.5°. $[\alpha]_D^{20} -3$ (c, 2.0 in Py) (5 min.).

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-D-glucofuranurono-6,3-lactone
[20513-98-8]

Needles (Et₂O/petrol). Mp 120°. $[\alpha]_D^{18} +70$ (c, 1.0 in H₂O).

5-Pivaloyl, 1,2-isopropylidene: 1,2-O-Isopropylidene-5-O-pivaloyl- α -D-glucofuranurono-6,3-lactone
C₁₄H₂₀O₇ 300.308
 $[\alpha]_D +90$ (c, 1 in MeOH).

α -D-form

1,2,5-Tri-Ac: 1,2,5-Tri-O-acetyl- α -D-glucurono-6,3-lactone
C₁₂H₁₄O₉ 302.237
Mp 110-112°. $[\alpha]_D^{24} +203.6$ (CHCl₃).

1,2-O-Cyclohexylidene: 1,2-O-Cyclohexylidene- α -D-glucurono-6,3-lactone
C₁₂H₁₆O₆ 256.255
Cryst. (EtOAc). Mp 148-149°. $[\alpha]_D^{20} +48.1$ (c, 2.0 in CHCl₃).

1,2-O-Cyclohexylidene, 5-mesyl: 1,2-O-Cyclohexylidene-5-O-mesyl- α -D-glucurono-1,5-lactone
 $C_{13}H_{18}O_8S$ 334.346
 Mp 139-140°. $[\alpha]_D^{20} +43.4$ (c, 2.1 in $CHCl_3$).

1,2-O-Cyclohexylidene, 5-benzyl: 5-O-Benzyl-1,2-O-cyclohexylidene- α -D-glucurono-1,5-lactone
 $C_{19}H_{22}O_6$ 346.379
 Cryst. (cyclohexane). Mp 94-95°. $[\alpha]_D^{20} +48.5$ (c, 2.0 in $CHCl_3$).

 β -D-form

1,2,5-Tri-Ac: 1,2,5-Tri-O-acetyl- β -D-glucurono-6,3-lactone
 $C_{12}H_{14}O_9$ 302.237
 Mp 194-195°. $[\alpha]_D^{23} +84.1$ ($CHCl_3$).

 α -D-Furanose-form

Me glycoside: Methyl α -D-glucofuranosidurono-6,3-lactone
 $C_7H_{10}O_6$ 190.152
 Mp 148°. $[\alpha]_D^{23} +149$ (H_2O). $[\alpha]_D^{23} +167$ (EtOH).

Me glycoside, 5-benzyl, 2-Me: Methyl 5-O-benzyl-2-O-methyl- α -D-glucofuranosidurono-6,3-lactone
 $C_{15}H_{18}O_6$ 294.304
 Mp 117-118°. $[\alpha]_D^{20} +107.1$ (c, 1.0 in $CHCl_3$).

Me glycoside, 2,5-di-Me: Methyl 2,5-di-O-methyl- α -D-glucofuranosidurono-6,3-lactone
 $C_9H_{14}O_6$ 218.206
 Mp 129-130°. $[\alpha]_D^{24} +151$ (c, 0.4 in $CHCl_3$).

 β -D-Furanose-form

Me glycoside: Methyl β -D-glucofuranosidurono-6,3-lactone
 $C_7H_{10}O_6$ 190.152
 Mp 139°. $[\alpha]_D^{23} -59$ (H_2O). $[\alpha]_D^{23} -61$ (EtOH).

Me glycoside, 5-benzyl, 2-Me: Methyl 5-O-benzyl-2-O-methyl- β -D-glucofuranosidurono-6,3-lactone
 $C_{15}H_{18}O_6$ 294.304
 Syrup. $[\alpha]_D^{20} -7.5$ (c, 1.0 in $CHCl_3$).

Me glycoside, 2,5-di-Me: Methyl 2,5-di-O-methyl- β -D-glucofuranosidurono-6,3-lactone
 $C_9H_{14}O_6$ 218.206
 Mp 90-91°. $[\alpha]_D^{24} -2.3$ (c, 0.9 in $CHCl_3$). $[\alpha]_D^{24} +2$ (c, 1.0 in H_2O).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 705C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 1139B (nmr)

Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, 4th edn., J.A. Barth, 1935, 282
 Reeves, R.E. et al., J.A.C.S., 1940, 62, 1616

(β -D-fur Me gly di-Me)
 Owen, L.N. et al., J.C.S., 1941, 339 (α -D-1,2-isopropylidene, synth)

Teague, R.S. et al., Adv. Carbohydr. Chem., 1954, 9, 185 (D -oxime, α -D-tri-Ac, β -D-tri-Ac, α -D-fur Me gly, β -D-fur Me gly, rev)

Paulsen, H. et al., Chem. Ber., 1966, 99, 908
 (α -D-fur cyclohexylidene, α -D-fur cyclohexylidene mesyl)

Jeffrey, G.A. et al., Chem. Comm., 1966, 211 (cryst struct)

Timpe, W. et al., Carbohydr. Res., 1975, 39, 53 (D -benzyl, α -D-fur cyclohexylidene benzyl, α -D-fur Me gly derivs, β -D-fur Me gly derivs)
 Kegeleviic, D. et al., Carbohydr. Res., 1981, 92, 51 (5-pivaloyl-1,2-isopropylidene)
 Driguez, H. et al., Tet. Lett., 1981, 22, 5061 (α -D-1,2-isopropylidene)

Litvak, M.M. et al., Bioorg. Khim., 1982, 8, 1133 (β -D-fur Me gly)

Salam, M.A. et al., Carbohydr. Res., 1982, 101, 255

Ružic-Toroš, Z. et al., Carbohydr. Res., 1986, 152, 21 (cryst struct, derivs)

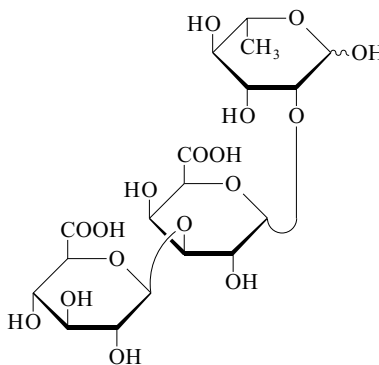
Negwer, M. et al., Organic-Chemical Drugs and their Synonyms, 6th edn., Akademie-Verlag, 1987, 463

Madaj, J. et al., Carbohydr. Res., 1998, 308, 431-433 (Me β -D-gly, cryst struct, pmr)

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, GFM000

 β -D-Glucuronopyranosyl-(1 \rightarrow 3)- α -D-galacturonopyranosyl-(1 \rightarrow 2)-L-rhamnose

β -D-Glucopyranuronosyl-(1 \rightarrow 3)- α -D-galactopyranuronosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, 9CI
 [122620-32-0]



$C_{18}H_{28}O_{17}$ 516.409

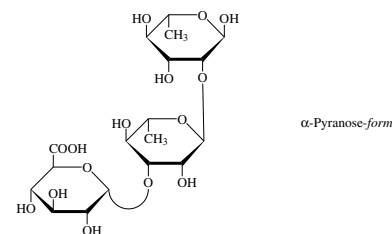
Isol. from the partial acid hydrolysates of bark of the kapok tree (*Ceiba pentandra*), bark of *Hydrangia paniculata*, mucilage of *Abelmoschus manihot* (aibika) and gums of *Sterculia setigera* and *Sterculia caudata*. Also from Okra mucilage R in fruits and roots of *Abelmoschus esculentus* and Hibiscus mucilages SL and SF from leaf and flower buds of *Hibiscus syriacus*.
 $[\alpha]_D +85.4$ (H_2O).

Aspinall, G.O. et al., J.C.S., 1965, 4325

Tomoda, M. et al., Chem. Pharm. Bull., 1979, 27, 1651 (isol)

Tomoda, M. et al., Carbohydr. Res., 1986, 151, 29; 1989, 190, 323 (isol)

Raju, T.S. et al., Carbohydr. Res., 1989, 191, 321 (isol)

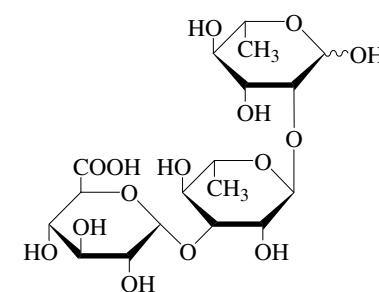
 α -D-Glucuronopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranose

$C_{18}H_{30}O_{15}$ 486.426

Constit. of the cells of *Chlorella vulgaris* K-22. Solid.

Mp 166-176° dec. $[\alpha]_D^{24} +46$ (c, 0.3 in H_2O).

Ogawa, K. et al., Carbohydr. Res., 1999, 321, 128-131

 α -D-Glucuronopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose

$C_{18}H_{30}O_{15}$ 486.426

Isol. by hydrol. of glucuronorhamnan polysaccharide from *Chlorella vulgaris*. Solid.

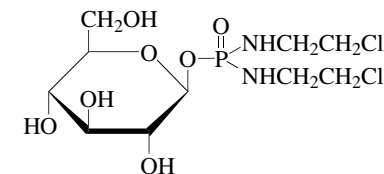
Mp 166-176° dec. $[\alpha]_D^{24} +46$ (c, 0.3 in H_2O) (nat.). $[\alpha]_D +12.1$ (c, 0.32 in H_2O) (equilib.) (synthetic).

Ogawa, K. et al., Carbohydr. Res., 1999, 321, 128-131 (isol, struct)

Sajtos, F. et al., Carbohydr. Res., 2001, 334, 253-259 (synth)

Glufosfamide, INN

Glucopyranose 1-[N,N'-bis(2-chloroethyl)-phosphorodiamidate]. D 19575



$C_{10}H_{21}Cl_2N_2O_7P$ 383.164

Antineoplastic agent. Granted fast track status by FDA (2004) for treatment of pancreatic cancer. Glucose deriv. of Ifosfamide.



$\text{C}_3\text{H}_9\text{O}_6\text{P}$ 172.074

Natural glycerophosphoric acid obt. from biol. sources is a mixt. of ca. 25% Glycerol 1-monophosphate, G-550 and 75% Glycerol 2-monophosphate.

$[\alpha]_{\text{D}}^{\text{ca. } -0.5^\circ}$. Synthetic glycerophosphoric acid prepd. by phosphorylation of glycerol has varying isomeric composition. Syrup. $\text{pK}_{\text{a}2}$ 6 (25°, 1.0M KCl). Hygroscopic, dec. on dist.

Mono-Na salt: Cariostatic used in mouthwashes.

Di-Na salt: [819-83-0]

Cryst. + 5H₂O (H₂O). Mp 100-102°.

Ca salt: [55701-23-0]

Cryst. + 1H₂O.

Di-Ph ether:

$\text{C}_{15}\text{H}_{17}\text{O}_6\text{P}$ 324.269

Cryst. (EtOH/petrol). Mp 137-137.5°.

Di-Ph ether, Na salt:

Cryst. + 10H₂O. Mp 54°.

[927-20-8, 1319-69-3, 1319-70-6, 1320-46-3, 1334-74-3, 27214-00-2]

Baer, G. *et al.*, *J. Biol. Chem.*, 1940, **135**, 321 (synth)

Cherbuliez, E. *et al.*, *Helv. Chim. Acta*, 1946, **29**, 2006 (synth)

Mazhar-Ul-Haque, *et al.*, *Chem. Comm.*, 1966, 214 (cryst struct)

Harvey, D.J. *et al.*, *J.C.S. Perkin 1*, 1972, 1074 (trimethylsilyl, ms)

Greenwald, J. *et al.*, *J.C.S. Perkin 2*, 1972, 1095 (uv, props)

Nakagaki, M. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 1887 (conformn)

Inoue, M. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 1491 (struct)

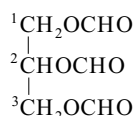
Glycerol triformate

G-552

1,2,3-Propanetriol triformate, 9CI.

Triformin, 8CI

[32765-69-8]



$\text{C}_6\text{H}_8\text{O}_6$ 176.126

Insol. cold H₂O. Mp 18°. Bp₇₆₂ 266°.

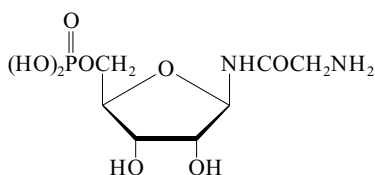
Hydrolysed by hot H₂O.

v. Romburgh, P. *et al.*, *Z. Phys. Chem.*, 1910, **70**, 459 (synth)

Glycinamide ribonucleotide

G-553

2-Amino-N-(5-O-phosphono-β-D-ribofuranosyl)acetamide, 9CI. 2-Amino-N-β-D-ribofuranosylacetamide 5'-(dihydrogen phosphate), 8CI. GAR [10074-18-7]



$\text{C}_7\text{H}_{15}\text{N}_2\text{O}_8\text{P}$ 286.178

Isol. from avian liver extracts. An intermed. in the *de novo* biosynthesis of purine nucleotides.

Ba salt: Mp 112-114° dec.

[73650-37-0, 92379-77-6]

Goldthwait, D.A. *et al.*, *J. Biol. Chem.*, 1956, **221**, 555; 569; 1071 (isol, struct)

Kazuo, I. *et al.*, *Biochim. Biophys. Acta*, 1963, **68**, 152 (isol)

Chettur, G. *et al.*, *Carbohydr. Res.*, 1977, **56**, 75 (synth)

Schendel, F.J. *et al.*, *Biochemistry*, 1986, **25**, 2256 (synth)

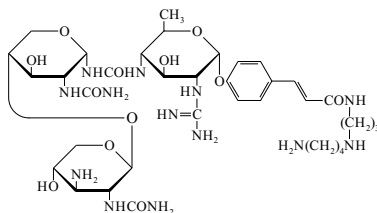
Boschelli, D.H. *et al.*, *Tet. Lett.*, 1989, **30**, 1599 (synth)

Glycocinnaspermicidin A

G-554

LL-BM 123β₁. BM 123β₁. Antibiotic BM 123β₁. Antibiotic LL-BM 123β₁

[62251-27-8]



$\text{C}_{36}\text{H}_{61}\text{N}_{13}\text{O}_{12}$ 867.958

Glycolipid antibiotic. Related to Cinodine I, C-133. Isol. from *Nocardia* spp.

Active against gram-positive and -negative bacteria and exp. infections in mice. Amorph. powder (as hydrochloride). Sol. H₂O; fairly sol. MeOH; poorly sol. Et₂O, hexane, butanol. $[\alpha]_{\text{D}}^{25} +67$ (c, 1 in H₂O). Hydrochloride dec. at ca. 200°. λ_{max} 286 (E1%/1cm 200) (MeOH) (Berdy). λ_{max} 286 (E1%/1cm 260) (H₂O) (Berdy). λ_{max} 286 (HCl) (Berdy).

4'-O-Deglycosyl: **Glycocinnaspermicidin D**

[99260-73-8]

$\text{C}_{30}\text{H}_{50}\text{N}_{10}\text{O}_9$ 694.787

Glycolipid antibiotic. Isol. from *Nocardia* sp. M9615-7F6. Possesses a broad antibacterial spectrum; also active against leukaemia L-1210 cells. Powder. Sol. H₂O; poorly sol. Me₂CO, hexane. Mp 300° dec. $[\alpha]_{\text{D}}^{18} +88$ (c, 0.5 in H₂O). λ_{max} 218 (ε 13500); 287 (ε 21900) (H₂O) (Derep). λ_{max} 218 (ε 10750); 287 (ε 21900) (H₂O) (Berdy).

► LD₅₀ (mus, ivn) 25 - 50 mg/kg.

UC6230000

Tresner, H. *et al.*, *J. Antibiot.*, 1978, **31**, 394 (isol)

Martin, J.H. *et al.*, *J. Antibiot.*, 1978, **31**, 398 (isol)

Ellestad, G.A. *et al.*, *J.A.C.S.*, 1978, **100**, 2515 (struct)

Araki, K. *et al.*, *Tet. Lett.*, 1982, **23**, 1705 (synth)

Dobashi, K. *et al.*, *J. Antibiot.*, 1985, **38**, 1166 (Glycocinnaspermicidin D)

Glycogen, 9CI, 8CI

G-555

Animal starch. Liver starch [9005-79-2]

$\text{C}_6\text{H}_{10}\text{O}_5$ 162.142

Reserve carbohydrate of animal organisms. High mol. wt. polymer (2.7×10^5 to 3.5×10^6) of (1→4)-α-linked glucopyranose residues branched through (1→6)-α-bonds to other chains, the average chain length being approx. 4-8 glucose residues. Polymeric. Minimum formula given. Distributed in the cell protoplasm. Found especially in the liver and rested muscle. Also occurs in insects and lower plants, e.g. fungi, yeasts. White powder. Sol. H₂O with opalescence. $[\alpha]_{\text{D}} +182$ (H₂O) (depending on origin).

► MC2700000

“Triacetate”: [95916-96-4]

$[\alpha]_{\text{D}}^{20} +170$ (CHCl₃). Dec. at 177°.

“Trimethyl deriv.”: [72067-11-9]

Mp 147° (softens at 135°). $[\alpha]_{\text{D}}^{20} +209$ (CHCl₃).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 199B (ir)

Manners, D.J. *et al.*, *Adv. Carbohydr. Chem.*, 1957, **12**, 261

Be Miller, J.N. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 138 (synth)

Leloir, L.F. *et al.*, *Encycl. Polym. Sci. Technol.*, 1967, **7**, 462

Dreyfus, J.C. *et al.*, *Pathobiol. Annu.*, 1974, **4**, 289

Dais, P. *et al.*, *Carbohydr. Res.*, 1982, **100**, 103 (cmr)

Snyder, A.P. *et al.*, *Anal. Chem.*, 1987, **59**, 1945 (ms)

Encyclopaedia of Polymer Science and Engineering, 1987, **7**, 545 (rev)

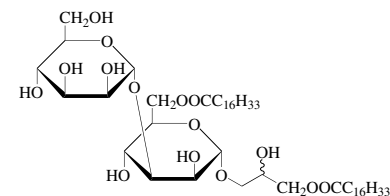
Manners, D.J. *et al.*, *Carbohydr. Polym.*, 1991, **16**, 37 (struct, rev)

Zang, L.-H. *et al.*, *Carbohydr. Res.*, 1991, **220**, 1 (pmr)

Saccharopolyspora Glycolipid

G-556

1



$\text{C}_{49}\text{H}_{92}\text{O}_{15}$ 921.257

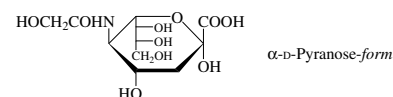
The C₁₇ residues appear to be mainly monomethyl branched. Isol. from *Saccharopolyspora hirsuta*, *Saccharopolyspora rectivirgula* and *Saccharopolyspora erythraea*.

Gamian, A. *et al.*, *Carbohydr. Res.*, 1996, **296**, 55-67 (isol)

N-Glycolylneuraminic acid

G-557

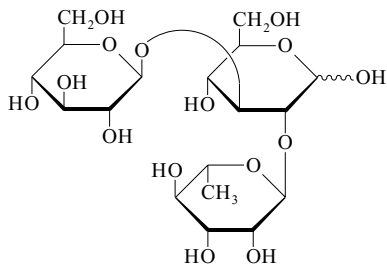
3,5-Dideoxy-5-[(hydroxyacetyl) amino]-D-glycero-D-galacto-2-nonulosonic acid, 9CI. Porcine sialic acid. NGNA [1113-83-3]



$\text{C}_{11}\text{H}_{19}\text{NO}_{10}$ 325.272

Gracillmatriose**G-564**

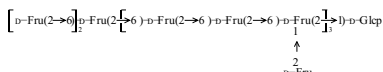
6-Deoxy- α -L-mannopyranosyl(1 \rightarrow 2)-
[β -D-glucopyranosyl(1 \rightarrow 3)]-D-glucose,
9CI. α -L-Rhamnopyranosyl(1 \rightarrow 2)[β -D-
glucopyranosyl(1 \rightarrow 3)]-D-glucose
[64313-64-0]



C₁₈H₃₂O₁₅ 488.442

The sugar moiety of Gracillin (see under Spirost-5-en-3-ol) and of a heteroside of *Populus yunnanensis*.
Mp 169-170° dec. [α]_D²⁰ -8.2 (c, 2.08 in H₂O).

Kawasaki, T. *et al.*, *Chem. Pharm. Bull.*, 1962, **10**, 698; 703 (*isol, struct*)
Sosa, F. *et al.*, *Phytochemistry*, 1970, **9**, 441 (*isol*)

Graminin B**G-565**

A polyfructosan attached to a single glucose unit. *Isol.* from rye spikes.
[α]_D²⁰ -31.7 (c, 1.0 in H₂O).

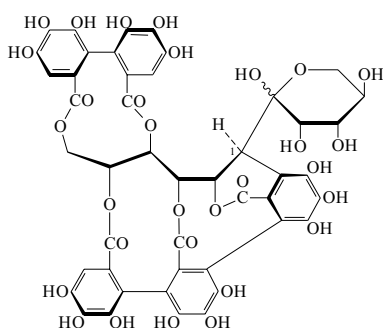
Poly-Ac: [α]_D²⁰ +7.9 (c, 1.0 in CHCl₃).

Poly-Me: [α]_D²⁰ -35.7 (c, 0.8 in CHCl₃).

Schlubach, H.H. *et al.*, *Annalen*, 1952, **578**, 198; 1958, **614**, 123 (*isol*)

Grandinin**G-566**

[115166-32-0]



C₄₆H₃₄O₃₀ 1066.757

In equilib. with the furanose isomer. A major tannin in a number of species of Myrtaceae, Fagaceae and Lythraceae. Pale brown amorph. powder + 6H₂O.
[α]_D²⁴ -33 (c, 1.2 in 50% Me₂CO aq.).
 λ _{max} 220; 280 (MeOH) (Berdy).

1-Deglycosyl, 1 α -hydroxy: **Castalagin**
[24312-00-3]

C₄₁H₂₆O₂₆ 934.641

Isol. from *Quercus sessiliflora*, *Quercus stenophylla* and *Castanea sativa* (sweet chestnut). Off-white amorph. powder.
[α]_D²⁵ -99.9 (c, 0.52 in MeOH).

1-Deglycosyl, 1 α -(3,4,5-trihydroxybenzoyloxy): **1-O-Galloylcastalagin**
[108449-60-1]

C₄₈H₃₀O₃₀ 1086.747

Elagitannin from leaves of *Eugenia grandis*. Needles + 7H₂O (H₂O).
Mp 230° dec. [α]_D²⁸ -105 (c, 1.0 in MeOH).

1-Deglycosyl, 1 β -hydroxy: **Vescalagin**
[36001-47-5]

C₄₁H₂₆O₂₆ 934.641

Isol. from sweet chestnut *Castanea sativa* and oak *Quercus sessiliflora*. Prisms (H₂O).
Mp 200° dec. [α]_D²⁵ -109.6 (c, 2 in H₂O).

1-Deglycosyl, 1 β -carboxy: **Vescalagincarboxylic acid**
[118964-19-5]

C₄₂H₂₆O₂₇ 962.651

Isol. from the bark of *Quercus mongolica* var. *grosseserrata*. Needles + 1½H₂O.
Mp 180° dec. [α]_D²³ -59.3 (c, 0.60 in MeOH aq.).

Mayer, W. *et al.*, *Annalen*, 1967, **707**, 177; 1969, **721**, 186; 1971, **751**, 60 (*isol, struct, pmr*)
Nonaka, G. *et al.*, *J.C.S. Perkin 1*, 1985, 165 (*pmr, cmr*)

Nonaka, G.-I. *et al.*, *Chem. Pharm. Bull.*, 1987, **35**, 217; 1989, **37**, 2071; 1990, **38**, 2151 (*struct, pmr, cmr, synth*)

Ishimaru, K. *et al.*, *Chem. Pharm. Bull.*, 1988, **36**, 3319 (*Vescalagincarboxylic acid*)

Vivas, N. *et al.*, *Phytochemistry*, 1995, **39**, 1193 (*Castalagin, Vescalagin*)

Grifolan 7N**G-567**

[98037-03-7]

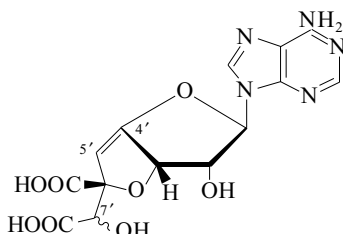
A (1 \rightarrow 3)- β -D-glucan having a β -D-glucopyranosyl group attached to the 6-position of almost every third backbone unit. MW ca. 1,200,000. Other similar polymers of smaller size *isol.* from this sp. *Isol.* from *Grifola frondosa* (maitake). Shows potent activity against Sarcoma 180 solid tumour. [α]_D +1.8 (c, 1 in H₂O).

[37361-00-5, 100358-66-5, 104074-36-4, 113189-33-6]

Iino, K. *et al.*, *Carbohydr. Res.*, 1985, **141**, 111-119 (*isol*)

Griseolic acid**G-568**

1-(6-Amino-9H-purin-9-yl)-3,6-anhydro-6-C-carboxy-1,5-dideoxy- α -L-talo-oct-4-enofuranuronic acid, 9CI
[79030-08-3]



C₁₄H₁₃N₅O₈ 379.285

Nucleoside antibiotic. Prod. by *Streptomyces griseoaurantiacus*. Inhibits cyclic-AMP phosphodiesterase. Powder.
Sol. H₂O; poorly sol. hexane, butanol.
Mp 220° dec. [α]_D²⁰ +6.9 (c, 0.1 in DMSO). λ _{max} 256 (€ 11500) (0.1N HCl) (Derep). λ _{max} 260 (€ 11800) (0.1N NaOH) (Derep). λ _{max} 256 (€ 11500) (0.1N HCl) (Derep).

► LD₅₀ 100-200 mg/kg. RH3080000

Ca salt: [α]_D²⁰ -7.4 (c, 1 in DMSO).

Di-Me ester: Mp 130-132°.

7'-Deoxy: **Griseolic acid B**. 7'-Desoxygriseolic acid
[98890-01-8]

C₁₄H₁₃N₅O₇ 363.286

From *Streptomyces griseoaurantiacus*.

Inhibits cyclic-AMP phosphodiesterase. Cryst. Sol. H₂O, MeOH.

Mp 160° dec. [α]_D²⁰ +13.2 (c, 1.1 in DMSO). λ _{max} 256 (€ 11500) (0.1N HCl) (Derep). λ _{max} 260 (€ 11800) (0.1N NaOH) (Derep). λ _{max} 256 (€ 11500) (0.1N HCl) (Derep).

4',5'-Dihydro, 7'-deoxy: **Griseolic acid C**. Dihydrodesoxygriseolic acid
[100242-49-7]

C₁₄H₁₅N₅O₇ 365.302

From *Streptomyces griseoaurantiacus*.

Inhibits various cyclic nucleotide phosphodiesterases. Less toxic than Griseolic acid. Cryst. +2H₂O. Sol. H₂O.

Mp 160° dec. [α]_D²⁰ -50.7 (c, 1 in DMSO). λ _{max} 256 (€ 11500) (0.1N HCl) (Derep).

λ _{max} 260 (€ 11800) (0.1N NaOH) (Derep).

λ _{max} 256 (€ 11500) (0.1N HCl) (Derep).

λ _{max} 260 (MeOH) (Berdy). λ _{max} 260 (H₂O) (Berdy).

Japan. Pat., 1981, 81 68 695; *CA*, **95**, 148721

Eur. Pat., 1985, 162 715; *CA*, **104**, 67509

(*Dihydrodesoxygriseolic acid*)

Iijima, Y. *et al.*, *FEBS Lett.*, 1985, **192**, 179 (*props*)

Nakagawa, F. *et al.*, *J. Antibiot.*, 1985, **38**, 823 (*isol, props*)

Takahashi, S. *et al.*, *J. Antibiot.*, 1985, **38**, 830; 1988, **41**, 705 (*structs, derivs*)

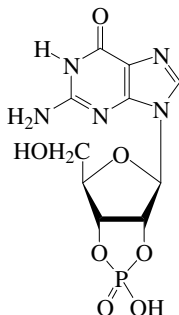
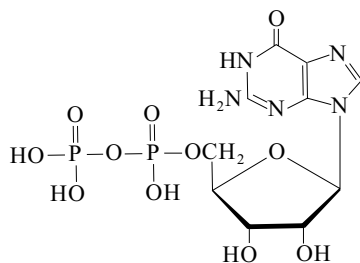
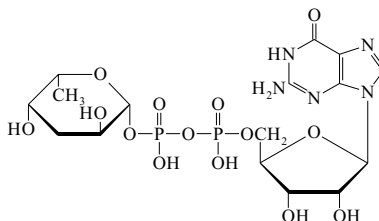
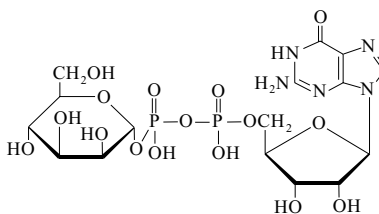
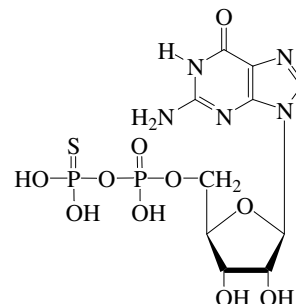
Japan. Pat., 1985, 85 149 394; *CA*, **104**, 4660 (*7'-Deoxygriseolic acid*)

Murofushi, Y. *et al.*, *Chem. Pharm. Bull.*, 1987, **35**, 1036

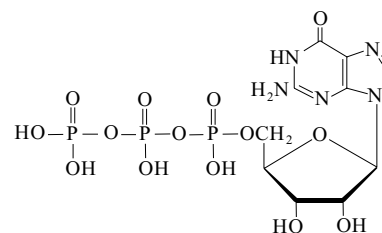
Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)

Tulshian, D.B. *et al.*, *J.A.C.S.*, 1995, **117**, 7009-7010 (*synth*)

Knapp, S. *et al.*, *Org. Lett.*, 2001, **3**, 3583-3585 (*Griseolic acid B, synth*)

Guanosine cyclic 2',3'-(hydrogen phosphate), 9CI2',3'-GMP
[634-02-6] $C_{10}H_{12}N_5O_7P$ 345.208Markham, R. *et al.*, *Biochem. J.*, 1952, **52**, 552-557 (synth)Jardetsky, C.D. *et al.*, *J.A.C.S.*, 1960, **82**, 222-229 (pmr)Holy, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1966, **31**, 1528-1534 (synth)Tomasz, J. *et al.*, *Nucleic Acid Chem.*, 1978, **2**, 875-879 (synth)**Guanosine 5'-diphosphate****G-572**Guanosine 5'-(trihydrogen diphosphate), 9CI. Guanosine 5'-diphosphoric acid. GDP
[146-91-8] $C_{10}H_{15}N_5O_{11}P_2$ 443.203Constit. of many plant and animal tissues. Intermediate in biosynth. of RNA by polynucleotide phosphorylase. Amorph. pK_a 2 (25°). λ_{max} 256 (ϵ 11800) (0.01M HCl).Ayengar, P. *et al.*, *J. Biol. Chem.*, 1956, **218**, 521-533 (isol)Michelson, A.M. *et al.*, *Biochim. Biophys. Acta*, 1964, **91**, 1-13 (synth)Lee, C. *et al.*, *Biochemistry*, 1976, **15**, 697-704 (conformn, pmr)Labotka, R.J. *et al.*, *J.A.C.S.*, 1976, **98**, 3699-3704 (P-31 nmr)**Guanosine diphosphate colitose**GDP-colitose
[14264-50-7] $C_{16}H_{25}N_5O_{14}P_2$ 573.346Isol. from *Escherichia coli*.Heath, E.C. *et al.*, *Biochim. Biophys. Acta*, 1960, **39**, 377 (isol)Heath, E.C. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1962, **48**, 1209 (synth)Elbein, A.D. *et al.*, *Methods Enzymol.*, 1966, **8**, 300 (synth)**Guanosine diphosphate mannose****G-574**Guanosine 5'-(trihydrogen diphosphate)-mono- α -D-mannopyranosyl ester, 9CI. Guanosine 5'-(trihydrogen pyrophosphate)-mono- α -D-mannopyranosyl ester, 8CI. GDP-mannose
[3123-67-9] $C_{16}H_{25}N_5O_{16}P_2$ 605.345Present in egg white. Presumed intermed. in formation of mannan in yeast. Also isol. from green gram (*Phaseolus aureus*) seedlings. Cofactor in the biosynth. of mannose-containing oligosaccharides. λ_{max} 260; 280 (H_2O). K salt: λ_{max} 252 (ϵ 13700) (H_2O)).Cabib, E. *et al.*, *J. Biol. Chem.*, 1954, **206**, 779Munch-Petersen, A. *et al.*, *Arch. Biochem. Biophys.*, 1955, **55**, 592 (synth)Grégoire, J. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1963, **257**, 3508 (isol)Donovan, J.W. *et al.*, *Arch. Biochem. Biophys.*, 1967, **122**, 17Braell, W.A. *et al.*, *Anal. Biochem.*, 1976, **74**, 484 (synth)Lee, C. *et al.*, *Biochemistry*, 1976, **15**, 697 (conformn, pmr)Pallanca, J.E. *et al.*, *J.C.S. Perkin 1*, 1993, 3017**Guanosine 5'-O-(2-thiodiphosphate)****G-575**5'-Guanylic acid monoanhydride with phosphorothioic acid, 9CI. GDP β S
[71376-97-1] $C_{10}H_{15}N_5O_{10}P_2S$ 459.27

Inhibits stimulation of adenylate cyclase by GTP.

Eckstein, F. *et al.*, *J. Biol. Chem.*, 1979, **254**, 9829-9834 (use)**Guanosine 5'-triphosphate****G-576**Guanosine 5'-(tetrahydrogen triphosphate), 9CI, 8CI. GTP. Guanosine 5'-triphosphoric acid
[86-01-1] $C_{10}H_{16}N_5O_{14}P_3$ 523.183Occurs in many animal and plant tissues. Isol. from yeast. Amorph. pK_{a5} 7.65; pK_{a6} 10.1 (25°). λ_{max} 256 nm (pH 1).

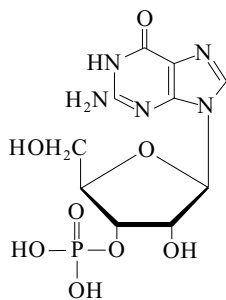
► MF8793000

[56001-37-7]

Ayengar, P. *et al.*, *J. Biol. Chem.*, 1956, **218**, 521 (isol)Kawaguchi, K. *et al.*, *Agric. Biol. Chem.*, 1970, **34**, 908 (synth)Chan, S.I. *et al.*, *Jerusalem Symp. Quantum Chem. Biochem.*, 1972, **4**, 277; *CA*, **80**, 129365d (rev, pmr)Labotka, R.J. *et al.*, *J.A.C.S.*, 1976, **98**, 3699 (nmr)Furusawa, K. *et al.*, *J.C.S. Perkin 1*, 1976, 1711 (synth)

3'-Guanylic acid, 9CI, 8CI G-577

Guanosine 3'-(dihydrogen phosphate), 9CI.
Guanylic acid b
[117-68-0]



$C_{10}H_{14}N_5O_8P$ 363.223

Occurs in yeast nucleic acid. Cryst.
+ 2H₂O.
Mp 180° dec. (208°). $[\alpha]_D^{25}$ -8 (c, 2.0 in H₂O).

Brucine salt:

Cryst. + 7H₂O. Mp 233-240° dec.
(anhyd.). $[\alpha]_D^{30}$ -26 (EtOH).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1932, **98**, 9
(struct)

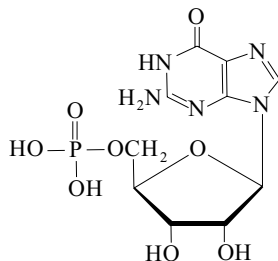
Cohn, W.E. *et al.*, *Biochem. Prep.*, 1957, **5**, 40
(isol)

Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997
Japan. Pat., 1971, 71 34 195; *CA*, **76**, 2550x
(synth)

Tran, D. *et al.*, *Nucleic Acids Res.*, 1975, **2**, 873
(pmr, conformn)

5'-Guanylic acid, 9CI, 8CI G-578

Guanosine 5'-(dihydrogen phosphate).
Guanosine monophosphate. Guanosine
5'-phosphoric acid. GMP. E626
[85-32-5]
[661-20-1]



$C_{10}H_{14}N_5O_8P$ 363.223

Widely distributed in plants and animals,
occurs in the hydrolysates of RNA.
Mp 190-200° dec. pK_{a3} 6.66 (25°). λ_{max}
256 (ε 12400) (aq. buffer) (pH 2). λ_{max} 260
(ε 12100) (aq. buffer) (pH 12).

MF9283000

Di-Na salt: Disodium guanylate. E628
[5550-12-9] Flavour enhancer.
Hygroscopic monohydrate. Mp 250°
dec.

LD₅₀ (mus, orl) 15000 mg/kg. MF9290000**Ba salt:**

Powder + 8H₂O.

Chambers, R.W. *et al.*, *J.A.C.S.*, 1957, **79**, 3747
(synth)

Tener, G.M. *et al.*, *J.A.C.S.*, 1961, **83**, 159

Takaku, O. *et al.*, *Agric. Biol. Chem.*, 1975, **39**,
2373 (pmr)

Simonsits, A. *et al.*, *Biochim. Biophys. Acta*,
1975, **395**, 74 (synth)

Norton, R.S. *et al.*, *J.A.C.S.*, 1976, **98**, 1007
(cmr)

Barnes, C.L. *et al.*, *Acta Cryst. B*, 1982, **38**, 812
(cryst struct)

Lewis, R.J. *et al.*, *Food Additives Handbook*,
Van Nostrand Reinhold International, New
York, 1989, GLS800

Martindale, *The Extra Pharmacopoeia*, 30th
edn., Pharmaceutical Press, 1993, 1362

Encyclopedia of Food and Color Additives, (ed.
Burdock, G.A.), CRC Press, 1997, 892 (rev)

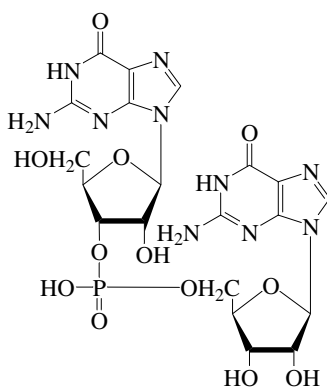
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of*
Industrial Materials, 8th edn., Van Nostrand
Reinhold, 1992, GLS800

Guanylyl-(3' → 5')-guanosine, G-579

9CI

GpG

[3353-33-1]



$C_{20}H_{25}N_{10}O_{12}P$ 628.451

Lohrmann, R. *et al.*, *J.A.C.S.*, 1964, **86**, 4188-
4194; 1966, **88**, 829-833 (synth, uv)

Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**,
29-38 (ord)

Brimacombe, R. *et al.*, *Coll. Czech. Chem.*
Comm., 1968, **33**, 2074-2086 (synth, uv)

Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997-
1029 (pmr)

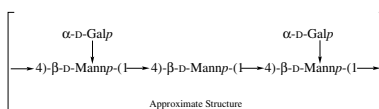
Neilson, T. *et al.*, *Can. J. Chem.*, 1973, **51**, 1068-
1074 (synth)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**,
424-435 (ms)

Guar gum

G-580

*Guar flour. Cyanopsis gum. Burtonite V-7-
E. Dealea TPI. Decarpa. Galactasol.
Glucotard. Guarina. Guarem. E412. Many
other names*
[9000-30-0]



Obt. from the ground endosperms of
Cyamopsis tetragonolobus. Thickener,
emulsifier, coagulant, flocculant, water
binding agent and tablet disintegrant.
Used in foodstuffs, cosmetics, pharmaceu-
ticals, paper making, explosives, water
treatment, mining ore concentration and
as a tobacco humectant. Hypocholester-
olaemic agent, used orally in control of
diabetes.

Yellowish-white to white powder. Sol.
H₂O; insol. org. solvs.

[2-Hydroxy-3-(trimethylammonio)propyl]
ether: *Hi-Care*® 1000
[65497-29-2] Used in hair conditioning
and skin cleansing products.

2-Hydroxypropyl ether: *Jaguar*® HP-11
[39421-75-5] Used in oil-well fracturing
fluids and liq. slurry explosives.

Goldstein, A.M. *et al.*, *Ind. Gums*, 2nd edn.,
(eds. Whistler, R.L. *et al.*), Academic Press,
1973, 303-321 (rev)

Busch, P. *et al.*, *Parfuem. Kosmet.*, 1984, **65**,
756; 758-760 (2-hydroxy-3-
(trimethylammonio)propyl ether)

Prabhanjan, H. *et al.*, *Carbohydr. Polym.*, 1989,
11, 279-292 (2-hydroxypropyl ether)

Todd, P.A. *et al.*, *Drugs*, 1990, **39**, 917-928 (rev,
clinical use)

Food Chemicals Codex, 4th edn., National
Academy Press, 1996, 187-188 (use, props)

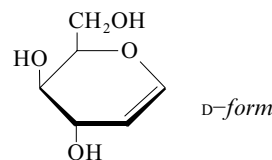
Martindale, *The Extra Pharmacopoeia*, 31st edn.,
Pharmaceutical Press, 1996, 349

Encyclopedia of Food and Color Additives, (ed.
Burdock, G.A.), CRC Press, 1997, 1250-1255

Merck Index, 13th edn., 2001, No. 4588

Gulal G-581

1,5-Anhydro-2-deoxy-xylo-hex-1-enitol.
1,2-Dideoxy-xylo-hex-1-enopyranose. *Idal*



$C_6H_{10}O_4$ 146.143

D-form

D-Gulal. L-Idal

[81275-42-5]

3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl-D-gulal
[6586-65-8]

$C_{12}H_{16}O_7$ 272.254

Mp 97-98°. $[\alpha]_D$ +248 (CHCl₃).

4,6-O-Benzylidene: 4,6-O-Benzylidene-
1,2-dideoxy-D-xylo-hex-1-enopyranose.
4,6-O-Benzylidene-D-gulal

$C_{13}H_{14}O_4$ 234.251

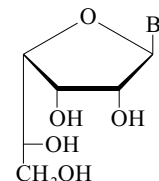
Cryst. (Et₂O/hexane). Mp 129°. $[\alpha]_D^{25}$
+192 (c, 1.4 in CHCl₃). Indexed as
D-arabino- in CAS.

Ciment, D.M. *et al.*, *J.C.S. (C)*, 1966, 441
(D-tri-Ac)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**,
61 (D-benzylidene, pmr)

Gulofuranosyl bromide

G-582

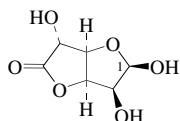


$C_6H_{11}BrO_5$ 243.054

- Atkins, E.D. *et al.*, *Biopolymers*, 1973, **12**, 1879 (cryst struct)
 Morris, E.R. *et al.*, *J.C.S. Perkin 2*, 1975, 1418 (cd, conformn)
 Siddiqui, I.R. *et al.*, *Carbohydr. Res.*, 1978, **63**, 312; 1980, **80**, 343 (isol, L-form, Na salt, synth)
 Mo, F. *et al.*, *Carbohydr. Res.*, 1985, **145**, 13 (cryst struct, L-form, Na salt)
 Grasdalen, H. *et al.*, *Carbohydr. Res.*, 1990, **203**, 281 (pmr, cmr)
 Chida, N. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 137-148 (2,3:4,5-diisopropylidene, Me ester)

Gulurono-6,3-lactone **G-590**

Guluronic acid γ -lactone, 9CI. Gulurone
 [28630-71-9]
 [14474-04-5]

 α -L-Furanose-form

$C_6H_8O_6$ 176.126

 α -L-Furanose-form

Me glycoside: Methyl α -L-gulofuranosiduronic acid γ -lactone. Methyl α -L-gulofuranosidurono-6,3-lactone
 [72521-46-1]
 $C_7H_{10}O_6$ 190.152
 Mp 140-143°. $[\alpha]_D^{20}$ -27 (c, 0.9 in Me_2CO).

 β -L-Furanose-form

Me glycoside: Methyl β -L-gulofuranosiduronic acid γ -lactone. Methyl β -L-gulofuranosidurono-6,3-lactone
 [72521-45-0]

$C_7H_{10}O_6$ 190.152

Syrup. $[\alpha]_D^{20}$ +111.5 (c, 3.7 in H_2O).

Macher, I. *et al.*, *Carbohydr. Res.*, 1979, **77**, 225-230

Gum ghatti**G-591**

Ghatti gum. Indian gum. FEMA 2519
 [9000-28-6]

A water-sol. polysaccharide made up of Ca and Mg salts of L-arabinose, D-galactose, D-mannose, D-xylose and D-glucuronic acids. Isol. from the tree *Anogeissus latifolia*. Emulsifier for foods.

Merck Index, 12th edn., 1996, 4424

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1199-1201

Gum karaya**G-592**

Karaya gum. *Sterculia* gum. FEMA 2605
 [9000-36-6]

A partially acetylated polysaccharide containing D-galactouronic acid, D-galactose and L-rhamnose units. The dried exudate of the tree *Sterculia urens*. Emulsifier, thickener, flavouring and gelling agent in food manuf.

Merck Index, 12th edn., 1996, 5296

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1510-1517

Gum tragacanth**G-593**

Tragacanth gum. FEMA 3079
 [9000-65-1]

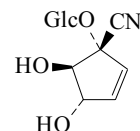
Complex mixt. of polysaccharides; contains two primary constituents, water-sol. Tragacanthin and water-insol. Bassorin. Dried exudate from *Astragalus gummifer* and other *Astragalus* species. Stabiliser, thickener and emulsifier in food manuf.

Merck Index, 12th edn., 1996, 4609

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2818-2822

Gynocardin**G-594**

1-(β -D-Glucopyranosyloxy)-4,5-dihydroxy-2-cyclopentene-1-carbonitrile, 8CI
 [14332-17-3]



$C_{12}H_{17}NO_8$ 303.268

Glucoside from seeds of *Gynocardia odorata* and from *Pangium edule* (football fruit). Prismatic needles + $1\frac{1}{2} H_2O$ (H_2O). Mp 165-166° (anhyd.). $[\alpha]_D^{28}$ +72.9 (c, 0.96 in H_2O).

Hexa-Ac: Mp 119-120°. $[\alpha]_D^{25}$ +40.2 (c, 1.69 in $CHCl_3$).

Hexa-Me ether:

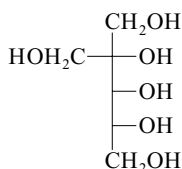
Oil. $[\alpha]_D^{27}$ +87.1 (c, 1.54 in $CHCl_3$).

Coburn, R.A. *et al.*, *J.O.C.*, 1966, **31**, 4312 (isol, struct)

Kim, H.S. *et al.*, *Chem. Comm.*, 1970, 381 (cryst struct)

Hamamelitol

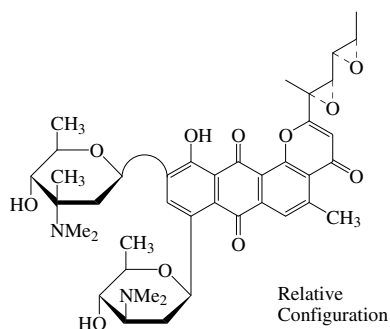
H-1

2-C-(Hydroxymethyl)-erythro-pentitol,
9CI. 2-(Hydroxymethyl)ribitol, 8CIC₆H₁₄O₆ 182.173

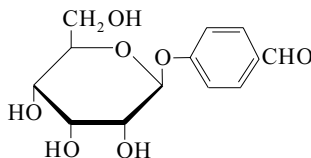
Note that C(2) is not a chiral centre in the parent compd.

D-form [17298-09-8]Found in leaves of numerous plant spp.; high levels in leaves of *Hedera helix*. Syrup. [α]_D²⁰ +23 (c, 1 in MeOH).*Hexabenzoyl: Hexabenzoyl-D-hamamelitol*C₄₈H₃₈O₁₂ 806.821Cryst. (C₆H₆/petrol). Mp 136°. [α]_D +13.7 (c, 1 in Me₂CO).Sellmair, J. et al., *Z. Pflanzenphysiol.*, 1968, **59**, 70 (*isol, synth, hexabenzoyl*)Szarek, W.A. et al., *Carbohydr. Res.*, 1977, **53**, 101 (*synth*)Yanagihara, R. et al., *Bull. Chem. Soc. Jpn.*, 1995, **68**, 237 (*synth*)Moore, B.D. et al., *Planta*, 1995, **195**, 418 (*occur, purifn, ms, bibl*)**Hedamycin, 8CI**

H-2

NSC 70929D
[11048-97-8]C₄₁H₅₀N₂O₁₁ 746.853Anthracycline-type antibiotic. Isol. from *Streptomyces griseoruber*. Antitumour agent. Needles. Sol. C₆H₆, Py, CCl₄, THF, EtOAc, CHCl₃, acids; fairly sol. MeOH, Et₂O, EtOH, Me₂CO; poorly sol. H₂O, hexane.Mp 243-245°. Similar to Kidamycin and Pluramycin. λ_{max} 254 (ε 37300); 330 (ε 10000); 535 (ε 6500) (MeOH/NaOH) (Derep). λ_{max} 213 (ε 34300); 243 (ε 48000); 265 (sh) (ε); 268 (ε 27200); 432 (ε 8800) (MeOH) (Derep). λ_{max} 243; 265; 430 (MeOH) (Berdy). λ_{max} 245 (E1%/1cm 500); 430 (HCl) (Berdy). λ_{max} 254 (E1%/1cm 500); 324 (E1%/1cm 170); 495 (NaOH) (Berdy).► LD₅₀ (mus, ipr) .3 mg/kg. CB4584400Séquin, U. et al., *Tetrahedron*, 1978, **34**, 761 (*struct*)Zehnder, M. et al., *Helv. Chim. Acta*, 1979, **62**, 2525 (*cryst struct*)Ceroni, M. et al., *Helv. Chim. Acta*, 1982, **65**, 302 (*struct*)**Helicite**

H-3

4-Formylphenyl β-allopyranoside
[80154-34-3]C₁₃H₁₆O₇ 284.265Obt. from seeds of *Helicia erratica*. Cryst. (MeOH).Mp 188-190°. [α]_D²⁰ -92 (H₂O).Wei-shin, C. et al., *Annalen*, 1981, 1893**Heparan sulfate**

H-4

Heparitin sulfate
[9050-30-0]The struct. is similar to that of Heparin, H-5 but distinguished from it by different sulfate and acetyl contents. There may also be less uronosyl units present with the L-ido-config. Glycosaminoglycan. Widespread in mammalian connective tissue. Found for example in amniotic fluid, aorta, arterial tissue, blood leucocytes, brain, kidney, liver, skin and uterus. Fibrinolytic agent, anticoagulant. [α]_D +38 (H₂O).

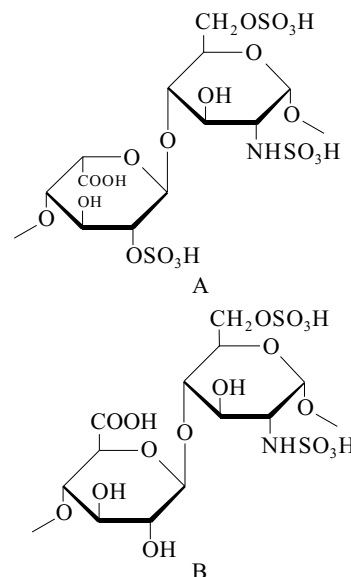
► MI0880000

Na salt (1:3): **Suleparoid sodium, INN**. *Arteven. Clarema. Hemorasil. Leparan. Tavidan. Tronan. Vasorema. Vas 40* [57459-72-0]

[83513-48-8]

Day, C.E. et al., *Artery (Leonidas, Mich.)*, 1975, **1**, 126 (*pharmacol*)Elloway, H.F. et al., *Biochem. J.*, 1977, **161**, 495 (*conformn*)Lindahl, U. et al., *Annu. Rev. Biochem.*, 1978, **47**, 385Kennedy, J.F. et al., *Proteoglycans-Biological and Chemical Aspects in Human Life*, Elsevier, 1979,Dietrich, C.P. et al., *Haemostaseologie (Stuttgart)*, 1986, **6**, 193 (*rev, struct, props, pharmacol*)Conrad, H.E. et al., *Ann. N.Y. Acad. Sci.*, 1989, **556**, 18 (*struct, metab, rev*)Lindahl, U. et al., *Ann. N.Y. Acad. Sci.*, 1989, **556**, 36 (*rev, biosynth*)*Adv. Exp. Med. Biol.*, 1992, **313**, 1 (*issue*)Gallagher, J.T. et al., *Glycobiology*, 1992, **2**, 523 (*rev*)Gallagher, J.T. et al., *Int. J. Biochem.*, 1992, **24**, 553 (*struct, rev*)Callas, D.D. et al., *Thromb. Res.*, 1993, **69**, 369 (*pharmacol*)Griffin, C.C. et al., *Carbohydr. Res.*, 1995, **276**, 183-197 (*isol, props*)Yeung, B.K.S. et al., *J. Carbohydr. Chem.*, 2002, **21**, 799-865 (*rev, synth*)**Heparin, 9CI, 8CI, BAN, USAN**

H-5

Heparinic acid. Fragmin. Pabryn. Many other names
[9005-49-6]

A polymer composed mainly of two disaccharide repeating units A and B. A is L-Iduronic acid 2-sulfate linked α-(1→4) to 2-Deoxy-2-sulfamido-D-glucose 6-sulfate while B is D-Glucuronic acid β-(1→4) linked to 2-Deoxy-2-sulfamido-D-glucose 6-sulfate. MW 5000-15000. See also 2-Amino-2-deoxy-α-D-glucopyranosyl-(1→4)-β-D-glucopyranosyluronic acid-(1→4)-2-amino-2-deoxy-α-D-glucopyranosyl-(1→4)-α-L-idopyranosyluronic acid-(1→4)-2-amino-2-deoxy-D-glucopyranose, A-255. Occurs in the blood, skin, aorta, umbilical cord and in most tissues and is supposedly manuf. by the mast cells. Has anticoagulant and thrombolytic action. Used in the manuf. of blood-compatible polymers for use as prosthetic materials. [α]_D +44 (H₂O). A variable fraction of the heparin chains are linked to serine or small peptides and contain the specific carbohydrate-protein linkage region (→ GlcUA → Gal → Gal → Xyl → Ser) identical with that found in several other connective tissue polysaccharides. The presence of this linkage region suggests that Heparin is synthesised *in vivo* as a proteoglycan. Na salt of depolymerised heparin obtained by nitrous acid degradn. of heparin from pork intestinal mucosa known as minolteparin sodium, INN, a low MW heparin.

► LD₅₀ (rat, orl) 1950 mg/kg. MI0700000Na salt: **Heparin sodium, BAN, INN, USAN. Hepsal. Liqueamin sodium. Monoparin. Uniparin**
[9041-08-1][α]_D²⁵ +47 (c, 1.5 in H₂O). Component of numerous preparations.

► Human systemic effects by subcutaneous route (altered perception, haemorrhages,

skin reactions *inter alia*). Exp. reprod. effects. M10850000

Ca salt: Calciparin. Heparin calcium.

Minihep calcium

[37270-89-6] Component of numerous preparations.

► M10800000

[9045-22-1]

Jeanloz, R.W. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 150 (synth)

Wolfson, M.L. *et al.*, *J.O.C.*, 1966, **31**, 1173 (config)

Biochem. Prep., 1968, **12**, 12 (purifn)

Helting, T. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 3515 (biosynth)

Perlin, A.S. *et al.*, *Can. J. Chem.*, 1972, **50**, 2437 (cmr)

Montgomery, R. *et al.*, *MTP Int. Rev. Sci.: Org. Chem., Ser. One*, (Aspinall, G.O., Ed.), University Park Press, USA and Canada, 1973, **7**, 242 (rev)

Falb, R.D. *et al.*, *Polym. Sci. Technol. (Plenum)*, 1975, **8**, 77 (rev, use)

Lindahl, U. *et al.*, *Annu. Rev. Biochem.*, 1978, **47**, 385

Roden, L. *et al.*, *The Biochemistry of Glycoproteins and Proteoglycans*, (Lennarz, W.J., Ed.), Plenum Press, New York and London, 1980, 321 (rev)

Meyer, B. *et al.*, *Carbohydr. Res.*, 1981, **88**, C1 (pmr)

Huckerby, T.N. *et al.*, *Carbohydr. Res.*, 1982, **103**, 141 (pmr)

Nachtmann, F. *et al.*, *Anal. Profiles Drug Subst.*, 1983, **12**, 215 (rev, pharmacol, metab, anal)

Witt, I. *et al.*, *Heparin: New Biochem. Med. Aspects, Proc. Symp. Dtsch. Ges. Klin. Chem.*, Ed., Walter de Gruyter, Berlin, 1983, (book)

Sinay, P. *et al.*, *Carbohydr. Res.*, 1984, **132**, C5 (synth)

Cocchetto, D.M. *et al.*, *Pharm. Int.*, 1984, **5**, 7 (rev, pharmacol)

Engelberg, H. *et al.*, *Pharmacol. Rev.*, 1984, **36**, 91 (rev, pharmacol)

Casu, B. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1985, **43**, 51 (rev)

Boettiger, L.E. *et al.*, *Acta Med. Scand.*, 1987, **222**, 195 (rev)

Mulloy, B. *et al.*, *Carbohydr. Res.*, 1987, **170**, 151 (pmr)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 7214

Hirsh, J. *et al.*, *Blood*, 1992, **79**, 1 (rev)

van Boeckel, C.A.A. *et al.*, *Angew. Chem., Int. Ed.*, 1993, **32**, 1671 (rev)

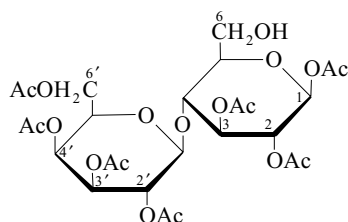
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 227; 229

Yeung, B.K.S. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 799-865 (rev, synth)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, HAQ500; HAQ550

1,2,2',3,3',4',6'-Hepta-O-acetylactose

H-6



C₂₆H₃₆O₁₈ 636.56

D-form [34394-99-5]

Mp 191-192°. [α]_D²² -12.5 (c, 2.24 in CHCl₃).

6-Mesyl: Mp 110-111°. [α]_D¹⁸ -5 (c, 2.11 in CHCl₃).

6-Tosyl: [34674-97-0]

Mp 129-131°. [α]_D¹⁹ -1 (c, 3.54 in CHCl₃).

6-Deoxy, 6-iodo: 1,2,2',3,3',4',6'-Hepta-O-acetyl-6-deoxy-6-iodo-D-lactose
C₂₆H₃₃IO₁₇ 746.457

Mp 220°. [α]_D¹⁹ -9 (c, 2.80 in CHCl₃).

Montgomery, E.M. *et al.*, *J.A.C.S.*, 1943, **65**, 1848

Tejina, S. *et al.*, *Carbohydr. Res.*, 1971, **20**, 123 (pmr)

2,2',3,3',4',6,6'-Hepta-O-acetylactose

H-7

C₂₆H₃₆O₁₈ 636.56

α -D-form

Glycosyl 1-bromide: Hepta-O-acetyl- α -D-lactosyl bromide

C₂₆H₃₅BrO₁₇ 699.456

Mp 143-144°. [α]_D²² +104.9 (CHCl₃).

Phenyl glycoside: Phenyl 2,2',3,3',4',6,6'-hepta-O-acetyl- α -D-lactoside

C₃₂H₄₀O₁₈ 712.657

Mp 170°. [α]_D¹⁹ +49 (c, 2.53 in CHCl₃).

β -D-form

Phenyl glycoside: Phenyl 2,2',3,3',4',6,6'-hepta-O-acetyl- β -D-lactoside

C₃₂H₄₀O₁₈ 712.657

Mp 165°. [α]_D²⁵ -22.7 (c, 1.58 in CHCl₃).

Montgomery, E.M. *et al.*, *J.A.C.S.*, 1943, **65**, 1848

Tejina, S. *et al.*, *Carbohydr. Res.*, 1971, **20**, 123 (pmr)

6-Heptenyl glucosinolate

H-8

1-Thio- β -D-glucopyranose 1-[N-(sulfooxy)-7-octenimide]

H₂C=CH(CH₂)₅C(SGlc)=NOSO₃H

C₁₄H₂₅NO₉S₂ 415.485

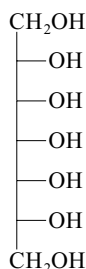
Present in Japanese horseradish (*Wasabia japonica*).

Kojima, M. *et al.*, *Yakugaku Zasshi*, 1973, **93**, 453; *CA*, **80**, 130475w (occur)

D-glycero-D-allo-Heptitol, 9CI

H-9

[1068-99-1]



C₇H₁₆O₇ 212.199

Prismatic rods (EtOH). Mp 144.5-146°. Opt. inactive (*meso*-).

Pratt, J.W. *et al.*, *J.A.C.S.*, 1955, **77**, 6326 (synth)

Okahira, A. *et al.*, *CA*, 1982, **97**, 103649a, (glc, struct)

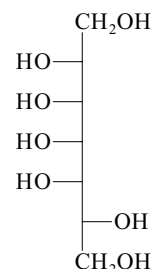
Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1984, **126**, 15 (conformn, cmr)

Köll, P. *et al.*, *Carbohydr. Res.*, 1993, **248**, 45 (cryst struct)

D-glycero-L-allo-Heptitol, 9CI

H-10

D-glycero-D-altro-Heptitol
[1068-96-8]



C₇H₁₆O₇ 212.199

Needles. Mp 125-128°. [α]_D²⁰ -0.3 (c, 1.2 in H₂O). [α]_D²⁰ +53.2 (c, 0.4 in 5% ammonium molybdate).

[6893-84-1]

Pratt, J.W. *et al.*, *J.A.C.S.*, 1955, **77**, 6326 (synth)

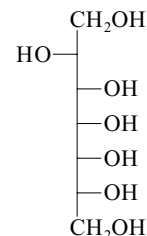
Young, R. *et al.*, *Can. J. Chem.*, 1966, **44**, 32 (synth)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1984, **126**, 15; 1986, **150**, 7 (cmr, conformn, cryst struct, pmr)

Lewis, D. *et al.*, *J.C.S. Perkin 2*, 1989, 1763 (conformn, pmr)

D-glycero-D-altro-Heptitol, D-glycero-L-allo-Heptitol

H-11



C₇H₁₆O₇ 212.199

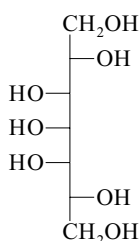
Minute needles. Mp 125-128°. [α]_D -0.3 (H₂O). [α]_D +53.2 (5% ammonium molybdate).

Pratt, J.W. *et al.*, *J.A.C.S.*, 1955, **77**, 6326 (synth)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1984, **126**, 15; 1986, **150**, 7 (cmr, cryst struct)

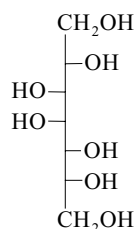
D-glycero-L-altro-Heptitol
meso-glycero-altro-Heptitol
[6893-83-0]

H-12

C₇H₁₆O₇ 212.199

A meso-compd. Syrup.

Hepta-Ac: [7011-03-2]

C₂₁H₃₀O₁₄ 506.46Cryst. (Et₂O/petrol). Mp 70°.Young, R. et al., *Can. J. Chem.*, 1966, **44**, 32
(synth, hepta-Ac)Lewis, D. et al., *J.C.S. Perkin 2*, 1989, 1763
(pmr)Kopf, J. et al., *Carbohydr. Res.*, 1994, **262**, 9
(cryst struct)**D-glycero-D-galacto-Heptitol**, H-13
9CI, 8CI
Perseitol. Persitol. α-Mannoheptitol. L-glycero-D-manno-Heptitol
[527-06-0]C₇H₁₆O₇ 212.199Isol. from leaves, fruit and particularly seeds of the avocado *Persea gratissima* or *Persea dymifolia*. Isol. (as K complex) from leaves of *Scurrula fusca*. Needles. Mp 187-188°. [α]_D²⁰ +1 (H₂O). Oxidised by *B. xylinum*.

Hepta-Ac: [19147-10-5]

C₂₁H₃₀O₁₄ 506.46Mp 119°. [α]_D²⁰ -13.4 (CHCl₃).

1,2:4,5:6,7-Tri-O-isopropylidene:

C₁₆H₂₈O₇ 332.393Mp 58-60°. [α]_D²⁰ -7 (c, 2.4 in CHCl₃).

[30635-52-0]

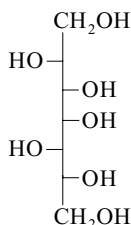
Peirce, G. et al., *J. Biol. Chem.*, 1915, **23**, 327Hann, R.M. et al., *J.A.C.S.*, 1939, **61**, 336
(struct)Szafraneck, J. et al., *Anal. Lett.*, 1973, **6**, 479
(glc)Okuda, T. et al., *Carbohydr. Res.*, 1975, **39**, 237
(synth)Angyal, S. et al., *Carbohydr. Res.*, 1984, **126**, 15
(cmr)Brimacombe, J.S. et al., *Carbohydr. Res.*, 1986, **150**, 35 (synth)Kanters, J.A. et al., *Acta Cryst. C*, 1990, **46**, 71
(cryst struct)Kopf, J. et al., *Acta Cryst. C*, 1991, **47**, 2186
(cryst struct)Jorgensen, M. et al., *J.O.C.*, 2001, **66**,

4630-4634 (synth, cmr)

Ishizu, T. et al., *Tet. Lett.*, 2001, **42**, 6887-6889
(isol)Ishizu, T. et al., *Chem. Pharm. Bull.*, 2002, **50**,
489-492 (pmr, cmr, struct)**D-glycero-L-galacto-Heptitol**, H-14
8CI

D-glycero-L-gluco-Heptitol. β-Galaheptitol. D-gulo-L-gala-Heptitol (obsol.). D-gala-L-gluco-Heptitol (obsol.)

[30636-42-1]

C₇H₁₆O₇ 212.199Mp 141-142°. [α]_D +2.4 (H₂O).

Hepta-Ac: Hepta-O-acetyl-D-glycero-L-galacto-heptitol

C₂₁H₃₀O₁₄ 506.46Mp 118°. [α]_D +11.4 (CHCl₃).

1-Deoxy-1-nitro: 1-Deoxy-1-nitro-D-glycero-L-galacto-heptitol

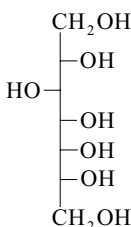
C₇H₁₅NO₈ 241.197Cryst. (EtOH). Mp 152-153°. [α]_D²⁰ +7.8
(c, 4 in H₂O).

[30635-52-0]

Hann, R.M. et al., *J.A.C.S.*, 1939, **61**, 336
(synth, hepta-Ac)Sowden, J.C. et al., *J.A.C.S.*, 1960, **82**, 954
(deoxy nitro deriv)Angyal, S. et al., *Carbohydr. Res.*, 1984, **126**, 15
(cmr)Kopf, J. et al., *Acta Cryst. C*, 1991, **47**, 1503
(cryst struct)Kopf, J. et al., *Carbohydr. Res.*, 1994, **262**, 9
(cryst struct, hepta-Ac)**D-glycero-D-gluco-Heptitol**, H-15
9CI, 8CI

β-Sedoheptitol. D-altro-D-gluco-Heptitol (obsol.). L-gulo-D-talo-Heptitol (obsol.)

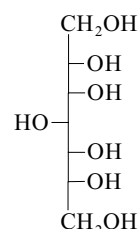
[608-61-7]

C₇H₁₆O₇ 212.199Isol. in trace amts. from *Sedum* spp.

Prisms (EtOH aq.).

Mp 128-129°. [α]_D²⁰ -0.8 (c, 4.1 in H₂O).

[30635-52-0]

Merrill, A.T. et al., *J.A.C.S.*, 1947, **69**, 70
(synth)Charlson, A.J. et al., *J.A.C.S.*, 1960, **82**, 3428
(isol)Szafraneck, J. et al., *Anal. Lett.*, 1973, **6**, 479
(glc)Mills, J.A. et al., *Aust. J. Chem.*, 1974, **27**, 1433
(conformn)Angyal, S. et al., *Carbohydr. Res.*, 1984, **126**, 15
(cmr)Brimacombe, J.S. et al., *Carbohydr. Res.*, 1986, **150**, 35 (synth)Köll, P. et al., *Carbohydr. Res.*, 1991, **218**, 55
(cryst struct)**D-glycero-D-gulo-Heptitol** H-16α-Guloheptitol. L-gluco-L-gulo-Heptitol (obsol.). D-gluco-D-gulo-Heptitol (obsol.)
[1069-00-7]C₇H₁₆O₇ 212.199Cryst. (MeOH). V. sol. H₂O; spar. sol. hot EtOH. Mp 127-128°. Opt. inactive (meso-).

Hepta-Ac:

C₂₁H₃₀O₁₄ 506.46Cryst. (EtOAc). Mp 118-119°
(113-115°).

1,2:4,5:6,7-Tri-O-isopropylidene:

C₁₆H₂₈O₇ 332.393

Cryst. (hexane). Mp 42-43°.

1,2:4,5:6,7-Tri-O-isopropylidene, 3-(p-nitrobenzoyl):

Cryst. (Et₂O). Mp 155-157°.

3,4,5,7-Tetrabenzyl:

C₃₅H₄₀O₇ 572.697Syrup. [α]_D²³ -0.7 (c, 4.4 in CHCl₃).

Heptabenzyl:

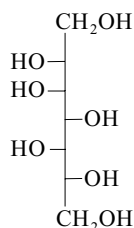
C₅₆H₅₈O₇ 843.07

Syrup.

Fischer, E. et al., *Annalen*, 1892, **270**, 64 (synth)MacLay, W.D. et al., *J.A.C.S.*, 1942, **64**, 1606
(synth)Wolfrom, M.L. et al., *J.A.C.S.*, 1951, **73**, 2933
(synth)Mills, J.A. et al., *Aust. J. Chem.*, 1974, **27**, 1433
(conformn)Okuda, T. et al., *Carbohydr. Res.*, 1975, **39**, 237
(synth, triisopropylidene deriv)Ningirawath, K. et al., *J.C.S. Perkin 2*, 1976, **349** (cryst struct)Angyal, S. et al., *Carbohydr. Res.*, 1984, **126**, 15
(cmr)Köll, P. et al., *Carbohydr. Res.*, 1993, **247**, 111
(cryst struct, hepta-Ac)Saavedra, O.M. et al., *J.O.C.*, 1996, **61**, 6987-6993 (tetrabenzyl, heptabenzyl, synth, cmr, ir, pmr)

D-glycero-L-gulo-Heptitol, 9CI**H-17**

D-glycero-D-ido-Heptitol. Glucoheptitol.
Glucoheptite
[3343-95-1]



C₇H₁₆O₇ 212.199

Formed by the action of *Pichia miso* (yeast) isol. from miso paste, when cultivated in presence of D-xylose. Platelets (MeOH aq.). Mp 130-131° (128-129°). [α]_D²⁰ +1.2 (H₂O).

Heptabenzoyl:

C₅₆H₄₄O₁₄ 940.955
Mp 181-182°. [α]_D²⁰ +25.1 (CHCl₃).

1,2:4,5:6,7-Tri-O-isopropylidene:

[68127-26-4]
C₁₆H₂₈O₇ 332.393
Oil. [α]_D²⁰ -7.4 (c, 2.0 in CHCl₃).

2,3:4,5:6,7-Tri-O-isopropylidene:

[68044-67-7]
C₁₆H₂₈O₇ 332.393
Oil. [α]_D²⁰ -3 (c, 2.5 in CHCl₃).

2,6-Anhydro, penta-Ac: [113889-65-9]

C₁₇H₂₄O₁₁ 404.37
Oil. [α]_D²⁵ +48.8 (c, 0.7 in CHCl₃).

2,6-Anhydro, pentabenzyl: [113889-64-8]

C₄₂H₄₄O₆ 644.806
Oil. [α]_D²⁵ +19.5 (c, 1.63 in CHCl₃).

1,3,4,5-Tetra-O-benzyl: [182265-87-8]

C₃₅H₄₀O₇ 572.697
Syrup. [α]_D²² -3.7 (c, 3.8 in CHCl₃).

Hepta-O-benzyl: [182124-70-5]

C₅₆H₅₈O₇ 843.07
Syrup. [α]_D²³ -4.5 (c, 2.4 in CHCl₃).

[30635-52-0]

Maclay, W.D. *et al.*, *J.A.C.S.*, 1942, **64**, 1606
(*synth*, heptabenzoyl)

Pratt, J.W. *et al.*, *J.A.C.S.*, 1952, **74**, 2210
(*synth*)

Onishi, H. *et al.*, *Can. J. Microbiol.*, 1965, **11**,
929 (*synth*, benzoyl)

Szafranek, J. *et al.*, *Anal. Lett.*, 1973, **6**, 479
(*glc*)

Mills, J.A. *et al.*, *Aust. J. Chem.*, 1974, **27**, 1433
(*conformn*)

Okuda, T. *et al.*, *Carbohydr. Res.*, 1978, **65**, 183
(*triisopropylidene*)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1984, **126**,
15; 1986, **150**, 7 (*cmr*, *conformn*)

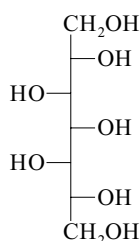
Lewis, D. *et al.*, *J.C.S. Perkin 2*, 1991, 197
(*conformn*)

Köll, P. *et al.*, *Carbohydr. Res.*, 1993, **248**, 45
(*cryst struct*)

Saavedra, O.M. *et al.*, *J.O.C.*, 1996, **61**,
6987-6993 (*tetrabenzyl*, *heptabenzyl*, *synth*,
cmr, *ir*, *pmr*)

D-glycero-L-ido-Heptitol**H-18**

meso-glycero-ido-Heptitol
[2204-11-7]



C₇H₁₆O₇ 212.199

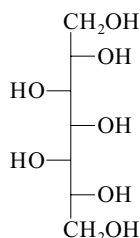
A meso-compd.

Lewis, D. *et al.*, *J.C.S. Perkin 2*, 1989, 1763
(*pmr*)

Kopf, J. *et al.*, *Carbohydr. Res.*, 1994, **262**, 9
(*cryst struct*)

D-glycero-L-ido-Heptitol**H-19**

ido-ido-Heptitol



C₇H₁₆O₇ 212.199

Meso-. Mp 110-112°.

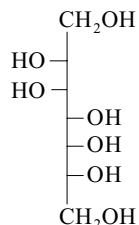
Hepta-Ac:

C₂₁H₃₀O₁₄ 506.46
Mp 175-176°.

Pratt, J.W. *et al.*, *J.A.C.S.*, 1952, **74**, 2210

D-glycero-D-manno-Heptitol, 9CI, 8CI**H-20**

D-glycero-D-talo-Heptitol. Volemitol.
α-Sedoheptitol. β-Mannoheptitol
[488-38-0]



C₇H₁₆O₇ 212.199

Occurs in the edible chichitake mushroom (*Lactarius volemus*), in roots of Primulae and in lipopolysaccharides from *E. coli*. Also in red algae. Widely distributed in plants. Needles (EtOH). Mp 152-153°. [α]_D²⁰ +2.2 (H₂O).

Hepta-Ac: 1,2,3,4,5,6,7-Hepta-O-acetyl-D-glycero-D-manno-heptitol

C₂₁H₃₀O₁₄ 506.46
Mp 63°. [α]_D²⁰ +36.1 (c, 2 in CHCl₃).

Tri-O-benzylidene:

C₂₈H₂₈O₇ 476.525
Needles. Mp 214-215°. [α]_D²⁰ +1.7
(CHCl₃). Exact struct. apparently not detd.

[30635-52-0]

La Forge, F.B. *et al.*, *J. Biol. Chem.*, 1917, **30**,
61; 1920, **42**, 375; 1928, **79**, 1 (*isol*,
tribenzylidene)

Maclay, W.D. *et al.*, *J.O.C.*, 1944, **9**, 293 (*occur*,
synth, hepta-Ac)

Merrill, A.T. *et al.*, *J.A.C.S.*, 1947, **69**, 70
(*synth*, hepta-Ac)

Adams, G.A. *et al.*, *Can. J. Microbiol.*, 1967, **13**,
1605 (*isol*, *glc*)

Mills, J.A. *et al.*, *Aust. J. Chem.*, 1974, **27**, 1433
(*conformn*)

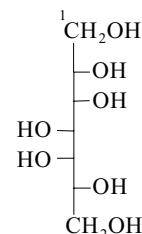
Angyal, S. *et al.*, *Carbohydr. Res.*, 1984, **126**, 15
(*cmr*)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1986,
150, 35 (*synth*)

Köll, P. *et al.*, *Carbohydr. Res.*, 1991, **218**, 55;
1993, **247**, 111 (*cryst struct*, hepta-Ac)

D-glycero-L-manno-Heptitol**H-21**

L-glycero-L-galacto-Heptitol, 9CI
[30636-43-2]



C₇H₁₆O₇ 212.199

Numbering changes direction according to the name used. Mp 187-188°. [α]_D +1.1 (H₂O).

Hepta-Ac:

C₂₁H₃₀O₁₄ 506.46
Mp 119°. [α]_D +13.4 (CHCl₃).

1-Deoxy-1-nitro: 6-Deoxy-6-nitro-L-

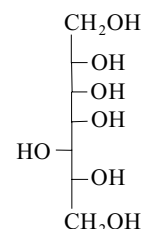
glycero-L-galacto-heptitol

C₇H₁₅NO₈ 241.197
Mp 165-166°. [α]_D²⁰ +6.3 (c, 4 in H₂O).

[30635-52-0]

Peirce, G. *et al.*, *J. Biol. Chem.*, 1915, **23**, 327
(*synth*)

Sowden, J.C. *et al.*, *J.A.C.S.*, 1960, **82**, 954
(*deoxy-nitro*)

D-glycero-L-talo-Heptitol**H-22**

C₇H₁₆O₇ 212.199

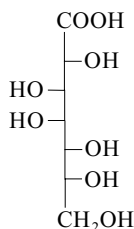
Mp 128-129°. [α]_D²² +1 (H₂O).

Merrill, A.T. *et al.*, *J.A.C.S.*, 1947, **69**, 70
(*synth*)

Webber, J.M. *et al.*, *Adv. Carbohydr. Chem.*, 1962, **17**, 15 (rev)

D-glycero-D-galacto-Heptonic acid, 9CI, 8CI

α -D-Mannoheptonic acid



C₇H₁₄O₈ 226.183
Mp 175°.

K salt: $[\alpha]_D^{20} +5.4$ (c, 4 in H₂O).

Amide: D-glycero-D-galacto-Heptonamide
C₇H₁₅NO₇ 225.198
Cryst. (H₂O). Mp 193°. $[\alpha]_D^{20} +28$ (c, 1 in H₂O).

1,4-Lactone: D-glycero-D-galacto-Heptono-1,4-lactone
[15397-08-7]

C₇H₁₂O₇ 208.168
Mp 150°. $[\alpha]_D^{20} +61.5$ (c, 0.2 in H₂O).

tert-Butyl ester:
C₁₁H₂₂O₈ 282.29
Cryst. (H₂O). Mp 175-177°. $[\alpha]_D -7.91$ (c, 1 in MeOH).

[2782-86-7]

Fischer, E. *et al.*, *Ber.*, 1889, **22**, 365 (synth, lactone)

Hudson, C.S. *et al.*, *J.A.C.S.*, 1919, **41**, 1140 (amide)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 400 (rev)

Isbell, H.J. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1938, **20**, 97 (K salt)

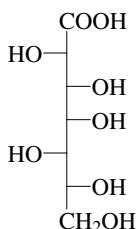
Kjölberg, O. *et al.*, *Acta Chem. Scand.*, 1966, **20**, 2081 (lactone)

Perry, M.B. *et al.*, *J. Chromatogr.*, 1969, **44**, 614 (glc)

Jorgensen, M. *et al.*, *J.O.C.*, 2001, **66**, 4625-4627 (lactone, synth, pmr, cmr)

D-glycero-L-galacto-Heptonic acid

β -d-Guloheptonic acid (obsol.)
[35784-84-0]



C₇H₁₄O₈ 226.183
Plates. Mp 135°. $[\alpha]_D^{20} +12.8$ (c, 4 in H₂O).

Ba salt: $[\alpha]_D +1.4$ (c, 1 in H₂O).

Phenylhydrazide:
Cryst. (EtOH aq.). Mp 193-194°. $[\alpha]_D^{20} -12$ (c, 1 in H₂O).

tert-Butyl ester:

C₁₁H₂₂O₈ 282.29
Cryst. (EtOH). Mp 130-132°. $[\alpha]_D +2.5$ (c, 1 in H₂O).

1,4-Lactone, 5,6-O-isopropylidene: 5,6-O-Isopropylidene-D-glycero-L-galacto-heptono-1,4-lactone

[221129-04-0]
C₁₀H₁₆O₇ 248.232
Cryst. (EtOAc/hexane). Mp 98-100°. $[\alpha]_D^{20} +59$ (c, 1.0 in EtOH).

1,5-Lactone, 3,4:6,7-di-O-isopropylidene: 3,4:6,7-Di-O-isopropylidene-D-glycero-L-galacto-heptono-1,5-lactone

[137126-27-3]
C₁₃H₂₀O₇ 288.297
Mp 134-136°. $[\alpha]_D^{20} -92.4$ (c, 1.0 in CHCl₃).

Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1937, **19**, 639-650 (synth)

Merrill, A.T. *et al.*, *J.A.C.S.*, 1947, **69**, 70-73 (phenylhydrazide)

Beacham, A.R. *et al.*, *Tetrahedron: Asymmetry*, 1991, **3**, 883-900 (diisopropylidene lactone)

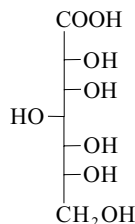
Horneman, A.M. *et al.*, *Synthesis*, 1999, 317-325 (isopropylidene lactone)

Jorgensen, M. *et al.*, *J.O.C.*, 2001, **66**, 4625-4629 (tert-butyl ester, synth, pmr, cmr)

D-glycero-D-gulo-Heptonic acid, 9CI, 8CI

α -d-Glucoheptonic acid (obsol.)

[87-74-1]
[23351-51-1]



C₇H₁₄O₈ 226.183

Readily obt. from glucose. Inexpensive starting material for synth. of chiral molecules. $[\alpha]_D^{20} -8.7 \rightarrow -42.4$ (H₂O).

2,3,4,5,6,7-Hexa-Ac, nitrile: 2,3,4,5,6,7-Hexa-O-acetyl-D-glycero-D-gulo-heptononitrile

C₁₉H₂₅NO₁₂ 459.406
Prisms (EtOH). Mp 86-88°. $[\alpha]_D^{20} +24.3$ (c, 3.9 in CHCl₃).

1,4-Lactone: D-glycero-D-gulo-Heptono-1,4-lactone

[89-67-8]
[79703-26-7]
C₇H₁₂O₇ 208.168
Sol. H₂O. Mp 148°. $[\alpha]_D^{20} -56 \rightarrow -50$ (c, 2 in H₂O) (equilib.).

1,4-Lactone, Na salt: [10094-62-9]
 $[\alpha]_D^{20} +3.98$ (c, 2 in H₂O).

1,4-Lactone, penta-Ac: 2,3,5,6,7-Penta-O-acetyl-D-glycero-D-gulo-heptono-1,4-lactone

[114682-37-0]
C₁₇H₂₂O₁₂ 418.354
Cryst. (EtOH). Mp 131-132°. $[\alpha]_D^{27} -29$ (c, 1.0 in CHCl₃).

1,4-Lactone, pentabenzoyl: 2,3,5,6,7-Penta-O-benzoyl-D-glycero-D-gulo-1,4-heptonolactone

C₄₂H₃₂O₁₂ 728.708
Feathery needles (EtOH/CHCl₃). Mp 153°. $[\alpha]_D^{25} -38.9$ (c, 4.7 in CHCl₃).

1,4-Lactone, 2,7-ditosyl: 2,7-Di-O-tosyl-D-glycero-D-gulo-1,4-heptonolactone

[146820-62-4]
C₂₁H₂₄O₁₁S₂ 516.546
Mp 146-147°. $[\alpha]_D^{20} -38$ (c, 2.0 in Me₂CO).

1,4-Lactone, 2,3,5,6,7-penta-Me: 2,3,5,6,7-Penta-O-methyl-D-glycero-D-gulo-1,4-heptonolactone

C₁₂H₂₂O₇ 278.302
Pyramidal rods (Et₂O/petrol). Mp 104°. $[\alpha]_D^{20} +41$ (c, 2.2 in CHCl₃).

[2782-86-7, 60046-25-5]

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1924, **60**, 173 (lactone)

Haworth, W.N. *et al.*, *J.C.S.*, 1932, 2481 (lactone, penta-Me)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 398 (rev, derivs)

Hockett, R.C. *et al.*, *J.A.C.S.*, 1944, **66**, 957 (nitrile, hexa-Ac)

Kjölberg, O. *et al.*, *Acta Chem. Scand.*, 1966, **20**, 2081 (lactone)

Kohn, P. *et al.*, *J.O.C.*, 1966, **31**, 1503 (lactone pentabenzoyl)

Perry, M.B. *et al.*, *J. Chromatogr.*, 1969, **44**, 614 (glc)

Jeroncic, L.O. *et al.*, *Carbohydr. Res.*, 1987, **167**, 175 (penta-Ac)

Czech. Pat., 1989, 257 827; CA, **112**, 77864y (manuf)

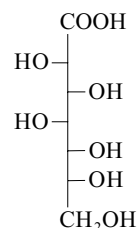
Lundt, I. *et al.*, *Synthesis*, 1992, 1129 (lactone ditosyl)

Sotofte, I. *et al.*, *Acta Cryst. C*, 1994, **50**, 938 (cryst struct, lactone)

D-glycero-D-ido-Heptonic acid, 9CI, 8CI

β -d-Glucoheptonic acid (obsol.)

[488-36-8]
[23351-51-1]



C₇H₁₄O₈ 226.183
Mp 134-135°. $[\alpha]_D^{20} +1.4 \rightarrow -35.3$ (H₂O).

Phenylhydrazide: Mp 150-152°.

1,4-Lactone: D-glycero-D-ido-Heptono-1,4-lactone

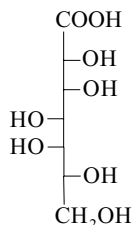
[15397-07-6]
C₇H₁₂O₇ 208.168
Cryst. Mp 152°. $[\alpha]_D^{20} -74.9$ (c, 0.2 in H₂O) (-39.3 in H₂O).

[2782-86-7, 31138-65-5]

Fischer, E. *et al.*, *Annalen*, 1892, **270**, 64 (synth, lactone)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 399 (rev)
Kjølberg, O. *et al.*, *Acta Chem. Scand.*, 1966, **20**, 2081 (lactone)

D-glycero-L-manno-Heptonic acid, 8CI H-27
α-d-Galactoheptonic acid (obsol.)



C₇H₁₄O₈ 226.183
Mp 149-150°.

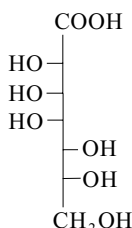
Amide: D-glycero-L-manno-Heptonamide
C₇H₁₅NO₇ 225.198
Mp 206°. [α]_D²⁰ +14.3 (H₂O).

1,4-Lactone: D-glycero-L-manno-Heptono-1,4-lactone
C₇H₁₂O₇ 208.168
Mp 145-147°. [α]_D²⁰ -52.2 (H₂O).

[2782-86-7]

Kiliani, H. *et al.*, *Ber.*, 1888, **21**, 915 (*synth*)
Hudson, C.S. *et al.*, *J.A.C.S.*, 1919, **41**, 1141 (*amide*)
Kiliani, H. *et al.*, *Ber.*, 1922, **55**, 75; 493 (*lactone*)

D-glycero-D-talo-Heptonic acid H-28
β-d-Mannoheptonic acid (obsol.)



C₇H₁₄O₈ 226.183
[α]_D²⁰ +6.1 → -25 (c, 4 in H₂O).

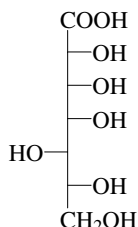
K salt: [α]_D²¹ +0.3 (c, 4 in H₂O).

1,4-Lactone: D-glycero-D-talo-Heptono-1,4-lactone
[15397-09-8]
C₇H₁₂O₇ 208.168
Mp 152°. [α]_D²⁰ +35.3 (c, 0.2 in H₂O).

[2782-86-7]

Isbell, H.J. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1938, **20**, 97 (*synth*)
Kjølberg, O. *et al.*, *Acta Chem. Scand.*, 1966, **20**, 2081 (*D-lactone*)
Perry, M.B. *et al.*, *J. Chromatogr.*, 1969, **44**, 614 (*glc*)

D-glycero-L-talo-Heptonic acid
α-d-Guloheptonic acid (obsol.)



C₇H₁₄O₈ 226.183
Prisms (AcOH aq.). Mp 128°. [α]_D²⁰ -12.6 (c, 4 in H₂O).

Phenylhydrazide:

Cryst. (EtOH aq.). Mp 156-157°. [α]_D²⁰ +31.4 (c, 1.2 in H₂O).

1,4-Lactone: D-glycero-L-talo-Heptono-1,4-lactone

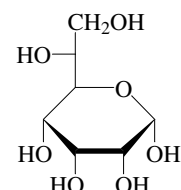
[221129-03-9]
C₇H₁₂O₇ 208.168
Cryst. (EtOH). Mp 139-141°. [α]_D²⁰ +25.4 (c, 4 in H₂O).

1,5-Lactone, 3,4:6,7-di-O-isopropylidene: 3,4:6,7-Di-O-isopropylidene-D-glycero-L-talo-heptono-1,5-lactone

[137126-26-2]
C₁₃H₂₀O₇ 288.297
Mp 174-176°. [α]_D²⁰ -66.4 (c, 0.5 in Me₂CO).

Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1937, **19**, 639-650 (*synth, lactone*)
Merrill, A.T. *et al.*, *J.A.C.S.*, 1947, **69**, 70-73 (*phenylhydrazide*)
Beacham, A.R. *et al.*, *Tetrahedron: Asymmetry*, 1991, **2**, 883-900 (*diisopropylidene lactone*)
Horneman, A.M. *et al.*, *Synthesis*, 1999, 317-325 (*lactone*)

D-glycero-D-allo-Heptose, 9CI H-30
[22224-55-1]



α-Pyranose-form

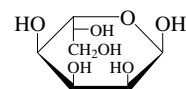
C₇H₁₄O₇ 210.183

An aq. soln. at 22° contains 14.0% *α*-Pyr, 74.0% *β*-Pyr, 5.0% *α*-Fur and 7.0% *β*-Pyr. Cryst. + 1H₂O (EtOH aq.). Mp 95-98° (effervesces). [α]_D +7.2 (3 min) → +12.68 (equilib.) (c, 4.6 in H₂O).

[87172-44-9, 87172-45-0, 87172-46-1, 87172-47-2]

Pratt, J.W. *et al.*, *J.A.C.S.*, 1955, **77**, 6326-6328 (*synth*)
Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1983, **36**, 937-946 (*cmr, equilib*)

D-glycero-L-allo-Heptose, 9CI, 8CI H-31
[7011-04-3]



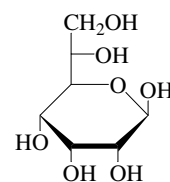
α-Pyranose-form

C₇H₁₄O₇ 210.183
[α]_D -10 (c, 1.9 in H₂O).

Hexa-Ac:

C₁₉H₂₆O₁₃ 462.407
Cryst. (Et₂O/petrol). Mp 142°. [α]_D +32 (c, 1.24 in CHCl₃).
Young, R. *et al.*, *Can. J. Chem.*, 1966, **44**, 32-36 (*synth, hexa-Ac*)

L-glycero-D-allo-Heptose, 9CI, 8CI H-32
[321187-62-6]



β-Pyranose-form

C₇H₁₄O₇ 210.183
[α]_D +8.9 (c, 1.77 in H₂O).

β-Pyranose-form

Me glycoside, 2,3,4-tribenzyl: Methyl 2,3,4-tri-O-benzyl-L-glycero-β-D-allo-heptopyranoside

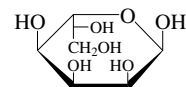
[321142-44-3]
C₂₉H₃₄O₇ 494.583
[α]_D +1 (c, 1 in CHCl₃).

Me glycoside, pentabenzyl: Methyl 2,3,4,6,7-penta-O-benzyl-L-glycero-β-D-allo-heptopyranoside

[321142-45-4]
C₄₃H₄₆O₇ 674.832
Oil. [α]_D +11.7 (c, 1.2 in CHCl₃).

Kim, M. *et al.*, *Tetrahedron*, 2000, **56**, 9319-9337 (*synth, Me pyr benzyl derivs*)

L-glycero-L-allo-Heptose, 9CI H-33



α-Pyranose-form

C₇H₁₄O₇ 210.183

β-Furanose-form

Me glycoside, 2,3:6,7-di-O-isopropylidene: Methyl 2,3:6,7-di-O-isopropylidene-L-glycero-β-L-allo-heptofuranoside

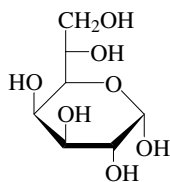
[115435-34-2]
C₁₄H₂₄O₇ 304.339
Mp 39-41°. [α]_D +53 (c, 1.3 in CHCl₃).

[108182-74-7]

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1987, **169**, 234-240 (*β-Me fur isopropylidene*)

L-glycero-D-galacto-Heptose, 9CI

[22617-40-9]

 α -Pyranose-form

$C_7H_{14}O_7$ 210.183
Cryst. (MeOH). Mp 178-182°. $[\alpha]_{D}^{20} +106$ (7 min) $\rightarrow +66$ (equil.) (c, 0.25 in H_2O).

Hexa-Ac: 1,2,3,4,6,7-Hexa-O-acetyl-L-glycero-D-galacto-heptose
[22617-41-0]
 $C_{19}H_{26}O_{13}$ 462.407
Cryst. (EtOH). Mp 115-122°.

 α -Pyranose-form

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-L-glycero- α -D-galacto-heptopyranose
[22738-75-6]
 $C_{13}H_{22}O_7$ 290.313
Mp 98-100°.

7-Benzyl, 1,2:3,4-di-O-isopropylidene: 7-O-Benzyl-1,2:3,4-di-O-isopropylidene-L-glycero- α -D-galacto-heptopyranose
[321142-34-1]
 $C_{20}H_{28}O_7$ 380.437
Oil. $[\alpha]_D -44$ (c, 2.22 in $CHCl_3$).

Me glycoside, 2,3,4,6,7-penta-Ac: Methyl 2,3,4,6,7-penta-O-acetyl-L-glycero- α -D-galacto-heptopyranoside
[287477-95-6]
 $C_{18}H_{26}O_{12}$ 434.396
 $[\alpha]_D +87$ (c, 0.44 in $CHCl_3$).

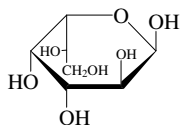
David, S. et al., *Carbohydr. Res.*, 1968, **8**, 350-353 (synth)

Khare, N.K. et al., *Can. J. Chem.*, 1994, **72**, 237-246 (α -pyr diisopropylidene)

Grzeszczyk, B. et al., *Coll. Czech. Chem. Comm.*, 2000, **65**, 610-620 (α -pyr acetates)

L-glycero-L-galacto-Heptose, 9CI, 8CI

[20585-65-3]

 α -Pyranose-form

$C_7H_{14}O_7$ 210.183

A Py soln. at r.t. contains 44.9% α -Pyr, 39.6% β -Pyr, 9.4% α -Fur and 6.1% β -Fur. Cryst. + H_2O (H_2O /MeOH/EtOH). Mp 131-134° (monohydrate). $[\alpha]_D^{21} -115.5 \rightarrow -62$ (equilib.) (c, 3 in H_2O). $[\alpha]_D^{25} -68$ (c, 1.12 in H_2O) (24h).

Phenylhydrazone:

Needles (H_2O). Mp 195-196° dec.

Phenyllosazone:

Needles (EtOH aq.). Mp 200° dec.

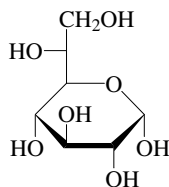
Kochetkov, N.K. et al., *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1964, 669-677; *Bull. Acad. Sci.*

USSR, Div. Chem. Sci. (Engl. Transl.), 1964, 622-627 (synth)

Bilik, V. et al., *Chem. Zvesti*, 1974, **28**, 668-672 (synth)

D-glycero-D-gluco-Heptose, 9CI

D-altro-D-gluco-Heptose
[1949-75-3]

 α -Pyranose-form

$C_7H_{14}O_7$ 210.183
Found in roots of *Primula officinalis*.
Cryst. (MeOH).
Mp 156-157°. $[\alpha]_D^{20} +17 \rightarrow +46$ (c, 2.4 in H_2O).

 α -Pyranose-form

Hexa-Ac:
 $C_{19}H_{26}O_{13}$ 462.407
Prisms ($CHCl_3$ /Et $_2$ O). Mp 181-182°. $[\alpha]_D^{20} +107$ (c, 2 in $CHCl_3$).

 β -Pyranose-form

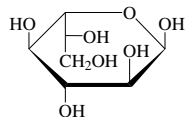
Hexa-Ac:
 $C_{19}H_{26}O_{13}$ 462.407
Prisms (CH_2Cl_2 /pentane). Mp 133-134°. $[\alpha]_D^{20} +19.6$ (c, 1 in $CHCl_3$).

Rosenfeld, D.A. et al., *J.A.C.S.*, 1951, **73**, 4907-4910 (synth, α -hexa-Ac)

Begbie, R. et al., *Carbohydr. Res.*, 1966, **2**, 272-288 (isol, β -hexa-Ac)

D-glycero-L-gluco-Heptose, 9CI, 8CI

β -D-Galaheptose (obsol.)
[23102-92-3]

 α -D-Pyranose-form

$C_7H_{14}O_7$ 210.183
An aq. soln. at 22° contains 43% α -pyr and 57% β -pyr.

Di-Et dithioacetal:
 $C_{11}H_{24}O_6S_2$ 316.439
Mp 133°. $[\alpha]_D^{20} +37.8$ (H_2O).

Dibenzyl dithioacetal:
 $C_{21}H_{28}O_6S_2$ 440.581
Mp 146-147°. $[\alpha]_D^{20} +73.8$ (Py).

α -Pyranose-form [87247-39-0]
Mp 196-197°. $[\alpha]_D^{20} -19 \rightarrow -54$ (H_2O).

Me glycoside: Methyl D-glycero- α -L-glucoheptopyranoside
 $C_8H_{16}O_7$ 224.21
Cryst. (MeOH). Mp 182-183°. $[\alpha]_D^{20} +36$ (c, 2 in H_2O).

 β -Pyranose-form

Mp 100-101°. $[\alpha]_D^{20} -55.8$ (H_2O).

Me glycoside: Methyl D-glycero- β -L-glucoheptopyranoside

$C_8H_{16}O_7$ 224.21
 $[\alpha]_D^{70} +74$.

 β -Furanose-form

1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-D-glycero-L-gluco- β -heptofuranose
[56808-72-1]
 $C_{13}H_{22}O_7$ 290.313
Syrup. $[\alpha]_D^{20} +15$ (c, 2.2 in $CHCl_3$).

1,2:5,6-Di-O-isopropylidene, 3,7-di-Ac: 3,7-Di-O-acetyl-1,2:5,6-di-O-isopropylidene-D-glycero-L-gluco- β -heptofuranose
[56808-75-4]
 $C_{17}H_{26}O_9$ 374.387
Syrup. $[\alpha]_D^{20} +37$ (c, 2.2 in $CHCl_3$).

1,2:6,7-Di-O-isopropylidene: 1,2:6,7-Di-O-isopropylidene-D-glycero-L-gluco- β -heptofuranose
[56808-73-2]
 $C_{13}H_{22}O_7$ 290.313
Cryst. (hexane). Mp 85-87°. $[\alpha]_D^{18} +9$ (c, 2.2 in $CHCl_3$).

1,2:6,7-Di-O-isopropylidene, 3,5-di-Ac: 3,5-Di-O-acetyl-1,2:6,7-di-O-isopropylidene-D-glycero-L-gluco- β -heptofuranose
[56808-76-5]
 $C_{17}H_{26}O_9$ 374.387
Cryst. (heptane). Mp 114-116°. $[\alpha]_D^{18} -3$ (c, 2.6 in $CHCl_3$).

Hann, R.M. et al., *J.A.C.S.*, 1937, **59**, 548-551 (struct, α -Me pmr)

Isbell, H.S. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1940, **24**, 125 (β -Me pyr)

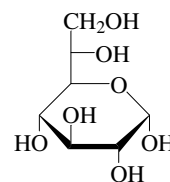
Dmitriev, B.A. et al., *Carbohydr. Res.*, 1976, **47**, 25-34 (β -fur isopropylidene derivs, pmr)

Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15-68 (equilib)

Brimacombe, J.S. et al., *Carbohydr. Res.*, 1986, **150**, 35 (synth, enantiomer)

L-glycero-D-gluco-Heptose, 9CI, 8CI

[84142-51-8]

 α -Pyranose-form

$C_7H_{14}O_7$ 210.183
Cryst. (EtOH aq.). Mp 193-194°. $[\alpha]_D +24$ (10 min) $\rightarrow +52$ (final) (c, 1.9 in H_2O).

 α -Pyranose-form

Me glycoside: Methyl L-glycero- α -D-glucoheptopyranoside
[66781-93-9]
 $C_8H_{16}O_7$ 224.21
Mp 153-155°. $[\alpha]_D +157$ (c, 1.0 in MeOH).

Me glycoside, 2,3,4-tribenzyl: Methyl 2,3,4-tri-O-benzyl-L-glycero- α -D-glucoheptopyranoside
[103597-24-6]
 $C_{29}H_{34}O_7$ 494.583
Cryst. (MeOH/hexane). Mp 105-106°. $[\alpha]_D +53$ (c, 1.0 in $CHCl_3$). $[\alpha]_D +18.2$ (c, 1.0 in $CHCl_3$).

β-Furanose-form

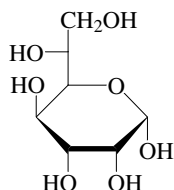
1,2-O-Isopropylidene: 1,2-O-Isopropylidene-β-L-glycero-D-glucio-heptofuranose [108267-49-8]
 $C_{10}H_{18}O_7$ 250.248
 Cryst. (MeOH/EtOAc). Mp 163-165°. $[\alpha]_D^{20}$ -9 (c, 0.5 in MeOH).

[108182-64-5]

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1986, **150**, 35-51 (synth, 1,2-isopropylidene, β-fur)
 Khare, N.K. *et al.*, *Can. J. Chem.*, 1994, **72**, 237-246 (Me-α-pyr tribenzyl)

D-glycero-D-gulo-Heptose, 9CI, 8CI**H-43**

α-Glucoheptose (obsol.)
 [3146-50-7]



α-Pyranose-form

 $C_7H_{14}O_7$ 210.183

An aq. soln. at 22° contains 15% α-pyr, 80% β-pyr = 2% α-fur, 3% β-fur, and 0.02% aldehyde. Cryst. (H₂O). Mp 193°. $[\alpha]_D^{20}$ -28.7 → -20.2 (H₂O).

7-Tosyl:

$C_{14}H_{20}O_9S$ 364.373
 Cryst. (EtOH). Mp 132-134° dec. $[\alpha]_D^{20}$ -13 (H₂O).

Di-Et dithioacetal:

$C_{11}H_{24}O_6S_2$ 316.439
 Needles (EtOH). Mp 155-156°. $[\alpha]_D^{20}$ -30.5 (H₂O). $[\alpha]_D^{20}$ -7.7 (Py).

Di-Et dithioacetal, hexa-Ac:

$C_{23}H_{36}O_{12}S_2$ 568.662
 Cryst. (MeOH aq.). Mp 99-100°. $[\alpha]_D^{20}$ -12 (c, 4 in CHCl₃).

α-Pyranose-form [84708-91-8]

Me glycoside: Methyl D-glycero-D-gulo-α-heptopyranoside [52571-81-0]
 $C_8H_{16}O_7$ 224.21
 Cryst. (EtOH/2-propanol). Mp 106-107°. $[\alpha]_D^{24}$ +112 (c, 1.0 in H₂O).

β-Pyranose-form [13405-44-2]

Me glycoside: Methyl D-glycero-D-gulo-β-heptopyranoside [5349-39-3]
 $C_8H_{16}O_7$ 224.21
 Cryst. (EtOH). Mp 169-170°. $[\alpha]_D^{24}$ -75 (c, 1.0 in H₂O).

α-Furanose-form [87172-61-0]

Me glycoside: Methyl D-glycero-D-gulo-α-heptofuranoside [56654-37-6]
 $C_8H_{16}O_7$ 224.21
 Syrup. $[\alpha]_D^{24}$ +73.5 (c, 1.3 in H₂O).

β-Furanose-form [87173-38-4]

2,3:6,7-Diisopropylidene: 2,3:5,6-Di-O-isopropylidene-D-glycero-D-gulo-heptofuranose [34685-44-4]

 $C_{13}H_{22}O_7$ 290.313

Chiron for prostaglandin synth.

Mp 99-100°. $[\alpha]_D^{20}$ -31 (c, 1.0 in CHCl₃).

Me glycoside: Methyl D-glycero-D-gulo-β-heptofuranoside [56654-38-7]

 $C_8H_{16}O_7$ 224.21Syrup. $[\alpha]_D^{24}$ -90.3 (c, 1.7 in H₂O).

[69008-91-9]

Aldrich Library of NMR Spectra, 2nd edn., 1983, **2**, 903A (nmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 194A (ir)

Haworth, W.N. *et al.*, *J.C.S.*, 1931, 2864-2872 (synth)

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1940, **62**, 2343-2349 (di-Et dithioacetal hexa-Ac)

Zissis, E. *et al.*, *J.A.C.S.*, 1951, **73**, 4714-4719 (di-Et dithioacetal)

Richtmyer, N.K. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 160-167 (synth)

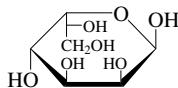
Micheel, F. *et al.*, *Carbohydr. Res.*, 1967, **3**, 283-294 (7-tosyl)

Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1968, 562-567 (Diisopropylidene)

Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1975, **28**, 1541-1549 (α-Me pyr, β-Me pyr, α-M e fur, β-Me fur)

Stork, G. *et al.*, *J.A.C.S.*, 1978, **100**, 8272-8273 (synth, diisopropylidene)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15-68 (equilib)

L-glycero-L-gulo-Heptose, 9CI, 8CI**H-44**

α-Pyranose-form

 $C_7H_{14}O_7$ 210.183

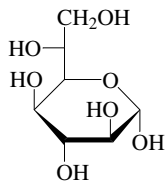
Di-Et dithioacetal: [201788-55-8]

 $C_{11}H_{24}O_6S_2$ 316.439Mp 154-155°. $[\alpha]_D^{20}$ +7.7 (c, 0.88 in Py).

Stepowska, H. *et al.*, *Carbohydr. Res.*, 1997, **304**, 347-355 (di-Et dithioacetal)

D-glycero-D-ido-Heptose**H-45**

[23102-94-5]



α-Pyranose-form

 $C_7H_{14}O_7$ 210.183

An aq. soln. at 22° contains 24.4% α-Pyr, 50.8% β-Pyr, 8.7% α-Fur and 15.5% β-Fur. Cryst. (EtOH aq.). Mp 121°. $[\alpha]_D^{20}$ -0.1 → -6 (18m) (c, 5 in H₂O) (24h, equilib.).

Dibenzyl dithioacetal: [7599-15-7]

 $C_{21}H_{28}O_6S_2$ 440.581

Shiny hexagonal platelets (EtOH). Mp 130-131°. $[\alpha]_D^{20}$ +71 (Py).

Phenylosazone: Mp 197-198°.

[52571-82-1, 52571-83-2, 87172-63-2]

Richtmyer, N.K. *et al.*, *Methods Carbohydr.**Chem.*, 1962, **1**, 160-168 (synth)

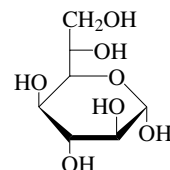
Williams, D.T. *et al.*, *Can. J. Chem.*, 1969, **47**, 2763-2765 (synth)

Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1983, **36**, 937-946 (cmr; equilib)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1991, **49**, 19-35 (equilib)

L-glycero-D-ido-Heptose, 9CI**H-46**

[172274-80-5]



α-Pyranose-form

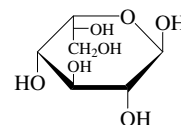
 $C_7H_{14}O_7$ 210.183

Constit. of core lipopolysaccharide of *Campylobacter jejuni* serotype 0:3 cell wall. Identified by degradative methods.

Aspinall, G.O. *et al.*, *Eur. J. Biochem.*, 1995, **231**, 570-578 (isol)

L-glycero-L-ido-Heptose, 9CI, 8CI**H-47**

[20585-67-5]



α-Pyranose-form

 $C_7H_{14}O_7$ 210.183 $[\alpha]_D^{20}$ +2.2 (c, 0.5 in H₂O).

Dibenzyl dithioacetal: [3960-52-9]

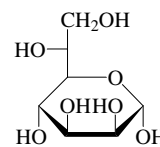
 $C_{21}H_{28}O_6S_2$ 440.581

Cryst. (EtOH). Mp 128°. $[\alpha]_D^{18}$ -78.5 (c, 1.58 in Py).

Kochetkov, N.K. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1964, 669-677; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1964, 622-627 (synth)

D-glycero-D-manno-Heptose, 9CI, 8CI**H-48**

D-altro-D-manno-Heptose
 [1961-73-5]



α-D-Pyranose-form

 $C_7H_{14}O_7$ 210.183

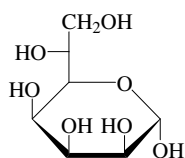
Found combined in baker's yeast, in the cell wall lipopolysaccharides of enterobacteria and the roots of *Primula officinalis*. A homopolymer occurs in the lipopolysaccharide of *Helicobacter pylori* strain D4.

 $[\alpha]_D^{22}$ +21.5 (c, 3.2 in MeOH).

Phenylosazone: Mp 194-195°. $[\alpha]_D^{20}$ -69 → +23 (c, 0.4 in Py/EtOH).

D-glycero-D-talo-Heptose, 9CI, 8CI

[10589-31-8]

 α -Pyranose-form $C_7H_{14}O_7$ 210.183An equilib. soln. at 22° contains 43% α -Pyr, 34% β -Pyr, 13% α -Fur and 10% β -Fur. **α -Pyranose-form**

Me glycoside: Methyl D-glycero- α -D-talo-heptopyranoside
[52571-84-3]
 $C_8H_{16}O_7$ 224.21
Mp 196-197°. $[\alpha]_D^{20}$ +83.6 (H₂O).

 β -Pyranose-form

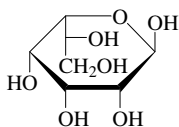
Me glycoside: Methyl D-glycero- β -D-talo-heptopyranoside
 $C_8H_{16}O_7$ 224.21
Mp 136.5-138°. $[\alpha]_D^{20}$ -48 (H₂O).

[156045-98-6]

Petterson, B. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 29-35 (α -Me pyr, β -Me pyr)
Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1983, **36**, 937-946 (*equilib*)

D-glycero-L-talo-Heptose, 9CI

α -d- α -Guloheptose (*obsol.*)
[23102-93-4]

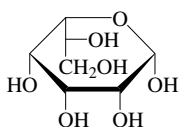
 α -Pyranose-form $C_7H_{14}O_7$ 210.183

An aq. soln. at 22° contains 33.0% α -Pyr, 30.0% β -Pyr, 22.0% α -Fur and 15.0% β -Fur. Cryst. (EtOH). Mp 127°. $[\alpha]_D^{20}$ -45.7 \rightarrow -16.9 (*equilib.*) (c, 4 in H₂O).

Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1937, **19**, 639-650 (*synth*)
Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1983, **36**, 937-946 (*cmr, equilib*)
Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15-68 (*equilib*)

L-glycero-L-talo-Heptose, 9CI, 8CI

[54676-20-9]

 α -Pyranose-form $C_7H_{14}O_7$ 210.183

Cryst. (MeOH/AcOH). Mp 108-110°. $[\alpha]_D^{21}$ -43 \rightarrow -13.3 (*equilib.*) (c, 3 in H₂O).

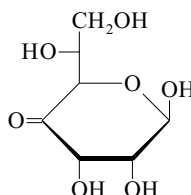
H-51 α -Pyranose-form

3,4:6,7-Di-O-isopropylidene, 1,2-di-Ac:
1,2-Di-O-acetyl-3,4:6,7-di-O-isopropylidene-L-glycero- α -L-talo-heptopyranose
[153580-57-5]
 $C_{17}H_{26}O_9$ 374.387
 $[\alpha]_D$ -78.7.

Bilik, V. *et al.*, *Chem. Zvesti*, 1974, **25**, 668-672 (*synth*)
Duan, J.J.-W. *et al.*, *Tet. Lett.*, 1993, **34**, 7541-7544 (*diisopropylidene di-Ac*)

allo-Heptos-4-ulose

H-54

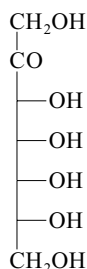
 $C_7H_{12}O_7$ 208.168 **β -D-Pyranose-form**

Me glycoside, 2,3:6,7-di-O-isopropylidene: Methyl 2,3:6,7-di-O-isopropylidene- β -D-allo-heptopyranos-4-uloside
[40010-38-6]
 $C_{14}H_{22}O_7$ 302.324
Cryst. (heptane). Mp 132-133°. $[\alpha]_D^{20}$ +53.5 (c, 2.03 in CHCl₃).

Dmitriev, B.A. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1972, 2298; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1972, 2230 (*diisopropylidene, ir*)

alto-2-Heptulose

H-55



D-form

 $C_7H_{14}O_7$ 210.183**D-form [7101-28-2]**

Isol. from *Primula officinalis*.
Mp 130-132°. $[\alpha]_D^{20}$ +52.8 (c, 0.2 in H₂O).

 β -D-Pyranose-form

2,7-Anhydro: [29514-20-3]
 $C_7H_{12}O_6$ 192.168
Syrup. $[\alpha]_D^{20}$ -79 (c, 0.81 in H₂O).
2,7-Anhydro, 1,3,4,5-tetra-Ac: [16526-57-1]
 $C_{15}H_{20}O_{10}$ 360.317
Cryst. (EtOH). Mp 114-115°. $[\alpha]_D^{20}$ -57.1 (c, 1 in CHCl₃).

L-form

Mp 130-132°. $[\alpha]_D^{20}$ -52.1 (H₂O).

Hydrate:

Cryst. (EtOH aq.).

Mp 74-76°.

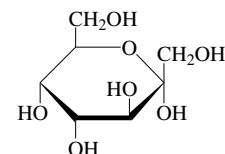
 $[\alpha]_D^{20}$ -46.6 (c, 1.5 in H₂O).

Pratt, J.W. *et al.*, *J.A.C.S.*, 1955, **77**, 6326-6328 (*L-form, D-form, synth*)
Schaffer, R. *et al.*, *J.O.C.*, 1964, **29**, 1471-1473 (*synth*)
Verstraeten, L.M.J. *et al.*, *Carbohydr. Res.*, 1966, **1**, 481-484 (*ir*)
Begbie, R. *et al.*, *Carbohydr. Res.*, 1966, **2**, 272-288 (*D-form, isol*)
Heyns, K. *et al.*, *Chem. Ber.*, 1973, **106**, 1668-1677 (β -D-pyr-2,7-anhydro)

altro-2-Heptulose, 9CI, 8CI

H-56

Sedoheptulose. Volemulse. Altroheptulose. Volemose. Sedoheptose

 α -Pyranose-form $C_7H_{14}O_7$ 210.183

An aq. soln. at 22°C contains 17% α -pyr, 6% β -pyr, 13% α -fur, and 64% β -fur.

D-form [3019-74-7]

Occurs in the common herbaceous perennial *Sedum spectabile* and probably present as a photosynthesis intermed. in all plants. Formed post mortem in mammalian tissues.
Cryst. + 1H₂O (EtOH aq.) or syrup.
Mp 100-102° (126°). $[\alpha]_D$ +2.5 (c, 10 in H₂O).

Phenylosazone: Mp 197°.

7-Phosphate: [2646-35-7]

 $C_7H_{15}O_{10}P$ 290.163

Intermed. in photosynthetic pathway.

1,7-Diphosphate: [815-91-8]

 $C_7H_{16}O_{13}P_2$ 370.143

No phys. props. reported.

7-(3,4,5-Trihydroxybenzoyl): **1-O-****Galloyl-D-sedoheptulose**

[233690-85-2]

 $C_{14}H_{18}O_{11}$ 362.29

Constit. of the fruit of *Cornus officinalis*.
Mp 192-194°. $[\alpha]_D$ +16.2 (c, 0.4 in MeOH). λ_{max} 218 (log ϵ 4.71); 275 (log ϵ 4.33) (MeOH).

1,7-Bis(3,4,5-trihydroxybenzoyl): **1,7-Di-O-galloyl-D-sedoheptulose**

[126622-78-4]

 $C_{21}H_{22}O_{15}$ 514.396

Constit. of *Cornus officinalis*. Light-tan amorph. powder + 2H₂O. $[\alpha]_D^{20}$ +0.4 (c, 0.8 in MeOH).

7-(3,4-Dihydroxy-E-cinnamoyl): **7-O-Caffeoylsedoheptulose**

[288141-05-9]

 $C_{16}H_{20}O_{10}$ 372.328

Constit. of the wood of *Nyssa sylvatica*.
Amorph. powder. $[\alpha]_D^{25}$ +13.9 (c, 0.42 in MeOH).

 β -D-Pyranose-form

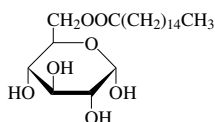
2,7-Anhydro: 2,7-Anhydro- β -D-altro-2-heptulopyranose. *Sedoheptulosan*
[469-90-9]

 $C_7H_{12}O_6$ 192.168Formed in *equilib.* with sedoheptulose

Pigman, W.W. *et al.*, *J.A.C.S.*, 1942, **64**, 369-374 (synth)
 Kreider, L.C. *et al.*, *J.A.C.S.*, 1942, **64**, 1482-1483 (synth)
 Shinoyama, H. *et al.*, *Agric. Biol. Chem.*, 1991, **55**, 1679-1681 (synth)

6-O-Hexadecanoylglucose

H-66

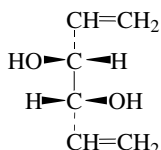
 α -D-Pyranose-form $C_{22}H_{42}O_7$ 418.57**D-form**

Constit. of *Munronia henryi*.
 Mp 106-107°. $[\alpha]_D^{19} +67.7$ (c, 0.2 in Py).
 Qi, S.-H. *et al.*, *J. Asian Nat. Prod. Res.*, 2003, **5**, 215-221

1,5-Hexadiene-3,4-diol, 9CI

H-67

Divinylethylene glycol. 1,2-Divinylglycol
 [1069-23-4]



(3R,4R)-form

 $C_6H_{10}O_2$ 114.144

Used in the synth. of bioadhesive cross-linked acrylic polymers.

► LD₅₀ (rat, orl) 1620 mg/kg; LD₅₀ (rbt, skn) 400 mg/kg. MM2100000

(3R,4R)-formOil. $[\alpha]_D +32.6$ (c, 0.98 in CHCl₃).**Monobenzoyl:** $C_{13}H_{16}O_2$ 204.268Oil. $[\alpha]_D +2.9$ (c, 1.2 in CHCl₃).**Dibenzoyl:** $C_{20}H_{18}O_4$ 322.36Oil. $[\alpha]_D +13.1$ (c, 3.3 in CHCl₃).**(3RS,4RS)-form**

(±)-form

[19700-97-1]

Mp 21.7°. Bp₈ 90.5°.**(3RS,4SR)-form**

meso-form

[19700-96-0]

Cryst. (petrol). Mp 88°.

Di-Et ether: 3,4-Diethoxy-1,5-hexadiene $C_{10}H_{18}O_2$ 170.251Bp 224-226° Bp₁₀ 111-113°.

[58208-04-1]

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 223A (nmr)

Young, W.G. *et al.*, *J.A.C.S.*, 1943, **65**, 1245 (synth)Braun, R.A. *et al.*, *J.O.C.*, 1963, **28**, 1383 (synth)

Wiemann, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1967, 3293 (synth)

Galaj, S. *et al.*, *Bull. Soc. Chim. Fr.*, 1972, 3979 (synth)Ching, H.S. *et al.*, *J. Pharm. Sci.*, 1985, **74**, 399 (use)Rao, A.V.R. *et al.*, *Tet. Lett.*, 1987, **28**, 2183 (synth)

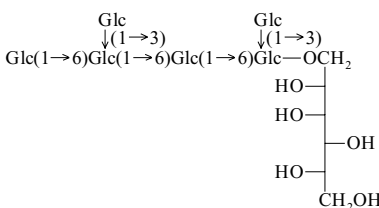
Yadav, J.S. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 307-316 (3R,4R-form)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DMU000

Hexa-β-D-glucopyranosyl-D-glucitol

[93289-76-0]

H-68

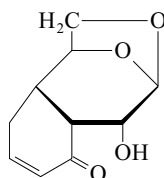
 $C_{42}H_{72}O_{36}$ 1153.009

Misleading name. Isol. from the mycelial walls of *Phytophthora megasperma* f.sp. *glycinea*. Stimulates formation of phytoalexins in soybean (*Glycine max*).

Sharp, J.K. *et al.*, *J. Biol. Chem.*, 1984, **269**, 11312; 11321; 11341 (isol, struct)

1,2,5,5a,9,9a-Hexahydro-5-hydroxy-1,4-epoxy-3-benzoxepin-6(4H)-one, 9CI

H-69

 $C_{10}H_{12}O_4$ 196.202**(5aR,9aS)-form**

D-allo-form. 1,6-Anhydro-3,4-dideoxy-3,4-(1-oxo-2-butene-1,4-diyl)-β-D-allopyranose

[113965-06-3]

Carbohydrate-derived synthon.

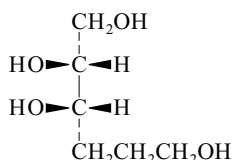
Cryst. (CH₂Cl₂/hexane). Mp 179°. $[\alpha]_D +223.8$ (c, 1.0 in CHCl₃).

Isobe, M. *et al.*, *Heterocycles*, 1987, **25**, 521 (synth, pmr, cmr)

1,2,3,6-Hexanetetrol

2,3-Dideoxyhexitol

H-70

 $C_6H_{14}O_4$ 150.174

Numbering as a dideoxyhexitol is from the other end of the chain.

(2R,3S)-form*D*-erythro-formGlass or syrup. $[\alpha]_D -7.1$ (H₂O) (-4.9).**Tetrabenzoyl:** $C_{34}H_{30}O_8$ 566.606

Mp 99-100°. $[\alpha]_D^{27} +22.2$ (c, 0.9 in CHCl₃).

1,2-O-Isopropylidene: 2,3-Dideoxy-5,6-O-isopropylidene-*D*-erythro-hexitol
 $C_9H_{18}O_4$ 190.239
 Mp 53-55°. $[\alpha]_D +12.9$ (c, 1.1 in CHCl₃).

1,2-O-Isopropylidene, dibenzoyl: 1,4-Di-O-benzoyl-2,3-dideoxy-5,6-O-isopropylidene-*D*-erythro-hexitol
 $C_{23}H_{26}O_6$ 398.455
 Cryst. (CCl₄). Mp 90.5-91.5°. $[\alpha]_D^{27} +2.4$ (c, 1.0 in CHCl₃).

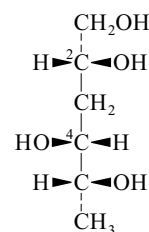
Kefurt, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 931 (synth, derivs)

Regeling, H. *et al.*, *Carbohydr. Res.*, 1990, **205**, 261 (synth)

1,2,4,5-Hexanetetrol

H-71

3,6-Dideoxyhexitol



(2R,4R,5R)-form

 $C_6H_{14}O_4$ 150.174

Care needed with naming and numbering (application of special rules for carbohydrate nomenclature).

(2R,4R,5R)-form*D*-xylo-form. 3,6-Dideoxy-*D*-xylo-hexitol.1,4-Dideoxy-*L*-xylo-hexitol. Abequitol

[20585-20-0]

Component of the *O*-specific polysaccharide of *Salmonella kentucky* strain 1S98.

Cryst. (EtOH).

Mp 90°. $[\alpha]_D^{20} +52$ (c, 2.0 in H₂O).**(2S,4S,5S)-form***L*-xylo-form. 1,4-Dideoxy-*D*-xylo-hexitol.3,6-Dideoxy-*L*-xylo-hexitol. ColititolMp 92-94°. $[\alpha]_D -51$.**(2R,4S,5R)-form**3,6-Dideoxy-*D*-ribo-hexitol. 1,4-Dideoxy-*L*-ribo-hexitol. *D*-ribo-formMp 67-69°. $[\alpha]_D^{22} -23$ (c, 0.03 in H₂O).

Fouquey, C. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1958, **246**, 2417 (synth)

Westphal, O. *et al.*, *Annalen*, 1959, **620**, 8 (synth)

Copeland, C. *et al.*, *Aust. J. Chem.*, 1977, **30**, 1269 (synth)

Patroni, J.J. *et al.*, *Aust. J. Chem.*, 1978, **31**, 445 (*D*-ribo-form)

Torgov, V.I. *et al.*, *Carbohydr. Res.*, 1990, **208**, 293 (occur)

(2S,3E,4S)-form*D*-threo-trans-form

1,2:5,6-Diisopropylidene: 3,4-Dideoxy-1,2:5,6-di-O-isopropylidene-*D*-threo-hex-3E-enitol
[3427-24-5]
C₁₂H₂₀O₄ 228.288
Cryst. Mp 78-80°. [α]_D²⁰ +56.1 (c, 1.1 in CHCl₃).

(2S,3Z,4S)-form*D*-threo-cis-form

1,2:5,6-Diisopropylidene: 3,4-Dideoxy-1,2:5,6-di-O-isopropylidene-*D*-threo-hex-3Z-enitol
[4578-27-2]
C₁₂H₂₀O₄ 228.288
Syrup. [α]_D²⁰ -2.9 (c, 0.4 in CHCl₃).

(2RS,3E,5SR)-form

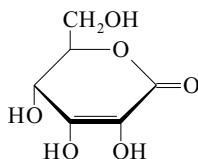
erythro-trans-form

1,2:5,6-Diisopropylidene: 3,4-Dideoxy-1,2:5,6-di-O-isopropylidene-*DL*-erythro-hex-3E-enitol
[53777-25-6]
C₁₂H₂₀O₄ 228.288
Light yellow needles (MeOH aq.). Mp 69-71°. *Meso*-.

(2RS,3Z,5SR)-form

erythro-cis-form

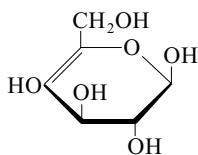
1,2:5,6-Diisopropylidene: 3,4-Dideoxy-1,2:5,6-di-O-isopropylidene-*DL*-erythro-hex-3Z-enitol
[105929-80-4]
C₁₂H₂₀O₄ 228.288
Syrup. [α]_D²⁰ +0.2 (c, 0.3 in CHCl₃).
Aspinall, G.O. *et al.*, *Carbohydr. Res.*, 1974, **36**, 257 (*synth*, *pmr*)
Kuszmarn, J. *et al.*, *Carbohydr. Res.*, 1980, **83**, 63 (*synth*)
Köll, P. *et al.*, *Annalen*, 1987, 199 (*synth*, *pmr*)
Marzi, M. *et al.*, *Tet. Lett.*, 1989, **30**, 6075 (*synth*)

erythro-Hex-2-enono-1,5-lactone**H-78**

C₆H₈O₆ 176.126
Unisolated enediol.

***D*-form**

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-*D*-erythro-hex-2-enono-1,5-lactone
C₁₄H₁₆O₁₀ 344.274
[α]_D +165 (c, 1.0 in CHCl₃).

Jarglis, P. *et al.*, *Tet. Lett.*, 1982, **23**, 3781**threo-Hex-4-enopyranose****H-79**C₆H₁₀O₆ 178.141

Unisolated enol.

α-L-form

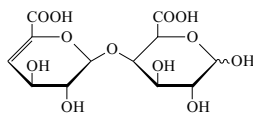
Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-α-L-threo-hex-4-enopyranose
[75860-74-1]
C₁₆H₂₀O₁₁ 388.327
Cryst. (EtOH). Mp 99-100°. [α]_D +50 (c, 1.0 in CHCl₃).

Pentabenzoyl: 1,2,3,4,6-Penta-O-benzoyl-α-L-threo-hex-4-enopyranose
[69534-69-6]
C₄₁H₃₀O₁₁ 698.681
Mp 72-74°. [α]_D +29 (c, 1.0 in CHCl₃).

4-Deoxy, tetra-Ac: 1,2,3,6-Tetra-O-acetyl-4-deoxy-α-L-threo-hex-4-enopyranose
[75860-50-3]
C₁₄H₁₈O₉ 330.291
Mp 81-82°. [α]_D +20.5 (c, 1.0 in CHCl₃).

4-Deoxy, tetrabenzoyl: 1,2,3,6-Tetra-O-benzoyl-4-deoxy-α-L-threo-hex-4-enopyranose
[69534-71-0]
C₃₄H₂₆O₉ 578.574
Syrup. [α]_D -34 (c, 1.0 in CHCl₃).

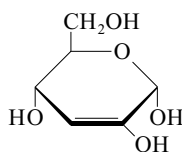
Ferrier, R.J. *et al.*, *Chem. Comm.*, 1978, 1019, (α-L-pentabenzoyl, α-L-tetrabenzoyl 4-deoxy)
Blattner, R. *et al.*, *J.C.S. Perkin I*, 1980, 1523; 1535 (α-L-penta-Ac, α-L-pentabenzoyl, α-L-tetra-Ac 4-deoxy)

α-L-threo-4-Hex-4-enopyranuronosyl-D-galacturonic acid**H-80**

Pyranose-form

C₁₂H₁₆O₁₂ 352.251
Isol. from the enzymic hydrolysate of pectin produced by the pectin-trans eliminase from *Bacillus polymyxa* or commercial pectinase.
[α]_D +177.8 (H₂O).

Albersheim, P. *et al.*, *Helv. Chim. Acta*, 1960, **43**, 1422 (*isol*)
Nagel, C.W. *et al.*, *Arch. Biochem. Biophys.*, 1961, **94**, 328 (*isol*)
Hasegawa, S. *et al.*, *J. Biol. Chem.*, 1962, **237**, 619 (*isol*)

erythro-Hex-2-enose**H-81**

Unisolated enol form of 3-Deoxy-erythro-hexos-2-ulose, D-214.

α-D-Pyranose-form

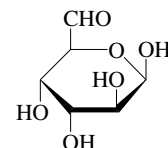
tert-Butyl glycoside, tri-Ac: tert-Butyl 2,4,6-tri-O-acetyl-α-D-erythro-hex-2-enopyranoside
[79698-71-8]
C₁₆H₂₄O₈ 344.361
Cryst. Mp 63-63.5°. [α]_D +84.3.

Hanessian, S. *et al.*, *Tet. Lett.*, 1981, **22**, 4583 (*synth*)

5-Hexenyl glucosinolate**H-82**

1-Thio-β-D-glucopyranose 1-[N-(sulfooxy)-6-heptenimidate]
[76265-24-2]
H₂C=CH(CH₂)₄C(SGlc)=NOSO₃H
C₁₃H₂₃NO₉S₂ 401.458
Present in horseradish (*Armoracia lapathifolia*) and Japanese horseradish (*Wasabia japonica*).

Kojima, M. *et al.*, *Yakugaku Zasshi*, 1973, **93**, 453; *CA*, **80**, 130475w (*occur*)
Grob, K. *et al.*, *Phytochemistry*, 1980, **19**, 1789 (*occur*)

altro-Hexodialdose
talo-Hexodialdose**H-83**

β-D-Pyranose-form

C₆H₁₀O₆ 178.141**β-D-Pyranose-form** [26548-39-0]

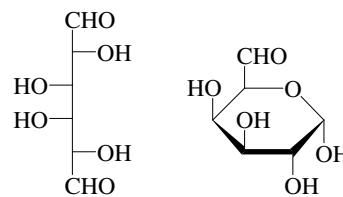
1,2:3,4-Diisopropylidene: 1,2:3,4-Di-O-isopropylidene-β-D-altro-hexodialdopyranose
[78654-58-7]
C₁₂H₁₈O₆ 258.271
Syrup.

α-L-Furanose-form

Me glycoside, 2,3-O-isopropylidene, 1',3'-propanediyl dithioacetal: [104833-40-1]
C₁₃H₂₂O₅S₂ 322.446
Cryst. (Et₂O/hexane). Mp 84-85°. [α]_D²¹ -42.4 (c, 1.86 in MeOH).

[26548-39-0]

Martinez, E. *et al.*, *An. Quim., Ser. C*, 1980, **76**, 230 (β-D-pyr diisopropylidene)
Boyd, F.L. *et al.*, *Chem. Comm.*, 1986, **5**, 257, (α-L-Me fur isopropylidene deriv)

galacto-Hexodialdose, 8CI**H-84***D*-form

α-D-Pyranose-form

C₆H₁₀O₆ 178.141

The parent compd. is *meso*-. Exists in soln. mainly as a mixt. of bicyclic hemiacetals.

α-D-Pyranose-form

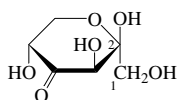
1,2:3,4-Diisopropylidene: 1,2:3,4-Di-O-isopropylidene-α-D-galacto-hexodialdo-1,5-pyranose
[4933-77-1]

1,2:4,5-Di-O-isopropylidene: 1,2:4,5-Di-O-isopropylidene- β -D-erythro-hexo-2,3-diulose-2,6-pyranose
[18422-53-2]
 $C_{12}H_{18}O_6$ 258.271

Highly enantioselective catalyst for epoxidation. Needles (petrol). Mp 102–103°. $[\alpha]_D^{20}$ -126.4 (c, 1.0 in $CHCl_3$).

1,2:4,5-Di-O-cyclohexylidene: 1,2:4,5-Di-O-cyclohexylidene- β -D-erythro-hexo-2,3-diulose-2,6-pyranose
 $C_{18}H_{26}O_6$ 338.4
Cryst. (Et₂O). Mp 152–153°. $[\alpha]_D^{20}$ -90 (c, 1.0 in $CHCl_3$).

James, K. *et al.*, *J.C.S. (C)*, 1967, 2681, (β -D-dicyclohexylidene, β -D-diisopropylidene)
Cree, G.M. *et al.*, *Can. J. Biochem.*, 1968, **46**, 765 (β -D-isopropylidene)
Fayet, C. *et al.*, *Carbohydr. Res.*, 1986, **155**, 99 (β -D-diisopropylidene)
Org. Synth., 2003, **80**, 1–8 (β -D-diisopropylidene, synth, ir, cmr, pmr)

threo-2,4-Hexodiulose**H-87** β -D-Pyranose-form $C_6H_{10}O_6$ 178.141**D-form** [102831-06-1]

Amorph. powder. $[\alpha]_D^{19}$ -39 (c, 0.36 in MeOH).

Tetra-Ac, di-O-benzoyloxime: [108529-35-7]
Cryst. (Et₂O/hexane). Mp 98–100°. $[\alpha]_D^{20}$ -19 (c, 1.2 in $CHCl_3$).

 β -D-Pyranose-form

1,2-Isopropylidene: 1,2-O-Isopropylidene- β -D-threo-2,4-hexodiulo-2,6-pyranose
[108529-27-7]
 $C_9H_{14}O_6$ 218.206
Cryst. (EtOAc/hexane). Mp 156–158°. $[\alpha]_D^{21}$ -65 (c, 1.6 in $CHCl_3$).

2,3-Isopropylidene: 2,3-O-Isopropylidene- β -D-threo-2,4-hexodiulopyranose
[58238-47-4]
 $C_9H_{14}O_6$ 218.206
Cryst. (Et₂O). Mp 135–137°. $[\alpha]_D^{20}$ -47 (c, 2 in MeOH).

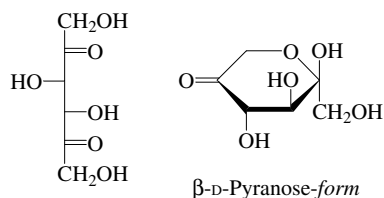
2,3-Isopropylidene, oxime(E-): [109200-64-8]
 $C_9H_{15}NO_6$ 233.221
Cryst. (Et₂O/hexane). Mp 169–171°. $[\alpha]_D^{20}$ -70 (c, 2.3 in MeOH).

Den Drijver, L. *et al.*, *Carbohydr. Res.*, 1986, **155**, 141 (β -D-pyr-isopropylidene, *cryst struct, deriv*)

Holzappel, C.W. *et al.*, *S. Afr. J. Chem.*, 1987, **40**, 77 (*D-form, synth, β -D-pyr 1,2-isopropylidene*)

threo-2,5-Hexodiulose, 9CI, 8CI**H-88**

5-Ketofructose
[5729-73-7]

 β -D-Pyranose-form $C_6H_{10}O_6$ 178.141

Exists as a monomer in soln. and as a dimer in the solid state.

D-form [1684-29-3]

Formed by the action of *Acetobacter suboxydans* on Glucitol, G-247, *Gluconobacter* on Fructose, F-84 and by *Pseudomonas convexa* on Sorbose, S-60.
Mp 157–158°
Mp 175–176°. $[\alpha]_D^{18}$ -86.8 (c, 1.0 in H₂O).

Bisphenylhydrazones:

Yellow cryst. Mp 123–124° Mp 141°. $[\alpha]_D^{20}$ -138.5 (c, 0.25 in Py).

1,3:4,6-Dibenzylidene: 1,3:5,6-Di-O-benzylidene-threo-hexo-2,5-diulose
 $C_{20}H_{18}O_6$ 354.359
Cryst. Mp 195–196°. $[\alpha]_D$ -93 (c, 1.7 in $CHCl_3$).

 β -D-Pyranose-form

1,2-Isopropylidene: 1,2-O-Isopropylidene- β -D-threo-2,5-hexodiulopyranose
 $C_9H_{14}O_6$ 218.206
Cryst. (EtOAc/ $CHCl_3$). Mp 174–176°. $[\alpha]_D^{20}$ -65 (c, 1.6 in MeOH).

Weidenhagen, R. *et al.*, *Chem. Ber.*, 1960, **93**, 2924

Whiting, G.C. *et al.*, *Chem. Ind. (London)*, 1963, 1925 (*synth, pmr*)

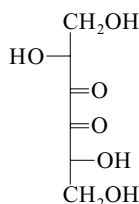
Avigad, G. *et al.*, *Methods Enzymol.*, 1975, **41**, 84 (*rev*)

Hansen, L.K. *et al.*, *Chem. Comm.*, 1976, 572 (*cryst struct*)

Baggett, N. *et al.*, *Carbohydr. Res.*, 1981, **96**, 41 (*dibenzylidene*)

Brewer, C.F. *et al.*, *Carbohydr. Res.*, 1982, **102**, 294 (*cmr*)

Den Driver, L. *et al.*, *Carbohydr. Res.*, 1986, **155**, 141 (*1,2-Isopropylidene*)

threo-3,4-Hexodiulose**H-89** $C_6H_{10}O_6$ 178.141

Dimeric in *cryst. struct.* and in *soln.* Mixt. of stereoisomers of the dimer in *soln.*

D-form

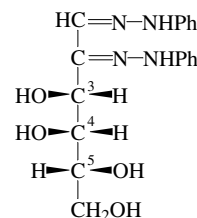
1,2:5,6-Diisopropylidene: 1,2:5,6-Di-O-isopropylidene-D-threo-3,4-hexodiulose
 $C_{12}H_{18}O_6$ 258.271
Mp 124–126°. $[\alpha]_D^{20}$ +113 (c, 1 in $CHCl_3$).

Kuszmarn, J. *et al.*, *Carbohydr. Res.*, 1987, **164**, 459 (*synth*)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1989, **194**, 21 (*cryst struct, struct, pmr*)

Hexose phenylosazones**H-90**

Hexos-2-ulose bis(phenylhydrazones), 9CI.
1,2-Aldodiose bis(phenylhydrazones).
Hexosazones



(3R,4R,5R)-form

 $C_{18}H_{22}N_4O_4$ 358.396

Formed from aldohexoses by treatment with phenylhydrazine. The reaction involves a formal oxidation step involving destruction of the chiral centre at C-2. The eight (enantiomeric pairs of) hexoses therefore form a total of four different osazones. In addition, the four ketohexoses form the same osazones by formal oxidation at C-1. Key compds. for historical characterisation of the hexoses and their configurational interconversion (Fischer, 1889). Readily converted into osotriazoles which can be used for further characterisation.

(3R,4R,5R)-form

D-lyxo-form. *D*-Galactosazone. *D*-Talosa-zone. *D*-Tagatosazone

[3879-35-4]

Yellow needles (EtOH/Et₂O). Mp 188° (185–187°). $[\alpha]_D^{20}$ +80 (168h) \rightarrow +18 (c, 0.84 in Py/EtOH 2:3).

Phenylosotriazole: *D*-Galactose phenylosotriazole. *D*-Talose phenylosotriazole

. *D*-Tagatose phenylosotriazole $C_{12}H_{15}N_3O_4$ 265.268

Cryst. (H₂O). Mp 110°. $[\alpha]_D^{20}$ -30.6 (c, 0.3 in Py).

(3R,4R,5S)-form

L-ribo-form. *L*-Allosazone. *L*-Altrosazone. *L*-Psicosazone

Yellow cryst. (EtOH aq.). Mp 173–174°. $[\alpha]_D^{20}$ +78.6 (15 min) \rightarrow +82.2 (c, 2 in Py).

(3R,4S,5R)-form

D-lyxo-form. *D*-Glucosazone. *D*-Mannosa-zone. *D*-Fructosazone

[534-97-4]

Fine yellow needles. Mp 208–209°. $[\alpha]_D^{20}$ -72.5 (48h) \rightarrow -40 (c, 0.88 in Py/EtOH 2:3).

Phenylosotriazole: *D*-Glucose phenylosotriazole. *D*-Mannose phenylosotriazole. *D*-Fructose phenylosotriazole

 $C_{12}H_{15}N_3O_4$ 265.268

Cryst. (H₂O). Mp 195–196°. $[\alpha]_D^{20}$ -81.6 (c, 0.8 in Py).

(3R,4S,5S)-form

L-xylo-form. *L*-Gulosazone. *L*-Idosazone.
L-Sorbosazone
[5934-57-6]
Yellow needles (Me₂CO/Et₂O).
Mp 170-172° (167°). [α]_D -13.8
(c, 1 in Py/EtOH 1:1).

Phenylosotriazole: *L*-Gulose phenylosotriazole. *L*-Idose phenylosotriazole. *L*-Sorbosazone phenylosotriazole
C₁₂H₁₅N₃O₄ 265.268
Cryst. (H₂O). Mp 158-159°. [α]_D²⁰ -46.7
(c, 0.8 in Py).

(3S,4R,5R)-form

D-xylo-form. *D*-Gulosazone. *D*-Idosazone.
D-Sorbosazone
[5978-96-1]
Fine needles (EtOH). Mp 168°. [α]_D +6
(MeOH). [α]_D -8 (48h) → -43 (c, 0.84 in
Py/EtOH 2:3).

Phenylosotriazole: *D*-Gulose phenylosotriazole. *D*-Idose phenylosotriazole. *D*-Sorbosazone phenylosotriazole
C₁₂H₁₅N₃O₄ 265.268
Cryst. (H₂O). Mp 158.5-159°. [α]_D²⁵ +47
(Py).

(3S,4R,5S)-form

L-arabino-form. *L*-Glucosazone. *L*-Mannosazone. *L*-Fructosazone
[6032-23-1]
Yellow needles. Mp 205-206°. [α]_D¹⁶ +57
(24h) → +36 (c, 1 in Py/EtOH 2:3).

Phenylosotriazole: *L*-Glucose phenylosotriazole. *L*-Mannose phenylosotriazole. *L*-Fructose phenylosotriazole
C₁₂H₁₅N₃O₄ 265.268
Cryst. (MeOH aq.). Mp 196-197°. [α]_D²⁵ +82
(c, 0.8 in Py).

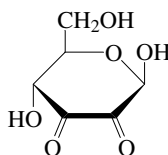
(3S,4S,5R)-form

D-ribo-form. *D*-Allosazone. *D*-Altrosazone.
D-Psicosazone
Mp 173-174° (162-163° dec.). [α]_D²⁰ -19.2
(c, 1 in EtOH). [α]_D -78 → -67 (Py). [α]_D²⁰ -38
(3h) → -48 (c, 0.82 in Py/EtOH 2:3).
Phenylosotriazole: *D*-Allose phenylosotriazole. *D*-Altrose phenylosotriazole. *D*-Psicose phenylosotriazole
C₁₂H₁₅N₃O₄ 265.268
Cryst. (H₂O). Mp 134-135°. [α]_D²⁰ +28
(c, 0.8 in Py).

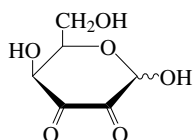
(3S,4S,5S)-form

L-lyxo-form. *L*-Galactosazone. *L*-Talosaazone. *L*-Tagatosazone
[81872-41-5]
Mp 192-195° dec.

Fischer, E. *et al.*, *Ber.*, 1888, **21**, 2631-2634;
1889, **22**, 365-376 (*synth*)
Haskins, W.T. *et al.*, *J.A.C.S.*, 1945, **67**, 939-941
(*phenylosotriazoles*)
Percival, E.G.V. *et al.*, *Adv. Carbohydr. Chem.*,
1948, **3**, 23-44 (*rev. bibl*)
Bayne, S. *et al.*, *Adv. Carbohydr. Chem.*, 1956,
11, 43-96 (*rev*)
Richtmyer, N.K. *et al.*, *Methods Carbohydr.*
Chem., 1963, **2**, 127-131 (*synth. bibl*)
Hough, L. *et al.*, *Rodd's Chem. Carbon Compd.*
(2nd edn.), 1967, **1F**, 440-446 (*rev*)
Ho, T. *et al.*, *Agric. Biol. Chem.*, 1969, **33**,
1217-1219 (*ms*)
Schnarr, G.W. *et al.*, *J.C.S. Perkin I*, 1979,
496-503 (*cmr*)
Lichtenthaler, F.W. *et al.*, *Angew. Chem., Int.*
Ed., 1992, **31**, 1541-1556 (*rev*)

erythro-Hexose-2,3-diulose
2,3-DiketoglucoseC₆H₈O₆ 176.126**β-D-Pyranose-form**

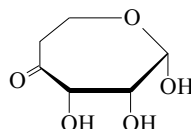
erythro-Hexopyranose-2,3-diulose, 9CI
2,3-Bis (covalent hydrate): [188575-80-6]
C₆H₁₂O₈ 212.156
Prisms. Mp 158-164° dec.
3,4-Dihydroxyphenethyl glycoside: *Dopaol*
2,3-diketoglycoside
C₁₄H₁₆O₈ 312.276
Constit. of the flowering stems of
Chelona obliqua. Glass. First natural
occurrence of a diketo sugar. In equilib.
with covalent tetrahydrate.
Sedmera, P. *et al.*, *Carbohydr. Res.*, 1997, **297**,
375-378 (*synth. pmr, cmr*)
Franzyk, H. *et al.*, *J. Nat. Prod.*, 2004, **67**,
1052-1054 (*Dopaol* 2,3-diketoglucoside)

threo-2,3-HexosediuloseC₆H₈O₆ 176.126**D-form** [591760-00-8]

Obt. by oxidn. of D-galactose by pyranose oxidase from *Trametes versicolor* and *Oudemansiella mucida*. Readily undergoes nonenzymic decarboxylation into D-threo-pentos-2-ulose. Pentos-2-ulose, P-45.
1,2-Bis (diphenylhydrazone): [591759-97-6]
C₃₀H₂₈N₄O₄ 508.576
Orange syrup.
1,3-Bis (diphenylhydrazone): [591759-98-7]
C₃₀H₂₈N₄O₄ 508.576
Yellow syrup.
1,2,3-Tris (diphenylhydrazone): [591759-99-8]
C₄₂H₃₈N₆O₃ 674.801
Orange solid.
Volc, J. *et al.*, *J. Carbohydr. Chem.*, 2003, **22**,
207-216 (*enzymic synth. hydrazones*)

erythro-Hexoseptanos-4-ulose

H-93

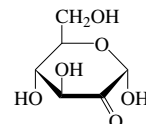
C₆H₁₀O₅ 162.142**α-D-form**

1,2-O-Isopropylidene, 3-Ac: 3-O-Acetyl-5-deoxy-1,2-O-isopropylidene-α-D-erythro-hexoseptanos-4-ulose, 9CI
[110537-95-6]
C₁₁H₁₆O₆ 244.244
Mp 80-82°. [α]_D²⁰ +173 (c, 1.3 in CHCl₃).
Csuk, R. *et al.*, *Carbohydr. Res.*, 1986, **157**, 235
(*synth. pmr, cmr*)

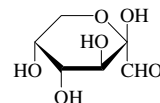
arabino-Hexos-2-ulose

H-94

Glucosone. Fructosone. Mannosone



α-D-Pyranose-form



β-D-2,6-Pyranose-form

C₆H₁₀O₆ 178.141**D-form** [26345-59-5]

Formed during sterilisation of foods by irradiation. [α]_D²⁰ -9.8.

6-Phosphate:

C₆H₁₁O₉P 258.121
Yellowish-brown solid.

α-D-Pyranose-form

4,6-Di-Me, 1,3-di-Ac: 1,3-Di-O-acetyl-4,6-di-O-methyl-α-D-arabino-hexopyranos-2-ulose
[41107-37-3]
C₁₂H₁₈O₈ 290.269
Cryst. (petrol). Mp 62-63°. [α]_D +47.7
(c, 1.3 in CHCl₃).

Me glycoside: Methyl α-D-arabino-hexopyranosid-2-ulose, 9CI
[39687-01-9]
C₇H₁₂O₆ 192.168

Cryst. Mp 151-153°. [α]_D²⁰ +141 (c, 0.5 in H₂O).

Me glycoside, 3-benzoyl: Methyl 3-O-benzoyl-α-D-arabino-hexopyranosid-2-ulose
[61403-88-1]
C₁₄H₁₆O₇ 296.276
Platelets. Mp 64°. [α]_D²⁰ +46 (c, 0.8 in CHCl₃).

Me glycoside, 3,4,6-tribenzoyl: Methyl 3,4,6-tri-O-benzoyl-α-D-arabino-hexopyranosid-2-ulose
[10579-00-7]
C₂₈H₂₄O₉ 504.492
Prismatic needles. Mp 150-151°. [α]_D²² +53 (c, 0.8 in CHCl₃).

β-D-Pyranose-form

Me glycoside, 3,4,6-tri-Ac: Methyl 3,4,6-tri-O-acetyl-β-D-arabino-hexopyranosid-2-ulose
[51295-64-8]
C₁₃H₁₈O₉ 318.28
[α]_D +179 (CHCl₃).

1,3,4,6-Tetrabenzoyl: 1,3,4,6-Tetra-O-benzoyl-β-D-arabino-hexopyranos-2-ulose
C₃₄H₂₆O₁₀ 594.573
Cryst. (CHCl₃/pentane). Mp 127-129°. [α]_D²³ -9.3 (c, 1.0 in CHCl₃).

1,6-Anhydro, 2,4-ditosyl: 1,6-Anhydro-2,4-di-O-tosyl- β -D-lyxo-hexopyranos-3-ulose [20183-67-9]
 $C_{20}H_{20}O_6S_2$ 468.505
 Mp 141-142°. $[\alpha]_D^{22}$ -51 (c, 0.65 in $CHCl_3$).

1,6-Anhydro, 2,4-dibenzyl: 1,6-Anhydro-2,4-di-O-benzyl- β -D-lyxo-hexopyranos-3-ulose
 $C_{20}H_{20}O_5$ 340.375
 Cryst. ($CHCl_3$ /petrol). Mp 107-109°. $[\alpha]_D^{22}$ -54 (c, 0.6 in $CHCl_3$).

β -D-Furanose-form

1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene- β -D-lyxo-hexofuranos-3-ulose
 $C_{12}H_{18}O_6$ 258.271
 Cryst. (petrol). Mp 88°. $[\alpha]_D^{20}$ -21 (c, 0.4 in H_2O).

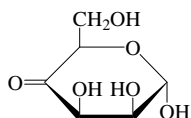
Heyns, K. et al., *Chem. Ber.*, 1967, **100**, 2317; 1971, **104**, 3096 (β -D-pyr anhydro, β -D-pyr anhydro di-Ac)

Černý, M. et al., *Coll. Czech. Chem. Comm.*, 1968, **33**, 1143 (β -D-pyr anhydro dibenzoyl, β -D-pyr anhydro ditosyl, β -D-pyr anhydro dibenzyl)

Slessor, K.N. et al., *Can. J. Chem.*, 1969, **47**, 3989 (β -D-fur)

lyxo-Hexos-4-ulose

H-99

 α -D-Pyranose-form $C_6H_{10}O_6$ 178.141

α -D-Pyranose-form

Me glycoside, 2,3-O-isopropylidene, 6-mesyl: Methyl 2,3-O-isopropylidene-6-O-mesyl- α -D-lyxo-hexopyranosid-4-ulose
 $C_{11}H_{18}O_8S$ 310.324
 Cryst. (2-propanol). Mp 100-102°. $[\alpha]_D^{22}$ +39 (c, 0.6 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene, 6-Me: Methyl 2,3-O-isopropylidene-6-O-methyl- α -D-lyxo-hexopyranosid-4-ulose
 $C_{11}H_{18}O_6$ 246.26
 Syrup. $[\alpha]_D^{21}$ +109.5 (c, 1.3 in $CHCl_3$).

β -D-Pyranose-form

1,6-Anhydro: See 1,6-Anhydro-lyxo-hexopyranos-4-ulose, A-649

α -L-Pyranose-form

6-Deoxy, benzyl glycoside, 2,3-O-isopropylidene: Benzyl 6-deoxy-2,3-O-isopropylidene- α -L-lyxo-hexopyranosid-4-ulose
 $C_{16}H_{20}O_5$ 292.331
 $[\alpha]_D^{22}$ -76.5 (c, 1.0 in $CHCl_3$).

Tronchet, J.M.J. et al., *Helv. Chim. Acta*, 1970, **53**, 364 (α -D-Me pyr isopropylidene Me)

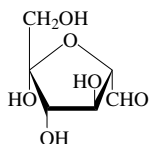
Collins, P.M. et al., *J.C.S. Perkin 1*, 1980, 779 (α -D-Me pyr isopropylidene mesyl, α -L-benzyl pyr 6-deoxy isopropylidene)

Aspinall, G.O. et al., *Carbohydr. Res.*, 1983, **121**, 61 (α -L-benzyl pyr 6-deoxy isopropylidene)

lyxo-Hexos-5-ulose

6-Aldofructose. 5-Ketomannose

H-100

 β -D-5,2-Furanose-form $C_6H_{10}O_6$ 178.141

Shows complex equilib. in aq. soln. with the covalent hydrate of the form illus. predominating (52%) and six other tautomers detected.

D-form [80451-84-9]

Prod. by bacterial dehydrogenation of D-fructose.

Prismatic needles (EtOH). Mp 156-158°. $[\alpha]_D^{19}$ -85 (c, 1 in H_2O).

Bis(phenylhydrazine):

Pale yellow-green prismatic cryst. Mp 123-124°. $[\alpha]_D^{20}$ -138.5 (c, 0.25 in Py).

β -D-Furanose-form

5,6-Isopropylidene: 5,6-O-Isopropylidene- β -D-lyxo-hexos-5-ulo-5,2-furanose [111462-72-7]
 $C_9H_{14}O_6$ 218.206
 Oil. $[\alpha]_D^{20}$ -15 (c, 0.8 in MeOH).

5,6-Isopropylidene, oxime: [111462-74-9]
 $C_9H_{15}NO_6$ 233.221
 Cryst. (Et_2O /hexane). Mp 124-126°. $[\alpha]_D^{20}$ -52 (c, 1.2 in MeOH).

L-form [216577-79-6]

$[\alpha]_D$ +18.8 (c, 1.3 in H_2O) (equilib.).

2,6-Dibenzyl: 2,6-Di-O-benzyl-L-lyxo-hexos-5-ulose [216590-22-6]
 $C_{20}H_{22}O_6$ 358.39

Solid. Mp 85-90°. $[\alpha]_D^{20}$ +15.1 (c, 0.96 in $CHCl_3$) (equilib.). Mixt. of anomers.

Weidenhagen, R. et al., *Chem. Ber.*, 1960, **93**, 2924 (synth)

Den Drijver, L. et al., *Carbohydr. Res.*, 1987, **161**, 65 (β -D-fur isopropylidene, synth)

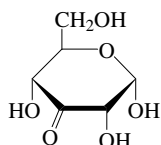
Kiely, D.E. et al., *J. Carbohydr. Chem.*, 1997, **16**, 1159-1177 (synth, pmr, cmr, equilib)

Barili, P.L. et al., *J. Carbohydr. Chem.*, 1998, **17**, 1167-1180 (L-form)

ribo-Hexos-3-ulose, 9CI, 8CI

3-Ketoglucose. 3-Oxoglucose

H-101

 α -D-Pyranose-form $C_6H_{10}O_6$ 178.141

Complex equilib. in soln. with at least 10 species present. Main forms in fresh D_2O soln. are α -D-Pyr (44%), β -D-Pyr (22%) and β -D-Pyr covalent hydrate (12%).

D-form [2092-61-7]

Constit. of the disaccharide from the culture media of the crown gall tumour inducing organism *Agrobacterium tumefaciens*.

Mp 58-60° (hydrate). $[\alpha]_D^{26}$ +14.8 (c, 1.0 in H_2O). $[\alpha]_D$ +55.6 (H_2O). Readily forms a hydrate, degrades in aq. soln. at 60°.

α -D-Pyranose-form

1,2-O-Propylidene, 4,6-O-benzylidene: 4,6-O-Benzylidene-1,2-O-propylidene- α -D-ribo-hexopyranos-3-ulose
 $C_{16}H_{18}O_6$ 306.315
 Cryst. (EtOH). Mp 129-130°.

1,2-O-Isopropylidene, 4,6-O-ethylidene: 4,6-O-Ethylidene-1,2-O-isopropylidene- α -D-ribo-hexopyranos-3-ulose
 $C_{11}H_{16}O_6$ 244.244
 Mp 76-78°. $[\alpha]_D^{20}$ +95 (c, 1.0 in $CHCl_3$).

1,2-O-Isopropylidene, 4,6-O-benzylidene: 4,6-O-Benzylidene-1,2-O-isopropylidene- α -D-ribo-hexopyranos-3-ulose
 $C_{16}H_{18}O_6$ 306.315
 Mp 165-166°. $[\alpha]_D^{20}$ +84 (c, 1 in $CHCl_3$).

Me glycoside: Methyl α -D-ribo-hexopyranos-3-uloside
 $C_7H_{12}O_6$ 192.168
 Cryst. (butanone). Mp 91-92°. $[\alpha]_D^{25}$ +155 (c, 2.6 in H_2O).

Me glycoside, 4-benzoyl, 2-Ac: Methyl 2-O-acetyl-4-O-benzoyl- α -D-ribo-hexopyranosid-3-ulose
 $C_{16}H_{18}O_8$ 338.313
 Needles ($CHCl_3$ /petrol). Mp 151-153°.

Me glycoside, 4,6-O-benzylidene: See Methyl 4,6-O-benzylidene-ribo-hexopyranosid-3-ulose, M-167

α -D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene- α -D-ribo-hexofuranos-3-ulose
 $C_9H_{14}O_6$ 218.206
 Cryst. (C_6H_6). Mp 80-81°. $[\alpha]_D$ +29.9 \rightarrow +36.7 (H_2O).

1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene- α -D-ribo-hexofuranos-3-ulose [2847-00-9]
 $C_{12}H_{18}O_6$ 258.271
 Mp 39-40°. Bp_{0.01} 97° Bp_{0.01} 97°. $[\alpha]_D$ +107 ($CHCl_3$).

1,2:5,6-Di-O-isopropylidene, covalent hydrate: [10578-85-5]
 $C_{12}H_{20}O_7$ 276.286
 Mp 112-114°. $[\alpha]_D$ +44.5 (H_2O).

1,2:5,6-Di-O-isopropylidene, oxime: [10578-95-7]
 $C_{12}H_{19}NO_6$ 273.285
 Cryst. (Et_2O /petrol). Mp 103-104°. $[\alpha]_D$ +180 (c, 1 in $CHCl_3$).

1,2-O-Cyclohexylidene: 1,2-O-Cyclohexylidene- α -D-ribo-hexofuranos-3-ulose
 $C_{12}H_{18}O_6$ 258.271
 Cryst. (petrol). Mp 108-110°. $[\alpha]_D^{16}$ +41.2 (c, 1.0 in MeOH).

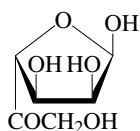
1,2:5,6-Di-O-cyclohexylidene: 1,2:5,6-Di-O-cyclohexylidene- α -D-ribo-hexofuranos-3-ulose [18546-21-9]
 $C_{18}H_{26}O_6$ 338.4
 Mp 66-67° Mp 122-124°. $[\alpha]_D$ +96.7 (c, 0.3 in $CHCl_3$).

1,2:5,6-Di-O-cyclohexylidene, oxime:
 $C_{18}H_{27}NO_6$ 353.414
 Mp 111-113° Mp 143-147°. $[\alpha]_D$ +133 (c, 1.0 in MeOH).

Theander, O. *et al.*, *Acta Chem. Scand.*, 1963, **17**, 1751; 1964, **18**, 2209 (α -D-isopropylidene, α -D-diisopropylidene, α -D-diisopropylidene hydrate)
 Fukui, S. *et al.*, *J.A.C.S.*, 1963, **85**, 1697 (*isol*)
 Beynon, P.J. *et al.*, *J.C.S. (C)*, 1966, 1131, (α -D-diisopropylidene, α -D-diisopropylidene hydrate, α -D-diisopropylidene oxime)
 Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1967, **21**, 910 (*Me* α -D-gly)
 James, K. *et al.*, *J.C.S. (C)*, 1967, 2681, (α -D-dicyclohexylidene)
 Onodera, K. *et al.*, *Carbohydr. Res.*, 1968, **6**, 276; 1972, **21**, 159 (α -D-diisopropylidene hydrate, α -D-dicyclohexylidene, α -D-dicyclohexylidene oxime)
 Christensen, J.E. *et al.*, *Carbohydr. Res.*, 1968, **7**, 510 (*synth*)
 Szarek, W.A. *et al.*, *Can. J. Chem.*, 1969, **47**, 4473 (α -D-diisopropylidene)
 Humphries, H.P. *et al.*, *Acta Chem. Scand.*, 1971, **25**, 883 (*D*-form)
 Hall, L.D. *et al.*, *Can. J. Chem.*, 1972, **50**, 1912 (*pmr*)
 Onodera, K. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 331 (α -D-diisopropylidene, α -D-diisopropylidene oxime)
 Hayano, K. *et al.*, *J. Bacteriol.*, 1973, **113**, 652 (*occur*)
 Shashkov, A.S. *et al.*, *Bioorg. Khim.*, 1977, **3**, 1021 (*cmr*)
 Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1977, 2423 (α -D-pyr propylidene benzylidene, α -D-pyr isopropylidene ethylidene, *pmr*)
 Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1978, **67**, 267 (α -D-diisopropylidene)
 De Wit, G. *et al.*, *Carbohydr. Res.*, 1980, **86**, 33 (*uv*, *pmr*, *bibl*, *Me* α -D-gly)
 Box, V.G.S. *et al.*, *Carbohydr. Res.*, 1982, **102**, 308 (*Me* α -D-gly 4-benzoyl-2-Ac)
 Lichtenthaler, F.W. *et al.*, *Annalen*, 1989, 1163 (*equilib*)
 Morris, P.E. *et al.*, *J. Carbohydr. Chem.*, 1989, **8**, 515-530 (*pmr*, *equilib*)
 de Wit, D. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1991, **110**, 271 (*D*-form)
 Lankin, D.C. *et al.*, *Carbohydr. Res.*, 1992, **229**, 245; 1993, **244**, 49 (α -D-diisopropylidene)

ribo-Hexos-5-ulose

H-102

 α -L-1,4-Furanose-form $C_6H_{10}O_6$ 178.141

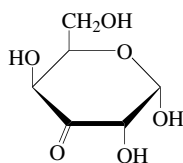
Shows complex tautomeric equilib. in soln., with 5 tautomers detected.

L-form

Syrup. $[\alpha]_D +2.3$ (c, 1.9 in D_2O).2,6-Dibenzyl: 2,6-Di-O-benzyl-L-ribo-hexos-5-ulose
 Amorph. solid. Mp 120-124°. $[\alpha]_D -20.5$ (c, 0.7 in $CHCl_3$). Shows tautomeric equilib. between α - and β -1,4-furanose forms.Barili, P.L. *et al.*, *J. Carbohydr. Chem.*, 1999, **18**, 1037-1049 (*synth*, *pmr*, *cmr*)

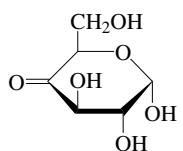
xylo-Hexos-3-ulose

H-103

 α -D-Pyranose-form $C_6H_{10}O_6$ 178.141 α -D-Pyranose-form4,6-O-Ethylidene, 1,2-O-isopropylidene:
 4,6-O-Ethylidene-1,2-O-isopropylidene- α -D-xylo-hexopyranosid-3-ulose
 $C_{11}H_{16}O_6$ 244.244
 Mp 62-63°. $[\alpha]_D^{21} -47$ (c, 0.6 in $CHCl_3$).1,2:4,6-Di-O-isopropylidene: 1,2:4,6-Di-O-isopropylidene- α -D-xylo-hexopyranosid-3-ulose
 $C_{12}H_{18}O_6$ 258.271
 Mp 62-63°. $[\alpha]_D^{21} -47$ (c, 0.6 in $CHCl_3$).*Me* glycoside, 4,6-O-benzylidene, 2-Ac:
 Methyl 2-O-acetyl-4,6-O-benzylidene- α -D-xylo-hexopyranosid-3-ulose
 $C_{16}H_{18}O_7$ 322.314
 Mp 117-118°. $[\alpha]_D^{25} +194$ (c, 1.5 in $CHCl_3$). α -D-Furanose-form1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene- α -D-xylo-hexofuranosid-3-ulose
 [26623-13-2]
 $C_{12}H_{18}O_6$ 258.271
 Cryst. (petrol). Mp 76-77°. $[\alpha]_D -58.5$ (c, 0.4 in H_2O). β -D-Pyranose-form*Benzyl* glycoside, 4,6-O-benzylidene:
 Benzyl 4,6-O-benzylidene- β -D-xylo-hexopyranosid-3-ulose
 [72045-25-1]
 $C_{20}H_{20}O_6$ 356.374
 Mp 156-157°.Chittenden, G.J.F. *et al.*, *Chem. Comm.*, 1968, 779 (α -D-pyr ethylidene isopropylidene)
 Slessor, K.N. *et al.*, *Can. J. Chem.*, 1969, **47**, 3989 (α -D-fur diisopropylidene)
 Chittenden, G. *et al.*, *Carbohydr. Res.*, 1970, **15**, 101 (α -D-pyr ethylidene isopropylidene)
 Defaye, J. *et al.*, *Carbohydr. Res.*, 1975, **42**, 373 (α -D-Me pyr benzylidene Ac)
 David, S. *et al.*, *J.C.S. Perkin 1*, 1979, 1568, (β -D-benzyl pyr benzylidene)

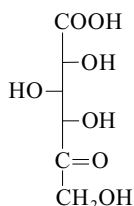
xylo-Hexos-4-ulose

H-104

 α -D-Pyranose-form $C_6H_{10}O_6$ 178.141 α -D-Pyranose-form*Me* glycoside, O-methylxime: Methyl α -D-xylo-hexopyranosid-4-ulose O-methylxime
 Mp 69-75°. $[\alpha]_D^{20} +66$ (c, 0.3 in EtOH).*Me* glycoside, 2,3,6-tribenzoyl: Methyl 2,3,6-tri-O-benzoyl- α -D-xylo-hexopyranosid-4-ulose
 $C_{28}H_{24}O_9$ 504.492
 Mp 136-138°. $[\alpha]_D +172$ ($CHCl_3$).*Me* glycoside, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl- α -D-xylo-hexopyranosid-4-ulose
 $C_{21}H_{24}O_6$ 372.417
 Syrup. $[\alpha]_D +75$ (c, 1.5 in $CHCl_3$).*Me* glycoside, 2,3-dibenzyl, 6-trityl: Methyl 2,3-di-O-benzyl-6-O-trityl- α -D-xylo-hexopyranosid-4-ulose
 $C_{40}H_{38}O_6$ 614.737
 $[\alpha]_D +47.1$ (c, 1.2 in $CHCl_3$).*Me* glycoside, 2,6-dibenzyl: Methyl 2,6-di-O-benzyl- α -D-xylo-hexopyranosid-4-ulose
 $C_{21}H_{24}O_6$ 372.417
 Syrup.*Me* glycoside, tribenzyl: Methyl 2,3,6-tri-O-benzyl- α -D-xylo-hexopyranosid-4-ulose, 9CI
 [98807-61-5]
 $C_{28}H_{30}O_6$ 462.541
 $[\alpha]_D^{22} +62$ (c, 1 in $CHCl_3$).*Me* glycoside, 2,3-di-Me, 6-trityl: Methyl 2,3-di-O-methyl-6-O-trityl- α -D-xylo-hexopyranosid-4-ulose
 $C_{28}H_{30}O_6$ 462.541
 $[\alpha]_D^{27} +123$ (c, 0.6 in $CHCl_3$).*Benzyl* glycoside, 2,3-dibenzyl: Benzyl 2,3-di-O-benzyl- α -D-xylo-hexopyranosid-4-ulose
 [72045-22-8]
 $C_{27}H_{28}O_6$ 448.515
 Characterised by *pmr*.*Benzyl* glycoside, 2,3-dibenzyl, 6-trityl: Benzyl 2,3-di-O-benzyl-6-O-trityl- α -D-xylo-hexopyranosid-4-ulose
 $C_{46}H_{42}O_6$ 690.834
 Cryst. (EtOH). Mp 131-136°. $[\alpha]_D +41.5$ (c, 1.42 in $CHCl_3$).*Benzyl* glycoside, 2,6-dibenzyl: Benzyl 2,6-di-O-benzyl- α -D-xylo-hexopyranosid-4-ulose
 [72045-26-2]
 $C_{27}H_{28}O_6$ 448.515
 Syrup. β -D-Pyranose-form*Me* glycoside: Methyl β -D-xylo-hexopyranosid-4-ulose
 $C_7H_{12}O_6$ 192.168
 Mp 61-65°. $[\alpha]_D^{20} -29$ (c, 0.4 in H_2O).*Me* glycoside, 2,3-di-Me, 6-trityl: Methyl 2,3-di-O-methyl-6-O-trityl- β -D-xylo-hexopyranosid-4-ulose
 $C_{28}H_{30}O_6$ 462.541
 Needles (diisopropyl ether). Mp 100-102°.David, S. *et al.*, *J.C.S. Perkin 1*, 1974, 1568 (*benzyl* α -D-gly dibenzyl)
 Miljković, M. *et al.*, *J.O.C.*, 1974, **39**, 1379 (α -D-Me pyr di-Me trityl, β -D-Me pyr di-Me trityl)
 Batey, J.F. *et al.*, *Carbohydr. Res.*, 1975, **40**, 275 (α -D-Me pyr tribenzoyl)
 Larm, O. *et al.*, *Carbohydr. Res.*, 1976, **49**, 69 (α -D-Me pyr methylxime, β -D-Me pyr)
 David, S. *et al.*, *J.C.S. Perkin 1*, 1979, 1568 (*Benzyl* gly 2,6-dibenzyl, *benzyl* gly tribenzyl)
 Matsuzawa, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1981, **54**, 2169 (α -D-benzyl pyr dibenzyl trityl)

xylo-5-Hexulosonic acid, 9CI, 8CI

5-Ketogluconic acid

C₆H₁₀O₇ 194.141**D-form** [5287-64-9]Metab. of *Acetobacter suboxydans* grown on D-glucose.Syrup. [α]_D²⁰ -14 (c, 2 in H₂O). Isol. as a trihydrated Ca salt.

Oxime: [19131-00-1]

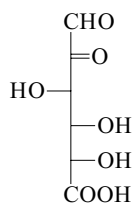
C₆H₁₁NO₇ 209.155Mp 148-149° dec. (as K salt). [α]_D²³ -4.6 (H₂O).

2,3,4,6-Tetra-Ac, Me ester: Methyl 2,3,4,6-tetra-O-acetyl-D-xylo-hex-5-ulosonate [24916-35-6]

C₁₅H₂₀O₁₁ 376.316Cryst. (Et₂O). Mp 59-60°. [α]_D²⁴ -5.8 (c, 1.65 in CHCl₃).Lockwood, L.B. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 54 (isol)Inouye, S. *et al.*, *Tetrahedron*, 1968, **24**, 2125, (D-oxime)Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1970, **23**, 1209; 1223 (D-Me ester tetra-Ac, pmr)Whyte, J.N.C. *et al.*, *J. Chromatogr.*, 1973, **87**, 163 (glc)**arabino-2-Hexulosuronic acid, 9CI**

2-Oxoglucuronic acid

[4746-26-3]

C₆H₈O₇ 192.125**D-form**Bis(phenylhydrazone): [99562-94-4]
Orange-yellow cryst.

Nitrile: [52387-27-6]

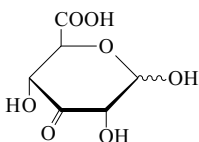
C₆H₇NO₅ 173.125

Syrup.

Imai, Y. *et al.*, *Yakugaku Zasshi*, 1961, **81**, 1109; *CA*, 1962, **56**, 1656a (synth)Kulish, F. *et al.*, *Zh. Fiz. Khim.*, 1974, **48**, 122; 67 (nitrile)Zemek, J. *et al.*, *CA*, 1985, **103**, 157192g (synth)**ribo-3-Hexulosuronic acid, 9CI**

3-Oxoglucuronic acid. 3-Ketoglucuronic acid

[4746-27-4]

C₆H₈O₇ 192.125**D-Pyranose-form** [14131-71-6]Cryst. as dioxan solvate (MeOH/dioxan). Mp 97-98°. [α]_D²⁵ +50 → -40 (H₂O).**D-Furanose-form**

Me glycoside, Me ester: Methyl (methyl D-ribo-hexofuranosid)uronate

[2671-17-2]

C₈H₁₂O₇ 220.179Cryst. (Me₂CO). Mp 119-120°. [α]_D²⁵ +302 (c, 1.0 in H₂O).**α-D-Furanose-form**

1,2-Isopropylidene: 1,2-O-Isopropylidene-α-D-ribo-hexulosofuranuronic acid

[13964-30-2]

C₉H₁₂O₇ 232.19

Yellow powder (as Ba salt). CAS no. refers to Ba salt.

1,2-O-Isopropylidene, 5-Ac, Me ester:

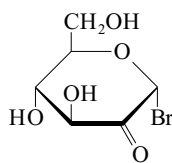
[13964-29-9]

C₁₂H₁₆O₈ 288.254Cryst. Mp 102-103° (diisopropyl ether). [α]_D²⁰ +132 (c, 1.0 in CHCl₃).

[13964-25-5]

Ishidate, M. *et al.*, *Chem. Pharm. Bull.*, 1962, **10**, 1258 (α-D-fur isopropylidene derivs, synth, ir)Kinoshita, T. *et al.*, *Chem. Pharm. Bull.*, 1966, **14**, 986; 991 (synth, ir, α-D-fur isopropylidene derivs)Japan. Pat., 1968, 6 803 763; *CA*, **69**, 87408k (synth)**arabino-Hex-2-ulosyl bromide**

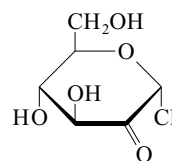
H-116

C₆H₉BrO₅ 241.038**α-D-Pyranose-form**

Tribenzoyl: 3,4,6-Tri-O-benzoyl-α-D-arabino-hexopyranos-2-ulosyl bromide [82469-69-0]

C₂₇H₂₁BrO₈ 553.362Needles (EtOAc). Mp 179-180°. [α]_D²¹ +208.2 (c, 1.1 in CHCl₃).Lichtenthaler, F.W. *et al.*, *Annalen*, 1983, 1959 (synth, pmr)Lichtenhaler, F.W. *et al.*, *Carbohydr. Res.*, 1994, **258**, 77 (synth)**arabino-Hex-2-ulosyl chloride**

H-117

C₆H₉ClO₅ 196.587**α-D-Pyranose-form**

Tri-Ac: 3,4,6-Tri-O-acetyl-α-D-arabino-hexopyranos-2-ulosyl chloride

[51295-59-1]

C₁₂H₁₅ClO₈ 322.698Mp 85-86°. [α]_D +179 (c, 1.0 in CHCl₃).Collins, P.M. *et al.*, *Carbohydr. Res.*, 1973, **31**, 1**Hexyl glucosinolate**

H-118

1-Thio-β-D-glucopyranose 1-[N-(sulfooxy)heptanimidate], 9CI

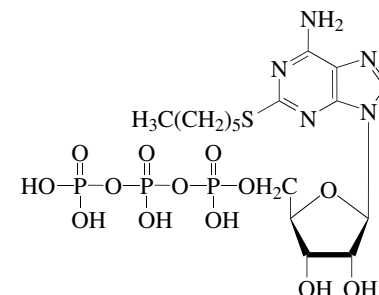
[127929-25-3]

H₃C(CH₂)₅C(SGlc)=NOSO₃HC₁₃H₂₅NO₉S₂ 403.474Present in radish (*Raphanus sativus*) and in kohlrabi aroma.Kjaer, A. *et al.*, *Agric. Biol. Chem.*, 1978, **42**, 1715 (occur)Macleod, G. *et al.*, *Phytochemistry*, 1990, **29**, 1183 (occur)**2-Hexylthioadenosine 5'-(tetrahydrogen triphosphate), 9CI**

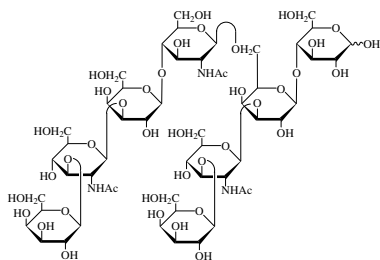
H-119

2-HexylthioATP

[148527-76-8]

C₁₆H₂₈N₅O₁₃P₃S 623.41Purinoceptor P_{2Y}-agonist. Characterised by ms.Fischer, B. *et al.*, *J. Med. Chem.*, 1993, **36**, 3937-3946 (synth, pharmacol)Zimmet, J. *et al.*, *Nucleosides Nucleotides*, 1993, **12**, 1 (synth, pharmacol)Bo, X. *et al.*, *Br. J. Pharmacol.*, 1994, **112**, 1151-1159 (pharmacol)Boyer, J.L. *et al.*, *Br. J. Pharmacol.*, 1995, **116**, 2611-2616 (pharmacol)

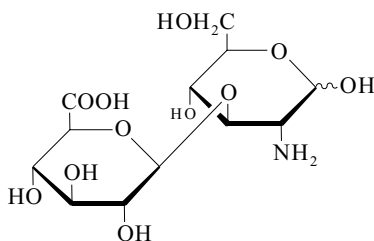
Mp 155°. $[\alpha]_D^{26}$ -42 (c, 2 in EtOH).
Nitrile, 3,4,5-tribenzoyl:
C₂₉H₂₅NO₇ 499.519
Mp 171°. $[\alpha]_D^{25}$ -147 (c, 4 in CHCl₃).
Grewe, R. et al., *Annalen*, 1952, **575**, 1

Human milk octasaccharide H-126

C₅₄H₉₁N₃O₄₁ 1438.308
Isol. from human milk. Solid. $[\alpha]_D$ +18
(c, 0.5 in MeOH/CHCl₃).
Knuhr, P. et al., *Eur. J. Org. Chem.*, 2001,
4239-4246 (*synth*)

Hyalbiuronic acid H-127

2-Amino-2-deoxy-3-O-β-D-glucopyranuronosyl-D-glucose, 9CI, 8CI. Hyalobiuronic acid. β-D-Glucopyranuronosyl-(1→3)-2-amino-2-deoxy-D-glucose
[499-15-0]



C₁₂H₂₁NO₁₁ 355.298
Unit disaccharide of Hyaluronic acid, H-128. Rectangular prisms (monohydrate). Pract. insol. H₂O, AcOH, MeOH, EtOH, Py. $[\alpha]_D^{20}$ +34 → +30 (c, 1.08 in 0.1N HCl). pK_a 2.67. Darkens at 190°.

N-Ac:
C₁₄H₂₃NO₁₂ 397.335
 $[\alpha]_D^{24}$ -32 (c, 2.0 in H₂O). pK_a 3.3.

α-Pyranose-form

Me glycoside, N-Ac:
C₁₅H₂₅NO₁₂ 411.362
Mp 207-210°. $[\alpha]_D$ +31 (c, 0.74 in MeOH).

Me glycoside, N-Ac, Me ester:
C₁₆H₂₇NO₁₂ 425.389
Mp 223-225°. $[\alpha]_D^{23}$ +16 (c, 1.09 in MeOH).

Me glycoside, hexa-Ac, Me ester:
C₂₆H₃₇NO₁₇ 635.575
Mp 236-238°. $[\alpha]_D^{26}$ +30 (c, 0.68 in CHCl₃).

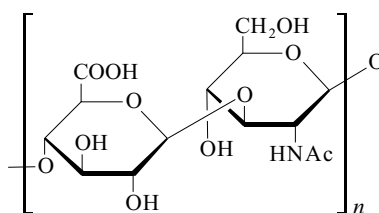
Hepta-Ac, Me ester:
C₂₇H₃₇NO₁₈ 663.585
Mp 120°. $[\alpha]_D^{24}$ +25 (c, 2.0 in CHCl₃).

Me glycoside, 4,6,2',3',6'-penta-Me, 4-Ac, Me ester:
C₂₁H₃₇NO₁₃ 511.522
Prisms melting or needles (dimorph.) (Et₂O/pentane). Mp 95-115° (prisms)
Mp 149-153° (needles). $[\alpha]_D^{25}$ +65 (c, 0.93 in CHCl₃).

Weissmann, B. et al., *J.A.C.S.*, 1954, **76**, 1753
(*struct*, N-Ac, α-D-Me ester hepta-Ac)
Whistler, R.L. et al., *Adv. Carbohydr. Chem.*, 1957, **12**, 299 (*rev*)
Takanashi, S. et al., *J.A.C.S.*, 1962, **84**, 3029 (*synth*)
Jeanloz, R.W. et al., *J.A.C.S.*, 1962, **84**, 3030, (α-D-Me pyr N-Ac, α-D-Me pyr Me ester N-Ac, α-D-Me pyr Me ester hexa Ac, *isol, struct*)
Jeanloz, R.W. et al., *Carbohydr. Res.*, 1982, **99**, 51 (α-D-Me pyr penta-Me Ac Me ester)

Hyaluronic acid, 9CI, BAN H-128

Hyaluronan. Fermathron
[9004-61-9]



C₁₄H₂₁NO₁₁ 379.32

A mucopolysaccharide composed of N-Acetylglucosamine and D-Glucuronic acid. MW= 1–8 × 10⁶. Polymeric. Minimum formula given. Found in the extracellular matrix of all higher animals, esp. in soft connective tissues. Isol. from synovial fluid, amniotic fluid, etc. Functions as a joint lubricant and shock absorber; used in the treatment of synovitis and osteoarthritis. Approved for clinical use in the EU (1999)[$\alpha]_D^{27}$ -68.2 (c, 1.0 in H₂O).

Na salt: **Hyaluronate sodium, USAN.**
Sodium hyaluronate. Amvisc. Healon. Hyalgan. Hyladerm. Pandermin
[9067-32-7]
 $[\alpha]_D^{25}$ -74 (c, 0.25 in H₂O). $[\alpha]_D$ -67 (H₂O).

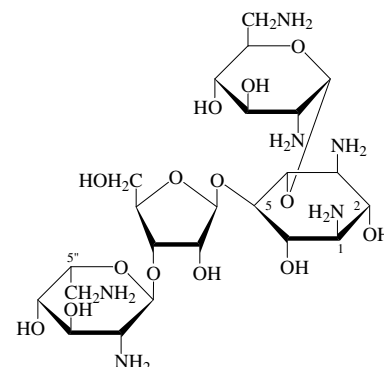
► MT7250000

[31799-91-4]
Rapport, M.M. et al., *J.A.C.S.*, 1951, **73**, 2416
Jeanloz, R.W. et al., *Methods Carbohydr. Chem.*, 1965, **5**, 154 (*isol*)
Danishefsky, I. et al., *J. Biol. Chem.*, 1966, **241**, 143
Winter, W.T. et al., *J. Mol. Biol.*, 1975, **99**, 219 (*struct*)
Darke, A. et al., *J. Mol. Biol.*, 1975, **99**, 477 (*pmr*)
Lindahl, U. et al., *Annu. Rev. Biochem.*, 1978, **47**, 385
Matsubara, C. et al., *Chem. Pharm. Bull.*, 1991, **39**, 2446 (*isol, cmr, biosynth*)
Sicińska, W. et al., *Carbohydr. Res.*, 1993, **242**, 29 (*pmr, cmr*)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1414
Carter, M.B. et al., *Carbohydr. Res.*, 1994, **258**, 299 (*synth*)
Yeung, B.K.S. et al., *J. Carbohydr. Chem.*, 2002, **21**, 799-865 (*rev, synth*)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, HGN600

Hybrimycin A₁, 8CI H-129

[22332-07-6]



C₂₃H₄₆N₆O₁₄ 630.648
Aminoglycoside antibiotic. Isol. from *Streptomyces fradiae* 3535. Active against gram-positive bacteria, fungi and yeasts. Sol. H₂O. $[\alpha]_D^{24}$ +44.6 (c, 0.01 in H₂O).

1-Deamino, 1-hydroxy: **1-Deamino-1-hydroxyhybrimycin A. LL-BM 434α.**
Antibiotic LL-BM 434α
[83480-60-8]

C₂₃H₄₅N₅O₁₅ 631.633
Prod. by *Streptomyces* sp. LL-BM434. Powder. A mixt. of C-5'''-epimers, i.e. Hybrimycin A₁ and A₂ analogues.

6'''-Deamino, 6'''-hydroxy: **Hybrimycin C₁**
[38965-79-6]

C₂₃H₄₅N₅O₁₅ 631.633
Prod. by *Streptomyces fradiae* and *Streptomyces rimosus*.
 $[\alpha]_D^{19.5}$ +60.6 (c, 0.01 in H₂O)
(as penta-N-Ac).

2-Epimer: **Hybrimycin B₁**
[22332-08-7]

C₂₃H₄₆N₆O₁₄ 630.648
Prod. by *Streptomyces fradiae* 3535.
 $[\alpha]_D^{24}$ +52 (c, 0.01 in H₂O).

5'''-Epimer: **Hybrimycin A₂**
[22400-60-8]

C₂₃H₄₆N₆O₁₄ 630.648
Prod. by *Streptomyces fradiae* 3535.
 $[\alpha]_D^{24}$ +80.5 (c, 0.01 in H₂O).

5'''-Epimer, 6'''-deamino, 6'''-hydroxy: **Hybrimycin C₂**
[39004-63-2]

C₂₃H₄₅N₅O₁₅ 631.633
Prod. by *Streptomyces fradiae* and *Streptomyces rimosus*.
 $[\alpha]_D^{19.5}$ +81.9 (c, 0.01 in H₂O)
(as penta-N-Ac).

2,5'''-Diepimer: **Hybrimycin B₂**
[27425-78-1]

C₂₃H₄₆N₆O₁₄ 630.648
Prod. by *Streptomyces fradiae* 3535.
 $[\alpha]_D^{24}$ +94.4 (c, 0.01 in H₂O) (as N-Ac).

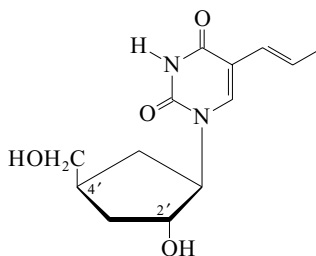
5-O-Deglycosyl: **Hybrimycin A₃**
[25150-78-1]

C₁₂H₂₆N₄O₇ 338.36
Hydrol. prod. of Hybrimycins A₁ and A₂.

Isol. from *Arabidopsis thaliana*.

Hogge, L.R. *et al.*, *J. Chromatogr. Sci.*, 1988, **26**, 551 (*isol*)

1-[2-Hydroxy-4-(hydroxymethyl)cyclopentyl]-5-(1-propenyl)-2,4(1*H*,3*H*)-pyrimidinedione, 9CI **H-147**

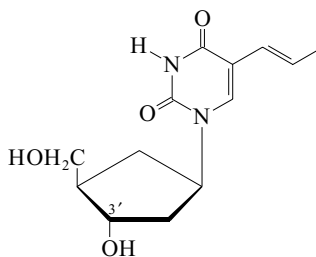


$C_{13}H_{18}N_2O_4$ 266.296

(2*RS*,4'*SR*,*E*)-form [109001-66-3]
Cryst. (EtOAc). Mp 198.5-199° dec.

Goodchild, J. *et al.*, *Nucleosides Nucleotides*, 1986, **5**, 571 (*synth, pharmacol*)

1-[3-Hydroxy-4-(hydroxymethyl)cyclopentyl]-5-(1-propenyl)-2,4(1*H*,3*H*)-pyrimidinedione, 9CI **H-148**



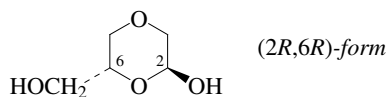
$C_{13}H_{18}N_2O_4$ 266.296

Carbocyclic nucleoside which shows significant activity against herpes simplex virus. Log P -2.03 (uncertain value) (calc).

(3*RS*,4'*RS*,*E*)-form [109001-65-2]
Cryst. (EtOAc). Mp 165-168°.

Goodchild, J. *et al.*, *Nucleosides Nucleotides*, 1986, **5**, 571 (*synth, pharmacol*)

2-Hydroxy-6-(hydroxymethyl)-1,4-dioxan **H-149**
6-Hydroxy-1,4-dioxan-2-methanol, 9CI. 6-(Hydroxymethyl)-1,4-dioxan-2-ol. 3-Oxa-2,3,4-trideoxyhexopyranose



$C_5H_{10}O_4$ 134.132

Numbered in the ref. using nonstandard (3-oxasugar) nomenclature.

(2*R*,6*R*)-form
 α -D-glycero-form
[107171-25-5]

2-Me ether: 6-Methoxy-1,4-dioxan-2-methanol. 2-(Hydroxymethyl)-6-methoxy-1,4-dioxan
[179533-25-6]
 $C_6H_{12}O_4$ 148.158
[α]_D²⁵ +149 (c, 1 in $CHCl_3$).

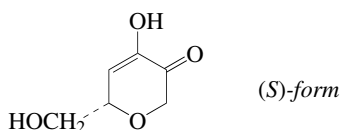
(2*R*,6*S*)-form β -L-glycero-form
2-Me ether: [179797-22-9]
[α]_D²² +104 (c, 1 in $CHCl_3$).

(2*S*,6*R*)-form β -D-glycero-form
2-Me ether: [179797-21-8]
[α]_D²⁵ -96 (c, 1 in $CHCl_3$).

(2*S*,5*S*)-form α -L-glycero-form
2-Me ether: [179797-20-7]
[α]_D²² -140 (c, 1 in $CHCl_3$).

Kuwahara, R. *et al.*, *Carbohydr. Res.*, 1996, **286**, 107-122

4-Hydroxy-6-hydroxymethyl-2*H*-pyran-3(6*H*)-one, 9CI **H-150**
1,5-Anhydro-4-deoxyhex-3-enos-2-ulopyranose



$C_6H_8O_4$ 144.127

Enol.

(*S*)-form

D-glycero-form

Di-Ac: [211800-60-1]

$C_{10}H_{12}O_6$ 228.201

Syrup. [α]_D -43.7 (c, 1.71 in $CHCl_3$).

Dibenzoyl: [75414-38-9]

$C_{20}H_{16}O_6$ 352.343

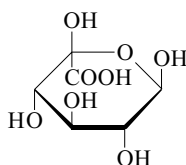
Synth. from D-glucose in 2 steps. Cryst. (MeOH). Mp 104-105°. [α]_D -16 (c, 1 in $CHCl_3$).

Lichtenthaler, F.W. *et al.*, *Tet. Lett.*, 1980, **21**, 1429-1432 (*dibenzoyl, synth, pmr*)

Brehm, M. *et al.*, *Angew. Chem., Int. Ed.*, 1987, **26**, 1271-1273 (*dibenzoyl, synth*)

Andersen, S.M. *et al.*, *J. Carbohydr. Chem.*, 1998, **17**, 1027-1035 (*di-Ac*)

5-C-Hydroxyidopyranuronic acid **H-151**



$C_6H_{10}O_8$ 210.14

α -L-Pyranose-form

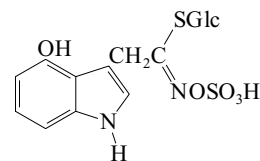
Penta-Ac, Me ester: Methyl 5-C-acetoxy-tetra-O-acetyl- α -L-idopyranuronate
[65615-68-1]

$C_{17}H_{22}O_{13}$ 434.353

Cryst. (MeOH). Mp 113-114°. [α]_D +13 ($CHCl_3$).

Ferrier, R.J. *et al.*, *J.C.S. Perkin 1*, 1977, 1996 (*synth, pmr*)

4-Hydroxyindol-3-ylmethyl glucosinolate **H-152**
*1-Thio- β -D-glucopyranose 1-[4-hydroxy-N-(sulfooxy)-1*H*-indole-3-ethanimidate], 9CI. 4-Hydroxyglucobrassicin*
[83327-20-2]



$C_{16}H_{20}N_2O_{10}S_2$ 464.473

Formulated as the 5-hydroxy isomer by Goetz *et al.* Isol. from *Brassica* sp. and other crucifers. Readily oxidises in the presence of air and light. λ_{max} 267 ; 284 ; 293 (MeOH).

Me ether: 4-Methoxyindol-3-ylmethyl glucosinolate. 4-Methoxyglucobrassicin
[83327-21-3]

$C_{17}H_{22}N_2O_{10}S_2$ 478.5

Isol. from *Brassica* sp. and other crucifers. Gummy solid. λ_{max} 267 ; 282 ; 292 (MeOH).

[87592-99-2, 87593-00-8, 96828-26-1
96828-27-2]

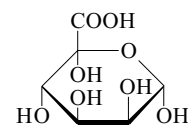
Truscott, R.J.W. *et al.*, *Biochem. Biophys. Res. Commun.*, 1982, **107**, 1258; 1368 (*isol, struct*)

Truscott, R.J.W. *et al.*, *J. Sci. Food Agric.*, 1983, **34**, 247 (*isol*)

Goetz, J.K. *et al.*, *Phytochemistry*, 1983, **22**, 905 (*isol*)

Hanley, A.P. *et al.*, *Phytochemistry*, 1985, **24**, 598 (*isol, struct*)

5-C-Hydroxymannopyranuronic acid **H-153**



α -D-Pyranose-form

$C_6H_{10}O_8$ 210.14

D-Pyranose-form

Isol. from holocellulose of *Sphagnum* moss, possibly present in other plants. Hygroscopic cryst. (EtOH aq.) (as Ca salt). [α]_D²² +25 (c, 3.25 in H_2O , equil.). Not well characterised. Unprecedented type of struct. but see 5-C-Hydroxyidopyranuronic acid, H-151.

Painter, T.J. *et al.*, *Carbohydr. Res.*, 1983, **124**, C18

Cryst. (EtOH). Mp 169-170.5°.

(1*RS*,2*RS*,3*RS*,4*SR*,5*SR*)-form*Pseudo-α-DL-glucopyranose*
[95043-48-4]*Penta-Ac*: [77209-45-1]Cryst. (EtOH/Et₂O). Mp 110-111°.**(1*RS*,2*RS*,3*SR*,4*RS*,5*RS*)-form***Pseudo-β-DL-mannopyranose*. 1,2-*Dideoxy-1-(hydroxymethyl)-DL-epi-inositol*, 9*CI*

[74561-10-7]

Cryst. (EtOH aq.). Mp 198-199°.

Penta-Ac: [74561-11-8]

Prisms (EtOH). Mp 123-125°.

(1*RS*,2*SR*,3*RS*,4*SR*,5*SR*)-form*Pseudo-α-DL-mannopyranose*. 2,3-*Dideoxy-3-(hydroxymethyl)-DL-chiro-inositol*, 9*CI*

[74561-03-8]

Syrup.

Penta-Ac: [74561-02-7]

Prisms (EtOH). Mp 99.5-100°.

(1*RS*,2*SR*,3*SR*,4*RS*,5*RS*)-form*Pseudo-β-DL-glucopyranose*. 1,2-*Dideoxy-1-(hydroxymethyl)-DL-myo-inositol*, 9*CI*

[64625-68-9]

Syrup.

Penta-Ac: [64625-67-8]

Cryst. (EtOH). Mp 111-112°.

(1*RS*,2*SR*,3*SR*,4*RS*,5*SR*)-form*Pseudo-α-DL-idopyranose*. 1,6-*Dideoxy-1-(hydroxymethyl)-DL-chiro-inositol*, 9*CI*

[74560-71-7]

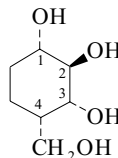
Cryst. (EtOH). Mp 155-156°.

Penta-Ac: [74560-70-6]

Mp 106°.

(1*RS*,2*SR*,3*SR*,4*SR*,5*RS*)-form*Pseudo-β-DL-galactopyranose*

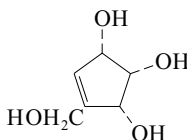
Cryst. (EtOH). Mp 173-174°.

Miller, P.W. *et al.*, *Biotechnol. Bioeng.*, 1973, **15**, 1075 (*isol*)Suami, T. *et al.*, *Carbohydr. Res.*, 1977, **58**, 240-244 (*pseudo-β-DL-glucopyranose*)Ogawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1980, **53**, 1121-1126; 1986, **59**, 2956-2958 (*synth, pmr*)Paulsen, H. *et al.*, *Annalen*, 1984, 433; 1987, 125; 133 (*synth, pmr*)Ogawa, S. *et al.*, *Chem. Lett.*, 1984, 355; 1919 (*synth*)Ogawa, S. *et al.*, *Carbohydr. Res.*, 1985, **136**, 77; 1986, **153**, 25 (*synth, bibl*)Ogawa, S. *et al.*, *J.C.S. Perkin 1*, 1985, 903-906 (*pseudo-α-D-galactopyranose, pseudo-β-D-glucopyranosyl*)Watkins, S.F. *et al.*, *Carbohydr. Res.*, 1986, **158**, 7 (*cryst struct, penta-Ac*)Tadano, K. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 231-234 (*synth*)Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **174**, 354 (*pmr, cmr, bibl*)Yoshikawa, M. *et al.*, *Chem. Pharm. Bull.*, 1993, **41**, 1197 (*synth*)Rassu, G. *et al.*, *J.O.C.*, 2000, **65**, 6307-6318 (*synth, pmr, cmr*)Zanardi, F. *et al.*, *Eur. J. Org. Chem.*, 2002, 1956-1965 (*pseudo-β-D-allopyranose, pseudo-β-D-gulopyranose, pseudo-β-L-mannopyranose*)Gómez, A.M. *et al.*, *Eur. J. Org. Chem.*, 2004, 1830-1840 (*penta-Ac*)**4-(Hydroxymethyl)-1,2,3-cyclohexanetriol**C₇H₁₄O₄ 162.185**(1*S*,2*R*,3*R*,4*S*)-form***Validatol*

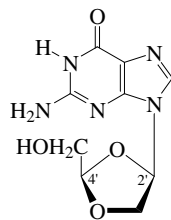
[32780-33-9]

Constit. and hydrol. prod. of Validoxylamine G, V-4.

Cryst.

Mp 119-121°. [α]_D -39 (c, 1 in H₂O).Horii, S. *et al.*, *J. Antibiot.*, 1971, **24**, 57; 59 (*isol*)Horii, S. *et al.*, *Chem. Comm.*, 1972, 747 (*abs config*)**4-(Hydroxymethyl)-4-cyclopentene-1,2,3-triol**C₆H₁₀O₄ 146.143**(1*S*,2*S*,3*R*)-form** [150074-37-6]Prod. by *Streptomyces citricolor*. Likely precursor of Aristeromycin, A-864.

Oil.

Roberts, S.M. *et al.*, *Tet. Lett.*, 1993, **34**, 4083Ziegler, F.E. *et al.*, *Synlett*, Spec. Issue, 1995, 493-494 (*synth*)**9-[2-(Hydroxymethyl)-1,3-dioxolan-4-yl]guanine**2-Amino-1,9-dihydro-9-[2-(hydroxymethyl)-1,3-dioxolan-4-yl]-6H-purin-6-one, 9*CI*. DXGC₉H₁₁N₅O₄ 253.217

Anti-HIV agent.

(2*R*',4*R*')-form [145514-01-8]Cryst. (MeOH). Mp 280° (dec.). [α]_D²⁵ -110 (c, 0.25 in H₂O). Pharmacol. active isomer.**(2*S*',4*R*')-form** [147060-50-2]Cryst. (H₂O). Mp 259-260°. [α]_D²⁵ -101.6 (c, 0.25 in NH₄OH).

H-159

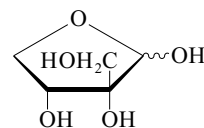
(2*S*',4*S*')-form [147060-49-9]

Solid. Mp 280° dec.

[151282-99-4]

Kim, H.O. *et al.*, *J. Med. Chem.*, 1993, **36**, 30-37; 519-528 (*synth, isomers, pharmacol*)*Pat. Coop. Treaty (WIPO)*, 1994, 94 09 793, ((Emory Univ.); *CA*, **121**, 99776j (*synth, activity*)Chen, H. *et al.*, *Antimicrob. Agents Chemother.*, 1996, **40**, 2332-2336; 2000, **44**, 1783-1788 (*activity*)**2-C-(Hydroxymethyl)erythrose**

H-162

C₅H₁₀O₅ 150.131**D-form**[α]_D -3.2 (c, 1 in H₂O) (24h). Exists mostly in furanose form.**D-Furanose-form**

2,3-Ethylidene: 2,3-O-Ethylidene-2-C-(hydroxymethyl)-D-erythrofurano-4,5-Bis(hydroxymethyl)-2-methyl-1,3-dioxolane-4-carboxaldehyde. Dihydro-4-hydroxy-2-methylfuro[3,4-d]-1,3-dioxole-3a(4H)-methanol

[74510-65-9]

C₇H₁₂O₅ 176.169Syrup. [α]_D -40.5 (c, 6.0 in CHCl₃).

[68123-97-7]

Ho, P.-T. *et al.*, *Tet. Lett.*, 1978, 1623 (*synth, pmr, cmr*)Ho, P.-T. *et al.*, *Can. J. Chem.*, 1980, **58**, 858 (*tosyl*)Hricoviniová, Z. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 827-836 (*synth*)**2-Hydroxy-1-methylethyl glucosinolate**

H-163

1-Thio-β-D-glucopyranose 1-[3-hydroxy-2-methyl-N-(sulfooxy)propanimidate], 9*CI*.**Glucosisybrin**

[30688-62-1]

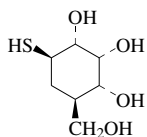
HOCH₂CH(CH₃)C(SGlc)=NOSO₃HC₁₀H₁₉NO₁₀S₂ 377.393Isol. from seeds of *Sisymbrium austriacum*. Amorph.*Benzoyl*: 2-(Benzoyloxy)-1-methylethyl glucosinolate. **Glucobenzosisybrin**C₁₇H₂₃NO₁₁S₂ 481.501Isol. from the seeds of *Sisymbrium austriacum*.

[536-02-7]

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1959, **13**, 1575; 1961, **15**, 1477 (*isol*)

4-(Hydroxymethyl)-6-mercapto-1,2,3-cyclohexanetriol

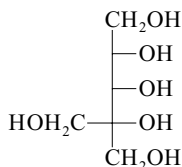
H-170

 β -D-form

(1R,2R,3R,4R,6R)-form

C₇H₁₄O₄S 194.251**(1R,2R,3R,4R,6R)-form**1-Thio-5a-carba- β -D-allopyranose. 1-Thiopseudo- β -D-allopyranoseGlassy solid. $[\alpha]_D^{20}$ -34.2 (c, 1.1 in MeOH).**(1R,2R,3S,4R,6R)-form**1-Thio-5a-carba- β -D-gulopyranose. 1-Thiopseudo- β -D-gulopyranoseSolid. $[\alpha]_D$ -28.4 (c, 0.8 in MeOH).Zanardi, F. et al., Eur. J. Org. Chem., 2002, 1956-1965 (1-thiopseudo- β -D-allopyranose, 1-thiopseudo- β -D-gulopyranose)**4-C-(Hydroxymethyl)-erythro-pentitol**

H-171

C₆H₁₄O₆ 182.173

C-4 is not a chiral centre.

D-form

1,2:3,4-Diisopropylidene: 4-C-(Hydroxymethyl)-1,2:3,4-di-O-isopropylidene-D-erythro-pentitol [100759-93-1]

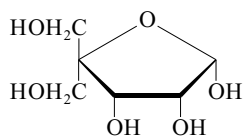
C₁₂H₂₂O₆ 262.302Cryst. Mp 91-92°. $[\alpha]_D$ +14 (c, 2.0 in MeOH).

Williams, D.T. et al., Can. J. Chem., 1964, 42, 69 (synth)

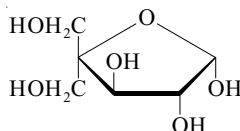
Koř, M. et al., Coll. Czech. Chem. Comm., 1985, 50, 1994 (synth, pmr)

4-C-(Hydroxymethyl)-erythro-pentofuranose

H-172

 α -D-formC₆H₁₂O₆ 180.157 **α -D-form**1,2-Isopropylidene: 4-C-(Hydroxymethyl)-1,2-O-isopropylidene- α -D-erythro-pentofuranose [55797-65-4]C₉H₁₆O₆ 220.222Cryst. (CHCl₃/Et₂O). Mp 113-114°. $[\alpha]_D^{25}$ +17.2 (c, 0.3 in EtOH).**4-C-(Hydroxymethyl)-threo-pentofuranose**

H-173

C₆H₁₂O₆ 180.157 **β -L-form**1,2-Isopropylidene: 4-C-(Hydroxymethyl)-1,2-O-isopropylidene- β -L-threo-pentofuranoseC₉H₁₆O₆ 220.222Cryst. (CHCl₃). Mp 98-100°.

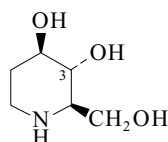
Leland, D.L. et al., Carbohydr. Res., 1974, 38, C9 (synth, pmr)

Youssefyeh, R.D. et al., J.O.C., 1979, 44, 1301 (synth, cmr)

2-(Hydroxymethyl)-3,4-piperidinediol, 9CI

H-174

3,4-Dihydroxy-2-(hydroxymethyl)piperidine. 3,4-Dihydroxy-2-piperidinemethanol. 1,2,5-Trideoxy-1,5-iminoheptitol



(2R,3R,4R)-form

C₆H₁₃NO₃ 147.174

Care needed with numbering; if named as an iminosugar the numbering is different.

(2R,3R,4R)-form**Fagomine**

[53185-12-9]

Alkaloid from buckwheat seeds (*Fagopyrum esculentum*) (Polygonaceae). Also from seeds of *Castanospermum australe* and *Xanthocercis zambeziaca* (Leguminosae). Needles (MeOH/EtOH).Mp 186-188°. $[\alpha]_D^{11}$ +23 (c, 1 in H₂O). $[\alpha]_D^{11}$ +37 (c, 1 in 0.1M HCl).

Hydrochloride: Mp 176-177°.

3-O- β -D-Glucopyranosyl: 3-O- β -D-

Glucopyranosylfagomine

C₁₂H₂₃NO₈ 309.316Alkaloid from the seeds of *Xanthocercis zambeziaca* (Leguminosae). Cryst. (MeOH/EtOH/Me₂CO).Mp 232-233° dec. $[\alpha]_D^{20}$ -3.1 (c, 1.2 in H₂O). Can also be named as 4-glucopyranosylfagomine (confusion with 4-isomer below).4-O- β -D-Glucopyranosyl: 4-O- β -D-GlucopyranosylfagomineC₁₂H₂₃NO₈ 309.316Alkaloid from leaves and roots of *Xanthocercis zambeziaca*. $[\alpha]_D$ -18.2 (c, 0.48 in H₂O). Can also be numbered as the 3-isomer (see above).**(2R,3R,4S)-form**

4-Epifagomine. 3-Epifagomine

Alkaloid from roots of *Morus alba* (white mulberry) (Moraceae) and from leaves and roots of *Xanthocercis zambeziaca* (Leguminosae).

Solid.

Mp 220-222° synthetic. $[\alpha]_D$ +69 (c, 0.5 in H₂O). Numbering systems vary.**(2R,3S,4S)-form**

3,4-Diepifagomine

Alkaloid from leaves of *Xanthocercis zambeziaca*. $[\alpha]_D$ -8.7 (c, 0.3 in H₂O) (natural). $[\alpha]_D^{25}$ +13.4 (c, 0.32 in H₂O) (synthetic).

Koyama, M. et al., Agric. Biol. Chem., 1974, 38, 1111 (ir, pmr, ms, struct)

Evans, S.V. et al., Tet. Lett., 1985, 26, 1465 (deriv)

Fleet, G.W.J. et al., Tet. Lett., 1985, 26, 1469 (abs config, synth)

Molyneux, R.J. et al., J. Nat. Prod., 1988, 51, 1198-1206 (isol)

Asano, N. et al., Carbohydr. Res., 1994, 259, 243 (3-Epifagomine)

Kato, A. et al., J. Nat. Prod., 1997, 60, 312-314 (glucoside, diepimer)

Schneider, C. et al., Eur. J. Org. Chem., 1998, 1155-1159 (synth)

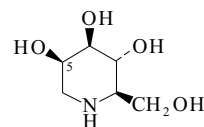
Takahata, H. et al., J.O.C., 2003, 68, 3603-3607 (synth)

2-(Hydroxymethyl)-3,4,5-piperidinetriol, 12CI

H-175

3,4,5-Trihydroxy-2-piperidinemethanol.

3,4,5-Trihydroxy-2-hydroxymethylpiperidine. 1,5-Dideoxy-1,5-iminoheptitol



(2R,3R,4R,5R)-form

C₆H₁₃NO₄ 163.173

CAS name was changed for 12CI period. Different numbering systems depending on whether named as a piperidine or as an iminosugar.

(2R,3R,4R,5R)-form

1,5-Dideoxy-1,5-imino-D-mannitol, 9CI.

Deoxymannojirimycin. LU 1. Antibiotic LU 1

[84444-90-6]

Alkaloid from the seeds of *Lonchocarpus sericeus*, *Lonchocarpus costaricensis* (Leguminosae), *Commelina communis* and *Streptomyces lavendulae*. Mannosidase inhibitor. α -Glucosidase inhibitor.Cryst. (MeOH/Et₂O).

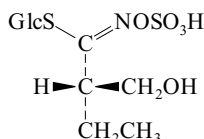
- Mp 187-188°. $[\alpha]_D^{20}$ -26.7 (c, 0.12 in MeOH). $[\alpha]_D^{25}$ -45.5 (c, 1.02 in H₂O).
Hydrochloride: [73465-43-7]
 Mp 175-180°. $[\alpha]_D^{20}$ -10.9 (c, 0.3 in H₂O).
1'-O- α -L-Rhamnopyranoside: 6-O- α -L-Rhamnopyranosyldeoxymannojirimycin [330594-47-3]
 C₁₂H₂₃NO₈ 309.316
 Alkaloid from the bark of *Angylocalyx pynaertii*.
 $[\alpha]_D$ -42.6 (c, 0.33 in H₂O).
- (2R,3R,4R,5S)-form**
1,5-Dideoxy-1,5-imino-D-glucitol, 9CI. Moranoline. 1-Deoxynojirimycin. S-GI. Antibiotic S-GI [19130-96-2]
 Alkaloid from *Morus* spp. (Moraceae), *Jacobinia suberecta* and *Commelina communis*. Also prod. by various *Bacillus* spp. and *Streptomyces lavendulae* ssp. *trehalostaticus*. α -Glucosidase inhibitor. Animal feedstuff additive. Shows anti-HIV activity. Antihyperglycaemic activity *in vivo*.
 Cryst. (MeOH).
 Mp 206° (195-197°). $[\alpha]_D^{22}$ +44.7 (c, 1 in H₂O). $[\alpha]_D^{30}$ -34.9 (c, 5 in H₂O). p*K*_a 6.6. Log P -2.85 (calc).
Hydrochloride: [73285-50-4]
 Amorph. powder. Mp 196-198°. $[\alpha]_D^{22}$ +38 (c, 1 in H₂O).
1'-O- α -D-Galactopyranoside: 6-O- α -D-Galactopyranosyl-1-deoxynojirimycin [156639-78-0]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry). Powder. $[\alpha]_D$ +107 (c, 0.1 in H₂O).
5-O- α -D-Galactopyranoside: 2-O- α -D-Galactopyranosyl-1-deoxynojirimycin [155168-05-1]
 C₁₂H₂₃NO₉ 325.315
 From leaves of *Morus bombycis* and from *Morus alba* (white mulberry). Powder. $[\alpha]_D$ +118.8 (c, 0.1 in H₂O).
1'-O- β -D-Glucopyranoside: 6-O- β -D-Glucopyranosyl-1-deoxynojirimycin [156714-96-4]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry). Powder.
3-O- α -D-Glucopyranoside: 4-O- α -D-Glucopyranosyl-1-deoxynojirimycin. 4-O- α -D-Glucopyranosylmoranoline [80312-32-9]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry). Needles (H₂O).
 Mp 189-192°. $[\alpha]_D^{24}$ +128.6 (c, 1 in H₂O).
3-O- β -D-Glucopyranoside: 4-O- β -D-Glucopyranosyl-1-deoxynojirimycin [152375-46-7]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry).
 $[\alpha]_D$ +25 (c, 0.42 in H₂O).
4-O- α -D-Glucopyranoside: 3-O- α -D-Glucopyranosyl-1-deoxynojirimycin [156714-94-2]
 [150447-77-1]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry) and *Scilla sibirica*.
 $[\alpha]_D$ +137.5 (c, 0.52 in H₂O).
4-O- β -D-Glucopyranoside: 3-O- β -D-Glucopyranosyl-1-deoxynojirimycin [143900-42-9]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry). Powder. $[\alpha]_D$ +18.1 (c, 0.74 in H₂O).
5-O- α -D-Glucopyranoside: 2-O- α -D-Glucopyranosyl-1-deoxynojirimycin [156714-93-1]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry).
 $[\alpha]_D$ +127.6 (c, 0.61 in H₂O).
5-O- β -D-Glucopyranoside: 2-O- β -D-Glucopyranosyl-1-deoxynojirimycin [156714-95-3]
 C₁₂H₂₃NO₉ 325.315
 Alkaloid from *Morus alba* (white mulberry).
 $[\alpha]_D$ -0.8 (c, 0.51 in H₂O).
N-Me: 1,5-Dideoxy-1,5-(methylimino)-D-glucitol, 9CI. N-Methyl-1-deoxynojirimycin. N-Methylmoranoline [69567-10-8]
 C₇H₁₅NO₄ 177.2
 Alkaloid from *Morus alba* (white mulberry) and *Morus bombycis*. Isol. from a *Streptomyces* sp. Cryst. (EtOH).
 Mp 141-142°. $[\alpha]_D^{24}$ +15.5 (H₂O).
N-Butyl: N-Butyldeoxynojirimycin. Miglustat, BAN, INN, USAN. Vevesca. Zavesca. Butyl-DNJ. OXALIDS. OGT 918. SC 48334 [72599-27-0]
 C₁₀H₂₁NO₄ 219.28
 In clinical trials (1989). Approved by FDA (Aug 2003) for the treatment of type 1 Gaucher's disease
 Ceramide-specific glucosyltransferase inhibitor. Inhibits biosynthesis of glucosphingolipids. Antiviral activity, of potential use against HIV infections. A substrate balance (deprivation) therapy for the treatment of Gaucher's disease and other lysosomal storage disorders.
 Log P -0.4 (calc).
- (2R,3R,4S,5R)-form**
1,5-Dideoxy-1,5-imino-D-altritol. 1-Deoxy-D-altronojirimycin [135395-59-4]
 Alkaloid from the bark of *Angylocalyx pynaertii* and the bulbs of *Scilla sibirica*.
 Mp 175°. $[\alpha]_D^{20}$ -30.7 (c, 0.13 in MeOH) (synthetic). $[\alpha]_D$ +19.1 (c, 0.74 in H₂O) (natural).
- (2R,3S,4R,5R)-form**
1,5-Dideoxy-1,5-imino-D-talitol. 1-Deoxy-D-talonojirimycin [143406-74-0]
 Mp 150-151°. $[\alpha]_D^{20}$ +30.4 (c, 0.3 in EtOH). $[\alpha]_D^{23}$ -22.4 (c, 1.6 in MeOH).
- (2R,3S,4R,5S)-form**
1,5-Dideoxy-1,5-imino-D-galactitol. 1-Deoxy-D-galactonojirimycin. 1-Deoxy-D-galactostatin [108147-54-2]
 Irregular prisms (EtOH aq.) (as hydrochloride). Mp 240-241.5° dec. (hydrochloride). $[\alpha]_D^{23}$ +52.8 (c, 1 in H₂O). $[\alpha]_D$ +61.3 (c, 0.4 in H₂O).
- (2R,3S,4S,5S)-form**
1-Deoxy-D-gulonojirimycin [254104-05-7]
 Mp 148-148.6°. $[\alpha]_D^{20}$ -16.2 (c, 0.3 in EtOH).
- (2R,3S,4S,5R)-form**
1,5-Dideoxy-1,5-imino-D-iditol. 1-Deoxy-D-idonojirimycin
 Cryst. (MeOH/Et₂O). Mp 137-139°. $[\alpha]_D^{25}$ +28 (c, 0.5 in H₂O).
- (2S,3R,4R,5R)-form**
1,5-Dideoxy-1,5-imino-L-gulitol. 1-Deoxy-L-gulonojirimycin [84518-54-7]
 Alkaloid from the bark of *Angylocalyx pynaertii*.
 Oil. $[\alpha]_D^{25}$ +8.8 (c, 0.25 in H₂O) (synthetic).
 $[\alpha]_D$ +14 (c, 0.56 in H₂O) (natural). Abs. config. of natural product was revised in 2005.
- (2S,3R,4R,5S)-form**
1,5-Dideoxy-1,5-imino-L-iditol. 1-Deoxy-L-idonojirimycin [16647-80-6]
 Cryst. (MeOH/Et₂O). Mp 137-139°. $[\alpha]_D^{25}$ -27 (c, 0.33 in H₂O).
Hydrochloride: [210223-32-8]
 Cryst. (MeOH aq.). $[\alpha]_D^{20}$ +32.3 (c, 1.0 in H₂O).
- (2S,3R,4S,5R)-form**
1,5-Dideoxy-1,5-imino-L-galactitol [126663-71-6]
 $[\alpha]_D^{20}$ -48.3 (c, 1.06 in H₂O).
Hydrochloride: [126663-84-1]
 Mp 225-230°. $[\alpha]_D^{20}$ -54.1 (c, 1.0 in H₂O).
- (2S,3S,4R,5S)-form**
1,5-Dideoxy-1,5-imino-L-altritol. 1-Deoxy-L-altronojirimycin [188779-13-7]
 Oil. $[\alpha]_D$ -7 (c, 0.4 in MeOH). $[\alpha]_D^{20}$ -34.6 (c, 0.3 in H₂O).
- (2S,3S,4S,5R)-form**
1,5-Dideoxy-1,5-imino-L-glucitol [146747-37-7]
 Mp 193-195°. $[\alpha]_D^{25}$ -46 (c, 0.3 in H₂O).
- (2S,3S,4S,5S)-form**
1,5-Dideoxy-1,5-imino-L-mannitol [117821-07-5]
 $[\alpha]_D^{22}$ +26.6 (H₂O).
Hydrochloride: [118464-54-3]
 Mp 184-186°. $[\alpha]_D^{20}$ +12.6 (H₂O).
 Yagi, M. *et al.*, *CA*, 1977, **86**, 167851r (*isol*)
 Fellows, L.E. *et al.*, *Chem. Comm.*, 1979, 977 (*isol*, *pmr*, *cmr*, *ms*, *cd*, *struct.*, *Deoxymannojirimycin*)
 Schmidt, D.D. *et al.*, *Naturwissenschaften*, 1979, **66**, 584 (*isol*)
 Murao, S. *et al.*, *Agric. Biol. Chem.*, 1980, **44**, 219 (*isol*)
 Legler, G. *et al.*, *Carbohydr. Res.*, 1984, **61**, 128 (*Deoxymannojirimycin*, *synth*)
 Bernotas, R.C. *et al.*, *Tet. Lett.*, 1984, **25**, 165; 1985, **26**, 1123 (*Deoxymannojirimycin*)
 Ezure, Y. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 2159-2165 (*4-Glucosyl-1-deoxynojirimycin*, *synth*)
 Fleet, G.W.J. *et al.*, *Tet. Lett.*, 1985, **26**, 1469; 1988, **29**, 2817 (*D-manno, L-manno*, *synth*)
 Daigo, K. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 2243 (*isol*)
 Bernotas, R.C. *et al.*, *Carbohydr. Res.*, 1987, **167**, 305 (*synth*, *ir*, *pmr*)

Yoshikuni, Y. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 121 (*Moranoline, pharmacol*)
 Ziegler, T. *et al.*, *Angew. Chem., Int. Ed.*, 1988, **27**, 716 (*Deoxymannojirimycin*)
 Paulsen, H. *et al.*, *Annalen*, 1988, 1121 (*synth, L-galacto*)
 Fleet, G.W.J. *et al.*, *FEBS Lett.*, 1988, **237**, 128 (*N-butyl, synth*)
 Ezure, Y. *et al.*, *J. Antibiot.*, 1988, **41**, 1142 (*Deoxymannojirimycin, isol*)
 Cole, M.D. *et al.*, *J. Chromatogr.*, 1988, **445**, 295 (*hplc*)
 Karpas, A. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1988, **85**, 9229 (*pharmacol, N-butyl*)
 Furumoto, T. *et al.*, *J. Antibiot.*, 1989, **42**, 1302 (*Deoxymannojirimycin*)
 Von der Ostern, C.H. *et al.*, *J.A.C.S.*, 1989, **111**, 3924 (*enzymatic synth*)
 Paulsen, H. *et al.*, *Annalen*, 1990, 953 (*synth, L-galacto*)
 Ermert, P. *et al.*, *Helv. Chim. Acta*, 1991, **74**, 2043 (*Moranoline, synth*)
 Behling, J. *et al.*, *Synth. Commun.*, 1991, **21**, 1383 (*Moranoline, synth*)
 Baxter, E.W. *et al.*, *Bioorg. Med. Chem. Lett.*, 1992, **2**, 1419 (*N-butyl, synth*)
 Chida, N. *et al.*, *Carbohydr. Res.*, 1992, **237**, 185 (*Deoxynojirimycin, synth*)
 Faber, E.D. *et al.*, *Pharm. Res.*, 1992, **9**, 1442 (*Deoxynojirimycin, metab*)
 Hardick, D.J. *et al.*, *Tetrahedron*, 1992, **48**, 6285 (*biosynth*)
 Oshiro, Y. *et al.*, *Toxicol. Lett.*, 1992, **60**, 275 (*N-butyl, tox*)
 Ratner, L. *et al.*, *AIDS Res. Hum. Retroviruses*, 1993, **9**, 291 (*N-butyl, HIV-1*)
 Fowler, P.A. *et al.*, *Carbohydr. Res.*, 1993, **246**, 377 (*L-ido*)
 Hempel, A. *et al.*, *J. Med. Chem.*, 1993, **36**, 4082 (*Deoxynojirimycin, cryst struct*)
 Asano, N. *et al.*, *Carbohydr. Res.*, 1994, **253**, 235-245; **259**, 243-255 (*N-Methyl-1-deoxynojirimycin, glycosides, 2-O- α -D-Galactopyranosyl-1-deoxynojirimycin*)
 Zou, W. *et al.*, *Carbohydr. Res.*, 1994, **254**, 25 (*synth, Deoxymannojirimycin*)
 Platt, F.M. *et al.*, *J. Biol. Chem.*, 1994, **269**, 8362 (*N-butyl, pharmacol*)
 Park, K.H. *et al.*, *J.C.S. Perkin 1*, 1994, 2871 (*synth, D-manno*)
 Hughes, A.B. *et al.*, *Nat. Prod. Rep.*, 1994, **11**, 135 (*rev, Moranoline*)
 Block, T.M. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1994, **91**, 2235 (*N-butyl, antihepatitis B activity*)
 Johnson, C.R. *et al.*, *Synlett*, 1995, 313-314, (*D-talo-Deoxyaltronojirimycin, Deoxymannojirimycin, synth, pmr, cmr*)
 Ikota, N. *et al.*, *Heterocycles*, 1997, **46**, 637-643 (*synth, Moraniline*)
 Xu, J.-M. *et al.*, *J.C.S. Perkin 1*, 1997, 741-746
 Schaller, C. *et al.*, *Carbohydr. Res.*, 1998, **314**, 25-35 (*D-gluco, L-gluco, D-ido, L-ido*)
 Kazmaier, U. *et al.*, *Eur. J. Org. Chem.*, 1998, 1833-1840 (*Deoxyaltronojirimycin*)
 Davis, B.G. *et al.*, *Tetrahedron: Asymmetry*, 1998, **9**, 2947-2960 (*L-gulo*)
 Kim, H.-S. *et al.*, *Planta Med.*, 1999, **65**, 437-439 (*isol, activity*)
 Ruiz, M. *et al.*, *Synlett*, 1999, 204-206 (*D-talo*)
 Uriel, C. *et al.*, *Synlett*, 1999, 593-595 (*synth, D-galacto, L-altero*)
 Matos, C.R.R. *et al.*, *Synthesis*, 1999, 571-573 (*synth, Deoxynojirimycin*)
 Meyers, A.I. *et al.*, *Tetrahedron*, 1999, **55**, 8931-8952 (*L-manno, synth*)
 Cox, T. *et al.*, *Lancet*, 2000, **355**, 1481-1485, (*N-butyl, pharmacol*)
 Lee, B.W. *et al.*, *Synthesis*, 2000, 1305-1309, (*L-ido*)
 Ranes, M.K. *et al.*, *Br. J. Cancer*, 2001, **84**, 1107-1114 (*N-butyl, pharmacol*)
 Asano, N. *et al.*, *Eur. J. Biochem.*, 2001, **268**, 35-41 (*Angylocalyx pynaertii isolates*)

Watson, A.A. *et al.*, *Phytochemistry*, 2001, **56**, 265-295
 Spreitz, J. *et al.*, *Carbohydr. Res.*, 2002, **337**, 183-186 (*Deoxymannojirimycin, synth*)
 Joseph, C.C. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1083-1087 (*L-gulo form, D-talo-form, synth*)
 Schiffmann, R. *et al.*, *Drugs*, 2002, **62**, 733-742 (*N-butyl, rev*)
 Lachmann, R.H. *et al.*, *Curr. Opin. Invest. Drugs*, 2003, **4**, 472-479 (*miglustat, rev*)
 McCormack, P.L. *et al.*, *Drugs*, 2003, **63**, 2427-2434 (*miglustat, rev*)
 Sorbera, L.A. *et al.*, *Drugs of the Future*, 2003, **28**, 229-236 (*N-butyl, rev*)
 Banwell, M.G. *et al.*, *Org. Biomol. Chem.*, 2003, 2035-2037 (*Deoxymannonojirimycin 6-rhamnoside, synth*)
 Zimran, A. *et al.*, *Philos. Trans. R. Soc. London, B*, 2003, **358**, 961-966 (*N-butyl, pharmacol*)
 Somfai, P. *et al.*, *Tetrahedron*, 2003, **59**, 1293-1299 (*Deoxynojirimycin, synth*)
 Pyun, S.-J. *et al.*, *Heterocycles*, 2004, **62**, 333-341 (*Deoxygalactonojirimycin, synth*)
 Amat, M. *et al.*, *Tet. Lett.*, 2004, **45**, 5355-5358 (*D-gulo-form, synth*)
 Pyun, S.-J. *et al.*, *Tetrahedron*, 2005, **61**, 1413-1416 (*Deoxygulonojirimycin, synth, abs cofig*)

1-[(Hydroxymethyl)propyl] glucosinolate

1-Thio- β -D-glucopyranose 1-[2-(hydroxymethyl)-N-(sulfooxy)butanimidate], 9CI. Glucosisaustriacina
 [74542-15-7]



$C_{11}H_{21}NO_{10}S_2$ 391.42
 Present in seeds of *Sisymbrium austriacum*.
O-Benzoyl: 1-[(Benzoyloxymethyl)propyl] glucosinolate. Glucobenzisaustriacina
 $C_{18}H_{25}NO_{11}S_2$ 495.528
 Present in seeds of *Sisymbrium austriacum*.
 Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1962, **16**, 71; 83 (*isol, struct*)

2-Hydroxy-2-methylpropyl glucosinolate

1-Thio- β -D-glucopyranose 1-[3-hydroxy-3-methyl-N-(sulfooxy)butanimidate]. Glucoconringiin
 [28463-28-7]
 $(H_3C)_2C(OH)CH_2C(SGlc)=NOSO_3H$
 $C_{11}H_{21}NO_{10}S_2$ 391.42
 Isol. from *Conringia orientalis* (hare's ear mustard), *Cochlearia* sp. and *Reseda alba*.
 Needles (EtOH aq.) (as K salt).
 Mp 168° dec. (K salt). $[\alpha]_D^{25}$ -10.87 (c, 3.68 in H_2O).

Tetra-Ac:
 Needles (EtOH aq.) (as K salt). Mp 152° dec. (K salt). $[\alpha]_D^{25}$ -5.3 (c, 5.3 in H_2O).
 [73519-00-3]
 Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1956, **10**, 432 (*isol*)
 Gmelin, R. *et al.*, *Acta Chem. Scand.*, 1959, **13**, 1718 (*isol*)
 Gmelin, R. *et al.*, *Phytochemistry*, 1970, **9**, 599 (*isol*)

Underhill, E.W. *et al.*, *Phytochemistry*, 1972, **11**, 2085 (*biosynth*)
 Fenwick, G.R. *et al.*, *Biomed. Mass Spectrom.*, 1980, **7**, 410; 1981, **8**, 265 (*ms*)

3-Hydroxy-2-methyl-4H-pyran-4-one, 9CI

3-Hydroxy-2-methyl- γ -pyrone. Maltol. Laricin†. Laricinic acid. Larixinic acid. Veltol. FEMA 2656
 [118-71-8]

$C_6H_6O_3$ 126.112
 Produced by alkaline hydrol. of Streptomycin, S-83. Found in larch trees (*Larix decidua*), pine needles, chicory. Also from ferns *Arachniodes maximowiczii* and *Macrothelypteris torresiana*. Used as metal indicator (e.g. for Fe(III)). Flavour enhancer and flavouring agent, used in foods and pharmaceutical formulations. Needles or prisms (toluene or $CHCl_3$) with odour of caramel/butterscotch. Mod. sol. H_2O ; sol. EtOH.
 Mp 161-162°. λ_{max} 318 (MeOH) (Berdy). λ_{max} 274 (€ 8400) (HCl) (Berdy). λ_{max} 317 (€ 7300) (NaOH) (Berdy).

► Skin irritant. LD₅₀ (rat, orl) 2330 mg/kg. UQ1050000

O- β -D-Glucopyranoside: Dianthoside. Maltol glucoside
 [20847-13-6]

$C_{12}H_{16}O_8$ 288.254
 Isol. from *Dianthus* sp. and other plants, e.g. from ferns *Arachniodes maximowiczii*, *Macrothelypteris torresiana*, *Parathelypteris* spp. *Metathelypteris laxa*. Cryst. (EtOH/EtOAc).
 Mp 132°. $[\alpha]_D^{25}$ -52.8 (H_2O).

O-(6-O-Acetyl- β -D-glucopyranoside):
 $C_{14}H_{18}O_9$ 330.291
 Constit. of *Prangos pabularia*.
 $[\alpha]_D^{25}$ -31.9 (c, 0.27 in MeOH). λ_{max} 216 (log € 3.8); 256 (log € 3.8); 324 (log € 3) (MeOH).

O-[3-Methylbutanoyl-(\rightarrow 6)- β -D-glucopyranoside]:
 $C_{17}H_{24}O_9$ 372.371
 Constit. of *Prangos tschimganica*. Oil. $[\alpha]_D^{25}$ -19.2 (c, 0.5 in MeOH). λ_{max} 256 (log € 4.7) (MeOH).

O-[3,4,5-Trihydroxybenzoyl-(\rightarrow 6)- β -D-glucopyranoside]:
 $C_{19}H_{20}O_{12}$ 440.36
 Constit. of the leaves of *Gordonia axillaris*. Off-white amorph. powder.

O-[4-Hydroxycinnamoyl-(\rightarrow 6)- β -D-glucopyranoside]: Innovanoside. Evodiopanax
 [28876-17-7]
 $C_{21}H_{22}O_{10}$ 434.399
 Constit. of the leaves of *Erodianpanax innovans*.
 Mp 122-128°. $[\alpha]_D^{25}$ -132 (c, 1.1 in MeOH).

O-[3,4-Dihydroxy-E-cinnamoyl-(\rightarrow 6)- β -D-glucopyranoside]:
 $C_{21}H_{22}O_{11}$ 450.398
 Constit. of *Prangos tschimganica*. Pale yellow oil. $[\alpha]_D^{25}$ -57 (c, 1 in MeOH). λ_{max} 250 (log € 4.6); 301 (log € 4.5); 329 (log € 4.6) (MeOH).

O-[4-Hydroxy-3-methoxy-E-cinnamoyl-(\rightarrow 6)- β -D-glucopyranoside]:
 $C_{22}H_{24}O_{11}$ 464.425

D-form [53766-67-9]Syrup. $[\alpha]_D^{20}$ -28 (c, 5 in H₂O). **α -D-Furanose-form**

1,2-O-Isopropylidene, 5,3'-lactone:

[52562-65-9]

(Et₂O/pentane). Mp 134°. $[\alpha]_D^{20}$ +57(c, 1.0 in CHCl₃).Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 3020**3-Hydroxy-6-(methylthio)hexyl glucosinolate** **H-183**MeSCH₂CH₂CH₂CH(OH)CH₂CH₂C(S-Glc)=NOSO₃HC₁₄H₂₇NO₁₀S₃ 465.566Present in seeds of *Erysimum rhaeticum*.**S-Oxide:** 3-Hydroxy-6-(methylsulfinyl)-hexyl glucosinolateC₁₄H₂₇NO₁₁S₃ 481.565Constit. of *Erysimum rhaeticum*.**S,S-Dioxide:** 3-Hydroxy-6-(methylsulfonyl)hexyl glucosinolateC₁₄H₂₇NO₁₂S₃ 497.565Constit. of *Erysimum rhaeticum*.Kjaer, A. *et al.*, *Phytochemistry*, 1973, **12**, 929 (occur)Daxenbichler, M.E. *et al.*, *Phytochemistry*, 1991, **30**, 2623-2628 (isol)**3-Hydroxy-5-(methylthio)pentyl glucosinolate** **H-184**

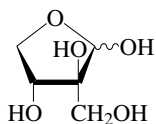
[29611-02-7]

MeSCH₂CH₂CH(OH)CH₂CH₂C(SGlc)=NOSO₃HC₁₃H₂₅NO₁₀S₃ 451.539Isol. from seeds of *Erysimum hieracifolium*.**S-Oxide:** 3-Hydroxy-5-(methylsulfinyl)-pentyl glucosinolate

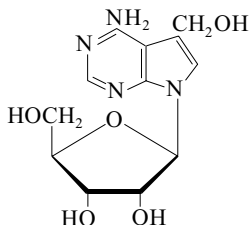
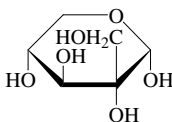
[29432-54-0]

C₁₃H₂₅NO₁₁S₃ 467.539Isol. from seeds of *Erysimum hieracifolium*.**S,S-Dioxide:** 3-Hydroxy-5-(methylsulfonyl)pentyl glucosinolate

[29432-55-1]

C₁₃H₂₅NO₁₂S₃ 483.538Isol. from seeds of *Erysimum hieracifolium*.Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1970, **24**, 1631 (isol)**2-C-(Hydroxymethyl)threose** **H-185****D-Furanose-form**C₅H₁₀O₅ 150.131**D-form** [311806-43-6] $[\alpha]_D^{20}$ -7.9 (c, 1 in H₂O). Exists mainly in furanose form.Hricoviniová, Z. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 827-836 (synth, pmr, cmr)**5-Hydroxymethyltubercidin** **H-186**

4-Amino-7-β-D-ribofuranosyl-7H-pyrrolo[2,3-d]pyrimidine-5-methanol, 9CI [49558-38-5]

C₁₂H₁₆N₄O₅ 296.282Cryst. (H₂O). Mp 229-230°.Uematsu, T. *et al.*, *J. Med. Chem.*, 1973, **16**, 1405 (synth, props)Bergstrom, D.E. *et al.*, *J.O.C.*, 1981, **46**, 1423 (synth, pmr, cmr)**2-C-(Hydroxymethyl)xylose** **H-187****α-D-Pyranose-form**C₆H₁₂O₆ 180.157**D-form** [161970-48-5]

The 1999 ref. gives a one-step synth.

from Sorbose, S-60, though in only

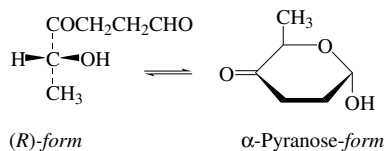
0.5% yield.

Cryst. (EtOH). Mp 108-110°. $[\alpha]_D$ +29.6 (24h) → +16.5 (c, 1 in H₂O).**2,5-Dichlorophenylhydrazine:**

Plates (EtOH). Mp 162-162.5°.

 $[\alpha]_D^{25.7}$ -9.75 (c, 4.1 in Py).Woods, R.J. *et al.*, *Can. J. Chem.*, 1954, **32**, 404-414 (D-form, synth)Yanagihara, R. *et al.*, *Bull. Chem. Soc. Jpn.*, 1995, **68**, 237-242 (D-form, synth)Hricoviniová-Bíliková, Z. *et al.*, *Carbohydr. Res.*, 1999, **319**, 38-46 (D-form, synth, pmr, cmr)**5-Hydroxy-4-oxohexanal, 9CI** **H-188**

Cinerulose A. 2,3,6-Trideoxyhexose-1,4-diulose

**(R)-form****α-Pyranose-form**C₆H₁₀O₃ 130.143**(R)-form****D-glycero-form**

[33980-83-5]

α-Me glycoside: Methyl 2,3,6-trideoxy-α-D-glycero-hexose-1,4-diulopyranosideC₇H₁₂O₃ 144.17Syrup. Bp₁₆ 80°. $[\alpha]_D^{23}$ -149.9 (c, 1.3 in CHCl₃). $[\alpha]_D^{20}$ -232 (c, 0.72 in CHCl₃). $[\alpha]_D$ -305.4 (CHCl₃). Unstable.**α-Me glycoside, 4-(p-nitrophenylhydrazone):**Yellow needles (EtOH aq.). Mp 158-159°. $[\alpha]_D^{20}$ -198.7 (c, 0.60 in CHCl₃).**(S)-form**Component of Vineomycin A₁.**α-Me glycoside, 4-(p-nitrophenylhydrazone):** $[\alpha]_D^{20}$ +347 (c, 0.6 in CHCl₃).Suzuki, T. *et al.*, *Chem. Lett.*, 1973, 789Bartner, P. *et al.*, *J.C.S. Perkin I*, 1979, 1600Ohta, K. *et al.*, *Chem. Pharm. Bull.*, 1984, **32**, 4350 (pmr, Me gly)**5-Hydroxypentanal, 9CI** **H-189****5-Hydroxyvaleraldehyde**

[4221-03-8]

HOCH₂CH₂CH₂CH₂CHOC₅H₁₀O₂ 102.133Exists as an equilib. mixt. with Tetrahydro-2H-pyran-2-ol, T-30, contg. 95% cyclic form at r.t. Oil. Bp₆ 66-67°.**Oxime:** [60222-90-4]C₅H₁₁NO₂ 117.147

Mp 92-93°.

Benzoyl: [55162-83-9]C₁₂H₁₄O₃ 206.241Liq. Bp_{0.1} 100-110°.**2,4-Dinitrophenylhydrazone:** Mp 79° Mp 109°.**Di-Me acetal:** 5,5-Dimethoxy-1-pentanol [79898-65-0]C₇H₁₆O₃ 148.202Oil. Bp₃₄ 112-113°.**Triphenylmethyl ether:** [258331-72-5]C₂₄H₂₄O₂ 344.452

Cryst. (hexane). Mp 41°.

[61862-52-0, 62042-74-4]

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 488C (nmr)Schneipp, L.F. *et al.*, *J.A.C.S.*, 1946, **68**, 1646 (synth)*Org. Synth., Coll. Vol.*, **3**, 1955, 470de Hoog, A.J. *et al.*, *Org. Magn. Reson.*, 1974, **6**, 233 (cmr)Potekhin, A.A. *et al.*, *Zh. Org. Khim.*, 1976, **12**, 2090 (derivs)Boeckman, R.K. *et al.*, *J.A.C.S.*, 1982, **104**, 1033 (synth, pmr, acetal)Vinczer, P. *et al.*, *Org. Prep. Proced. Int.*, 1989, **21**, 344 (synth)Kalaus, G. *et al.*, *Annalen*, 1995, 1245 (di-Me acetal, benzoyl)Angehrn, P. *et al.*, *J. Med. Chem.*, 2004, **47**, 1487-1513 (trityl ether, pmr)**2-Hydroxy-4-pentenyl glucosinolate** **H-190****1-Thio-β-D-glucopyranose 1-[3-hydroxy-N-(sulfooxy)-5-hexenimide]**, 9CI.**Gluconapoleiferin**

[19764-03-5]

H₂C=CHCH₂CH(OH)CH₂C(SGlc)=NOSO₃HC₁₂H₂₁NO₁₀S₂ 403.431Isol. from *Brassica* seeds.

[107657-50-1]

Tapper, B.A. *et al.*, *Phytochemistry*, 1967, **6**, 749 (occur)Josefsson, E. *et al.*, *Acta Agric. Scand.*, 1968, **18**, 97; *CA*, **69**, 57420r (isol)

2-Hydroxypentyl glucosinolate **H-191**

1-Thio-β-D-glucopyranose 1-[3-hydroxy-N-(sulfooxy)hexanimidate], 9CI
[76265-23-1]
H₃CCH₂CH₂CH(OH)CH₂C(SGlc)=NO-SO₃H

C₁₂H₂₃NO₁₀S₂ 405.446

Present in horseradish (*Armoracia lapathifolia*).

Grob, K. *et al.*, *Phytochemistry*, 1980, **19**, 1789 (occur)

5-Hydroxypentyl glucosinolate **H-192**

HOCH₂(CH₂)₄C(SGlc)=NOSO₃H

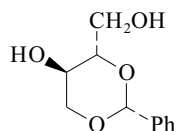
C₁₂H₂₃NO₁₀S₂ 405.446

O⁵-Benzoyl: 5-Benzoyloxypentyl glucosinolate. 1-[6-(Benzoyloxy)-N-(sulfooxy)-hexanimidate], 9CI
[118609-02-2]

C₁₉H₂₇NO₁₁S₂ 509.554

Isol. from *Arabidopsis thaliana*.

Hogge, L.R. *et al.*, *J. Chromatogr. Sci.*, 1988, **26**, 551 (isol)

5-Hydroxy-2-phenyl-1,3-dioxane-4-methanol, 9CI **H-193**

C₁₁H₁₄O₄ 210.229

(2R,4S,5R)-form

1,3-O-Benzylidene-L-erythritol

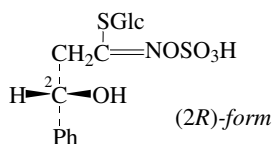
[117122-84-6]

Cryst. (C₆H₆/petrol). Mp 135-137°. [α]_D²⁰ -14 (c, 0.5 in CHCl₃).

Foster, A.B. *et al.*, *J.C.S.*, 1961, 5005 (synth)

2-Hydroxy-2-phenylethyl glucosinolate **H-194**

1-Thio-β-D-glucopyranose 1-[β-hydroxy-N-(sulfooxy)benzenepropanimidate]. β-Hydroxyphenethyl glucosinolate. **Glucobarbarin**
[30688-64-3]



C₁₅H₂₁NO₁₀S₂ 439.464

(2R)-form

Constit. of *Barbarea vulgaris* (winter cress).

(2S)-form [37913-31-8]

Constit. of *Reseda luteola* and *Barbarea vulgaris* (winter cress).

2-O-α-L-Arabinopyranoside: 2-(α-L-Arabinopyranosyloxy)-2-phenylethyl glucosinolate

[80754-95-6]

C₂₀H₂₉NO₁₄S₂ 571.579

Isol. from *Sesamoides canescens* and *Sesamoides pygmaea*. (S)-Config. not certain for this deriv.

[73519-01-4]

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1957, **11**, 906; 1958, **12**, 1693 (occur)

Underhill, E.W. *et al.*, *Phytochemistry*, 1972, **11**, 1973 (biosynth)

Olsen, O. *et al.*, *Phytochemistry*, 1981, **30**, 1857 (arabinoside)

Agerbirk, N. *et al.*, *Phytochemistry*, 2001, **58**, 91-100 (isol, pmr)

2-Hydroxypropyl glucosinolate **H-195**

1-Thio-β-D-glucopyranose 1-[3-hydroxy-N-(sulfooxy)butanimidate], 9CI

[76265-21-9]

H₃CCH(OH)CH₂C(SGlc)=NOSO₃H

C₁₀H₁₉NO₁₀S₂ 377.393

Present in horseradish (*Armoracia lapathifolia*) and in *Arabidopsis thaliana*.

Grob, K. *et al.*, *Phytochemistry*, 1980, **19**, 1789 (occur)

Hogge, L.R. *et al.*, *J. Chromatogr. Sci.*, 1986, **26**, 551 (occur)

3-Hydroxypropyl glucosinolate **H-196**

1-Thio-β-D-glucopyranose 1-[4-hydroxy-N-(sulfooxy)butanimidate], 9CI

[75272-75-2]

HOCH₂CH₂CH₂C(SGlc)=NOSO₃H

C₁₀H₁₉NO₁₀S₂ 377.393

Isol. from seeds of *Erysimum hieracifolium*.

Benzoyl: 3-(Benzoyloxy)propyl glucosinolate. **Glucomalcolmiin**
[75331-11-2]

C₁₇H₂₃NO₁₁S₂ 481.501

Isol. from *Malcolmia maritima*.

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1956, **10**, 1192 (*Glucomalcolmiin*)

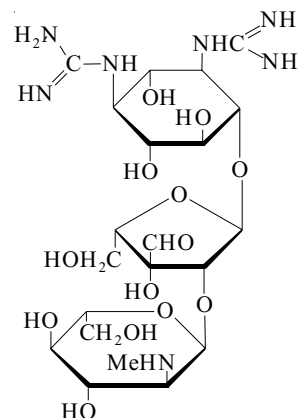
Daxenbichler, M.E. *et al.*, *Phytochemistry*, 1980, **19**, 813 (isol)

Eagles, J. *et al.*, *Biomed. Mass Spectrom.*, 1981, **8**, 278 (isol, ms)

Hydroxystreptomycin **H-197**

Streptomycin C. Reticulin. D 212. NA 232NI. Antibiotic D 212. Antibiotic NA 232NI

[6835-00-3]



C₂₁H₃₉N₇O₁₃ 597.578

Aminoglycoside antibiotic. From *Streptomyces griseocarneus*, *Streptomyces reticuli* and *Streptomyces subtritus*. Shows broad spectrum activity.

Hydrochloride (1:3):

Cryst. Sol. H₂O, MeOH; poorly sol.

EtOH, hexane. [α]_D²⁵ -91 (c, 1 in H₂O).

► LD₅₀ (mus, ivn) 154 mg/kg, LD₅₀ (mus, scu) 865 mg/kg.

Helianthate:

Red-brown cryst. Mp 200° dec.

[485-19-8]

Hosoya, S. *et al.*, *Jpn. J. Exp. Med.*, 1949, **20**, 327; *CA*, **45**, 3459i (isol)

Benedict, R.G. *et al.*, *Science (Washington, D.C.)*, 1950, **112**, 77

Stodola, F.H. *et al.*, *J.A.C.S.*, 1951, **73**, 2290

Hosoya, S. *et al.*, *Jpn. J. Exp. Med.*, 1952, **22**, 303; *CA*, **48**, 3477a

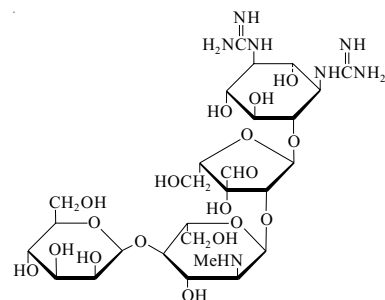
Wallace, B.W. *et al.*, *Antibiotics (N.Y.)*, 1979, **5**, 272 (rev)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SLX500

Hydroxystreptomycin B **H-198**

Mannosidohydroxystreptomycin

[28979-71-7]



C₂₇H₄₉N₇O₁₈ 759.72

Aminoglycoside antibiotic. Isol. from *Nocardia apis* and *Streptomyces flavovirens*. Sol. H₂O; fairly sol. MeOH; poorly sol. EtOH, hexane. Mp 182-184°.

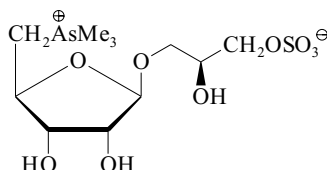
► WK2260000

Sulfate: $[\alpha]_D^{25}$ -46 (H₂O). Dec. >210°.

U.K. Pat., 1963, 955 762; *CA*, **61**, 2440 (*isol*)
Arcamone, F. *et al.*, *Experientia*, 1968, **24**, 441 (*isol*)

2-Hydroxy-3-(sulfooxy)propyl-5-deoxy-5-(trimethylarsonio)-β-D-ribofuranoside, 9CI **H-199**

[138382-73-7]



C₁₁H₂₃AsO₉S 406.285

Constit. of the kidney of the giant clam *Tridacna maxima*. Also from *Chaetoceros gracilis* and *Sargassum thunbergii*. Solid.

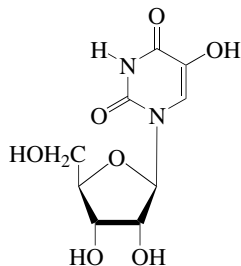
[88216-77-7, 115299-23-5]

Francesconi, K.A. *et al.*, *J.C.S. Perkin I*, 1991, 2707; 1992, 1349 (*isol*)

Edmonds, J.S. *et al.*, *Nat. Prod. Rep.*, 1993, **10**, 421 (*rev*)

5-Hydroxyuridine, 9CI **H-200**

1-β-D-Ribofuranosylisobarbituric acid, 8CI. Isobarbituridine
[957-77-7]



C₉H₁₂N₂O₇ 260.203

Component of RNA. Cryst. (EtOH).
Mp 230-232° (224-225°) Mp 238-241°.
 λ_{\max} 280 (no solvent reported).

5-O-Me: *5-Methoxyuridine*

[35542-01-9]

C₁₀H₁₄N₂O₇ 274.23

Modified nucleoside found in tRNA's.
Prisms (H₂O). λ_{\max} 206 ; 278 (no solvent reported).

5-O-(Carboxymethyl): Uridine-5-oxyacetic acid

[28144-25-4]

C₁₁H₁₄N₂O₉ 318.24

Modified nucleoside found in tRNA's.

5-O-(Methoxycarbonylmethyl): Methyl uridine-5-oxyacetate

[66536-81-0]

[54795-90-3]

C₁₂H₁₆N₂O₉ 332.266

Modified nucleoside found in tRNA's.

Cryst. (MeOH). λ_{\max} 208 ; 275 (no solvent reported).

Morikawa, K. *et al.*, *Acta Cryst. B*, 1975, **31**, 1004-1007 (*Me ester, cryst struct*)

Tompson, J.G. *et al.*, *Biochemistry*, 1979, **18**, 2079-2085 (*isol, cmr*)

Yokoyama, S. *et al.*, *FEBS Lett.*, 1980, **119**, 77-80 (*isol, cmr*)

Egert, E. *et al.*, *J.A.C.S.*, 1980, **102**, 3707-3713 (*pmr, conformn*)

Birnbaum, G.I. *et al.*, *Can. J. Chem.*, 1983, **61**, 2299-2304 (*Methoxyuridine, cryst struct, conformn*)

Uhl, W. *et al.*, *Nucleic Acids Res.*, 1983, **11**, 1167-1180 (*pmr, conformn*)

Crow, F.W. *et al.*, *Anal. Biochem.*, 1984, **139**, 243-262 (*Me ester, ms*)

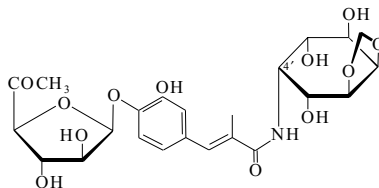
McCrery, D.A. *et al.*, *Anal. Chim. Acta*, 1985, **178**, 91-103 (*ms*)

Sierzputowska-Gracz, H. *et al.*, *J.A.C.S.*, 1987, **109**, 7171-7177 (*synth, uv, cmr*)

Hygromycin A

H-201

Homomycin. Hygromix. Totomycin. XK 43-2. WS 1627B. Antibiotic XK 43-2. Antibiotic 51086. Compound 51086
[6379-56-2]



C₂₃H₂₉NO₁₂ 511.482

Prod. by *Streptomyces hygroscopicus*, *Streptomyces noboritoensis* and *Corynebacterium equi*. Active against gram-positive and -negative bacteria incl. mycobacteria, endomeoba and leptospira. Anthelmintic. Amorph. solid.
Mp 105-109° dec. $[\alpha]_D^{25}$ -126 (c, 1 in H₂O).
pK_a 8.9. Log P -3.22 (uncertain value) (calc). λ_{\max} 214 (€ 19400); 272 (€ 15000); 302 (sh) (€ 10000) (dil HCl) (Derep). λ_{\max} 254 (€ 17900); 285 (sh) (€); 286 (€ 9910); 323 (€ 5930) (dil. NaOH) (Derep). λ_{\max} 215 (€ 19000); 272 (€ 14900); 302 (sh) (€ 10000) (H₂O) (Derep).

► LD₅₀ (mus, ipr) 1067 mg/kg. NG8859000

2,4-Dinitrophenylhydrazon:

Red cryst. (H₂O). Mp 154-156°.

4'-Epimer: Epihygromycin. WS 1627D.

Antibiotic WS 1627D

[75081-92-4]

C₂₃H₂₉NO₁₂ 511.482

From *Streptomyces noboritoensis* and *Corynebacterium equi* sp. Weakly active against gram-positive bacteria. Sesquihydrate.

Mp 114-117°. $[\alpha]_D^{20}$ -91.1 (c, 1 in H₂O).
 λ_{\max} 214 (€ 19400); 272 (€ 15000); 302 (sh) (€ 10000) (dil HCl) (Derep). λ_{\max} 254 (€ 17900); 285 (sh) (€); 286 (€ 9910); 323 (€ 5930) (dil. NaOH) (Derep). λ_{\max} 215 (€ 19000); 272 (€ 14900); 302 (sh) (€ 10000) (H₂O) (Derep).

[11049-00-6]

Isono, K. *et al.*, *J. Antibiot., Ser. A*, 1957, **10**, 160 (*struct, ir, uv*)

Mann, R.L. *et al.*, *J.A.C.S.*, 1957, **79**, 120 (*uv, ir, struct*)

Kakinuma, K. *et al.*, *Agric. Biol. Chem.*, 1978, **42**, 279 (*pmr, cmr, struct, abs config*)

Wakisaka, Y. *et al.*, *J. Antibiot.*, 1980, **33**, 695 (*Epihygromycin*)

Chida, N. *et al.*, *J.O.C.*, 1991, **56**, 2976 (*synth, bibl*)

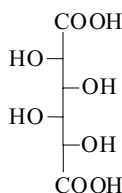
Jaynes, B.H. *et al.*, *J.O.C.*, 1994, **59**, 1224 (*synth*)

Kang, H.-C. *et al.*, *CA*, 2000, **132**, 10585c (*Antibiotic 51086*)

Trost, B.M. *et al.*, *Chem. Eur. J.*, 2002, **8**, 259-268 (*synth*)

Idaric acid, 8CI

Idosaccharic acid
[5768-54-7]



$C_6H_{10}O_8$ 210.14

D-form [33012-63-4]

Isol. from *Lespedeza cuneata*. Leaf-closing factor (as K salt).

Mp 151-154°. $[\alpha]_D^{25} +15.6$ (c, 1.02 in H_2O).

Phenylhydrazide: Mp 217-218° dec.

2,4:3,5-Di-O-benzylidene: 2,4:3,5-Di-O-benzylidene-D-idaric acid

$C_{20}H_{18}O_8$ 386.357

Mp 230-233°.

2,4:3,5-Di-O-benzylidene, di-Me ester: Dimethyl 2,4:3,5-di-O-benzylidene-D-idarate

$C_{22}H_{22}O_8$ 414.411

Mp 266-267°. $[\alpha]_D^{25} -77.3$ ($CHCl_3$).

L-form [80876-58-0]

[189759-76-0] $[\alpha]_D^{25} -5.6$ (c, 0.1 in H_2O) (as K salt).

1,4-Lactone: L-Idaro-1,4-lactone

[80876-59-1]

$C_6H_8O_7$ 192.125

2,4:3,5-Di-O-methylene: 2,4:3,5-Di-O-methylene-L-idaric acid

[7437-69-6]

$C_8H_{10}O_8$ 234.162

Mp 297-299°. $[\alpha]_D^{25} +73.7$ (c, 3.75 in H_2O).

Behrend, R. et al., *Annalen*, 1919, **418**, 294-316 (synth)

Seebeck, E. et al., *Helv. Chim. Acta*, 1945, **28**, 934-940 (D-form, di-O-benzylidene, synth)

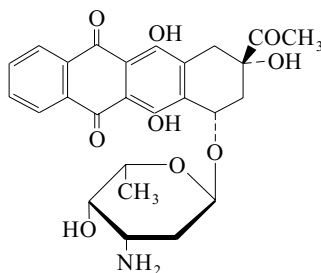
Jansen, L. et al., *J. Chromatogr.*, 1971, **57**, 353-364 (glc, ion exch)

Herd, J.K. et al., *Carbohydr. Res.*, 1982, **99**, 33-39 (L-form, 1,4-lactone, di-O-methylene, synth)

Ohnuki, T. et al., *Tetrahedron*, 1998, **54**, 12173-12184 (D-form, L-form, synth, isol, pmr, cmr, props)

Idarubicin, BAN, INN

4-Demethoxydaunomycin. IMI 30. NSC 256439
[58957-92-9]



$C_{26}H_{27}NO_9$ 497.501

I-1

Antineoplastic agent. Launched 1990. Log P -0.86 (uncertain value) (calc).

►HB7876000

Hydrochloride: Idarubicin hydrochloride, USAN. Idamycin. Zavedos

[57852-57-0]

Bright orange solid. Mp 172-174° (183-185°). $[\alpha]_D^{20} +187$ (c, 0.1 in MeOH).

►HB7877000

Kelly, T.R. et al., *Tet. Lett.*, 1978, 4457 (synth, bibl)

Broadhurst, M.J. et al., *J.C.S. Perkin 1*, 1982, 2249 (synth)

Rao, A.V.R. et al., *Chem. Comm.*, 1984, 453 (synth, isom)

Zini, G. et al., *Cancer Chemother. Pharmacol.*, 1986, **16**, 107 (metab)

Weiss, R.B. et al., *Cancer Chemother.*

Pharmacol., 1986, **18**, 185 (rev, pharmacol, tox)

Ganzina, F. et al., *Invest. New Drugs*, 1986, **4**, 85 (rev, pharmacol)

Hollingshead, L.M. et al., *Drugs*, 1991, **42**, 690 (rev)

Cersosimo, R.J. et al., *Clin. Pharm.*, 1992, **11**, 152 (rev)

Kunick, C. et al., *Pharm. Ztg.*, 1992, **137**, 30; 34; 36 (rev)

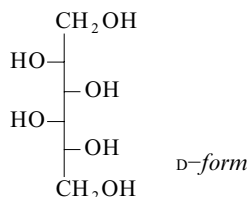
Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 483

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAN000

Iditol, 9CI, 8CI

Sorbieritol. ido-Hexitol

[24557-79-7]

I-3

$C_6H_{14}O_6$ 182.173

D-form [25878-23-3]

Mp 73-74°. $[\alpha]_D^{20} +3.5$ (H_2O).

Hexa-Ac: 1,2,3,4,5,6-Hexa-O-acetyl-D-iditol

$C_{18}H_{26}O_{12}$ 434.396

Mp 120°. $[\alpha]_D^{20} +25.3$ ($CHCl_3$).

L-form [488-45-9]

Occurs with D-glucitol in the berry of mountain ash (*Sorbus aucuparia*) and in other plants.

Mp 73.5°. $[\alpha]_D^{20} -3.5$ (c, 1.0 in H_2O).

Hexa-Ac: 1,2,3,4,5,6-Hexa-O-acetyl-L-iditol

[13443-46-4]

Mp 122°. $[\alpha]_D^{23} -25.9$ (c, 1.4 in $CHCl_3$).

Hexabenzoyl: 1,2,3,4,5,6-Hexa-O-benzoyl-L-iditol

[21238-34-6]

$C_{48}H_{38}O_{12}$ 806.821

Prisms. Mp 142-143°. $[\alpha]_D^{19} +48.5$ (c, 1.8 in $CHCl_3$).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-L-iditol

$C_9H_{18}O_6$ 222.238

Mp 90-91°. $[\alpha]_D^{20} +41.7$ (c, 3.5 in MeOH).

1,2:3,4:5,6-Tri-O-isopropylidene:

1,2:3,4:5,6-Tri-O-isopropylidene-L-iditol

$C_{15}H_{26}O_6$ 302.367

Mp 57-58°. $[\alpha]_D^{16} +5.8$ (c, 5.5 in $CHCl_3$).

$[\alpha]_D^{18} +12.2$ (c, 3.3 in EtOH).

2,3:4,5-Di-O-benzylidene: 2,3:4,5-Di-O-benzylidene-L-iditol

$C_{20}H_{22}O_6$ 358.39

Needles (Me_2CO /hexane). Mp 207°

Mp 229-231°.

[45007-61-2]

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **1**, 290A; 1054C (nmr)

Jones, W.G.M. et al., *J.C.S.*, 1944, 363 (synth)

Meyer, A.S. et al., *Helv. Chim. Acta*, 1946, **29**, 152 (L-hexa-Ac)

Bourne, E.J. et al., *J.C.S.*, 1952, 2542

(L-isopropylidene, L-hexa-Ac, L-hexabenzoyl)

Sicé, J. et al., *J.A.C.S.*, 1954, **76**, 1661

(L-benzylidene)

Jeffrey, G.A. et al., *Carbohydr. Res.*, 1970, **14**, 207 (conform)

Azarnia, N. et al., *Acta Cryst. B*, 1972, **28**, 1007 (cryst struct)

Angyal, S.J. et al., *Carbohydr. Res.*, 1980, **84**, 201 (cmr)

Herd, J.K. et al., *Carbohydr. Res.*, 1982, **99**, 33 (synth)

Kopf, J. et al., *Acta Cryst. C*, 1992, **48**, 339 (cryst struct)

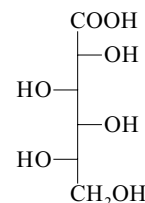
Kopf, J. et al., *Carbohydr. Res.*, 1992, **229**, 17 (cryst struct, hexa-Ac)

Wachmeister, J. et al., *Tetrahedron*, 2000, **56**, 3219-3225 (hexa-Ac, synth, pmr)

Mills, S.J. et al., *Can. J. Chem.*, 2003, **9**, 6207-6214 (hexa-Ac, synth, pmr, cmr)

Idonic acid, 9CI, 8CI

ido-Hexonic acid

I-4

$C_6H_{12}O_7$ 196.157

L-form [1114-17-6]

Manuf. by the action of *Pseudomonas aeruginosa* on Sorbose and *Brevibacterium ketosoreductum* on 5-Oxo-D-gluconic acid. $[\alpha]_D^{20} +5.2 \rightarrow -13.7$ (H_2O).

Na salt: [5135-28-4]

$[\alpha]_D^{20} -9.5$ (H_2O).

Ba salt:

Dihydrate. $[\alpha]_D^{20} -3.5$ (H_2O).

Penta-Ac, Me ester: Methyl 2,3,4,5,6-penta-O-acetyl-L-idonate

[28436-40-0]

$C_{17}H_{24}O_{12}$ 420.369

Cryst. (EtOH/petrol). Mp 77-79°. $[\alpha]_D^{22} -38.6$ (c, 1.4 in $CHCl_3$).

1,4-Lactone: L-Idono-1,4-lactone

[18404-70-1]

$C_6H_{10}O_6$ 178.141

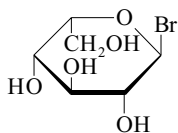
Mp 174°. $[\alpha]_D^{20} -52.6$ (H_2O).

Mochizuki, K. et al., *CA*, 1969, **71**, 37484c (enzymic synth)

Angyal, S.I. *et al.*, *Aust. J. Chem.*, 1970, **23**, 1209 (*Me ester penta-Ac*)
 Abola, E.E. *et al.*, *CA*, 1974, **81**, 55360r (*cryst struct*)
 Sonoyama, T. *et al.*, *CA*, 1975, **82**, 153797h (*enzymic synth*)

Idopyranosyl bromide

I-5



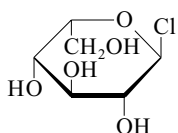
$C_6H_{11}BrO_5$ 243.054

 α -L-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -L-idopyranosyl bromide
 [14795-18-7]
 $C_{14}H_{19}BrO_9$ 411.203
 Cryst. (CH_2Cl_2 /Et₂O/pentane). Mp 126-127°. $[\alpha]_D^{25}$ -120 (c, 0.75 in $CHCl_3$).
 2,3,4-Tribenzoyl, 6-Ac: 6-O-Acetyl-2,3,4-tri-O-benzoyl- α -L-idopyranosyl bromide
 [117129-63-2]
 $C_{29}H_{25}BrO_9$ 597.415
 Syrup.
 3-Benzyl, tri-Ac: 2,4,6-Tri-O-acetyl-3-O-benzyl- α -L-idopyranosyl bromide
 [103703-02-2]
 $C_{19}H_{23}BrO_8$ 459.29
 Syrup.
Eur. Pat., 1983, 84 999; *CA*, **100**, 7066t (*tetra-Ac*)
 Van Boeckel, C.A.A. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 293 (*tri-Ac*)
 Petitou, M. *et al.*, *Tet. Lett.*, 1988, **29**, 1389 (*tribenzoyl*)

Idopyranosyl chloride

I-6



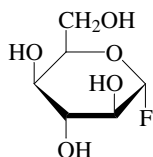
$C_6H_{11}ClO_5$ 198.603

 α -L-form

2,3,4-Tribenzyl, 6-(chloroacetyl): 2,3,4-Tri-O-benzyl-6-O-chloroacetyl- α -L-idopyranosyl chloride
 [109914-66-1]
 $C_{29}H_{30}Cl_2O_6$ 545.458
 Syrup. $[\alpha]_D^{20}$ -41 (c, 1 in $CHCl_3$) (lit. gives a temp. range). Unstable at ambient temp.
 Jacquinet, J.C. *et al.*, *Carbohydr. Res.*, 1987, **159**, 229 (*tribenzyl deriv, pmr*)

Idopyranosyl fluoride

I-7

 α -D-form

$C_6H_{11}FO_5$ 182.148

 α -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-idopyranosyl fluoride
 [51897-77-9]
 $C_{14}H_{19}FO_9$ 350.297
 Syrup. $[\alpha]_D^{24}$ +15.8 (c, 1.5 in $CHCl_3$).

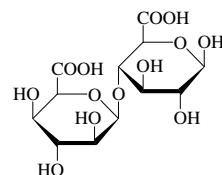
 α -L-form

3-Benzyl, tri-Ac: 2,4,6-Tri-O-acetyl-3-O-benzyl- α -L-idopyranosyl fluoride
 [117326-11-1]
 $C_{19}H_{23}FO_8$ 398.384
 Syrup.
 3-Benzyl, 2,4,6-tribenzoyl: 2,4,6-Tri-O-benzoyl-3-O-benzyl- α -L-idopyranosyl fluoride
 [135362-92-4]
 $C_{34}H_{29}FO_8$ 584.597
 Syrup.
 Bock, K. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 2701 (α -D-tetra-Ac, *pmr*, *F-19 nmr*)
 Van Boeckel, C.A.A. *et al.*, *Tet. Lett.*, 1988, **29**, 803 (α -L-benzyl tri-Ac, *pmr*)
 Petitou, M. *et al.*, *Bioorg. Med. Chem. Lett.*, 1991, **1**, 95 (α -L-benzyl tribenzoyl, *pmr*)

4-O- β -D-Idopyranosyl-D-glucose, 9CI

I-8

[64550-93-2]

 β -Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. Hygroscopic amorph. powder + $\frac{1}{2}$ H₂O. $[\alpha]_D^{24}$ +31 (c, 1.1 in H₂O).

4-Methylbenzenesulfonylhydrazone: Hygroscopic cryst. (MeOH/EtOH) + 1.5 H₂O. Mp 138-139° dec. $[\alpha]_D^{19}$ -31 (c, 1.0 in Py).

3'-Me: [69538-27-8]
 $C_{13}H_{24}O_{11}$ 356.326
 Amorph. powder + $\frac{1}{2}$ H₂O. $[\alpha]_D^{21}$ +23.3 (c, 0.8 in H₂O).

 β -Pyranose-form

1,2,3,2',3',4',6'-Hepta-Ac: [61278-04-4]
 $C_{26}H_{36}O_{18}$ 636.56
 Cryst. (EtOH). Mp 173-175°. $[\alpha]_D^{22}$ -33 (c, 1.1 in $CHCl_3$).

3'-Me, 1,2,3,2',4',6'-hexa-Ac: [69538-26-7]
 $C_{25}H_{36}O_{17}$ 608.549
 Needles (EtOH). Mp 156-157°. $[\alpha]_D^{24}$ -31.2 (c, 0.95 in $CHCl_3$).

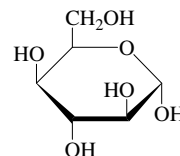
3'-Me, 2,3,2'-tri-Ac:

$C_{19}H_{30}O_{14}$ 482.438
 Mp 154-156°. $[\alpha]_D^{27}$ -87.1 (c, 1.13 in $CHCl_3$).

Chiba, T. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 1049; 1978, **26**, 3426

Idose, 9CI

I-9

 α -D-Pyranose-form

$C_6H_{12}O_6$ 180.157

An aq. soln. at 31° contains 38.5% α -pyr, 36% β -pyr, 11.5% α -fur, 14% β -fur, and 0.2% aldehyde. Readily forms 1,6-anhydride. For septanose-form see Idoseptanose, I-10.

D-form [5978-95-0]

Syrup. $[\alpha]_D^{13}$ +15.8 (c, 2.3 in H₂O).

Pentabenzyl: 1,2,3,4,5-Penta-O-benzyl-D-idose

[158420-42-9]
 $C_{41}H_{42}O_6$ 630.779

Oil. $[\alpha]_D^{20}$ -4.3 (c, 0.58 in $CHCl_3$).

Phenylosazone: See Hexose phenylosazones, H-90

 α -D-Pyranose-form [7282-82-8]

1,2,3,6-Tetra-Ac: 1,2,3,6-Tetra-O-acetyl- α -D-idopyranose

[18977-21-4]
 $C_{14}H_{20}O_{10}$ 348.306
 Mp 103-104°. $[\alpha]_D^{20}$ +63 (c, 1.0 in $CHCl_3$).

1,2,3,4,6-Penta-Ac: 1,2,3,4,6-Penta-O-acetyl- α -D-idopyranose

[16299-15-3]
 $C_{16}H_{22}O_{11}$ 390.343
 Mp 94-95°. $[\alpha]_D^{20}$ +55.2 (c, 0.8 in $CHCl_3$).

1,2,3,4,6-Pentabenzoyl: 1,2,3,4,6-Penta-O-benzoyl- α -D-idopyranose

[29884-70-6]
 $C_{41}H_{32}O_{11}$ 700.697
 Mp 233-234°. $[\alpha]_D^{20}$ +15 (c, 2.0 in $CHCl_3$).

4,6-O-Ethylidene, 1,2,3-tri-Ac: 1,2,3-Tri-O-acetyl-4,6-O-ethylidene- α -D-idopyranose

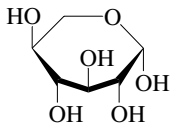
[19510-61-3]
 $C_{14}H_{20}O_9$ 332.307
 Mp 123-124°. $[\alpha]_D^{20}$ +55 (c, 2.0 in $CHCl_3$).

Me glycoside: Methyl α -D-idopyranoside

[35437-40-2]
 $C_7H_{14}O_6$ 194.184
 Syrup. $[\alpha]_D^{20}$ +101 (c, 2.8 in H₂O).

Me glycoside, 2,3,4,6-tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- α -D-idopyranoside

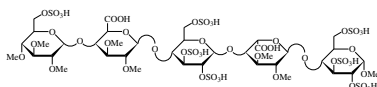
[92619-79-9]
 $C_{15}H_{22}O_{10}$ 362.333
 Mp 112-113°. $[\alpha]_D^{20}$ -64.1 (c, 1.56 in $CHCl_3$).

- Me glycoside, 4,6-benzylidene*: See Methyl 4,6-*O*-benzylideneidopyranoside, M-168
- β -D-Pyranose-form** [7283-02-5]
Me glycoside: Methyl β -D-idopyranoside [35437-43-5]
 $C_7H_{14}O_6$ 194.184
 $[\alpha]_D^{20}$ -49.2 (c, 2.5 in H_2O).
- L-form** [5934-56-5]
 $[\alpha]_D^{20}$ -12.35 (c, 1.0 in H_2O).
 2,3,4,6-Tetrabenzyl: 2,3,4,6-Tetra-*O*-benzyl-L-idose [78184-89-1]
 $C_{34}H_{36}O_6$ 540.655
 $[\alpha]_D$ -1 (c, 2.4 in $CHCl_3$).
- α -L-Pyranose-form** [39281-68-0]
 Syrup. $[\alpha]_D^{20}$ -17.4 (c, 3.6 in H_2O).
Me glycoside: Methyl α -L-idopyranoside [58650-83-2]
 $C_7H_{14}O_6$ 194.184
 $[\alpha]_D^{22}$ -75.5 (c, 0.9 in H_2O).
- β -L-Pyranose-form** [12773-33-0]
Me glycoside: Methyl β -L-idopyranoside [58650-82-1]
 $C_7H_{14}O_6$ 194.184
 $[\alpha]_D^{22}$ +88 (c, 1.4 in Me_2CO).
Me glycoside, 2,3-dibenzyl: Methyl 2,3-di-*O*-benzyl- β -L-idopyranoside [87392-25-4]
 $C_{21}H_{26}O_6$ 374.433
 $[\alpha]_D^{22}$ +86 (c, 1.2 in $CHCl_3$).
Me glycoside, 2,3-dibenzyl, 4-benzoyl: Methyl 4-*O*-benzoyl-2,3-di-*O*-benzyl- β -L-idopyranoside [87326-93-0]
 $C_{28}H_{30}O_7$ 478.541
 $[\alpha]_D^{22}$ -9 (c, 1.0 in $CHCl_3$).
Me glycoside, 2,3-dibenzyl, 6-trityl, 4-benzoyl: Methyl 2,3-di-*O*-benzyl-4-*O*-benzoyl-6-*O*-trityl- β -L-idopyranoside [87326-92-9]
 $C_{47}H_{44}O_7$ 720.86
 $[\alpha]_D^{22}$ +37 (c, 1.5 in $CHCl_3$).
- β -D-Furanose-form** [40461-75-4]
 1,2-*O*-Isopropylidene: See 1,2-*O*-Isopropylideneidose, I-69
- β -L-Furanose-form** [36574-15-9]
 1,2-*O*-Isopropylidene: See 1,2-*O*-Isopropylideneidose, I-69
 [41847-65-8, 41847-67-0]
 Wiggins, L.F. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 140 (synth, *D*-form)
 Shafizadeh, F. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 144 (synth, *L*-form)
 Paulsen, H. *et al.*, *Chem. Ber.*, 1967, **100**, 2822-2836 (synth, penta-Ac, *pmr*)
 Paulsen, H. *et al.*, *Chem. Ber.*, 1970, **103**, 2450-2462 (penta-benzoyl)
 Perlman, A.S. *et al.*, *Carbohydr. Res.*, 1972, **21**, 123-132 (glycosides)
 Parrish, F.W. *et al.*, *Carbohydr. Res.*, 1975, **45**, 73-83 (*L*-form)
 Helleur, R. *et al.*, *Carbohydr. Res.*, 1981, **89**, 83-90 (*L*-form, *L*-tetrabenzyl, α -L-Me pyr, β -L-Me pyr)
 Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (*cmr*)
 Ko, S.Y. *et al.*, *Science (Washington, D.C.)*, 1983, **220**, 949-951 (total synth, *L*-form)
- Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15-68 (*equilib*)
 Snyder, J.R. *et al.*, *J.O.C.*, 1986, **51**, 2694-2702 (*conformn*, *pmr*)
 Chiba, T. *et al.*, *Carbohydr. Res.*, 1988, **174**, 253-264 (2,3-dibenzyl derivs)
 Hirota, K. *et al.*, *Chem. Pharm. Bull.*, 1991, **39**, 2702-2705 (synth)
 Krülle, T. *et al.*, *Carbohydr. Res.*, 1994, **254**, 141-156 (penta-benzyl)
 Dondoni, A. *et al.*, *J.O.C.*, 1997, **62**, 6261-6267 (*L*-form, synth)
 Dromowicz, M. *et al.*, *Carbohydr. Res.*, 1998, **308**, 169-171 (*D*-form, synth)
 Takeuchi, M. *et al.*, *Synthesis*, 1999, 341-354 (*L*-form, synth)
 Tobiasson, F.L. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 959-974 (*nmr*, *conformn*)
- Idoseptanose, 9CI** **I-10**
-  β -L-form
 $C_6H_{12}O_6$ 180.157
- β -L-form**
 1,2-*O*-Isopropylidene: 1,2-*O*-Isopropylidene- β -L-idoseptanose [132677-31-7]
 $C_9H_{16}O_6$ 220.222
 Cryst. ($MeOH$). Mp 165-166°. $[\alpha]_D^{24}$ -13.4 (c, 0.85 in H_2O).
 1,2-*O*-Isopropylidene, tri-Ac: 3,4,5-Tri-*O*-acetyl-1,2-*O*-isopropylidene- β -L-idoseptanose [132677-32-8]
 $C_{15}H_{22}O_9$ 346.333
 Plates ($MeOH$ aq.). Mp 138-139°. $[\alpha]_D^{22}$ +35.7 (c, 1.1 in $CHCl_3$).
 1,2:3,4-Di-*O*-isopropylidene: 1,2:3,4-Di-*O*-isopropylidene- β -L-idoseptanose [70056-88-1]
 $C_{12}H_{20}O_6$ 260.286
 Cryst. ($EtOAc$). Mp 179-180°. $[\alpha]_D^{22}$ -20.4 (c, 1.2 in $CHCl_3$).
 1,2:3,4-Di-*O*-isopropylidene; 5-Ac: 5-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene- β -L-idoseptanose [70056-90-5]
 $C_{14}H_{22}O_7$ 302.324
 Prisms (C_6H_6 /petrol). Mp 163-164°. $[\alpha]_D^{22}$ +4.9 (c, 1.2 in $CHCl_3$).
 1,2:3,4-Di-*O*-isopropylidene, 5-benzoyl: 5-*O*-Benzoyl-1,2:3,4-di-*O*-isopropylidene- β -L-idoseptanose [132677-28-2]
 $C_{19}H_{24}O_7$ 364.394
 Plates (petrol). Mp 155-156°. $[\alpha]_D^{26}$ +37.6 (c, 0.95 in $CHCl_3$).
 1,2:3,4-Di-*O*-isopropylidene, 5-tosyl: 1,2:3,4-Di-*O*-isopropylidene-5-tosyl- β -L-idoseptanose [132677-30-6]
 $C_{19}H_{26}O_8S$ 414.476
 Needles (C_6H_6 /petrol). Mp 109-110°. $[\alpha]_D$ +15.8 (c, 1.47 in $CHCl_3$).
 1,2:4,5-Di-*O*-isopropylidene: 1,2:4,5-Di-*O*-isopropylidene- β -L-idoseptanose [132677-35-1]
 $C_{12}H_{20}O_6$ 260.286
- Cryst. (C_6H_6 /petrol). Mp 157-159°. $[\alpha]_D^{20}$ -2.3 (c, 1 in $CHCl_3$).
 1,2:4,5-Di-*O*-isopropylidene, 3-Ac: 3-*O*-Acetyl-1,2:4,5-di-*O*-isopropylidene- β -L-idoseptanose [132677-36-2]
 $C_{14}H_{22}O_7$ 302.324
 Needles (C_6H_6). Mp 121-122°. $[\alpha]_D^{22}$ +34.1 (c, 0.4 in $CHCl_3$).
Me glycoside: Methyl β -L-idoseptanoside [178812-65-2]
 $C_7H_{14}O_6$ 194.184
 Viscous syrup.
Me glycoside, tetra-Ac: Methyl 2,3,4,5-tetra-*O*-acetyl- β -L-idoseptanoside [178812-66-3]
 $C_{15}H_{22}O_{10}$ 362.333
 Syrup. Bp_{0.1} 120° (bath). $[\alpha]_D^{22}$ +118.1 (c, 0.8 in $CHCl_3$).
Me glycoside, tetrabenzoyl: Methyl 2,3,4,5-tetra-*O*-benzoyl- β -L-idoseptanoside [178812-67-4]
 $C_{35}H_{30}O_{10}$ 610.616
 Needles ($MeOH$). Mp 129-130°. $[\alpha]_D^{22}$ +120.4 (c, 1.6 in $CHCl_3$).
*Me glycoside, 3,4-*O*-isopropylidene*: Methyl 3,4-*O*-isopropylidene- β -L-idoseptanoside [178812-60-7]
 $C_{10}H_{18}O_6$ 234.249
 Prisms ($EtOAc$). Mp 162°. $[\alpha]_D^{22}$ +76.5 (c, 1.1 in H_2O).
*Me glycoside, 3,4-*O*-isopropylidene, di-Ac*: Methyl 2,5-di-*O*-acetyl-3,4-*O*-isopropylidene- β -L-idoseptanoside [178812-61-8]
 $C_{14}H_{22}O_8$ 318.323
 Needles (C_6H_6 /petrol). Mp 75-76°. $[\alpha]_D^{22}$ +137.9 (c, 0.8 in $CHCl_3$).
*Me glycoside, 3,4-*O*-isopropylidene, 2-benzoyl*: Methyl 2-*O*-benzoyl-3,4-*O*-isopropylidene- β -L-idoseptanoside [178812-62-9]
 $C_{17}H_{22}O_7$ 338.357
 Cryst. ($EtOAc$ /petrol). Mp 125°. $[\alpha]_D^{22}$ +90 (c, 1.4 in $CHCl_3$).
*Me glycoside, 3,4-*O*-isopropylidene, dibenzoyl*: Methyl 2,5-di-*O*-benzoyl-3,4-*O*-isopropylidene- β -L-idoseptanoside [178812-63-0]
 $C_{24}H_{26}O_8$ 442.465
 Needles ($EtOH$). Mp 182-188°. $[\alpha]_D^{21}$ +141.2 (c, 0.8 in $CHCl_3$).
*Me glycoside, 2,3:4,5-di-*O*-isopropylidene*: Methyl 2,3:4,5-di-*O*-isopropylidene- β -L-idoseptanoside [178812-68-5]
 $C_{13}H_{22}O_6$ 274.313
 Cryst. (petrol). Mp 90°. $[\alpha]_D^{23}$ +106.8 (c, 0.8 in $CHCl_3$).
- α -L-form**
Me glycoside, 2,3,4,5-tetra-Ac: Methyl 2,3,4,5-tetra-*O*-acetyl- α -L-idoseptanoside [86651-68-5]
 $C_{15}H_{22}O_{10}$ 362.333
 [178812-70-9, 178812-71-0, 178812-72-1]
 James, V.J. *et al.*, *Cryst. Struct. Commun.*, 1982, **11**, 1933-1938 (*Me* α -L-pyr tetra Ac, *cryst struct*)
 Driver, G.E. *et al.*, *Aust. J. Chem.*, 1990, **43**, 2063-2081 (β -L isopropylidene derivs)

Craig, D.C. *et al.*, *Carbohydr. Res.*, 1996, **284**, 249-263; 265-270 (synth, pmr, cmr, cryst struct, β -L-Me gly derivs)

Idraparinix

SR 34006. SanOrg 34006
[162610-17-5]



$C_{38}H_{64}O_{49}S_7$ 1529.356

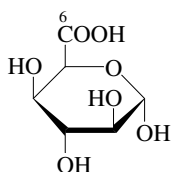
Synth. pentasaccharide. Antithrombotic agent. Factor Xa inhibitor. Sulfated polysaccharide related to SR 90107.

Nona-Na salt: Idraparinix sodium, INN
[149920-56-9]
[α]_D²⁰ +55 (c, 1 in H₂O).

Eur. Pat., 1993, 529 715, (AKZO, Elf Sanofi); CA, **119**, 160723s (synth, activity)
Westerduin, P. *et al.*, *Bioorg. Med. Chem.*, 1994, **2**, 1267-1280 (synth, activity)
Herbert, J.M. *et al.*, *Blood*, 1998, **91**, 4197-4205 (pharmacol)
Bootsma, J. *et al.*, *Magn. Reson. Chem.*, 2001, **39**, 288-293 (pmr, cmr, conformn, bibl)
Diaz-Ricart, M. *et al.*, *Drugs of the Future*, 2002, **27**, 639-644 (rev)

Iduronic acid

[3402-98-0]



α -D-Pyranose-form

$C_6H_{10}O_7$ 194.141

D-form [21675-53-6]

[α]_D -32 (H₂O).

6,3-Lactone: D-Idurono-1,4-lactone.

D-Idurone

$C_6H_8O_6$ 176.126

[α]_D²¹ -30 (c, 1.5 in H₂O).

 α -D-Pyranose-form

Me glycoside, Me ester: Methyl (methyl α -D-idopyranosid)uronate

$C_8H_{14}O_7$ 222.194

Syrup. [α]_D²² +61 (c, 1.5 in MeOH).

 β -D-Pyranose-form

Me glycoside, Me ester: Methyl (methyl β -D-idopyranosid)uronate

$C_8H_{14}O_7$ 222.194

Cryst. (EtOH/hexane). Mp 168-170°.

[α]_D²² -86 (c, 1.1 in MeOH).

L-form

Constit. of Heparin, Dermatan sulfate and the type-specific polysaccharide of *Clostridium perfringens*. Also a component of Protuberic acid, P-100.

Cryst. (MeOH/EtOAc).

Mp 131-132°. [α]_D²² +37 \rightarrow +33 (c, 3.0 in H₂O).

Brucine salt: Mp 160-161° dec.

6,3-Lactone: L-Idurono-1,4-lactone.

L-Idurone

$C_6H_8O_6$ 176.126

[α]_D²⁵ +30 (c, 1.0 in H₂O).

6,3-Lactone, 1,2-O-isopropylidene: 1,2-O-

Isopropylidene-L-idurono-1,4-lactone

$C_9H_{12}O_6$ 216.19

Cryst. (EtOAc/petrol). Mp 137-138°.

[α]_D²⁶ +91 (c, 1.82 in Me₂CO).

L-Pyranose-form

3-Benzyl, Me ester: Methyl 3-O-benzyl-L-idopyranuronate

$C_{14}H_{18}O_7$ 298.292

Cryst. (EtOAc). Mp 127-129°. [α]_D²³ +13

(c, 1 in MeOH).

 α -L-Pyranose-form

Tetra-Ac, Me ester: Methyl 1,2,3,4-tetra-O-acetyl- α -L-idopyranuronate

$C_{15}H_{20}O_{11}$ 376.316

Cryst. (EtOH). Mp 118-119°. [α]_D -88

(c, 1.00 in CHCl₃).

Me glycoside, Me ester: Methyl (methyl α -L-idopyranosid)uronate

$C_8H_{14}O_7$ 222.194

Syrup. [α]_D²² -59 (c, 1.4 in MeOH).

Me glycoside, tri-Ac, Me ester: Methyl (methyl 2,3,4-tri-O-acetyl- α -L-idopyranosid)uronate

$C_{14}H_{20}O_{10}$ 348.306

[α]_D -56.5 (CHCl₃).

Me glycoside, tri-Me, Me ester: Methyl (methyl 2,3,4-tri-O-methyl- α -L-idopyranosid)uronate

$C_{11}H_{20}O_7$ 264.275

[α]_D -54 (c, 0.30 in CHCl₃).

 β -L-Pyranose-form

Tetra-Ac, Me ester: Methyl 1,2,3,4-tetra-O-acetyl- β -L-idopyranuronate

$C_{15}H_{20}O_{11}$ 376.316

[α]_D +12.3 (c, 0.5 in CHCl₃).

Me glycoside, 2,3-dibenzyl, Me ester:

Methyl (methyl 2,3-di-O-benzyl- β -L-idopyranosid)uronate

$C_{22}H_{26}O_7$ 402.443

Amorph. [α]_D +109 (c, 2.7 in CHCl₃).

Me glycoside, Me ester: Methyl

(β -L-idopyranosid)uronate

$C_8H_{14}O_7$ 222.194

Cryst. (EtOH). Mp 170-172°. [α]_D²² +90

(c, 0.46 in MeOH).

Me glycoside, tri-Ac, Me ester: Methyl (methyl 2,3,4-tri-O-acetyl- β -L-idopyranosid)uronate

$C_{14}H_{20}O_{10}$ 348.306

Plates (CHCl₃/toluene). Mp 120-126°.

[α]_D +90 (c, 0.4 in CHCl₃).

 α -L-Furanose-form

3-Benzyl, tri-Ac, Me ester: Methyl 1,2,5-tri-O-acetyl-3-O-benzyl- α -L-idofuranuronate

$C_{20}H_{24}O_{10}$ 424.404

Syrup. [α]_D²³ +5 (c, 1 in CHCl₃).

 β -L-Furanose-form

3-Benzyl, tri-Ac, Me ester: Methyl 1,2,5-tri-O-acetyl-3-O-benzyl- β -L-idofuranuronate

$C_{20}H_{24}O_{10}$ 424.404

[α]_D +88 (c, 1 in CHCl₃).

1,2-Isopropylidene, 3-benzyl, Me ester:

Methyl 3-O-benzyl-1,2-O-isopropylidene- β -L-idofuranuronate

$C_{17}H_{22}O_7$ 338.357

Amorph. [α]_D²³ -33 (c, 1.9 in CHCl₃).

[32449-81-3]

Shafizadeh, F. *et al.*, *J.A.C.S.*, 1955, **77**, 2568

(L-form, synth, L-lactone isopropylidene)

Wolfson, M.L. *et al.*, *Carbohydr. Res.*, 1969, **10**,

259 (L-form, isol)

Sowa, W. *et al.*, *Can. J. Chem.*, 1971, **49**, 1176

(D-lactone, L-lactone)

Lee, L. *et al.*, *Carbohydr. Res.*, 1974, **33**, 387

(L-form, occur)

Malmstrom, A. *et al.*, *J. Biol. Chem.*, 1975, **250**,

3419 (biosynth)

Miyazaki, T. *et al.*, *Carbohydr. Res.*, 1979, **77**,

281-284 (occur)

Baggett, N. *et al.*, *Carbohydr. Res.*, 1982, **108**,

59 (β -L-fur derivs)

Jacquinet, J.C. *et al.*, *Carbohydr. Res.*, 1984,

130, 221 (L-Me pyr benzyl, L-fur derivs)

Chiba, T. *et al.*, *Carbohydr. Res.*, 1986, **151**, 379

(α -L-pyr derivs, β -L-pyr derivs)

Chida, N. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**,

555-570 (Me glycoside Me esters)

Whitfield, D.H. *et al.*, *J. Carbohydr. Chem.*,

1991, **10**, 329-348 (Me β -L Pyr tri-Ac Me

ester, synth, cryst struct)

Medaković, D. *et al.*, *Carbohydr. Res.*, 1994,

253, 299 (β -L-tetra-Ac Me ester)

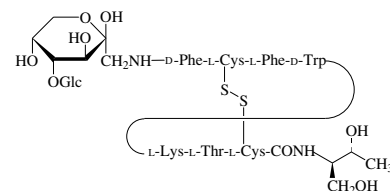
Dilhas, A. *et al.*, *Carbohydr. Res.*, 2003, **338**,

681-686 (3-benzyl derivs, bibl)

Ilatreotide, INN

SDZ CO 611

[119719-11-8]



$C_{61}H_{86}N_{10}O_{20}S_2$ 1343.537

Orally active pituitary and gut hormonal secretolytic agent. Potential role in treating gastroenteropancreatic tumours. Glycated analogue of Somatostatin.

Ac: [119785-17-0]

Solid. [α]_D²⁰ -7.9 (c, 0.71 in AcOH).

Pat. Coop. Treaty (WIPO), 1988, 88 02 756,

(Sandoz); CA, **110**, 213349x (synth, activity)

Albert, R. *et al.*, *Life Sci.*, 1993, **53**, 517 (synth,

pharmacol)

Shiratori, K. *et al.*, *Pancreas*, 1993, **8**, 471

(pharmacol)

Fricker, G. *et al.*, *Hepatology (St. Louis)*, 1994,

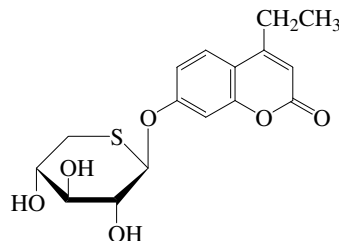
20, 191 (pharmacokinetic)

Nelson-Piercy, C. *et al.*, *J. Clin. Endocrinol.*

Metab., 1994, **78**, 329 (pharmacol, man)

Iliparcil

4-Ethyl-7-[(5-thio-β-D-xylopyranosyl)oxy]-2*H*-1-benzopyran-2-one, 9CI.
4-Ethyl-7-[(5-thio-β-D-xylopyranosyl)oxy]coumarin
[137214-72-3]



C₁₆H₁₈O₆S 338.381
Antithrombotic agent.

Tri-O-Ac: [137214-73-4]

C₂₂H₂₄O₉S 464.492

Cryst. (EtOAc/Et₂O). Mp 186-188°.
[α]_D -63 (c, 0.8 in CH₂Cl₂).

Eur. Pat., 1991, 421 829, (Fournier Innovation et Synergie); CA, 115, 256557j (synth, pharmacol)

Bellamy, F. et al., Eur. J. Med. Chem. (Chim. Ther.), Suppl., 1995, 30, 101s-115s (synth, pharmacol)

Chicaud, P. et al., Haemostasis, 1998, 28, 313-320 (pharmacol)

Collette, Y. et al., Carbohydr. Res., 1999, 318, 162-166 (tri-Ac, synth)

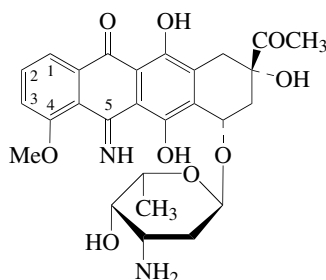
5-Iminodaunomycin

8-Acetyl-10-[(3-amino-2,3,6-trideoxy-α-L-lyxo-hexopyranosyl)oxy]-7,9,10,12-tetrahydro-6,8,11-trihydroxy-12-imino-1-methoxy-5(8*H*)-naphthacenone, 9CI.

5-Iminodaunorubicin

[72983-78-9]

[67324-99-6]



C₂₇H₃₀N₂O₉ 526.542

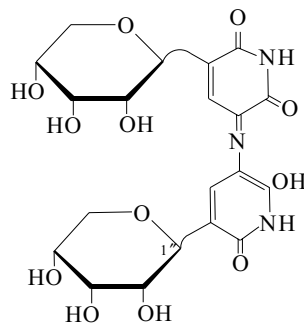
Various numbering systems in use.

Anthracene compd. with antitumour activity, having less cardiotoxicity than daunomycin. Blue-violet powder + 1H₂O (as hydrochloride). Mp 175-178° (dec.) (hydrochloride monohydrate).

Tong, G.L. et al., J. Med. Chem., 1979, 22, 36-39 (synth, uv, pmr, cmr)

I-14
Indochrome A

[24723-51-1]



C₂₀H₂₃N₃O₁₂ 497.415

Nucleoside-type antibiotic. Main component of blue pigment Amylocyanin from *Streptomyces coelicolor*. Also isol. from *Arthrobacter polychromogenes*. Sol. H₂O, DMF; poorly sol. MeOH, hexane. Mp 330°. Minor components of Indochrome are the isomers Indochrome BI which has one α-D-ribofuranosyl residue, and Indochrome BII which has one β-D-ribofuranosyl residue. λ_{max} 255; 340; 586 (H₂O) (Berdy). λ_{max} 255; 340; 596 (pH 13 buffer) (Berdy). λ_{max} 240; 255; 570 (pH 2 buffer) (Berdy).

[24723-52-2, 24723-53-3]

Knackmuss, H.J. et al., Eur. J. Biochem., 1969, 10, 90 (isol)

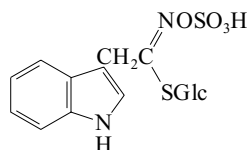
Knackmuss, H.J. et al., Annalen, 1970, 736, 68 (synth, struct)

Christ, B.G. et al., Z. Naturforsch., B, 1977, 32, 1195 (isol, struct)

3-Indolylmethyl glucosinolate

Glucobrassicin

[4356-52-9]



C₁₆H₂₀N₂O₉S₂ 448.474

Constit. of *Brassica* and *Raphanus* spp., e.g. rape (*Brassica napus* var. *napus*) and Brussels sprouts (*Brassica oleracea* var. *gemmifera*). Minor constit. of *Moricandia arvensis* (Cruciferae).

Mp 149-150° (as Me₄N salt). [α]_D²² -13.3 (Me₄N salt).

N-Ac: (1-Acetyl-1*H*-indol-3-yl)methyl glucosinolate. N-Acetylglucobrassicin
[103951-50-4]

C₁₈H₂₂N₂O₁₀S₂ 490.511

Present in *Tovaria pendulata* seedlings.

N-Sulfonic acid: (1-Sulfo-1*H*-indol-3-yl)-methyl glucosinolate, 9CI. Sulfoglucobrassicin
[29702-28-1]

C₁₆H₂₀N₂O₁₂S₃ 528.538

Isol. from woad (*Isatis tinctoria*). Cryst. (EtOH aq.) (as Me₄N salt). Mp 156° dec. (Me₄N salt).

I-16

N-Methoxy: Neoglucobrassicin. N-Methoxyglucobrassicin
[5187-84-8]

C₁₇H₂₂N₂O₁₀S₂ 478.5

Widespread in *Brassica* spp. and found in the Cruciferae, Tovariaceae, Cappariaceae and Resedaceae.

Mp 175° dec. (as brucine salt).

N,4-Dimethoxy: 1,4-Dimethoxyglucobrassicin

C₁₈H₂₄N₂O₁₁S₂ 508.526

Isol. from the roots of *Barbarea vulgaris* ssp. *arcuata*.

Gmelin, R. et al., Suom. Kemistil. B, 1961, 34, 15 (isol)

Gmelin, R. et al., Acta Chem. Scand., 1962, 16, 1378 (Neoglucobrassicin)

Gmelin, R. et al., CA, 1965, 63, 5584

Schraudolf, H. et al., Experientia, 1965, 21, 520 (occur)

Elliott, M.C. et al., Phytochemistry, 1970, 9, 1629 (sulfonic acid)

Fenwick, G.R. et al., Biomed. Mass Spectrom., 1980, 7, 410 (ms)

Hanley, A.B. et al., J. Sci. Food Agric., 1983, 34, 869 (isol)

Cox, I.J. et al., Carbohydr. Res., 1984, 132, 323 (cmr, pmr)

Schraudolf, H. et al., Z. Naturforsch., C, 1986, 41, 526 (acetyl)

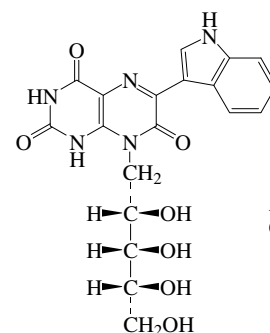
Belkhiri, A. et al., Phytochemistry, 1990, 29, 1315 (isol, uv, pmr)

Viaud, M.C. et al., Tet. Lett., 1990, 31, 1417 (synth)

Agerbirk, N. et al., J. Agric. Food Chem., 2001, 49, 1502-1507 (1,4-Dimethoxyglucobrassicin)

6-(1*H*-Indol-3-yl)-8-(2,3,4,5-tetrahydroxypentyl)-2,4,7-(1*H*,3*H*,8*H*)-pteridinetrione, 9CI

[23140-55-8]



Absolute Configuration

C₁₉H₁₉N₅O₇ 429.388

D-ribo-form

Isol. from *Pseudomonas ovalis*.

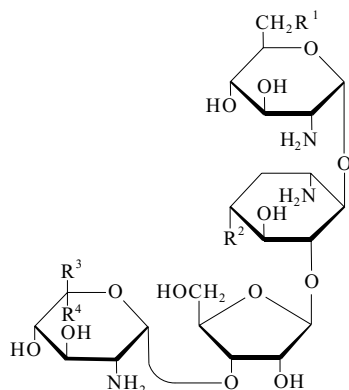
Yellow cryst. (AcOH aq.).

Mp 285-286° dec.

Macnult, W.S. et al., Biochemistry, 1969, 8, 1370
Suzuki, Z. et al., Bull. Chem. Soc. Jpn., 1971, 44, 1869

Inosamycin A**I-19**

1-Deamino-1-hydroxyneomycin B. BMY 28162. BU 2659. Antibiotic BMY 28162. Antibiotic Bu 2659
[91421-97-5]



$R^1 = \text{NH}_2$, $R^2 = \text{OH}$, $R^3 = \text{H}$, $R^4 = \text{CH}_2\text{NH}_2$

$\text{C}_{23}\text{H}_{45}\text{N}_5\text{O}_{14}$ 615.634

Aminoglycoside antibiotic. Prod. by *Streptomyces hygroscopicus*. Shows broad spectrum of antibacterial activity. Sol. H_2O , MeOH; poorly sol. butanol, hexane. Similar to Neomycin B, N-23.
► LD_{50} (mus, ivn) 110 mg/kg, LD_{50} (mus, ipr) 460 mg/kg, LD_{50} (mus, scu) 720 mg/kg. NM7524400

Sulfate (1:2.5):

Amorph. + $2\text{H}_2\text{O}$. Mp 210-215° dec. $[\alpha]_{\text{D}}^{25} +52$ (c, 0.6 in H_2O).

Penta-N-Ac:

Cryst. (Me_2CO). Mp 166-174°. $[\alpha]_{\text{D}}^{26.5} +41$ (c, 0.6 in MeOH).

Tsunakawa, M. *et al.*, *J. Antibiot.*, 1985, **38**, 1302; 1313 (*isol, struct, props*)

Inosamycin B**I-20**

BMY 28163. Antibiotic BMY 28163
[91465-52-0]

As Inosamycin A, I-19 with $R^1 = \text{NH}_2$, $R^2 = \text{OH}$, $R^3 = \text{CH}_2\text{NH}_2$, $R^4 = \text{H}$

$\text{C}_{23}\text{H}_{45}\text{N}_5\text{O}_{14}$ 615.634

Aminoglycoside antibiotic. Prod. by *Streptomyces hygroscopicus*. Shows broad spectrum antibacterial activity. Amorph. solid + $2.5\text{H}_2\text{O}$ (as sulfate salt). Sol. H_2O , MeOH; poorly sol. butanol, hexane. Mp 200-206° dec. (sulfate). $[\alpha]_{\text{D}}^{25} +73$ (c, 0.6 in H_2O).

► LD_{50} (mus, scu) 720 mg/kg.

Tsunakawa, M. *et al.*, *J. Antibiot.*, 1985, **38**, 1302; 1313 (*isol, struct, props*)

Inosamycin C**I-21**

BMY 28164. Antibiotic BMY 28164. 1-Deamino-1-hydroxyparomomycin B
[91421-96-4]

As Inosamycin A, I-19 with $R^1 = R^2 = \text{OH}$, $R^3 = \text{H}$, $R^4 = \text{CH}_2\text{NH}_2$

$\text{C}_{23}\text{H}_{44}\text{N}_4\text{O}_{15}$ 616.618

Aminoglycoside antibiotic. Prod. by *Streptomyces hygroscopicus*. Shows broad spectrum antibacterial activity.

Amorph. solid + $3\text{H}_2\text{O}$ (as sulfate salt). Sol. H_2O , MeOH; poorly sol. butanol, hexane.

Mp 195-201° dec. (sulfate). Similar to Paromomycin, P-13.

Tsunakawa, M. *et al.*, *J. Antibiot.*, 1985, **38**, 1302; 1313 (*isol, struct, props*)

Inosamycin D**I-22**

BMY 28165. Antibiotic BMY 28165
[91421-98-6]

As Inosamycin A, I-19 with $R^1 = \text{NH}_2$, $R^2 = \text{OH}$, $R^3 = \text{H}$, $R^4 = \text{CH}_2\text{OH}$

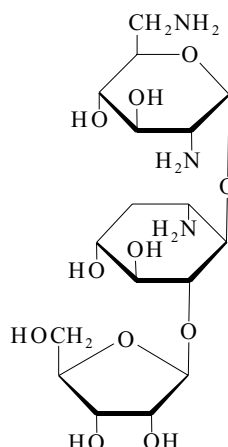
$\text{C}_{23}\text{H}_{44}\text{N}_4\text{O}_{15}$ 616.618

Aminoglycoside antibiotic. Prod. by *Streptomyces hygroscopicus*. Shows broad spectrum antibacterial activity. Amorph. solid + $3\text{H}_2\text{O}$ (disulfate salt). Sol. H_2O , MeOH; poorly sol. butanol, hexane. Mp 193-204° dec. (disulfate). $[\alpha]_{\text{D}}^{25} +52.5$ (c, 0.6 in H_2O).

Tsunakawa, M. *et al.*, *J. Antibiot.*, 1985, **38**, 1302; 1313 (*isol, struct, props*)

Inosamycin E**I-23**

1-Deamino-1-hydroxyribostamycin
[91465-53-1]



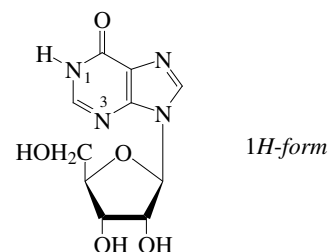
$\text{C}_{17}\text{H}_{33}\text{N}_3\text{O}_{11}$ 455.461

Aminoglycoside antibiotic. Prod. by *Streptomyces hygroscopicus*. Shows broad spectrum of antibacterial activity. Amorph. solid + $2\frac{1}{2}\text{H}_2\text{O}$ (sesquisulfate salt). Sol. H_2O ; fairly sol. MeOH; poorly sol. butanol, hexane. Mp 195-218° dec. (sulfate). $[\alpha]_{\text{D}}^{25} +47$ (c, 0.37 in H_2O). Related to Ribostamycin, R-143.

Tsunakawa, M. *et al.*, *J. Antibiot.*, 1985, **38**, 1302; 1313 (*isol, struct, props*)

Inosine, 9CI, INN, JAN**I-24**

1,9-Dihydro-9-β-D-ribofuranosyl-6H-purin-6-one, 9CI. 9-β-D-Ribofuranosylhypoxanthine, 8CI. Hypoxanthine riboside. Hypoxanthosine. Aminosin†. Carnine. Delimmun. Inosie. Oxiamine. Trophicardyl
[58-63-9]



$\text{C}_{10}\text{H}_{12}\text{N}_4\text{O}_5$ 268.229

Present in meat extracts and sugar beet. Also prod. by microorganisms, e.g. *Bacillus subtilis*, *E. coli*, *Saccharomyces cerevisiae*, *Fusarium* spp. A minor constit. of t-RNAs. Activates cellular functions. Cardiotonic. Suggested to be capable of forming base pairs with Adenine, Cytosine or Uracil thus contributing to genetic code degeneracy by causing stable mispairings. Used to treat cardiac disorders. Mp 215° dec. $[\alpha]_{\text{D}}^{18} -49.2$ (c, 0.9 in H_2O). $\text{pK}_{\text{a}1}$ 1.5; $\text{pK}_{\text{a}2}$ 8.85; $\text{pK}_{\text{a}3}$ 12.5 (25°). Log P -3.76 (calc). λ_{max} 249 (ε 12200) (H_2O) (pH 6).

► Probable mutagen. Exp. reprod. effects (very high dose) LD_{50} (mus, ivn) 3000 mg/kg. NM7460000

Salt with 1-(dimethylamino)-2-propanol 4-acetamidobenzoate: **Inosine pranobex, BAN, JAN. Imunovir. Inosiplex. Isoprinosine. Methisoprinol. Prinosine. Many other names**

[36703-88-5] Antiviral, immunostimulant. Used in the treatment of HIV infection.

► NM7461240

5'-Phosphate: See Inosinic acid, I-26

5'-Diphosphate: [86-04-4]

[71672-86-1]

$\text{C}_{10}\text{H}_{14}\text{N}_4\text{O}_{11}\text{P}_2$ 428.188

Mp 230-231° dec. (as tri-Na salt).

5'-Triphosphate: Inosine 5'-(tetrahydrogen triphosphate). Inosine triphosphate. ITP [132-06-9]

$\text{C}_{10}\text{H}_{15}\text{N}_4\text{O}_{14}\text{P}_3$ 508.168

No phys. props. reported.

3'-Ac: [28224-91-1]

$\text{C}_{12}\text{H}_{14}\text{N}_4\text{O}_6$ 310.266

Cryst. (MeOH). Mp 208.5-210°.

5'-Ac: [28526-32-1]

$\text{C}_{12}\text{H}_{14}\text{N}_4\text{O}_6$ 310.266

Solid (MeOH). Mp 228-230°.

2',3'-Di-Ac: [4152-78-7]

$\text{C}_{14}\text{H}_{16}\text{N}_4\text{O}_7$ 352.303

Cryst. (MeOH). Mp 212-213°.

$[\alpha]_{\text{D}}^{45} -38.6$ (c, 1 in MeOH).

2',3',5'-Tri-Ac: [3181-38-2]

$\text{C}_{16}\text{H}_{18}\text{N}_4\text{O}_8$ 394.34

Mp 194-195° Mp 236°.

- 3-Me, 5-O- α -D-galactopyranoside:
5-O- α -D-Galactopyranosyl-3-O-methyl-D-chiro-inositol
C₁₃H₂₄O₁₁ 356.326
Constit. of jojoba meal, *Simmondsia chinensis*.
- 3-O-[α -D-Galactopyranosyl-(1 \rightarrow 6)- α -D-galactopyranoside]: **Fagopyritol A₂**
C₁₈H₃₂O₁₆ 504.441
Constit. of *Fagopyrum esculentum*.
- 3-O-[α -D-Galactopyranosyl-(1 \rightarrow 6)- α -D-galactopyranosyl-(1 \rightarrow 6)- α -D-galactopyranoside]: **Fagopyritol A₃**
C₂₄H₄₂O₂₁ 666.583
Constit. of *Fagopyrum esculentum* (buckwheat).

L-form

- 1-Inositol. *Laevoinositol*. *Levoinositol*
[551-72-4]
Widely distributed in higher plants predominantly as its monomethyl ether.
Mp 246°. [α]_D -65 (H₂O).
- 1,2,3,5-Tetra-O-angeloyl: [82668-02-8]
C₂₆H₃₆O₁₀ 508.564
Constit. of *Inula cappa*. Gum. [α]_D²⁴ +4.4 (c, 1 in CHCl₃).
- 1,2,4,5-Tetra-O-angeloyl: [82668-03-9]
C₂₆H₃₆O₁₀ 508.564
Constit. of *Inula cappa*.
- 1,5-Bis(4-hydroxyphenylacetyl):
1,5-Bis(4-hydroxyphenylacetyl)-L-chiro-inositol
[245043-95-2]
C₂₂H₂₄O₁₀ 448.426
Constit. of *Taraxacum linearisquameum*. Cryst.
Mp 190-193° dec. [α]_D²⁰ -20 (c, 0.13 in H₂O).
- 1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-L-chiro-inositol
[65556-81-2]
C₁₂H₂₀O₆ 260.286
Mp 153°. [α]_D²⁰ -4.7 (c, 1.2 in EtOH).
- 1,2:5,6-Di-O-isopropylidene, 3,4-di-O-acetyl-1,2:5,6-di-O-isopropylidene-L-chiro-inositol
[39110-60-6]
C₁₆H₂₄O₈ 344.361
Mp 129°. [α]_D²² -116.5 (c, 2.1 in CHCl₃).
- 1,2:5,6-Di-O-isopropylidene, 3,4-ditosyl: 1,2:5,6-Di-O-isopropylidene-3,4-di-O-tosyl-L-chiro-inositol
[18391-46-3]
C₂₆H₃₂O₁₀S₂ 568.665
Mp 146-147°. [α]_D¹⁴ -79.5 (c, 2.6 in CHCl₃).
- 1,2:3,4:5,6-Tri-O-isopropylidene: 1,2:3,4:5,6-Tri-O-isopropylidene-L-chiro-inositol
[90694-04-5]
C₁₅H₂₄O₆ 300.351
Mp 213-214°. [α]_D²⁵ +38.1 (c, 1.0 in CHCl₃).
- 1-Me: 1-O-Methyl-L-chiro-inositol
[17405-65-1]
C₇H₁₄O₆ 194.184
Mp 207°. [α]_D¹⁸ -58 (c, 1.5 in H₂O).
- 1-Me, penta-Ac: 2,3,4,5,6-Penta-O-acetyl-1-O-methyl-L-chiro-inositol
[17230-39-6]
C₁₇H₂₄O₁₁ 404.37
Mp 111°. [α]_D¹⁸ -31 (c, 3.8 in EtOH).

- 2-Me: 2-O-Methyl-L-chiro-inositol.
L-Quebrachitol. *Brahol*
[642-38-6]
C₇H₁₄O₆ 194.184
Widely distributed in plants, isol. from rubber latex. Prod. on large scale from *Hevea brasiliensis*. Synth. precursor.
Mp 191°. [α]_D¹⁹ -80.3 (H₂O). Struct. of *Brahol* revised in 2004.
- 2-Me, 5,6-O-isopropylidene: 5-O-Methyl-1,2-O-isopropylidene-L-chiro-inositol, 9CI. 5,6-O-isopropylidene-2-O-methyl-L-chiro-inositol
[17230-37-4]
C₁₀H₁₈O₆ 234.249
Mp 134-135°. [α]_D²³ -88.8 (c, 1.6 in H₂O).
- 2-Me, 3,4:5,6-di-O-isopropylidene: 3,4:5,6-Di-O-isopropylidene-2-O-methyl-L-chiro-inositol
[58769-23-6]
C₁₃H₂₂O₆ 274.313
Mp 72°. [α]_D²⁰ -8.2 (c, 2 in CHCl₃).
- 3-Me: 3-O-Methyl-L-chiro-inositol.
L-Pinitol
[3559-00-0]
C₇H₁₄O₆ 194.184
Present in tarragon (*Artemisia dracunculus*) and other *Artemisia* spp. Shows antifungal activity.
Mp 186°. [α]_D -65 (c, 2 in H₂O).
- 1-O-(2-Methylbutanoyl), 2-O-(2-methylpropanoyl), 6-Ac: [132536-75-5]
C₁₇H₂₈O₉ 376.403
Constit. of *Hymenoxys biennis*. Gum. Tentative identification of substis.
- 1,2-Bis-O-(2-methylbutanoyl), 6-Ac: [132536-76-6]
C₁₈H₃₀O₉ 390.43
Constit. of *Hymenoxys biennis*. Gum. Tentative identification of substis.
- 5-O-(3-Methyl-2-butanoyl), 3-O-(2-methylbutanoyl), 1-O-(2-methylpropanoyl): [129744-03-2]
C₂₀H₃₂O₉ 416.467
Constit. of *Hymenoxys texana*.
- 5-O-(3-Methyl-2-butanoyl), 1,3-bis-O-(2-methylbutanoyl):
C₂₁H₃₄O₉ 430.494
Constit. of *Hymenoxys texana*.

(±)-form

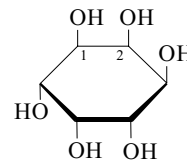
- Hexa-Ac: Hexa-O-acetyl-DL-chiro-inositol
[70878-34-1]
C₁₈H₂₄O₁₂ 432.38
Cryst. (Et₂O/hexane). Mp 113-114°.
- Anderson, A.B. et al., *J.A.C.S.*, 1952, **74**, 1479-1480 (*D-Pinitol*, struct)
- Angyal, S.J. et al., *J.C.S.*, 1952, 686-695 (*Pinitol*, *Quebrachitol*, struct)
- Angyal, S.J. et al., *J.A.C.S.*, 1955, **77**, 4343-4346 (*L-form 1-Me*, synth)
- Plouvier, V. et al., *C. R. Hebd. Seances Acad. Sci.*, 1956, **243**, 1913-1915 (*L-Pinitol*, isol)
- Angyal, S.J. et al., *J.C.S.*, 1962, 2985-2991 (*Quebrachitol*)
- Foxall, C.D. et al., *J.C.S.*, 1963, 5573-5575 (*D-form 1-Me*, isol)
- Kindl, H. et al., *Prog. Chem. Org. Nat. Prod.*, 1966, **24**, 149-205 (rev)
- Dorman, D.E. et al., *J.A.C.S.*, 1970, **92**, 1351-1354 (*cmr*)
- McConnell, J.F. et al., *J.C.S. Perkin 2*, 1972, 2039-2044 (*L-form*, 1,2:5,6-di-O-isopropylidene 3,4-ditosyl, *cryst struct*)

- Gallagher, R.T. et al., *Phytochemistry*, 1975, **14**, 755 (*Pinopollitol*, isol, ms)
- Angyal, S.J. et al., *Aust. J. Chem.*, 1976, **29**, 219 (*Pinopollitol*, synth, struct, *pmr*)
- Blunt, J.W. et al., *Aust. J. Chem.*, 1976, **29**, 1115 (*Pinopollitol*, conformn, *cmr*)
- Beverage, R.J. et al., *Aust. J. Chem.*, 1977, **30**, 1583-1590 (*Galactosylpinitol*)
- Paulsen, H. et al., *Annalen*, 1981, 2180-2203 (*L-form 2-Me isopropylidene derivs*)
- Garegg, P.J. et al., *Carbohydr. Res.*, 1981, **90**, 61-69 (*Galactosylpinitol*)
- Schweizer, T.F. et al., *Carbohydr. Res.*, 1981, **95**, 61-71 (2-galactoside, 4-Me 5-galactoside)
- Angyal, S.J. et al., *Carbohydr. Res.*, 1982, **100**, 43-54 (*cmr*)
- Bohlmann, F. et al., *Phytochemistry*, 1982, **21**, 780-783 (*angelates*)
- Quemener, B. et al., *Phytochemistry*, 1983, **22**, 1745-1751 (*Ciceritol*)
- Nicolas, P. et al., *Carbohydr. Res.*, 1984, **131**, 331-334 (6'- α -D-Galactosylciceritol)
- Jeffrey, G.A. et al., *Carbohydr. Res.*, 1987, **159**, 211-216 (*L-form*, *cryst struct*)
- Shiomi, N. et al., *Agric. Biol. Chem.*, 1988, **52**, 1587-1588 (*Fagopyritol B₂*)
- Chida, N. et al., *J. Carbohydr. Chem.*, 1989, **8**, 319-332 (*Quebrachitol*, isol, use)
- Ley, S.V. et al., *Tetrahedron*, 1989, **45**, 3463-3476 (*Pinitol*, synth)
- Gao, F. et al., *Phytochemistry*, 1990, **29**, 2273-2276; 3875-3880 (*Hymenoxys esters*)
- Ganter, J. et al., *Plant Physiol. Biochem. (Paris)*, 1991, **29**, 139-146 (*Mimosa scabrella glycoside*)
- Tschamber, T. et al., *Helv. Chim. Acta*, 1992, **75**, 1052-1060 (*synth*, *pmr*, *cmr*)
- Mondal, D.N. et al., *J. Indian Chem. Soc.*, 1993, **70**, 651-652 (*Pinitol*, *config*, *pmr*)
- Mandel, M. et al., *J.O.C.*, 1993, **58**, 2331-2333 (*D-form*, *synth*)
- Agrawal, P.K. et al., *Indian J. Chem., Sect. B*, 1994, **33**, 803-805 (*Quebrachitol*, isol, *pmr*, *cmr*)
- Huang, K.F. et al., *J. Chin. Chem. Soc. (Taipei)*, 1994, **41**, 115-117 (*cryst struct*, *Quebrachitol*)
- Kiddle, J.J. et al., *Chem. Rev.*, 1995, **95**, 2189-2202 (rev, *Quebrachitol*)
- Acena, J.L. et al., *Tetrahedron: Asymmetry*, 1996, **7**, 3535-3544 (*D-Pinitol*, *synth*)
- Ogawa, K. et al., *Carbohydr. Res.*, 1997, **302**, 219-221 (*Galactosylpinitol*)
- Kornienko, A. et al., *Carbohydr. Res.*, 1998, **310**, 141-144 (*galactosyl*, *synth*)
- Kim, K.S. et al., *Chem. Comm.*, 1998, 1945-1946 (*D-form*, *synth*)
- Takahashi, H. et al., *Tet. Lett.*, 1998, **39**, 9707-9710 (*D-form*, *L-form*, *synth*)
- Zidorn, C. et al., *Phytochemistry*, 1999, **51**, 991-994; 2000, **53**, 317; **54**, 349 (1,5-bis-4-hydroxyphenylacetate)
- Tan, R.X. et al., *Planta Med.*, 1999, **65**, 64-67 (*Pinitol*, *activity*)
- Obendorf, R.L. et al., *Carbohydr. Res.*, 2000, **328**, 623-627 (*Fagopyritol A₁*)
- Szczecinski, P. et al., *J. Agric. Food Chem.*, 2000, **48**, 2717-2720 (*trigalactosylpinitol*)
- Steadman, K.J. et al., *Carbohydr. Res.*, 2001, **331**, 19-25 (*Fagopyritols A₂*, *A₃*)
- Van Boven, M. et al., *J. Agric. Food Chem.*, 2001, **49**, 4278-4283 (3-Me 2-,5-galactosides)
- Miethchen, R. et al., *Carbohydr. Res.*, 2002, **337**, 1-9 (*derivs*, *synth*)
- Dowd, M.K. et al., *J. Carbohydr. Chem.*, 2002, **21**, 373-383 (*D-Pinitol*, *L-Quebrachitol*, *cryst struct*)
- Podeschwa, M. et al., *Eur. J. Org. Chem.*, 2003, 1958-1972 (*synth*)
- Larner, J. et al., *J. Med. Chem.*, 2003, **46**, 3283-3291 (*bis-isopropylidene*, 3-Me, *synth*)
- Sureshan, K.M. et al., *Tet. Lett.*, 2004, **45**, 3197-3201 (*Brahol*)

- $C_{18}H_{30}O_{17}$ 518.425
Isol. from cell cultures of *Rosa* sp.
- 2-Ac: 2-O-Acetyl-myoinositol. **Campanulitol**. *Campanulite* [41929-24-2]
 $C_8H_{14}O_7$ 222.194
Isol. from *Campanula cephalotes*.
Prismatic cryst. (H_2O).
Mp 193-195°. Achiral.
- 1,4,5,6-Tetra-Ac: 1,4,5,6-Tetra-O-acetyl-myoinositol
[108032-48-0]
[90366-30-6]
 $C_{14}H_{20}O_{10}$ 348.306
Cryst. ($CHCl_3/Et_2O$). Mp 143-144° (hemihydrate). $[\alpha]_D^{20} +5$ (c, 0.9 in $CHCl_3$).
Chiral D-form. Racemate also known (Mp 138-140°, as hemihydrate).
- 3,4,5,6-Tetra-Ac: [80953-32-8]
 $C_{14}H_{20}O_{10}$ 348.306
Cryst. ($CHCl_3/Et_2O$). Mp 143-144°. $[\alpha]_D^{20} -6.7$ (c, 3.0 in $CHCl_3$). Chiral, D-form.
- 1,2,3,4,6-Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-myoinositol
 $C_{16}H_{22}O_{11}$ 390.343
Mp 178°. *Meso*-.
- 1,3,4,5,6-Penta-Ac: [52389-41-0]
 $C_{16}H_{22}O_{11}$ 390.343
Prisms (EtOH). Mp 170-173°. *Meso*-.
- Hexa-Ac: Hexa-O-acetyl-myoinositol
[1254-38-2]
 $C_{18}H_{24}O_{12}$ 432.38
Mp 216-217°. *Meso*-.
- 1,2,4,5-Tetra-O-angeloyl: [82729-35-9]
 $C_{26}H_{36}O_{10}$ 508.564
Constit. of *Inula cappa*.
- 1,2,4,6-Tetra-O-angeloyl: [82729-36-0]
 $C_{26}H_{36}O_{10}$ 508.564
Constit. of *Inula cappa*. Gum. $[\alpha]_D^{24} +3.4$ (c, 0.7 in $CHCl_3$).
- 2-O-(2-Methylbutanoyl), 1-O-angeloyl: [129744-02-1]
 $C_{16}H_{26}O_8$ 346.377
Constit. of *Hymenoxys texana*.
- 6-O-(2-Methylbutanoyl), 1-O-angeloyl, 2,3-di-Ac: [129744-00-9]
 $C_{20}H_{30}O_{10}$ 430.451
Constit. of *Hymenoxys texana*.
- 6-O-(2-Methylbutanoyl) 1-O-angeloyl, 3-O-(3-methyl-2-butanoyl), 2-Ac: [129744-01-0]
 $C_{23}H_{34}O_{10}$ 470.516
Constit. of *Hymenoxys texana*.
- 2,3-Bis-O-(2-methylbutanoyl), 6-O-angeloyl: 6-Angeloyl-2,3-bis(2-methylbutanoyl)-myoinositol
 $C_{21}H_{34}O_9$ 430.494
Constit. of *Viguiera quinqueremis*.
- 1,4-Dibenzoyl:
 $C_{20}H_{20}O_8$ 388.373
Cryst. (DMF aq.). Mp 253-254°.
- 1,6-Dibenzoyl: [162062-54-6]
 $C_{20}H_{20}O_8$ 388.373
Cryst. (2-propanol). Mp 101-103°.
- Hexabenzoyl: Hexa-O-benzoyl-myoinositol
[4099-90-5]
 $C_{48}H_{36}O_{12}$ 804.805
Mp 258°. *Meso*-.
- 6-O-(4-Hydroxy-Z-cinnamoyl): 6-O-cis-p-Coumaroyl-myoinositol
 $C_{15}H_{18}O_8$ 326.302
Constit. of the seeds of *Taxus mairei*.
Amorph. powder.
- Hexakis(3-pyridinecarbonyl): **Inositol nicotinate**, **BAN**, **INN**. Inositol niacinate, **USAN**. Inositol hexanicotinate, **JAN**. Hexanicotinoylinositol. **Hexopal**. **Linodil**. **Lipoflavonoid**. **Mesonex**. **Palohex**. **NSC 49506**. **Win 9154**. Many other names
[6556-11-2]
 $C_{42}H_{30}N_6O_{12}$ 810.732
Peripheral vasodilator, antilipidaemic agent. Mp 254-255°. Log P 1.77 (calc). *Meso*-.
- LD₅₀ (rat, scu) 1180 mg/kg. NM7535400
- 1,2-Ethylidene: 1,2-O-Ethylidene-myoinositol
 $C_8H_{14}O_6$ 206.195
Mp 120-122°. DL-form.
- 1,2-O-Isopropylidene: 1,2-O-Isopropylidene-myoinositol
[26276-97-1]
 $C_9H_{16}O_6$ 220.222
Cryst. (EtOH). Mp 182-184°. *Meso*-.
- 1,2,3,4-Di-O-isopropylidene: 1,2,3,4-Di-O-isopropylidene-myoinositol
[115116-20-6]
 $C_{12}H_{20}O_6$ 260.286
Solid (petrol/EtOAc). Mp 150-152°. Chiral compd.; props. refer to racemate.
- 1,2,3,4-Di-O-isopropylidene, di-Ac: 4,5-Di-O-acetyl-1,2,3,6-di-O-isopropylidene-myoinositol
[115116-25-1]
 $C_{16}H_{24}O_8$ 344.361
Mp 140-142°. Chiral compd.; props. refer to racemate.
- 1,2,4,5-Di-O-isopropylidene: 1,2,4,5-Di-O-isopropylidene-myoinositol
[98974-89-1]
 $C_{12}H_{20}O_6$ 260.286
Mp 174°. Chiral compd.; props. refer to racemate.
- 1,2,5,6-Di-O-isopropylidene: 1,2,5,6-Di-O-isopropylidene-myoinositol
[115116-18-2]
 $C_{12}H_{20}O_6$ 260.286
Mp 172-175°. Chiral compd.; props. refer to racemate.
- 1,2,5,6-Di-O-isopropylidene, di-Ac: 1,6-Di-O-acetyl-2,3,4,5-di-O-isopropylidene-myoinositol
[115116-19-3]
 $C_{16}H_{24}O_8$ 344.361
Mp 165-168°. Chiral compd.; props. refer to racemate.
- 1,2,5,6-Di-O-isopropylidene, dibenzoyl: 1,6-Di-O-benzoyl-2,3,4,5-di-O-isopropylidene-myoinositol
[115072-66-7]
 $C_{26}H_{28}O_8$ 468.502
Solid (MeOH). Mp 197-200°. Chiral compd.; props. refer to racemate.
- 1,2-O-Cyclohexylidene: 1,2-O-Cyclohexylidene-myoinositol
[6763-47-9]
 $C_{12}H_{20}O_6$ 260.286
Solid (EtOH/Et₂O). Mp 179°. Chiral compd.; props. refer to racemate.
- 1,2,5,6-Di-O-cyclohexylidene: 1,2,5,6-Di-O-cyclohexylidene-myoinositol
[33021-17-9]
 $C_{18}H_{28}O_6$ 340.416
Mp 153-156°. $[\alpha]_D^{20} -7.4$ (c, 0.5 in C_6H_6). Chiral compd. Racemate Mp 133°.
- 1,3,5-O-Methylidyne: myo-Inositol mono-orthoformate
[98510-20-4]
 $C_7H_{10}O_6$ 190.152
Cryst. (MeOH). Mp 300-302° (sealed tube). *Meso*-.
- 4-Benzyl:
 $C_{13}H_{18}O_6$ 270.282
Cryst. (EtOH). Mp 173°. $[\alpha]_D^{24} +6.1$ (c, 0.5 in MeOH).
- 5-Benzyl: [92217-63-5]
 $C_{13}H_{18}O_6$ 270.282
Cryst. (EtOH). Mp 286°. *Meso*-compd.
- 3,6-Dibenzyl:
 $C_{20}H_{24}O_6$ 360.406
Cryst. (EtOH). Mp 172-173°. $[\alpha]_D +16$ (c, 1 in MeOH).
- 4,6-Dibenzyl: 4,6-Di-O-benzyl-myoinositol
 $C_{20}H_{24}O_6$ 360.406
Cryst. Mp 124-125°.
- 1,2,5-Tribenzyl: 1,2,5-Tri-O-benzyl-myoinositol
[185021-63-0]
 $C_{27}H_{30}O_6$ 450.53
Cryst. (EtOAc/hexane). Mp 176-177°. $[\alpha]_D -34$ (c, 1 in CH_2Cl_2). Chiral compd. Racemate Mp 161-162°.
- 2,3,5-Tribenzyl: [185020-93-3]
 $C_{27}H_{30}O_6$ 450.53
Cryst. (EtOAc/hexane). Mp 176-177°. $[\alpha]_D +34$ (c, 1 in CH_2Cl_2). Chiral compd.; props. refer to D-form.
- 2,4,6-Tribenzyl, 1,3,5-O-methylidyne: [114847-11-9]
 $C_{28}H_{28}O_6$ 460.526
Cryst. (petrol). Mp 102-104°. *Meso*-.
- 3,4,5-Tribenzyl: 3,4,5-Tri-O-benzyl-myoinositol
 $C_{27}H_{30}O_6$ 450.53
Powder. $[\alpha]_D^{25} -13.1$ (c, 0.22 in THF). Chiral compd.
- 1,2,3,4-Tetrabenzyl: 1,2,3,4-Tetra-O-benzyl-myoinositol
[109584-31-8]
 $C_{34}H_{36}O_6$ 540.655
Solid (Et₂O). Mp 87-89°. Chiral compd.; props. refer to racemate.
- 1,2,3,4-Tetrabenzyl, di-Ac: 4,5-Di-O-acetyl-1,2,3,6-tetra-O-benzyl-myoinositol
[111392-21-3]
 $C_{38}H_{40}O_8$ 624.729
Mp 132-134°. Chiral compd.; props. refer to racemate.
- 1,2,5,6-Tetrabenzyl: 1,2,5,6-Tetra-O-benzyl-myoinositol
[115116-22-8]
 $C_{34}H_{36}O_6$ 540.655
Solid (EtOH). Mp 169-170°. Chiral compd.; props. refer to racemate.
- 1,2,5,6-Tetrabenzyl, di-Ac: 1,6-Di-O-acetyl-2,3,4,5-tetra-O-benzyl-myoinositol
[115116-23-9]
 $C_{38}H_{40}O_8$ 624.729

- Solid (petrol). Mp 106-108°. Chiral compd.; props. refer to DL-form.
- 1,4,5,6-Tetrabenzyl:** 1,4,5,6-Tetra-O-benzyl-myio-inositol [28140-40-1] C₃₄H₃₆O₆ 540.655 Solid (EtOAc/petrol). Mp 148-149°. [α]_D²⁵ +19.8 (c, 1 in CHCl₃). Chiral compd.; props refer to D-form.
- 2,3,5,6-Tetrabenzyl:** [141193-60-4] C₃₄H₃₆O₆ 540.655 Cryst. (Et₂O). Mp 103-105°. [α]_D +4 (c, 1 in CH₂Cl₂). Chiral compd.; props refer to the D-form (equivalent to 1,2,4,5-tetra-O-benzyl-L-myio-inositol).
- 1-Me:** See 1-O-Methyl-myio-inositol, M-265
- 2-Me:** See 2-O-Methyl-myio-inositol, M-266
- 4-Me:** See 4-O-Methyl-myio-inositol, M-267
- 5-Me:** See Sequoyitol, S-30
- 1,3-Di-Me:** See 1,3-Di-O-methyl-myio-inositol, D-746
- 1,4-Di-Me:** See 1,4-Di-O-methyl-myio-inositol, D-747
- [3615-82-5, 7205-52-9, 17211-15-3, 21667-10-7, 23784-11-4, 39907-99-8, 56083-79-5, 68247-19-8, 105182-27-2]
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neo-Inositol, 9CI, 8CI **I-33**
(1 α ,2 α ,3 α ,4 β ,5 β ,6 β)-Cyclohexanhexol.
1,2,3/4,5,6-Inositol. Neoinositol
[488-54-0]



C₆H₁₂O₆ 180.157
Isol. from *Croton celtidifolius* and calf brain tissue. Present in various mammalian tissues. V. spar. sol. H₂O (0.1% at r.t.). Mp 315° (dec., subl.). Opt. inactive (meso-).

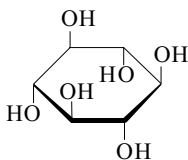
Hexa-Ac: 1,2,3,4,5,6-Hexa-O-acetyl-neo-inositol
[20097-40-9]
C₁₈H₂₄O₁₂ 432.38
Mp 262°.

1,4-Bis(4-hydroxyphenylacetyl): 1,4-Bis(4-hydroxyphenylacetyl)-neo-inositol [37098-48-9]
C₂₂H₂₄O₁₀ 448.426

Constit. of *Taraxacum linearisquameum*. Cryst.
Mp 108-110° dec. [α]_D²⁰ -20 (c, 0.12 in H₂O). D-form. CA incorrectly indexes this compound as an *allo*-inositol deriv.
[41546-33-2]

Angyal, S.J. *et al.*, *J.C.S.*, 1965, 1807-1816 (*hexa-Ac*)
Sherman, W.R. *et al.*, *Biochemistry*, 1971, **10**, 3491-3499 (*occur*)
Lichtenthaler, F.W. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 250
Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54 (*cmr*)
Mukherjee, R. *et al.*, *Phytochemistry*, 1984, **23**, 2682-2684 (*isol*)
Tschamber, T. *et al.*, *Helv. Chim. Acta*, 1992, **75**, 1052-1060 (*synth*, *pmr*, *cmr*)
Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1994, **263**, 149-154 (*cryst struct*)
Hudlicky, T. *et al.*, *J.C.S. Perkin 1*, 1994, 1553-1567 (*synth*)
Riley, A.M. *et al.*, *Carbohydr. Res.*, 1998, **314**, 277-281 (*synth*)
Zidorn, C. *et al.*, *Phytochemistry*, 1999, **51**, 991-994; 2000, **53**, 317 (*1,4-bis-4-hydroxyphenylacetyl*)
Hudlicky, T. *et al.*, *Carbohydr. Res.*, 2000, **324**, 200-203 (*synth*)
Podeschwa, M. *et al.*, *Eur. J. Org. Chem.*, 2003, 1958-1972 (*synth*)

scyllo-Inositol **I-34**
(1α,2β,3α,4β,5α,6β)-Cyclohexanehexol.
Scyllitol. 1,3,5/2,4,6-Inositol. Quercin.
Scylloinositol. Cocositol
[488-59-5]



C₆H₁₂O₆ 180.157
Occurs in animals, notably plagiostomous fish, plants such as flowering dogwood; detected in insects and mammalian urine.
Mp 350-354°. Opt. inactive (*meso*-).

Hexa-Ac: 1,2,3,4,5,6-Hexa-O-acetyl-scyllo-inositol
[20108-52-5]
C₁₈H₂₄O₁₂ 432.38
Mp 300-301°.

Mono-Me ether: 1-O-Methyl-scyllo-inositol
[23887-12-9]
C₇H₁₄O₆ 194.184
Cryst. (EtOH aq.). Mp 239-242°.

Hexa-Me ether: 1,2,3,4,5,6-Hexa-O-methyl-scyllo-inositol
[148906-41-6]
C₁₂H₂₄O₆ 264.318
Cryst. (petrol). V. sol. all common solvs.
Mp 114-115°.

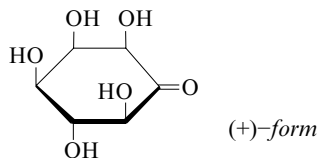
[41546-32-1]

Anderson, R.C. *et al.*, *J.A.C.S.*, 1948, **70**, 2931-2935 (*synth*)

Anderson, L. *et al.*, *Arch. Biochem. Biophys.*, 1958, **78**, 518-531 (*mono-Me ether*)
Kindl, H. *et al.*, *Prog. Chem. Org. Nat. Prod.*, 1966, **24**, 149 (*rev*)
Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1968, **7**, 121-137 (*pmr*)
Karrer, W. *et al.*, *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 290 (*occur*)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54 (*cmr*)
Kohne, B. *et al.*, *Annalen*, 1985, 866-868 (*synth*)
Anderson, J.E. *et al.*, *Carbohydr. Res.*, 1995, **272**, 141-148 (*synth*, *cryst struct*, *hexa-Me ether*)
Salazar-Pereda, V. *et al.*, *J. Carbohydr. Chem.*, 1997, **16**, 1479-1507 (*cryst struct*, *cmr*, *conformn*)
Husson, C. *et al.*, *Carbohydr. Res.*, 1998, **307**, 163-165 (*synth*)
Takahashi, H. *et al.*, *Tet. Lett.*, 1998, **39**, 9707-9710 (*synth*)
Chung, S.K. *et al.*, *Bioorg. Med. Chem.*, 1999, **7**, 2577-2589 (*synth*, *pmr*)
Sarmah, M.P. *et al.*, *Carbohydr. Res.*, 2003, **338**, 999-1001 (*synth*)
Podeschwa, M. *et al.*, *Eur. J. Org. Chem.*, 2003, 1958-1972 (*synth*)

epi-Inosose 2, 9CI **I-35**
2,3,4,6/5-Pentahydroxycyclohexanone.
Epiinosose 2. Epimesoinosose. meso-Inosose-6. myo-Inosose-6. epi-Inosose [6623-68-3]

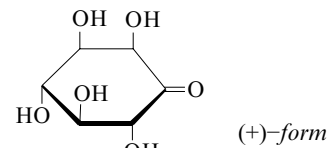


C₆H₁₀O₆ 178.141

(+)-form
Mp 198-200°.
2,4-Dinitrophenylhydrazon: Mp 270°.
Semicarbazone: Mp 207°.
Penta-Ac: Penta-O-acetyl-(+)-epi-inosose
C₁₆H₂₀O₁₁ 388.327
Mp 106-108°.
Pentabenzoyl: Penta-O-benzoyl-(+)-epi-inosose
C₄₁H₃₀O₁₁ 698.681
Mp 144°.

(-)-form
Mp 198° dec. [α]_D -4.5 (H₂O).
Pentabenzoyl: Penta-O-benzoyl(-)-epi-inosose
C₄₁H₃₀O₁₁ 698.681
Mp 134-136°. Opt. active.
Posternak, T. *et al.*, *Helv. Chim. Acta*, 1936, **19**, 1333
Biochem. Prep., 1952, **2**, 57
Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1959, **14**, 135 (*rev*)
Posternak, T. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 289 (*synth*)
De Wit, G. *et al.*, *Carbohydr. Res.*, 1980, **86**, 33 (*uv*, *pmr*, *cmr*)

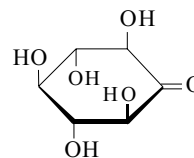
myo-Inosose 1, 8CI **I-36**
2,3,5/4,6-Pentahydroxycyclohexanone.
vibo-Inosose
[488-66-4]



C₆H₁₀O₆ 178.141

(+)-form
D-Inosose
Cryst. (hemihydrate). Mp 138-139°. [α]_D²⁶ +20 (H₂O).
Phenylhydrazon: Mp 196-197°. [α]_D²⁵ -55.3 (Py/EtOH).
(-)-form
Mp 138-139°. [α]_D -17 (H₂O).
Phenylhydrazon: Mp 196-197°.
Magasanik, B. *et al.*, *J. Biol. Chem.*, 1948, **175**, 929
Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem.*, 1959, **14**, 135 (*rev*)

myo-Inosose 2, 9CI **I-37**
2,4,6/3,5-Pentahydroxycyclohexanone.
scyllo-Inosose. Scylloinosose. Bioinosose.
Scyllomesoinosose. bio-Inosose. scyllo-meso-Inosose
[488-64-2]



C₆H₁₀O₆ 178.141

Found in animal tissue and in *Streptomyces griseus*.
Mp 200° dec. Opt. inactive (*meso*-).

Phenylhydrazon: [7045-48-9]
Mp 184°.

Diethyl dithioacetal:
C₁₀H₂₀O₅S₂ 284.397
Mp 186-187°.

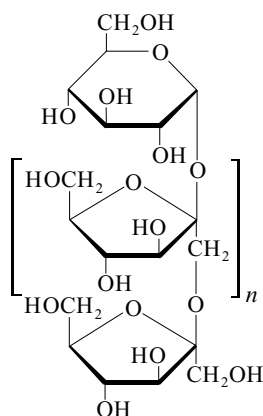
Penta-Ac: [20097-56-7]
C₁₆H₂₀O₁₁ 388.327
Mp 211-212°.

Pentabenzoyl:
C₄₁H₃₀O₁₁ 698.681
Mp 286°.

Biochem. Prep., 1952, **2**, 57
MacDonald, D.L. *et al.*, *J.A.C.S.*, 1955, **77**, 4348
McCasland, G.E. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 291 (*synth*)
Posternak, T. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 294 (*synth*)
Anderson, L. *et al.*, *The Carbohydrates*, Academic Press, 1972, **1A**, 520 (*rev*)

Inulin, 9CI, 8CI, BAN, USAN

Dahlin. Plant starch
[9005-80-5]



n approx. 30, MW approx. 5000. Contains Inulobiose, I-39 as a repeating structural unit with mostly glucose as terminal group. Yields D-Fructose and D-Glucose on acid hydrol. Replaces starch as a reserve food in Jerusalem artichoke (*Helianthus tuberosus*) and in other members of Compositae. Also present in a few Campanulaceae and Lobeliaceae. Diagnostic aid for kidney function. $[\alpha]_D^{20}$ -40 (c, 2.0 in H₂O). Log P -7.77 (uncertain value) (calc). For other related storage polysaccharides see Levan, L-34, Sinistrin, S-44 and Phleam, P-66. Other storage polysaccharides which have been isol. from various species and given trivial names include Secalin and Asparagodin from asparagus.

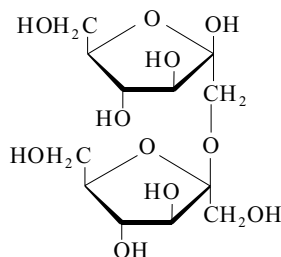
Per-Ac: [59818-02-9]
 $[\alpha]_D^{20}$ -34 (c, 1.6 in CHCl₃).

Per-Me: Mp 140°. $[\alpha]_D^{20}$ -55 (c, 1.0 in CHCl₃).

Haworth, W.N. *et al.*, *J.C.S.*, 1932, 2384
McDonald, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1946, **2**, 254 (*isol*)
Bacon, J.S.D. *et al.*, *Biochem. J.*, 1951, **48**, 114
Percival, E.G.V. *et al.*, *Structural Carbohydr. Chem.*, 2nd Ed., 1962, 274 (*struct*)
Aspinall, G.O. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 157 (*synth*)
Ovodov, Yu.S. *et al.*, *Dokl. Akad. Nauk SSSR*, 1968, **178**, 1338; *CA*, **69**, 44141a (*pmr*)
Kennedy, J.F. *et al.*, *Carbohydr. Res.*, 1973, **26**, 401
Hultman, E. *et al.*, *Clin. Biochem. Princ. Methods*, (Eds., Curtius, H. *et al.*), Berlin, 1974, **2**, 908; *CA*, **82**, 13173b (*rev*)
Newkome, G.R. *et al.*, *Carbohydr. Res.*, 1976, **48**, 1
Jarrell, H.C. *et al.*, *Carbohydr. Res.*, 1979, **76**, 45-57 (*cmr*)
Marchessault, R.H. *et al.*, *Can. J. Chem.*, 1980, **58**, 2415 (*cryst struct*)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 776
Van Loo, J. *et al.*, *Crit. Rev. Food Sci. Nutr.*, 1995, **35**, 525-552 (*rev*)
Heyer, A.G. *et al.*, *Carbohydr. Res.*, 1998, **313**, 165-174 (*enzymic synth*)

I-38**Inulobiose**

1-O-β-D-Fructofuranosyl-D-fructose.
Difructan
[470-58-6]



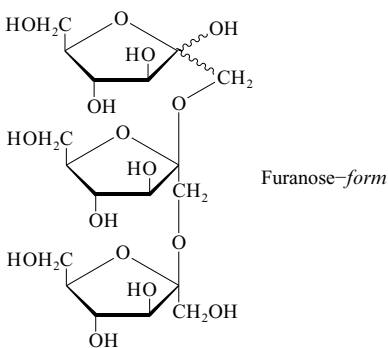
C₁₂H₂₂O₁₁ 342.299
Formed by partial acid hydrol. of Inulin, I-38 and by the action of purified yeast invertase on Fructose; a constit. of *Artemisia absinthium* (wormwood) leaves and *Artemisia dracunculoides* (tarragon) roots.
 $[\alpha]_D^{20}$ -72.4 (c, 2.7 in H₂O) (-32.5). Sweeter than sucrose.

β-Furanose-form

Octa-Ac:
C₂₈H₃₈O₁₉ 678.597
 $[\alpha]_D^{20}$ -14.2 (c, 1.5 in CHCl₃) (-6.5).
Pazur, J.H. *et al.*, *J.A.C.S.*, 1953, **75**, 3458 (*synth, octa-Ac*)
Schlubach, H.H. *et al.*, *Annalen*, 1954, **588**, 192 (*isol*)
Andersen, B. *et al.*, *Acta Chem. Scand.*, 1967, **21**, 828 (*occur*)
Lombard, A. *et al.*, *CA*, 1976, **85**, 74938p (*occur*)
Senda, T. *et al.*, *CA*, 1990, **113**, 170368v (*synth*)
Calub, T.M. *et al.*, *Carbohydr. Res.*, 1990, **207**, 221 (*conform*)

Inulotriose

β-D-Fructofuranosyl-(2→1)-β-D-fructofuranosyl-(2→1)-D-fructose, 9CI
[58208-59-6]



C₁₈H₃₂O₁₆ 504.441
Isol. from partial acid hydrolysate of inulin and from a partial hydrolysate of lycoridin obt. from *Lycoris radiata* bulbs. Occurs in inulin polymers and is present as the structural unit in the fructosylsucroses formed by the action of invertase on sucrose.
Mp 109-110°. $[\alpha]_D$ -58.4 (-41) (H₂O).

I-39**Undeca-Ac:**

C₄₀H₅₄O₂₇ 966.85
Mp 73-74°. $[\alpha]_D$ -40 (in CHCl₃).

Undeca-Me:

C₂₉H₅₄O₁₆ 658.736
Mp 89-91°. $[\alpha]_D$ -69.7 (in CHCl₃).

Feingold, D.A. *et al.*, *Biochim. Biophys. Acta*, 1956, **22**, 196 (*isol*)

Mizuno, T. *et al.*, *CA*, 1961, **55**, 27099 (*isol, deriv*)

Uchiyama, T. *et al.*, *Biochim. Biophys. Acta*, 1975, **397**, 153 (*enzymic synth*)

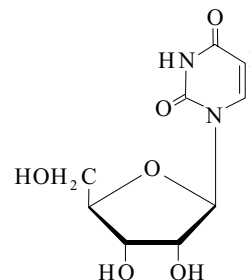
Soler, A. *et al.*, *CA*, 1979, **90**, 168857s (*formu*)

Das, M.K. *et al.*, *Mol. Immunol.*, 1979, **16**, 91; *CA*, 1979, **91**, 106419n (*biochem*)

Gettins, P. *et al.*, *Biochemistry*, 1981, **20**, 7463 (*pmr*)

5-Iodouridine, 9CI, 8CI

[1024-99-3]

I-41

C₉H₁₁IN₂O₆ 370.1
Mp 203-204.5° dec. $[\alpha]_D^{25}$ -27.5 (c, 0.13 in H₂O).

► YU8060000

2',3',5'-Tribenzoyl: [2880-91-3]

C₃₀H₂₃IN₂O₉ 682.424
Mp 183-184°. $[\alpha]_D$ -112.5 (c, 0.5 in CHCl₃).

2',3'-O-Isopropylidene: [19556-58-2]

C₁₂H₁₅IN₂O₆ 410.165
Cryst. (EtOH aq.). Mp 225-227°.

2'-O-Me: [34218-84-3]

C₁₀H₁₃IN₂O₆ 384.127
Mp 242-245° dec. $[\alpha]_D^{25}$ -24.5 (c, 1.0 in 50% DMF aq.).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 372B (*nmr*)

Aldrich Library of Infrared Spectra, 3rd edn., 1981, 1357B (*ir*)

Prusoff, W.H. *et al.*, *Cancer Res.*, 1953, **13**, 221-225 (*synth*)

Prystaš, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1964, **29**, 2956-2970 (*synth*)

Otter, B.A. *et al.*, *J.O.C.*, 1969, **34**, 1390-1396 (*isopropylidene*)

Rahman, A. *et al.*, *Acta Cryst. B*, 1970, **26**, 1765-1775 (*cryst struct*)

Niedballa, U. *et al.*, *Angew. Chem., Int. Ed.*, 1970, **9**, 461-462 (*tribenzoyl*)

Robins, M.J. *et al.*, *Biochemistry*, 1971, **10**, 3591-3597 (2'-O-Me)

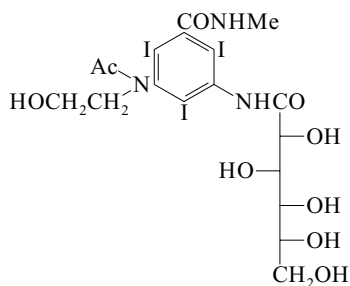
Hruska, F.E. *et al.*, *Can. J. Chem.*, 1974, **52**, 497-508 (*pmr*)

Asakura, J. *et al.*, *J.O.C.*, 1990, **55**, 4928-4933 (*synth, pmr, uv*)

Paolini, L. *et al.*, *Synthesis*, 2003, 1039-1042 (*synth, pmr*)

Ioglugol, INN, USAN

N-[3-(Acetyl(2-hydroxyethyl)amino)-2,4,6-triiodo-5-[(methylamino)carbonyl]phenyl]gluconamide, 9CI. 3'-[N-(2-Hydroxyethyl)acetamido]-2',4',6'-triiodo-5'-(methylcarbamoyl)gluconanilide. MP-6026 [63941-73-1]

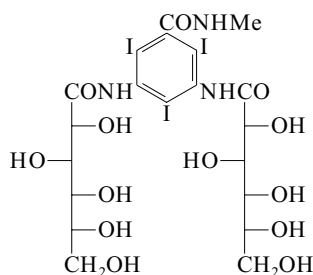


C₁₈H₂₄I₃N₃O₉ 807.116
Diagnostic aid (radioopaque medium).
Mp 165-174°. Log P -5.93 (calc).

Ger. Pat., 1977, 2 643 841, (Mallinckrodt); CA, 87, 136300b (synth, pharmacol)

Ioglucomide, INN, USAN

N,N'-[2,4,6-Triiodo-5-[(methylamino)carbonyl]-1,3-phenyl]bisgluconamide, 10CI. MP-8000 [63941-74-2]

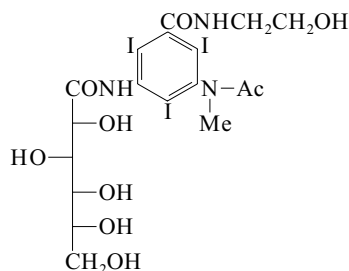


C₂₀H₂₈I₃N₃O₁₃ 899.167
Diagnostic aid (radioopaque medium).
Investigated as a method for myelography.
Mp 144-148°. Log P -11.4 (calc).

► LD₅₀ (rat, ivn) 15600 mg/kg. LZ5055000
Ger. Pat., 1977, 2 643 841, (Mallinckrodt); CA, 87, 136300b (synth, pharmacol)
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, IFS400

I-42 Ioglutide, INN

N-[3-(Acetylmethylamino)-5-[(2-hydroxyethyl)amino]carbonyl]-2,4,6-triiodophenyl]gluconamide, 9CI. 3'-[2-Hydroxyethyl]carbamoyl]-2',4',6'-triiodo-5'-(N-methylacetamido)gluconanilide. P-297 [56562-79-9]

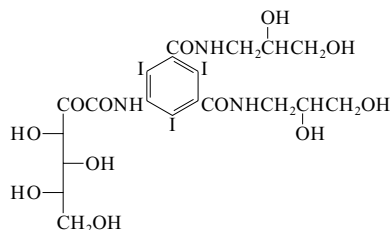


C₁₈H₂₄I₃N₃O₉ 807.116
Diagnostic aid (radioopaque medium).
Investigated as a method for myelography and cisternography. Log P -6.06 (calc).

Ger. Pat., 1975, 2 456 685, (Laboratoires Andre Guerbet); CA, 83, 114021b (synth, tox, pharmacol)
Gonsette, R.E. et al., *Am. J. Neuroradiol.*, 1983, 4, 304 (use)
Caillé, J.-M. et al., *Am. J. Neuroradiol.*, 1983, 4, 1185 (use)

Iogulamide, USAN

N,N'-Bis(2,3-dihydroxypropyl)-5-[(L-xylo-hexulosonoyl)amino]-2,4,6-triiodo-1,3-benzenedicarboxamide, 9CI. N,N'-Bis(2,3-dihydroxypropyl)-5-L-xylo-2-hexulosonamido-2,4,6-triiodoisophthalamide. MP 10013 [75751-89-2]

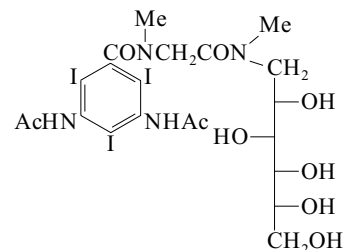


C₂₀H₂₆I₃N₃O₁₂ 881.152
Diagnostic aid (radioopaque medium).

Ger. Pat., 1980, 3 010 153, (Mallinckrodt); CA, 94, 103783c (synth, pharmacol, tlc, gle)
Adams, M.D. et al., *Invest. Radiol.*, (Suppl. 1), 1988, 23, S217-S219 (pharmacol)

Iosarcol, INN

1-[[[3,5-Bis(acetylamino)-2,4,6-triiodobenzoyl]methylamino]acetyl]methylamino]-1-deoxyglucitol, 9CI [97702-82-4]

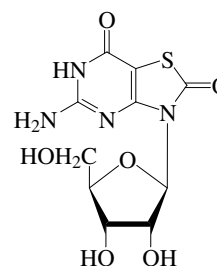


C₂₁H₂₉I₃N₄O₉ 862.195
Radiopaque medium. Diagnostic aid.
Log P -5.07 (calc).

Ger. Pat., 1985, 3 407 473, (Dr Franz Koehler Chemie); CA, 105, 60940 (synth, use)
Kinawi, A. et al., *Arch. Pharm. (Weinheim, Ger.)*, 1990, 323, 443

Isatoribine, BAN, INN, USAN

5-Amino-3-β-D-ribofuranosylthiazolo-[4,5-d]pyrimidine-2,7(3H,4H)-dione, 9CI. ICN 10146. N 10146. NARI 10146 [122970-40-5]



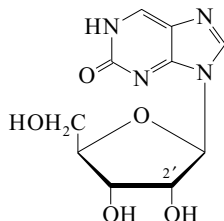
C₁₀H₁₂N₄O₆S 316.294
Immunomodulator. Powder (H₂O). Mp 238° (dec.).

[198832-38-1]

Pat. Coop. Treaty (WIPO), 1989, 89 05 649, (Brigham Young Univ.); CA, 112, 56584s (synth, pharmacol)
Nagahara, K. et al., *J. Med. Chem.*, 1990, 33, 407-415 (synth, pharmacol)
Smee, D.F. et al., *Antimicrob. Agents Chemother.*, 1991, 35, 152-157 (pharmacol)

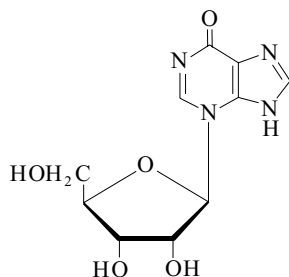
Miura, K. *et al.*, *Chem. Pharm. Bull.*, 1975, **23**, 2064 (*synth*)
 Sepiol, J. *et al.*, *Z. Naturforsch., C.*, 1976, **37**, 361 (*uv*)
 Fuhrmann, F.A. *et al.*, *Science (Washington, D.C.)*, 1981, **212**, 557 (*isol*)
 Nair, V. *et al.*, *J.O.C.*, 1985, **50**, 406 (*synth, pmr*)
 Itaya, T. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 2971 (3-Methylisoguanosine)
 Kazimierzczuk, Z. *et al.*, *Helv. Chim. Acta*, 1991, **74**, 1742 (2'-Deoxyisoguanosine)
 Seela, F. *et al.*, *Helv. Chim. Acta*, 1991, **74**, 1742-1748; 1994, **77**, 622-630; 1995, **78**, 1843-1854 (*synth, uv, pmr, cmr, 2'-Deoxyisoguanosine*)
 Divakar, K.J. *et al.*, *J.C.S. Perkin I*, 1991, 771 (*synth, uv, pmr, cmr*)
 Chern, J.-W. *et al.*, *J.O.C.*, 1991, **56**, 4213 (*synth*)
 De Napoli, L. *et al.*, *J.C.S. Perkin I*, 1995, 15 (*synth, bibl*)
 Jurczyk, S.C. *et al.*, *Helv. Chim. Acta*, 1999, **82**, 1005-1015 (2'-Deoxyguanosine 5'-triphosphate)

Isoinosine **I-52**
 1,9-Dihydro-9-β-D-ribofuranosyl-2H-purin-2-one, 9CI. 9-(β-D-Ribofuranosyl)-2-hydroxypurine
 [72346-26-0]



C₁₀H₁₂N₄O₅ 268.229
 Not the same as 3-Isoinosine, I-53.
 Constit. of bark of *Acanthopanax giraldii hispidus*. Cryst. (MeOH/Et₂O).
 2-Deoxy:
 C₁₀H₁₂N₄O₄ 252.229
 Powder (MeOH/Et₂O).
 Holý, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 2846 (*synth, uv*)
 Seela, F. *et al.*, *Helv. Chim. Acta*, 1994, **77**, 194 (2'-deoxyisoinosine)

3-Isoinosine **I-53**
 3,7-Dihydro-3-β-D-ribofuranosyl-6H-purin-6-one, 9CI. 3-(β-D-Ribofuranosyl)-hypoxanthine
 [6835-54-7]



C₁₀H₁₂N₄O₅ 268.229

Mp 183.5° (218° dec.). [α]_D²⁵ -35.2 (c, 1.0 in H₂O). λ_{max} 265 (ε 13 200) (H₂O), 254 (10 950) (0.1M HCl), 270 nm (10 950) (0.1M NaOH).

2',3',5'-Tribenzoyl:

C₃₁H₂₄N₄O₈ 580.553

Mp 118-119°. [α]_D²⁵ -64.2 (c, 1.0 in CHCl₃).

Wolfenden, R. *et al.*, *J.A.C.S.*, 1966, **88**, 185 (*synth*)

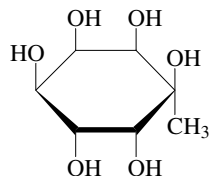
Tindall, C.G. *et al.*, *J.O.C.*, 1972, **37**, 3985 (*synth, pmr*)

Kumar, S. *et al.*, *Acta Cryst. C*, 1989, **45**, 1394 (*cryst struct*)

Isolaminitol

4-C-Methyl-epi-inositol

I-54



C₇H₁₄O₆ 194.184

4-C-Methyl-epi-inositol is the enantiomer of 2-C-methyl-epi-inositol.

(+)-form

Cryst. (EtOH aq.). Mp 192-193°. [α]_D²¹ +3.7 (c, 1 in H₂O).

Hexa-Ac:

C₁₉H₂₆O₁₂ 446.407

Cryst. (EtOH). Mp 133-134°.

(±)-form

Cryst. (EtOH aq.). Mp 210-212°.

Hexa-Ac:

Cryst. (EtOH). Mp 133-134°.

1,5,6-Tribenzyl: [190059-22-4]

C₂₈H₃₂O₆ 464.557

Cryst. (EtOAc/petrol). Mp 106-108°.

1,5,6-Tribenzyl, 2,3-*O*-isopropylidene:

[190059-31-5]

C₃₁H₃₆O₆ 504.622

Oil.

[190059-15-5]

Posternak, T. *et al.*, *Helv. Chim. Acta*, 1960, **43**, 2142-2147 ((+)-form, (±)-form, *synth*)

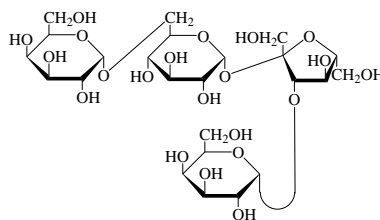
Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1974, **27**, 1075-1086 ((±)-form, *synth, pmr*)

Gigg, J. *et al.*, *Carbohydr. Res.*, 1997, **299**, 77-83 (1,5,6-tribenzyl, 2,3-isopropylidene)

Isolychnose

I-55

α-D-Galactopyranosyl-(1→3)-β-D-fructofuranosyl α-D-galactopyranosyl-(1→6)-α-D-glucopyranoside, 9CI
 [546-35-0]



C₂₄H₄₂O₂₁ 666.583

Constit. of *Cerastium arvense*, *Dianthus lumnitzeri*, *Lychnis dioica* and *Silene inflata*.

Wickstrom, A. *et al.*, *Bull. Soc. Chim. Fr.*, 1959, 871-878 (*isol*)

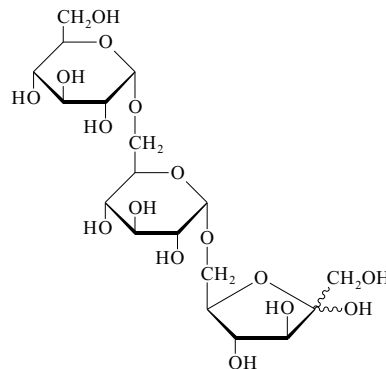
Koenigshofer, H. *et al.*, *Z. Pflanzenphysiol.*, 1979, **92**, 449-453 (*isol*)

Hopf, H. *et al.*, *Planta*, 1984, **162**, 283-288 (*isol, biosynth*)

Isomaltotriulose

I-56

α-D-Glucopyranosyl(1→6)-α-D-glucopyranosyl(1→6)-D-fructose



C₁₈H₃₂O₁₆ 504.441

Isol. from a culture medium of *Streptococcus bovis*. Amorph. [α]_D²² +118 (H₂O).

Avigad, A. *et al.*, *Biochem. J.*, 1959, **73**, 587 (*enzymic synth*)

Bourne, E.J. *et al.*, *Biochem. J.*, 1961, **79**, 549 (*isol*)

Isopropyl glucosinolate

I-57

1-Thio-β-D-glucopyranose 1-[N-(sulfoxy)-2-methylpropanimidate], 9CI.

Glucoputranjivin

[18432-16-1]

(H₃C)₂CHC(SGlc)=NOSO₃H

C₁₀H₁₉NO₉S₂ 361.393

Isol. from seeds of *Lumaria annua* and other Cruciferae.

Tetra-Ac:

Fine needles (EtOH aq.) (as K salt).

Mp 180.5-182° (K salt). [α]_D²⁵ -18.3

(c, 1.6 in H₂O).

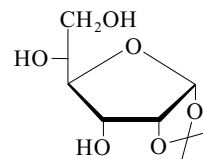
Putambekar, S.V. *et al.*, *Proc. - Indian Acad. Sci., Sect. A*, 1950, **32**, 114 (*isol*)

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1959, **13**, 851 (*isol*)

Benn, M.H. *et al.*, *Can. J. Chem.*, 1965, **43**, 1874 (*synth, biosynth*)

1,2-*O*-Isopropylideneallose, 9CI, 8CI

I-58



C₉H₁₆O₆ 220.222

3,4-Dimesyl, 5-Ac: 5-O-Acetyl-1,2-O-isopropylidene-3,4-di-O-mesyl- β -D-fructopyranose
 $C_{13}H_{22}O_{11}S_2$ 418.442
 Mp 84-86°.

3-Tosyl, 4,5-di-Ac: 4,5-Di-O-acetyl-1,2-O-isopropylidene-3-O-tosyl- β -D-fructopyranose
 $C_{20}H_{26}O_{10}S$ 458.485
 Mp 97°. $[\alpha]_D$ -133 (CHCl₃).

4,5-Ditosyl, 3-Ac: 3-O-Acetyl-1,2-O-isopropylidene-4,5-di-O-tosyl- β -D-fructopyranose
 $C_{25}H_{30}O_{11}S_2$ 570.637
 Mp 127-128°. $[\alpha]_D$ -119.5 (CHCl₃).

3-Tosyl, 4,5-dibenzoyl: 4,5-Di-O-benzoyl-1,2-O-isopropylidene-3-O-tosyl- β -D-fructopyranose
 $C_{30}H_{30}O_{10}S$ 582.627
 Mp 144°. $[\alpha]_D$ -316.2 (CHCl₃).

4,5-Ditosyl, 3-benzoyl: 3-O-Benzoyl-1,2-O-isopropylidene-4,5-di-O-tosyl- β -D-fructopyranose
 $C_{30}H_{32}O_{11}S_2$ 632.708
 Mp 164-165°. $[\alpha]_D$ -175 (CHCl₃).

3,4,5-Tritosyl: 1,2-O-Isopropylidene-3,4,5-tri-O-tosyl- β -D-fructopyranose
 $C_{30}H_{34}O_{12}S_3$ 682.789
 Mp 125°. $[\alpha]_D$ -121.4 (CHCl₃).

4,5-O-Isopropylidene: See 1,2,4,5-Di-O-isopropylidene-fructopyranose, D-714

3,4,5-Tri-Me: 1,2-O-Isopropylidene-3,4,5-tri-O-methyl- β -D-fructopyranose
 $C_{12}H_{22}O_6$ 262.302
 $[\alpha]_D$ -147.9 (H₂O).

β -D-Furanose-form

Syrup. $[\alpha]_D^{25}$ -40 (MeOH) (-38).

3,4,5-Tri-Ac: 3,4,5-Tri-O-acetyl-1,2-O-isopropylidene- β -D-fructofuranose
 $C_{15}H_{22}O_9$ 346.333
 Mp 120-122°.

3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl-1,2-O-isopropylidene- β -D-fructofuranose
 $C_{15}H_{22}O_9$ 346.333
 Cryst. (EtOAc/hexane). Mp 82-84°. $[\alpha]_D^{20}$ -45 (c, 1.8 in 1,2-dimethoxyethane).

6-Benzoyl: 6-O-Benzoyl-1,2-O-isopropylidene- β -D-fructofuranose
 $C_{16}H_{20}O_7$ 324.33
 Cryst. (Et₂O/hexane). Mp 83-84°. $[\alpha]_D^{19}$ -14 (c, 2 in MeOH).

Irvine, J.C. et al., *J.C.S.*, 1922, **121**, 2146 (β -D-pyr)

Ohle, H. et al., *Ber.*, 1930, **63**, 2912 (β -D-pyr)

Ohle, H. et al., *Ber.*, 1935, **68**, 601 (β -D-di-Ac tosyl, β -D-dibenzoyl tosyl, β -D-tosyl, β -D-tritosyl, β -D-tri-Me)

Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 375

Ohle, H. et al., *Ber.*, 1938, **71**, 2302 (β -D-Ac, β -D-Ac ditosyl, β -D-tri-Ac, β -D-benzoyl, β -D-benzoyl ditosyl)

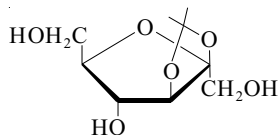
Verstraeten, L.M.J. et al., *Adv. Carbohydr. Chem.*, 1967, **22**, 229 (rev. derivs)

Sarel-Imber, M. et al., *Carbohydr. Res.*, 1973, **27**, 73 (β -D-tosyl)

Szarek, W.A. et al., *Tet. Lett.*, 1986, **27**, 3827
 Den Drijver, L. et al., *Carbohydr. Res.*, 1987, **161**, 65 (β -D-Fur derivs, cryst struct, β -D-Fur-6-benzoyl)

2,3-O-Isopropylidene-fructose, 8CI

I-63



$C_9H_{16}O_6$ 220.222

β -D-Furanose-form

Mp 80°. $[\alpha]_D$ +18.9 (H₂O). Referred to incorrectly as α -D by Zervas.

1,4,6-Tri-Ac: 1,4,6-Tri-O-acetyl-2,3-O-isopropylidene- β -D-fructofuranose
 $C_{15}H_{22}O_9$ 346.333
 Mp 55°. $[\alpha]_D$ -8 (EtOH).

1,4,6-Tribenzoyl: 1,4,6-Tri-O-benzoyl-2,3-O-isopropylidene- β -D-fructofuranose
 $C_{30}H_{28}O_9$ 532.546
 Mp 137°. $[\alpha]_D^{21}$ -9.1 (Me₂CO).

1,6-Ditosyl: 2,3-O-Isopropylidene-1,6-di-O-tosyl- β -D-fructofuranose
 [32087-61-9]

$C_{23}H_{28}O_{10}S_2$ 528.6
 Mp 132-133°. $[\alpha]_D^{20}$ +14.5 (c, 1.24 in EtOH).

Tri-Me: 2,3-O-Isopropylidene-1,4,6-tri-O-methyl- β -D-fructofuranose
 $C_{12}H_{22}O_6$ 262.302
 $[\alpha]_D$ +10 (EtOH).

1,6-Ditrityl: 2,3-O-Isopropylidene-1,6-di-O-trityl- β -D-fructofuranose
 $C_{47}H_{44}O_6$ 704.861
 Mp 155°. $[\alpha]_D$ -5.2 (Py).

Zervas, L. et al., *Ber.*, 1933, **66**, 1698 (β -D-form, β -D-tri-Ac, β -D-tribenzoyl, β -D-ditrityl)

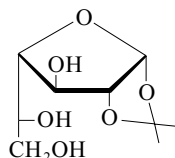
Morgan, W.Th.J. et al., *Helv. Chim. Acta*, 1938, **21**, 1023 (β -D-ditosyl)

Verstraeten, L.M.J. et al., *Adv. Carbohydr. Chem.*, 1967, **22**, 229 (rev)

Al-Jobore, A.A.H. et al., *Carbohydr. Res.*, 1971, **16**, 474 (β -D-ditosyl, pmr)

1,2-O-Isopropylidene-galactofuranose, 9CI, 8CI

I-64



$C_9H_{16}O_6$ 220.222

α -D-form

[51921-42-7]
 Cryst. (EtOAc). Mp 102-103°. $[\alpha]_D$ -27 (c, 2.0 in H₂O).

Tri-Ac: 3,5,6-Tri-O-acetyl-1,2-O-isopropylidene- α -D-galactofuranose
 [14297-97-3]
 $C_{15}H_{22}O_9$ 346.333
 $[\alpha]_D^{20}$ +25.5 (c, 1.0 in CHCl₃).

3-Benzoyl: 3-O-Benzoyl-1,2-O-isopropylidene- α -D-galactofuranose
 [53942-36-2]
 $C_{16}H_{20}O_7$ 324.33
 Cryst. (MeOH aq.). Mp 105-107°. $[\alpha]_D^{20}$ +41 (c, 1.0 in CHCl₃).

6-Benzoyl: 6-O-Benzoyl-1,2-O-isopropylidene- α -D-galactofuranose
 $C_{16}H_{20}O_7$ 324.33
 Cryst. (CHCl₃/petrol). Mp 93-95°. $[\alpha]_D^{20}$ -13.8 (c, 0.6 in CHCl₃).

3,6-Dibenzoyl: 3,6-Di-O-benzoyl-1,2-O-isopropylidene- α -D-galactofuranose
 [53942-38-4]
 $C_{23}H_{24}O_8$ 428.438
 Cryst. (Et₂O/petrol). Mp 127-129°. $[\alpha]_D^{20}$ +10.2 (c, 1 in CHCl₃).

5,6-O-Isopropylidene: 1,2:5,6-Di-O-isopropylidene- α -D-galactofuranose
 [10368-86-2]
 $C_{12}H_{20}O_6$ 260.286
 Cryst. (cyclohexane). Mp 97-98°. $[\alpha]_D$ -34 (c, 1.0 in MeOH).

5,6-O-Isopropylidene, 3-Ac: 3-O-Acetyl-1,2:5,6-di-O-isopropylidene- α -D-galactofuranose
 $C_{14}H_{22}O_7$ 302.324
 Syrup. $[\alpha]_D$ -7.5 (c, 1.47 in CHCl₃).

5,6-O-Isopropylidene, 3-benzoyl: 3-O-Benzoyl-1,2:5,6-di-O-isopropylidene- α -D-galactofuranose
 [19131-07-8]
 $C_{19}H_{24}O_7$ 364.394
 Mp 85-88°. $[\alpha]_D^{20}$ 0 (c, 5.0 in CHCl₃).

5,6-O-Isopropylidene, 3-tosyl: 1,2:5,6-Di-O-isopropylidene-3-O-tosyl- α -D-galactofuranose
 [28140-21-8]
 $C_{19}H_{26}O_8S$ 414.476
 Cryst. (EtOH). Mp 95°. $[\alpha]_D^{25}$ -14 (c, 0.5 in CHCl₃).

3-Me: 1,2-O-Isopropylidene-3-O-methyl- α -D-galactofuranose
 [36215-54-0]
 $C_{10}H_{18}O_6$ 234.249
 Bp_{0.2} 110-112°. $[\alpha]_D$ -31 (c, 0.9 in CHCl₃).

3-Me, 6-benzoyl: 6-O-Benzoyl-1,2-O-isopropylidene-3-O-methyl- α -D-galactofuranose
 [34727-39-4]
 $C_{17}H_{22}O_7$ 338.357
 $[\alpha]_D$ -20 (c, 1.0 in CHCl₃).

3-Me, 6-benzoyl, 5-mesyl: 6-O-Benzoyl-1,2-O-isopropylidene-5-O-mesyl-3-O-methyl- α -D-galactofuranose
 [34685-29-5]
 $C_{18}H_{24}O_9S$ 416.448
 Cryst. (Et₂O/petrol). Mp 98-98.5°. $[\alpha]_D$ -18 (c, 1.0 in CHCl₃).

3-Me, 6-tosyl: 1,2-O-Isopropylidene-3-O-methyl-6-O-tosyl- α -D-galactofuranose
 [36215-56-2]
 $C_{17}H_{24}O_8S$ 388.438
 $[\alpha]_D$ -20 (c, 0.9 in CHCl₃).

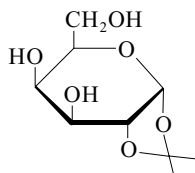
3-Me, 5,6-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-3-O-methyl- α -D-galactofuranose
 [32087-37-9]
 $C_{13}H_{22}O_6$ 274.313
 Mp 43.5-45°. Bp_{0.1} 100°. $[\alpha]_D$ -38 (c, 1.0 in CHCl₃).

Heap, J.M. et al., *J.C.S.(C)*, 1970, 712 (α -D-isopropylidene tosyl)

Brimacombe, J.S. et al., *J.C.S.(C)*, 1971, 1363; 3762 (α -D-isopropylidene Me, α -D-Me, α -D-Me benzoyl, α -D-Me tosyl, α -D-Me benzoyl mesyl, pmr)

- Hall, L.D. *et al.*, *Can. J. Chem.*, 1972, **50**, 1912 (α -*D*-isopropylidene 3-Ac)
 Morgenlie, S. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 3609 (α -*D*-form, α -*D*-isopropylidene)
 Brewer, C.L. *et al.*, *Carbohydr. Res.*, 1974, **36**, 188 (α -*D*-isopropylidene benzoyl, α -*D*-3-benzoyl, α -*D*-6-benzoyl, α -*D*-dibenzoyl)
 Lemieux, R.U. *et al.*, *Aust. J. Chem.*, 1975, **28**, 1799 (α -*D*-isopropylidene, α -*D*-isopropylidene benzoyl)
 Wang, H. *et al.*, *J.O.C.*, 2003, **68**, 2521-2524 (5,6-isopropylidene, 3-benzoyl, synth, pmr)

1,2-*O*-Isopropylidenegalactopyranose, 9CI
I-65
 1,2-*O*-(1-Methylethylidene)galactopyranose, 9CI

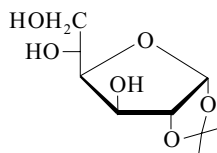


C₉H₁₆O₆ 220.222

- α -*D*-form** [60945-40-6]
 Mp 156-157° (92-93°). [α]_D -11.3 (EtOH).
 3,4-*O*-Ethylidene: 3,4-*O*-Ethylidene-1,2-*O*-isopropylidene- α -*D*-galactopyranose
 C₁₁H₁₈O₆ 246.26
 [α]_D -55.7 (CHCl₃).
 3,4-*O*-Ethylidene, 6-mesyl: Mp 98-99°.
 [α]_D -52.9 (CHCl₃).
 3,4-*O*-Ethylidene, 6-tosyl: Mp 106-107°.
 [α]_D -67.3 (CHCl₃).
 4,6-*O*-Ethylidene: 4,6-*O*-Ethylidene-1,2-*O*-isopropylidene- α -*D*-galactopyranose
 [6207-24-5]
 C₁₁H₁₈O₆ 246.26
 Mp 71-73°. [α]_D²¹ +57 (c, 1.4 in CHCl₃).
 4,6-*O*-Ethylidene, 3-benzoyl: [3006-46-0]
 C₁₈H₂₂O₇ 350.368
 Mp 175.5-176°. [α]_D²¹ +120 (c, 1.0 in CHCl₃).
 4,6-*O*-Ethylidene, 3-mesyl: Mp 97-99°.
 [α]_D +109 (EtOH).
 4,6-*O*-Ethylidene, 3-tosyl: [14960-50-0]
 Mp 115-116°. [α]_D²⁰ +117 (c, 0.7 in CHCl₃).
 4,6-*O*-Ethylidene, 3-benzyl: [13996-88-8]
 C₁₈H₂₄O₆ 336.384
 Mp 116-118°. [α]_D²⁵ +19 (c, 1.5 in CHCl₃).
 4,6-*O*-Ethylidene, 3-(methylthio-methyl): Bp_{0.5} 148-152°. [α]_D²¹ +15.5 (c, 0.8 in CHCl₃).
 3,4,6-Tri-Me: 1,2-*O*-Isopropylidene-3,4,6-tri-*O*-methyl- α -*D*-galactopyranose
 C₁₂H₂₂O₆ 262.302
 Bp_{0.3} 105°. [α]_D -31.4 (MeOH).
 Levene, P.A. *et al.*, *J. Biol. Chem.*, 1931, **92**, 257 (1,2-*O*-isopropylidene, tri-Me)
 Foster, A.B. *et al.*, *J.C.S.*, 1951, 980 (3,4-*O*-ethylidene, 6-mesyl, 6-tosyl)
 Ball, D.H. *et al.*, *J.C.S.*, 1958, 905 (3-tosyl)
 Tipson, R.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1959, **62**, 257 (1,2-*O*-isopropylidene)

- De Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 220; *Adv. Carbohydr. Chem. Biochem.*, 1977, **34**, 179 (rev)
 Ball, D.H. *et al.*, *J.O.C.*, 1966, **31**, 220 (4,6-*O*-ethylidene, 3-mesyl)
 Chittenden, G.J.F. *et al.*, *Carbohydr. Res.*, 1970, **15**, 101 (4,6-*O*-ethylidene, 3-benzoyl, 3-tosyl, 3-thiomethyl)
 Stacey, B.E. *et al.*, *Carbohydr. Res.*, 1976, **49**, 129 (1,2-*O*-isopropylidene, pmr, ms)

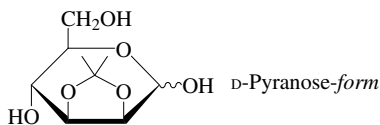
1,2-*O*-Isopropylidene-glucufuranose, 8CI
I-66



C₉H₁₆O₆ 220.222

- α -*D*-form** [18549-40-1]
 Needles (MeOH/Et₂O). Mp 161-162.5°.
 [α]_D²⁰ -11.8 (H₂O).
 3-Ac: 3-*O*-Acetyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 [24807-96-3]
 C₁₁H₁₈O₇ 262.259
 Mp 125-126°. [α]_D²⁰ -20.1 (H₂O).
 6-Ac: 6-*O*-Acetyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 [32754-29-3]
 C₁₁H₁₈O₇ 262.259
 Mp 144-146°. [α]_D -6.3 (EtOH).
 3,6-Di-Ac: 3,6-Di-*O*-acetyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 C₁₃H₂₀O₈ 304.296
 Mp 96°. [α]_D +10.7 (CHCl₃).
 3,5,6-Tri-Ac: 3,5,6-Tri-*O*-acetyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 [29364-56-5]
 C₁₅H₂₂O₉ 346.333
 Mp 75°. [α]_D²⁰ +24.6 (CHCl₃).
 3-Benzoyl: 3-*O*-Benzoyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 [37614-73-6]
 C₁₆H₂₀O₇ 324.33
 Syrup. [α]_D -26 (EtOH).
 3-Benzoyl, 5,6-di-Ac: 5,6-Di-*O*-acetyl-3-*O*-benzoyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 C₂₀H₂₄O₉ 408.404
 Mp 77-78°. [α]_D -26.7 (CHCl₃).
 6-Benzoyl: 6-*O*-Benzoyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 [3254-32-8]
 C₁₆H₂₀O₇ 324.33
 Mp 195-197°. [α]_D +7.4 (EtOH).
 6-Benzoyl, 3,5-di-Ac: 3,5-Di-*O*-acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 C₂₀H₂₄O₉ 408.404
 Mp 108°. [α]_D +7.1 (CHCl₃).
 3,6-Dibenzoyl: 3,6-Di-*O*-benzoyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 [55169-76-1]
 C₂₃H₂₄O₈ 428.438
 Mp 108-109°. [α]_D -4.6 (CHCl₃).
 5,6-Dibenzoyl, 3-Ac: 3-*O*-Acetyl-5,6-di-*O*-benzoyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 C₂₅H₂₆O₉ 470.475
 Mp 90°. [α]_D -26.6 (CHCl₃).
 3,5,6-Tribenzoyl: 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene- α -*D*-glucufuranose
 [6339-03-3]
 C₃₀H₂₈O₉ 532.546
 Mp 120-121°. [α]_D -94.2 (CHCl₃).
 6-Mesyl: 1,2-*O*-Isopropylidene-6-*O*-mesyl- α -*D*-glucufuranose
 C₁₀H₁₈O₈S 298.313
 Mp 99°. [α]_D -10 (MeOH).
 3-Tosyl: 1,2-*O*-Isopropylidene-3-*O*-tosyl- α -*D*-glucufuranose
 [2946-01-2]
 C₁₆H₂₂O₈S 374.411
 Syrup. [α]_D -12.2 (CHCl₃).
 6-Tosyl: 1,2-*O*-Isopropylidene-6-*O*-tosyl- α -*D*-glucufuranose
 [26275-20-7]
 C₁₆H₂₂O₈S 374.411
 Mp 108°. [α]_D²⁰ -9.3 (c, 2 in CHCl₃).
 3,6-Ditosyl: 1,2-*O*-Isopropylidene-3,6-di-*O*-tosyl- α -*D*-glucufuranose
 C₂₃H₂₈O₁₀S₂ 528.6
 Syrup. [α]_D -4.9 (CHCl₃).
 5,6-Ditosyl: 1,2-*O*-Isopropylidene-5,6-di-*O*-tosyl- α -*D*-glucufuranose
 C₂₃H₂₈O₁₀S₂ 528.6
 Mp 160°. [α]_D -6.4 (CHCl₃).
 3,5,6-Tritosyl: 1,2-*O*-Isopropylidene-3,5,6-tri-*O*-tosyl- α -*D*-glucufuranose
 [7022-86-8]
 C₃₀H₃₄O₁₂S₃ 682.789
 Mp 95-96° Mp 129°. [α]_D -5.2 (CHCl₃).
 5-Tosyl, 6-Ac: 6-*O*-Acetyl-1,2-*O*-isopropylidene-5-*O*-tosyl- α -*D*-glucufuranose
 C₁₈H₂₄O₉S 416.448
 Mp 133°. [α]_D +16.7 (CHCl₃).
 5,6-Ditosyl, 3-Ac: 3-*O*-Acetyl-1,2-*O*-isopropylidene-5,6-di-*O*-tosyl- α -*D*-glucufuranose
 C₂₅H₃₀O₁₁S₂ 570.637
 Mp 92°. [α]_D -28.8 (CHCl₃).
 5-Tosyl, 6-benzoyl, 3-Ac: 3-*O*-Acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene-5-*O*-tosyl- α -*D*-glucufuranose
 C₂₅H₂₈O₁₀S 520.556
 Mp 151°. [α]_D +0.98 (CHCl₃).
 5,6-Carbonate: 1,2-*O*-Isopropylidene- α -*D*-glucufuranose 5,6-carbonate
 [2875-90-3]
 C₁₀H₁₄O₇ 246.216
 Cryst. (EtOH aq.). Mp 228-230°.
 [α]_D²⁰ -36 (Me₂CO).
 5,6-Thiocarbonate: 1,2-*O*-Isopropylidene- α -*D*-glucufuranose 5,6-thiocarbonate
 [2816-87-7]
 C₁₀H₁₄O₆S 262.283
 Cryst. (EtOH). Mp 206-208°. [α]_D²⁰ -16 (c, 3 in Me₂CO).
 5,6-*O*-Isopropylidene: See 1,2:5,6-Di-*O*-isopropylidene-glucufuranose, D-717
 3,5-*O*-Benzylidene: See 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-glucufuranose, B-28
 3-Me: See 3-*O*-Methylglucose, M-256

de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1976, **34**, 179
 Barbat, J. *et al.*, *Carbohydr. Res.*, 1991, **219**, 115 (synth, pmr)
 Gartenmann Dickson, L. *et al.*, *Org. Biomol. Chem.*, 2004, **2**, 1217-1226 (Me β -D-fur)

2,3-O-Isopropylidenemannose I-71

C₉H₁₆O₆ 220.222

D-Pyranose-form

1-Ac: 1-O-Acetyl-2,3-O-isopropylidene- α -D-mannofuranose
 [79241-32-0]
 C₁₁H₁₈O₇ 262.259
 [α]_D²⁵ +55 (c, 1.0 in CH₂Cl₂).
4,6-Dibenzyl: 4,6-Dibenzyl-2,3-O-isopropylidene-D-mannopyranose
 [170998-36-4]
 C₂₃H₂₈O₆ 400.471
 Syrup.

 α -D-Furanose-form

1-Benzoyl: 1-O-Benzoyl-2,3-O-isopropylidene- α -D-mannofuranose
 [57492-90-7]
 C₁₆H₂₀O₇ 324.33
 Glass. [α]_D²⁰ +52.5 (c, 1.7 in EtOH).
1,6-Dimesyl: 2,3-O-Isopropylidene-1,6-di-O-mesyl- α -D-mannofuranose
 C₁₁H₂₀O₁₀S₂ 376.405
 Needles. Mp 147-148°. [α]_D²⁵ +33.5 (c, 1.39 in CHCl₃).
5,6-Dimesyl: 2,3-O-Isopropylidene-5,6-di-O-mesyl- α -D-mannofuranose
 [28978-36-1]
 C₁₁H₂₀O₁₀S₂ 376.405
 Cryst. (EtOAc/petrol). Mp 142-143°. [α]_D -10 (c, 1 in CHCl₃).
5,6-Isopropylidene: 2,3:5,6-Di-O-isopropylidene- α -D-mannofuranose
 [14131-84-1]
 C₁₂H₂₀O₆ 260.286
 Mp 121-122°. [α]_D¹⁵ +16.6 (c, 2.5 in EtOH).
5,6-Isopropylidene, 1-benzoyl: 1-O-Benzoyl-2,3:5,6-di-O-isopropylidene- α -D-mannofuranose
 [57526-34-8]
 C₁₉H₂₄O₇ 364.394
 Mp 127-128°. [α]_D²⁰ +33.4 (c, 2.3 in CHCl₃). An earlier preparation without assignment of anomeric config. had props. almost identical to these and was presumably the α -anomer.
5,6-Isopropylidene, 1-(2,4-dinitrobenzenesulfonyl): [35880-41-2]
 Mp 147-148°. [α]_D²⁰ -32.1 (1 in dioxan).
Me glycoside: Methyl 2,3-O-isopropylidene- α -D-mannofuranoside
 [27954-10-5]
 C₁₀H₁₈O₆ 234.249
 Syrup. [α]_D +85.3 (c, 1 in CHCl₃) (+82.6).

Me glycoside, 5,6-di-Ac: Methyl 5,6-di-O-acetyl-2,3-O-isopropylidene- α -D-mannofuranoside
 [26255-74-3]
 C₁₄H₂₂O₈ 318.323
 Cryst. (petrol). Mp 54-55°. [α]_D +57 (c, 3 in CHCl₃).

Me glycoside, 6-tosyl: Methyl 2,3-O-isopropylidene-6-O-tosyl- α -D-mannofuranoside
 [40789-24-0]
 C₁₇H₂₄O₈S 388.438
 Mp 94-95°. [α]_D¹⁶ +4.5 (c, 1.24 in CHCl₃).

Me glycoside, 5,6-dimesyl: Methyl 2,3-O-isopropylidene-5,6-di-O-mesyl- α -D-mannofuranoside
 [50692-25-6]
 C₁₂H₂₂O₁₀S₂ 390.432
 Cryst. (EtOH). Mp 143-145°. [α]_D +32.6 (c, 0.50 in CHCl₃).

Me glycoside, 5,6-isopropylidene: Methyl 2,3:5,6-di-O-isopropylidene- α -D-mannofuranoside
 [26255-73-2]
 C₁₃H₂₂O₆ 274.313
 Plates (EtOH aq.). Mp 23°. Bp_{0.04} 125° (bath). [α]_D²⁵ +68 (c, 4.65 in CHCl₃).

Me glycoside, 5-Me: Methyl 2,3-di-O-isopropylidene-5-O-methyl- α -D-mannofuranoside
 [26511-53-5]
 C₁₁H₂₀O₆ 248.275
 Cryst. (petrol). Mp 54°. [α]_D²⁴ +76 (c, 0.25 in CHCl₃).

Me glycoside, 5-benzyl: Methyl 5-O-benzyl-2,3-O-isopropylidene- α -D-mannofuranoside
 [161365-09-9]
 C₁₇H₂₄O₆ 324.373
 Syrup. [α]_D +62.4 (c, 0.7 in CHCl₃).

Me glycoside, 6-benzyl: Methyl 6-O-benzyl-2,3-O-isopropylidene- α -D-mannofuranoside
 [161365-10-2]
 C₁₇H₂₄O₆ 324.373
 Syrup. [α]_D +59.5 (c, 0.4 in CHCl₃).

Allyl glycoside, 5,6-isopropylidene: Allyl 2,3:5,6-di-O-isopropylidene- α -D-mannofuranoside
 [54515-83-2]
 C₁₅H₂₄O₆ 300.351
 [α]_D²⁵ +55.6 (c, 1.1 in CHCl₃).

 β -D-Furanose-form

5,6-O-Isopropylidene, 1-Ac: 1-O-Acetyl-2,3:5,6-di-O-isopropylidene- β -D-mannofuranose
 [54469-11-3]
 C₁₄H₂₂O₇ 302.324
 Mp 73-75°. [α]_D²⁵ +40.4 (c, 1.7 in CHCl₃). [α]_D²⁵ +22.4 (c, 1.5 in CHCl₃).

Me glycoside, 5,6-O-isopropylidene: Methyl 2,3:5,6-di-O-isopropylidene- β -D-mannofuranoside
 [26255-72-1]
 C₁₃H₂₂O₆ 274.313
 Mp 40-41°. Bp_{0.35} 118-124° (lit. gives a pressure range). [α]_D -49.3 (tetrachloroethane). [α]_D²⁵ -58.9 (c, 2.0 in CHCl₃).

Allyl glycoside, 5,6-O-isopropylidene: Allyl 2,3:5,6-di-O-isopropylidene- β -D-mannofuranoside
 [54515-84-3]
 C₁₅H₂₄O₆ 300.351
 Gum. [α]_D²⁵ -29.5 (c, 0.97 in CHCl₃).

 α -L-Furanose-form

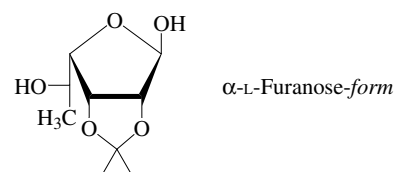
5,6-O-Isopropylidene: 2,3:5,6-Di-O-isopropylidene- α -L-mannofuranose
 [57819-52-0]
 C₁₂H₂₀O₆ 260.286
 Mp 121.5-122.5°. [α]_D²¹ -15.7 (c, 2.5 in EtOH).

[27954-10-5, 29847-39-0]

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 315A (nmr)
 Freudenberg, K. *et al.*, *Ber.*, 1923, **56**, 2119 (β -D-diisopropylidene)
 de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219 (rev, acetals)
 Randall, M.H. *et al.*, *Carbohydr. Res.*, 1969, **11**, 173 (α -D-Me fur isopropylidene, β -D-Me fur isopropylidene, α -D-Me fur di-Ac, α -D-Me fur Me)
 Lerner, L.M. *et al.*, *Carbohydr. Res.*, 1970, **14**, 297 (α -fur benzoyl)
 Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1970, 1273 (α -D-fur dimesyl)
 Dmytraczenko, A. *et al.*, *Carbohydr. Res.*, 1973, **26**, 297 (α -D-Me fur di-Ac, α -D-Me fur tosyl)
 Evans, M.E. *et al.*, *Carbohydr. Res.*, 1973, **28**, 359 (α -D-Me fur dimesyl)
 Boigegegrain, R.-A. *et al.*, *Bull. Soc. Chim. Fr.*, 1974, 2623 (α -D-Me fur isopropylidene, α -D-allyl fur isopropylidene, β -D-allyl fur isopropylidene, β -D-Me fur isopropylidene)
 Ritchie, R.G.S. *et al.*, *Can. J. Chem.*, 1975, **53**, 1424 (pmr)
 Lerner, L.M. *et al.*, *Carbohydr. Res.*, 1975, **44**, 13 (α -L-isopropylidene)
 Ohnui, H. *et al.*, *Tet. Lett.*, 1975, 2765 (α -D-isopropylidene benzoyl, α -D-benzoyl)
 de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1977, **34**, 179 (rev)
 Jurczak, J. *et al.*, *Carbohydr. Res.*, 1982, **104**, C18 (Me gly 5,6-isopropylidene)
 Sheldrick, B. *et al.*, *Acta Cryst. C*, 1985, **41**, 431 (α -D-isopropylidene, cryst struct)
 Stepowska, H. *et al.*, *Carbohydr. Res.*, 1994, **265**, 133 (α -D-Me gly, Me gly benzyl derivs)
 Tamura, J. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 895-911 (D-pyr 4,6-dibenzyl)
 Garcia-Moreno, M.I. *et al.*, *Eur. J. Org. Chem.*, 2004, 1803-1819 (α -D-fur 1-Ac)

2,3-O-Isopropylidenerhamnose I-72

6-Deoxy-2,3-O-isopropylidenemannose



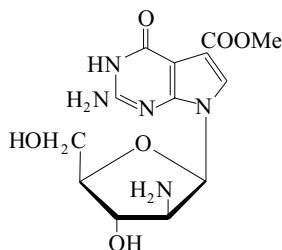
C₉H₁₆O₅ 204.222

L-form

[4926-05-0]
 Cryst. (EtOAc/petrol). Mp 84-86°. [α]_D²⁵ +17.6 (0.5h) \rightarrow +20.7 (15h) (c, 2.8 in H₂O). See also α - and β -anomers separately descr. below.

Kanagawamycin

AB 116. Antibiotic AB 116
[84873-16-5]



C₁₃H₁₇N₅O₆ 339.307

Nucleoside antibiotic. Prod. by *Actinoplanes kanagawaensis*. Shows antitumour and weak antibacterial props. Amorph. powder +1 H₂O. Sol. H₂O, DMSO, Py, MeOH; poorly sol. Me₂CO, hexane. Mp 225-228°. [α]_D²⁵ -14 (c, 1 in DMSO). Related to Cadeguomycin. λ_{\max} 231 (€ 14100); 272 (€ 6310); 297 (€ 6920) (0.1N HCl) (Derep). λ_{\max} 225 (sh) (€ 9175); 268 (€ 9175); 282 (sh) (€) (H₂O at pH 11) (Derep). λ_{\max} 232 (€ 19680); 272 (€ 6881); 298 (€ 7610) (H₂O) (Derep). λ_{\max} 233 (€ 15900); 272 (€ 6350); 298 (€ 6950) (H₂O) (Berdy). λ_{\max} 231 (€ 14200); 272 (€ 6350); 297 (€ 6950) (HCl) (Berdy).

N,O,O-Tri-Ac:

Amorph. powder. Mp 170-171°.

[86330-89-4]

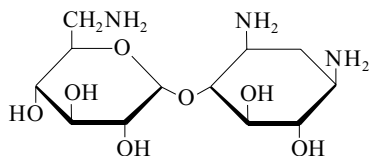
Naruto, S. et al., *Heterocycles*, 1983, **20**, 27 (isol, struct)

Japan. Pat., 1983, 83 32 893; CA, **99**, 37106 (isol)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Kanamine

4-O-(6-Amino-6-deoxy- α -D-glucopyranosyl)-2-deoxystreptamine, 9CI. NK 1003. Antibiotic NK 1003
[31077-71-1]



C₁₂H₂₅N₃O₇ 323.345

Aminoglycoside antibiotic. Isol. from *Streptomyces fradiae* and *Streptomyces kanamyceticus*. Needles. Mp 202-205°. [α]_D²⁵ +95 (c, 1 in H₂O).

► WK1970400

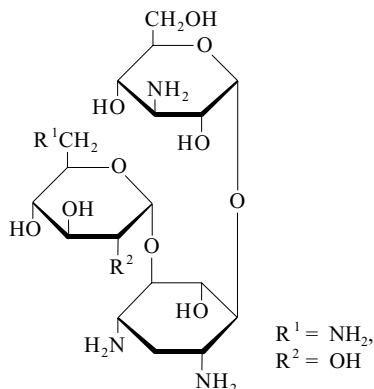
Hydrochloride (1:2): [34304-39-7]
[α]_D²² +89 (c, 0.3 in H₂O).

Umezawa, S. et al., *J. Antibiot.*, 1962, **15**, 51 (isol)

Nishimura, Y. et al., *Bull. Chem. Soc. Jpn.*, 1971, **44**, 2521 (synth, pmr)

K-1 Kanamycin A, 8CI

4-O-(6-Amino-6-deoxy- α -D-glucopyranosyl)-6-O-(3-amino-3-deoxy- α -D-glucopyranosyl)-2-deoxystreptamine, 9CI. **Kanamycin**, BAN, INN. Kanacin. Many other names
[59-01-8]



C₁₈H₃₆N₄O₁₁ 484.503

Aminoglycoside antibiotic. Isol. from *Streptomyces kanamyceticus*. Broad spectrum clinically used antibiotic. Cryst. (EtOH). Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. Log P -7.77 (uncertain value) (calc).

► Gastrointestinal and other adverse effects incl. nephrotoxicity and ototoxicity reported when used therapeutically. LD₅₀ (mus, orl) 20500 mg/kg. LD₅₀ (mus, ipr) 794 mg/kg. Exp. reprod. and teratogenic effects; LD₅₀ (mus, ivn) 220 mg/kg. WK1962000

Sulfate: Kanamytrex. Kantrex. Kano.

Kantrim

[25389-94-0]

[64013-70-3]

Cryst. Mp 250° dec. [α]_D²⁴ +149 (c, 0.87 in H₂O).

► LD₅₀ (rat, ipr) 3200 mg/kg. NZ3225030 Tetra-N-Ac: Mp 240°. [α]_D²⁵ +115 (c, 0.52 in H₂O).

3'-N-Me: 3'-N-Methylkanamycin A.

Combimicin A₄

[76551-32-1]

C₁₉H₃₈N₄O₁₁ 498.529

Prod. by *Micromonospora echinospora*.

Powder. λ_{\max} 200 (H₂O).

5-Deoxy: 5-Deoxykanamycin A

[62819-32-3]

C₁₈H₃₆N₄O₁₀ 468.503

Isol. from *Streptomyces kanamyceticus*.

Active against gram-positive and -negative bacteria.

Mp 250-255° dec. (dec. from 160°). [α]_D²⁵ +101.8 (c, 0.33 in H₂O). Lacks the OH group in the cyclitol ring.

► WK1969200

5-Deoxy; sulfate (2:3): [86540-92-3]

[α]_D²⁵ +124 (c, 0.5 in H₂O).

Cron, M.J. et al., *J.A.C.S.*, 1958, **80**, 2342 (isol) Hichens, M. et al., *J.A.C.S.*, 1963, **85**, 1547 (abs config)

Nakajima, M. et al., *Tet. Lett.*, 1968, 623 (synth, ir, nmr)

K-3

Koyama, G. et al., *Tet. Lett.*, 1968, 1875

(cryst struct, abs config)

Umezawa, S. et al., *Bull. Chem. Soc. Jpn.*, 1969, **42**, 533 (synth, ir)

Yamaoka, N. et al., *Chem. Pharm. Bull.*, 1974, **22**, 2196 (cmr)

Claes, P.J. et al., *Anal. Profiles Drug Subst.*, 1977, **6**, 259 (rev)

Kavadias, G. et al., *Can. J. Chem.*, 1978, **56**, 2086 (synth, pmr, deriv)

Japan. Pat., 1978, 78 34 988; CA, **89**, 127758 (isol, deriv)

Miyake, T. et al., *Bull. Chem. Soc. Jpn.*, 1983, **56**, 1149 (synth, pmr, cmr)

Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 5078 (synonyms)

Eneva, G. et al., *Spectrochim. Acta A*, 1991, **47**, 875 (pmr, cmr)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 177

Cox, J.R. et al., *Carbohydr. Res.*, 1995, **271**, 55 (pmr, conformn)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, KAL000; KAM000; KAV000

Kanamycin B, 8CI
K-4

Bekanamycin, INN. Aminodeoxykanamycin, JAN. Nebramycin factor 5. Nebramycin V. Kanendomycin. Many other names
[4696-76-8]

As Kanamycin A, K-3 with
R¹ = R² = NH₂

C₁₈H₃₇N₅O₁₀ 483.518

Aminoglycoside antibiotic. Prod. by

Streptomyces kanamyceticus. Shows

broad-spectrum activity. Congener of

Kanamycin A, K-3 administered as

sulfate. Cryst. or cryst. + 2H₂O.

Mp 178-182° dec. [α]_D¹⁸ +130 (c, 0.5 in H₂O). Log P -7.72 (uncertain value) (calc).

► LD₅₀ (mus, ipr) 800 mg/kg. WK1975000

Sulfate: **Bekanamycin sulfate**, JAN

[29701-07-3]

[70550-99-1] Mp >250° dec.

N-Ac: N-Acetylkanamycin B. NK 1013-2.

Antibiotic NK 1013-2

[31156-80-6]

C₂₀H₃₉N₅O₁₁ 525.555

Isol. from *Streptomyces kanamyceticus*.

Cryst.

Mp 229-232° dec. [α]_D²⁴ +117 (c, 1 in H₂O).

Not clear which nitrogen is acetylated.

Another (? the same) N-Ac deriv., Mp 220-250° dec. [α]_D²⁴ +150° (H₂O) has been reported.

Undeca-Ac: [α]_D²⁴ +107.8 (c, 0.49 in MeOH).

4'-O- α -D-Glucopyranosyl: 4'-O- α -D-Glucopyranosylkanamycin B

C₂₄H₄₇N₅O₁₅ 645.66

Prod. by *Streptomyces kanamyceticus*.

Sol. H₂O; poorly sol. Me₂CO, hexane.

► LD₅₀ (mus, ivn) 1040 mg/kg.

3'-N-Me: 3'-N-Methylkanamycin B.

Combimicin B₃

[58700-58-6]

C₁₉H₃₉N₅O₁₀ 497.545

Prod. by *Micromonospora echinospora*.

6''-O-Carbamoyl: Nebramycin IV.

Nebramycin factor 4

[51736-76-6]

C₁₉H₃₈N₆O₁₁ 526.543

Isol. from *Streptomyces* spp. Cryst. Sol. H₂O, MeOH; poorly sol. butanol, hexane. $[\alpha]_D^{25} +122.8$ (c, 7.8 in H₂O). pK_{a1} 5.3; pK_{a2} 6.8; pK_{a3} 7.8; pK_{a4} 9.

► LD₅₀ (mus, ivn) 219 mg/kg. WK1930000

Schmitz, H. *et al.*, *J.A.C.S.*, 1958, **80**, 2911 (isol)

Hichens, M. *et al.*, *J.A.C.S.*, 1963, **85**, 1547 (struct, abs config)

Stark, W.M. *et al.*, *Antimicrob. Agents Chemother.*, 1967, 314; 324; 332; 341 (Nebramycin IV)

Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969, **42**, 537 (synth, ir)

Japan. Pat., 1970, 70 06 077; *CA*, **73**, 2660 (isol, deriv)

Stark, W.M. *et al.*, *Folia Microbiol. (Prague)*, 1971, **16**, 205 (Nebramycin IV)

Koch, K.F. *et al.*, *J. Antibiot.*, 1973, **26**, 745

Suami, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1978, **51**, 2354 (synth, cmr)

Koch, K.F. *et al.*, *J.O.C.*, 1978, **43**, 1430 (cmr, pmr, ms)

Japan. Pat., 1982, 82 149 300; *CA*, **98**, 34907q (4'-Glucosylkanamycin B)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 5085

Eneva, G. *et al.*, *Spectrochim. Acta A*, 1991, **47**, 875 (pmr, cmr)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 121

Cox, J.R. *et al.*, *Carbohydr. Res.*, 1995, **271**, 55 (pmr, conformn)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BAU270; KBA100

Kanamycin C, 8CI**K-5**

4-O-(2-Amino-2-deoxy- α -D-glucopyranosyl)-6-O-(3-amino-3-deoxy- α -D-glucopyranosyl)-2-deoxystreptamine, 9CI.

Kanamycin

[2280-32-2]

As Kanamycin A, K-3 with

R¹ = OH, R² = NH₂C₁₈H₃₆N₄O₁₁ 484.503

Aminoglycoside antibiotic. Isol. from *Streptomyces kanamyceticus*. Shows broad-spectrum activity. Needles (DMF aq. or EtOH). Sol. H₂O; fairly sol. HCONH₂, MeOH; poorly sol. EtOH, hexane, butanol. Mp 270° dec. $[\alpha]_D^{25} +145$ (c, 0.58 in H₂O).

► LD₅₀ (mus, ivn) 225 mg/kg; LD₅₀ (mus, ivn) 200 mg/kg. NZ3165000

3'-Deoxy: 3'-Deoxykanamycin C. Antibiotic 535

C₁₈H₃₆N₄O₁₀ 468.503

From *Streptomyces cremus tobramycinii*. Sol. H₂O; poorly sol. Me₂CO, hexane.

Mp 247-250°.

► LD₅₀ (mus, ivn) 225 mg/kg, LD₅₀ (mus, scu) 1150 mg/kg.

2-Hydroxy: 2-Hydroxykanamycin C. LL-BM 27 α . Antibiotic LL-BM 27 α [83480-58-4]

C₁₈H₃₆N₄O₁₂ 500.502

Prod. by *Streptomyces* sp. BM27. Sol. H₂O; poorly sol. Me₂CO, hexane. λ_{max} (H₂O) (Berdy).

Murase, M. *et al.*, *J. Antibiot., Ser. A*, 1961, **14**, 156; 367 (isol)

Hichens, M. *et al.*, *J.A.C.S.*, 1963, **85**, 1547 (abs config, struct)

Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969, **42**, 529 (synth, ir, nmr)

Toda, S. *et al.*, *J. Antibiot.*, 1977, **30**, 1002 (synth)

Harada, K. *et al.*, *J. Antibiot.*, 1982, **35**, 102 (ms)

Borders, D.B. *et al.*, *J. Antibiot.*, 1982, **35**, 1107-1110 (2-Hydroxykanamycin C)

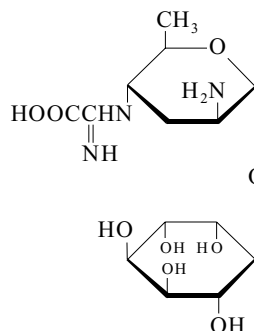
Konstantinova, N.V. *et al.*, *CA*, 1986, **104**, 17418 (deriv)

Kasugamycin, 8CI**K-6**

3-O-[2-Amino-4-[(carboxyiminomethyl)-amino]-2,3,4,6-tetra-deoxy- α -D-arabino-hexopyranosyl]-D-chiro-inositol, 9CI.

Kasumin L

[6980-18-3]

C₁₄H₂₅N₃O₉ 379.366

Aminoglycoside antibiotic. Prod. by *Streptomyces kasugaensis*. Inhibitor of the fungus responsible for rice blast.

pK_{a1} 2; pK_{a2} 7.1; pK_{a3} 10.6 (amidine). pK_a 10.6.

► NM7521650

Hydrochloride: Kasumin. NSC 100858

[19408-46-9]

[39080-40-5]

Plates. Sol. H₂O; poorly sol. MeOH, hexane. Mp 206-210° dec. $[\alpha]_D^{25} +125$ (c, 1.6 in H₂O).

► LD₅₀ (mus, orl) 20.5 mg/kg; LD₅₀ (mus, ivn) 800 mg/kg, LD₅₀ (mus, scu) 2000 mg/kg, LD₅₀ (mus, ipr) 2000 mg/kg. NM7521800

Umezawa, H. *et al.*, *J. Antibiot., Ser. A*, 1965, **18**, 101 (isol)

Ikekawa, T. *et al.*, *J. Antibiot., Ser. A*, 1966, **19**, 49 (cryst struct, abs config)

Suhara, Y. *et al.*, *Tet. Lett.*, 1966, 1239 (struct, ir, nmr)

Fukagawa, Y. *et al.*, *J. Antibiot.*, 1968, **21**, 50 (biosynth)

Suhara, Y. *et al.*, *J.A.C.S.*, 1968, **90**, 6559; 1972, **94**, 6501 (synth, nmr, ir)

Nii, Y. *et al.*, *Tet. Lett.*, 1979, 2517

Martindale, *The Extra Pharmacopoeia*, 28th/29th edn., Pharmaceutical Press, 1982, 12876

Sato, K. *et al.*, *CA*, 1983, **99**, 83581 (rev)

Pesticide Manual, 9th edn., 1991, No. 7610

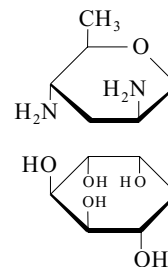
Agrochemicals Handbook, 3rd edn., Royal Society of Chemistry, 1992, A501

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, KCK000

Kasuganobiosamine, 8CI**K-7**

3-O-(2,4-Diamino-2,3,4,6-tetra-deoxy- α -D-arabino-hexopyranosyl)-D-chiro-inositol, 9CI

[6189-93-1]

C₁₂H₂₄N₂O₇ 308.331

Degradn. prod. of Kasugamycin, K-6.

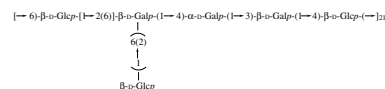
Hydrochloride (1:2): Mp 225-230° dec.

$[\alpha]_D^{25} +103$ (c, 1.8 in H₂O).

Suhara, Y. *et al.*, *J. Antibiot., Ser. A*, 1965, **18**, 187 (isol)

Nakajima, M. *et al.*, *Tet. Lett.*, 1968, 2271 (synth)

Suhara, Y. *et al.*, *J.A.C.S.*, 1972, **94**, 6501 (synth)

Kefiran**K-8**

Exopolysaccharide composed of hexasaccharide repeating units. Prod. by *Lactobacillus kefiranofaciens* and *Lactobacillus delbrueckii* ssp. *bulgaricus* both isol. from kefir grains. Sol. H₂O. $[\alpha]_D^{25} +68$ (c, 1.0 in H₂O).

Poly(O-Me):

Syrup. $[\alpha]_D^{25} +18$ (CHCl₃).

Kooiman, P. *et al.*, *Carbohydr. Res.*, 1968, **7**, 200-211

Micheli, L. *et al.*, *Appl. Microbiol. Biotechnol.*, 1999, **53**, 69-74 (isol, cd, struct)

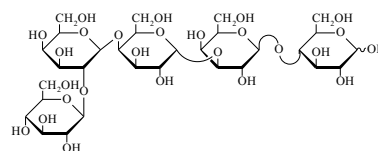
Frengova, G.I. *et al.*, *Z. Naturforsch., C*, 2002, **57**, 805-810 (isol)

Maeda, H. *et al.*, *J. Agric. Food Chem.*, 2004, **52**, 5533-5538 (pmr, cmr, struct)

Kefirose**K-9**

β -D-Glucopyranosyl-(1→2)- β -D-galactopyranosyl-(1→4)- α -D-galactopyranosyl-(1→3)- β -D-galactopyranosyl-(1→4)-D-glucose, 9CI

[20108-50-3]

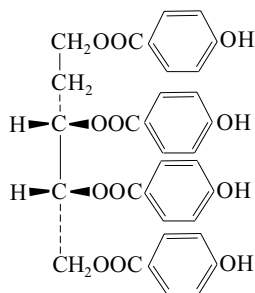
C₃₀H₅₂O₂₆ 828.725

Enzymic degradation prod. of Kefiran, K-8. Syrup. $[\alpha]_D^{25} +90$ (H₂O).

Kooiman, P. *et al.*, *Carbohydr. Res.*, 1968, **7**, 200

Kelletin II

2-Deoxy-D-ribitol tetrakis(4-hydroxybenzoate)
[87698-01-9]



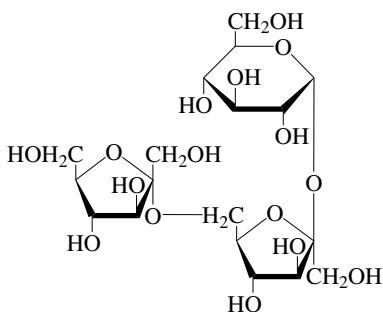
$C_{33}H_{28}O_{12}$ 616.577

Metab. of the marine mollusc, *Kelletia kelletii*. Antibacterial, cytotoxic. Sol. MeOH, bases, Et₂O; poorly sol. H₂O. λ_{max} 258 (€ 63100) (EtOH/HCl) (Derep). λ_{max} 301 (€ 100000) (EtOH/NaOH) (Derep). λ_{max} 258 (€ 50100) (EtOH) (Derep). λ_{max} 259 (€ 24700) (EtOH) (Berdy). λ_{max} 257 (€ 33900) (HCl) (Berdy). λ_{max} 302 (€ 45600) (NaOH) (Berdy).

Tymiak, A.A. *et al.*, *J.A.C.S.*, 1983, **105**, 7396 (isol, ms, pmr, cmr)

Kelose**K-11**

O- α -D-Fructofuranosyl-(2 \rightarrow 6)- β -D-fructofuranosyl- α -D-glucopyranoside, 9CI
[138809-76-4]



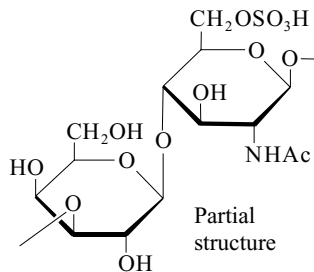
$C_{18}H_{32}O_{16}$ 504.441

Constit. of commercial beet syrup, *Beta vulgaris*.

Swallow, K.W. *et al.*, *J. Agric. Food Chem.*, 1993, **41**, 1587-1592 (isol, cmr, struct)

Keratan sulfate

Keratosulfate, 9CI, 8CI
[9056-36-4]

**K-12**

A proteoglycan, the polysaccharide of which is mainly composed of a repeating unit of β -D-galactosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy- β -D-glucopyranosyl 6-sulfate-(1 \rightarrow 3)-, with occasionally some L-fucose, D-mannose and other sugars present. The linkage to protein is either through the N of L-asparagine or the O of L-serine or L-threonine. MW 5000-20000. Present in aorta, cornea, cartilage and nucleus pulposus. $[\alpha]_D^{20} +4.5$ (H₂O).

Jeanloz, R.W. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1970, **2B**, 617
CRC Handb. Biochem. Mol. Biol., Lipids, Carbohydrates, Steroids, 3rd Ed., 1975, 357
Sharon, N. *et al.*, *Complex Carbohydrates*, Addison-Wesley, Mass., 1975,
Lindahl, U. *et al.*, *Annu. Rev. Biochem.*, 1978, **47**, 385

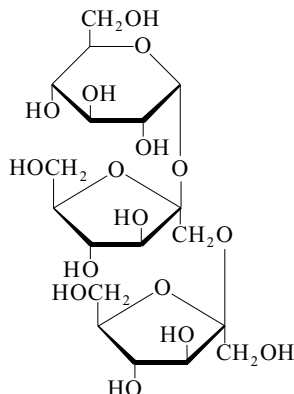
Kennedy, J.F. *et al.*, *Proteoglycans-Biological and Chemical Aspects in Human Life*, Elsevier, 1979,

Peña, M. *et al.*, *Carbohydr. Res.*, 1998, **309**, 117-124 (pmr, cmr, struct)

Yeung, B.K.S. *et al.*, *J. Carbohydr. Chem.*, 2002, **21**, 799-865 (rev, synth)

1-Kestose**K-13**

O- β -D-Fructofuranosyl-(2 \rightarrow 1)- β -D-fructofuranosyl α -D-glucopyranoside, 9CI, 8CI.
O- α -D-Glucopyranosyl-(1 \rightarrow 2)-O- β -D-fructofuranosyl-(1 \rightarrow 2)- β -D-fructofuranoside. Isokestose. 1-Fructosylsucrose. Inulobiosylsucrose. 1-Kestotriose
[470-69-9]



$C_{18}H_{32}O_{16}$ 504.441

A fructan. See Fructans, F-43. Formed by the action of various enzymes on sucrose. Also obt. from some monocotyledons and from moulds, e.g. *Aspergillus*. Isol from the roots of asparagus. Appears to play an essential role in the metabolism of D-fructose polymers in the tubers of the Jerusalem artichoke.

Mp 82-88° Mp 200-201° (double Mp). $[\alpha]_D^{20} +28.5$ (c, 1.8 in H₂O).

Undeca-Ac:

$C_{40}H_{54}O_{27}$ 966.85

Syrup. $[\alpha]_D^{20} +31.8$ (c, 3.7 in CHCl₃).

Undeca-Me:

$C_{29}H_{54}O_{16}$ 658.736

$[\alpha]_D^{20} +27.9$ (c, 2.5 in H₂O).

Bacon, J.S.D. *et al.*, *J.C.S.*, 1953, 2528 (isol)
Barker, S.A. *et al.*, *J.C.S.*, 1954, 2125

Bacon, J.S.D. *et al.*, *Biochem. J.*, 1959, **73**, 507 (isol)

Gross, D. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 360 (enzymic synth)

Pazur, J.H. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 365 (enzymic synth)

Edelman, J. *et al.*, *Biochem. J.*, 1966, **98**, 787

Binkley, W.W. *et al.*, *Carbohydr. Res.*, 1969, **10**, 245; 1971, **17**, 127 (pmr, ms)

Jeffrey, G.A. *et al.*, *Acta Cryst. B*, 1972, **28**, 257 (cryst struct)

Jarrell, H.C. *et al.*, *Carbohydr. Res.*, 1979, **76**, 45 (cmr)

Calub, T.M. *et al.*, *Carbohydr. Res.*, 1990, **199**, 11 (pmr, cmr)

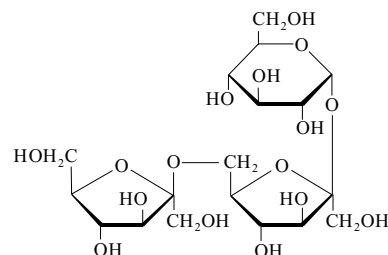
Waterhouse, A.L. *et al.*, *Carbohydr. Res.*, 1991, **217**, 29 (pmr, cmr, conformum)

Takeda, H. *et al.*, *J. Ferment. Bioeng.*, 1994, **77**, 386-389 (enzymic synth)

Fukuchi, E. *et al.*, *Magn. Reson. Chem.*, 2000, **38**, 1005-1011 (isol, pmr, cmr)

6-Kestose**K-14**

O- β -D-Fructofuranosyl-(2 \rightarrow 6)- β -D-fructofuranosyl α -D-glucopyranoside, 9CI, 8CI.
Kestose. 6-Kestotriose
[562-68-5]



$C_{18}H_{32}O_{16}$ 504.441

A fructan. See Fructans, F-43. Produced by the action of yeast invertase on a conc. sucrose soln. Constit. of the grasses *Lolium multiflorum* and *Arrhenatherum elatius*. Widely distributed in cereals and other grasses. Also isol. from onion (*Allium cepa*). Component of Neosugar which is a mixt. with Nystose, N-87 and its 1-fructosyl deriv. used as a dietary constit. for improvement of intestinal flora.

Mp 145°. $[\alpha]_D^{20} +27.3$ (c, 2.19 in H₂O).

Undeca-Me: $[\alpha]_D^{18} +25.8$ (c, 4.2 in H₂O).

Albon, N. *et al.*, *J.C.S.*, 1953, 24 (synth, isol)

Gross, D. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 360 (enzymic synth)

Hammer, H. *et al.*, *Acta Chem. Scand.*, 1968, **22**, 197 (occur)

Jeffrey, G.A. *et al.*, *Acta Cryst. B*, 1972, **28**, 257 (cryst struct)

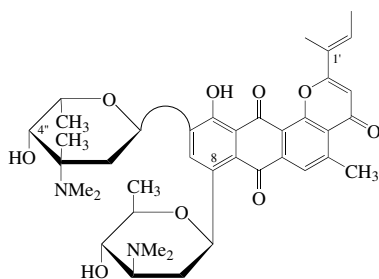
Ferretti, V. *et al.*, *Acta Cryst. C*, 1984, **40**, 531 (cryst struct)

Liu, J. *et al.*, *Carbohydr. Res.*, 1991, **217**, 43 (pmr, cmr)

Buddington, R.K. *et al.*, *Am. J. Clin. Nutr.*, 1996, **63**, 709-719 (pharmacol, neosugar)

Kidamycin

Rubiflavin B
[11072-82-5]



C₃₉H₄₈N₂O₉ 688.816

Anthracycline-type antibiotic. Isol. from *Streptomyces phaeovorticillatus* var. *takatsukiensis*. Antitumour agent. Orange-red cryst. (MeOH). Sol. MeOH, C₆H₆, acids, Py; poorly sol. H₂O, hexane. Mp 214–217° dec. [α]_D²⁰ +476 (c, 0.986 in CHCl₃). Related to Hedamycin, H-2 and Pluramycin A. λ_{max} 258 (ε 43500); 323 (ε 14200); 543 (ε 9500) (EtOH/NaOH) (Derep). λ_{max} 244 (ε 46600); 271 (ε 32700); 343 (ε 6400); 427 (ε 9100) (EtOH) (Derep). λ_{max} 244 (E1%/1cm 807); 270; 434 (E1%/1cm 210) (MeOH) (Berdy).

► LD₅₀ (mus, ivn) 12.5 mg/kg, LD₅₀ (mus, ipr) 20 mg/kg. CB4584600

Tri-Ac: Mp 214–216°. [α]_D²⁵ +256.2 (c, 1.1 in CHCl₃).

1',S,2'S-Epoxyde: **Epoxykidamycin**. *Largomycin FII component 4* [99237-11-3]

C₃₉H₄₈N₂O₁₀ 704.816

Prod. by *Streptomyces pluricologrescens*. Active against gram-positive bacteria and fungi. Sol. MeOH, EtOAc, CHCl₃; poorly sol. H₂O, hexane. λ_{max} 245 (ε 33900); 268 (sh) (ε 20600); 288 (sh) (ε 10800); 428 (ε 6120) (EtOH/HCl) (Derep). λ_{max} 257 (ε 33800); 283 (sh) (ε 12100); 335 (ε 7390); 555 (ε 5140) (EtOH/NaOH) (Derep). λ_{max} 246 (ε 33400); 268 (sh) (ε 2200); 288 (sh) (ε 10800); 434 (ε 5770) (EtOH) (Derep). λ_{max} 246 (E1%/1cm 474); 434 (E1%/1cm 82) (EtOH) (Berdy).

8-Deglycosyl, 4''-Ac: **Saptomycin G**. 8-C-Deglycosylrubiflavin F [138370-81-7]

C₃₃H₃₅NO₈ 573.641

Prod. by *Streptomyces* sp. HP530. Antitumour agent. Yellow powder. Sol. MeOH, acids, CHCl₃, C₆H₆; fairly sol. EtOAc, Me₂CO; poorly sol. H₂O, hexane. [α]_D²⁰ +118 (c, 0.1 in CHCl₃). λ_{max} 243 (ε 73200); 267 (sh) (ε 44200); 421 (ε 15300) (MeOH/HCl) (Derep). λ_{max} 255 (ε 65400); 285 (sh) (ε 21800); 337 (ε 15700); 544 (ε 10300) (MeOH/NaOH) (Derep). λ_{max} 243 (ε 65400); 267 (sh) (ε 39500); 422 (ε 13300) (MeOH) (Derep). λ_{max} 250; 278; 410 (MeOH) (Berdy).

Kanda, N. *et al.*, *J. Antibiot.*, 1971, **24**, 599 (isol)
Furukawa, M. *et al.*, *Tetrahedron*, 1975, **31**, 2989 (struct, uv, ir, nmr, cryst struct)
Séguin, U. *et al.*, *Tetrahedron*, 1978, **34**, 761; 3623 (struct, pmr, ir, uv, cmr)

K-15

Takeshima, H. *et al.*, *Antibiotics (N.Y.)*, 1979, **5**, 120 (rev)

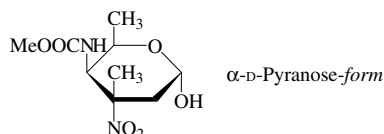
Nadig, H. *et al.*, *Helv. Chim. Acta*, 1985, **68**, 953 (isol)

Byrne, K.M. *et al.*, *J. Antibiot.*, 1985, **38**, 1040 (*Epoxykidamycin*)

Abe, N. *et al.*, *J. Antibiot.*, 1993, **46**, 1530; 1536 (*Saptomycin G*, isol, pmr, cmr, uv, ms)

Kijanose

2,3,4,6-Tetradecoxy-4-(methoxycarbonylamino)-3-C-methyl-3-nitro-xylo-hexopyranose. *Tetronitrose*



C₉H₁₆N₂O₆ 248.235

D-form [79005-87-1]

Component of Kijanamicin, Tetrocarcin A and Tetrocarcin B.

α-D-Pyranose-form

Me glycoside: Methyl 2,3,4,6-tetradecoxy-4-(methoxycarbonylamino)-3-C-methyl-3-nitro-α-D-xylo-hexopyranoside [78798-14-8]
C₁₀H₁₈N₂O₆ 262.262
[α]_D +152 (CHCl₃). [α]_D +130 (c, 0.3 in MeOH).

β-D-Pyranose-form

Me glycoside: Methyl 2,3,4,6-tetradecoxy-4-(methoxycarbonylamino)-3-C-methyl-3-nitro-β-D-xylo-hexopyranoside C₁₀H₁₈N₂O₆ 262.262
Mp 180.5–181.5°. [α]_D +34.1 (MeOH). [78798-15-9]

Tamaoki, T. *et al.*, *J. Antibiot.*, 1980, **33**, 668; 946

Mallams, A.K. *et al.*, *J.A.C.S.*, 1981, **103**, 3938 (pmr, cmr, ms, *Me glycosides*)

Funaki, F. *et al.*, *Tet. Lett.*, 1982, 3069 (*α-D-Me pyr*)

Hirayama, N. *et al.*, *Bull. Chem. Soc. Jpn.*, 1983, **56**, 2112 (*α-Me Pyr*, *β-Me Pyr*, *cryst struct*)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1983, **123**, C19 (*partial synth*)

Mallams, A.K. *et al.*, *J.C.S. Perkin 1*, 1983, 1497 (*occur*)

Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1986, **155**, 236 (*synth*)

Giuliano, R.M. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 295-299 (*Me gly, synth*)

Kojihexaose

K-17

β-D-Glcp (1 → 2)-[β-D-Glcp (1 → 2)]₄-β-D-Glcp

C₃₆H₆₂O₃₁ 990.867

Higher homologue of Kojitriose, K-18.

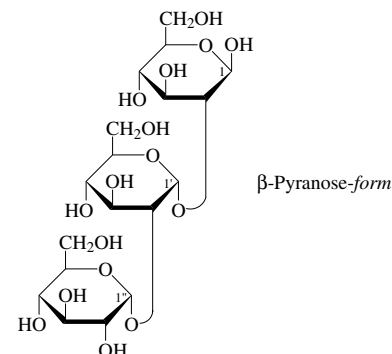
Prob. struct. Isol. from *Rhizobium japonicum* strain 561. Sol. H₂O. [α]_D +166.3 (c, 1.6 in H₂O).

Watanabe, T. *et al.*, *Carbohydr. Res.*, 1982, **110**, 170

Kojitriose

K-18

O-α-D-Glucopyranosyl-(1 → 2)-O-α-D-glucopyranosyl-(1 → 2)-D-glucose, 9CI [74738-47-9]



C₁₈H₃₂O₁₆ 504.441

Component of the membrane teichoic acid isol. from *Streptococcus faecalis* strain 8191.

Mp 228–230° dec. [α]_D²⁵ +150 → +156 (c, 1.7 in H₂O).

β-Pyranose-form

Undeca-Ac:

C₄₀H₅₄O₂₇ 966.85
Mp 187–188°. [α]_D²⁵ +123 (c, 2.2 in CHCl₃).

Wicken, A.J. *et al.*, *Biochem. J.*, 1963, **87**, 54 (isol)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1981, **88**, 158 (*synth*)

Watanabe, T. *et al.*, *Carbohydr. Res.*, 1982, **110**, 170 (isol)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1987, **162**, 95 (*synth*)

Bols, M. *et al.*, *Acta Chem. Scand.*, 1996, **50**, 931-937 (*synth*)

Krestin

K-19

Polysaccharide K. Polysaccharide Kureha. PSK

[66455-27-4]

Protein-bound β-glucan. Isol. from the mushroom *Coriolus versicolor* CM-101. Antineoplastic agent.

Uetsuka, A. *et al.*, *Adv. Exp. Med. Biol., Sect. B*, 1979, **121**, 21-31 (*pharmacol*)

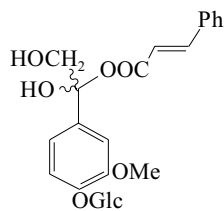
Fisher, M. *et al.*, *Anticancer Res.*, 2002, **22**, 1737-1754 (rev)

Yamaguchi, Y. *et al.*, *Anticancer Res.*, 2004, **24**, 639-647 (*pharmacol*)

Ohwada, S. *et al.*, *Br. J. Cancer*, 2004, **90**, 1003-1010 (*clin trial*)

Kujimycin A

4^A-O-Deacetylankamycin
[33955-27-0]



C₄₀H₇₀O₁₅ 790.984

Macrolide antibiotic. From *Streptomyces spinichromogenes* var. *kujimyceticus*.

Protein synth. inhibitor. Powder (Et₂O/ petrol). Sol. MeOH, Et₂O; poorly sol. H₂O, hexane.

Mp 114-115°. [α]_D²⁰ -83 (c, 1 in MeOH). λ_{max} 289 (E1%/1cm 3.5) (MeOH) (Berdy).

► LD₅₀ (mus, ivn) 400 mg/kg. OE3047000

15-Ac: **Kujimycin C**
[33956-60-4]

C₄₂H₇₂O₁₆ 833.021

More active antibiotic than Kujimycin A.

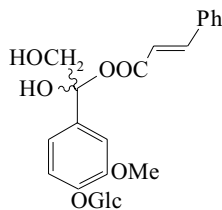
Omura, S. *et al.*, *J. Antibiot. Ser. A*, 1969, **22**, 500

Omura, S. *et al.*, *J. Antibiot.*, 1971, **24**, 717

Sawada, J. *et al.*, *J. Antibiot.*, 1974, **27**, 639

K-20**Kutkin****K-21**

4-[1,2-Dihydroxy-1-[(1-oxo-3-phenyl-2-propenyl)oxy]ethyl]-2-methoxyphenyl β-D-glucopyranoside, 9CI. 2-Methoxy-4-(1,1,2-trihydroxyethyl)phenyl β-D-glucopyranoside 1-cinnamate, 8CI
[25356-80-3]



C₂₄H₂₈O₁₁ 492.479

Constit. of roots of *Picrorhiza kurrooa*.

Mp 211°. [α]_D⁴¹ -165.

Basu, K. *et al.*, *Experientia*, 1970, **26**, 818 (*isol. ir, pmr, ms*)

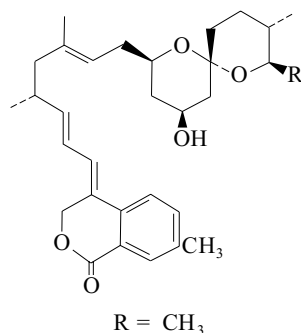
Basu, K. *et al.*, *J.O.C.*, 1970, **35**, 3159 (*isol*)

LabioseC₁₈H₃₂O₁₆ 504.441

Prob. a trisaccharide. Struct. unknown.
Isol. from root nodules of *Eremostachys labiosa*. Small prisms (EtOH aq.).
Mp 126-128°. [α]_D²⁰ +136.7 (H₂O).
Strepkov, S.M. *et al.*, *Ber.*, 1937, **70**, 1166
Strepkov, S.M. *et al.*, *Chem. Zentralbl.*, 1940, 1840

Lacrimin A

[87292-17-9]

C₃₁H₄₂O₅ 494.67

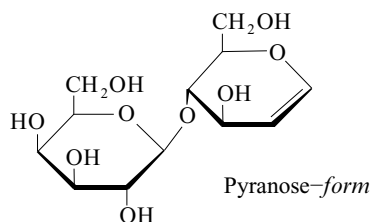
Semisynthetic. Antihypotensive agent.
[α]_D²² -49 (c, 0.26 in CHCl₃). Log P 6.19 (calc).

Japan. Pat., 1983, 83 69 886, (*Sankyo*); *CA*, **99**, 156820x (*synth*)

Takle, A. *et al.*, *Tetrahedron*, 1990, **46**, 4503 (*synth*)

Lactal

4-O- β -D-Galactopyranosyl-1,2-dideoxy-D-arabino-1-hexenose. 1,5-Anhydro-2-deoxy-4-O- β -D-galactopyranosyl-D-arabino-hex-1-enitol
[65207-55-8]

C₁₂H₂₀O₉ 308.285

Cryst. Mp 191-192°. [α]_D²³ +27.5 (c, 1.6 in H₂O).

Hexa-Ac: [51450-24-9]

C₂₄H₃₂O₁₅ 560.508Mp 114°. [α]_D²⁰ -18 (c, 0.8 in CHCl₃).

Haworth, W.N. *et al.*, *J.C.S.*, 1930, 2644 (*synth, hexa-Ac*)

Haskins, W.T. *et al.*, *J.A.C.S.*, 1942, **64**, 1852 (*hexa-Ac*)

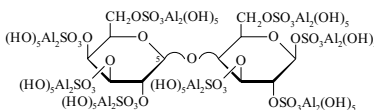
Helferich, B. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 209 (*rev*)

Rivera-Sagredo, A. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 903-919 (*pmr, conformn*)

Shull, B.K. *et al.*, *J. Carbohydr. Chem.*, 1996, **15**, 955 (*hexa-Ac, synth, pmr, cmr*)

L-1**Lactalfate, INN**

Lactose octakis(hydrogen sulfate) basic aluminium salt
[96427-12-2]

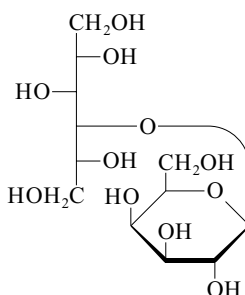
C₁₂H₅₄Al₁₆O₇₅S₈ 2086.746

Antilucer agent.

Spanish Pat., 1985, 532 088; *CA*, **106**, 5370n (*synth*)

Lactitol, BAN, INN**L-5**

4-O- β -D-Galactopyranosyl-D-glucitol, 9CI.
Emportal. Floralac. Importal. Oponaf. Portolac. E966
[585-86-4]
[81025-04-9]

C₁₂H₂₄O₁₁ 344.315

Artificial sweetener used in foods.
Monohydrate used in the management of hepatic encephalopathy. Bulking agent for cosmetics and pharmaceuticals. Laxative.
Cryst. + 1, 2 or 3H₂O. Mp 95-98° (monohydrate). Log P -6.86 (calc). A food additive petition for GRAS status has been filed with the FDA.

► LD₅₀ (rat, orl) 27500 mg/kg. LZ4392000
[81025-03-8]

Hoagland, P.D. *et al.*, *Carbohydr. Res.*, 1979, **74**, 135 (*cmr*)

Van Velthuijsen, J.A. *et al.*, *J. Agric. Food Chem.*, 1979, **27**, 680 (*rev, synth, props, use*)

Kanters, J.A. *et al.*, *Acta Cryst. C*, 1990, **46**, 2408 (*cryst struct*)

Van Velthuijsen, J.A. *et al.*, *Food Sci. Technol.*, 1991, **48**, 283 (*rev*)

Kivikoski, J. *et al.*, *Carbohydr. Res.*, 1992, **223**, 45; 53; 189 (*cryst struct*)

Sinkledam, E.J. *et al.*, *J. Am. Coll. Toxicol.*, 1992, **11**, 165; 189; 209; 219; 233; 249 (*tox*)

Christiansen-Brams, I. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 813 (*synth, pmr, cmr*)

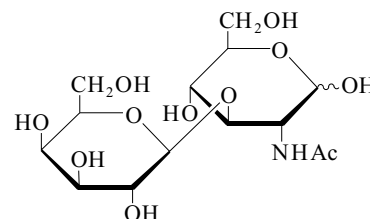
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1043

Peruche, B. *et al.*, *Pharm. Ztg.*, 1993, **138**, 40 (*rev*)

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1533-1534 (*props*)

L-4**Lacto-N-biose I**

2-Acetamido-2-deoxy-3-O- β -D-galactopyranosyl-D-glucose. β -D-Galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy-D-glucose
[50787-09-2]

C₁₄H₂₅NO₁₁ 383.352

Found in combined form in human milk and in blood group A substance.
Mp 197°. [α]_D²⁵ +22 \rightarrow +7 (c, 1.0 in H₂O).

2,2,2-Trichloroethyl glycoside:

Cryst. (EtOH/EtOAc). Mp 187-188°. [α]_D²⁵ -29.3 (c, 1 in H₂O).

Kuhn, R. *et al.*, *Chem. Ber.*, 1954, **87**, 1553 (*struct*)

Cheese, I.A.F.L. *et al.*, *Nature (London)*, 1961, **191**, 149 (*isol*)

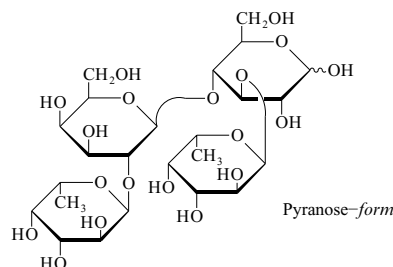
Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4063 (*trichloroethyl gly, pmr, cmr*)

Jain, R.K. *et al.*, *Carbohydr. Res.*, 1993, **241**, 165-176 (*synth*)

Vetere, A. *et al.*, *Eur. J. Biochem.*, 2000, **267**, 942-949 (*synth*)

Lactodifucotetraose**L-7**

α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 3)]-D-glucose
[20768-11-0]

C₂₄H₄₂O₁₉ 634.584

Isol. from human milk. Principal neutral carbohydrate of platypus milk. Found in some human urines. Amorph. powder.
[α]_D²⁶ -106 (-103.2) (c, 1 in H₂O).

Montreuil, J. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1956, **242**, 192 (*isol*)

Kuhn, R. *et al.*, *Annalen*, 1958, **611**, 249 (*isol*)

Jenkins, G.A. *et al.*, *Carbohydr. Res.*, 1984, **30**, 488 (*cmr*)

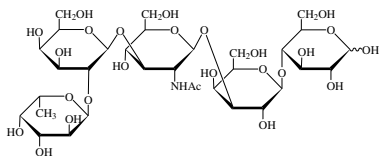
Takeo, K. *et al.*, *Carbohydr. Res.*, 1985, **141**, 159 (*synth, cmr, bibl*)

Thurl, S. *et al.*, *J. Chromatogr.*, 1991, **568**, 291-300 (*anal*)

Thurl, S. *et al.*, *Anal. Biochem.*, 1996, **235**, 202-206 (*anal*)

Lacto-*N*-fucopentaose I **L-8**

6-Deoxy- α -L-galactopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose [7578-25-8]

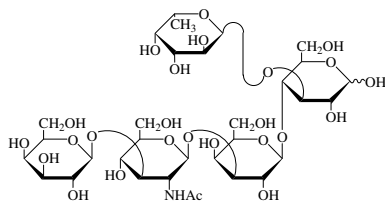


C₃₂H₅₅NO₂₅ 853.778
Isol. from human milk. Cryst (MeOH/1-butanol/1-hexanol).
Mp 216°. [α]_D²³ -11 \rightarrow -16.3 (4h) (c, 2 in H₂O).

Kuhn, R. *et al.*, *Chem. Ber.*, 1956, **89**, 2514-2523 (*isol. struct*)
Kabat, E.A. *et al.*, *Biochemistry*, 1969, **8**, 747-756 (*ord. cd*)
Bush, C.A. *et al.*, *Anal. Biochem.*, 1985, **145**, 124-136 (*cmr*)
Hounsell, E.F. *et al.*, *Carbohydr. Res.*, 1988, **178**, 67-78 (*pmr*)

Lacto-*N*-fucopentaose V **L-9**

[60254-64-0]

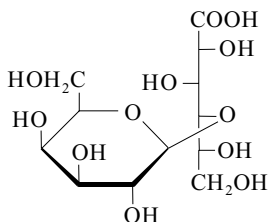


C₃₂H₅₅NO₂₅ 853.778
Isol. from human milk.

Ginsburg, V. *et al.*, *Arch. Biochem. Biophys.*, 1976, **175**, 565-568

Lactonic acid **L-10**

4-O- β -Galactopyranosylgluconic acid, 9CI.
Lactobionic acid, 8CI



C₁₂H₂₂O₁₂ 358.299

D-form [96-82-2]

Formed by the action of paracolon bacteria and *Pseudomonas graveolens* (ATCC 4683) on lactose.

Ca salt: Calcium lactobionate

[5001-51-4] Firming agent in foods. Pentahydrate. [α]_D²⁰ +23.7 (c, 6.28 in H₂O).

1,5-Lactone: Lactono-1,5-lactone

C₁₂H₂₀O₁₁ 340.283
Mp 195-196° dec. [α]_D²⁰ +54 \rightarrow +22 (c, 5.0 in H₂O).

Octa-Me, Me ester: Methyl octa-O-methyl-D-lactonate

C₂₁H₄₀O₁₂ 484.54

Bp_{0.05} 157-164°.

Aldrich Library of NMR Spectra, 2nd edn., 1983, **1**, 460B (*nmr*)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 525D (*ir*)

Haworth, W.N. *et al.*, *J.C.S.*, 1927, 544 (*Me octa-Me*)

Isbell, H.S. *et al.*, *Bur. Standards J. Research*, 1933, **11**, 713 (*Ca salt, lactone, synth*)

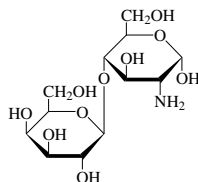
Nishizuka, Y. *et al.*, *J. Biol. Chem.*, 1960, **235**, PC13 (*enzymic synth*)

Cook, W.J. *et al.*, *Acta Cryst. B*, 1973, **29**, 215 (*cryst struct*)

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 395-396

Lactosamine**L-11**

2-Amino-2-deoxy-4-O-(β -D-galactopyranosyl)-D-glucose, 9CI. β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose. 4-O- β -D-Galactosyl-D-glucosamine [13000-25-4]

 α -Pyranose-form

C₁₂H₂₃NO₁₀ 341.314

Isol. from porcine gastric mucin, human milk, glycoproteins with human blood group A activity, goat colostrum and from fetuin. Growth factor for *Lactobacillus bifidus*. [α]_D^{21.5} +78.2 (3 min) \rightarrow +63.1 (3h) (c, 1.25 in H₂O).

N-Ac: N-Acetylactosamine
[32181-59-2]

[77304-67-7]

C₁₄H₂₅NO₁₁ 383.352

Repeating unit in mucopolysaccharides isol. from partial acid hydrolysates or acetolysates of human-blood group A substance and other sources. Structural unit in higher oligosaccharides present in human milk. Hydrolysis prod. of human plasma glycoprotein and of fetuin, a glycoprotein from calf foetal plasma. Cryst. (2-propanol/MeOH).

Mp 170-171° (168-170°). [α]_D²⁰ +50 \rightarrow +28.5 (c, 0.6 in 90% MeOH aq.). [α]_D¹⁹ +48.3 (3 min) \rightarrow +27.4 (equilib.) (c, 0.5 in H₂O).

 α -Pyranose-form

Octa-Ac: [36954-63-9]

C₂₈H₃₉NO₁₈ 677.612

Mp 224-225°. [α]_D +61.5 (+57.7) (CHCl₃).

[4307-58-8, 36954-63-9]

Kuhn, R. *et al.*, *Chem. Ber.*, 1954, **87**, 1547-1552; 1961, **94**, 842; 1259-1263 (*synth*)

Kuhn, R. *et al.*, *Annalen*, 1956, **600**, 135-143 (*N-Ac, synth*)

Cote, R.H. *et al.*, *Nature (London)*, 1956, **178**, 1171-1172 (*N-Ac, isol*)

Okuyama, T. *et al.*, *CA*, 1961, **55**, 18817 (*N-Ac, isol, synth*)

Spiro, R.G. *et al.*, *J. Biol. Chem.*, 1962, **237**, 646-652 (*N-Ac, isol*)

Johnson, G. *et al.*, *Carbohydr. Res.*, 1975, **39**, 271-281 (*N-Ac, synth*)

Jacquinet, J.C. *et al.*, *Carbohydr. Res.*, 1976, **46**, 138-142 (*N-Ac, synth, hepta-Ac*)

Lee, R.T. *et al.*, *Carbohydr. Res.*, 1979, **77**, 270-274 (*N-Ac, synth*)

Takamura, T. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 721-725 (*N-Ac, synth*)

Longchambon, F. *et al.*, *Acta Cryst. B*, 1981, **37**, 601-607 (*N-Ac, cryst struct*)

Alais, J. *et al.*, *Carbohydr. Res.*, 1981, **93**, 164-165 (*N-Ac, synth*)

Wong, C.-H. *et al.*, *J.O.C.*, 1982, **41**, 5416-5418 (*N-Ac, synth*)

Ajisaka, K. *et al.*, *Carbohydr. Res.*, 1988, **180**, 35-42 (*synth*)

Goux, W.J. *et al.*, *Carbohydr. Res.*, 1988, **184**, 47-65 (*cmr*)

Orlando, R. *et al.*, *Anal. Chem.*, 1990, **62**, 2388-2390 (*ms*)

Lattová, E. *et al.*, *Carbohydr. Res.*, 1992, **235**, 289-293 (*N-Ac, synth*)

Sakai, K. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 553-565 (*N-Ac, enzymic synth*)

Herrmann, G.F. *et al.*, *Angew. Chem., Int. Ed.*, 1993, **32**, 1342-1343 (*N-Ac, synth*)

Wiemann, T. *et al.*, *Carbohydr. Res.*, 1994, **257**, C1-C6 (*N-Ac, synth*)

Kaji, E. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 791-803 (*synth, N-Ac*)

Kretzschmar, G. *et al.*, *Tetrahedron*, 1998, **54**, 6341-6358 (*N-Ac, synth*)

Endo, J. *et al.*, *Carbohydr. Res.*, 1999, **316**, 179-183 (*N-Ac, biomannuf, pmr*)

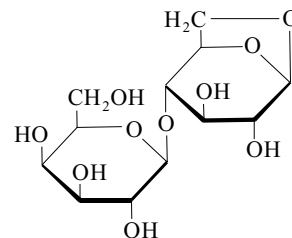
Yoon, J.H. *et al.*, *Carbohydr. Res.*, 2000, **327**, 377-383 (*N-Ac, enzymic synth*)

Hara, Y. *et al.*, *Carbohydr. Res.*, 2001, **330**, 65-71 (*biosynth*)

Stütz, A.E. *et al.*, *J. Carbohydr. Chem.*, 2003, **22**, 253-265 (*synth, N-Ac*)

Lactosan**L-12**

1,6-Anhydro-4-O- β -D-galactopyranosyl- β -D-glucopyranose, 9CI
[34395-01-2]



C₁₂H₂₀O₁₀ 324.284

Mp 128-130°. [α]_D²⁰ -50.6 (H₂O).

Hexa-Ac:

C₂₄H₃₂O₁₆ 576.507

Mp 206-208°. [α]_D²⁰ -40.8 (CHCl₃).

4,6-O-Benzylidene:

C₁₉H₂₄O₁₀ 412.393

Hygroscopic amorph. powder. [α]_D²⁵ -64 (c, 1.1 in H₂O).

4,6-O-Benzylidene, tetrabenzoyl:

C₄₇H₄₀O₁₄ 828.825

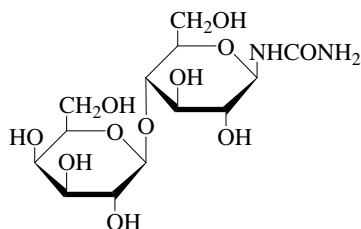
Cryst. (EtOH/EtOAc). Mp 227-229°. [α]_D²⁰ +110 (c, 0.5 in CHCl₃).

Montgomery, E.M. *et al.*, *J.A.C.S.*, 1943, **65**, 1848 (*synth*)

Chiba, T. *et al.*, *Carbohydr. Res.*, 1975, **45**, 11 (*benzylidene, benzylidene tetrabenzoyl*)

Isac-Garcia, J. *et al.*, *Eur. J. Org. Chem.*, 2001, 383-390 (β -octa-Ac)

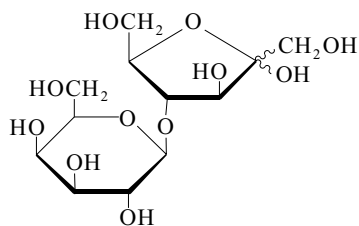
Lactosylurea **L-15**
(4-O- β -D-Galactopyranosyl- β -D-glucopyranosyl)urea, 9CI. Lactose ureide
[76249-90-6]
[24162-28-5]



$C_{13}H_{24}N_2O_{11}$ 384.339
Animal feedstuff. Cryst. (H_2O).
Mp 234-236° (230-240°) dec. $[\alpha]_D^{20} +2.4$
(H_2O). $[\alpha]_D^{25} +1.5$ (H_2O).

Schoorl, M.N. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1903, **22**, 31-78 (synth)
Segal, L. *et al.*, *J.A.C.S.*, 1960, **82**, 2807-2811 (ir)
Cerbulis, J. *et al.*, *Carbohydr. Res.*, 1978, **65**, 311-313 (synth, pmr, cmr)
U.S. Pat., 1978, 4 066 750; CA, **88**, 135073p (synth)
Merry, R.J. *et al.*, *Br. J. Nutr.*, 1982, **48**, 275-286 (synth, ms)
Olmstead, M.M. *et al.*, *Acta Cryst. C*, 1997, **C53**, 915-916 (cryst struct)
Morrison, D.J. *et al.*, *Rapid Commun. Mass Spectrom.*, 2001, **15**, 1279-1282 (synth, ms)

Lactulose, BAN, INN, JAN, **L-16**
USAN
4-O- β -D-Galactopyranosyl-D-fructose, 9CI. Bifiteral. Cephalac. Duphalac. Laevilac. Normose. Many other names
[4618-18-2]



$C_{12}H_{22}O_{11}$ 342.299
An aq. soln. at 25° contains 61.5% β -pyr, 7.5% α -fur 29% β -fur, and 1.6% ketone. Used in the treatment of hepatic coma and chronic constipation. V. sol. H_2O (65.4% w/w, 30°). Mp 168-171°. $[\alpha]_D^{20} -51.4$ (c, 4.0 in H_2O).

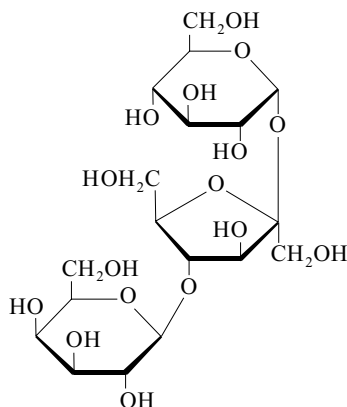
► LS6965000

Octa-Ac:

$C_{28}H_{38}O_{19}$ 678.597
Needles (EtOH). Mp 138°. $[\alpha]_D^{20} -6.6$ ($CHCl_3$).

Montgomery, E.M. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 325 (synth, octa-Ac)
Carubelli, R. *et al.*, *Carbohydr. Res.*, 1966, **2**, 480 (synth)
Gatzsche, L. *et al.*, *Ernaehrungsforschung*, 1967, **12**, 641
Kamerling, J.P. *et al.*, *Biochem. Biophys. Res. Commun.*, 1969, **38**, 794 (pmr)
Adachi, S. *et al.*, *Carbohydr. Res.*, 1969, **9**, 242 (saccharate complex, isol)
Canulli, N. *et al.*, *Digestion*, 1972, **6**, 139 (metab)
Otten, N. *et al.*, *Drug Intell. Clin. Pharm.*, 1977, **11**, 604 (rev, pharmacol)
Bradbury, J.H. *et al.*, *Carbohydr. Res.*, 1979, **71**, 15 (pmr)
Hicks, K.B. *et al.*, *Carbohydr. Res.*, 1980, **82**, 393 (synth)
Pfeffer, P.E. *et al.*, *Carbohydr. Res.*, 1982, **102**, 11 (cmr)
Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (equilib)
Shukla, R. *et al.*, *Carbohydr. Res.*, 1985, **143**, 97 (synth)
Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 2586
Jeffrey, G.A. *et al.*, *Carbohydr. Res.*, 1992, **226**, 29 (cmr, cryst struct)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 887

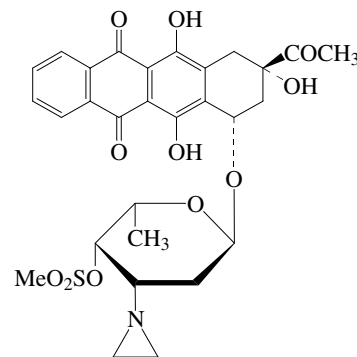
Lactulosucrose **L-17**
O- β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-fructofuranosyl α -D-glucopyranoside



$C_{18}H_{32}O_{16}$ 504.441
Metab. of *Leuconostoc mesenteroides* strain K.
 $[\alpha]_D^{24} +44.1$ (c, 2.0 in H_2O).

Suzuki, H. *et al.*, *Arch. Biochem. Biophys.*, 1964, **105**, 339 (isol)

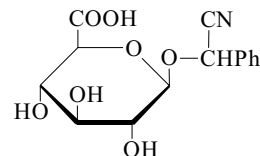
Ladirubicin, INN **L-18**
9-Acetyl-7-[[3-(1-aziridinyl)-2,3,6-tri-deoxy-4-O-(methylsulfonyl)- α -L-lyxo-hexapyranosyl]oxy]-7,8,9,10-tetrahydro-6,9,11-trihydroxy-5,12-naphthacenedione, 9CI. 3'-Aziridinyl-3'-deamino-4-de-methoxy-4'-methylsulfonyldaunorubicin. FCE 28729. PNU 159548
[171047-47-5]



$C_{29}H_{31}NO_{11}S$ 601.63
Antineoplastic agent, antibacterial agent. Characterised by ms.

Marchini, S. *et al.*, *Anti-Cancer Drug Des.*, 1995, **10**, 641-653 (pharmacol)
Pat. Coop. Treaty (WIPO), 1995, 95 16 695, (Pharmacia); CA, **124**, 9318w (synth, pharmacol)
Breda, M. *et al.*, *J. Chromatogr. A*, 1999, **854**, 81-92 (detn)

Laetrile **L-19**
Cyanophenylmethyl β -D-glucopyranosiduronic acid, 9CI. Mandelonitrile- β -glucuronic acid
[1332-94-1]



$C_{14}H_{15}NO_7$ 309.275
Obt. by hydrol. of Amygdalin (see 2-Hydroxy-2-phenylacetonitrile) and oxidn. of the resulting L-Mandelonitrile- β -glucoside. Claimed to be an anticancer agent, but there is no rigorous scientific evidence for this. Mp 214-216°.

► Human systemic effects by ingestion and other routes of administration characteristic of cyanide toxicity. OD9910000

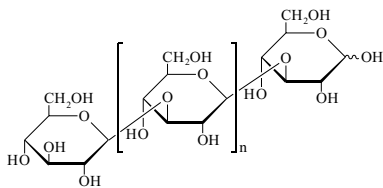
Na salt: Mp 112-116°.

U.K. Pat., 1958, 788 855; CA, **52**, 11913 (synth)
Culliton, P. *et al.*, *Science (Washington, D.C.)*, 1973, **182**, 1000 (rev)
Junghans, B. *et al.*, *Pharmazie*, 1982, **37**, 172 (synth)
D'Arcy, P.F. *et al.*, *Pharm. Int.*, 1984, **5**, 163 (rev)
Chandler, R.F. *et al.*, *Pharm. J.*, 1984, **232**, 330 (rev, pharmacol)
Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1719

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, LAS000

Laminarin, 9CI

Laminaran, 9CI, 8CI. Laminarirose
[9008-22-4]



$C_6H_{10}O_5$ 162.142

General term for low M.W. water-soluble reserve glucans from phaeophyte algae. Soluble and insoluble forms were earlier recognised, but laminarans differ considerably in struct.

Soluble-form

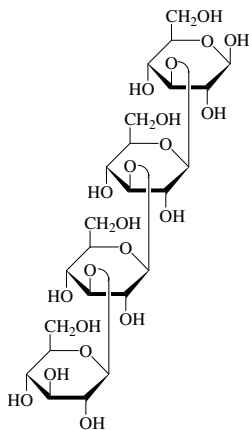
Found in brown algae especially the Laminaria subgroup; isol. from *Laminaria digitata*. Sol. H_2O , pptd. by addn. of EtOH. $[\alpha]_D^{18}$ -11.9 (c, 2.1 in H_2O). *Per-Ac*: $[\alpha]_D^{17}$ -64.6 (c, 0.9 in $CHCl_3$). *Per-carbanilate*: Mp 175-185°. $[\alpha]_D^{20}$ -7 ($CHCl_3$). $[\alpha]_D^{20}$ -52 (Py).

Insoluble-form

Found in brown algae especially the Laminaria subgroup; isol. from *Laminaria cloustoni*. Insol. H_2O . $[\alpha]_D^{16}$ -13.4 (c, 0.9 in H_2O). *Per-Ac*: $[\alpha]_D^{15}$ -65.6 (c, 0.45 in $CHCl_3$). Peat, S. *et al.*, *J.C.S.*, 1958, 724 (*struct*)
Annan, W.D. *et al.*, *J.C.S.*, 1965, 885 (*constit*)
Black, W.A.P. *et al.*, *Methods Carbohydr. Chem.*, 1965, 5, 159 (*synth*)
Black, W.A.P. *et al.*, *Ind. Gums*, 2nd Ed., Academic Press, 1973, 137 (*rev*)
Colson, P. *et al.*, *J.A.C.S.*, 1974, 96, 8081 (*cmr*)
Zyvgintseva, T.N. *et al.*, *Carbohydr. Res.*, 1999, 322, 32-39 (*isol, bibl*)

Laminaritetraose**L-21**

β -D-Glucopyranosyl-(1→3)- β -D-glucopyranosyl-(1→3)- β -D-glucopyranosyl-(1→3)-D-glucose, 9CI
[26212-72-6]

 β -Pyranose-form

$C_{24}H_{42}O_{21}$ 666.583

Isol. from partial acid hydrolysate of Laminarin, L-20 and Pachyman. $[\alpha]_D$ -5.9 (H_2O).

 β -Pyranose-form

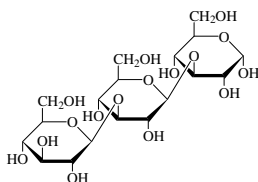
Tetradeca-Ac: [49587-42-0]
 $C_{52}H_{70}O_{35}$ 1255.104
Mp 122-123°. $[\alpha]_D$ -46.2 ($CHCl_3$).

[53956-67-5]

Peat, S. *et al.*, *J.C.S.*, 1958, 724 (*synth, Ac*)
Handa, N. *et al.*, *Nature (London)*, 1961, 192, 1078 (*isol*)
Ueno, Y. *et al.*, *Carbohydr. Res.*, 1982, 99, 194 (*synth, pmr, isopropylidene*)
Rogers, D.E.C. *et al.*, *Org. Mass Spectrom.*, 1984, 19, 490 (*ms*)
Bezukladnikov, P.W. *et al.*, *Carbohydr. Res.*, 1990, 203, 119 (*enzym synth*)

Laminaritriose**L-22**

O- β -D-Glucopyranosyl-(1→3)-O- β -D-glucopyranosyl-(1→3)-D-glucose, 9CI.
Laminaratriose
[3256-04-0]

 α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

Some α -anomer present in the crystalline state. Acid hydrolysis product of Laminarin, L-20, pachyman and yeast β -glucan. Isol. from the partial hydrolysate of sclerotia of *Sclerotium sclerotinia*. Dihydrate (MeOH). Mp 164-165°. $[\alpha]_D$ +2.4 (H_2O). $[\alpha]_D^{20}$ +7.1 (2 min.) \rightarrow +3.3 (c, 1.0 in H_2O).

 β -Pyranose-form*Undeca-Ac*:

Cryst. (MeOH/EtOH). Mp 120-121°. $[\alpha]_D$ -40 ($CHCl_3$). $[\alpha]_D^{20}$ -33 (c, 2.0 in $CHCl_3$).

Warsi, S.A. *et al.*, *Chem. Ind. (London)*, 1957, 1573 (*isol*)

Peat, S. *et al.*, *J.C.S.*, 1958, 724; 3862; 1960, 175 (*isol, synth*)

Bouveng, H.O. *et al.*, *Acta Chem. Scand.*, 1963, 17, 1351 (*isol*)

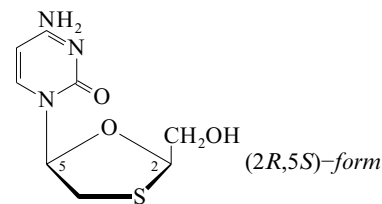
Ford, C.W. *et al.*, *J.C.S.*, 1965, 7035 (*isol*)

Hase, S. *et al.*, *J. Biochem. (Tokyo)*, 1979, 85, 217

Ueno, Y. *et al.*, *Carbohydr. Res.*, 1980, 80, 212 (*isol*)

Lamivudine, BAN, INN, USAN**L-23**

4-Amino-1-[2-(hydroxymethyl)-1,3-oxathiolan-5-yl]-2-(1H)-pyrimidinone, 9CI.
1-[2-(Hydroxymethyl)oxathiolan-5-yl]-cytosine. 2',3'-Dideoxy-3'-thiacytidine.
Epivir. Heptodin. Zeffix. BCH 189.
GR 109714X. 3TC



(2R,5S)-form

$C_8H_{11}N_3O_3S$ 229.259

HIV reverse transcriptase inhibitor. Potent antiviral agent, active against hepatitis B virus and human immunodeficiency virus. Marketed drug. Launched 1995 (US) as Combivir (combination with Zidovudine, Z-4). Worldwide 63rd best selling prescription drug (\$0.88 bn, 2002) (GlaxoSmithKline) (Med Ad News). Log P -1.7 (calc). Component of Combivir.

(2R,5R)-form [139757-68-9]

Mp 145-156°. $[\alpha]_D^{25}$ +146.6 (c, 0.55 in MeOH).

(2R,5S)-form [134678-17-4]

Cryst. (Et₂O/MeOH). Mp 160-162°. $[\alpha]_D^{25}$ -121.6 (c, 1.1 in MeOH). Pharmacol. active isomer.

(2S,5R)-form [134680-32-3]

Mp 145-147°. $[\alpha]_D^{25}$ +120.96 (c, 1.04 in MeOH).

[131086-21-0, 131086-22-1, 136846-20-3, 136891-12-8, 141434-39-1, 146726-78-5]

Soudeyns, H. *et al.*, *Antimicrob. Agents*

Chemother., 1991, 35, 1386 (*pharmacol*)

Beach, J.W. *et al.*, *J.O.C.*, 1991, 56, 6503; 1992, 57, 2217 (*synth, bibl, pharmacol*)

Coates, J.A.V. *et al.*, *Antimicrob. Agents*

Chemother., 1992, 36, 202 (*pharmacol*)

Schinazi, R.F. *et al.*, *Antimicrob. Agents*

Chemother., 1992, 36, 672 (*pharmacol*)

Eur. Pat., 1992, 517 145, (Glaxo); CA, 118, 191756p (*synth, cryst struct*)

Chang, C.N. *et al.*, *J. Biol. Chem.*, 1992, 267, 22414 (*pharmacol*)

Humber, D.C. *et al.*, *Tet. Lett.*, 1992, 33, 4625 (*synth, bibl*)

Skalski, V. *et al.*, *J. Biol. Chem.*, 1993, 268, 23234 (*pharmacol*)

Jeong, L.S. *et al.*, *J. Med. Chem.*, 1993, 36, 181; 2627 (*synth, bibl, pharmacol, pmr, uv*)

Storer, R. *et al.*, *Nucleosides Nucleotides*, 1993, 12, 225 (*synth, abs config*)

van Leeuwen, R. *et al.*, *J. Infect. Dis.*, 1995, 171, 1166; 1438 (*clin trials*)

Perry, C.M. *et al.*, *Drugs*, 1997, 54, 657-680 (*rev*)

Harris, R.K. *et al.*, *J.C.S. Perkin I*, 1997, 2653-2659 (*cryst struct, ir, cmr, pmr*)

Jarvis, B. *et al.*, *Drugs*, 1999, 58, 101-141

Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 622

Li, J. *et al.*, *Synth. Commun.*, 2002, 32, 2355-2359 (*isomers, synth*)

Haas, D. *et al.*, *Drugs*, 2003, 63, 1099-1100 (*rev*)

Clarke's Analysis of Drugs and Poisons, 3rd edn.,
(eds. Moffat, A.C. et al.), Pharmaceutical
Press, 2004, 1161 (props, hplc, uv)

Lantanose A

[145204-38-2]

α -D-Gal-(1→6)- α -D-Gal-(1→6)- α -D-
Gal-(1→6)- α -D-Gal-(1→6)-D-Glu

C₃₀H₅₂O₂₆ 828.725

Constit. of the roots of *Lantana camara*.
Powder. $[\alpha]_D^{20} +166$ (c, 1 in H₂O).

6-O- α -D-Galactopyranosyl: **Lantanose B**

[145204-39-3]

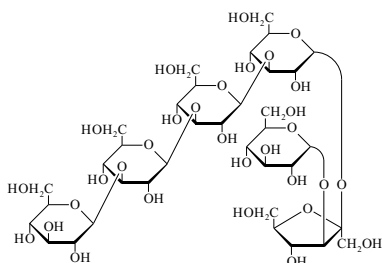
C₃₆H₆₂O₃₁ 990.867

Constit. of the roots of *Lantana camara*.
Powder. $[\alpha]_D^{20} +114.2$ (c, 1.1 in H₂O).

Pan, W. et al., *Yaoxue Xuebao*, 1992, **27**, 515-
521

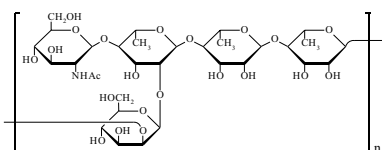
Lasiose**L-25**

α -D-Glucopyranosyl-(1→3)- β -D-fructofur-
anosyl β -D-glucopyranosyl-(1→3)- β -D-
glucopyranosyl-(1→3)- β -D-glucopyrano-
syl-(1→3)- α -D-glucopyranoside, 9CI
[41653-68-3]

C₃₆H₆₂O₃₁ 990.867

Constit. of honeydew of sap sucking
insects *Eriococcus conaceus* and *Lasio-
phylla striatus*. Syrup.

Basden, R. et al., *Proc. Linn. Soc. N.S.W.*, 1972,
97, 95; *CA*, **78**, 55532r (isol)

Latosillan**L-26**C₃₂H₅₃NO₂₂ 803.764

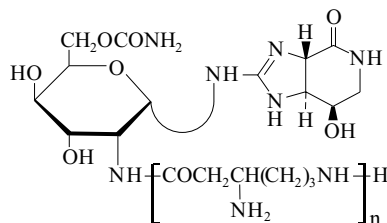
Heteroglycan antibiotic. Polymeric.

Minimum formula given. Isol. from
Alcaligenes latus. Antileukaemic agent.
 $[\alpha]_D^{20} -13$ (c, 1 in 0.1M NaOH).

Hayakawa, Y. et al., *Agric. Biol. Chem.*, 1985,
49, 2437; 2443 (isol, struct, props)

Lavendothricin

[67383-12-4]



Isol. from *Actinomyces* 741. Sol. H₂O;
fairly sol. MeOH; poorly sol. butanol,
hexane. Consists of six biol. active com-
ponents A to F. Similar to Streptothricin,
S-86.

► OF6120000

Lavendothricin A [67355-55-9]C₄₉H₉₄N₁₈O₁₃ 1143.394

n = 6.

Lavendothricin B

A 53930B. Antibiotic A 53930B

[67355-56-0]

C₄₃H₈₂N₁₆O₁₂ 1015.221Prod. by *Streptomyces vinaceusdrappus*.

Powder.

Mp 61-36°. $[\alpha]_D^{25} -4.4$ (c, 0.5 in H₂O). n = 5.**Lavendothricin C**

A 53930A. Antibiotic A 53930A

[67392-17-0]

C₃₇H₇₀N₁₄O₁₁ 887.047Prod. by *Streptomyces vinaceusdrappus*.

Powder.

Mp 55-57°. $[\alpha]_D^{25} -15.1$ (c, 0.5 in H₂O). n = 4.**Lavendothricin D** [67392-18-1]C₃₁H₅₈N₁₂O₁₀ 758.874

n = 3.

Lavendothricin E [67392-19-2]C₂₅H₄₆N₁₀O₉ 630.7

n = 2.

Lavendothricin F [67392-16-9]C₁₉H₃₄N₈O₈ 502.526

n = 1.

Dobrev, N. et al., *Farmatsiya (Sofia)*, 1977,
27, 25 (isol)

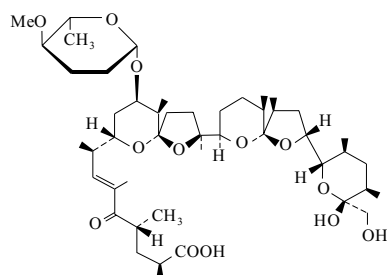
Hisamoto, M. et al., *J. Antibiot.*, 1998, **51**, 607-
617 (Antibiotic A 53930)

Lenoremycin**L-28**

A 130A. Ro 21-6150. Antibiotic A 130A.

Antibiotic Ro 21-6150

[51257-84-2]

C₄₇H₇₈O₁₃ 851.125**L-27**

Polyether antibiotic. See also Antibiotic A
130B, A-736 and Antibiotic A 130C.

Isol. from *Streptomyces hygroscopicus*.
Monovalent ionophore showing anti-
microbial activity. Growth promotor.
Amorph. powder. $[\alpha]_D^{20} +64.5$ (c, 1 in
CHCl₃). Related to Dianemycin. λ_{\max}
235 (ε 14000) (EtOH) (Derep).

► LD₅₀ (mus, orl) 55 mg/kg. HL5522000

Na salt:

Needles (Me₂CO aq.). Mp 227-231°. $[\alpha]_D^{20} +97.9$ (c, 1 in CHCl₃).

Kubota, T. et al., *J. Antibiot.*, 1975, **28**, 931
(isol, ir, uv, ms, nmr)

Liu, C. et al., *J. Antibiot.*, 1976, **29**, 21 (pmr, ir,
uv)

Anteunis, M.J.O. et al., *Bull. Soc. Chim. Belg.*,
1977, **86**, 609 (pmr, conformn)

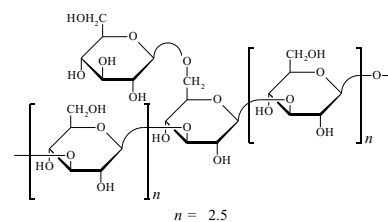
Koyama, H. et al., *J.C.S. Perkin 2*, 1977, 1531
(cryst struct)

Tsuji, N. et al., *J. Antibiot.*, 1980, **33**, 94 (cmr)
Mizoue, K. et al., *J. Antibiot.*, 1980, **33**, 144
(cmr)

Lewis, R.J. et al., *Sax's Dangerous Properties of
Industrial Materials*, 8th edn., Van Nostrand
Reinhold, 1992, LEJ700

Lentinan**L-29**

[37339-90-5]



A highly (1→6) branched (1→3) β -D-glucan.
Elaborated by the fungus *Lentinus
edodes* (shiitake). Shows growth-inhibi-
tory activity against certain allogenic
tumours, particularly mouse sarcoma
180. Immunostimulant. Has been used
in the treatment of malignant
neoplasms and AIDS. Launched 1986.
Powder. Sol. H₂O, DMSO; fairly sol.
H₂O; poorly sol. EtOH, hexane. Forms
nonelastic gel in aq. suspensions.

[114285-68-6]

Chihara, G. et al., *Nature (London)*, 1969, **222**,
687; 1971, **229**, 634 (isol, pharmacol)

Sasaki, T. et al., *Carbohydr. Res.*, 1976, **47**, 99
(pharmacol)

Bluhm, T.L. et al., *ACS Symp. Ser.*, 1977, **48**,
105 (cryst struct)

Saito, H. et al., *Carbohydr. Res.*, 1979, **74**, 227-
240 (cmr, struct)

Saito, H. et al., *Bull. Chem. Soc. Jpn.*, 1986, **59**,
2093 (conform, cmr)

Tsukagoshi, S. et al., *Drugs of Today
(Barcelona)*, 1988, **24**, 91 (rev)

Suzuki, M. et al., *Int. J. Immunopharmacol.*,
1994, **16**, 463 (rev)

Martindale, *The Extra Pharmacopoeia*, 31st edn.,
Pharmaceutical Press, 1996, 1721

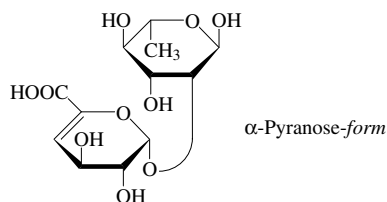
Gordon, M. et al., *J. Med. (Westbury, N.Y.)*,
1998, **29**, 305-330 (pharmacol)

Yang, G. et al., *Synlett*, 2000, 1423-1426 (synth)

Lepidimoic acid L-30

6-Deoxy-2-O-(4-deoxy-β-L-threo-hex-4-enopyranuronosyl)-L-mannose, 9CI.

Lepidimoide
[157676-09-0]



C₁₂H₁₈O₁₀ 322.268

Widespread in the exudates of all plant species studied. Isol. from seeds of *Lepidium sativum* (garden cress) and *Arabidopsis thaliana*. Allelopathic agent. Increases fructose 2,6-biphosphate level in plants. Growth promoter. Oil, amorph. powder (as Na salt). [α]_D¹⁹ +87.8 (c, 0.03 in D₂O). Strictly the Na salt is named Lipodimoide.

[145039-76-5]

Hasegawa, K. *et al.*, *Plant Physiol.*, 1992, **100**, 1059-1061 (*isol*)

Kosemura, S. *et al.*, *Tet. Lett.*, 1993, **34**, 2653-2656 (*abs config, synth*)

Yamada, K. *et al.*, *Phytochemistry*, 1995, **39**, 1031-1032; 1996, **41**, 671 (*occur, activity*)

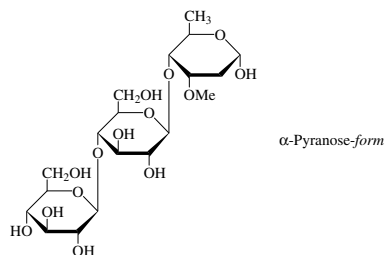
Yokotani-Tomita, K. *et al.*, *Phytochemistry*, 1998, **47**, 1-2 (*isol, pmr*)

Kato-Noguchi, H. *et al.*, *Phytochemistry*, 2001, **56**, 499-503 (*activity*)

Hirose, K. *et al.*, *Tet. Lett.*, 2003, **44**, 2171-2173 (*synth*)

Leptatriose L-31

β-D-Glucopyranosyl-(1→4)-β-D-glucopyranosyl-(1→4)-2,6-dideoxy-3-O-methyl-D-ribo-hexose. β-D-Glucopyranosyl-(1→4)-β-D-glucopyranosyl-(1→4)-β-D-cymarose



C₁₉H₃₄O₁₄ 486.469

Obt. by acid hydrol. of Leptaculatin. Syrup. [α]_D -53.6 (c, 0.2 in MeOH).

Srivastava, S. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 75-80 (*isol, pmr, cmr, ms*)

Leucosin, 9CI L-32

Chrysolaminarin. Chrysolaminaran [9013-94-9]

Polysaccharide. Isol. from diatoms and algae. Reserve carbohydrate. Cryst. Consists mainly of β(1→3)-linked glucosyl residues with some branching.

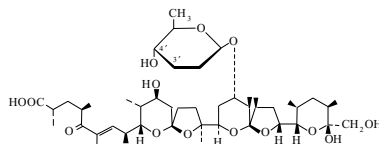
Beattie, A. *et al.*, *Biochem. J.*, 1961, **79**, 531 (*isol, struct*)

Archibald, A.R. *et al.*, *Biochem. J.*, 1963, **88**, 444 (*isol, struct*)

McConville, M. *et al.*, *Carbohydr. Res.*, 1986, **153**, 330 (*isol, struct*)

Leuseramycin B

TM 531B. Antibiotic TM 531B [80118-77-0]



C₄₆H₇₆O₁₄ 853.098

Polyether antibiotic. Isol. from *Streptomyces hygroscopicus* ATCC31590. Active against gram-positive bacteria, plant pathogens, coccidiosis in chickens. Cryst. (Me₂CO aq.). Sol. MeOH, Et₂O, hexane; poorly sol. H₂O, hexane.

Mp 252.1-253.2°. [α]_D²⁶ +37.8 (c, 0.5 in MeOH). Similar to Dianemycin. λ_{max} 232 (E₁%/1cm 160) (MeOH) (Berdy).

3'-Hydroxy, 4'-Me ether: **Leuseramycin C**. TM 531C. Antibiotic TM 531C [80118-78-1]

C₄₇H₇₈O₁₅ 883.124

From *Streptomyces hygroscopicus* ATCC31590. Sol. MeOH, hexane; poorly sol. H₂O, hexane.

Mp 190.4-190.6°. [α]_D²⁶ +27.1 (c, 0.5 in MeOH). λ_{max} 232 (E₁%/1cm 146.6) (MeOH) (Berdy).

Ger. Pat., 1980, 2 952 520; CA, **93**, 236926 Mitzutani, T. *et al.*, *J. Antibiot.*, 1981, **34**, 1369 (*struct*)

Levan

[9013-95-0] A large variety of bacterial strains (*Aerobacter levanicum*, *Pseudomonas prunicula*, *Corynebacterium* sp., and a strain of *Bacillus subtilis*), produce levans when grown on sucrose in a suitable nutrient medium. Also a constit. of grasses. Has a number of developing industrial uses. [α]_D²⁰ -43. Levans in grasses contain essentially linear chains of =20-30 2,6-linked β-D-fructofuranose units terminated in most cases by a nonreducing glucopyranose residue. Some grass levans may contain a single branch point. In contrast, the levans elaborated by bacteria are of much higher molecular weight. Although the major linkage is of the 2,6-type, the polysaccharides are branched and contain unit chains =10-12 residues joined at the branching points by 2,1-linkages.

Bell, D.J. *et al.*, *J.C.S.*, 1952, 3763; 1954, 2866 (*isol*)

Avigad, G. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 161

Rodd's Chem. Carbon Compd. (2nd edn.), 1967, **1F**, 687

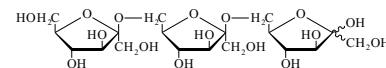
Jarrell, H.C. *et al.*, *Carbohydr. Res.*, 1979, **76**, 45-57 (*cmr*)

Han, Y.W. *et al.*, *Adv. Appl. Microbiol.*, 1990, **35**, 171 (*rev, use*)

Levantriase

L-35

β-D-Fructofuranosyl-(2→6)-β-D-fructofuranosyl-(2→6)-D-fructose, 9CI [79324-71-3]



Furanose-form

C₁₈H₃₂O₁₆ 504.441

Present in enzymic hydrolysates of levans; isol. from partial acid hydrolysates of grass; constit. of some fructosylsucroses. [α]_D -28 (-20.8) (H₂O).

Schlubach, H.H. *et al.*, *Annalen*, 1955, **595**, 224 (*isol*)

Aspinall, G.O. *et al.*, *J.C.S.*, 1955, 1106 (*isol*)

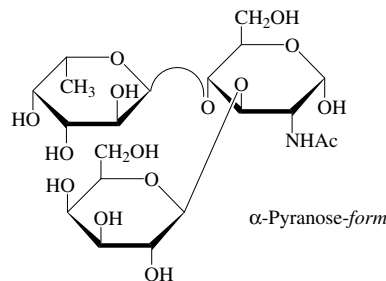
Zelikson, R. *et al.*, *Biochem. J.*, 1961, **79**, 71

Tanaka, T. *et al.*, *J. Biochem. (Tokyo)*, 1981, **90**, 521; 1985, **97**, 1679 (*synth*)

Tanaka, K. *et al.*, *J. Chromatogr.*, 1983, **265**, 374 (*chromatogr*)

Lewis a blood group trisaccharide L-36

β-D-Galactopyranosyl-(1→3)-[α-L-fucopyranosyl-(1→4)]-2-acetamido-2-deoxy-D-glucose. Le^a



C₂₀H₃₅NO₁₅ 529.494

Found in serologically active materials in the Le^a system. Present in the oligosaccharide component of glycoproteins and glycolipids present in bodily fluids and on the surface of cells. Antigenic determinant. [α]_D²⁵ -45.1 (c, 1.0 in H₂O).

α-Pyranose-form

Nona-Ac:

C₃₈H₅₃NO₂₄ 907.829

Mp 142-144°. [α]_D²² -52 (c, 1.0 in CHCl₃).

β-Pyranose-form

Me glycoside:

C₂₁H₃₇NO₁₅ 543.521

Characterised spectroscopically.

Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4063 (*synth, pmr, cmr*)

Jacquinet, J.-C. *et al.*, *J.C.S. Perkin 1*, 1979, 319 (*synth, nona-Ac, pmr*)

Yan, L. *et al.*, *J.A.C.S.*, 1996, **118**, 9239 (*synth, Me gly, pmr, cmr*)

L-41

Lincolcin. Lincolnensis. NSC 70731. U 10149. Antibiotic U 10149. Jiemycin. Many other names
[154-21-2]



L-40

Chemical structure of a substituted pyrrolidine derivative. The pyrrolidine ring has a methyl group (Me) on the nitrogen and a substituent R at the 4' position. The 2-position of the pyrrolidine is connected via a carbonyl group (CONH) to a chiral center. This chiral center is also bonded to a methyl group (CH₃), a hydroxyl group (HO), and a hydrogen atom (H). This chiral center is further connected to another chiral center, which is bonded to a hydroxyl group (HO), a hydrogen atom (H), and a sugar moiety. The sugar moiety is a pyranose ring with hydroxyl groups (OH) at the 2, 3, and 6 positions, and a methyl group (SMe) at the 5 position. The substituent R is defined as R = CH₂CH₂CH₃.

N,S-Di-de-Me, S-Et: **Lincomycin K**.
U 20943. Antibiotic U 20943
C₁₈H₃₄N₇O₆S 406.542

α -Pyranose-form

682

Needles. Mp 187-188°. $[\alpha]_D -7$ (c, 0.63 in H₂O).

[13006-69-4]

Fr. Pat., 1966, 1 451 314; CA, **66**, 85995 (α -pyr thio Me gly, α -pyr thio Me gly N-Ac, β -pyr hexa-Ac, β -pyr thio Me gly penta-Ac)

Schroeder, W. et al., J.A.C.S., 1967, **89**, 2448 (α -pyr thio Me gly, isol, struct, α -pyr thio Me gly N-Ac, α -pyr thio Me gly acetals)

Sloomp, G. et al., J.A.C.S., 1967, **89**, 2454-2459 (Celestosamine, synth, pmr, cofig)

Saeki, H. et al., Chem. Pharm. Bull., 1970, **18**, 412; 789 (α -pyr diisopropylidene N-Ac)

Howarth, G.B. et al., J.C.S. (C), 1970, 2218 (α -pyr diisopropylidene N-Ac, di-Me dithioacetal N-Ac, α -pyr thio Me gly, α -pyr thio Me gly N-Ac)

Magerlein, B.J. et al., Tet. Lett., 1970, 33 (α -pyr thio Me gly, α -pyr thio Me gly penta-Ac)

Bannister, B. et al., J.C.S. Perkin 1, 1973, 1676 (α -pyr thio Me gly 7-Me, β -pyr thio Me gly 7-Me)

David, S.M. et al., Carbohydr. Res., 1974, **38**, 147; 1976, **50**, 239 (α -pyr thio Me gly N-Ac, α -pyr diisopropylidene N-Ac, α -pyr diisopropylidene N-Ac N-Me, α -pyr diisopropylidene N-Ac 7-Me, 7-Me derivs)

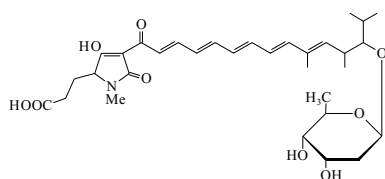
Danishefsky, S.J. et al., J.A.C.S., 1985, **107**, 1246 (total synth, DL-form)

Szechner, B. et al., J. Carbohydr. Chem., 1992, **11**, 401-406 (synth)

α -Lipomycin

L-44

[51053-40-8]



C₃₂H₄₅NO₉ 587.709

Pentane antibiotic. Prod. by *Streptomyces aureofaciens*. Active against gram-positive organisms. Orange-red amorph. powder. Sol. MeOH, Et₂O, bases; poorly sol. H₂O, hexane. Mp 105°. $[\alpha]_D^{20} -229$ (c, 0.1 in MeOH). λ_{\max} 260 (€ 16400); 267 (€ 15800); 301 (€ 10600); 455 (€ 55800) (MeOH/HCl) (Derep). λ_{\max} 260 (€ 15800); 270 (€ 15300); 287 (€ 10600); 403 (€ 47000) (MeOH) (Derep). λ_{\max} 259 (€ 14700); 269 (€ 13500); 285 (€ 10600); 393 (€ 55900) (MeOH/NaOH) (Derep).

Aglycone: β -Lipomycin

[51053-41-9]

C₂₆H₃₅NO₆ 457.566

Prod. by *Streptomyces aureofaciens*. Active against gram-positive bacteria. Sol. bases, Et₂O, MeOH; poorly sol. H₂O, hexane. $[\alpha]_D^{20} -176$ (c, 0.1 in MeOH). λ_{\max} 261 (€ 15800); 269 (€ 15100); 301 (€ 9830); 453 (€ 57600) (MeOH/HCl) (Derep). λ_{\max} 260 (€ 14400); 269 (€ 13700); 287 (€ 10100); 393 (€ 57600) (MeOH/NaOH) (Derep). λ_{\max} 260 (€ 14600); 269 (€ 14600); 287 (€ 10100); 399 (€ 9830); 460 (€ 47500) (MeOH) (Derep).

Kunze, B. et al., Arch. Microbiol., 1972, **86**, 147 (isol)

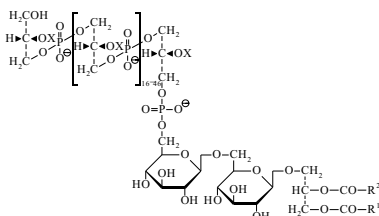
Schabacher, K. et al., Tet. Lett., 1973, 2691 (struct)

Zeeck, A. et al., Annalen, 1975, 2079

Nolte, M.J. et al., J.C.S. Perkin 1, 1980, 1057 (cryst struct)

Lipoteichoic acids

L-45



X = H, D-Ala, Glycosyl

Poly(glycerophosphate) lipoteichoic acids are the most widespread, and have a glycolipid group which may vary within a genus or in a species-specific manner. The poly(glycerophosphate) chain is unbranched and contains 16-40 glycerophosphate residues. Position 2 of the glycerophosphate chain is substituted in part with D-alanine and glycosyl residues (typically Glc, Gal, and N-acetyl-D-glucosamine). Generally all the chains are partially substituted and D-alanine and glycosyl substituents are found on the same chains. Components of the cytoplasmic membrane of gram-positive bacteria. Potent immunogens, stimulate the release of cytokines from blood monocytes and murine peritoneal macrophages. Lipoteichoic acids from *Staphylococcus* spp. induce nitric acid synthase *in vivo* and show antitumour props. prob. by induction of tumour necrosis factor.

Streptococcus pyogenes Lipoteichoic acid (modified) [145454-61-1]

C₅₉H₁₁₆O₃₅P₄ 1509.439

Powder (as tetraammonium salt decahydrate). $[\alpha]_D^{21} +42$ (c, 0.22 in H₂O).

Fischer, W. et al., Adv. Microb. Physiol., 1988, **29**, 233 (rev)

Fischer, W. et al., Handb. Lipid Res., 1990, **6**, 123 (rev)

Fukase, K. et al., Bull. Chem. Soc. Jpn., 1992, **65**, 2643 (synth)

Fischer, W. et al., New Compr. Biochem., 1994, **27**, 199 (rev)

De Kimpe, S.J. et al., Br. J. Pharmacol., 1995, **114**, 1317 (pharmacol)

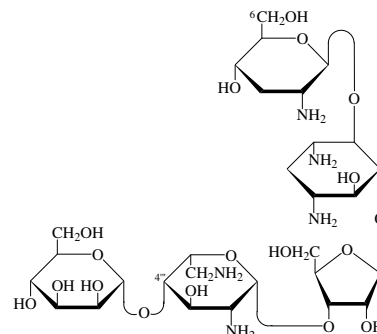
Wada, K. et al., J. Pharmacol. Exp. Ther., 2000, **294**, 280-285 (activity)

Stadelmaier, A. et al., Angew. Chem., Int. Ed., 2003, **42**, 916-920 (synth)

Lividomycin A

L-46

Lividomycin, INN. Livaline 500. Quintomycin B. SF 767A. Antibiotic SF 767A. Antibiotic 503-2 [36441-41-5]



C₂₉H₅₅N₅O₁₈ 761.776

Aminoglycoside antibiotic. Isol. from *Streptomyces lividus*. Active against gram-positive and gram-negative bacteria. Powder.

Mp 197-203° dec. $[\alpha]_D^{25} +72$ (c, 1 in H₂O). Log P -10.8 (uncertain value) (calc).

► LD₅₀ (mus, scu) 1246 mg/kg. WK2140000

6-Phosphate: [68978-11-0]

C₂₉H₅₆N₅O₂₁P 841.756

Prod. by *Streptomyces lividus*

ATCC21178. Antibacterial agent. Powder.

Sol. H₂O, MeOH; poorly sol. Me₂CO, hexane. $[\alpha]_D +76.9$ (H₂O). λ_{\max} 200 (H₂O).

4'''-Deglycosyl: **Lividomycin B**. Quintomycin D. SF 767D. Antibiotic SF 767D [37636-51-4]

C₂₃H₄₅N₅O₁₃ 599.634

Prod. by *Streptomyces lividus*. Amorph. powder.

Mp 178-184° dec. $[\alpha]_D^{25} +62$ (c, 1 in H₂O).

[11111-23-2]

Oda, T. et al., J. Antibiot., 1971, **24**, 333; 511 (isol, struct, ir, nmr)

Mori, T. et al., J. Antibiot., 1971, **24**, 339 (isol) Yamamoto, H. et al., J. Antibiot., 1972, **25**, 128; 485; 534 (synth, ir, nmr, props)

Okutani, T. et al., J.A.C.S., 1977, **99**, 1278

(synth, Lividomycin B)

Japan. Pat., 1978, 78 101 334; CA, **90**, 70586e (6-phosphate)

Martindale, The Extra Pharmacopoeia, 28th/29th edn., Pharmaceutical Press, 1982, 99

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, LHX350; DAS600

Locust bean gum

L-47

Gum locust bean. Carob bean gum. Carob gum [9000-40-2]

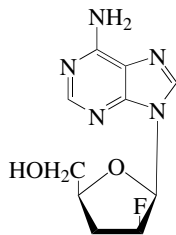
Consists of a high-MW polysaccharide with a main chain of 1,4-linked D-mannose units and side chains of D-galactose. Obt. from seeds of the carob tree *Ceratonia siliqua*. Stabiliser and thickener in food manuf.

Merck Index, 12th edn., 1996, 5584

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 494-497

Lodenosine, INN, USAN L-48

9-(2,3-Dideoxy-2-fluoro-β-D-threo-pentofuranosyl)-9H-purin-6-amine, 9CI. 2',3'-Dideoxy-2'-β-fluoroadenosine. β-FluoroddA. NSC 613792
[110143-10-7]



C₁₀H₁₂FN₅O₂ 253.236
Anti-HIV agent. Fluffy powder (EtOH).
Mp 227°. [α]_D²⁴ +57.8 (c, 0.08 in H₂O). λ_{max} 258 (ε 15100) (MeOH).

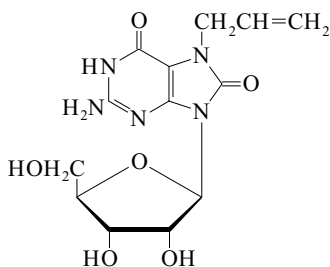
► Cardiotoxic in rats.

[110143-05-0]

Herdewijn, P. *et al.*, *J. Med. Chem.*, 1987, **30**, 2131-2137 (synth, uv, pmr, cmr, ms, pharmacol)
U.S. Pat., 1987, 39 402, (US Dept. Health and Human Services); CA, **109**, 222451f (synth, pharmacol)
Marquez, V.E. *et al.*, *J. Med. Chem.*, 1990, **33**, 978-985 (synth, pmr, pharmacol)
Masood, R. *et al.*, *Mol. Pharmacol.*, 1990, **37**, 590-596 (metab)
Donizetti, B.A. *et al.*, *Fundam. Appl. Toxicol.*, 1995, **27**, 167-176 (tox)
Ruxrungtham, K. *et al.*, *Antimicrob. Agents Chemother.*, 1996, **40**, 2369-2374 (pharmacol)
Singhal, D. *et al.*, *Drug Metab. Dispos.*, 1996, **24**, 1155-1161 (metab)
Driscoll, J.S. *et al.*, *Antiviral Chem. Chemother.*, 1997, **8**, 107-111 (pharmacol)

Loxoribine, INN, USAN L-50

7,8-Dihydro-8-oxo-7-(2-propenyl)guanosine, 9CI. 7-Allyl-2-amino-9-β-D-ribofuranosylpurine-6,8(1H,9H)-dione. 7-Allyl-8-oxoguanosine. RWJ 21757
[121288-39-9]



C₁₃H₁₇N₅O₆ 339.307
Immunostimulant, enhances murine natural killer synth. and β lymphocyte proliferation. Powder. Mp 230°. Log P -2.81 (calc).
Eur. Pat., 1989, 341 065, (Scripps Found); CA, **112**, 217466x (synth, pharmacol)
Goodman, M.G. *et al.*, *Cell Immunol.*, 1990, **129**, 377 (activity)
Come, J. *et al.*, *Tet. Lett.*, 1991, **32**, 4823 (synth)
Pope, B.L. *et al.*, *J. Immunol.*, 1993, **151**, 3007 (pharmacol)
Pope, B.L. *et al.*, *Cell Immunol.*, 1994, **159**, 194 (pharmacol)

Reitz, A.B. *et al.*, *J. Med. Chem.*, 1994, **37**, 3561 (synth, pharmacol, sar)

LTA T

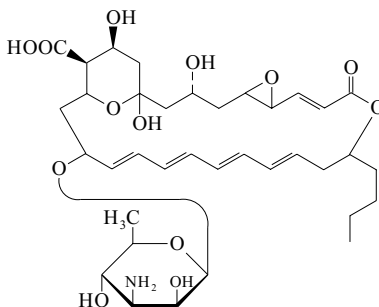
Lipoteichoic acid T

A lipoteichoic acid with a lipid anchor which is a galactofuranosyl-β-1,3-glycerol with different fatty acid residues esterified to the two adjacent OH groups in the glycerol moiety and a non-glycosylated, linear, unbranched glycerol phosphate chain. The hydrophilic backbone consists of only 10 glycerophosphate units esterified with D-alanine to the extent of 30%. Isol. from *Streptococcus* sp. DSM 8747. Shows antitumour activity.

Pat. Coop. Treaty (WIPO), 1996, 96 23 896; CA, **125**, 219747g (isol)

Lucensomycin, 9CI

Etruscomycin. Lucimycin, INN. FI 1163
[13058-67-8]



C₃₆H₅₃NO₁₃ 707.814

Polyene antibiotic. Isol. from *Streptomyces lucensis*. Shows antifungal props. Red tide plankton-controlling agent. No longer marketed. Cryst. powder. [α]_D²⁰ +240 (DMF). [α]_D²⁰ +50 (0.1M methanolic HCl). Log P -4.16 (uncertain value) (calc). Unstable to heat, light and air. Unstable beyond pH 6-8. λ_{max} 215 (ε 15000); 280 (ε 25200); 291 (ε 53500); 304 (ε 85700); 318 (ε 75000) (MeOH) (Derep).

► LD₅₀ (mus, orl) 1263 mg/kg. OK3850000

Arcamone, F. *et al.*, *Ann. Chim. (Rome)*, 1959, **49**, 345 (isol)
Gaudiano, G. *et al.*, *Tet. Lett.*, 1966, 3559; 3567 (struct)
Pandey, R.C. *et al.*, *J. Antibiot.*, 1976, **29**, 1035 (cmr)
Dornberger, K. *et al.*, *Tet. Lett.*, 1976, 4469 (cd, cmr, struct)
Dornberger, K. *et al.*, *Tetrahedron*, 1976, **32**, 3069 (struct, ms)
Nadeau, P. *et al.*, *Antimicrob. Agents Chemother.*, 1982, **21**, 545 (props)
Martindale, *The Extra Pharmacopoeia*, 28th/29th edn., Pharmaceutical Press, 1982, 12904
Kirk-Othmer *Encycl. Chem. Technol.*, 4th edn., Wiley, 1991, **3**, 475 (rev)
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, LIN000

Luridomycin

L-53

[84069-90-9]

Glycopeptide antibiotic. Struct. unknown. Prod. by *Nocardia lurida* var. *luridomycina*. Active against gram-positive and mycobacteria. Cryst. Sol. H₂O; fairly sol. MeOH, EtOH; poorly sol. Me₂CO, hexane.

Mp 180°. [α]_D²⁰ -81.7 (c, 1 in H₂O). λ_{max} 280 (H₂O) (Berdy).

Wang, C. *et al.*, *CA*, 1983, **98**, 32962 (isol)

Lutropin

L-54

Luteinising hormone. LH

[9002-67-9]

MW ca. 30,000. A glycoprotein consisting of two subunits designated α and β. It contains about 20% carbohydrate residues. Ovine LH-α is a polypeptide chain of 96 amino-acid residues having two carbohydrate moieties. Secreted by the anterior pituitary gland. In the male, stimulates testicular Leydig cells to secrete androgen. In the female it stimulates ovulation of the ovarian follicle and formation of the corpus luteum, which secretes progesterone. Preps. isol. from urine of postmenopausal women are used in the treatment of infertility (Menotropin BAN, INN, USAN).

► OK6367000

Human-α-form

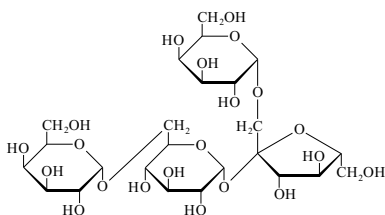
Lutropin alfa, BAN, INN, USAN. Luveris [152923-57-4] Recombinant human luteinising hormone. Stimulates follicle maturation. Used in the treatment of infertility. Approved 2000 (EU)

Pierce, J.G. *et al.*, *J. Biol. Chem.*, 1971, **246**, 866 (struct)
Sairam, M.R. *et al.*, *Arch. Biochem. Biophys.*, 1972, **153**, 554; *Biochem. Biophys. Res. Commun.*, 1972, **48**, 530 (struct)
Inagami, T. *et al.*, *Biochem. J.*, 1972, **126**, 441 (struct)
Liu, W.K. *et al.*, *J. Biol. Chem.*, 1972, **247**, 4351; 4365 (struct)
Maghuin-Rogister, G. *et al.*, *Eur. J. Biochem.*, 1973, **39**, 235; 255 (struct)
Closset, J. *et al.*, *FEBS Lett.*, 1973, **29**, 97 (struct)
Shome, B. *et al.*, *J. Clin. Endocrinol.*, 1973, **36**, 618 (struct)
Ascoli, M. *et al.*, *Eur. J. Biochem.*, 1977, **72**, 157 (cd)
Butt, W.R. *et al.*, *Ann. Clin. Biochem.*, 1979, **16**, 1 (rev)
Keutmann, H.T. *et al.*, *Biochem. Biophys. Res. Commun.*, 1979, **90**, 842 (isol)
Jibson, M.D. *et al.*, *Int. J. Pept. Protein Res.*, 1979, **14**, 113 (conform)
Sairam, M.R. *et al.*, *Int. J. Pept. Protein Res.*, 1979, **14**, 153 (struct)
Brown, F.F. *et al.*, *J. Biol. Chem.*, 1979, **254**, 4335 (pmr)
Pierce, J.G. *et al.*, *Annu. Rev. Biochem.*, 1981, **50**, 465 (rev)
Zimniski, S.J. *et al.*, *Biochem. Mamm. Reprod.*, 1982, 383 (rev, metab)
Kunz, H. *et al.*, *Annalen*, 1983, **3**, 337 (synth)
Talmadge, K. *et al.*, *DNA*, 1983, **2**, 281 (cloning)
Fiddes, J.C. *et al.*, *Recent Prog. Horm. Res.*, 1984, **40**, 43 (rev, cloning)
Harlin, J. *et al.*, *Fertil. Steril.*, 1986, **46**, 1055 (pharmacol)
Lynch, S.S. *et al.*, *Acta Endocrinol.*, Suppl., 1988, **119**, 12 (isol, purifn)

Reichert, L.E. *et al.*, *Trends Pharmacol. Sci.*, 1991, **12**, 199 (rev)
 Pandian, M.R. *et al.*, *Clin. Chem. (Winston-Salem, N.C.)*, 1993, **39**, 1815 (anal)
 Dharmesh, S.M. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1993, **90**, 11127 (pharmacol)
 Robert, P. *et al.*, *Mol. Cell. Endocrinol.*, 1994, **101**, 11-20 (lutropin alfa)
 Pantel, J. *et al.*, *Endocrinology (Baltimore)*, 1998, **139**, 527-533 (lutropin alfa)
 Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 1254
 Mi, Y. *et al.*, *J. Clin. Invest.*, 2002, **109**, 269-276 (lutropin alfa)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, LIU300

Lychnose L-55

α -D-Galactopyranosyl-(1 \rightarrow 1)- β -D-fructofuranosyl α -D-galactopyranosyl-(1 \rightarrow 6)- α -D-glucopyranoside, 8CI
 [512-65-2]



C₂₄H₄₂O₂₁ 666.583
 Isol. from roots of *Lychnis dioica*. Occurs in vegetative parts of all species of Caryophyllaceae tested. $[\alpha]_D^{20}$ +153.5 (c, 0.5 in H₂O).

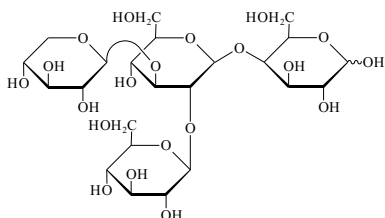
Archambault, A. *et al.*, *Bull. Soc. Chim. Biol.*, 1956, **38**, 1121; 1133 (isol, struct)
 Archambault, A. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1956, **242**, 2875 (struct)
 Wickström, A. *et al.*, *Bull. Soc. Chim. Fr.*, 1958, 1410 (struct)
 Hopf, H. *et al.*, *Planta*, 1984, **162**, 283 (isol, biosynth)

Lycopose L-56

C₃₆H₆₂O₂₁ 830.873
 Struct. uncertain. Appears to be a non-reducing hexasaccharide of composition galactosyl(galactosyl)₄fructose. Isol. from rhizomes of *Lycopus lucidus*.
 Mp 270°. $[\alpha]_D$ +187.6.
 Murakami, S. *et al.*, *CA*, 1951, **45**, 3465
 Nakahara, K. *et al.*, *CA*, 1955, **49**, 16086

Lycotetraose L-57

β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 3)]- β -D-glucopyranosyl-(1 \rightarrow 4)-D-galactose



C₂₃H₄₀O₂₀ 636.557

Component sugar of Demissine and α -Tomatine.
 Mp 188°. $[\alpha]_D$ +2 (H₂O).
 Aspinal, G.O. *et al.*, *J.C.S.*, 1962, 214 (isol)
 Takeo, K. *et al.*, *Carbohydr. Res.*, 1984, **133**, 275 (synth)

Lymphokine LK1 L-58

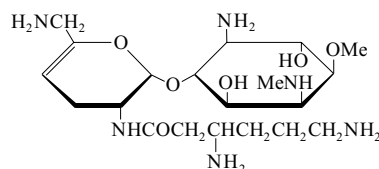
Glycoprotein. Isol. from human tumour cells. Shows antitumour activity.
 Sol. H₂O; poorly sol. CHCl₃, EtOAc, Et₂O. λ_{\max} 280 (H₂O) (Berdy).
 U.K. Pat., 1985, 2 153 364; *CA*, **103**, 176904g (isol)

Lyophyllan A L-59

[104521-46-2]
 Glycoprotein. Prod. by *Lyophyllum decaster*. Shows antitumour activity.
 Lee, C.O. *et al.*, *Saengyak Hakhoechi*, 1986, **17**, 23-24; *CA*, **105**, 149406f (isol)

Lysinomycin L-60

AX 127B₁. Antibiotic AX 127B₁
 [79528-70-4]



C₂₀H₄₀N₆O₆ 460.573
 Aminoglycoside antibiotic. Prod. by *Micromonospora pilospora*. Active against gram-negative and -positive bacteria. More active than Fortimicin A, F-26. Amorph. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.
 Mp 220-222° dec. (darkens at 160°).
 $[\alpha]_D^{25}$ +49 (c, 1 in H₂O).

4',5'-Dihydro: [94481-04-6]

C₂₀H₄₂N₆O₆ 462.588
 Semisynthetic. Shows antimicrobial props. $[\alpha]_D^{26}$ +76 (c, 1.0 in MeOH).

De-N-lysyl: [79549-88-5]

C₁₄H₂₈N₄O₅ 332.399
 Semisynthetic. Shows antimicrobial props. $[\alpha]_D^{23}$ +120 (c, 1.05 in MeOH).

De-N-lysyl, 4',5'-dihydro: [84048-09-9]

C₁₄H₃₀N₄O₅ 334.415
 Semisynthetic. Shows antimicrobial props. $[\alpha]_D^{27}$ +77 (c, 1.02 in MeOH).

[75432-69-8]

Ger. Pat., 1980, 3 003 497; *CA*, **94**, 2931 (isol)
 U.S. Pat., 1981, 4 283 529; *CA*, **95**, 187604 (synth)

Kurath, P. *et al.*, *J. Antibiot.*, 1982, **35**, 1338; 1984, **37**, 1130 (derivs, struct)

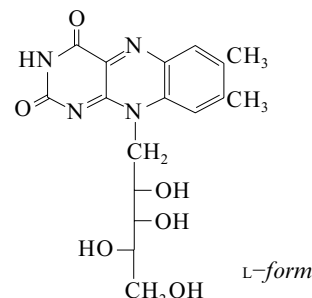
Lytechinastatin L-61

[80893-08-9]
 Glycoprotein. Isol. from the sea urchin *Lytechinus variegatus*. Shows antitumour activity. Fairly sol. H₂O; poorly sol. hexane.

Pettit, G.R. *et al.*, *J. Nat. Prod.*, 1981, **44**, 713-716 (isol)

Lyxoflavin, 9CI L-62

5-Deoxy-5-(3,4-dihydro-7,8-dimethyl-2,4-dioxobenzof[*g*]pteridin-10(2H)-yl)arabinitol, 9CI
 [482-12-2]



C₁₇H₂₀N₄O₆ 376.368

D-form [53187-52-3]
 Mp 276°. $[\alpha]_D^{20}$ +46 (0.05N NaOH).

L-form

Isol. from mammalian heart tissue.
 Orange needles.
 Mp 283-284° dec. $[\alpha]_D^{23}$ -49 (c, 0.26 in 0.05N NaOH).

Tetra-Ac: Mp 223°.

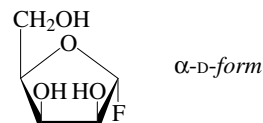
Karrer, P. *et al.*, *Helv. Chim. Acta*, 1935, **18**, 908 (D-form, synth)

Heyl, D. *et al.*, *J.A.C.S.*, 1951, **73**, 3826 (L-form, synth)

Emerson, G.A. *et al.*, *J.A.C.S.*, 1951, **73**, 5383 (L-form, activity)

Harders, H. *et al.*, *Biochemistry*, 1974, **13**, 3360 (D-form, cd)

Lyxofuranosyl fluoride L-63



C₅H₉FO₄ 152.122

α -D-form

Tribenzoyl: 2,3,5-Tri-O-benzoyl- α -D-lyxofuranosyl fluoride
 [57578-81-1]

C₂₆H₂₁FO₇ 464.446

Syrup. $[\alpha]_D^{20}$ -15.5 (c, 0.46 in CHCl₃).

β -D-form

Tribenzoyl: 2,3,5-Tri-O-benzoyl- β -D-lyxofuranosyl fluoride
 [61835-38-9]

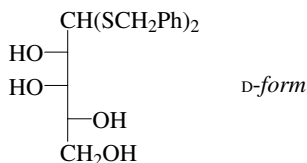
C₂₆H₂₁FO₇ 464.446

Cryst. (Et₂O). Mp 62-63°. $[\alpha]_D^{20}$ -14.13 (c, 0.72 in CHCl₃).

Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1976, **30**, 727 (tribenzoyl, pmr, cmr, F-19 nmr)

de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1976, **34**, 179 (β -L-fur isopropylidene, β -L-fur isopropylidene tosyl, β -L-fur isopropylidene benzyl)
 Bock, K. *et al.*, *Annu. Rep. NMR Spectrosc.*, (Webb, G.A. ed.), Acad. Press, London and New York, 1982, **13**, 38; 41 (*pmr, cmr*)
 Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (*equilib*)
 Lacourt-Gadras, B. *et al.*, *Carbohydr. Res.*, 1992, **235**, 281 (*synth, D-form*)
 Yanagihara, R. *et al.*, *Bull. Chem. Soc. Jpn.*, 1993, **66**, 2268 (*synth*)
 Benesi, A.J. *et al.*, *Carbohydr. Res.*, 1994, **258**, 27 (*pmr, cmr*)
 Popsavin, V. *et al.*, *Carbohydr. Res.*, 1999, **321**, 110-115 (*D-form, synth*)

Lyxose dibenzyl dithioacetal L-73
 Lyxose dibenzyl mercaptal. 5,5-Bis(benzylthio)-1,2,3,4-pentanetetrol†

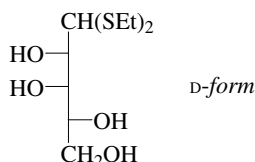


$C_{19}H_{24}O_4S_2$ 380.528

D-form [64780-60-5]
 Needles (2-propanol). Mp 104°. $[\alpha]_D^{25} +4.8$ (c, 3.81 in MeOH). $[\alpha]_D -26$ (c, 2 in Py).
 Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-D-lyxose dibenzyl dithioacetal
 $C_{27}H_{32}O_8S_2$ 548.677
 Needles (MeOH). Mp 103.5°. $[\alpha]_D^{25} +198$ (c, 1.8 in MeOH).
 2,3,5-Tri-Me: 2,3,5-Tri-O-methyl-D-lyxose dibenzyl dithioacetal
 [58886-15-0]
 $C_{22}H_{30}O_4S_2$ 422.609
 Syrup. $[\alpha]_D^{27} +122$ (c, 1.61 in $CHCl_3$).

L-form
 2,3,5-Tribenzoyl: 2,3,5-Tri-O-benzoyl-L-lyxose dibenzyl dithioacetal
 [169331-13-9]
 $C_{40}H_{36}O_8S_2$ 692.852
 Cryst. (MeOH). Mp 119-120°. Hardegger, E. *et al.*, *Helv. Chim. Acta*, 1950, **33**, 1159-1164 (*D-form, synth*)
 Zinner, H. *et al.*, *Chem. Ber.*, 1956, **89**, 800-813 (*D-form, synth*)
 Van Es, T. *et al.*, *Carbohydr. Res.*, 1976, **46**, 237-244 (*D-2,3,5-tri-Me*)
 Birtwistle, I *et al.*, *Synth. Commun.*, 2001, **31**, 3739-3746 (*L-2,3,5-tribenzoyl*)

Lyxose diethyl dithioacetal L-74
 Lyxose diethyl mercaptal. 5,5-Bis(ethylthio)-1,2,3,4-pentanetetrol

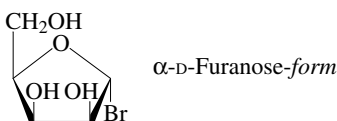


$C_9H_{20}O_4S_2$ 256.387

D-form [6838-08-0]
 Cryst. (EtOH). Mp 103-104° (102-102.5°). $[\alpha]_D^{20} +42.1$ (c, 1.0 in H_2O).
 Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-D-lyxose diethyl dithioacetal
 [7241-19-2]
 $C_{17}H_{28}O_8S_2$ 424.535
 Cryst. (EtOH). Mp 52-53° Mp 36-37°. $[\alpha]_D^{28} +40.5$ (c, 5 in $CHCl_3$). Dimorphic.
 2,3,4-Tribenzyl: [96236-35-0]
 $C_{30}H_{38}O_4S_2$ 526.76
 Syrup. $[\alpha]_D^{17} -25.2$ (c, 1.23 in $CHCl_3$).

L-form [22249-18-9]
 Solid (2-methyl-1-propanol). Mp 101-102°. $[\alpha]_D^{20} -41.5$ (c, 0.6 in H_2O).
 Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1940, **62**, 3465-3466 (*D-form, synth*)
 Zissis, E. *et al.*, *J.A.C.S.*, 1954, **76**, 5515-5522 (*D-form, synth*)
 Smrz, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 3803-3808 (*D-form, L-form, synth*)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1980, **80**, 263-275 (*D-tetra-Ac*)
 Dills, W.L. *et al.*, *Carbohydr. Res.*, 1982, **99**, 23-31 (*D-form, synth*)
 Tadano, K. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 245-257 (*D-2,3,4-tribenzyl*)

Lyxosyl bromide L-75



$C_5H_9BrO_4$ 213.028

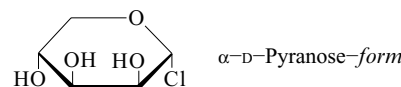
alpha-D-Pyranose-form
 Tri-Ac: 2,3,4-Tri-O-acetyl-alpha-D-lyxopyranosyl bromide
 [4099-16-5]
 $C_{11}H_{15}BrO_7$ 339.139
 Needles (Et₂O/petrol). Mp 118°. $[\alpha]_D^{26} +143.8$ (c, 1.0 in $CHCl_3$).
 2-Bromo-2-deoxy, 3,4-dibenzoyl: 3,4-Di-O-benzoyl-2-bromo-2-deoxy-alpha-D-lyxopyranosyl bromide
 [50271-34-6]
 $C_{19}H_{16}Br_2O_5$ 484.14
 Cryst. (Et₂O/pentane). Mp 144-145°. $[\alpha]_D^{22} +36.3$ (c, 1.6 in $CHCl_3$).

beta-D-Pyranose-form
 2-Bromo-2-deoxy, 3,4-dibenzoyl: 3,4-Di-O-benzoyl-2-bromo-2-deoxy-beta-D-lyxopyranosyl bromide
 [50271-33-5]
 $C_{19}H_{16}Br_2O_5$ 484.14
 Cryst. (Et₂O/pentane). Mp 143-144°. $[\alpha]_D^{21} -234$ (c, 1.5 in $CHCl_3$).

alpha-D-Furanose-form
 2,3-Carbonate, 5-benzoyl: 5-O-Benzoyl-2,3-O-carbonyl-alpha-D-lyxofuranosyl bromide. 5-O-Benzoyl-alpha-D-lyxofuranosyl bromide 2,3-carbonate
 [64609-12-7]
 $C_{13}H_{11}BrO_6$ 343.13
 Cryst. (Et₂O). Mp 138-139°. $[\alpha]_D +92$ (c, 1 in CH_2Cl_2).
 Durette, P.L. *et al.*, *Carbohydr. Res.*, 1971, **18**, 57 (*alpha-D-pyr tri-Ac, conform*)

Bock, K. *et al.*, *J.C.S. Perkin 1*, 1973, 1456 (2-bromo-2-deoxy dibenzoyl derivs)
 Bock, K. *et al.*, *Acta Chem. Scand.*, Ser. B, 1974, **28**, 1041 (*pmr, equilib*)
 Horitsu, K. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 1459 (*alpha-D-fur carbonate benzoyl*)

Lyxosyl chloride L-76



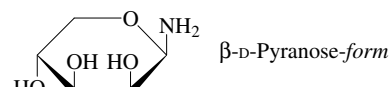
$C_5H_9ClO_4$ 168.576

alpha-D-Pyranose-form
 Tri-Ac: 2,3,4-Tri-O-acetyl-alpha-D-lyxopyranosyl chloride
 [32445-42-4]
 $C_{11}H_{15}ClO_7$ 294.688
 Needles (Et₂O/petrol). Mp 95.5-96.5°. $[\alpha]_D^{27} +90.3$ (c, 1 in $CHCl_3$).
 Tribenzoyl, 2-C-chloro: [52080-51-0]
 $C_{26}H_{20}Cl_2O_7$ 515.345
 Syrup. $[\alpha]_D^{25} -92$ (c, 1.0 in $CHCl_3$).
 Tris(chlorosulfate): [23566-98-5]
 Cryst. ($CHCl_3$ /petrol). Mp 92-93°. $[\alpha]_D^{21} +20.6$ (c, 1.1 in $CHCl_3$).

beta-D-Pyranose-form
 Tribenzoyl, 2-C-chloro: [52080-54-3]
 Syrup. $[\alpha]_D^{25} -115$ (c, 1.0 in $CHCl_3$).
 Tris(chlorosulfonyl):
 Needles ($CHCl_3$ /petrol). Mp 78°. $[\alpha]_D^{21} -82.8$ (c, 1.6 in $CHCl_3$).

alpha-D-Furanose-form
 2,3,5-Tri-Ac: 2,3,5-Tri-O-acetyl-alpha-D-lyxofuranosyl chloride
 $C_{11}H_{15}ClO_7$ 294.688
 Syrup. $[\alpha]_D +80$ (c, 2.4 in $CHCl_3$).
 Zinner, H. *et al.*, *Chem. Ber.*, 1956, **89**, 1507 (*furanose form*)
 Jennings, H.J. *et al.*, *Can. J. Chem.*, 1969, **47**, 1157 (*trichloro sulfate*)
 Horton, D. *et al.*, *Chem. Comm.*, 1970, 1608
 Durette, P.L. *et al.*, *Carbohydr. Res.*, 1971, **18**, 57 (*tri-Ac*)
 Durette, P.L. *et al.*, *Org. Magn. Reson.*, 1971, **3**, 417 (*pmr*)
 Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1980, **113**, 471 (*chloro, pmr, cmr*)

Lyxosylamine L-77



$C_5H_{11}NO_4$ 149.146

D-form [39840-37-4]
 Mp 142-143°. $[\alpha]_D -44.5$ (H_2O).
 N-(4-Nitrophenyl): [74709-33-4]
 Yellow amorph. powder. Mp 209-210°. $[\alpha]_D -126$ (c, 1.5 in $CHCl_3$).
 N-(4,5-Dimethyl-2-nitrophenyl): Mp 198-199°. $[\alpha]_D -109$ (Py).
 N-(4,5-Dimethyl-2-nitrophenyl), tri-Ac: Mp 190-191°. $[\alpha]_D -154$ (c, 1 in Py).

β-D-Pyranose-form

N-Ac:

C₇H₁₃NO₅ 191.183Mp 166-167°. [α]_D -47 (c, 1 in H₂O).

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl-β-D-lyxopyranosylamine

[53887-03-9]

C₁₁H₁₇NO₇ 275.258

Cryst. (EtOAc/petrol). Mp 193-195°.

2,3,4-Tri-Ac: hydrochloride: [53784-77-3]

Cryst. (EtOH). Mp 153-163°. [α]_D²¹ -23.3 (c, 1 in MeOH).

N-(p-Methoxybenzoyl), tri-Ac:

Cryst. (EtOAc). Mp 202-203°. [α]_D²³ -57 (c, 1 in CHCl₃).

N-(4-Nitrobenzoyl), tri-Ac:

Cryst. (EtOAc/petrol). Mp 186-189°. [α]_D²⁵ -41 (c, 1 in CHCl₃).

N-(Trifluoroacetyl), tri-Ac:

Cryst. (EtOH/petrol). Mp 175-177°.

[α]_D²² -45.3 (c, 1 in CHCl₃).

N,2,3,4-Tetra-Ac:

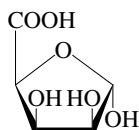
C₁₃H₁₉NO₈ 317.295[α]_D²⁵ -53.6 (c, 1 in CHCl₃).**L-form**N-(4,5-Dimethyl-2-nitrophenyl): Mp 195-196°. [α]_D +112 (c, 1 in Py).

N-(4,5-Dimethyl-2-nitrophenyl), tri-Ac:

Mp 184-185°. [α]_D +155 (c, 1 in Py).Levene, P.A. *et al.*, *J. Biol. Chem.*, 1915, **22**, 333; 1916, **24**, 692 (*D-form*)Weygand, F. *et al.*, *Chem. Ber.*, 1950, **83**, 559 (4-nitrophenyl)Heyl, D. *et al.*, *J.A.C.S.*, 1954, **76**, 1355 (2-nitrophenyl)Ellis, G.P. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 95 (rev)Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 1590 (synth, pmr, conformn, β-D-Pyr)Isbell, H.S. *et al.*, *Methods Carbohydr. Chem.*, 1980, **8**, 255 (β-D-N-Ac)Smiatecz, Z. *et al.*, *Carbohydr. Res.*, 1984, **128**, 227 (N-Aryl)**Lyxuronic acid, 8CI**

[30923-19-4]

[134679-15-5]

C₅H₈O₆ 164.115

α-D-Furanose-form

D-formProduced by the action of *Acetobacter melanogenum* on D-glucose.[α]_D²⁰ -23 → -53 (H₂O) (as Ca salt dihydrate).**α-D-Furanose-form**

α-D-Lyxofuranuronic acid

[134679-11-1]

Me glycoside, Me ester: Methyl (methyl α-D-lyxofuranosid)uronate

C₇H₁₂O₆ 192.168Solid. [α]_D²⁰ +50.1 (c, 0.7 in CHCl₃).**L-form**Cryst. (as Na salt). [α]_D -10 (c, 2.0 in H₂O).

Me ester: Methyl L-lyxuronate

C₆H₁₀O₆ 178.141Mp 140°. [α]_D -37.7 → -23 (c, 1.8 in H₂O).**α-L-Furanose-form**

Me glycoside, Me ester: Methyl (methyl α-L-lyxofuranosid)uronate

[5531-17-9]

C₇H₁₂O₆ 192.168Cryst. Mp 85°. [α]_D -94 (c, 2 in MeOH).Ameyama, M. *et al.*, *Bull. Agric. Chem. Soc. Jpn.*, 1958, **22**, 271; 380; *CA*, **52**, 20408; **53**, 22229 (*D-form*)Hulyalkar, R.K. *et al.*, *Can. J. Chem.*, 1965, **43**, 3241-3246 (*L-form* Me ester, α-L-Me fur Me ester)Wu, J. *et al.*, *Carbohydr. Res.*, 1991, **210**, 51-70 (pmr, cmr)Werschkun, B. *et al.*, *Synthesis*, 1999, 121-137 (α-D-Me fur Me ester)

Ac, 1-Me ester: [39701-84-3]
 $C_7H_{10}O_6$ 190.152
 Oil. $[\alpha]_D^{20}$ -27.9 (c, 9.25 in MeOH).

Ac, di-Me ester: Dimethyl 2-acetoxy succinate
 [85828-07-5]
 $C_8H_{12}O_6$ 204.179
 Liq. Bp₃₅ 157°. $[\alpha]_D$ -21.6 (c, 2.5 in EtOH).

Ac, 1-Et ester: [52485-05-9]
 $C_8H_{12}O_6$ 204.179
 Cryst. (Et₂O/hexane). Mp 51-53° (50-51°). $[\alpha]_D^{21}$ -26.1 (c, 1.05 in CHCl₃).

Ac, di-Et ester: Diethyl 2-acetoxy succinate
 [7554-26-9]
 $C_{10}H_{16}O_6$ 232.233
 Oil. $[\alpha]_D^{20}$ -15.4 (c, 1.4 in CHCl₃) (82% ee).

O-Benzoyl: Benzoylmalic acid
 [22138-51-8]
 $C_{11}H_{10}O_6$ 238.196
 Constit. of alfalfa (*Medicago sativa*).
 Cryst.
 Mp 142° (136-138°).

O-Benzoyl, di-Me ester: Dimethyl benzoylmalate
 [65582-59-4]
 $C_{13}H_{14}O_6$ 266.25
 Syrup. $[\alpha]_D^{21}$ -4.1 (c, 2 in CHCl₃).

O-(3,4,5-Trihydroxybenzoyl): Galloylmalic acid
 $C_{11}H_{10}O_9$ 286.195
 Constit. of the fruit of *Phyllanthus emblica*. Amorph. powder. $[\alpha]_D^{22}$ -0.4 (c, 0.24 in MeOH).

O-(4-Hydroxycinnamoyl): Constit. of *Chelidonium majus* (Papaveraceae), *Dicentra* sp. and *Fumaria* sp. (Fumariaceae).
 $[\alpha]_D$ -7.5 (c, 5 in H₂O).

O-(4-Hydroxy-3-methoxycinnamoyl):
 Constit. of *Chelidonium majus* (Papaveraceae), *Corydalis* sp., *Dicentra* sp. and *Fumaria* sp. (Fumariaceae).
 $[\alpha]_D$ -19.2 (c, 0.9 in H₂O).

O-(3,4-Dihydroxycinnamoyl): (S)-Phase-lic acid
 [53755-04-7]
 $C_{13}H_{12}O_8$ 296.233
 Isol. from leaves of French bean (*Phaseolus vulgaris*) and from *Trifolium pratense* (red clover). Yellowish hygroscopic glass. $[\alpha]_D^{20}$ +31.5 (c, 1.36 in H₂O). $[\alpha]_D^{25}$ +28.3 (H₂O).

Me ether: See Methoxybutanedioic acid in *The Combined Chemical Dictionary*.

Et ether: [23264-21-3]
 Cryst. Mp 76-80°. $[\alpha]_D^{14}$ -66.48 (Me₂CO).

(±)-form [617-48-1] Acidulant, antioxidant, flavouring agent, flavour enhancer. Forms a biodegradable homopolymer suitable for use as a drug carrier.
 Cryst. Sol. MeOH, Me₂CO, H₂O. Mp 131-133°. pK_{a1} 3.4; pK_{a2} 5.81 (25°, H₂O).

Di-Et ester: [626-11-9]
 [7554-12-3] d₄²¹ 1.12. Bp 255° Bp₂₇ 150-152°.

Bis-4-nitrobenzyl ester: Mp 124.5°.

1-Amide, 4-Me ester:
 Prisms (EtOH). Sol. H₂O, EtOH, Et₂O.
 Mp 146°.

4-Amide: [62445-24-3]
 Cryst. Spar. sol. EtOH; insol. Et₂O. Mp 148°.

4-Amide, 1-Me ester:
 Cryst. Spar. sol. MeOH. Mp 113°.

Diamide: [89104-80-3]
 Cryst. Mp 163-164°.

Dinitrile: Malic dinitrile. 2-Hydroxysuccinonitrile. 1,2-Dicyanoethanol
 [4341-85-9]
 $C_4H_4N_2O$ 96.088
 A widely referenced compd. for which very little data is available (whether racemic or as enantiomers).

Ac, diamide: [89073-63-2]
 $C_6H_{10}N_2O_4$ 174.156
 Mp 168-170° dec.

Me ether: See Methoxybutanedioic acid in *The Combined Chemical Dictionary*.

Et ether: [1726-75-6]
 Cryst. (Et₂O). V. sol. H₂O, EtOH, Et₂O.
 Mp 86°.

Et ether, di-Et ester: Diethyl 2-ethoxysuccinate
 [17596-10-0]
 $C_{10}H_{18}O_5$ 218.249
 Bp₂₅₀ 195-200° Bp_{14.5} 126° (lit. gives a pressure range).

[149-61-1, 676-46-0, 3105-51-9, 4387-09-1, 22138-22-3, 39015-77-5, 68303-40-2]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 522A; 522B; 522C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 811B; 1041B (nmr)

Aldrich Library of NMR Spectra, **2**, 172B (pmr)

Sadtler Standard C-13 NMR Spectra, 4652 (cmr)

Lutz, O. *et al.*, *Ber.*, 1902, **35**, 2460; 1908, **41**, 841 (malamic acids)

Pratt, D.S. *et al.*, *Philipp. J. Sci.*, 1912, **7**, 201; *Chem. Zentralbl.*, 1913, 645 (isol, R-form)

Freudenberg, K. *et al.*, *Ber.*, 1914, **47**, 2027; 1922, **55**, 1339 (amides)

McKenzie, A. *et al.*, *J.C.S.*, 1923, **123**, 2875 (synth, resohn)

Scarpati, M.L. *et al.*, *Gazz. Chim. Ital.*, 1960, **90**, 212 (Phase-lic acid)

Kryger, L. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 2349 (cryst struct, abs config)

Rodd's *Chem. Carbon Compd.* (2nd edn.), 1976, **1E**, 224 (rev)

Yoshihara, T. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 2427 (Benzoylmalic acid)

Shiba, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1982, **55**, 899 (resohn)

Wynberg, H. *et al.*, *J.A.C.S.*, 1982, **104**, 166 (synth)

Braud, C. *et al.*, *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)*, 1983, **24**, 71 (rev, polymer)

van der Sluis, P. *et al.*, *Acta Cryst. C*, 1985, **41**, 956; 1989, **45**, 1406 (cryst struct)

Larchevêque, M. *et al.*, *Synth. Commun.*, 1986, **16**, 183 (synth, derivs)

Alpegiani, M. *et al.*, *J.O.C.*, 1987, **52**, 278, (R-form di-Me ester)

Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, MAN000

Santaniello, E. *et al.*, *J.C.S. Perkin 1*, 1991, 601 (esters)

Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **13**, 1063 (rev)

Ushio, K. *et al.*, *Biotechnol. Lett.*, 1992, **14**, 795 (synth)

Hahn, R. *et al.*, *Planta Med.*, 1993, **59**, 71; 189 (Phase-lic acid)

Koert, U. *et al.*, *Chem. Ber.*, 1994, **127**, 1447, (di-Et ester)

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. *et al.*), American Pharmaceutical Association/Pharmaceutical Press, 1994, 285-286

Eck, R. *et al.*, *Tetrahedron*, 1994, **50**, 13641-13654 (synth, R-form, S-form)

Lee, S.S. *et al.*, *J.C.S. Perkin 1*, 1995, 2877 (dibenzyl esters)

Boege, S.C. *et al.*, *Z. Naturforsch., C*, 1995, **50**, 608 (cinnamoylmalic acids)

Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1723

Kobayashi, A. *et al.*, *Z. Naturforsch., C*, 1996, **51**, 233 (isol, dibutyl ester)

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 817; 1637-1639 (use, occur, props, di-Et ester)

Kuo, Y.-H. *et al.*, *Chem. Pharm. Bull.*, 2000, **48**, 1211-1214 (isol, di-Et ester)

Brittain, H.G. *et al.*, *Anal. Profiles Drug Subst.*, 2001, **28**, 153-195 (rev)

Zhang, Y.-J. *et al.*, *Chem. Pharm. Bull.*, 2001, **49**, 537-540 (Galloylmalic acid)

Tazaki, H. *et al.*, *Biosci., Biotechnol., Biochem.*, 2002, **66**, 255-261 ((R)-Phase-lic acid)

Martindale, *The Extra Pharmacopoeia*, 33rd edn., Pharmaceutical Press, 2002, 1631

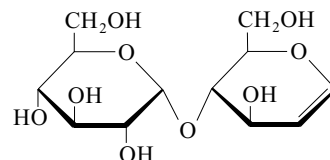
Cho, D.H. *et al.*, *Synth. Commun.*, 2003, **33**, 515-519 (R-form, diesters)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MAN000

Maltal

M-7

1,5-Anhydro-2-deoxy-4-O-α-D-glucopyranosyl-D-arabino-hex-1-enitol, 9CI, 8CI. 4-O-α-D-Glucopyranosyl-1,2-dideoxy-D-arabino-hex-1-enose
 [32447-71-5]



$C_{12}H_{20}O_9$ 308.285

Hexa-Ac: [67314-34-5]

$C_{24}H_{32}O_{15}$ 560.508
 Foam or solid. Mp 131-133°. $[\alpha]_D^{20}$ +72.2 (c, 0.2 in CHCl₃).

Haworth, W.N. *et al.*, *J.C.S.*, 1934, 302 (synth)

Helferich, B. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 209 (rev)

Shull, B.K. *et al.*, *J. Carbohydr. Chem.*, 1996, **15**, 955-964 (hexa-Ac, *1synth*, *ir*, *pmr*, *cmr*)

Alberti, A. *et al.*, *Tetrahedron*, 2000, **56**, 6291-6297 (synth, *pmr*, hexa-Ac)

Maltodextrin, 9CI

M-8

[9050-36-6]

[52769-80-9, 54077-26-8]

Polysaccharide consisting of D-glucose units linked primarily by α-1,4-bonds and having a reducing sugar content (dextrose equivalent) of less than 20%. Produced by partial hydrolysis of corn starch. Nonsweet nutritive food additive;

stabiliser, thickener and encapsulating agent in food products. Powder, granules or conc. soln. Mp 240° dec.

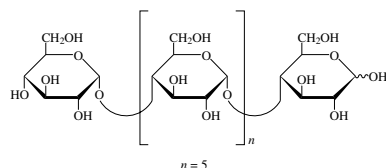
Kirk-Othmer *Encycl. Chem. Technol.*, 4th edn., Wiley, 1991, **9**, 599; **23**, 289-601; 559; 569 (use)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1643-1644 (props, use)

Maltoheptaose M-9

O- α -D-Glucopyranosyl-(1 \rightarrow 4)-[O- α -D-glucopyranosyl-(1 \rightarrow 4)]₅-D-glucose.

Amyloheptaose

[34620-78-5]



C₄₂H₇₂O₃₆ 1153.009

Synth. by acid hydrol. of cyclodextrins. Prod. from, 1,2-O-Isopropylidene using *Bacillus sphaericus* E-244. Used in detn. of α -amylase. V. sol. H₂O; insol. EtOH. [α]_D +175.5 (c, 2 in H₂O).

Tricosa-Ac: [114715-54-7]

[84814-32-4]

C₈₈H₁₁₈O₅₉ 2119.865
 Powder.

β -Pyranose-form

2-Chloro-4-nitrophenyl glycoside:

[90826-64-5]

C₄₈H₇₄ClNO₃₈ 1308.549

Reagent for detn. of α -amylase in body fluids.

Friebolin, H. *et al.*, *Makromol. Chem.*, 1976, **177**, 845-858 (cmr)

Henkel, E. *et al.*, *Fresenius' Z. Anal. Chem.*, 1984, **317**, 753-754 (chloronitrophenyl glycoside, use)

Oguma, T. *et al.*, *Agric. Biol. Chem.*, 1991, **55**, 1661-1662

Hitchkiss, A.T. *et al.*, *Carbohydr. Res.*, 1993, **242**, 1-9 (synth)

Sakairi, N. *et al.*, *J.C.S. Perkin 1*, 1995, 437-443 (tricosa-Ac)

Sugiyama, H. *et al.*, *Carbohydr. Res.*, 2000, **325**, 177-182 (pmr, conformn)

Maltohexaose, 8CI M-10

O- α -D-Glucopyranosyl-(1 \rightarrow 4)-[O- α -D-glucopyranosyl-(1 \rightarrow 4)]₄-D-glucose, 9CI.

Amylohexaose

[34620-77-4]

As Maltoheptaose, M-9 with

n = 4

C₃₆H₆₂O₃₁ 990.867

Constit. of corn starch. Amylolysis prod. from starch. Maltooligosaccharide mixtures are important food additives (sweeteners, gelling agents and viscosity modifiers). [α]_D²⁵ +182 (c, 1 in H₂O).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 311B (nmr)

Whistler, R.L. *et al.*, *J.A.C.S.*, 1955, **77**, 5761-5762 (isol)

French, D. *et al.*, *J. Chem. Res.*, 1966, **24**, 68-75 (isol)

Beadle, J.B. *et al.*, *J. Agric. Food Chem.*, 1969, **17**, 904-906 (gle)

Friebolin, H. *et al.*, *Makromol. Chem.*, 1976, **177**, 845-858 (cmr)

Eur. Pat., 1995, 670 368; *CA*, **123**, 221799 (synth)

Sugiyama, H. *et al.*, *Carbohydr. Res.*, 2000, **325**, 177-182 (pmr, conformn)

Maltononaose M-11

O- α -D-Glucopyranosyl-(1 \rightarrow 4)-[O- α -D-glucopyranosyl-(1 \rightarrow 4)]₇-D-glucose, 9CI [6471-60-9]

As Maltoheptaose, M-9 with

n = 7

C₅₄H₉₂O₄₆ 1477.293

Maltooligosaccharide mixts. are important food additives as sweeteners, gelling agents and viscosity modifiers. Mp 231-235° (dec.). [α]_D +181 (c, 1.0 in H₂O).

Uchida, R. *et al.*, *Carbohydr. Res.*, 1996, **283**, 271-274

Maltooctaose M-12

O- α -D-Glucopyranosyl-(1 \rightarrow 4)-[O- α -D-glucopyranosyl-(1 \rightarrow 4)]₆-D-glucose, 9CI [6156-84-9]

As Maltoheptaose, M-9 with

n = 6

C₄₈H₈₂O₄₁ 1315.151

Maltooligosaccharide mixts. are important food additives as sweeteners, gelling agents and viscosity modifiers. Mp 223-225° (dec.). [α]_D +180 (c, 1.0 in H₂O).

Uchida, R. *et al.*, *Carbohydr. Res.*, 1996, **287**, 271-284

Maltopentaose, 8CI M-13

O- α -D-Glucopyranosyl-(1 \rightarrow 4)-[O- α -D-glucopyranosyl-(1 \rightarrow 4)]₃-D-glucose, 9CI. Amylopentaose

[34620-76-3]

As Maltoheptaose, M-9 with

n = 3

C₃₀H₅₂O₂₆ 828.725

Constit. of corn syrup. Amylolysis prod. from starch. Maltooligosaccharide mixtures are important food additives (sweeteners, gelling agents and viscosity modifiers). Synergist for antitumour agents. Cryst. + H₂O. Sol. H₂O; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, hexane.

Mp 78° (hydrate). [α]_D²⁵ +176.4 (c, 1.0 in H₂O).

[1668-09-3]

Whistler, R.L. *et al.*, *J.A.C.S.*, 1955, **77**, 1017 (isol)

Beadle, J.B. *et al.*, *J. Agric. Food Chem.*, 1969, **17**, 904 (gle)

Robyt, J.F. *et al.*, *J. Biol. Chem.*, 1970, **245**, 3917

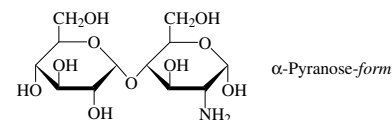
Friebolin, H. *et al.*, *Makromol. Chem.*, 1976, **177**, 845 (cmr)

Moates, G.K. *et al.*, *Carbohydr. Res.*, 1997, **299**, 91-94 (struct, props)

Sugiyama, H. *et al.*, *Carbohydr. Res.*, 2000, **325**, 177-182 (pmr, conformn)

Maltosamine M-14

2-Amino-2-deoxy-4-O-(α -D-glucopyranosyl)- α -D-glucopyranose. α -D-Glucopyranosyl-(1 \rightarrow 4)-glucosylamine



C₁₂H₂₃NO₁₀ 341.314

Obt. by acid hydrol. of partially reduced heparin.

Hydrochloride: Mp 183-187° dec. [α]_D²⁵ +100 \rightarrow +81 (c, 2.8 in H₂O).

N-Ac:

C₁₄H₂₅NO₁₁ 383.352

Mp 145-146°. [α]_D +87 \rightarrow +39 (H₂O).

Wolfson, M.L. *et al.*, *J.O.C.*, 1963, **28**, 278 (struct)

Wolfson, M.L. *et al.*, *Chem. Ind. (London)*, 1964, 545 (synth)

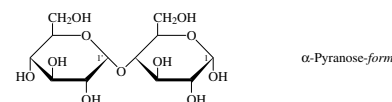
Nasser, M.A.M. *et al.*, *Carbohydr. Res.*, 1979, **77**, 99-105 (synth, N-Ac)

Maltose, 9CI, 8CI M-15

4-O- α -D-Glucopyranosyl-D-glucose, 9CI.

Finetose. Maltobiose. Malt sugar

[69-79-4]



C₁₂H₂₂O₁₁ 342.299

Occurs in some plants as hydrolytic dec. prod. of starch. Prod. in high yield (80%) by the action of diastase (α - and β -amylase) on starch, a process used in brewing. Inexpensive starting material for synthesis. Sweetening agent. Dietary supplement. Cryst. + 1H₂O (β -form). Mp 102-103°. [α]_D +112 \rightarrow +130 (H₂O).

► LD₅₀ (rat, orl) 35000 mg/kg. OO5250000

Phenyllosazone: Mp 206°. [α]_D +82.6 (Py/EtOH).

4',6'-Isopropylidene, hexa-Ac:

[74135-00-5]

C₂₇H₃₈O₁₇ 634.587

Mp 88-90°. [α]_D²⁰ -75 (CHCl₃).

α -Pyranose-form [4482-75-1]

Octa-Ac: [6920-00-9]

C₂₈H₃₈O₁₉ 678.597

Mp 125°. [α]_D +123 (CHCl₃).

6'-Trityl, hepta-Ac: [6748-73-8]

C₄₅H₅₀O₁₈ 878.879

Cryst. (Me₂CO/EtOH). Mp 161-161.6°. [α]_D +131 (c, 2 in CHCl₃).

Me glycoside: Methyl α -maltopyranoside

C₁₅H₂₄O₁₁ 356.326

[α]_D²⁰ +174 (c, 0.9 in H₂O).

Ph glycoside: Phenyl α -D-maltopyranoside

[1175-37-7]

C₁₈H₂₆O₁₁ 418.397

[α]_D +198 (H₂O).

Ph glycoside, hepta-Ac: [71238-94-3]

C₃₂H₄₀O₁₈ 712.657

Mp 184-185°. [α]_D +170 (CHCl₃).

Maltotriose, 8CI**M-19**

α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI. Amylotriose [1109-28-0]

As Maltoheptaose, M-9 with $n = 1$

$C_{18}H_{32}O_{16}$ 504.441

Constit. of corn syrup. Amylolysis prod. from starch. Maltooligosaccharide mixtures are important food additives (sweeteners, gelling agents and viscosity modifiers). $[\alpha]_D^{25} +160$ (in H_2O).

β -Undeca-Ac: [35396-13-5]

Cryst. (EtOH). Mp 134-136°. $[\alpha]_D^{25} +86$ (c, 1.6 in $CHCl_3$).

Thompson, A. et al., *J.A.C.S.*, 1952, **74**, 3612 (struct)

Pazur, J.H. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 337 (enzymic synth)

Kamerling, J.P. et al., *Tetrahedron*, 1972, **28**, 3037 (pmr)

Colson, P. et al., *J.A.C.S.*, 1974, **96**, 8081 (conformn, cmr)

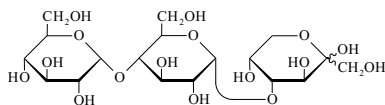
Sugiyama, H. et al., *Carbohydr. Res.*, 2000, **325**, 177-182 (pmr, conformn)

Damager, I. et al., *Synthesis*, 2002, 418-426, (β -undeca-Ac)

Storz, C.A. et al., *Carbohydr. Res.*, 2003, **338**, 95-107 (conformn)

Maltotriulose**M-20**

α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-fructose [17807-89-5]



Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

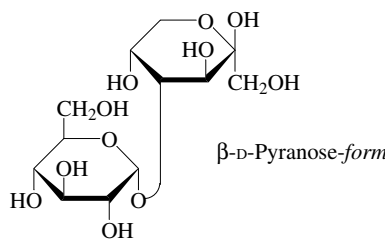
Reducing trisaccharide. $[\alpha]_D +80$ (H_2O). Fermented by brewing strains of *Saccharomyces cerevisiae*.

Avigad, G. et al., *Biochem. J.*, 1959, **73**, 587 (synth)

Clapperton, J.F. et al., *J. Inst. Brewing*, 1971, **77**, 519; *CA*, **76**, 32838q

Maltulose**M-21**

4-O- α -D-Glucopyranosyl-D-fructose, 9CI [17606-72-3]

 β -D-Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299

An aq. soln. at 25° contains 64% β -pyr, 12% α -fur, 22.5% β -fur and 1.5% ketone. Isol. from honey, beer and from the products formed by the action of an α -amylase on liver glycogen. Originates partly by epimerisation of maltose and partly by transglucosylation during the

hydrolysis of sucrose by D-glucosidases present in yeast and honey. Cryst. + $1H_2O$ (dioxan/MeOH).

Mp 113-115° dec Mp 200-202°. $[\alpha]_D^{20} +58 \rightarrow +64$ (c, 1.6 in H_2O). $[\alpha]_D^{20} +51.9$ (c, 1.5 in H_2O).

Peat, S. et al., *Biochem. J.*, 1952, **51**, xvii (isol)

Hough, L. et al., *J.C.S.*, 1953, 2005 (synth)

MacWilliam, I.C. et al., *Chem. Ind. (London)*, 1959, 364 (occur)

Täufel, A. et al., *Carbohydr. Res.*, 1967, **5**, 223 (enzymic synth)

Pfeffer, P.E. et al., *Carbohydr. Res.*, 1982, **102**, 11 (cmr)

Hicks, K.B. et al., *Carbohydr. Res.*, 1983, **112**, 37 (synth, hplc)

Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (equilib)

Lichtenthaler, F.W. et al., *J.C.S. Perkin 2*, 1990, 1489 (equilib)

Mannan, 9CI, 8CI**M-22**

[9036-88-8]

$C_6H_{10}O_5$ 162.142

A polysaccharide containing 95% or more mannose units which are (1 \rightarrow 4) linked in the β -pyranosyl form with some α -D-galactopyranosyl units (1 \rightarrow 6) linked along the main chain. The type of mannan depends on the ratio D-mannose: D-galactose; Galactomannan 1.04-5.26: 1; Mannan A 50:1; Mannan B 90:1. Polymeric. Minimum formula given. Occurs in custard apple, ebony and palms. Ivory nut mannan is a major product. Used in prepn. of D-Mannose by hydrol. of ivory nut meal. Widely used in industry, notably in food, pharmaceuticals, paints and explosives. $[\alpha]_D^{18} -44.58$ (c, 0.83 in 1N NaOH).

► LD₅₀ (mus, ivn) 2000 mg/kg. OP1949500

Per-Ac:

Powder. Mp 128-145°. $[\alpha]_D -3$ ($CHCl_3$).

Patterson, J. et al., *J.C.S.*, 1923, **123**, 1147

Hess, K. et al., *Annalen*, 1928, **466**, 18

Gorin, P.A.J. et al., *Can. J. Chem.*, 1973, **51**, 2375 (cmr)

Marchessault, R.M. et al., *Adv. Carbohydr. Chem. Biochem.*, 1976, **33**, 398 (cryst struct)

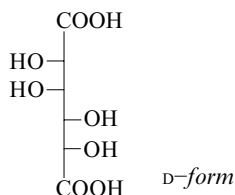
Dey, P.M. et al., *Adv. Carbohydr. Chem. Biochem.*, 1978, **35**, 341

Fox, J.E. et al., *Thickening and Gelling Agents for Food*, (ed. Imeson, A.), 2nd edn., Blackie, 1997, 262-283 (rev)

Mannaric acid, 9CI, 8CI**M-23**

Mannosaccharic acid

[6543-97-1]



D-form

$C_6H_{10}O_8$ 210.14

D-form [22076-54-6]

Mp 128.5°. Slowly converts into dilactone.

Diamide: D-Mannaric acid diamide

$C_6H_{12}N_2O_6$ 208.171

Mp 188-189.5° dec. $[\alpha]_D^{20} -24.4$ (H_2O).

1,4-Lactone, phenylhydrazide: Mp 190-191° dec.

1,4;6,3-Dilactone: D-Mannaro-1,4;6,3-dilactone

[2900-01-8]

$C_6H_6O_6$ 174.11

Silky plates (EtOH). Mp 189° dec. $[\alpha]_D^{18} +214$ (c, 1.1 in H_2O).

2,3,4,5-Tetra-Me: 2,3,4,5-Tetra-O-methyl-D-mannaric acid

$C_{10}H_{18}O_8$ 266.247

Semisolid, cryst. on standing. Mp 98-100°. $[\alpha]_D +4$ (c, 1 in $CHCl_3$).

L-form

Diamide: L-Mannaric acid diamide

$C_6H_{12}N_2O_6$ 208.171

Mp 189-190° dec.

1,4;6,3-Dilactone: L-Mannaro-1,4;6,3-dilactone

$C_6H_6O_6$ 174.11

Mp 180° dec. $[\alpha]_D -201$ (H_2O).

Kiliani, H. et al., *Ber.*, 1887, **20**, 339; 1926, **59**, 1469 (synth, D-form, L-form)

Fischer, E. et al., *Ber.*, 1891, **24**, 539 (D-form, L-form, D-diamide, L-diamide, D-lactone, phenylhydrazide)

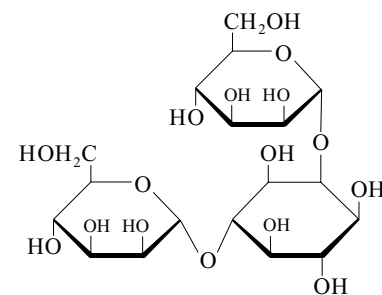
Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 322; 325 (rev)

Haworth, W.N. et al., *J.C.S.*, 1944, 217, (D-dilactone)

Mancera, M. et al., *Carbohydr. Res.*, 2003, **338**, 1115-1119 (D-form, 2,3,4,5-tetra-Me)

Mannimositose**M-24**

2-O- α -D-Mannopyranosyl-6-O- α -D-mannopyranosyl-myo-inositol



$C_{18}H_{32}O_{16}$ 504.441

Component of an inositol phospholipid from *Mycobacterium tuberculosis* and *Mycobacterium phlei*.

Dodeca-Ac: Mp 135-137°. $[\alpha]_D +54$ ($CHCl_3$).

Vilkas, E. et al., *Bull. Soc. Chim. Biol.*, 1960, **42**, 1005

Ballou, C.E. et al., *Biochemistry*, 1964, **3**, 682

Lee, Y.C. et al., *Biochemistry*, 1964, **3**, 1395

2,3,4,5-Di-O-benzylidene: 2,3,4,5-Di-O-benzylidene-D-mannitol
[35827-52-2]
C₂₀H₂₂O₆ 358.39
Mp 203-205°. [α]_D +76.7 (Py).

1,3,2,5:4,6-Tri-O-benzylidene: 1,3,2,5:4,6-Tri-O-benzylidene-D-mannitol
C₂₇H₂₆O₆ 446.499
Needles (Et₂O). Mp 218°.

1,6-Di-Ph ether, 3,4-isopropylidene:
C₂₁H₂₆O₆ 374.433
Solid. Mp 116-117°. [α]_D +44.9 (c, 1.52 in CHCl₃).

2,3,4,5-Tetra-Me: 2,3,4,5-Tetra-O-methyl-D-mannitol
C₁₀H₂₂O₆ 238.28
Syrup, cryst. on standing. Mp 67-69°. [α]_D +12 (c, 1 in CHCl₃).

Hexa-Me: 1,2,3,4,5,6-Hexa-O-methyl-D-mannitol
[20746-37-6]
C₁₂H₂₆O₆ 266.334
[α]_D +12.5.

3,4-Dibenzyl, 1,2,5,6-tetra-Ac: 1,2,5,6-Tetra-O-acetyl-3,4-di-O-benzyl-D-mannitol
[113409-83-9]
C₂₈H₃₄O₁₀ 530.571
Oil. [α]_D²⁵ +41 (c, 0.8 in CHCl₃).

3,6-Dibenzyl, 1,2,4,5-di-O-isopropylidene:
[132565-88-9]
C₂₆H₃₄O₆ 442.551
[α]_D²⁰ +1.9 (c, 1 in CHCl₃).

1,6-Ditrityl: 1,6-Di-O-trityl-D-mannitol
[29780-94-7]
C₄₄H₄₂O₆ 666.812
Mp 98-103° (90-93°). [α]_D -10 (c, 1 in CHCl₃). [α]_D -3.5 (C₆H₆).

1,6-Ditrityl, 2,3,4,5-tetra-Me: 2,3,4,5-Tetra-O-methyl-1,6-ditrityl-D-mannitol
C₄₈H₅₀O₆ 722.919
Cryst. Mp 158-160°. [α]_D +2 (c, 1 in CHCl₃).

Hexanitrate: Mannitol hexanitrate, INN.
Nitromannitol. Nitromannite.
Nitromaxitate
[15825-70-4]
C₆H₈N₆O₁₈ 452.159
Coronary vasodilator and spasmolytic.
Needles (EtOH). Mp 106-108°. Log P 0.84 (calc).

► Explodes upon percussion. Mod. toxic.
OP3000000

L-form [643-01-6] Not known in nature. Mp 164°.

Hexa-Ac: 1,2,3,4,5,6-Hexa-O-acetyl-L-mannitol
[129097-73-0]
C₁₈H₂₆O₁₂ 434.396
Cryst. (EtOH). Mp 122-123°. [α]_D -25.2 (c, 7.735 in CHCl₃).

3,4-Isopropylidene: 3,4-Isopropylidene-L-mannitol
[153059-36-0]
C₉H₁₈O₆ 222.238
Cryst. (Et₂O). Mp 83-86°. [α]_D -26.4 (c, 3 in H₂O).

1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-L-mannitol
[22323-78-0]

C₁₂H₂₂O₆ 262.302
Needles (H₂O). Mp 121.5-122.5°.

1,2:3,4:5,6-Tri-O-isopropylidene:
1,2:3,4:5,6-Tri-O-isopropylidene-L-mannitol
[153059-35-9]
C₁₅H₂₆O₆ 302.367
Cryst. (EtOH). Mp 72-74°.

1,2:5,6-Tetrabenzyl ether: [425622-82-8]
C₃₄H₃₈O₆ 542.671
Oil. [α]_D²⁵ +12.7 (c, 1.02 in CHCl₃).

1,2:5:6-Dianhydro, 3,4-O-isopropylidene:
See 1,2:5,6-Diepoxy-3,4-hexanediol, D-661

DL-form
DL-Mannitol. α-Acristol
[133-43-7]
Mp 170°.

Hexa-Ac: 1,2,3,4,5,6-Hexa-O-acetyl-DL-mannitol
[142563-12-0]
C₁₈H₂₆O₁₂ 434.396
Mp 108-109°.

[45007-61-2, 61453-77-8]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 186C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 289C; 401A; 401B; 404A (nmr)

Ohle, H. et al., Ber., 1929, 62, 2982 (4,5-dibenzoyl)

Brigl, P. et al., Ber., 1932, 65, 641 (dibenzoyl)

Baer, E. et al., J.A.C.S., 1939, 61, 761-765, (L-hexa-Ac, L-1,2:5,6-diisopropylidene)

Ness, A.T. et al., J.A.C.S., 1943, 65, 2215 (2,5-methylene)

Wiggins, L.F. et al., J.C.S., 1946, 13 (3,4-isopropylidene)

Lohmar, R. et al., Carbohydr. Res., 1949, 4, 211 (rev)

Kolthoff, I.M. et al., Volumetric Analysis, Interscience, NY, 1954, 2, (use)

Wright, L. et al., J.O.C., 1961, 26, 1588 (synth)

Sinclair, H.B. et al., Carbohydr. Res., 1970, 12, 150 (1,3:4,6-dibenzylidene, synth, pmr)

Horváth, T. et al., Carbohydr. Res., 1971, 16, 253 (Mannosulfan)

Vargha, L. et al., Ther. Hung., 1971, 19, 10 (Mannosulfan)

Analyst (London), 1972, 97, 740 (microanal)

Karrer, W. et al., Konstitution und Vorkommen der Organischen Pflanzenstoffe, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 148 (occur)

Brimacombe, J.S. et al., The Carbohydrates, Academic Press, 1972, 1A, 479

Brecknell, D.J. et al., Aust. J. Chem., 1976, 29, 1749 (tribenzylidene)

Holzbecher, Z. et al., Handbook of Organic Reagents in Inorganic Analysis, Horwood, Chichester, 1976, (use)

Kirk-Othmer Encycl. Chem. Technol., 3rd edn., Wiley, 1978, 1, 754 (rev)

Morpain, C. et al., J.C.S. Perkin 1, 1979, 1379 (dibenzoyl)

Chittenden, G.J.F. et al., Carbohydr. Res., 1980, 84, 350 (1,2:5,6-diisopropylidene)

Matsuhira, B. et al., Carbohydr. Res., 1981, 89, 326 (cmr)

Kuszmann, J. et al., Carbohydr. Res., 1984, 128, 87; 132, 178; 1985, 137, 276 (isopropylidene derivs)

Makkee, M. et al., Starch/Staerke, 1985, 37, 136 (rev, synth)

Jurczak, J. et al., Carbohydr. Res., 1987, 164, 493 (derivs)

Negwer, M. et al., Organic-Chemical Drugs and their Synonyms, 6th edn., Akademie-Verlag, 1987, 457; 572

Gawronska, K. et al., Carbohydr. Res., 1988, 176, 79 (2,3:4,5-diisopropylidene, 2,4:3,4-diisopropylidene)

Morpain, C. et al., Org. Prep. Proced. Int., 1990, 22, 540 (1,2:5,6-diisopropylidene)

Frick, W. et al., Annalen, 1991, 435-438 (3,6-dibenzyl, D-1,2:4,5-diisopropylidene)

Chittenden, G.J.F. et al., Carbohydr. Res., 1991, 222, 283 (diisopropylidene)

Stein, Z. et al., Acta Cryst. C, 1992, 48, 1141 (cryst struct, hexa-Ac)

Kopf, J. et al., Carbohydr. Res., 1992, 229, 17 (cryst struct, D-hexa-Ac, DL-hexa-Ac)

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. et al.), American Pharmaceutical Association/Pharmaceutical Press, 1994, 294-298

Nugiel, D.A. et al., J. Med. Chem., 1996, 39, 2156-2169 (L-form, triisopropylidene, 3,4-isopropylidene, synth, pmr)

Earle, M.J. et al., J.O.C., 1996, 61, 5697 (1,2:5,6-diisopropylidene)

Martindale, The Extra Pharmacopoeia, 31st edn., Pharmaceutical Press, 1996, 901; 902

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1658 (rev)

Saravanan, P. et al., J.O.C., 1997, 62, 2669-2670 (tosylates, synth, pmr, ir, cmr)

Zuccarello, G. et al., J.O.C., 1998, 63, 4898-4906 (3,4-isopropylidene 1,6-di-Ph, synth, pmr, cmr)

Org. Synth., Coll. Vol., 9, 1998, 450-453 (1,2:5,6-diisopropylidene, synth, ir, pmr, cmr)

Liu, P. et al., Acta Cryst. C, 1999, 55, 1179-1181 (triisopropylidene, cryst struct)

Li, G. et al., Organometallics, 1999, 581, 66-69 (1,2:5,6-dicyclohexylidene, use)

Badorrey, R. et al., Tetrahedron, 2002, 58, 341-354 (L-form, 1,2,5,6-tetrabenzyl ether)

Li, L.-S. et al., Tetrahedron, 2002, 58, 9049-9054 (D-form, 1,2:4,5-diisopropylidene)

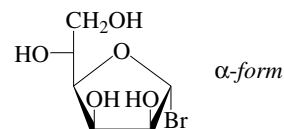
Froneczek, F.R. et al., Acta Cryst. C, 2003, 59, o567-o570 (D-form, cryst struct)

Mancera, M. et al., Carbohydr. Res., 2003, 338, 1115-1119 (2,3,4,5-tetra-Me, 1,6-ditrityl, 1,6-ditrityl 2,3,4,5-tetra-Me)

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, HER000; MAW250; MAW800

Mannofuranosyl bromide

M-26

C₆H₁₁BrO₅ 243.054

α-D-form

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl-α-D-mannofuranosyl bromide
[55018-57-0]
C₁₄H₁₉BrO₉ 411.203
Syrup.

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene-α-D-mannofuranosyl bromide
[38838-12-9]
C₁₂H₁₉BrO₅ 323.183
Cryst. Mp 122-123°.

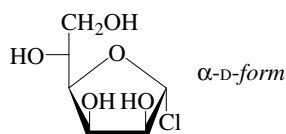
β -D-form

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl- β -D-mannofuranosyl bromide
[55018-58-1]
 $C_{14}H_{19}BrO_9$ 411.203
Syrup.

Hanessian, S. *et al.*, *Carbohydr. Res.*, 1972, **24**, 45 (*diisopropylidene*, *pmr*)
Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1974, **28**, 1041 (*tetra-Ac*, *pmr*)
McAdam, D.P. *et al.*, *Aust. J. Chem.*, 1988, **41**, 563 (*tetra-Ac*, *diisopropylidene*)

Mannofuranosyl chloride

M-27

 $C_6H_{11}ClO_5$ 198.603 **α -D-form**

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene- α -D-mannofuranosyl chloride
[17087-84-2]
 $C_{12}H_{19}ClO_5$ 278.732
Oil. Bp_{2.4} 135-137° Bp_{0.1} 112-122° (bath). $[\alpha]_D^{19.5} +2.75$ (c, 8.3 in Me_2CO). $n_D^{19.5}$ 1.4679.

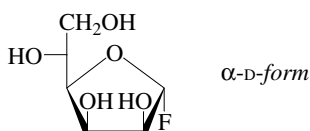
 β -D-form

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene- β -D-mannofuranosyl chloride
[72258-31-2]
 $C_{12}H_{19}ClO_5$ 278.732
Oil.

Lee, J.B. *et al.*, *Tetrahedron*, 1967, **23**, 2789, (α -diisopropylidene, *ir*)
Lerner, L.M. *et al.*, *Carbohydr. Res.*, 1975, **44**, 13 (α -diisopropylidene, *pmr*)
Csuk, R. *et al.*, *Chem. Comm.*, 1986, 1149, (β -diisopropylidene)

Mannofuranosyl fluoride

M-28

 $C_6H_{11}FO_5$ 182.148 **α -D-form**

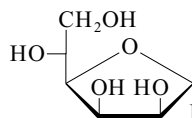
Tetra-Ac: 2,3,5,6-Tetra-O-acetyl- α -D-mannofuranosyl fluoride
[40031-25-2]
 $C_{14}H_{19}FO_9$ 350.297
Cryst. (Et_2O). Mp 96-97.5°. $[\alpha]_D^{25} +68.5$ (c, 2.1 in $CHCl_3$).
Tetra-benzoyl: 2,3,5,6-Tetra-O-benzoyl- α -D-mannofuranosyl fluoride
 $C_{34}H_{27}FO_9$ 598.58
Cryst. (Et_2O). Mp 90-91°. $[\alpha]_D^{23} -115.6$ (c, 2 in $CHCl_3$).

 β -D-form

Tetra-Ac: 2,3,5,6-Tetra-O-acetyl- β -D-mannofuranosyl fluoride
[40031-26-3]
 $C_{14}H_{19}FO_9$ 350.297
Cryst. (Et_2O). Mp 91-92.5°. $[\alpha]_D^{25} -13.8$ (c, 2.5 in $CHCl_3$).
Bock, K. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 2360 (*tetra-Ac*, *tetra-benzoyl*, *pmr*, *F-19 nmr*)
Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 682 (*cmr*, *F-19 nmr*)

Mannofuranosyl iodide

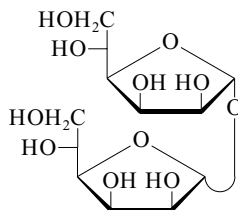
M-29

 $C_6H_{11}IO_5$ 290.054 **α -D-form**

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene- α -D-mannofuranosyl iodide
[125181-25-1]
 $C_{12}H_{19}IO_5$ 370.184
Syrup.
Ernst, B. *et al.*, *Tet. Lett.*, 1989, **30**, 3081 (*diisopropylidene*, *pmr*)

 α -D-Mannofuranosyl α -D-mannofuranoside

M-30

 $C_{12}H_{22}O_{11}$ 342.299

Tetra-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene- α -D-mannofuranosyl 2,3:5,6-di-O-isopropylidene- α -D-mannofuranoside
[64842-81-5]
 $C_{24}H_{38}O_{11}$ 502.558
Cryst. ($MeOH$). Mp 187-188°. $[\alpha]_D^{20} +63$ (c, 1.0 in $CHCl_3$).

Tetra-O-cyclohexylidene: 2,3:5,6-Di-O-cyclohexylidene- α -D-mannofuranosyl 2,3:5,6-di-O-cyclohexylidene- α -D-mannofuranoside
 $C_{36}H_{54}O_{11}$ 662.816

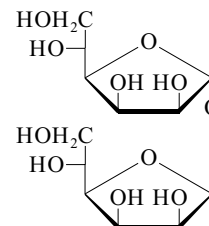
Cryst. ($EtOH$). Mp 158-159°. $[\alpha]_D +73$ (c, 1.4 in $CHCl_3$).

Eitelman, S.J. *et al.*, *J.C.S. Perkin 1*, 1978, 595 (*synth*)
Zhdanov, Y.A. *et al.*, *Dokl. Akad. Nauk SSSR, Ser. Khim.*, 1979, **245**, 846; *Dokl. Chem. (Engl. Transl.)*, 1979, **245**, 157

 β -D-Mannofuranosyl α -D-mannofuranoside, 9CI

M-31

α -D-Mannofuranosyl β -D-mannofuranoside
[97629-23-7]

 $C_{12}H_{22}O_{11}$ 342.299

Non-reducing disaccharide. Cryst. ($MeOH$). Mp 172°. $[\alpha]_D^{20} -11.4$ (c, 0.8 in $DMSO$).

Octa-Ac: [97672-95-2]
 $C_{28}H_{38}O_{19}$ 678.597
Syrup. $[\alpha]_D^{20} -30.2$ (c, 1.3 in $CHCl_3$).

Tetra-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene- β -D-mannofuranosyl 2,3:5,6-di-O-isopropylidene- α -D-mannofuranoside
[68198-88-9]
 $C_{24}H_{38}O_{11}$ 502.558
Oil. $[\alpha]_D^{20} +18$ (c, 1.0 in $CHCl_3$).

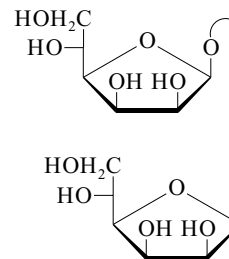
2,3:5,6-Di-O-isopropylidene, *tetra-Ac:* 2,3:5,6-Di-O-isopropylidene- β -D-mannofuranosyl 2,3:5,6-tetra-O-acetyl- α -D-mannofuranoside
[97629-26-0]
 $C_{26}H_{38}O_{15}$ 590.577
Mp 40°. $[\alpha]_D^{20} -54.9$ (c, 0.5 in $CHCl_3$).

Eitelman, S.J. *et al.*, *J.C.S. Perkin 1*, 1978, 595
Dahlhoff, W.V. *et al.*, *Z. Naturforsch., B*, 1985, **40**, 141 (*synth*)

 β -D-Mannofuranosyl β -D-mannofuranoside, 9CI

M-32

[97672-99-6]

 $C_{12}H_{22}O_{11}$ 342.299

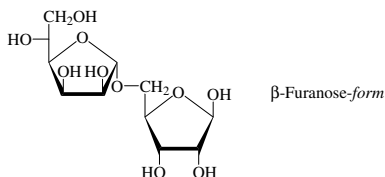
Non-reducing disaccharide. Mp 121°. $[\alpha]_D^{20} -126.1$ (c, 0.5 in $DMSO$).

Octa-Ac: [97673-00-2]
 $C_{28}H_{38}O_{19}$ 678.597
Mp 234-235°. $[\alpha]_D^{20} -116.5$ (c, 0.6 in $CHCl_3$).

2,3:5,6-Di-O-isopropylidene, *tetra-Ac:* 2,3:5,6-Di-O-isopropylidene- β -D-mannofuranosyl 2,3:5,6-tetra-O-acetyl- β -D-mannofuranoside
[97672-97-4]
 $C_{26}H_{38}O_{15}$ 590.577
 $[\alpha]_D^{20} -60.7$ (c, 1.3 in $CHCl_3$).

Dahlhoff, W.V. *et al.*, *Z. Naturforsch.*, **B**, 1985, **40**, 141 (*synth*)

5-O- α -D-Mannofuranosyl-D-ribose M-33



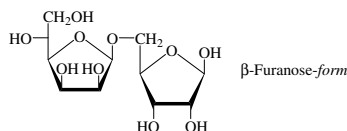
$C_{11}H_{20}O_{10}$ 312.273

β-Furanose-form

Benzyl glycoside, 2,3-dibenzyl, 2',3':5',6'-di-O-isopropylidene: Benzyl 2,3-di-O-benzyl-5-O-(2,3:5,6-di-O-isopropylidene- α -D-mannofuranosyl)- β -D-ribofuranoside, 9CI [76679-42-0]
 $C_{38}H_{46}O_{10}$ 662.775
 Syrup. $[\alpha]_D^{20}$ +30 (c, 1.0 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene, 2',3':5',6'-di-O-isopropylidene: Methyl 5-O-(2,3:5,6-di-O-isopropylidene- α -D-mannofuranosyl)-2,3-O-isopropylidene- β -D-ribofuranoside, 9CI [76679-43-1]
 $C_{21}H_{34}O_{10}$ 446.494
 Mp 67-68°. $[\alpha]_D^{20}$ +2.6 (c, 1.0 in $CHCl_3$).
 Schmidt, R.R. *et al.*, *Chem. Ber.*, 1982, **115**, 39 (*synth, pmr*)

5-O- β -D-Mannofuranosyl-D-ribose M-34



$C_{11}H_{20}O_{10}$ 312.273

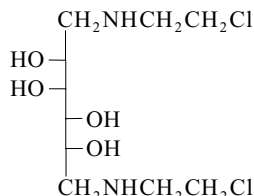
β-Furanose-form

Benzyl glycoside, 2,3-dibenzyl, 2',3':5',6'-di-O-isopropylidene: Benzyl 2,3-di-O-benzyl-5-O-(2,3:5,6-di-O-isopropylidene- β -D-mannofuranosyl)- β -D-ribofuranoside, 9CI [76679-45-3]
 $C_{38}H_{46}O_{10}$ 662.775
 Syrup. $[\alpha]_D^{20}$ -16.6 (c, 1.0 in $CHCl_3$).

Schmidt, R.R. *et al.*, *Chem. Ber.*, 1982, **115**, 39 (*synth, pmr*)

Mannomustine, BAN, INN M-35

1,6-Bis[(2-chloroethyl)amino]-1,6-di-deoxy-D-mannitol, 9CI, 8CI. Mannitol nitrogen mustard. Degranol. Mannitlost. NSC 9698 [576-68-1]



$C_{10}H_{22}Cl_2N_2O_4$ 305.2

Antineoplastic agent. Mp 278° dec. Log P -2.73 (calc).

► OP2100000

Hydrochloride (1:2): [551-74-6]
 Mp 239-241° dec. $[\alpha]_D^{20}$ +18.46 (c, 1.81 in H_2O).

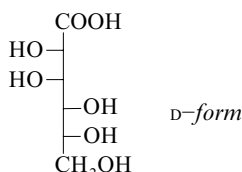
► Human systemic effects when used therapeutically. Exp. reprod. effects. Exp. carcinogen. LD₅₀ (mus, scu) 120 mg/kg. OP2275000

Salt with ATP (1:1): Degratef [89457-62-5]

Vargha, L. *et al.*, *J.C.S.*, 1957, 805 (*synth*)
 Hadnagy, C. *et al.*, *Arch. Int. Pharmacodyn. Ther.*, 1959, **120**, 334 (*pharmacol*)
 Gergely, P. *et al.*, *CA*, 1973, **79**, 38 396c (*use*)
IARC Monog., 1975, **9**, 157; *Suppl.*, **7**, 65 (*tox. rev*)
 Isakov, I. *et al.*, *Khim.-Farm. Zh.*, 1983, **17**, 1446 (*salt*)
 Buess, M.L. *et al.*, *Org. Magn. Reson.*, 1984, **22**, 67 (*nqr*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 486
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MAW500; MAW750

Mannonic acid, 9CI, 8CI M-36

manno-Hexonic acid [6906-37-2]



$C_6H_{12}O_7$ 196.157

Free acid v. readily lactonises.

D-form [642-99-9]

Na salt: $[\alpha]_D^{20}$ -8.8 (H_2O).

Ca salt:

Hydrate. Mp 165°. $[\alpha]_D^{20}$ -7.5 (H_2O).

Brucine salt: Mp 212°. $[\alpha]_D^{20}$ -26.7 (H_2O).

Me ester: Methyl D-mannonate [16752-03-7]
 $C_7H_{14}O_7$ 210.183

Mp 155°. $[\alpha]_D^{20}$ -11.1 (H_2O).

Et ester: Ethyl D-mannonate [27934-94-7]
 $C_8H_{16}O_7$ 224.21

Mp 164°.

Amide: D-Mannonamide

[27022-42-0]

$C_6H_{13}NO_6$ 195.172

Mp 176°. $[\alpha]_D^{20}$ -13.1 (c, 2.2 in H_2O).

Anilide: N-Phenyl-D-mannonamide

$C_{12}H_{17}NO_6$ 271.269

Mp 176°. $[\alpha]_D^{12}$ -16.9 (H_2O).

Hydrazide: D-Mannonic hydrazide

$C_6H_{14}N_2O_6$ 210.186

Mp 161° dec. $[\alpha]_D^{15}$ -2.7 (H_2O).

Nitrile: D-Mannonitrile

[52387-28-7]

$C_6H_{11}NO_5$ 177.157

Characterised as derivs.

Nitrile, 2,3:5,6-diisopropylidene: 2,3:5,6-

Di-O-isopropylidene-D-mannonitrile

[123790-87-4]

$C_{12}H_{19}NO_5$ 257.286

Mp 97-98°. $[\alpha]_D^{20}$ +62.4 (c, 1.2 in CH_2Cl_2).

1,4-Lactone: See 1,4-Mannonolactone, M-37

1,5-Lactone: See 1,5-Mannonolactone, M-38

Penta-Ac: 2,3,4,5,6-Penta-O-acetyl-D-mannonic acid

$C_{16}H_{22}O_{12}$ 406.343

Cryst. (EtOH aq.). Mp 68-70° (as hydrate). $[\alpha]_D^{21}$ +23 (c, 4 in $CHCl_3$).

Penta-Ac, Me ester: Methyl 2,3,4,5,6-penta-O-acetyl-D-mannonate

[35813-13-9]

$C_{17}H_{24}O_{12}$ 420.369

Mp 78-79°. $[\alpha]_D^{20}$ +20.5 (c, 1.0 in CH_2Cl_2).

Penta-Ac, amide: Penta-O-acetyl-D-mannonamide

[20744-69-8]

$C_{16}H_{23}NO_{11}$ 405.358

Mp 113-114°. $[\alpha]_D^{28}$ +40.7 (c, 1.1 in $CHCl_3$).

Nitrile, 2,3:5,6-diisopropylidene, 4-benzoyl:

4-O-Benzoyl-2,3:5,6-di-O-isopropylidene-D-mannonitrile

[35023-81-5]

$C_{19}H_{23}NO_6$ 361.394

Cryst. (C_6H_6). Mp 148°. $[\alpha]_D^{28}$ +21.2 (c, 2.0 in $CHCl_3$).

Penta-Ac, nitrile: 2,3,4,5,6-Penta-O-acetyl-D-mannonitrile

[6337-12-8]

$C_{16}H_{21}NO_{10}$ 387.343

Cryst. (EtOH). Mp 92-93°. $[\alpha]_D^{29}$ -1.8 ($CHCl_3$).

2,3,4,5-Tetra-Me, nitrile: 2,3,4,5-Tetra-O-methyl-D-mannonitrile

$C_{10}H_{19}NO_5$ 233.264

Bp₁₂ 180-182°. $[\alpha]_D^{20}$ +10.1 (MeOH).

Penta-Me, nitrile: 2,3,4,5,6-Penta-O-methyl-D-mannonitrile

$C_{11}H_{21}NO_5$ 247.291

Syrup. Bp_{0.18} 110°. $[\alpha]_D^{20}$ +13.3 (EtOH).

1,6-Lactone, 2,3:4,5-diisopropylidene:

2,3:4,5-Di-O-isopropylidene-D-mannono-1,6-lactone

$C_{12}H_{18}O_6$ 258.271

Syrup. $[\alpha]_D^{25}$ -49.5 (c, 1.3 in $CHCl_3$).

1-form [51547-37-6]

Na salt: $[\alpha]_D$ +10.1 (H_2O).

Amide: L-Mannonamide

$C_6H_{13}NO_6$ 195.172
Mp 170-171° dec. $[\alpha]_D^{25} +29.9$ (H₂O).

Hydrazide: L-Mannonic hydrazide

$C_6H_{14}N_2O_6$ 210.186
Mp 161-162° dec. $[\alpha]_D^{25} +4.4$ (H₂O).

1,4-Lactone: See 1,4-Mannonolactone, M-37**Penta-Ac, Me ester: Methyl 2,3,4,5,6-penta-O-acetyl-L-mannionate**

$C_{17}H_{24}O_{12}$ 420.369
Cryst. (MeOH/Et₂O/petrol). Mp 79-80°.
 $[\alpha]_D^{25} -19$ (c, 3.3 in H₂O).

Nef, J.U. et al., *Annalen*, 1914, **403**, 306 (*D*-form, *D*-Et ester)

Wolff, M.L. et al., *J.A.C.S.*, 1931, **53**, 622
(*D*-nitrile penta-Ac)

Isbell, H.S. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1933, **11**, 649 (*D*-form)

Glattfeld, J.W.E. et al., *J.A.C.S.*, 1934, **56**, 2481
(*D*-amide)

Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 320

Wolff, M.L. et al., *J.A.C.S.*, 1951, **73**, 730
(*L*-amide, *L*-Me ester penta-Ac)

Wolff, M.L. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 21 (*D*-penta-Ac)

Deferrari, J.O. et al., *An. Asoc. Quim. Argent.*, 1967, **55**, 187; *CA*, **69**, 67645g (*D*-Penta-Ac, amide)

Kampf, A. et al., *Carbohydr. Res.*, 1972, **21**, 1
(*D*-nitrile diisopropylidene)

Horton, D. et al., *Carbohydr. Res.*, 1972, **22**, 151
(*D*-Me ester penta-Ac)

Deslongchamps, P. et al., *Can. J. Chem.*, 1974, **52**, 3651 (*D*-Me ester penta-Ac, pmr)

Seldes, A.M. et al., *Carbohydr. Res.*, 1975, **39**, 11
(*D*-nitrile penta-Ac)

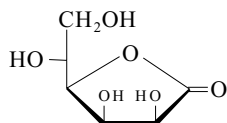
Horton, D. et al., *Carbohydr. Res.*, 1983, **119**, 263 (pmr, cmr, conformn)

Gawronska, K. et al., *Carbohydr. Res.*, 1988, **176**, 79 (*D*-1,6-lactone diisopropylidene)

Furstner, A. et al., *Angew. Chem., Int. Ed.*, 1994, **33**, 751 (diisopropylidene nitrile)

1,4-Mannonolactone**M-37**

manno-Hexono-1,4-lactone. γ -Mannolactone

*D*-form $C_6H_{10}O_6$ 178.141***D*-form** [26301-79-1]

Mp 152°. $[\alpha]_D +51.8$ (H₂O).

2,3,5,6-Tetra-Ac: 2,3,5,6-Tetra-O-acetyl-D-mannono-1,4-lactone

$C_{14}H_{18}O_{10}$ 346.29
Cryst. (Et₂O). Mp 120°. $[\alpha]_D^{20} +52$ (H₂O).

2,6-Ditosyl: 2,6-Di-O-tosyl-D-mannono-1,4-lactone

[146820-58-8]
 $C_{20}H_{22}O_{10}S_2$ 486.52
Cryst. (CHCl₃). Mp 142-143°. $[\alpha]_D^{20} +47$ (c, 2.0 in Me₂CO).

2,3-O-Isopropylidene: 2,3-O-Isopropylidene-D-mannono-1,4-lactone

$C_9H_{14}O_6$ 218.206
Needles (Me₂CO/petrol). Mp 133°. $[\alpha]_D^{20} +55.4$ (c, 1.62 in H₂O).

5,6-O-Isopropylidene: 5,6-O-Isopropylidene-D-mannono-1,4-lactone

$C_9H_{14}O_6$ 218.206
Solid (EtOAc). Mp 136-137°. $[\alpha]_D^{21} +58.5$ (c, 1.00 in H₂O).

2,3:5,6-Di-O-isopropylidene: 2,3:5,6-Di-O-isopropylidene-D-mannono-1,4-lactone

[14440-56-3]
 $C_{12}H_{18}O_6$ 258.271
Cryst. (petrol). Mp 126°. $[\alpha]_D +50.6$ (c, 1.0 in CHCl₃).

5,6-O-Isopropylidene, 2-O-(trifluoromethanesulfonyl): 5,6-O-Isopropylidene-2-triflyl-D-mannono-1,4-lactone

$C_{10}H_{13}F_3O_8S$ 350.269
Solid. Mp 109-110° dec. $[\alpha]_D^{21} +13.6$ (c, 1.00 in CHCl₃).

5,6-Di-Me, 2,3-O-isopropylidene: 2,3-O-Isopropylidene-5,6-di-O-methyl-D-mannono-1,4-lactone

$C_{11}H_{18}O_6$ 246.26
Needles (Et₂O). Mp 110°. $[\alpha]_D^{20} +64.2$ (c, 1.1 in H₂O).

3,5,6-Tri-Me: 3,5,6-Tri-O-methyl-D-mannono-1,4-lactone

[25018-61-5]
 $C_9H_{16}O_6$ 220.222
Cryst. (diisopropyl ether/EtOH). Mp 132-133°. $[\alpha]_D^{26} +43.2$ (c, 0.53 in H₂O) (initial).

2,3,5,6-Tetra-Me: 2,3,5,6-Tetra-O-methyl-D-mannono-1,4-lactone

[20869-29-8]
 $C_{10}H_{18}O_6$ 234.249
Mp 110°.

3,6-Dibenzoyl: 3,6-Di-O-benzoyl-D-mannono-1,4-lactone

[89950-78-7]
 $C_{20}H_{18}O_8$ 386.357
Cryst. (EtOH). Mp 204-208°. $[\alpha]_D^{20} +8.7$ (c, 1.0 in Me₂CO).

2,5,6-Tribenzoyl: 2,5,6-Tri-O-benzoyl-D-mannono-1,4-lactone

[89950-76-5]
 $C_{27}H_{22}O_9$ 490.465
Cryst. (C₆H₆ or MeOH). Mp 136-138°. $[\alpha]_D^{20} -20$ (c, 1.0 in CHCl₃).

Tetrabenzoyl: 2,3,5,6-Tetra-O-benzoyl-D-mannono-1,4-lactone

[89950-77-6]
 $C_{34}H_{26}O_{10}$ 594.573
Noncryst. $[\alpha]_D^{20} -99$ (c, 1.0 in CHCl₃).

***L*-form** [22430-23-5]

Mp 150-151°. $[\alpha]_D -51.8$ (H₂O).

Nef, J.U. et al., *Annalen*, 1914, **403**, 306 (*D*-form, synth)

Goodyear, E.H. et al., *J.C.S.*, 1927, 3136,
(*D*-isopropylidene di-Me, *D*-isopropylidene,
D-diisopropylidene, *D*-tetra-Ac, *D*-tetra-Me)

Haworth, W.N. et al., *J.C.S.*, 1929, 345,
(*D*-tetra-Me)

Horton, D. et al., *Carbohydr. Res.*, 1966, **2**, 251
(*D*-diisopropylidene)

Aleksidze, N.V. et al., *Zh. Obshch. Khim.*, 1967, **37**, 2625; *CA*, **69**, 97056h (*D*-form, *D*-tetra-Me)

Siddiqui, I.R. et al., *Carbohydr. Res.*, 1969, **9**, 344 (*D*-tri-Me)

Morgenlie, S. et al., *Acta Chem. Scand.*, 1972, **26**, 2518 (*D*-diisopropylidene)

Walaszek, Z. et al., *Carbohydr. Res.*, 1982, **105**, 131 (pmr, cmr, conformn)

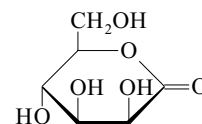
Fernández-Cirelli, A. et al., *J. Carbohydr. Chem.*, 1983, **2**, 167-176 (*D*-form, 3,6-dibenzoyl, 2,5,6-tribenzoyl, tetrabenzoyl)

Lunot, I. et al., *Synthesis*, 1992, 1129 (2,6-ditosyl)

Sotofte, I. et al., *Acta Cryst. C*, 1994, **50**, 941
(cryst struct, dimesyl)

Shalaby, M.A. et al., *Carbohydr. Res.*, 1994, **264**, 181 (cryst struct, *L*-form)

Long, D.D. et al., *J.C.S. Perkin 1*, 2002, 1982-1998 (5,6-isopropylidene, synth, pmr)

1,5-Mannonolactone**M-38****1,5-Mannolactone** $C_6H_{10}O_6$ 178.141***D*-form** [32746-79-5]

Mp 162°. $[\alpha]_D +111.8 \rightarrow +28.3$ (H₂O).

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-D-mannono-1,5-lactone

[73322-42-6]
 $C_{14}H_{18}O_{10}$ 346.29
Cryst. (Et₂O). Mp 109-110° (99-100°).
 $[\alpha]_D^{25} +96.3 \rightarrow +31.3$ (H₂O). $[\alpha]_D^{21} +56$ (3 min) $\rightarrow +53$ (10 d) (c, 1 in CHCl₃).

Tetra-Me: 2,3,4,6-Tetra-O-methyl-D-mannono-1,5-lactone

[51224-21-6]
 $C_{10}H_{18}O_6$ 234.249
Cryst. or syrup. Mp 38-40°. Bp_{0.05} 106-108°. $[\alpha]_D^{20} +150$ (c, 1.0 in H₂O). $[\alpha]_D^{20} +59.5$ (c, 0.6 in CHCl₃). $[\alpha]_D^{20} +35$ (c, 0.5 in Et₂O). $[\alpha]_D^{20} +20$ (c, 0.7 in C₆H₆).

Tetrabenzyl: 2,3,4,6-Tetra-O-benzyl-D-mannono-1,5-lactone

[82598-88-7]
 $C_{34}H_{34}O_6$ 538.639
Cryst. (EtOAc/petrol). Mp 83.5-85°. $[\alpha]_D +13$ (c, 1.0 in CHCl₃) (-0.5).

***L*-form** [124915-65-7]

Mp 162°. $[\alpha]_D -113.6 \rightarrow -40.9$ (H₂O).

3,4,6-Tri-Me: 3,4,6-Tri-O-methyl-L-mannono-1,5-lactone

$C_9H_{16}O_6$ 220.222
Mp 96-97°. $[\alpha]_D -167 \rightarrow -112.8$ (c, 1.88 in H₂O).

Tetra-Me: 2,3,4,6-Tetra-O-methyl-L-mannono-1,5-lactone

$C_{10}H_{18}O_6$ 234.249
 $[\alpha]_D -150 \rightarrow -58.2$ (H₂O).

Haworth, W.N. et al., *J.C.S.*, 1930, 2659,
(tetra-Me)

Pocker, Y. et al., *J.A.C.S.*, 1974, **96**, 166 (synth, pmr, ms, bibl)

Lichtenthaler, F.W. et al., *Chem. Ber.*, 1980, **113**, 489-510 (synth)

Walaszek, Z. et al., *Carbohydr. Res.*, 1982, **106**, 193 (pmr, cmr, conformn)

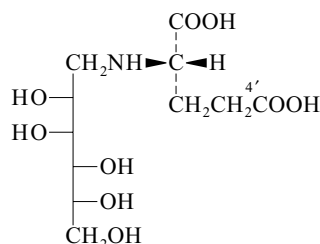
Overkleef, H.S. et al., *Tetrahedron*, 1994, **50**, 4215 (synth, pmr, cmr, tetrabenzyl)

Crich, D. et al., *J.O.C.*, 1996, **61**, 6189,
(*D*-tetra-Me, synth, ir, pmr, cmr)

Xie, J. et al., *J. Carbohydr. Chem.*, 1999, **18**, 481-498 (*D*-form tetrabenzyl)

Mannopinic acid**M-39**

1-Deoxy-1-[(1,3-dicarboxypropyl)amino]-mannitol, 9CI
[74524-18-8]



$C_{11}H_{21}NO_9$ 311.288

4'-Amide: **Mannopine**

[87084-52-4]

$C_{11}H_{22}N_2O_8$ 310.303

Opine found in plant tumours.

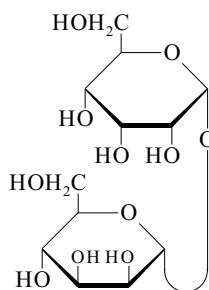
Tempe, J. et al., *C. R. Hebd. Seances Acad. Sci.*

Ser. D, 1980, **290**, 1173 (synth)

Chilton, W.S. et al., *J. Bacteriol.*, 1984, **158**, 650

 α -D-Mannopyranosyl α -D-allopyranoside**M-40**

α -D-Allopyranosyl α -D-mannopyranoside



$C_{12}H_{22}O_{11}$ 342.299

Non-reducing disaccharide.

Bis-4,6-O-benzylidene, bis-2,3-anhydro: 2,3-Anhydro-4,6-O-benzylidene- α -D-mannopyranosyl 2,3-anhydro-4,6-O-benzylidene- α -D-allopyranoside

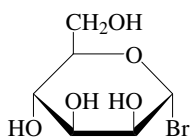
[33072-97-8]

$C_{26}H_{26}O_9$ 482.486

Cryst. (MeOH). Mp 288°. $[\alpha]_D^{20} +118$ (c, 0.17 in DMF).

Richardson, A.C. et al., *J.C.S. (C)*, 1971, 1090 (synth)

Hough, L. et al., *J.C.S. Perkin I*, 1973, 287

Mannopyranosyl bromide**M-41** α -D-form

$C_6H_{11}BrO_5$ 243.054

 α -D-form

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-mannopyranosyl bromide, 9CI, 8CI.
Acetobromomannose
[13242-53-0]

$C_{14}H_{19}BrO_9$ 411.203

Mp 53-54°. $[\alpha]_D^{20} +128$ (c, 1.8 in $CHCl_3$).

2,3,4,6-Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl- α -D-mannopyranosyl bromide
[14218-30-5]

$C_{34}H_{27}BrO_9$ 659.486

Amorph. powder. $[\alpha]_D^{20} +11.7$ ($CHCl_3$).

2,3-Carbonate, 4,6-di-Ac: 4,6-Di-O-acetyl- α -D-mannopyranosyl bromide 2,3-carbonate

[53958-21-7]

$[\alpha]_D^{25} +88$ (c, 1.0 in $CHCl_3$).

6-Deoxy-6-iodo, 2,3,4-tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy-6-iodo- α -D-mannopyranosyl bromide

[50692-56-3]

$C_{12}H_{16}BrIO_7$ 479.063

Needles (diisopropyl ether). Mp 136-137° (softens at 122°). $[\alpha]_D^{20} +110$ (c, 1.0 in $CHCl_3$).

Brauns, D.H. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1931, **7**, 573 (α -D-tetra-Ac)

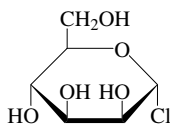
Haynes, L.J. et al., *Adv. Carbohydr. Chem.*, 1955, **10**, 207 (rev)

Capon, B. et al., *J.C.S.*, 1964, 3242 (α -D-tetra-Ac)

Freestone, A.J. et al., *Carbohydr. Res.*, 1973, **28**, 378 (α -D-deoxy-iodo tri-Ac)

Shaban, M.A.E. et al., *Carbohydr. Res.*, 1975, **45**, 105 (carbonate)

Kartha, K.P.R. et al., *J. Carbohydr. Chem.*, 1990, **9**, 777-781 (tetra-Ac, *Isynth*)

Mannopyranosyl chloride**M-42** α -D-Pyranose-form

$C_6H_{11}ClO_5$ 198.603

 α -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-mannopyranosyl chloride

[14257-40-0]

$C_{14}H_{19}ClO_9$ 366.751

Cryst. Mp 81°. $[\alpha]_D^{20} +90.6$ ($CHCl_3$).

Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl- α -D-mannopyranosyl chloride

[14262-87-4]

$C_{34}H_{27}ClO_9$ 615.035

Amorph. solid. $[\alpha]_D^{20} -30.5$ (c, 1.0 in $CHCl_3$).

Di-O-cyclohexylidene: 2,3:4,6-Di-O-cyclohexylidene- α -D-mannopyranosyl chloride

[70835-79-9]

$C_{18}H_{27}ClO_5$ 358.861

Cryst. (2-propanol). Mp 87-88°. $[\alpha]_D^{20} +47$ (c, 4.5 in $CHCl_3$).

2,3-Dibenzyl, 4,6-di-Ac: 4,6-Di-O-acetyl-2,3-di-O-benzyl- α -D-mannopyranosyl chloride

[79317-22-9]

$C_{24}H_{27}ClO_7$ 462.926

Syrup. $[\alpha]_D^{20} +28.8$ (c, 4.7 in CH_2Cl_2).

3,6-Dibenzyl, 2,4-di-Ac: 2,4-Di-O-acetyl-3,6-di-O-benzyl- α -D-mannopyranosyl chloride

[79317-22-9]

$C_{24}H_{27}ClO_7$ 462.926

Syrup. $[\alpha]_D^{20} +40$ (c, 0.3 in $CHCl_3$).

 β -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-mannopyranosyl chloride

[14227-52-2]

$C_{14}H_{19}ClO_9$ 366.751

Cryst. (CH_2Cl_2 /Et₂O). Mp 162-166°.

$[\alpha]_D^{20} -27.2$ (c, 1.0 in $CHCl_3$).

Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl- β -D-mannopyranosyl chloride

[65236-81-9]

$C_{34}H_{27}ClO_9$ 615.035

Solid. Mp 186°. $[\alpha]_D^{20} -129.1$ (c, 0.9 in $CHCl_3$).

 α -L-form

6-Deoxy, tri-Ac: 2,3,4-Tri-O-acetyl-6-deoxy- α -L-mannopyranosyl chloride.

Acetochlororhamnose

[5160-09-8]

$C_{12}H_{17}ClO_7$ 308.715

Cryst. Mp 73°. $[\alpha]_D^{20} -127$ ($CHCl_3$).

Pacsu, E. et al., *Ber.*, 1928, **61**, 1508 (α -tetra-Ac)

Ness, R.K. et al., *J.A.C.S.*, 1950, **72**, 2200,

(α -tetrabenzoyl)

Herpin, P. et al., *Acta Cryst. B*, 1976, **32**, 209

(cryst struct, α -tetra-Ac)

Chapleur, Y. et al., *Tetrahedron*, 1977, **33**, 1615

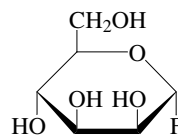
(β -tetrabenzoyl)

Blanc-Muesser, M. et al., *Carbohydr. Res.*, 1978, **67**, 305 (β -tetra-Ac, 6-deoxy tri-Ac)

Garegg, P.J. et al., *Carbohydr. Res.*, 1979, **70**, C13 (cyclohexylidene)

Ogawa, T. et al., *Carbohydr. Res.*, 1981, **93**, C1

(di-Ac dibenzyl)

Mannopyranosyl fluoride**M-43** α -D-form

$C_6H_{11}FO_5$ 182.148

 α -D-form [2713-54-4]

Syrup.

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- α -D-mannopyranosyl fluoride

[2823-44-1]

$C_{14}H_{19}FO_9$ 350.297

Cryst. (Et₂O/pentane). Mp 69-71°. $[\alpha]_D^{20} +22.7$ (c, 2 in $CHCl_3$).

Tetrabenzoyl: 2,3,4,6-Tetra-O-benzoyl- α -D-mannopyranosyl fluoride

[3825-18-1]

$C_{34}H_{27}FO_9$ 598.58

Cryst. (Et₂O/pentane). Mp 129-131°.

$[\alpha]_D^{20} -86.2$ (c, 1.47 in $CHCl_3$).

4,6-Di-Me, 2-benzoyl: 2-O-Benzoyl-4,6-di-O-methyl- α -D-mannopyranosyl fluoride

[69370-76-9]

$C_{15}H_{19}FO_6$ 314.31

Cryst. (Et₂O/pentane). Mp 147-148°.

$[\alpha]_D^{20} -36.3$ (c, 1.5 in $CHCl_3$).

4,6-Di-Me, 2,3-dibenzoyl: 2,3-Di-O-benzoyl-4,6-di-O-methyl- α -D-mannopyranosyl fluoride

[69370-75-8]

$C_{22}H_{23}FO_7$ 418.418

Cryst. (pentane). Mp 79-81°. $[\alpha]_D^{20} -131.1$ (c, 1.8 in $CHCl_3$).

β -D-form

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-mannopyranosyl fluoride
[57573-38-3]
 $C_{14}H_{19}FO_9$ 350.297
Cryst. (Et₂O). Mp 105.5-107°. $[\alpha]_D^{20}$ -1 (c, 1.5 in CHCl₃).

4,6-Di-Me, 2-benzoyl: 2-O-Benzoyl-4,6-di-O-methyl- β -D-mannopyranosyl fluoride
[69370-78-1]
 $C_{15}H_{19}FO_6$ 314.31
Syrup.

4,6-Di-Me, 3-benzoyl: 3-O-Benzoyl-4,6-di-O-methyl- β -D-mannopyranosyl fluoride
[69370-77-0]
 $C_{15}H_{19}FO_6$ 314.31
Syrup.

4,6-Di-Me, 2,3-dibenzoyl: 2,3-Di-O-Benzoyl-4,6-di-O-methyl- β -D-mannopyranosyl fluoride
[69370-79-2]
 $C_{22}H_{23}FO_7$ 418.418
Syrup. $[\alpha]_D^{20}$ -82.2 (c, 2.5 in CHCl₃).

2,6-Anhydro: 2,6-Anhydro- β -D-mannopyranosyl fluoride
[108224-15-3]
 $C_6H_9FO_4$ 164.133
Solid. Mp 101-103.5°. $[\alpha]_D$ -66.8 (c, 1 in abs. EtOH).

Pedersen, C. et al., *Acta Chem. Scand.*, 1963, **17**, 673 (α -tetra-Ac, α -tetrabenzoyl)

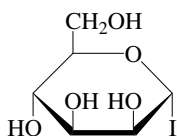
Hall, L.D. et al., *Can. J. Chem.*, 1969, **47**, 1 (synth, pmr, F-19 nmr)

Bock, K. et al., *Acta Chem. Scand., Ser. B*, 1975, **29**, 682 (β -tetra-Ac, pmr, cmr)

Pedersen, C. et al., *Acta Chem. Scand., Ser. B*, 1978, **32**, 687 (Me deriv, pmr)

Baillargeon, D.J. et al., *Carbohydr. Res.*, 1986, **154**; 275 (anhydro)

Caddick, S. et al., *Tetrahedron*, 1996, **52**, 149-156 (tetra-Ac)

Mannopyranosyl iodide**M-44** $C_6H_{11}IO_5$ 290.054 **α -D-form**

2,3,4,6-Tetra-Ac: [14227-51-1]

$C_{14}H_{19}IO_9$ 458.203

Oil. $[\alpha]_D^{25}$ +190.3 (c, 1.2 in CHCl₃).

2,3,4,6-Tetrabenzoyl: [14726-07-9]

$C_{34}H_{27}IO_9$ 706.486

Amorph. mass. $[\alpha]_D^{25}$ +138.5 (c, 1.2 in CHCl₃).

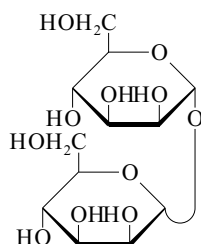
Ness, R.K. et al., *J.A.C.S.*, 1950, **72**, 2200-2205 (tetrabenzoyl)

Thiem, J. et al., *Chem. Ber.*, 1980, **113**, 3075-3085 (tetra-Ac)

Caputo, R. et al., *Eur. J. Org. Chem.*, 1999, 3147-3150 (tetra-Ac, tetrabenzoyl)

 α -D-Mannopyranosyl α -D-mannopyranoside, 9CI

[74464-63-4]

 $C_{12}H_{22}O_{11}$ 342.299

Non-reducing disaccharide. Mp 240-243°. $[\alpha]_D$ +124 (H₂O). $[\alpha]_D$ +123 (c, 0.5 in 50% aq. MeOH).

Octa-Ac: [74080-42-5]

$C_{28}H_{38}O_{19}$ 678.597

Mp 126° (70-75°). $[\alpha]_D$ +65 (c, 1.0 in CHCl₃).

2,2',3,3'-Tetrabenzyl: 2,3-Di-O-benzyl- α -D-mannopyranosyl 2,3-di-O-benzyl- α -D-mannopyranoside
[93636-47-6]

$C_{40}H_{46}O_{11}$ 702.797

$[\alpha]_D$ +41.5 (c, 1.0 in CHCl₃).

3,3',4,4',6,6'-Hexabenzyl: 3,4,6-Tri-O-benzyl- α -D-mannopyranosyl 3,4,6-tri-O-benzyl- α -D-mannopyranoside
[80738-61-0]

$C_{54}H_{58}O_{11}$ 883.046

Syrup. $[\alpha]_D^{25}$ +49.2 (c, 0.61 in CHCl₃).

Octabenzyl: 2,3,4,6-Tetra-O-benzyl- α -D-mannopyranosyl 2,3,4,6-tetra-O-benzyl- α -D-mannopyranoside
[74080-41-4]

$C_{68}H_{70}O_{11}$ 1063.294

$[\alpha]_D^{20}$ +40 (c, 0.85 in CHCl₃).

Di-O-benzylidene, tetrabenzyl: 2,3-Di-O-benzyl-4,6-di-O-benzylidene- α -D-mannopyranosyl 2,3-di-O-benzyl-4,6-di-O-benzylidene- α -D-mannopyranoside
[93636-46-5]

$C_{54}H_{54}O_{11}$ 879.014

$[\alpha]_D$ +55 (c, 1.1 in CHCl₃).

Micheel, F. et al., *Chem. Ber.*, 1960, **93**, 1143 (synth)

Pavia, A.A. et al., *Carbohydr. Res.*, 1980, **79**, 79

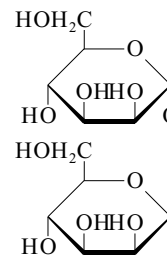
Koto, S. et al., *Chem. Lett.*, 1980, 403 (cmr)

Ogawa, T. et al., *Tetrahedron*, 1981, **37**, 2787

Liaiv, A. et al., *Carbohydr. Res.*, 1983, **123**, C22; 1984, **129**, 121 (synth, deriv)

M-45 **β -D-Mannopyranosyl α -D-mannopyranoside, 9CI****M-46**

α -D-Mannopyranosyl β -D-mannopyranoside
[80794-88-3]

 $C_{12}H_{22}O_{11}$ 342.299

Mp 115-120°. $[\alpha]_D$ +44 (H₂O).

Octa-Ac:

$C_{28}H_{38}O_{19}$ 678.597

$[\alpha]_D$ +19 (CHCl₃).

3,3',4,4',6,6'-Hexabenzyl: 3,4,6-Tri-O-benzyl- β -D-mannopyranosyl 3,4,6-tri-O-benzyl- α -D-mannopyranoside
[80779-89-1]

$C_{54}H_{58}O_{11}$ 883.046

$[\alpha]_D^{25}$ +55.6 (c, 0.18 in CHCl₃).

Hexabenzyl, di-Ac: 2-O-Acetyl-3,4,6-tri-O-benzyl- β -D-mannopyranosyl 2-O-acetyl-3,4,6-tri-O-benzyl- α -D-mannopyranoside
[80779-88-0]

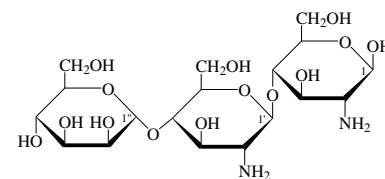
$C_{58}H_{62}O_{13}$ 967.12

Syrup. $[\alpha]_D^{25}$ +18.4 (c, 0.62 in CHCl₃).

Freudenberg, K. et al., *Ber.*, 1928, **61**, 1743

Micheel, F. et al., *Chem. Ber.*, 1960, **93**, 1143 (synth)

Ogawa, T. et al., *Tetrahedron*, 1981, **37**, 2787

 α -D-Mannopyranosyl-(1 \rightarrow 4)-**M-47****2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, 9CI** β -Pyranose-form $C_{18}H_{34}N_2O_{14}$ 502.472 **β -Pyranose-form**

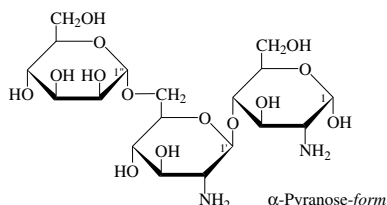
Benzyl glycoside, N,N'-dipthaloyl, 3'',6''-diallyl, 2'',3,3',4'',6,6'-hexabenzyl:
[89067-98-1]

$C_{89}H_{88}N_2O_{18}$ 1473.677

Syrup. $[\alpha]_D^{25}$ +15.6 (c, 1.0 in CHCl₃).

Ogawa, T. et al., *Carbohydr. Res.*, 1983, **123**, C5 (β -benzyl pyr hexabenzyl derivs)

**α -D-Mannopyranosyl-(1 \rightarrow 6)-
2-amino-2-deoxy- β -D-glucopyranosyl-
(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose,
9CI**
 α -D-Mannopyranosyl-(1 \rightarrow 6)-chitobiose



$C_{18}H_{34}N_2O_{14}$ 502.472

N,N'-Di-Ac: [34222-65-6]

$C_{22}H_{38}N_2O_{16}$ 586.546

Cryst. (MeOH/Me₂CO). Mp 186-188°.

$[\alpha]_D^{+36} \rightarrow +34$ (c, 1.4 in MeOH aq.).

α -Pyranose-form

1,2N,2'N,2'',3,3',3'',4'',6,6''-Deca-Ac:

[34140-97-1]

$C_{38}H_{54}N_2O_{24}$ 922.844

Cryst. (CHCl₃/pentane). Mp 136-138°.

$[\alpha]_D^{+29}$ (c, 1.1 in CHCl₃).

Undeca-Ac: [34140-98-2]

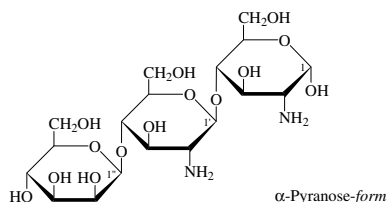
$C_{40}H_{56}N_2O_{25}$ 964.881

Cryst. (CHCl₃/pentane). Mp 134-135°.

$[\alpha]_D^{+37}$ (c, 0.6 in CHCl₃).

Shaban, M. *et al.*, *Carbohydr. Res.*, 1971, **19**,
311 (*di-Ac, deca-Ac, undeca-Ac, ir*)

**β -D-Mannopyranosyl-(1 \rightarrow 4)-
2-amino-2-deoxy- β -D-glucopyranosyl-
(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose,
9CI**



$C_{18}H_{34}N_2O_{14}$ 502.472

Occurs in the core region of the carbohydrate chains of N-glycoproteins. Constit. of a dolichyl pyrophosphate lipid intermed. (cf. Dolichols).

N,N'-Di-Ac: [61652-90-2]

$C_{22}H_{38}N_2O_{16}$ 586.546

Amorph. solid. $[\alpha]_D^{+0.5}$ (c, 0.44 in H₂O) (+0.2).

α -Pyranose-form

Benzyl glycoside, 2'N-phthaloyl,

2'',3,3',4'',6-pentabenzyl, 2N,6'-di-Ac:

[92733-51-2]

$C_{72}H_{76}N_2O_{18}$ 1257.395

Syrup. $[\alpha]_D^{+29.1}$ (c, 0.6 in CHCl₃).

β -Pyranose-form

Benzyl glycoside, 3,6-dibenzyl, octa-Ac:

$C_{55}H_{68}N_2O_{22}$ 1109.142

Syrup. $[\alpha]_D^{+23}$ (c, 0.9 in CHCl₃).

Benzyl glycoside, 2N,2'N-diphthaloyl,
3'',6''-diallyl, hexabenzyl: [89067-97-0]
 $C_{89}H_{88}N_2O_{18}$ 1473.677

Syrup. $[\alpha]_D^{+25}$ -2.1 (CHCl₃).

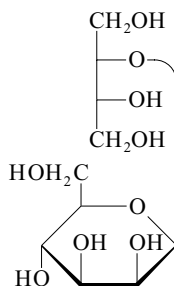
[74653-25-1, 92733-50-1]

Warren, C.D. *et al.*, *Carbohydr. Res.*, 1980, **82**,
71; 85 (*di-N-Ac, β -benzyl pyr octa-Ac deriv, ir, pmr, occur*)

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1983, **123**, C5
(*β -benzyl pyr hexabenzyl deriv, pmr*)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1984, **130**,
85 (*α -benzyl pyr di-Ac deriv, pmr, occur*)

**2-O- β -D-Mannopyranosyl-D-
erythritol**



$C_{10}H_{20}O_9$ 284.263

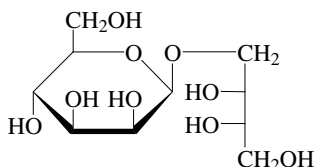
$[\alpha]_D$ -35 (H₂O).

Heptakis(p-nitrobenzoyl): Mp 116-118°.

$[\alpha]_D$ -106 (CHCl₃).

Clamp, J.R. *et al.*, *Adv. Carbohydr. Chem.*, 1961,
16, 159 (*synth*)

**1-O- β -D-Mannopyranosyl-L-
erythritol**
2,3,4-Trihydroxybutyl β -mannopyranoside.
4-O- β -D-Mannopyranosyl-D-erythritol



$C_{10}H_{20}O_9$ 284.263

Prod. by *Ustilago* spp. Needles (EtOH aq.).

Mp 160-162°. $[\alpha]_D^{+26}$ -38 (c, 1 in H₂O).

2',3'-Di-O-acyl, 4' and/or 6'-Ac:

Mannosylerythritol lipids. MEL

Glycolipid complex prod. in high yield by *Candida antarctica* grown on soybean oil. Biosurfactant.

Complex consisting of C₈-C₁₄ acyl residues at C-2' and C-3', further acetylated at C-4' (MEL C), C-6' (MEL B) or both (MEL A).

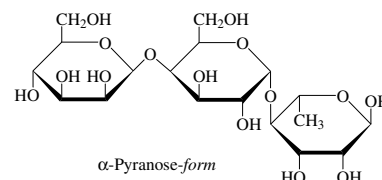
Boothroyd, B. *et al.*, *Can. J. Biochem.*, 1956, **34**,
10 (*isol*)

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1961, **39**,
2474 (*synth*)

Kikamoto, D. *et al.*, *Biophys. Chem.*, 1990, **54**,
31 (*Mannosylerythritol lipids*)

Crich, D. *et al.*, *Tetrahedron*, 2002, **58**, 35-44
(*Mannosylerythritol lipids, synth, config*)

**β -D-Mannopyranosyl-(1 \rightarrow 4)-
 α -D-galactopyranosyl-(1 \rightarrow 4)-L-rham-
nose**
[79522-98-8]



$C_{18}H_{32}O_{15}$ 488.442

Constit. of the repeating unit of the O-antigen present in the lipopolysaccharide of the bacterium *E. coli* serotype 075.

α -Pyranose-form

Benzyl glycoside, 2',2'',3'',4''-tetrabenzyl,
3',6',6''-tri-Ac:

$C_{59}H_{68}O_{18}$ 1065.175

$[\alpha]_D^{+20}$ +11.8 (c, 1.26 in CH₂Cl₂).

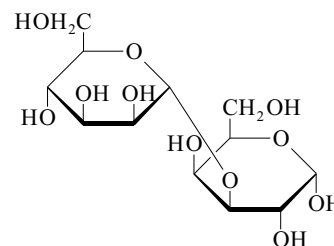
Benzyl glycoside, 2,3-O-isopropylidene,
2',2'',3'',4''-tetrabenzyl, 3',6',6''-tri-Ac:

$C_{62}H_{72}O_{18}$ 1105.24

$[\alpha]_D^{+20}$ +15.1 (c, 2.58 in CH₂Cl₂).

Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 3102
(*synth*)

**3-O- α -D-Mannopyranosyl-D-
galactose, 9CI**
[71869-57-3]



$C_{12}H_{22}O_{11}$ 342.299

Isolated from enzymic hydrolysate of peach gum.

$[\alpha]_D^{+20}$ +135.9 (c, 1.0 in H₂O) (+42.1).

α -Pyranose-form

Octa-Ac: [96150-23-1]

$C_{28}H_{38}O_{19}$ 678.597

Mp 134-136°. $[\alpha]_D^{+20}$ +91.9 (c, 1.0 in CHCl₃).

4,6-O-Ethylidene, 1,2-O-isopropylidene,
tetra-Ac:

$C_{25}H_{36}O_{15}$ 576.55

$[\alpha]_D$ +53.4 (c, 4.0 in CHCl₃).

4,6-O-Ethylidene, 1,2-O-isopropylidene,
3',4',6'-tribenzyl:

$C_{38}H_{46}O_{11}$ 678.775

Cryst. (Et₂O/hexane). Mp 114-115°.

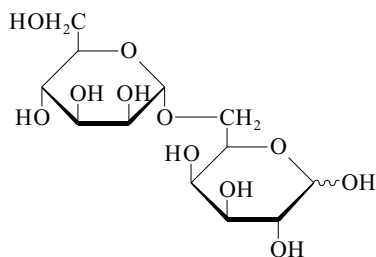
$[\alpha]_D^{+20}$ +78.7 (c, 2.0 in CHCl₃).

Kardosova, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 2250

Torgov, V.I. *et al.*, *Bioorg. Khim.*, 1985, **11**, 83;
Sov. J. Bioorg. Chem. (Engl. Transl.), 1985,
11, 47 (*synth, deriv*)

6-O- α -D-Mannopyranosyl-D-galactose, 9CI

[20113-42-2]



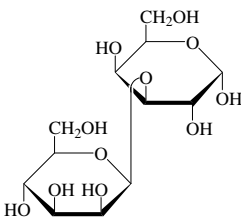
Pyranose-form

 $C_{12}H_{22}O_{11}$ 342.299Mp 166-168° (174-175° dec.). $[\alpha]_D^{25} +115 \rightarrow +96$ (c, 1.0 in H_2O).

[23339-29-9]

Ferrier, R.J. *et al.*, *J.C.S. (C)*, 1969, 575 (synth)**3-O- β -D-Mannopyranosyl-D-galactose, 9CI**

[86784-47-6]

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299 $[\alpha]_D^{20} +22$ (c, 2.0 in H_2O). **α -Pyranose-form**

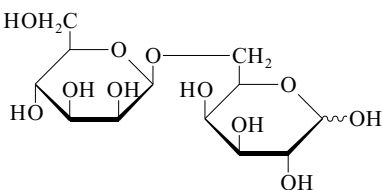
Octa-Ac: [96150-24-2]

 $C_{28}H_{38}O_{19}$ 678.597Mp 183-185°. $[\alpha]_D^{20} +38$ (c, 1.0 in $CHCl_3$).

4,6-O-Ethylidene, 1,2-O-isopropylidene, 3',4',6'-tribenzyl:

 $C_{38}H_{46}O_{11}$ 678.775 $[\alpha]_D^{20} +13$ (c, 2.7 in $CHCl_3$).Lipkind, J. *et al.*, *Bioorg. Khim.*, 1983, **9**, 407; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 223 (conformm)Torgov, V.I. *et al.*, *Bioorg. Khim.*, 1985, **11**, 83; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 47 (synth, deriv)**6-O- β -D-Mannopyranosyl-D-galactose**

[40246-35-3]



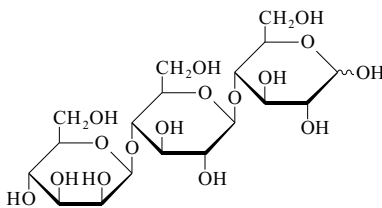
Pyranose-form

 $C_{12}H_{22}O_{11}$ 342.299

M-54

Cryst. (EtOH aq.). Mp 178-180°. $[\alpha]_D^{23} +23$ (5 min) $\rightarrow +0.7$ (24h) (c, 0.75 in H_2O).Ekborg, G. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 3287 **β -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI**

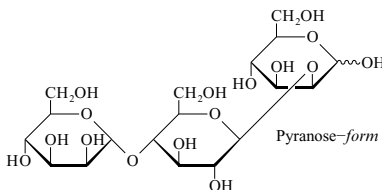
[50692-77-8]



Pyranose-form

 $C_{18}H_{32}O_{16}$ 504.441Constit. of the mucilage from the tubers of *Bletilla striata*. Isol. from the enzymatic hydrolysate of the glucomannans from lily, Jack pine (*Pinus banksiana*), *Narcissus tazetta* and from larch (*Larix decidua*) glucomannan. Amorph. $[\alpha]_D^{20} +5.7$ (c, 0.5 in H_2O). $[\alpha]_D +17$ (c, 1.0 in H_2O).Perila, O. *et al.*, *Can. J. Chem.*, 1961, **39**, 815Aspinall, G.O. *et al.*, *J.C.S.*, 1962, 214Kato, K. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 2495 (isol)Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 1807 (isol, pmr) **α -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose, 9CI**

[84693-09-4]



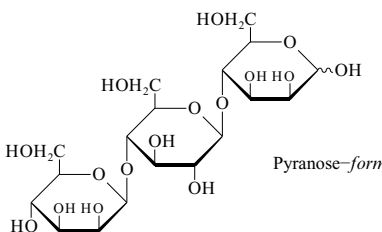
Pyranose-form

 $C_{18}H_{32}O_{16}$ 504.441

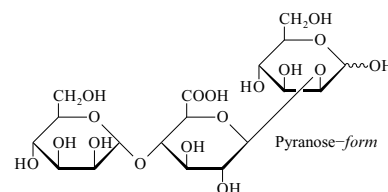
Syrup.

Gowda, D. *et al.*, *Carbohydr. Res.*, 1983, **113**, 113 (synth, chromatog, struct) **β -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-mannose, 8CI**

[28152-46-7]



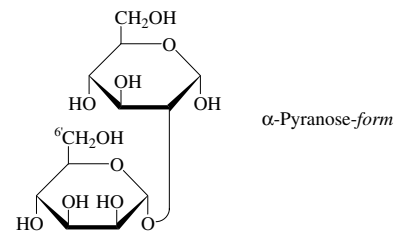
Pyranose-form

 $C_{18}H_{32}O_{16}$ 504.441Isol. from the partial acid hydrol. of the glucomannan from *Bletilla striata*, *Narcissus tazetta*, *Arum maculatum*, *Arum orientale* and from larch (*Larix decidua*). Isol. from enzymic reaction on *Amorphophallus konjac* glucomannan. $[\alpha]_D^{23} -5.8$ (c, 2.2 in H_2O). $[\alpha]_D^{25} -8$ (c, 0.4 in H_2O).Aspinall, G.O. *et al.*, *J.C.S.*, 1962, 214Kato, K. *et al.*, *Carbohydr. Res.*, 1973, **29**, 469Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 1807 (isol)Usui, T. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 863 (cmr)Koleva, M. *et al.*, *CA*, 1981, **95**, 165582r (isol)Shimizu, K. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 949 (isol)Kusakabe, I. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 519 (synth) **α -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranuronosyl-(1 \rightarrow 2)-D-mannose, 9CI**

Pyranose-form

 $C_{18}H_{30}O_{17}$ 518.425Constit. of the repeating unit of a polysaccharide of mucin secreted by the leaves of *Drosera capensis*. Syrup.Gowda, D. *et al.*, *Carbohydr. Res.*, 1983, **113**, 113 (occur, isol, chromatog, anal)**2-O- α -D-Mannopyranosyl-D-glucose, 9CI**

[53777-23-4]

 α -Pyranose-form $C_{12}H_{22}O_{11}$ 342.299Reducing disaccharide. $[\alpha]_{456}^{25} +75.5$ (c, 1.0 in H_2O). **α -Pyranose-form***Me glycoside*: Methyl 2-O- α -D-mannopyranosyl- α -D-glucopyranoside [129948-04-5] $C_{13}H_{24}O_{11}$ 356.326Amorph. powder. $[\alpha]_{378}^{22} +136$ (c, 1.1 in H_2O).*Me glycoside*, 3,4,6-tribenzyl, 2',3',4',6'-tetra-Ac: Methyl 3,4,6-tris-O-benzyl-2-O-(2,3,4,6-tetra-O-acetyl- α -D-mannopyranosyl)- α -D-glucopyranoside [129948-14-7] $C_{42}H_{50}O_{15}$ 794.848Syrup. $[\alpha]_{378}^{25} +82$ (c, 0.8 in $CHCl_3$).

6'-Me, hepta-Ac: [70551-15-4]
 $C_{27}H_{38}O_{18}$ 650.586
 Amorph. powder. $[\alpha]_D^{10} +98.8$ (c, 4.0 in $CHCl_3$).

 β -Pyranose-form [75880-63-6]

Octa-Ac: [53777-22-3]
 $C_{28}H_{38}O_{19}$ 678.597
 Cryst. (EtOH). Mp 148-149°. $[\alpha]_D +48.3$ ($CHCl_3$).

Me glycoside: Methyl 2-O- α -D-mannopyranosyl- β -D-glucopyranoside
 [129948-05-6]
 $C_{13}H_{24}O_{11}$ 356.326
 $[\alpha]_D^{22} +34$ (c, 1.9 in H_2O).

Dick, W.E. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319 (synth)

Esaki, S. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 231 (synth)

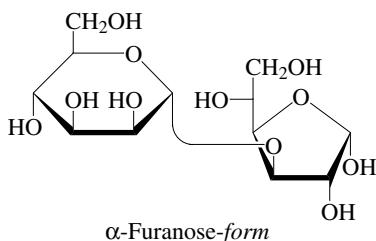
Sztaricskai, F. *et al.*, *Tet. Lett.*, 1980, **21**, 2983 (cmr)

Jansson, P.-E. *et al.*, *J.C.S. Perkin 1*, 1990, 591-598 (Me glycoside derivs)

Eriksson, L. *et al.*, *Acta Cryst. C*, 1997, **53**, 1105-1107 (cryst struct, Me- β -gly)

3-O- α -D-Mannopyranosyl-D-glucose M-62

[64938-31-4]


 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. Isol. from the partial acetolysis of xanthan gum from *Xanthomonas campestris*.

 α -Furanose-form

2',3':4',6'-Di-O-cyclohexylidene, 1,2:5,6-di-O-isopropylidene: [77855-99-3]
 $C_{30}H_{46}O_{11}$ 582.687
 $[\alpha]_D +3$ (c, 2 in $CHCl_3$).

 β -D-Pyranose-form

Me glycoside:
 $C_{13}H_{24}O_{11}$ 356.326
 $[\alpha]_D^{22} +55$ (c, 0.8 in H_2O).

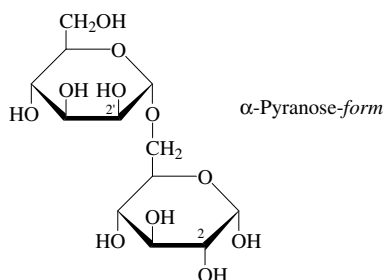
Lawson, C.J. *et al.*, *Carbohydr. Res.*, 1977, **58**, 433 (isol)

Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1980, **34**, 505 (cyclohexylidene deriv)

Jansson, P. *et al.*, *J.C.S. Perkin 1*, 1990, 591-598 (Me β -D-Pyr)

6-O- α -D-Mannopyranosyl-D-glucose, 9CI

[7286-49-9]


 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. $[\alpha]_D +73$ (H_2O).

 α -Pyranose-form

Me glycoside, 2,3,4-tri-Ac, tetrabenzyl:
 [71528-66-0]

$C_{47}H_{54}O_{14}$ 842.935
 Oil. $[\alpha]_D^{25} +66.6$ (c, 0.38 in CH_2Cl_2).

 β -Pyranose-form

Octa-Ac: [66007-86-1]
 $C_{28}H_{38}O_{19}$ 678.597
 Amorph. $[\alpha]_D^{20} +38$ (c, 1.2 in $CHCl_3$). Softens at 90°.

2',3':4',6'-Di-O-cyclohexylidene, tetra-Ac: [77855-95-9]

$C_{32}H_{46}O_{15}$ 670.706
 $[\alpha]_D +155$ (c, 1 in $CHCl_3$).

Talley, E.A. *et al.*, *J.A.C.S.*, 1943, **65**, 573; 575
 Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1961, **39**, 2474; 1959, **37**, 1930 (synth)

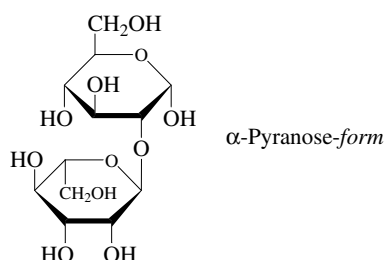
Kochetkov, N.K. *et al.*, *Tet. Lett.*, 1977, **41**, 3681 (Octa-Ac)

Wulff, G. *et al.*, *Chem. Ber.*, 1979, **112**, 2847 (α -Me gly)

Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1980, **34**, 505 (cyclohexylidene)

2-O- α -L-Mannopyranosyl-D-glucose

M-64


 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. Syrup. $[\alpha]_D^{18} -7.5$ (c, 0.1 in MeOH).

6'-Me: [70551-17-6]

$C_{13}H_{24}O_{11}$ 356.326
 $[\alpha]_D^{30} +15$ (c, 2 in MeOH).

 α -Pyranose-form

Octa-Ac: [61303-34-2]

$C_{28}H_{38}O_{19}$ 678.597
 Amorph. powder. $[\alpha]_D^{30} -45.8$ (c, 1.2 in EtOH).

6'-Me, hepta-Ac: [70551-14-3]

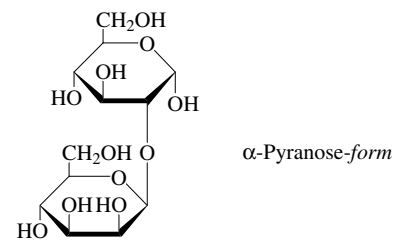
$C_{27}H_{38}O_{18}$ 650.586
 Amorph. powder. $[\alpha]_D^{10} 0$ (c, 4 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 1731 (synth)

Esaki, S. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 231 (6'-Me)

2-O- β -D-Mannopyranosyl-D-glucose M-65

[143120-91-6]


 $C_{12}H_{22}O_{11}$ 342.299

Parent sugar not well characterised.

 α -Pyranose-form [143120-90-5]

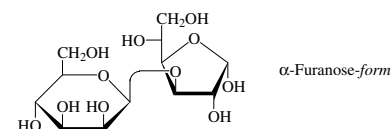
Me glycoside: Methyl 2-O- β -D-mannopyranosyl- β -D-glucopyranoside
 [129948-06-7]
 $C_{13}H_{24}O_{11}$ 356.326
 $[\alpha]_D^{22} -45$ (c, 1.1 in H_2O).

Jansson, P. *et al.*, *J.C.S. Perkin 1*, 1990, 591, (Me β -gly)

Kobayashi, H. *et al.*, *Carbohydr. Res.*, 1992, **229**, 369-375 (pmr)

3-O- β -D-Mannopyranosyl-D-glucose, 9CI M-66

[77881-88-0]


 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. $[\alpha]_D +6$ (c, 4.8 in H_2O).

 α -Furanose-form

2',3':4',6'-Di-O-cyclohexylidene, 1,2:5,6-di-O-isopropylidene: [77855-98-2]

$C_{30}H_{46}O_{11}$ 582.687
 $[\alpha]_D -68$ (c, 3.6 in $CHCl_3$).

 β -D-Pyranose-form

Me glycoside:

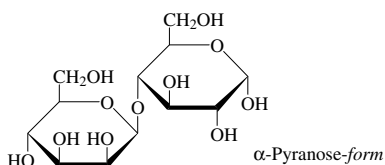
$C_{13}H_{24}O_{11}$ 356.326
 $[\alpha]_D^{22} -38$ (c, 1.9 in H_2O).

Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1980, **34**, 505 (synth, pmr)

Jansson, P. *et al.*, *J.C.S. Perkin 1*, 1990, 591-598 (Me β -D gly)

4-O-β-D-Mannopyranosyl-D-glucose, 9CI

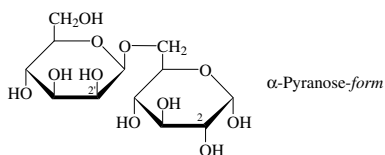
[28072-80-2]

 $C_{12}H_{22}O_{11}$ 342.299

Structural unit in the glucomannan of plant hemicelluloses. Isol. from partial acid hydrol. of *Amorphophalus*, spp., *Picea glauca*, *Tsuga heterophylla*, *Acer rubrum* and others.

Mp 199-201°. $[\alpha]_D +30$ (H₂O).Gyaw, M.O. *et al.*, *Can. J. Chem.*, 1960, **38**, 1957 (*isol*)Tyminski, A. *et al.*, *J.A.C.S.*, 1960, **82**, 2823 (*isol*)Perila, O. *et al.*, *Can. J. Chem.*, 1961, **39**, 815 (*isol, struct*)Bailey, R.W. *et al.*, *Oligosaccharides*, Pergamon Press, 1965, **4**, 100 (*occur*)Usui, T. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 863 (*cmr*)Koleva, M. *et al.*, *CA*, 1980, **92**, 143239v (*isol*)**6-O-β-D-Mannopyranosyl-D-glucose**

[77881-87-9]

 $C_{12}H_{22}O_{11}$ 342.299

Reducing disaccharide. Cryst. (EtOH).

Mp 209-210° (188-190°). $[\alpha]_D -5$ (c, 2 in H₂O).**α-Pyranose-form***Me glycoside, 2,3,4-tri-Ac*: [72009-59-7] $C_{19}H_{30}O_{14}$ 482.438 $[\alpha]_D^{25} +33.7$ (c, 1.4 in CH₂Cl₂).*Me glycoside, hepta-Ac*: [71526-32-4] $C_{27}H_{38}O_{18}$ 650.586Mp 127-128°. $[\alpha]_D^{25} +35$ (c, 0.14 in CH₂Cl₂).*Me glycoside, 2,3,4-tri-Ac, tetrabenzyl*:

[71528-65-9]

 $C_{47}H_{54}O_{14}$ 842.935 $[\alpha]_D^{25} +15.6$ (c, 1.24 in CH₂Cl₂).**β-Pyranose-form***2',3':4',6'-Di-O-cyclohexylidene, tetra-Ac*:

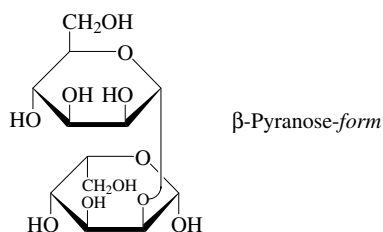
[77855-94-8]

 $C_{32}H_{46}O_{15}$ 670.706 $[\alpha]_D -32$ (c, 6 in CHCl₃).Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1961, **39**, 2474 (*synth*)Wulff, G. *et al.*, *Chem. Ber.*, 1979, **112**, 2847, (*α-Me gly*)Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1980, **34**, 505 (*synth, pmr*)

M-67

2-O-α-D-Mannopyranosyl-L-gulose, 9CI

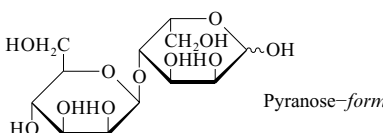
[78684-25-0]

 $C_{12}H_{22}O_{11}$ 342.299

Constit. of Bleomycin. Hygroscopic solid. $[\alpha]_D^{25} +96$ (c, 1.0 in H₂O).

β-Pyranose-form*Octa-Ac*: [78684-26-1] $C_{28}H_{38}O_{19}$ 678.597 $[\alpha]_D^{25} +36$ (c, 0.5 in CHCl₃).Tsuchiya, T. *et al.*, *Tet. Lett.*, 1981, **22**, 1413**4-O-β-D-Mannopyranosyl-L-gulose, 8CI**

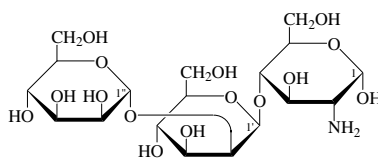
[20237-61-0]

 $C_{12}H_{22}O_{11}$ 342.299

Formed by the partial acid hydrolysis of a chemically reacted alginic acid, extracted from *Laminaria digitata*. Cryst. (EtOH/EtOAc).

Mp 201-203°. $[\alpha]_D -23.2$ (c, 0.83 in H₂O).Hirst, E.L. *et al.*, *J.C.S.*, 1964, 1493 (*synth*)Percival, E. *et al.*, *Carbohydr. Res.*, 1967, **4**, 441 (*glc*)**α-D-Mannopyranosyl-(1→2)-β-D-mannopyranosyl-(1→4)-2-amino-2-deoxy-D-glucose**

M-71

 $C_{18}H_{33}NO_{15}$ 503.456**α-Pyranose-form***Undeca-Ac*: [88087-50-7] $C_{40}H_{55}NO_{26}$ 965.866Powder (CH₂Cl₂/hexane). $[\alpha]_D^{19} +32.7$ (c, 0.11 in CHCl₃).**β-Pyranose-form***1,6-Anhydro, nona-Ac*: [88087-49-4] $C_{36}H_{49}NO_{23}$ 863.776Powder (CH₂Cl₂/hexane). $[\alpha]_D^{21} -39.8$ (c, 0.22 in CHCl₃).

M-69

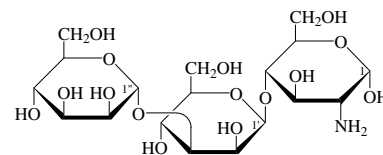
1,6-Anhydro, 3,3',4',6'-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac: [88087-47-2]

 $C_{56}H_{65}NO_{19}$ 1056.125Foamy solid. $[\alpha]_D^{19} -29$ (c, 0.2 in CHCl₃).

Itoh, Y. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 1632 (*α-undeca-Ac, anhydro derivs, in, pmr, cmr*)

α-D-Mannopyranosyl-(1→3)-β-D-mannopyranosyl-(1→4)-2-amino-2-deoxy-D-glucose, 9CI

M-72

 $C_{18}H_{33}NO_{15}$ 503.456

Constit. of carbohydrate chains of glycoproteins.

N-Ac: [50722-98-0] $C_{20}H_{35}NO_{16}$ 545.494Syrup. $[\alpha]_D^{20} +27.8$ (c, 0.71 in MeOH).*Undeca-Ac*: [88155-79-7] $C_{40}H_{55}NO_{26}$ 965.866

Amorph. powder + 1H₂O (CHCl₃/hexane). Mp 106-109°. $[\alpha]_D^{20} 0$ (c, 2.3 in CHCl₃/MeOH) (monohydrate). $[\alpha]_D^{22} +20$ (c, 0.14 in CHCl₃).

α-Pyranose-form*Undeca-Ac*: [79157-01-0]Syrup. $[\alpha]_D^{20} +3.9$ (c, 1.20 in CHCl₃).**β-Pyranose-form***1,6-Anhydro, nona-Ac*: [88087-42-7] $C_{36}H_{49}NO_{23}$ 863.776Powder + 0.5H₂O (CHCl₃/hexane). $[\alpha]_D^{21} -10$ (c, 0.1 in CHCl₃).

1,6-Anhydro, 2',3,4',6'-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac: [88087-41-6]

 $C_{56}H_{65}NO_{19}$ 1056.125Syrup. $[\alpha]_D^{21} -27.8$ (c, 0.22 in CHCl₃).

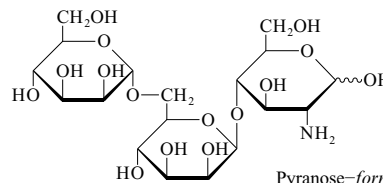
[59446-75-2, 72398-11-9, 79157-08-7]

Warren, C.D. *et al.*, *Carbohydr. Res.*, 1981, **92**, 85 (*undeca-Ac*)

Paulsen, H. *et al.*, *Annalen*, 1983, 1047 (*N-Ac, α-undeca-Ac, pmr, occur*)

Itoh, Y. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**,1632 (*undeca-Ac, anhydro derivs, pmr, cmr*)Homans, S.W. *et al.*, *Biochemistry*, 1990, **29**,9110 (*N-Ac, struct*)**α-D-Mannopyranosyl-(1→6)-β-D-mannopyranosyl-(1→4)-2-amino-2-deoxy-D-glucose, 9CI**

M-73

 $C_{18}H_{33}NO_{15}$ 503.456

Constit. of carbohydrate chains of

glycoproteins. Isol. from urine of sheep with Swainsonine toxicosis.

N-Ac: [83259-19-2]

$C_{20}H_{35}NO_{16}$ 545.494

Syrup. $[\alpha]_D^{20} +36.5$ (c, 0.74 in MeOH).

Undeca-Ac: [86861-59-8]

$C_{40}H_{55}NO_{26}$ 965.866

Syrup. $[\alpha]_D^{20} +32.3$ (c, 1.3 in $CHCl_3$).

[86861-60-1, 86861-61-2, 86861-67-8]

Paulsen, H. *et al.*, *Annalen*, 1983, 1047 (*N-Ac*, *pmr*)

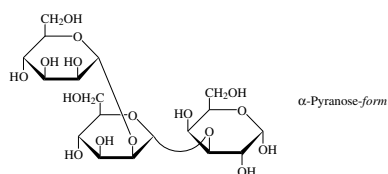
Daniel, P.F. *et al.*, *Methods Enzymol.*, 1987, **138**, 94 (*anal*)

Warren, C.D. *et al.*, *J. Biol. Chem.*, 1988, **263**, 15041 (*isol*, *pmr*, *hplc*)

Michalski, J.C. *et al.*, *Eur. J. Biochem.*, 1990, **189**, 369 (*occur*)

α -D-Mannopyranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI

[105678-07-7]



$C_{18}H_{32}O_{16}$ 504.441

Constituent of the main chain of *O*-antigenic polysaccharide of *Salmonella* serological groups C_2 and C_3 .

Undeca-Ac: [111407-79-5]

$C_{40}H_{54}O_{27}$ 966.85

$[\alpha]_D^{20} +61.5$ (c, 1.0 in $CHCl_3$).

α -Pyranose-form

4,6-*O*-Ethylidene, 1,2-*O*-isopropylidene, 3',3'',4',4'',6',6''-hexabenzyl: [111407-78-4]

$C_{65}H_{74}O_{16}$ 1111.29

$[\alpha]_D^{20} +54$ (c, 1.0 in $CHCl_3$).

4,6-*O*-Ethylidene, 1,2-*O*-isopropylidene, 2''-*Ac*, hexabenzyl: [111407-76-2]

$C_{67}H_{76}O_{17}$ 1153.327

$[\alpha]_D^{20} +42$ (c, 1.0 in $CHCl_3$).

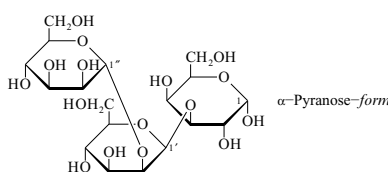
[105678-09-9, 111407-80-8]

Srivastava, D.P. *et al.*, *Can. J. Chem.*, 1986, **64**, 2324 (*methoxycarbonyloctyl glycoside*)

Torgov, V.I. *et al.*, *Carbohydr. Res.*, 1987, **161**, 97

α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI

[105678-08-8]



$C_{18}H_{32}O_{16}$ 504.441

Syrup.

Pyranose-form

Undeca-Ac: [111407-81-9]

$C_{40}H_{54}O_{27}$ 966.85

Amorph. $[\alpha]_D^{20} +38$ (c, 1.0 in H_2O).

α -Pyranose-form

1-*Dihydrogen phosphate*: [105698-81-5]

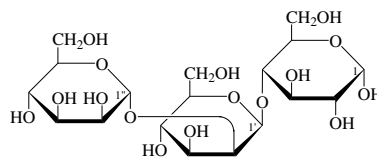
$C_{18}H_{33}O_{19}P$ 584.421

Syrup. $[\alpha]_D^{20} +54$ (c, 3.2 in H_2O).

[111407-82-0]

Torgov, V.I. *et al.*, *Carbohydr. Res.*, 1987, **161**, 97 (*synth*, *pmr*)

α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI



α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

Pyranose-form

2,2'',3,3',3'',4',4'',6,6',6''-*Deca-Ac*:

[128377-16-2]

$C_{38}H_{52}O_{26}$ 924.813

Syrup.

α -Pyranose-form

1-*Trichloroacetimidoyl*, *deca-Ac*: [128377-17-3]

Amorph. + 0.1 toluene. $[\alpha]_D^{25} +16.5$

(c, 0.2 in $CHCl_3$).

β -Pyranose-form

Benzyl glycoside, 2,3,4',6,6'-*pentabenzyl*,

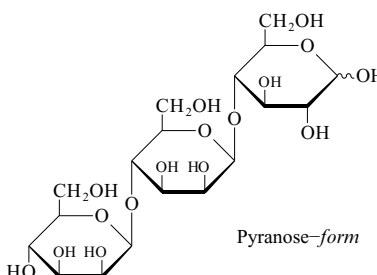
2'',3'',4'',6''-*tetra-Ac*: [128377-05-9]

$C_{68}H_{76}O_{20}$ 1213.336

Syrup. $[\alpha]_D^{25} -5.1$ (c, 1.6 in $CHCl_3$).

Mori, M. *et al.*, *Carbohydr. Res.*, 1990, **195**, 199 (*deca-Ac*, α -*deca-Ac* deriv, β -*benzyl pyr* *tetra-Ac* deriv, *pmr*)

β -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-glucose [50692-76-7]



Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

Constit. of mucilage, from the bulbs of *Suisen* (*Narcissus tazetta*); from the tubers of *Bletilla striata* and *Arum maculatum* and from the glucomannan of lily. Amorph. $[\alpha]_D -8$ (c, 1.0 in H_2O).

Perila, O. *et al.*, *Can. J. Chem.*, 1961, **39**, 815 (*isol*)

Kato, K. *et al.*, *Carbohydr. Res.*, 1973, **29**, 469 (*isol*)

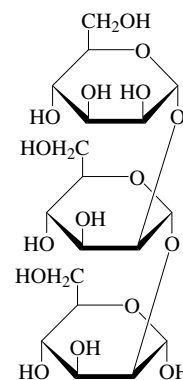
Kato, K. *et al.*, *Agric. Biol. Chem.*, 1976, **40**, 2495

Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 1807 (*isol*, *pmr*)

Holeva, M. *et al.*, *CA*, 1981, **95**, 165582r; 1983, **100**, 20436h (*isol*)

α -D-Mannopyranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-mannose, 9CI, 8CI

[32581-41-2]



α -Pyranose-form

$C_{18}H_{32}O_{16}$ 504.441

Constit. of the cell surface D-mannan of *Candida albicans*, *Candida utilis* and *Candida parapsilosis*. Isol. from mannan of *Pichia pastoris*.

Mp 183-185°. $[\alpha]_D +55.3$ (c, 0.11 in H_2O).

α -Pyranose-form [77447-85-9]

Allyl glycoside, 2'',3,3',3'',4',4'',6,6',6''-*decabenzyl*: [97576-75-5]

$C_{91}H_{96}O_{16}$ 1445.75

Syrup. $[\alpha]_D^{25} +17$ (c, 0.23 in $CHCl_3$).

Propyl glycoside: [97576-78-8]

$C_{21}H_{38}O_{16}$ 546.522

Syrup. $[\alpha]_D^{25} +13$ (c, 0.74 in H_2O).

Karkkainen, J. *et al.*, *Carbohydr. Res.*, 1971, **17**, 11 (*glc*, *ms*)

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1982, **104**, 271 (*synth*, *cmr*)

Funayama, M. *et al.*, *Carbohydr. Res.*, 1983, **117**, 229

Allerhand, A. *et al.*, *J.A.C.S.*, 1984, **106**, 2400 (*cmr*)

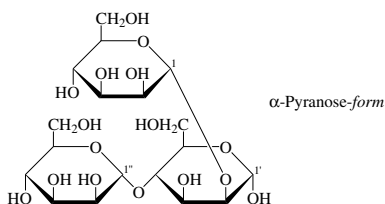
Ogawa, T. *et al.*, *Carbohydr. Res.*, 1985, **136**, 135 (*allyl*, *propyl gly synth*, *pmr*, *cmr*)

Lee, R.T. *et al.*, *J. Biol. Chem.*, 1991, **266**, 4810 (*isol*, *pmr*, *struct*)

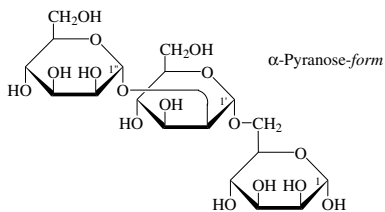
Ajisaka, K. *et al.*, *Carbohydr. Res.*, 1995, **270**, 123-130 (*enzymic synth*)

**α -D-Mannopyranosyl-(1 \rightarrow 2)-
[α -D-mannopyranosyl-(1 \rightarrow 4)]-D-mannose, 9CI**

M-79

 $C_{18}H_{32}O_{16}$ 504.441Constit. of the cell wall proteoheteroglycan from *Piricularia oryzae*. **α -Pyranose-form***Me glycoside*: [79218-78-3] $C_{19}H_{34}O_{16}$ 518.468Amorph. solid + 3H₂O. $[\alpha]_D^{25} + 38.5$ (c, 0.3 in H₂O).*Me glycoside*, 3,3',3'',4',4'',6,6',6''-octabenzyl, 2',2''-di-Ac: [79218-82-9] $C_{79}H_{86}O_{18}$ 1323.538Syrup. $[\alpha]_D^{25} + 23.5$ (c, 0.52 in CHCl₃).Ogawa, T. *et al.*, *Carbohydr. Res.*, 1981, **93**, 67 (α -Me pyr derivs, pmr, cmr) **α -D-Mannopyranosyl-(1 \rightarrow 2)-
 α -D-mannopyranosyl-(1 \rightarrow 6)-D-mannose, 9CI**

M-80

 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form** [72812-44-3]*6'-Phosphate*: $C_{18}H_{33}O_{19}P$ 584.421

Found on the asparagine-linked carbohydrate chains of lysosomal enzymes. Essential component of the enzyme recognition marker. Oil.

8-Methoxycarbonyloctyl glycoside, 6'-phosphate: [118465-01-3] $C_{28}H_{51}O_{21}P$ 754.672Syrup; powder + H₂O (as di-Na salt). $[\alpha]_D^{23} + 53.2$ (c, 0.19 in CHCl₃) (di-Na salt).*8-Methoxycarbonyloctyl glycoside*, 6'-diphenyl phosphate, nona-Ac:

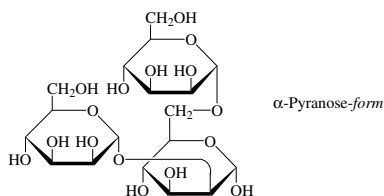
[106450-72-0]

 $C_{58}H_{77}O_{30}P$ 1285.202Syrup. $[\alpha]_D^{23} + 44.2$ (c, 0.53 in CHCl₃).

[106450-76-4]

Srivastava, O.P. *et al.*, *Can. J. Chem.*, 1986, **64**, 2324 (synth, pmr, cmr)Townsend, R.R. *et al.*, *Anal. Biochem.*, 1988, **174**, 459 (hplc)Tomoda, H. *et al.*, *Carbohydr. Res.*, 1991, **213**, 37 (biochem)Ajisaka, K. *et al.*, *Carbohydr. Res.*, 1995, **270**, 123-130 (enzyme synth) **α -D-Mannopyranosyl-(1 \rightarrow 2)-
[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose, 9CI**

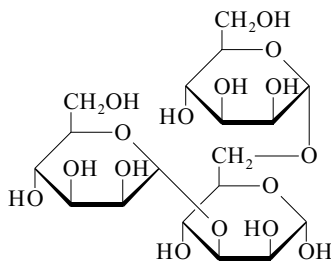
M-81

 $C_{18}H_{32}O_{16}$ 504.441Synth. by the action of α -mannosidase (from jack bean) on a 85% conc. mannose soln. **α -Pyranose-form** [95396-22-8]

Syrup.

Johansson, E. *et al.*, *Enzyme Microb. Technol.*, 1989, **11**, 347; *CA*, 1989, **111**, 37871w (synth, pmr, hplc) **α -D-Mannopyranosyl-(1 \rightarrow 3)-
[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose, 9CI**

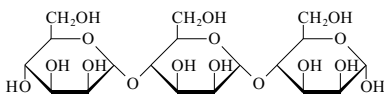
M-82

 $C_{18}H_{32}O_{16}$ 504.441Synth. by the action of α -mannosidase (from jack bean) on a 85% conc. mannose soln. **α -Pyranose-form** [121123-33-9]

Syrup.

Johansson, E. *et al.*, *Enzyme Microb. Technol.*, 1989, **11**, 347; *CA*, 1989, **111**, 37871w (synth, pmr, hplc) **α -D-Mannopyranosyl-(1 \rightarrow 4)-
 α -D-mannopyranosyl-(1 \rightarrow 4)-D-mannose, 9CI**

M-83

 $C_{18}H_{32}O_{16}$ 504.441Isol. from rapeseed (*Brassica campestris*) meal. **α -Pyranose-form** [6817-81-8]

3,3',3'',6,6',6''-Hexabenzyl, 2,2',2''-tris(4-methylbenzoyl), 4'-chloroacetyl:

[123826-58-4]

 $C_{86}H_{87}ClO_{20}$ 1476.074

Syrup.

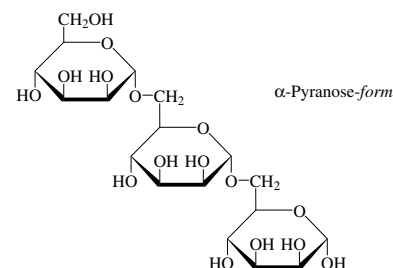
Me 1-thioglycoside, 3,3',3'',6,6',6''-hexabenzyl, 2,2',2''-tris(4-methylbenzoyl): [123826-49-3] $C_{85}H_{88}O_{18}S$ 1429.685
Syrup. $[\alpha]_D^{25} - 26$ (c, 0.4 in CHCl₃).

[126403-29-0]

Siddiqui, I.R. *et al.*, *J. Sci. Food Agric.*, 1973, **24**, 1427 (isol)Mori, M. *et al.*, *Carbohydr. Res.*, 1989, **192**, 131 (hexabenzyl derivs, pmr)Mori, M. *et al.*, *Tet. Lett.*, 1989, **30**, 1273 (hexabenzyl derivs) **α -D-Mannopyranosyl-(1 \rightarrow 6)-
 α -D-mannopyranosyl-(1 \rightarrow 6)-D-mannose**

M-84

[6614-36-4]

 $C_{18}H_{32}O_{16}$ 504.441Isol. from the partial acid hydrolysate of bakers' yeast (*Saccharomyces cerevisiae*) mannan and of *Candida utilis* mannan. $[\alpha]_D + 68$ (c, 0.42 in H₂O). **α -Pyranose-form** [89253-88-3]

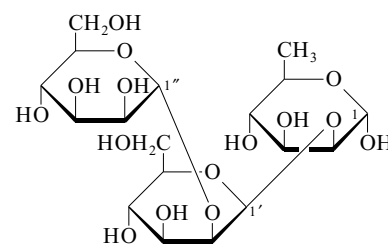
Syrup.

Undeca-Ac: $C_{40}H_{54}O_{27}$ 966.85Mp 162-163°. $[\alpha]_D + 43.7$ (c, 0.09 in CHCl₃). α -Config. is probable.

[89253-88-3]

Peat, S. *et al.*, *J.C.S.*, 1961, 29 (isol)Rademacher, K.H. *et al.*, *Z. Allg. Mikrobiol.*, 1982, **22**, 123; *CA*, **97**, 53720u (isol)Allerhand, A. *et al.*, *J.A.C.S.*, 1984, **106**, 2400 (cmr)Lee, R.T. *et al.*, *J. Biol. Chem.*, 1991, **266**, 4810 (isol, pmr, struct)Zhu, Y. *et al.*, *Carbohydr. Res.*, 2001, **332**, 1-21 (synth) **α -D-Mannopyranosyl-(1 \rightarrow 2)-
 β -D-mannopyranosyl-(1 \rightarrow 2)-D-mannose, 9CI**

M-85

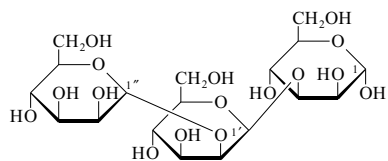
 $C_{18}H_{32}O_{16}$ 504.441 **α -Pyranose-form***8-Methoxycarbonyloctyl glycoside*, 6'-phosphate: [106450-75-3] $C_{28}H_{51}O_{21}P$ 754.672Powder (as di-Na salt). $[\alpha]_D^{23} + 41.5$ (c, 0.27 in H₂O) (di-Na salt).

8-Methoxycarbonyloctyl glycoside, 6'-di-phenyl phosphate, 3,3',4,4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac: [106450-74-2]
 $C_{76}H_{91}O_{25}P$ 1435.514
 Syrup. $[\alpha]_D^{23} +37$ (c, 0.18 in $CHCl_3$).

[106450-65-1, 118464-99-6]

Srivastava, O.P. *et al.*, *Can. J. Chem.*, 1986, **64**, 2324 (α -methoxycarbonyloctyl pyr derivs, cmr, pmr, deriv)

α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 3)-D-mannose, 9CI M-86



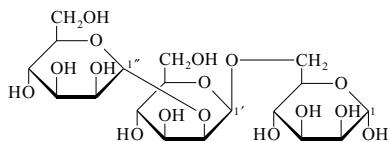
$C_{18}H_{32}O_{16}$ 504.441

α -Pyranose-form

8-Methoxycarbonyloctyl glycoside, 6'-di-phenylphosphoryl, 4,6-O-benzylidene, 2,3,4'-tribenzyl, 2'',3'',4'',6''-tetra-Ac: [106499-41-6]
 $C_{76}H_{89}O_{23}P$ 1401.499
 Syrup. $[\alpha]_D^{23} 0$ (c, 0.89 in $CHCl_3$).

Srivastava, O.P. *et al.*, *Can. J. Chem.*, 1986, **64**, 2324 (α -methoxycarbonyloctyl pyr tetra-Ac deriv, pmr, cmr)

α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 6)-D-mannose, 9CI M-87



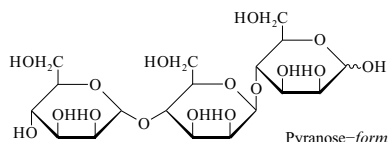
$C_{18}H_{32}O_{16}$ 504.441

α -Pyranose-form

8-Methoxycarbonyl glycoside, 6'-diphenyl phosphate, nona-Ac: [106450-73-1]
 $C_{58}H_{77}O_{30}P$ 1285.202
 Syrup. $[\alpha]_D^{23} +16.4$ (c, 0.28 in $CHCl_3$).

Srivastava, O.P. *et al.*, *Can. J. Chem.*, 1986, **64**, 2324 (synth, cmr, pmr)

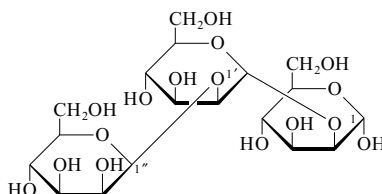
α -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-mannose M-88



$C_{18}H_{32}O_{16}$ 504.441

Isol. from the partial acid hydrolysate of ivory-nut mannan (*Phytelephas macrocarpa*). Cryst. (EtOH aq.). Mp 224-225°. $[\alpha]_D^{18} +40$ (c, 2.1 in H_2O). Aspinall, G.O. *et al.*, *J.C.S.*, 1958, 215 (isol)

β -D-Mannopyranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-mannose, 9CI M-89



$C_{18}H_{32}O_{16}$ 504.441

Repeating unit in the O-specific polymers of *Escherichia coli* 08, *Klebsiella pneumoniae* 05 and in *Serratia marcescens* strain S3255. Constit. of mannan of *Pischia pastoris*.

α -Pyranose-form [134931-19-4]

Allyl glycoside, 2'',3,3',3'',4,4',4'',6,6',6''-decabenzyl: [97576-76-6]

$C_{91}H_{96}O_{16}$ 1445.75
 Syrup. $[\alpha]_D^{25} -26$ (c, 0.17 in $CHCl_3$).

Propyl glycoside: [97576-79-9]

$C_{21}H_{38}O_{16}$ 546.522
 Syrup. $[\alpha]_D +13$ (c, 0.74 in H_2O).

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1985, **136**, 135 (α -propyl pyr, α -allyl pyr deriv, pmr, cmr)

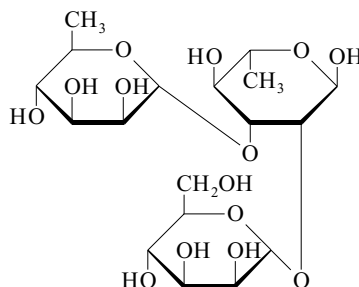
Aucken, H.M. *et al.*, *FEMS Microbiol. Lett.*, 1990, **136**, 1279; *CA*, 1991, **115**, 47390k (isol)

Mbawala, A. *et al.*, *J. Gen. Microbiol.*, 1990, **136**, 1279 (isol)

Oxley, D. *et al.*, *Carbohydr. Res.*, 1991, **212**, 213 (isol, pmr, cmr)

α -D-Mannopyranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-L-rhamnose M-90

α -D-Mannopyranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

Me glycoside: [130062-86-1]

$C_{19}H_{34}O_{15}$ 502.469
 Syrup. $[\alpha]_D^{28} -70.9$ (c, 1.9 in $CHCl_3$).

Me glycoside, nonabenzoyl: [135129-57-6]

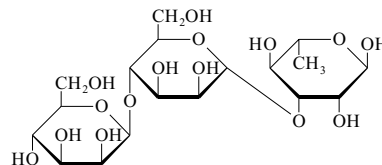
$C_{82}H_{70}O_{24}$ 1439.441
 Syrup. $[\alpha]_D^{28} +32.1$ (c, 1.0 in $CHCl_3$).

Lipkind, G.M. *et al.*, *Can. J. Chem.*, 1990, **68**, 1238 (α -Me pyr, conform, nmr)

Nifantev, P.E. *et al.*, *Bioorg. Khim.*, 1991, **17**, 517; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1991, **17**, 292 (α -Me pyr derivs)

β -D-Mannopyranosyl-(1 \rightarrow 4)- α -D-mannopyranosyl-(1 \rightarrow 3)-L-rhamnose M-91

β -D-Mannopyranosyl-(1 \rightarrow 4)- α -D-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{15}$ 488.442

α -Pyranose-form

3'-Ac: [121471-20-3]

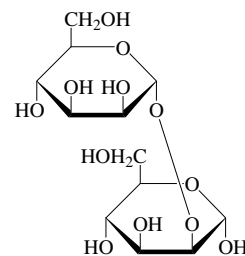
$C_{20}H_{34}O_{16}$ 530.479

Repeating unit of the O-specific polysaccharide from *Pseudomonas cepacia*. Syrup.

Soldatkina, M.A. *et al.*, *Mikrobiol. Zh. (Kiev)*, 1989, **51**, 32; *CA*, **111**, 37531k (occur, struct, immunol)

2-O- α -D-Mannopyranosyl-D-mannose, 9CI, 8CI M-92

[40871-49-6]



α -Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299

Constit. of the mycelia of *Epidermophyton floccosum* and in the cell walls of *Hansensula capsulata*, *Hansensula holstii* and in *Trichophyton mentagrophytes* the dermatophyte that causes tinea and other cutaneous lesions in humans. Isol. from baker's yeast (this appears to be a better route than chemical synthesis). Located at the non-reducing ends of the antennae of mannosidic type N-glycoproteins and assumed to play an important role in their interaction with receptor molecules. Amorph. powder.

Mp 186-189° dec. $[\alpha]_D^{25} +60$ (c, 0.1 in H_2O).

α -Pyranose-form [50271-62-0]

Octa-Ac: [82731-25-7]

$C_{28}H_{38}O_{19}$ 678.597

Needles (hexane/Et₂O). Mp 135-137°. $[\alpha]_D^{23} +42.1$ (c, 0.47 in $CHCl_3$).

Me glycoside: Methyl 2-O- α -D-mannopyranosyl- α -D-mannopyranoside, 9CI, 8CI [59571-75-4]

$C_{13}H_{24}O_{11}$ 356.326

Syrup or cryst. $[\alpha]_D^{22} +67.6$ (c, 2.4 in H_2O). $[\alpha]_D^{22} +74.4$ (c, 1.4 in MeOH).

β -Pyranose-form [89253-87-2]

Octa-Ac: [69685-28-5]

$C_{28}H_{38}O_{19}$ 678.597

Mp 102-103°. $[\alpha]_D^{20} +5.7$ (c, 0.78 in $CHCl_3$).

Me glycoside, hepta-Ac: [76951-67-2]
C₂₇H₃₈O₁₈ 650.586
Foam. [α]_D²⁰ +62.5 (c, 0.6 in CHCl₃).

Me glycoside 2,3',4,4'-tetrabenzyl:
[78880-17-8]
C₄₁H₄₈O₁₁ 716.824
[α]_D²⁵ +58.8 (c, 0.4 in CHCl₃).

Me glycoside 2,3',4,4',6'-pentabenzyl:
[79218-67-0]
C₄₈H₅₄O₁₁ 806.948
Syrup. [α]_D²⁵ +68.9 (c, 0.19 in CHCl₃).

p-Nitrophenyl glycoside: [72647-96-2]
[α]_D²⁰ +114 (c, 0.29 in H₂O).

β-Pyranose-form [82729-73-5]

Octa-Ac: [69685-27-4]
Mp 146° (152-153°). [α]_D +19.6
(CHCl₃). [α]_D +55 (c, 0.3 in EtOH).

Me glycoside: [100896-85-3]
C₁₃H₂₄O₁₁ 356.326
Amorph. solid. [α]_D²² +8 (c, 0.4 in MeOH).

Me glycoside, 2',3',4',6'-tetra-Ac:
[131283-85-7]
C₂₁H₃₂O₁₅ 524.475
Amorph. solid. [α]_D²² +3 (c, 1.1 in CHCl₃).

Me glycoside, 6'-phosphate: [131283-87-9]
C₁₃H₂₅O₁₄P 436.306
Amorph. solid (as di-Na salt). [α]_D²² +42
(c, 1.1 in H₂O).

Peat, S. *et al.*, *J.C.S.*, 1961, 29; 3918 (*isol*)
O'Brien, E. *et al.*, *Carbohydr. Res.*, 1974, **32**, 31
(*synth*)

Reichert, C.M. *et al.*, *Carbohydr. Res.*, 1979, **77**,
141 (*α-Octa-Ac*)

Backinowsky, L.V. *et al.*, *Carbohydr. Res.*, 1980,
85, 209 (*Me gly, hepta-Ac*)

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1981, **93**, 53;
231 (*derivs*)

Brisson, J.R. *et al.*, *J. Carbohydr. Chem.*, 1983,
2, 41-55 (*Me gly, pmr*)

Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*,
1984, **42**, 193 (*cmr, Me gly*)

Khan, S.H. *et al.*, *Carbohydr. Res.*, 1990, **200**,
57 (*β-Me gly, deriv*)

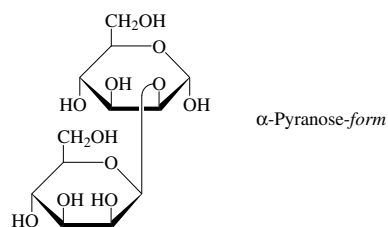
Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1990, **200**,
475

Ajisaka, K. *et al.*, *Carbohydr. Res.*, 1995, **270**,
123-130 (*enzymic synth*)

Zhu, Y. *et al.*, *Carbohydr. Res.*, 2001, **332**, 1-21
(*synth*)

2-O-β-D-Mannopyranosyl-D-mannose, 8CI M-96

[50728-38-6]

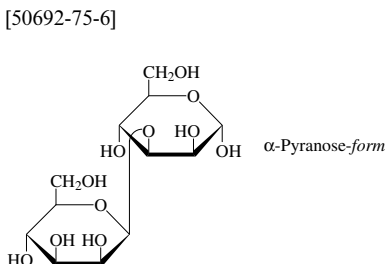


C₁₂H₂₂O₁₁ 342.299
Present in the side chain of a number of yeast mannans. Constituent of the repeating unit of the phosphomannan from *Hansenula capsulata*.

[50271-58-4, 50271-63-1]

Slodki, M.E. *et al.*, *Biochim. Biophys. Acta*,
1963, **69**, 96 (*isol*)
Goldstein, I.J. *et al.*, *Biochim. Biophys. Acta*,
1973, **317**, 500
Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1973, **51**,
2375 (*cmr*)
Sugawara, T. *et al.*, *Carbohydr. Res.*, 1992, **230**,
117 (*deriv, synth, pmr*)

3-O-β-D-Mannopyranosyl-D-mannose, 9CI, 8CI M-97



C₁₂H₂₂O₁₁ 342.299
Isol. from the hydrolysed glucomannan of *Narcissus tazetta* and from the exocellular mannan of *Rhototorula glutinis*.

α-Pyranose-form [55058-42-9]

Me glycoside: Methyl 3-O-β-D-mannopyranosyl-α-D-mannopyranoside, 9CI
[104714-42-3]
C₁₃H₂₄O₁₁ 356.326
[α]_D²³ +5.8 (c, 0.59 in H₂O).

Me glycoside, hexabenzyl: Methyl 2,4,6-tri-O-benzyl-3-O-(3,4,6-tri-O-benzyl-β-D-mannopyranosyl)-α-D-mannopyranoside
[104652-46-2]
C₅₅H₆₀O₁₁ 897.072
Syrup. [α]_D²² +16.6 (c, 0.72 in CHCl₃).

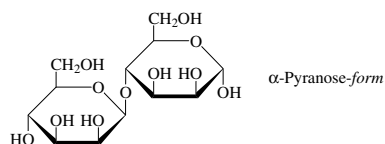
Kato, K. *et al.*, *Carbohydr. Res.*, 1973, **29**, 469
(*isol*)

Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1975, **39**, 3
(*cmr*)

Awad, L.F. *et al.*, *Bull. Chem. Soc. Jpn.*, 1986,
59, 1587 (*Me gly, cmr*)

4-O-β-D-Mannopyranosyl-D-mannose, 9CI, 8CI M-98

Mannobiose
[14417-51-7]



C₁₂H₂₂O₁₁ 342.299
The major repeating unit in the mannose chains of plant mannans, galacto and glucomannans. Isol. from partial acid hydrolysates of ivory nut (*Phytalephas macrocarpa*) mannan, guaran (*Cyamopsis* sp.), palmyra palm nut mannan (*Borassus flabellifer*), fenugreek (*Trigonella foenum-graecum*), lucerne (*Medicago sativa*) galactomannans, western hemlock wood cellulose (*Tsuga heterophylla*), white spruce (*Picea glauca*), *Larix decidua*, *Pinus strobus* and red maple (*Acer rubrum*) glucomannans and *Pinus taeda* hemicellulose. Also from the mucilage in

the bulbs of *Narcissus tazetta*, the exocellular yeast mannan of *Rhodotorula glutinis* and from *Sesbania aegyptiaca* seeds.

Cryst. (MeOH).
Mp 203-204° (198-199°). [α]_D³⁰ -8 (c, 1.6 in H₂O) (-2.3, -4). Some sources report a hydrate, Mp 122-124°.

Phenylosazone: Mp 203-206° (199°).

α-Pyranose-form [37169-60-1]

Octa-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-mannopyranosyl)-α-D-mannopyranoside
[68036-19-1]
C₂₈H₃₈O₁₉ 678.597
Mp 152°. [α]_D²⁰ +7 (c, 1.0 in MeOH).

Ph glycoside: Phenyl 4-O-β-D-mannopyranosyl-α-D-mannopyranoside
[71238-86-3]
C₁₈H₂₆O₁₁ 418.397
[α]_D²⁰ +53 (c, 1.15 in MeOH).

Ph glycoside, hepta-Ac: Phenyl 2,3,6-tri-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-mannopyranosyl)-α-D-mannopyranoside
[71238-76-1]
C₃₂H₄₀O₁₈ 712.657
[α]_D²⁰ +20.4 (c, 1.3 in CHCl₃).

Ph glycoside, 6,6'-ditosyl: [α]_D²⁰ +25.2
(c, 1.13 in MeOH).

β-Pyranose-form [37169-64-5]

Benzyl glycoside, hepta-Ac: Benzyl 2,3,6-tri-O-acetyl-4-O-(2,3,4,6-tetra-O-acetyl-β-D-mannopyranosyl)-β-D-mannopyranoside
[71238-92-1]
C₃₃H₄₂O₁₈ 726.684
[α]_D²⁰ -35 (c, 0.5 in CHCl₃).

Courtois, J.E. *et al.*, *Bull. Soc. Chim. Biol.*,
1958, **40**, 2031 (*isol*)

Mukherjee, A.K. *et al.*, *Can. J. Chem.*, 1961, **39**,
1408 (*isol*)

Kato, K. *et al.*, *Agric. Biol. Chem.*, 1969, **33**,
1446 (*isol, struct*)

Kamerling, J.P. *et al.*, *Tetrahedron*, 1971, **27**,
4275; 1972, **28**, 3037 (*ms, pmr*)

Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1975, **39**, 3
(*isol, cmr*)

Usui, T. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 863
(*cmr*)

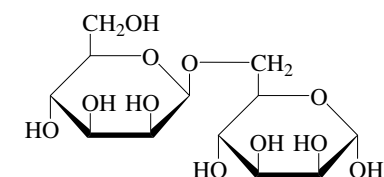
Thiem, J. *et al.*, *Chem. Ber.*, 1979, **112**, 1035,
(*α-D-pyr octa-Ac, α-D-Ph pyr, α-D-Ph pyr hepta-Ac, α-D-Ph pyr ditosyl, αβ-D-benzyl pyr hepta A*)

Bhattacharyya, S.B. *et al.*, *Phytochemistry*,
1983, **22**, 161 (*isol*)

Sheldrick, B. *et al.*, *Carbohydr. Res.*, 1984, **132**,
1 (*cryst struct*)

6-O-β-D-Mannopyranosyl-D-mannose, 9CI M-99

[71184-87-7]



α-Pyranose-form

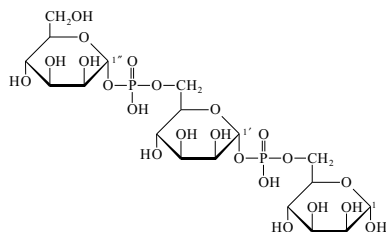
C₁₂H₂₂O₁₁ 342.299

Isol. from the acid hydrolysate of the galactomannan of *Cassia javanica*.
 $[\alpha]_D^{25}$ -12.4 (H₂O). $[\alpha]_D^{26}$ -16 (c, 1.0 in H₂O).

 α -Pyranose-form

Me glycoside: Methyl 6-O- β -D-mannopyranosyl- α -D-mannopyranoside, 9CI
 [76332-68-8]
 C₁₃H₂₄O₁₁ 356.326
 Foam. $[\alpha]_D^{22}$ +49.5 (c, 1.6 in H₂O).

Jones, J.K.N. *et al.*, *J.C.S.*, 1958, 27 (*synth*)
 Srivastava, V.K. *et al.*, *J.O.C.*, 1981, **46**, 1121 (*deriv*)
 Singh, R.B. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1983, **57**, 1263 (*isol*)

 α -D-Mannopyranosyloxyphosphinico-(1 \rightarrow 6)- α -D-mannopyranosyloxyphosphinico-(1 \rightarrow 6)-D-mannose, 9CI

C₁₈H₃₄O₂₂P₂ 664.401

In general poly(glycosyl phosphates) are immunologically active components of microorganism cell walls and capsules.

 α -Pyranose-form

Me glycoside, 2',2'',3',3'',4',4''-hexabenzoyl, 2,3,4-tri-Ac: [132498-66-9]
 C₆₇H₆₆O₃₁P₂ 1429.187
 Syrup (as bis(trimethylammonium) salt). $[\alpha]_D^{30}$ -75 (H₂O). CAS no. refers to salt.

1-Dihydrogen phosphate: [123827-53-2]
 C₁₈H₃₅O₂₅P₃ 744.381
 Syrup (as tetrakis(ammonium) salt). $[\alpha]_D$ +35 (H₂O). CAS no. refers to salt.

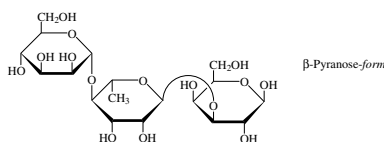
1-Dihydrogen phosphate, 2,2',2'',3',3'',3'',4',4',4''-nonabenzoyl: [123900-44-7]
 C₈₁H₇₁O₃₄P₃ 1681.353

Syrup (as tetrakis(ammonium) salt). CAS no. refers to salt.

Kenne, L. *et al.*, *The Polysaccharides*, 1983, **2**, 287 (*rev*)
 Nikolaev, A.V. *et al.*, *Carbohydr. Res.*, 1989, **187**, C1 (*phosphate derivs*)
 Nikolaev, A.V. *et al.*, *Bioorg. Khim.*, 1990, **16**, 1696; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1990, **16**, 960 (*α -Me pyr tri-Ac deriv, pmr, cmr*)

 α -D-Mannopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI

α -D-Mannopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI
 [59678-93-2]



C₁₈H₃₂O₁₅ 488.442

Constituent of the main chain of the O-antigenic polysaccharide of *Salmonella* serological groups A, B and D. Amorph. $[\alpha]_D^{20}$ +27 (c, 1.0 in H₂O). $[\alpha]_D$ +20 (c, 0.6 in H₂O).

 β -Pyranose-form

Benzyl glycoside:

C₂₅H₃₈O₁₅ 578.566
 Mp 178-179°. $[\alpha]_D$ -5.9 (c, 1.0 in H₂O).

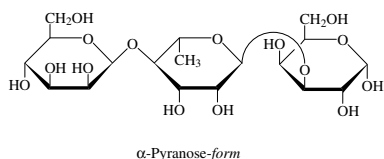
Benzyl glycoside, 2-benzoyl:

C₃₂H₄₂O₁₆ 682.674
 Cryst. (EtOH). Mp 214-218°. $[\alpha]_D$ -12.5 (c, 0.6 in Py).

Torgov, V.I. *et al.*, *Bioorg. Khim.*, 1980, **6**, 1860; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989
 Betanelli, V.I. *et al.*, *Carbohydr. Res.*, 1980, **84**, 211
 Garegg, P.T. *et al.*, *J.C.S. Perkin 1*, 1982, 2973
 Szirmai, Z. *et al.*, *Carbohydr. Res.*, 1990, **200**, 201 (*synth*)

 β -D-Mannopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-galactose

β -D-Mannopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-D-galactose, 9CI
 [53659-29-3]



C₁₈H₃₂O₁₅ 488.442

Repeating unit of the O-specific (antigenic) polysaccharide of *Salmonella anatum* and *Salmonella newington*. $[\alpha]_D$ -24 (H₂O). $[\alpha]_D$ -13 (H₂O). $[\alpha]_D^{20}$ -15 (c, 1.0 in H₂O).

Deca-Ac:

C₃₈H₅₂O₂₅ 908.814
 Syrup. $[\alpha]_D^{25}$ -4 (c, 1.1 in CHCl₃).

 α -Furanose-form

1,2:5,6-Di-O-isopropylidene, hexa-Ac:

C₃₆H₅₂O₂₁ 820.794
 Oil. $[\alpha]_D^{20}$ -41.5 (c, 1.4 in CHCl₃).

 α -Pyranose-form [74538-23-1]

4,6-O-Ethylidene, 1,2-O-isopropylidene: [65817-34-7]

C₂₃H₃₈O₁₅ 554.544
 Syrup. $[\alpha]_D^{25}$ -11.3 (c, 0.77 in MeOH).

4,6-O-Ethylidene, 1,2-O-isopropylidene, hexa-Ac: [65817-33-6]
 C₃₅H₅₀O₂₁ 806.767
 Vitreous powder. Mp 87-92°. $[\alpha]_D^{25}$ -23 (c, 1.0 in CHCl₃).

 β -Pyranose-form [51599-34-9]

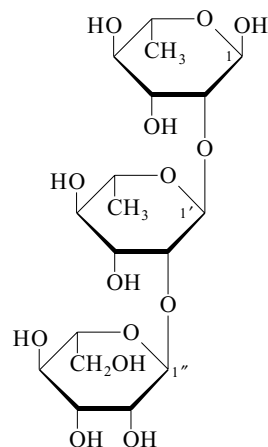
Benzyl glycoside, 2,4-dibenzyl, 2',2'',3',3'',4',6''-hexa-Ac:
 C₅₁H₆₂O₂₁ 1011.038
 $[\alpha]_D^{20}$ -50.8 (c, 1.0 in CHCl₃).

[70168-45-5, 70168-47-7]

Kochetkov, N.K. *et al.*, *Carbohydr. Res.*, 1975, **45**, 283 (*furanose deriv*)
 Kochetkov, N.K. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1977, 2578; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 2387 (*α -form deriv*)
 Betanelli, V.I. *et al.*, *Carbohydr. Res.*, 1980, **84**, 211
 Lipkind, G.M. *et al.*, *Bioorg. Khim.*, 1981, **7**, 391; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 227 (*conform, struct*)
 Torgov, V.I. *et al.*, *Bioorg. Khim.*, 1981, **7**, 401; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 235 (*synth, benzylgly*)
 Kochetkov, N.K. *et al.*, *Carbohydr. Res.*, 1982, **110**, C6; 1984, **128**, 269 (*allyl gly, synth, pmr, cmr*)
 Helander, I.M. *et al.*, *FEBS Lett.*, 1989, **250**, 565 (*occur*)

 α -L-Mannopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose

α -L-Mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, 9CI



C₁₈H₃₂O₁₄ 472.442

 α -Pyranose-form

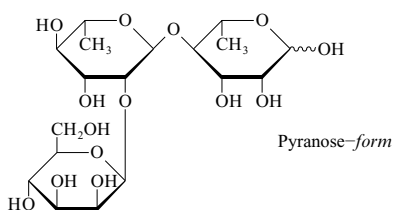
Me glycoside: [115678-06-3]

C₁₉H₃₄O₁₄ 486.469
 Amorph. $[\alpha]_D^{22}$ -54 (c, 1.1 in H₂O) (lit. gives a temp. range).

Me glycoside, 3,3',4,4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac: [115678-25-6]
 C₅₅H₆₆O₁₈ 1015.116
 Syrup. $[\alpha]_D^{22}$ -28 (c, 1.0 in CHCl₃) (lit. gives a temp. range).

Pozsgay, V. *et al.*, *J.O.C.*, 1988, **53**, 4042 (*α -Me pyr derivs, pmr, cmr*)

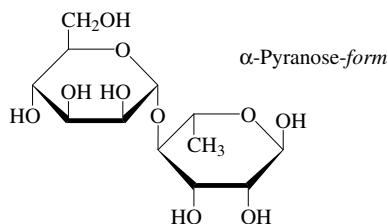
β-D-Mannopyranosyl-(1→2)-α-L-rhamnopyranosyl-(1→4)-L-rhamnose **M-104**
β-D-Mannopyranosyl-(1→2)-6-deoxy-α-L-mannopyranosyl-(1→4)-6-deoxy-L-mannose, 9CI
 [101236-42-4]



$C_{18}H_{32}O_{14}$ 472.442
 Hydrolytic product of lactosillan. Constit. of a polysaccharide isol. from culture filtrate of a bacterium *Alcaligenes latus* strain G66A. The polysaccharide induces differentiation of mouse myeloid leukemia cells (M1).

Hayakawa, Y. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 2437; 2443 (*isol*, *cmr*, *glc*, *ms*)

4-O-α-D-Mannopyranosyl-L-rhamnose **M-105**
4-O-α-D-Mannopyranosyl-6-deoxy-L-mannose, 6-Deoxy-4-O-α-D-mannopyranosyl-L-mannose
 [52327-16-9]



$C_{12}H_{22}O_{10}$ 326.3
 Reducing disaccharide. Constit. of the repeating unit of the O-antigens of *Salmonella* serogroups A, B and D (the most harmful to man). Cryst. (MeOH/2-propanol). Mp 143-145°. $[\alpha]_D^{20} +53 \rightarrow +60.3$ (2h) (c, 1 in H_2O).

α-Pyranose-form [52389-38-5]

Hepta-Ac: [52389-37-4]
 $C_{26}H_{36}O_{17}$ 620.56
 Cryst. (EtOH). Mp 149.5-150.5°. $[\alpha]_D -5.5$ (c, 4.3 in $CHCl_3$).

Me glycoside: [52327-13-6]
 $C_{13}H_{24}O_{10}$ 340.327
 $[\alpha]_D +13$ (c, 2.2 in H_2O).

Me glycoside, 2',3',4',6'-tetra-Ac, 2,3-carbonate:
 Cryst. (EtOH). Mp 146-148°. $[\alpha]_D^{20} +23$ (c, 1.8 in $CHCl_3$).

Me glycoside, hexa-Ac: [52327-15-8]
 $C_{25}H_{36}O_{16}$ 592.55
 $[\alpha]_D +4$ (c, 1.3 in $CHCl_3$).

Me glycoside, 2,3-O-isopropylidene, tetra-Ac: [52327-11-4]
 $C_{24}H_{36}O_{14}$ 548.54

Cryst. (EtOH or Et₂O/petrol). Mp 119-120° (116.5-117.5°). $[\alpha]_D +30.7$ (c, 2.2 in $CHCl_3$). $[\alpha]_D +28.4$ (c, 1.8 in $CHCl_3$).

[117249-82-8]

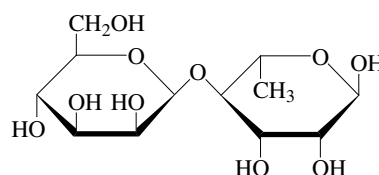
Luderitz, O. *et al.*, *Microb. Toxins*, Academic Press, New York, ed. Weinbaum, G. *et al.*, 1971, **4**, 158 (*occur*)

Bebault, G.M. *et al.*, *Can. J. Chem.*, 1974, **52**, 678 (*synth*)

Torgov, V.I. *et al.*, *Bioorg. Khim.*, 1980, **6**, 1860; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1980, **6**, 989 (*carbonate*, *pmr*, *ir*)

Lipkind, G.M. *et al.*, *Carbohydr. Res.*, 1988, **175**, 59 (*cmr*)

4-O-β-D-Mannopyranosyl-L-rhamnose **M-106**
4-O-β-D-Mannopyranosyl-6-deoxy-L-mannose, 6-Deoxy-4-O-β-D-mannopyranosyl-L-rhamnose
 [6918-40-7]



$C_{12}H_{22}O_{10}$ 326.3

Reducing disaccharide. Constit. of the repeating unit of the O-antigen of *Salmonella muenster* E₁. $[\alpha]_D -46$ (c, 2.5 in H_2O).

α-Pyranose-form

Hepta-Ac: [53319-05-4]

$C_{26}H_{36}O_{17}$ 620.56
 Cryst. (EtOH). Mp 164-165°. $[\alpha]_D -67.8$ (c, 1.3 in $CHCl_3$) (-57).

Me glycoside: [53958-23-9]

$C_{13}H_{24}O_{10}$ 340.327
 Cryst. (2-propanol). Mp 108.5-110°. $[\alpha]_D -72.4$ (c, 2.2 in H_2O).

Me glycoside, hexa-Ac:

$C_{25}H_{36}O_{16}$ 592.55
 $[\alpha]_D -57$ (c, 2.1 in $CHCl_3$).

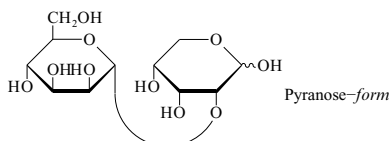
Bebault, G.M. *et al.*, *Carbohydr. Res.*, 1974, **37**, 309 (*synth*, *derivs*)

Kochetkov, N.K. *et al.*, *Carbohydr. Res.*, 1975, **45**, 283 (*hepta-Ac*)

Dmitriev, B.A. *et al.*, *Carbohydr. Res.*, 1982, **100**, 195 (*cmr*)

Kenne, L. *et al.*, *The Polysaccharides*, Academic Press, ed. Aspinall, G.O., 1983, **2**, 300 (*occur*)

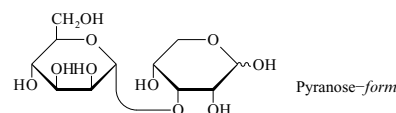
2-O-α-D-Mannopyranosyl-D-ribose, 9CI **M-107**
 [39102-71-1]



$C_{11}H_{20}O_{10}$ 312.273
 Syrup. $[\alpha]_D^{20} +54$ (c, 1.4 in H_2O).

Zurowska, A. *et al.*, *Carbohydr. Res.*, 1972, **24**, 319

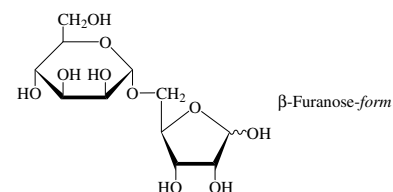
3-O-α-D-Mannopyranosyl-D-ribose, 9CI **M-108**
 [39102-72-2]



$C_{11}H_{20}O_{10}$ 312.273
 $[\alpha]_D^{20} +42$ (c, 1.4 in H_2O).

Zurowska, A. *et al.*, *Carbohydr. Res.*, 1972, **24**, 319

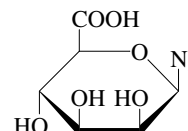
5-O-α-D-Mannopyranosyl-D-ribose, 9CI **M-109**
 [39102-73-3]



$C_{11}H_{20}O_{10}$ 312.273
 Syrup. $[\alpha]_D^{20} +22$ (c, 1.4 in H_2O).

Zurowska, A. *et al.*, *Carbohydr. Res.*, 1972, **24**, 319

Mannopyranosyluronic acid azide **M-110**
1-Deoxymannopyranosyl azide uronic acid. (Mannopyranosyl azide)uronate

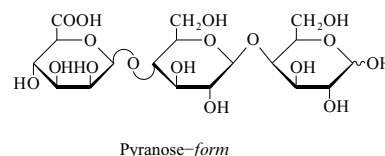


$C_6H_9N_3O_6$ 219.154

β-D-form [562847-35-2]
 Solid. $[\alpha]_D^{26} -70.8$ (c, 1.0 in H_2O).

Ying, L. *et al.*, *Carbohydr. Res.*, 2003, **338**, 835-841 (*β-D-form*, *synth*, *pmr*, *cmr*)

β-D-Mannopyranuronosyl-(1→4)-β-D-glucopyranosyl-(1→4)-D-galactose, 8CI **M-111**
 [22412-73-3]



$C_{18}H_{30}O_{17}$ 518.425
 Constit. of the extracellular bacterial polysaccharide from *Arthrobacter viscosus* (NRRL B-1973).

- 1,2-O-Ethylidene, 3,4,6-tri-Me: 1,2-O-Ethylidene-3,4,6-tri-O-methyl- β -D-mannopyranose
[26922-65-6]
 $C_{11}H_{20}O_6$ 248.275
[α]_D²⁵ -1.4 (c, 0.5 in EtOH).
- 2-Me, 1,3,4,6-tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-O-methyl- β -D-mannopyranose
 $C_{15}H_{22}O_{10}$ 362.333
Mp 98-99°. [α]_D³⁰ -32.3 (c, 1.1 in CHCl₃).
- Me glycoside: See Methyl β -D-mannopyranoside, M-205

D-Furanose-form

Me glycoside: See Methyl mannofuranoside, M-203

 α -D-Furanose-form [36574-21-7]

- 2,3-O-Isopropylidene: See 2,3-O-Isopropylidenemannose, I-71
- 2,3:5,6-Di-O-cyclohexylidene: 2,3:5,6-Di-O-cyclohexylidene- α -D-mannofuranose
[61489-23-4]
 $C_{18}H_{28}O_6$ 340.416
Needles (heptane). Mp 122°. [α]_D²¹ +13.4 (c, 0.9 in CHCl₃).
- Me glycoside: See Methyl mannofuranoside, M-203
- Benzyl glycoside: See Benzyl mannoside, B-19

 β -D-Furanose-form [40550-49-0]

- 2,3-O-Isopropylidene: See 2,3-O-Isopropylidenemannose, I-71
- Me glycoside: See Methyl mannofuranoside, M-203
- Benzyl glycoside: See Benzyl mannoside, B-19

L-form [10030-80-5]

- Mp 132°. [α]_D +14 \rightarrow -14 (H₂O).
- Phenylhydrazones: [53956-43-7]
Mp 195°. [α]_D -34 (Py).
- 2,3:5,6-Di-O-isopropylidene: See 2,3-O-Isopropylidenemannose, I-71

 α -L-Pyranose-form [35810-56-1]

- Me glycoside: Methyl α -L-mannopyranoside
[64912-19-2]
 $C_7H_{14}O_6$ 194.184
Mp 190-191°. [α]_D²⁰ -79.4 (H₂O).
- Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- α -L-mannopyranoside
[141042-95-7]
 $C_{15}H_{22}O_{10}$ 362.333
Syrup. [α]_D -34 (c, 0.9 in CHCl₃).

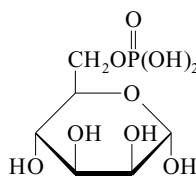
 α -L-Furanose-form [36972-23-3]

- 2,3:5,6-Di-O-isopropylidene: See 2,3-O-Isopropylidenemannose, I-71
- [12773-34-1, 36972-23-3, 37738-80-0, 41767-04-8, 41847-42-1, 41847-43-2, 41847-45-4]
- Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 188B; 191B (ir)
- Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 299A; 299B; 1058A (nmr)
- Fischer, E. et al., Ber., 1913, 46, 4029 (penta-Ac, pentabenzoyl)
- Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, 4th edn., J.A. Barth, 1935, 298; 324 (rev, derivs)
- Guthrie, R.D. et al., J.C.S., 1959, 853 (dicyclohexylidene- α -D-fur)

- Sowden, J.C. et al., Methods Carbohydr. Chem., 1962, 1, 132 (L-form)
- Isbell, H.S. et al., Methods Carbohydr. Chem., 1962, 1, 145 (α -D-form, isol)
- Levine, S. et al., Carbohydr. Res., 1968, 6, 382; 1969, 10, 468 (β -D-pyr, synth, β -D-pyr-penta-Ac)
- Fernández-Bolaños, M. et al., An. Quim., 1969, 65, 1163 (β -D-pyr tetra-Ac mesyl)
- Schaffer, R. et al., The Carbohydrates, 1972, 1A, 69 (occur)
- Warren, C.D. et al., J. Biol. Chem., 1975, 250, 8069 (β -D-pyr tetra-Ac dihydrogen phosphate)
- Wilbur, D.J. et al., J.A.C.S., 1977, 99, 5450 (equilib)
- Gelas, J. et al., Carbohydr. Res., 1978, 67, 371-387 (α -D-pyr 2,3:4,6-diisopropylidene)
- Bock, K. et al., Annu. Rep. NMR Spectrosc., (Webb, G.A. ed.), Acad. Press, London and New York, 1982, 13, 37; 41 (pmr, cmr)
- Horton, D. et al., Carbohydr. Res., 1982, 105, 145 (cmr)
- D'Accorso, N.B. et al., Carbohydr. Res., 1983, 124, 177 (cmr, α -D-pentabenzoyl, β -D-pentabenzoyl)
- Ko, S.Y. et al., Science (Washington, D.C.), 1983, 220, 949 (total synth, L-form)
- Mikamo, M. et al., Carbohydr. Res., 1989, 191, 150 (synth, bibl, 2,3,4,6-tetra-Ac, 2,3,4,6-tetrabenzoyl)
- Pavliak, V. et al., Carbohydr. Res., 1991, 210, 333 (2-triflyl, tetra-Ac)
- Chida, N. et al., J. Carbohydr. Chem., 1992, 11, 137-148 (Me α -L-Pyr tetra-Ac)
- Chung, S.K. et al., Carbohydr. Res., 1994, 260, 39 (α -D-pyr 2,3:4,6-diisopropylidene)

Mannose 6-dihydrogen phosphate

Mannose 6-phosphate



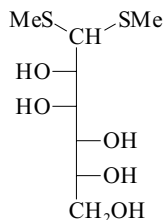
$C_6H_{13}O_9P$ 260.137

D-form [3672-15-9]

- [α]_D²⁵ +7.39 (c, 3.72 in H₂O) (as Na salt).
- Meldal, M. et al., Carbohydr. Res., 1992, 235, 115 (synth, pmr, cmr)

Mannose dimethyl dithioacetal

M-116



$C_8H_{18}O_5S_2$ 258.359

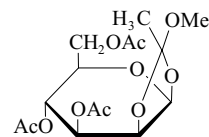
D-form

- 3,4:5,6-Diisopropylidene: 3,4:5,6-Di-O-isopropylidene-D-mannose dimethyl dithioacetal
 $C_{14}H_{26}O_5S_2$ 338.488
Cryst. (petrol). Mp 58-59°. [α]_D²¹ +5 (c, 7.6 in CHCl₃).

- Curtis, E.J.C. et al., Can. J. Chem., 1960, 38, 890 (synth)

Mannose 1,2-orthoacetate

M-117



exo-Methyl, tri-Ac

$C_8H_{14}O_7$ 222.194

 β -D-exo-form

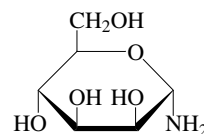
- Me ether, 3,4,6-tri-Ac: exo-3,4,6-Tri-O-acetyl-1,2-O-(1-methoxyethylidene)- β -D-mannopyranose
 $C_{15}H_{22}O_{10}$ 362.333
Cryst. (Et₂O). Mp 112-113°. [α]_D²⁵ -22.2 (c, 2.5 in CHCl₃).
- Benzyl ether: exo-1,2-O-(1-Benzylloxyethylidene)- β -D-mannopyranose
 $C_{15}H_{20}O_7$ 312.319
Mp 128-130°. [α]_D +22.6 (c, 1.2 in H₂O).
- Benzyl ether, 3,4,6-tri-Ac: exo-3,4,6-Tri-O-acetyl-1,2-O-(1-benzylloxyethylidene)- β -D-mannopyranose
 $C_{21}H_{26}O_{10}$ 438.43
Mp 146-147°. [α]_D²⁵ -1 (c, 2.4 in CHCl₃).

endo- β -D-form

- Me ether, 3,4,6-tri Ac: endo-3,4,6-Tri-O-acetyl-1,2-O-(1-methoxyethylidene)- β -D-mannopyranose
 $C_{15}H_{22}O_{10}$ 362.333
Cryst. (Et₂O/hexane). Mp 104-105°. [α]_D²⁵ -37.1 (c, 2.1 in CHCl₃).
- Benzyl ether: endo-1,2-O-(1-Benzylloxyethylidene)- β -D-mannopyranose
 $C_{15}H_{20}O_7$ 312.319
Mp 115-117°. [α]_D -14.8 (c, 1.1 in H₂O).
- Perlin, A.S. et al., Can. J. Chem., 1963, 41, 399
- Dais, P. et al., Carbohydr. Res., 1983, 122, 305

Mannosylamine, 9CI, 8CI

M-118



α -Pyranose-form

$C_6H_{13}NO_5$ 179.172

D-form [52274-54-1]

- 2,3:5,6-Di-O-isopropylidene, N-(4-bromophenyl): Mp 135-136°. [α]_D²⁵ -129 (c, 0.5 in CHCl₃).
- 2,3:5,6-Di-O-isopropylidene, N-(4-nitrophenyl): Mp 182-183°. [α]_D¹⁵ -212 (c, 0.6 in CHCl₃).
- 2,3:5,6-Di-O-isopropylidene, N-phenyl: 2,3:5,6-Di-O-isopropylidene-N-phenyl-D-mannosylamine
 $C_{18}H_{25}NO_5$ 335.399
Mp 121-122°. [α]_D²⁰ -149 (c, 1.1 in CHCl₃).
- 2,3:5,6-Di-O-isopropylidene, N-(4-methylphenyl): Mp 142-143°. [α]_D¹⁶ -139 (c, 0.4 in CHCl₃).

α -D-Pyranose-form α -D-Mannopyranosylamine

Cryst. Mp 70-71°.

 β -D-Pyranose-form β -D-Mannopyranosylamine

[7388-99-0]

Cryst. + 1H₂O. Mp 93-94°. [α]_D²⁰ -11.6 (c, 2 in H₂O).2,3,4,6-Tetra-O-Ac: 2,3,4,6-Tetra-O-acetyl- β -D-mannopyranosylamine [41355-50-4]C₁₄H₂₁NO₉ 347.321Mp 155-156°. [α]_D²⁰ -12.7 (c, 1.0 in CHCl₃).

2,3,4,6-Tetra-O-benzoyl: [41093-31-6]

C₃₄H₂₉NO₉ 595.604Mp 156-157°. [α]_D²⁰ -134.8 (c, 0.77 in CHCl₃).N-Ac: N-Acetyl- β -D-mannopyranosylamine. N- β -D-Mannopyranosylacetamide, 9CI

[41093-33-8]

C₈H₁₅NO₆ 221.21Mp 201-204°. [α]_D²⁰ -46.8 (c, 1.0 in H₂O).N-Benzoyl: N-Benzoyl- β -D-mannopyranosylamine. N- β -D-Mannopyranosylbenzamide, 9CI

[15354-98-0]

C₁₃H₁₇NO₆ 283.28Mp 256-258°. [α]_D²⁷ -9.1 (c, 1.0 in DMSO) (c, 0.2 in Py).

2,3,4,6-Tetra-O-benzoyl, N-Ac:

[41093-32-7]

C₃₆H₃₁NO₁₀ 637.642Mp 166-167°. [α]_D²⁰ -84 (c, 0.89 in CHCl₃).

2,3,4,6-Tetra-O-Ac, N-benzoyl:

[74761-72-1]

C₂₃H₂₅NO₁₀ 451.429[α]_D²⁷ -19.9 (c, 1.3 in CHCl₃).N,O²,O³,O⁴,O⁶-Penta-Ac: [35923-07-0]C₁₆H₂₃NO₁₀ 389.358Mp 188-189°. [α]_D²⁰ -16.5 (CHCl₃).N-Benzyl: N-Benzyl- β -D-mannopyranosylamine

[70428-27-2]

C₁₃H₁₉NO₅ 269.297Mp 131-132°. [α]_D²⁷ -35.3 (c, 1.0 in MeOH).

N-(4-Hydroxyphenyl): [74372-70-6]

Mp 151-152°. [α]_D²⁷ -78.8 (c, 1.0 in MeOH).

N-(4-Methoxybenzyl): [74372-71-7]

Mp 90-91°. [α]_D²⁷ -38 (c, 1.0 in MeOH).

N-(4-Nitrophenyl): [25876-25-9]

Mp 217° dec. [α]_D²⁷ -329 (c, 1.0 in Py).

2,3,4,6-Tetra-O-Ac, N-(4-nitrophenyl):

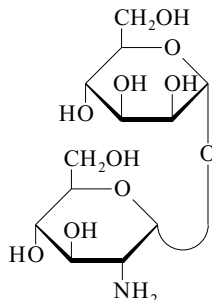
[151767-39-4]

Mp 189-190°. [α]_D²⁰ -150 (c, 2.0 in CHCl₃).

[2950-59-6]

Isbell, H.S. et al., *J.O.C.*, 1958, **23**, 1309-1319 (β -D-Pyr form, penta-Ac)Guthrie, R.D. et al., *J.C.S.*, 1960, 1598-1602, (D-isopropylidene derivs)Sprovierio, J.F. et al., *Carbohydr. Res.*, 1973, **26**, 357-363 (β -D-tetrabenzoyl, N-Ac, N-benzoyl)Ponpipom, M.M. et al., *Carbohydr. Res.*, 1980, **82**, 134-140; 141-148 (tetra-Ac, N-benzoyl, N-acyl)Linek, K. et al., *Carbohydr. Res.*, 1993, **247**, 329-335 (β -D-pyr form, pmr, cmr)Maity, S.K. et al., *Tetrahedron*, 1994, **50**, 6965-6974 (α -D-pyr-form)Isac-Garcia, J. et al., *Eur. J. Org. Chem.*, 2001, 383-390 (penta-Ac)**Mannosylglucosaminide****M-119**

Mannotrehalosamine. Antibiotic 4243 [14510-04-4]

C₁₂H₂₃NO₁₀ 341.314From *Streptomyces virginiae* var. 4243 MT/T1. Active against limited strains of gram-positive and -negative bacteria. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. pK_a 6.98.► LD₅₀ (mus, ivn) 2000 mg/kg.

Hydrochloride: [17272-81-0]

Mp 230° dec. [α]_D²³ +91.3 (c, 2 in H₂O).

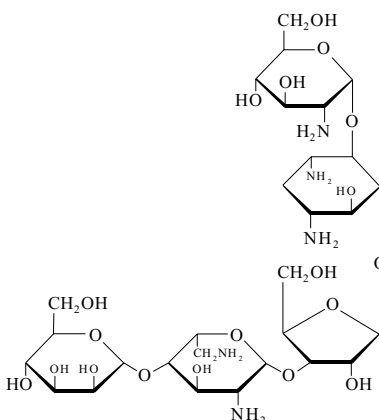
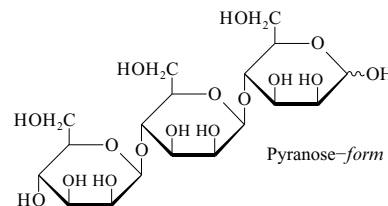
Octa-Ac:

C₂₈H₃₉NO₁₈ 677.612

Mp 91.5-93°.

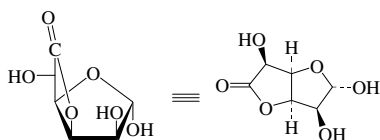
Uramoto, M. et al., *J. Antibiot.*, 1967, **20**, 236 (isol)Paulsen, H. et al., *Chem. Ber.*, 1979, **112**, 3203 (synth)Koto, S. et al., *Bull. Chem. Soc. Jpn.*, 1981, **54**, 2728 (synth, conformn, cmr)**Mannosylparomomycin****M-120**

Quintomycin A. SF 767L. Antibiotic 503-I. Antibiotic 2230C. Antibiotic SF 767L [36019-37-1]

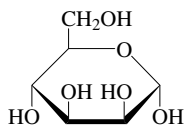
C₂₉H₅₅N₅O₁₉ 777.776Aminoglycoside antibiotic. Obt. from *Streptomyces lividus*. Active against gram-positive and -negative bacteria. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.Mp 197-203°. [α]_D²⁵ +74 (c, 1.0 in H₂O). Closely related to Lividomycin A, L-46. λ_{\max} (H₂O) (Berdy).► LD₅₀ (mus, ivn) 198 mg/kg, LD₅₀ (mus, ipr) 357 mg/kg, LD₅₀ (mus, scu) 1878 mg/kg. WK2120000Mori, T. et al., *J. Antibiot.*, 1971, **24**, 339; 1972, **25**, 317 (isol, struct)Wang, W. et al., *CA*, 1976, **85**, 166542 (isol, struct, props)**Mannotriose****M-121** β -D-Mannopyranosyl-(1→4)- β -D-mannopyranosyl-(1→4)-D-mannose, 9CI, 8CI [28173-52-6]C₁₈H₃₂O₁₆ 504.441Isol. from the partial acid and enzymic hydrolysates of several mannans e.g. ivory nut (*Phytelephas macrocarpa*), Palmyra palm (*Borassus flabellifer*), galactomannans e.g. lucerne (*Medicago sativa*), seeds of *Sesbania aegyptiaca*, glucomannans e.g. white spruce (*Picea glauca*), *Larix decidua*, jack pine (*Pinus banksiana*), *Bletilla striata* and *Narcissus tazetta*. Isol. from enzymic hydrolysates of brown copra meal, sapwood of *Pinus densiflora*. Constit. of commercial soybean syrup. Cryst. (EtOH). Mp 167° Mp 211-213° (219°). [α]_D²⁵ -21 (c, 3.0 in H₂O).

Trihydrate: Mp 137-137.5°.

Aspinall, G.O. et al., *J.C.S.*, 1958, 215; 1962, 214 (isol)Tyminski, A. et al., *J.A.C.S.*, 1960, **82**, 2823Perila, O. et al., *Can. J. Chem.*, 1961, **39**, 815Mukherjee, A.K. et al., *Can. J. Chem.*, 1961, **39**, 1408Kato, K. et al., *Carbohydr. Res.*, 1973, **29**, 469Tomoda, M. et al., *Chem. Pharm. Bull.*, 1976, **24**, 1807 (isol)Usui, T. et al., *Agric. Biol. Chem.*, 1979, **43**, 863 (cmr)Tanaka, R. et al., *CA*, 1982, **97**, 24116w (occur)Shimizu, K. et al., *Agric. Biol. Chem.*, 1983, **47**, 949 (isol)Kusakabe, I. et al., *Agric. Biol. Chem.*, 1983, **47**, 2391 (isol, props)Bhattacharyya, S.B. et al., *Phytochemistry*, 1983, **22**, 161 (isol)Mackie, W. et al., *Int. J. Biol. Macromol.*, 1986, **8**, 43 (cryst struct)Park, G.G. et al., *CA*, 1989, **110**, 171717h (occur)Takano, Y. et al., *CA*, 1991, **115**, 278391c (occur, cmr, hplc)

Mannourono-6,3-lactone**M-122** α -form $C_6H_8O_6$ 176.126 **α -D-Pyranose-form***Me glycoside*: [18486-28-7] $C_7H_{10}O_6$ 190.152Mp 146-147°. $[\alpha]_D^{25}$ +201.6 (c, 1.2 in MeOH). **β -D-Pyranose-form***Me glycoside*: [18587-77-4]Mp 169-170°. $[\alpha]_D^{25}$ -31.5 (c, 1.27 in MeOH).Schmidt, H.W.H. *et al.*, *Tet. Lett.*, 1968, 235**Mannuronic acid, 9CI, 8CI****M-123**

[6814-36-4]

 α -D-Pyranose-form $C_6H_{10}O_7$ 194.141**D-form** [1986-14-7]A hydrol. prod. of alginic acids from algae, e.g. *Macrocystis pyrifera*. V. hygroscopic cryst.Mp 165-167°. $[\alpha]_D$ -50 \rightarrow -20 (H₂O, equilib.). Crystallises spontaneously as the 6,3-lactone. The variable opt. rotn. values of the acid and its readily-formed lactone are difficult to interpret.**6,3-Lactone**: *D*-Mannuronolactone.*Mannurone*

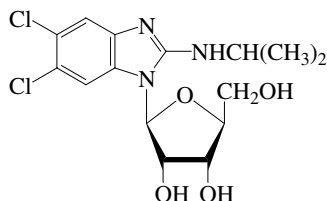
[7424-09-1]

 $C_6H_8O_6$ 176.126Cryst. (dimorph.). Mp 143-144° Mp 191-192°. $[\alpha]_D^{21}$ +57.7 \rightarrow +92.2 (30 min) (H₂O). **α -D-Pyranose-form***Me glycoside*: *Methyl α -D-mannopyranosiduronic acid* $C_7H_{12}O_7$ 208.168Monohydrate. Mp 108°. $[\alpha]_D^{19}$ +65.6 (c, 1.2 in H₂O).*Me glycoside, Me ester*: *Methyl (methyl α -D-mannopyranosid)uronate* $C_8H_{14}O_7$ 222.194Syrup. $[\alpha]_D^{25}$ +78.8 (c, 1.04 in H₂O).*Me glycoside, amide*: *Methyl α -D-mannopyranosiduronamide* $C_7H_{13}NO_6$ 207.183Prisms (Me₂CO aq.). Mp 182-183°. $[\alpha]_D^{18}$ +66 (c, 1.1 in H₂O).*Me glycoside, 2,3,4-tri-Ac*: *Methyl 2,3,4-tri-O-acetyl- α -D-mannopyranosiduronic acid* $C_{13}H_{18}O_{10}$ 334.279Syrup. $[\alpha]_D^{20}$ +41 (c, 1.1 in CHCl₃).*Me glycoside, 2,3,4-tri-Me, Me ester*:*Methyl (methyl 2,3,4-tri-O-methyl- α -D-mannopyranosid)uronate* $C_{11}H_{20}O_7$ 264.275Bp_{0.02} 118°. $[\alpha]_D^{20}$ +74 (c, 1 in MeOH). $[\alpha]_D$ +64.1 (c, 1 in CHCl₃).*Me glycoside, 6,3-lactone*: *Methyl α -D-mannopyranosidurono-6,3-lactone* $C_7H_{10}O_6$ 190.152Cryst. (MeOH). Mp 186°. $[\alpha]_D^{20}$ +80 (c, 1.1 in H₂O). **β -D-Pyranose-form****6 \rightarrow 1 Lactone, tri-Ac**: *2,3,4-Tri-O-acetyl- β -D-mannopyranurono-6,1-lactone*

[141989-99-3]

 $C_{12}H_{14}O_9$ 302.237Syrup. $[\alpha]_D^{20}$ +7.9 (c, 0.8 in CHCl₃).**L-form**Mp 143-144°. $[\alpha]_D^{27}$ -92 (H₂O).*Semicarbazone*: Mp 189°.

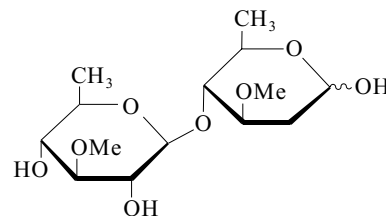
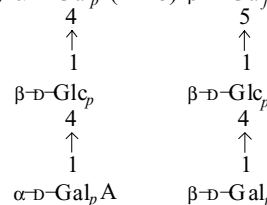
[35898-49-8]

Nelson, W.L. *et al.*, *J.A.C.S.*, 1932, **54**, 3409, (*D*-lactone, isol)Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 322; 325 (rev)Stacey, M. *et al.*, *J.C.S.*, 1944, 587 (*D*-lactone, α -D-Me pyr tri-Ac, α -D-Me pyr lactone)Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand. (U.S.)*, 1946, **37**, 43; 321 (*D*-lactone, isol, struct)Edington, R.A. *et al.*, *J.C.S.*, 1955, 2281, (α -D-Me pyr amide)Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 35 (*D*-lactone, isol)Schmidt, H.W.H. *et al.*, *Tet. Lett.*, 1967, 235, (α -D-Me pyr Me ester)Morris, E.R. *et al.*, *J.C.S. Perkin 2*, 1975, 1418 (cd)Vogel, C. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 287-303 (6,1-lactone tri-Ac)Shalaby, M.A. *et al.*, *Carbohydr. Res.*, 1994, **265**, 197 (cryst struct, lactone)**Maribavir, BAN, INN, USAN** **M-124****5,6-Dichloro-N-(1-methylethyl)-1-ribofuranosyl-1H-benzimidazol-2-amine, 9CI.***Benzimidavir*. 1263 W 94 $C_{15}H_{19}Cl_2N_3O_4$ 376.238 **β -L-form** [176161-24-3]

Antiviral agent. Used in the treatment of cytomegalovirus infections.

Solid. $[\alpha]_D^{20}$ -22.4 (c, 0.5 in DMF).Pharmacol. active isomer. λ_{max} 260 (ϵ 8300); 275 (ϵ 1800); 304 (ϵ 9500) (pH 7).

[176161-49-2]

Koszalka, G.W. *et al.*, *Antiviral Res.*, 1996, **30**, A43 (pharmacol)Pat. Coop. Treaty (WIPO), 1996, 96 01 833, (Wellcome); *CA*, **124**, 317788v (synth, pharmacol)Graul, A. *et al.*, *Drugs of the Future*, 1997, **22**, 707-710 (rev)Zacny, V.L. *et al.*, *J. Virol.*, 1999, **73**, 7271-7277 (pharmacol)Lu, H. *et al.*, *Curr. Opin. Invest. Drugs*, 2004, **5**, 898-907 (rev)**Marsectobiose****M-125****2,6-Dideoxy-4-O-(6-deoxy-3-O-methyl- β -D-glucopyranosyl)-3-O-methyl-D-arabinohexose, 9CI, 8CI**
[25153-15-5] $C_{14}H_{26}O_8$ 322.355Isol. from *Marsdenia erecta*.Mp 136-140°. $[\alpha]_D^{25}$ -10.5 (c, 1.1 in H₂O).Saner, A. *et al.*, *Helv. Chim. Acta*, 1969, **52**, 1655; 1970, **53**, 221 (isol, struct, pmr, ms)**Melanocidin A****M-126** $\rightarrow 3)-\alpha$ -D-Galp_p-(1 \rightarrow 3)- β -D-Galp_f-(1 \rightarrow Glycoside antibiotic, struct. not fully known. Isol. from *Nocardioideis* sp. 1681J. Inhibitor of 5'-Nucleotidase. Also shows antitumour activity. Powder. Sol. H₂O, DMSO; poorly sol. MeOH, hexane.Mp 300°. $[\alpha]_D^{20}$ +40 (c, 0.5 in H₂O).Ogawara, H. *et al.*, *J. Antibiot.*, 1985, **38**, 587; 592 (isol, uv, ir, pmr, cmr)**Melanocidin B****M-127** $[\rightarrow 3)-\alpha$ -D-Galp(1 \rightarrow 3) β -D-Galp(1 \rightarrow 4) α -D-Galp(1 \rightarrow 3)- β -D-Galp(1 \rightarrow)](structural unit)

Glycoside antibiotic, struct. partly known.

Isol. from *Nocardioideis* sp. 1681J.Inhibitor of 5'-Nucleotidase. Also shows antitumour activity. Powder. Sol. H₂O, DMSO; poorly sol. MeOH, hexane.Mp 300°. $[\alpha]_D^{20}$ +2 (c, 1 in H₂O).Ogawara, H. *et al.*, *J. Antibiot.*, 1985, **38**, 587; 592 (isol, uv, ir, pmr, cmr)**Melastin****M-128**Glycopeptide; struct. unknown. Isol. from an unidentified *Streptomyces* sp. Selectively inhibits leukaemia cell growth. Sol. H₂O, MeOH; poorly sol. EtOH, butanol, EtOAc.

Magae, J. *et al.*, *Biosci., Biotechnol., Biochem.*, 1993, **57**, 969-972 (*isol*)

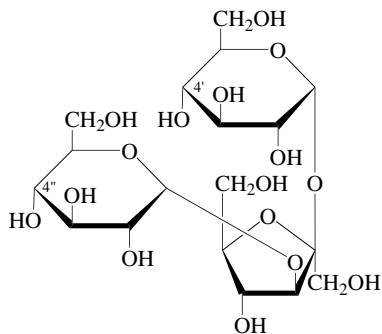
Melezitose, 8CI**M-129**

O- α -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-fructofuranosyl α -D-glucopyranoside, 9CI.

Melizitose

[597-12-6]

[10030-67-8]



$C_{18}H_{32}O_{16}$ 504.441

Constit. of honey and of the sweet exudates of many plants. Dihydrate.

Mp 153-154°. [α]_D²⁰ +88.2 (H₂O).

Dimorphic.

Undeca-Ac:

$C_{40}H_{54}O_{27}$ 966.85

Mp 117°. [α]_D +104 (c, 1.0 in CHCl₃).

Undeca-Me:

$C_{29}H_{54}O_{16}$ 658.736

Bp_{0.01} 236°. [α]_D +114 (MeOH).

4',4''-Di-O- β -D-glucopyranosyl: **Digluco-melezitose**

$C_{30}H_{52}O_{26}$ 828.725

Constit. of the honeydew from *Bemisia argentifolii* feeding on cotton.

Leitch, G.C. *et al.*, *J.C.S.*, 1927, 588

Hudson, C.S. *et al.*, *Adv. Carbohydr. Chem.*, 1946, **2**, 2 (*rev*)

Richtmyer, N.K. *et al.*, *J.O.C.*, 1946, **11**, 610 (*struct*)

Hehre, E.J. *et al.*, *Arch. Biochem. Biophys.*, 1952, **36**, 158 (*occur*)

Moor, J. *et al.*, *Org. Mass Spectrom.*, 1974, **9**, 903 (*ms*)

Anteunis, M. *et al.*, *Carbohydr. Res.*, 1975, **44**, 101 (*pmr*)

Avenel, D. *et al.*, *Acta Cryst. B*, 1976, **32**, 2598 (*cryst struct*)

Bequart, J. *et al.*, *Carbohydr. Res.*, 1982, **111**, 9 (*cryst struct*)

Wei, Y.A. *et al.*, *J. Agric. Food Chem.*, 1997, **45**, 3481-3486 (*Digluco-melezitose*)

Meliacin**M-130**

[131641-50-4]

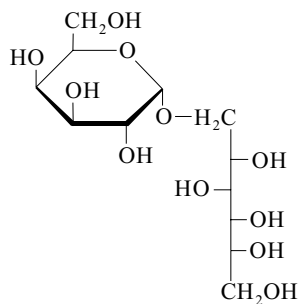
Glycoprotein; a cyclic peptide, MW 2200-2300, with a single glucose unit. Isol. from *Melia azederach*. Shows antiviral activity.

Andrei, G. *et al.*, *Antiviral Chem. Chemother.*, 1994, **5**, 105-110 (*isol*)

Melibiitol**M-131**

6-O- α -D-Galactopyranosyl-D-glucitol, 9CI, 8CI

[497-83-6]



$C_{12}H_{24}O_{11}$ 344.315

Mp 173°. [α]_D²⁵ +116 (H₂O).

Nonabenzoyl:

$C_{75}H_{60}O_{20}$ 1281.287

Mp 157°. [α]_D²⁵ +123 (CHCl₃).

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1940, **62**, 2553 (*synth*)

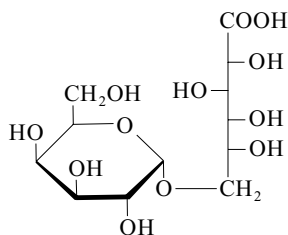
Percival, E. *et al.*, *Carbohydr. Res.*, 1967, **4**, 441 (*glc*)

Havlicek, J. *et al.*, *Chromatographia*, 1974, **7**, 361; *CA*, **81**, 105856j (*chromatog*)

Melibiononic acid, 9CI**M-132**

6-O- α -D-Galactopyranosyl-D-gluconic acid, 9CI, 8CI

[21675-38-7]



$C_{12}H_{22}O_{12}$ 358.299

Formed by the action of Paracolon bacteria on Lactose, L-13. Obt. as Ca salt.

Me ester, octa-Me: Methyl octa-O-methylmelibionate

$C_{21}H_{40}O_{12}$ 484.54

Oil. Bp_{0.06} 173-175°. [α]_D¹³ +106.4 (H₂O).

Zemplén, G. *et al.*, *Ber.*, 1927, **60**, 923 (*struct*)

Haworth, W.N. *et al.*, *J.C.S.*, 1927, 3146 (*struct*)

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1930, **86**, 403 (*Ca salt*)

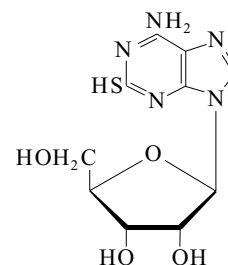
Eddy, B.P. *et al.*, *Nature (London)*, 1958, **181**, 904 (*bacterial synth*)

Samuelson, O. *et al.*, *J. Chromatogr.*, 1963, **12**, 236 (*chromatog*)

2-Mercaptadenosine**M-133**

1,2-Dihydro-2-thioxoadenosine, 9CI. 2-Thioadenosine

[43157-50-2]



$C_{10}H_{13}N_5O_4S$ 299.31

Mp 196-199° dec. [α]_D²⁵ -43.6 (c, 0.5 in DMSO).

5'-Phosphate: 1,2-Dihydro-2-thioxo-5'-adenylic acid, 9CI. 2-Mercapto-5'-adenylic acid. 2-Thio-5'-adenylic acid [59924-57-1]

$C_{10}H_{14}N_5O_7PS$ 379.29

Powder. Dimerises very easily by aerial oxidn.

S-Me: 2-(Methylthio)adenosine, 9CI

[4105-39-9]

$C_{11}H_{15}N_5O_4S$ 313.337

Mp 228-229.5°.

S-Me, 5'-phosphate: 2-(Methylthio)-5'-adenylic acid, 9CI. 2-(Methylthio)-AMP

[22140-20-1]

$C_{11}H_{16}N_5O_7PS$ 393.316

Specific inhibitor of platelet aggregation. Mp 192-195° dec.

S-Me, 5'-triphosphate: [43170-89-4]

[50880-70-1]

$C_{11}H_{18}N_5O_{13}P_3S$ 553.276

P₂ purinoreceptor agonist.

S-Me, 2',3',5'-tri-Ac:

$C_{17}H_{21}N_5O_7S$ 439.448

Cryst. (EtOAc/petrol). Mp 159-161°.

S-Me, N⁶-(3-methyl-1-butenyl): N-(3-Methyl-1-butenyl)-2-(methylthio)adenosine, 9CI

[39832-56-9]

$C_{16}H_{23}N_5O_4S$ 381.455

Modified nucleoside found in tRNA's.

S-Me, N⁶-(3-methyl-2-butenyl): N-(3-Methyl-2-butenyl)-2-(methylthio)adenosine, 9CI. N⁶-Isopentenyl-2-(methylthio)adenosine

[20859-00-1]

[75869-71-5]

$C_{16}H_{23}N_5O_4S$ 381.455

Nucleoside present at the 37-position of the phenylalanine tRNA in most eubacteria. Cytokinin. Cryst. (EtOH). Mp 198.5-201°.

Tener, G.M. *et al.*, *J.A.C.S.*, 1961, **83**, 159

(*synth*, S-Me phosphate)

Michael, F. *et al.*, *Nature (London)*, 1969, **222**, 1073 (*synth*, S-Me phosphate)

U.K. Pat., 1971, 1 226 699; *CA*, **75**, 20922d

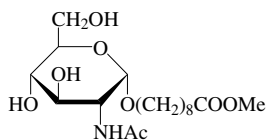
(*synth*, S-Me phosphate)

Fleysher, M.H. *et al.*, *J. Med. Chem.*, 1972, **15**, 187 (S-Me N-3-Me-2-butenyl, pharmacol)

Pinkerton, T.C. *et al.*, *Nature (London)*, 1972, **240**, 88-90 (S-Me N-3-Me-1-butenyl)

Paulsen, H. *et al.*, *Carbohydr. Res.*, 1982, **104**, 195 (*synth*, *pmr*)

8-(Methoxycarbonyloctyl 2-acetamido-2-deoxyglucopyranoside M-139



α -D-form

$C_{18}H_{33}NO_8$ 391.461
Intermediate for synth. of semi-synthetic trisaccharide antigens.

α -D-form

Mp 139°. $[\alpha]_D +112$ (MeOH).

3,4,6-Tri-Ac:

$C_{24}H_{39}NO_{11}$ 517.572
 $[\alpha]_D^{25} +78$ (MeOH).

4,6-O-Benzylidene: 8-(Methoxycarbonyloctyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-glucopyranoside
 $C_{25}H_{37}NO_8$ 479.569
Mp 138°. $[\alpha]_D +61$ (MeOH).

β -D-form

Mp 156°. $[\alpha]_D -21$ (MeOH).

3,4,6-Tri-Ac:

$C_{24}H_{39}NO_{11}$ 517.572
Mp 102°. $[\alpha]_D -10$ (CHCl₃).

4,6-O-Benzylidene: 8-(Methoxycarbonyloctyl 2-acetamido-4,6-O-benzylidene-2-deoxy- β -D-glucopyranoside
 $C_{25}H_{37}NO_8$ 479.569
Cryst. (EtOH/petrol). Mp 221°. $[\alpha]_D -56$ (c, 1.3 in DMF).

Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4076 (β -D-benzylidene)

Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **103**, C12 (α -D-benzylidene, β -D-benzylidene)

3-(Methoxycarbonyl)propyl glucosinolate M-140

1-Thio- β -D-glucopyranose 1-[5-methoxy-5-oxo-N-(sulfooxy)pentanimidate], 9CI.

Glucosylpestrin. 4-Methoxy-4-oxobutyl glucosinolate
[27303-29-3]
 $MeOOCCH_2CH_2CH_2C(SGlc)=NO-SO_3H$

$C_{12}H_{21}NO_{11}S_2$ 419.43

Isol. from *Erysimum odoratum* seeds.

Tetra-Ac:

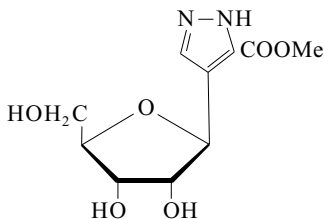
Cryst. + 1H₂O (EtOH) (as K salt). Mp 188-190° dec. (K salt). $[\alpha]_D^{23} -18$ (c, 1.7 in H₂O).

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1957, **11**, 577; 1969, **23**, 2548 (*isol*)

Chisholm, M.D. *et al.*, *Phytochemistry*, 1973, **12**, 605 (*biosynth*)

3(5)-Methoxycarbonyl-4-ribofuranosylpyrazole M-141

Methyl 4-ribofuranosyl-1H-pyrazole-3-carboxylate, 9CI



$C_{10}H_{14}N_2O_6$ 258.23

β -D-form [50866-58-5]

Cryst. (EtOH). Mp 186-188°. $[\alpha]_D +10.6$ (c, 0.56 in H₂O).

5-Trityl, 2,3-O-isopropylidene:

[57016-96-3]
 $C_{32}H_{32}N_2O_6$ 540.615
Cryst. (MeOH). Mp 120-125° (as methanolate).

2,3,5-Tribenzyl: [59463-90-0]

$C_{31}H_{32}N_2O_6$ 528.604
 $[\alpha]_D^{25} +95.1$ (c, 0.8 in CHCl₃).

Albrecht, H.P. *et al.*, *J.O.C.*, 1974, **39**, 2176, (β -D-form, *synth*)

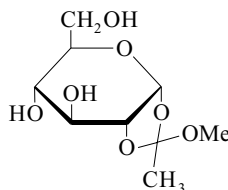
de Las Heras, F.G. *et al.*, *J.O.C.*, 1976, **41**, 84 (*isopropylidene trityl*)

Gupta, C.M. *et al.*, *J.O.C.*, 1976, **41**, 3000, (β -D-form, β -D-tribenzyl)

Buchanan, J.G. *et al.*, *Carbohydr. Res.*, 1977, **55**, 225 (β -D-tribenzyl)

1,2-O-(1-Methoxyethylidene)-glucopyranose, 9CI M-142

Glucopyranose 1,2-(O-methyl orthoacetate)



$C_9H_{16}O_7$ 236.221

α -D-form [55865-04-8]

3,4,6-Tri-Ac: 3,4,6-Tri-O-acetyl-1,2-O-(1-methoxyethylidene)- α -D-glucopyranose
[3254-16-8]

$C_{15}H_{22}O_{10}$ 362.333
Mp 92-94°. $[\alpha]_D +36$ (c, 0.8 in CHCl₃).

4,6-O-Benzylidene, 3-Ac: 3-O-Acetyl-4,6-O-benzylidene-1,2-O-(1-methoxyethylidene)- α -D-glucopyranose, 9CI
 $C_{18}H_{22}O_8$ 366.367
Cryst. (Et₂O). Mp 148-149°. $[\alpha]_D^{20} +36$ (c, 0.7 in CHCl₃).

4,6-O-Benzylidene, 3-Me: 4,6-O-Benzylidene-1,2-O-(1-methoxyethylidene)-3-O-methyl- α -D-glucopyranose
 $C_{17}H_{22}O_7$ 338.357
Needles (Et₂O). Mp 130-131°. $[\alpha]_D^{18} -63.8$ (c, 0.7 in CHCl₃).

3,4,6-Tribenzyl: 3,4,6-Tri-O-benzyl-1,2-O-(1-methoxyethylidene)- α -D-glucopyranose, 9CI
[51532-75-3]

$C_{30}H_{34}O_7$ 506.594

Syrup. $[\alpha]_D +36$ (c, 1.0 in CHCl₃).

Korytnyk, W. *et al.*, *J.C.S.*, 1959, 636 (*synth*, α -D-benzylidene Ac, α -D-benzylidene Me)

Kochetkov, N.K. *et al.*, *Tetrahedron*, 1967, **23**, 693 (α -D-tri-Ac)

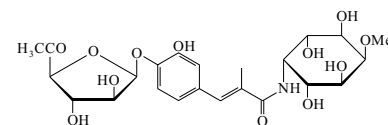
Dick, W.E. *et al.*, *Carbohydr. Res.*, 1972, **23**, 229 (α -D-benzylidene Ac, *pmr*)

Borén, H.B. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 2639 (α -D-tribenzyl)

Ogawa, T. *et al.*, *Carbohydr. Res.*, 1976, **51**, C13 (α -D-tri-Ac)

Methoxyhygromycin M-143

[101313-71-7]



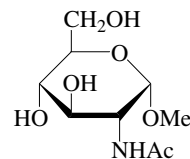
$C_{23}H_{31}NO_{12}$ 513.497

Loosely named (see Hygromycin A, H-201). Isol. from *Streptomyces* sp. no. 207. Inhibitor of *E. coli* haemagglutination activity. Powder.
Mp 133-136°.

Yoshida, M. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 143

Methyl 2-acetamido-2-deoxyglucopyranoside M-144

Methyl N-acetyl glucosaminide



α -D-form

$C_9H_{17}NO_6$ 235.236

α -D-form [6082-04-8]

Mp 189°. $[\alpha]_D +118$ (c, 0.9 in H₂O).

3,4,6-Tri-Ac: Methyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy- α -D-glucopyranoside
[2595-39-3]

$C_{15}H_{23}NO_9$ 361.348
Mp 107-108° Mp 132°. $[\alpha]_D^{25} +100.2$ (c, 1.0 in CHCl₃). $[\alpha]_D +44.6$ (CHCl₃).

6-Mesyl: Methyl 2-acetamido-2-deoxy-6-O-mesyl- α -D-glucopyranoside
[41431-94-1]

$C_{10}H_{19}NO_8S$ 313.328
Cryst. (MeOH/Et₂O). Mp 153-153.5°. $[\alpha]_D^{20} +120$ (c, 0.5 in MeOH).

6-Tosyl: Methyl 2-acetamido-2-deoxy-6-O-tosyl- α -D-glucopyranoside
[53756-24-4]

$C_{16}H_{23}NO_8S$ 389.426
Needles (CHCl₃/hexane/toluene). Mp 70-73°. $[\alpha]_D^{23} +68$ (c, 2.0 in CHCl₃).

6-Tosyl, 3,4-di-Ac: Methyl 2-acetamido-3,4-di-O-acetyl-2-deoxy-6-O-tosyl- α -D-glucopyranoside
[53756-25-5]

$C_{20}H_{27}NO_{10}S$ 473.5
 $[\alpha]_D^{25} +86$ (c, 0.6 in $CHCl_3$).

4,6-O-Benzylidene, 3-mesyl: Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy-3-O-mesyl- α -D-glucopyranoside [6619-03-0]
 $C_{17}H_{23}NO_8S$ 401.437
 Cryst. (Me_2CO). Mp 213-214° dec. $[\alpha]_D^{24} +42$ (c, 1.3 in $CHCl_3$).

3-Me: See Methyl 2-acetamido-2-deoxy-3-O-methylglucopyranoside, M-145

4-Me: See Methyl 2-acetamido-2-deoxy-4-O-methylglucopyranoside, M-146

6-Me: See Methyl 2-acetamido-2-deoxy-6-O-methylglucopyranoside, M-147

3,6-Anhydro: Methyl 2-acetamido-3,6-anhydro-2-deoxy- α -D-glucopyranoside
 $C_9H_{15}NO_5$ 217.221
 Plates ($EtOAc$). Mp 150-152°. $[\alpha]_D^{23} +130$ (c, 0.5 in $CHCl_3$).

3,6-Anhydro, 4-Ac: Methyl 2-acetamido-4-O-acetyl-3,6-anhydro-2-deoxy- α -D-glucopyranoside
 $C_{11}H_{17}NO_6$ 259.258
 Needles ($EtOH/Et_2O$). Mp 120-122.5°. $[\alpha]_D^{23} +20$ (c, 0.1 in $CHCl_3$).

β -D-form [3946-01-8]

Mp 200°. $[\alpha]_D^{20} -41.7$ (c, 1.2 in H_2O).

3-Ac: Methyl 2-acetamido-3-O-acetyl-2-deoxy- β -D-glucopyranoside [50605-08-8]
 $C_{11}H_{19}NO_7$ 277.274
 Needles ($EtOH$). Mp 162-164°. $[\alpha]_D^{20} -67$ (c, 0.5 in $MeOH$).

3,4,6-Tri-Ac: Methyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy- β -D-glucopyranoside [2771-48-4]
 $C_{15}H_{23}NO_9$ 361.348
 Cryst. ($EtOH/Et_2O$). Mp 160°. $[\alpha]_D^{27} -21$ (c, 2.0 in $EtOH$).

3,4,6-Tribenzyl: Methyl 2-acetamido-3,4,6-tri-O-benzyl-2-deoxy- β -D-glucopyranoside [10583-66-1]
 $C_{30}H_{35}NO_6$ 505.61
 Cryst. (Et_2O /hexane). Mp 158-159°. $[\alpha]_D^{20} +17.5$ (c, 1.0 in $CHCl_3$).

3,4,6-Tris(4-nitrobenzoyl): Prisms ($MeOH$). Mp 126-127°. $[\alpha]_D^{20} -19$ (c, 1.0 in $CHCl_3$).

4,6-O-Isopropylidene, 3-Ac: Methyl 2-acetamido-3-O-acetyl-2-deoxy-4,6-O-isopropylidene- β -D-glucopyranoside [50605-07-7]
 $C_{14}H_{23}NO_7$ 317.338
 Cryst. ($Et_2O/EtOH$). Mp 197-198°. $[\alpha]_D^{20} -75$ (c, 1.0 in $CHCl_3$).

4,6-Di-Me: See Methyl 2-acetamido-2-deoxy-4-O-methylglucopyranoside, M-146

3,4,6-Tri-Me: See Methyl 2-acetamido-2-deoxy-6-O-methylglucopyranoside, M-147

Foster, A.B. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 247 (rev. derivs)

Kuhn, R. *et al.*, *Chem. Ber.*, 1953, **86**, 466, (α -D-form, synth, α -D-tri-Ac)

Jeanloz, R.W. *et al.*, *J.A.C.S.*, 1957, **79**, 2591, (α -D-benzylidene mesyl)

Conchie, J. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 332 (β -D-form, synth)

Shulman, M.L. *et al.*, *Carbohydr. Res.*, 1973, **27**, 141 (α -D-mesyl)

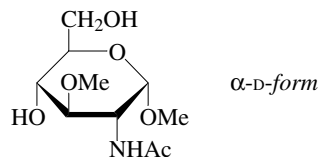
Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1973, **29**, 223 (β -D-Ac, β -D-Ac isopropylidene, β -D-tri-Ac)

Jacquinet, J.-C. *et al.*, *Carbohydr. Res.*, 1974, **32**, 101 (β -D-form, synth, β -D-trisnitrobenzoyl, β -D-tribenzyl)

Walker, E. *et al.*, *Carbohydr. Res.*, 1974, **35**, 270 (α -D-tosyl, α -D-tosyl di-Ac, α -D-anhydro, α -D-anhydro Ac)

Yamaoka, N. *et al.*, *Chem. Pharm. Bull.*, 1974, **22**, 2196 (α -D-form, β -D-form, cmr)

Methyl 2-acetamido-2-deoxy-3-O-methylglucopyranoside M-145



$C_{10}H_{19}NO_6$ 249.263

α -D-form [10427-79-9] Inhibitor of wheat-germ agglutinin. Mp 211°. $[\alpha]_D +116$ (H_2O).

4,6-Di-Ac: Methyl 2-acetamido-4,6-di-O-acetyl-2-deoxy-3-O-methyl- α -D-glucopyranoside
 $C_{14}H_{23}NO_8$ 333.338
 Mp 167-168°. $[\alpha]_D +82$ ($CHCl_3$).

4-Benzoyl: Methyl 2-acetamido-4-O-benzoyl-2-deoxy-3-O-methyl- α -D-glucopyranoside [10368-83-9]
 $C_{17}H_{23}NO_7$ 353.371
 Mp 143-147°. $[\alpha]_D +20$ ($CHCl_3$).

4,6-Dibenzoyl: Methyl 2-acetamido-4,6-di-O-benzoyl-2-deoxy-3-O-methyl- α -D-glucopyranoside [18944-95-1]
 $C_{24}H_{27}NO_8$ 457.479
 Mp 123-125°.

6-Tosyl: Methyl 2-acetamido-2-deoxy-3-O-methyl-6-O-tosyl- α -D-glucopyranoside [53657-50-4]
 $C_{17}H_{25}NO_8S$ 403.452
 Mp 159-160°. $[\alpha]_D +99$ (c, 0.2 in $CHCl_3$).

4,6-O-Benzylidene: Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy-3-O-methyl- α -D-glucopyranoside
 $C_{17}H_{23}NO_6$ 337.372
 Mp 277-279°. $[\alpha]_D +39$ ($CHCl_3$).

4-Me: Methyl 2-acetamido-2-deoxy-3,4-di-O-methyl- α -D-glucopyranoside
 $C_{11}H_{21}NO_6$ 263.29
 Needles ($EtOH/Et_2O$). Mp 192-193°. $[\alpha]_D +152$ (c, 0.45 in $MeOH$).

4-Me, 6-Ac: Methyl 2-acetamido-6-O-acetyl-2-deoxy-3,4-di-O-methyl- α -D-glucopyranoside [55976-34-6]
 $C_{13}H_{23}NO_7$ 305.327
 Mp 171°. $[\alpha]_D +123$ ($CHCl_3$).

4-Me, 6-mesyl: Methyl 2-acetamido-2-deoxy-6-O-mesyl-3,4-di-O-methyl- α -D-glucopyranoside [41341-96-2]
 $C_{12}H_{23}NO_8S$ 341.382
 Cryst. ($CHCl_3/Et_2O$). Mp 180-181°. $[\alpha]_D^{20} +117$ (c, 0.5 in $CHCl_3$).

6-Me: Methyl 2-acetamido-2-deoxy-3,6-di-O-methyl- α -D-glucopyranoside
 $C_{11}H_{21}NO_6$ 263.29
 Mp 161-162°. $[\alpha]_D +129$ ($MeOH$).

6-Me, 4-Ac: Methyl 2-acetamido-4-O-acetyl-2-deoxy-3,6-di-O-methyl- α -D-glucopyranoside
 $C_{13}H_{23}NO_7$ 305.327
 Mp 163-164°. $[\alpha]_D +116$ ($CHCl_3$).

6-Me, 4-benzoyl: Methyl 2-acetamido-4-O-benzoyl-2-deoxy-3,6-di-O-methyl- α -D-glucopyranoside
 $C_{18}H_{25}NO_7$ 367.398
 Mp 139-140°. $[\alpha]_D +48$ ($CHCl_3$).

4,6-Di-Me: Methyl 2-acetamido-2-deoxy-3,4,6-tri-O-methyl- α -D-glucopyranoside [7380-60-1]
 $C_{12}H_{23}NO_6$ 277.317
 Cryst. ($EtOAc$). Mp 150°. $[\alpha]_D^{20} +104.3$ (c, 0.92 in H_2O).

4-Benzyl: Methyl 2-acetamido-4-O-benzyl-2-deoxy-3-O-methyl- α -D-glucopyranoside
 $C_{17}H_{25}NO_6$ 339.388
 Mp 198-200°. $[\alpha]_D +101$ ($CHCl_3$).

6-Trityl: Methyl 2-acetamido-2-deoxy-3-O-methyl-6-O-trityl- α -D-glucopyranoside
 $C_{29}H_{33}NO_6$ 491.583
 Prismatic needles ($MeOH$). Mp 206-207°. $[\alpha]_D^{26} +53$ (c, 1.01 in $CHCl_3$).

6-Trityl, 4-Me: Methyl 2-acetamido-2-deoxy-3,4-di-O-methyl-6-O-trityl- α -D-glucopyranoside
 $C_{30}H_{35}NO_6$ 505.61
 Prismatic needles (Et_2O). Mp 232-233°. $[\alpha]_D^{27} +88$ (c, 1.4 in $CHCl_3$).

Cutler, W.O. *et al.*, *J.C.S.*, 1937, 1979 (α -D-4,6-di-Me)

Jeanloz, R.W. *et al.*, *J.A.C.S.*, 1952, **74**, 4597, (α -D-6-trityl, α -D-4-Me, α -D-4-Me trityl, α -D-4,6-di-Me)

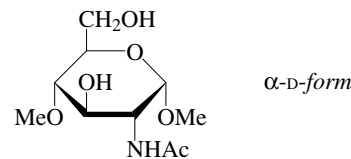
Jeanloz, R.W. *et al.*, *Adv. Carbohydr. Chem.*, 1958, **13**, 189 (rev. derivs)

Allen, A.K. *et al.*, *Biochem. J.*, 1973, **131**, 155 (pharmacol)

Shulman, M.L. *et al.*, *Carbohydr. Res.*, 1973, **27**, 141 (α -D-4-Me mesyl)

Perry, M.B. *et al.*, *Can. J. Chem.*, 1974, **52**, 2425 (α -D-6-tosyl)

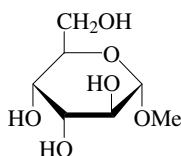
Methyl 2-acetamido-2-deoxy-4-O-methylglucopyranoside M-146



$C_{10}H_{19}NO_6$ 249.263

α -D-form [41137-07-9] Inhibitor of wheat-germ agglutinin. Mp 232-233°. $[\alpha]_D +157$ ($MeOH$).

- Brimacombe, J.S. *et al.*, *J.C.S.(C)*, 1967, 1503; 1970, 1273 (α -D-pyr 3-benzyl 2-Me, α -D-pyr benzyl Me tosyl, α -D-pyr tosyl, α -D-pyr-isopropylidene tosyl)
 Williams, J.M. *et al.*, *Carbohydr. Res.*, 1970, **13**, 281 (α -D-pyr, β -D-pyr, α -D-fur, β -D-fur, pmr)
 Guthrie, R.D. *et al.*, *J.C.S.(C)*, 1970, 1961
 Evans, M.E. *et al.*, *Carbohydr. Res.*, 1972, **25**, 43 (α -D-pyr, α -D-fur, β -D-fur)
 Kondo, Y. *et al.*, *Agric. Biol. Chem.*, 1974, **38**, 2553 (β -D-pyr-benzylidene tosyl)
 Dick, W.E. *et al.*, *Carbohydr. Res.*, 1975, **42**, 55 (α -D-pyr diethylidene)
 Kawana, M. *et al.*, *Tet. Lett.*, 1975, 3395 (α -D-fur-cyclohexylidene, α -D-fur cyclohexylidene mesyl, β -D-fur-cyclohexylidene mesyl)
 de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1977, **34**, 179 (cyclic acetals, rev)
 Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr)
 Colombo, D. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 611-617 (α -D-Pyr, enzymic synth)
 Kim, M. *et al.*, *Carbohydr. Res.*, 1999, **320**, 244-249 (synth, derivs)

Methyl altroside**M-149** α -D-Pyranose-form $C_7H_{14}O_6$ 194.184 **α -D-Pyranose-form** [29411-57-2]

- Mp 107-108°. [α]_D +125 (c, 3.0 in H₂O).
Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- α -D-altropyranoside [51897-78-0]
 $C_{15}H_{22}O_{10}$ 362.333
 Prisms (CHCl₃/Et₂O/2-methylbutane). Mp 88-89°. [α]_D +66 (c, 5 in CHCl₃).
3,4-O-Isopropylidene: Methyl 3,4-O-isopropylidene- α -D-altropyranoside [10230-25-8]
 $C_{10}H_{18}O_6$ 234.249
 Mp 61-62°. [α]_D +103 (c, 1.66 in H₂O).
4,6-O-Isopropylidene: Methyl 4,6-O-isopropylidene- α -D-altropyranoside [50615-71-9]
 $C_{10}H_{18}O_6$ 234.249
 Mp 167-169°. [α]_D +125 (c, 0.61 in H₂O).
4,6-O-Isopropylidene, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,6-O-isopropylidene- α -D-altropyranoside [50615-72-0]
 $C_{14}H_{22}O_8$ 318.323
 Mp 134-135°. [α]_D +62 (c, 1.25 in CHCl₃).
4,6-O-Benzylidene: See Methyl 4,6-O-benzylidenealtropyranoside, M-156
2-Me, 3-tosyl: Methyl 2-O-methyl-3-O-tosyl- α -D-altropyranoside
 $C_{15}H_{22}O_8S$ 362.4
 Mp 118°. [α]_D +88.1 (c, 1.04 in CHCl₃).
2-Me, 4,6-dibenzoyl, 3-tosyl: Methyl 4,6-di-O-benzoyl-2-O-methyl-3-O-tosyl- α -D-altropyranoside
 $C_{29}H_{30}O_{10}S$ 570.616
 Mp 113°. [α]_D +94.69 (c, 1.10 in CHCl₃).

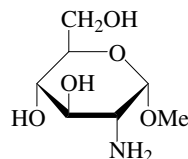
- 2-Me, 6-trityl, 4-Ac, 3-tosyl*: Methyl 4-O-acetyl-2-O-methyl-3-O-tosyl-6-O-trityl- α -D-altropyranoside
 $C_{36}H_{38}O_9S$ 646.757
 Mp 165°. [α]_D +72.4 (c, 1.00 in CHCl₃).
2-Me, 4,6-O-ethylidene: Methyl 4,6-O-ethylidene-2-O-methyl- α -D-altropyranoside [38088-51-6]
 $C_{10}H_{18}O_6$ 234.249
 Mp 104-105°.
2,3-Dibenzyl: Methyl 2,3-di-O-benzyl- α -D-altropyranoside [33164-03-3]
 $C_{21}H_{26}O_6$ 374.433
 Bp_{0.01} 160-165°. [α]_D +80.5 (c, 1.25 in CHCl₃).
2,3-Dibenzyl, 6-tosyl: Methyl 2,3-di-O-benzyl-6-O-tosyl- α -D-altropyranoside [33159-48-7]
 $C_{28}H_{32}O_8S$ 528.622
 Cryst. (Et₂O/petrol). Mp 103°. [α]_D +50.7 (c, 1.38 in CHCl₃).
6-Trityl, 2-benzoyl, 3,4-dimesyl: Methyl 2-O-benzoyl-3,4-di-O-mesyl-6-O-trityl- α -D-altropyranoside [51385-41-2]
 $C_{35}H_{36}O_{11}S_2$ 696.795
 Cryst. (Et₂O). Mp 194° dec. [α]_D -13.9 (c, 6.0 in CHCl₃).

 β -D-Pyranose-form

- Tetra-Ac*: Methyl 2,3,4,6-tetra-O-acetyl- β -D-altropyranoside [34254-54-1]
 $C_{15}H_{22}O_{10}$ 362.333
 Mp 93-94°. [α]_D -60 (c, 1.5 in CHCl₃).
 Robertson, G.J. *et al.*, *J.C.S.*, 1940, 319 (α -D-pyr Me dibenzoyl tosyl, α -D-pyr Me Ac tosyl trityl, α -D-pyr Me tosyl)
 Richtmyer, N.K. *et al.*, *J.A.C.S.*, 1941, **63**, 1727 (α -D-pyr, α -D-pyr tetra-Ac, β -D-pyr tetra-Ac)
 Richtmyer, N.K. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 107 (α -D-pyr)
 Giudici, T.A. *et al.*, *Chem. Comm.*, 1970, 690 (α -D-pyr, hydrol)
 Spichtig, A.M. *et al.*, *Helv. Chim. Acta*, 1971, **54**, 1191 (α -D-pyr dibenzyl, α -D-pyr dibenzyl tosyl)
 Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1972, 1670 (α -D-pyr ethylidene Me)
 Holder, N.L. *et al.*, *Can. J. Chem.*, 1973, **51**, 3357 (α -D-pyr benzoyl dimesyl trityl)
 Evans, M.E. *et al.*, *Carbohydr. Res.*, 1973, **30**, 215 (α -D-pyr, α -D-3,4-isopropylidene, α -D-4,6-isopropylidene)
 Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr)

Methyl 2-amino-2-deoxyglucopyranoside**M-150**

Methyl glucosamine

 α -D-form $C_7H_{15}NO_5$ 193.199 **α -D-form** [4704-14-7]

- Cryst. (EtOH). Mp 154-160°. [α]_D +158.5 (c, 1.06 in H₂O).
N-Ac: See Methyl 2-acetamido-2-deoxyglucopyranoside, M-144
N-Benzoyl: See Methyl 2-benzamido-2-deoxyglucopyranoside, M-154
4,6-O-Benzylidene: Methyl 2-amino-4,6-O-benzylidene-2-deoxy- α -D-glucopyranoside [10396-58-4]
 $C_{14}H_{19}NO_5$ 281.308
 Needles (EtOH). Mp 175°. [α]_D +112.5 (c, 1.0 in CHCl₃).
4,6-O-Benzylidene, 2N,3-dimesyl: [20759-16-4]
 $C_{16}H_{23}NO_9S_2$ 437.491
 Needles (EtOH). Mp 207-208.5°. [α]_D +47 (c, 1.0 in CHCl₃).
4,6-O-Benzylidene, N-Et: [169873-65-8]
 $C_{16}H_{23}NO_5$ 309.361
 Mp 126-128°. [α]_D +108 (CHCl₃).
3-Me, 4,6-O-ethylidene: Methyl 2-amino-2-deoxy-4,6-O-ethylidene-3-O-methyl- α -D-glucopyranoside
 $C_{10}H_{19}NO_5$ 233.264
 Mp 231° dec. (as hydrochloride). [α]_D +97 (H₂O).
3-Me, N-benzoyloxycarbonyl:
 $C_{16}H_{23}NO_7$ 341.36
 Mp 139-140°. [α]_D +74 (EtOH).
3,4,6-Tri-Me: Methyl 2-amino-2-deoxy-3,4,6-tri-O-methyl- α -D-glucopyranoside
 $C_{10}H_{21}NO_5$ 235.28
 Bp_{0.004} 85°. [α]_D +169.8 (MeOH).
3,4,6-Tri-Me; hydrochloride: Mp 237° dec. [α]_D +129.6 (H₂O).
3,4,6-Tri-Me, N-benzoyloxycarbonyl:
 $C_{18}H_{27}NO_7$ 369.414
 Mp 119-121°. [α]_D +98.5 (CHCl₃).
N,N,3,4,6-Penta-Me: Methyl 2-deoxy-2-(N-dimethylamino)-3,4,6-tri-O-methyl- α -D-glucopyranoside [92414-15-8]
 $C_{12}H_{25}NO_5$ 263.333
 Bp_{0.03} 160°.
3-Benzyl, N-benzoyloxycarbonyl: [87907-35-5]
 $C_{22}H_{27}NO_7$ 417.458
 Mp 151-152°. [α]_D +94 (c, 1 in MeOH).
3-Benzyl, 6-benzoyl, N-benzoyloxycarbonyl: [87907-36-6]
 $C_{29}H_{31}NO_8$ 521.566
 Mp 154-155°. [α]_D +74 (c, 1.0 in CHCl₃).
3-Benzyl, 4,6-O-benzylidene, N-benzoyloxycarbonyl: Methyl 3-O-benzyl-4,6-O-benzylidene-2-(benzyloxycarbonyl)amino-2-deoxy- α -D-glucopyranoside [93000-11-4]
 $C_{29}H_{31}NO_7$ 505.566
 Mp 202-203°. [α]_D +46 (c, 1.0 in CHCl₃).
3,4,6-Tribenzyl: Methyl 2-amino-3,4,6-tri-O-benzyl-2-deoxy- α -D-glucopyranoside [207272-62-6]
 $C_{28}H_{33}NO_5$ 463.572
 Slowly crystallising gum. Mp 37°. [α]_D +105.2 (c, 1.0 in CHCl₃).

Cryst. (Me₂CO/EtOH). Mp 120-122°. [α]_D +22 (c, 2.0 in CHCl₃).

2,3-Dibenzyl: *Methyl 2,3-di-O-benzyl- α -L-arabinofuranoside*
C₂₀H₂₄O₅ 344.407
Syrup. [α]_D²⁷ -88.4 (c, 3.83 in CHCl₃).

5-Trityl: *Methyl 5-O-trityl- α -L-arabinofuranoside*
[14645-36-4]
C₂₅H₂₆O₅ 406.477
Mp 112-113°. [α]_D²⁶ -89.1 (c, 3.10 in CHCl₃).

5-Trityl, 2,3-dibenzyl: *Methyl 2,3-di-O-benzyl-5-O-trityl- α -L-arabinofuranoside*
[16896-01-8]
C₃₉H₃₈O₅ 586.726
Mp 80-81°. [α]_D²⁷ -41.2 (c, 3.3 in CHCl₃).

β -L-form [3795-69-5]
Cryst. (EtOAc). Mp 58°. [α]_D +118 (c, 2.2 in H₂O).

5-Tosyl: *Methyl 5-O-tosyl- β -L-arabinofuranoside*
[34980-56-8]
C₁₃H₁₈O₇S 318.347
Mp 71-76°. [α]_D²⁹ +35.7 (c, 2.38 in MeOH).

2,3-Dibenzyl: *Methyl 2,3-di-O-benzyl- β -L-arabinofuranoside*
C₂₀H₂₄O₅ 344.407
Syrup. [α]_D²⁴ +43 (c, 2.61 in CHCl₃).

5-Trityl: *Methyl 5-O-trityl- β -L-arabinofuranoside*
[16896-00-7]
C₂₅H₂₆O₅ 406.477
Mp 122-123°. [α]_D²⁷ +50.9 (c, 3.02 in CHCl₃).

5-Trityl, 2,3-dibenzyl: *Methyl 2,3-di-O-benzyl-5-O-trityl- β -L-arabinofuranoside*
[16896-02-9]
C₃₉H₃₈O₅ 586.726
Syrup. [α]_D²⁷ +31.3 (c, 2.94 in CHCl₃).

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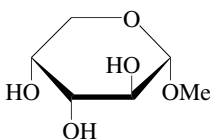
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Methyl arabinopyranoside**M-153** α -D-formC₆H₁₂O₅ 164.158 **α -D-form** [3867-83-2]Cryst. (EtOAc). Mp 132°. [α]_D -17 (H₂O).

2,3,4-Tri-Ac: *Methyl 2,3,4-tri-O-acetyl- α -D-arabinopyranoside*
[32453-58-0]
C₁₂H₁₈O₈ 290.269
[α]_D -19 (7:3 Ac₂O/AcOH).

3,4-O-Isopropylidene: *Methyl 3,4-O-isopropylidene- α -D-arabinopyranoside*
C₉H₁₆O₅ 204.222
Cryst. (diisopropyl ether). Mp 73-74°. [α]_D -43 (H₂O). [α]_D -28 (H₂O).

3,4-O-Isopropylidene, 2-mesyl: *Methyl 3,4-O-isopropylidene-2-O-mesyl- α -D-arabinopyranoside*
C₁₀H₁₈O₇S 282.314
Needles (EtOH). Mp 135° (144-145°). [α]_D -81.5 (CHCl₃). [α]_D -33.1 (CHCl₃).

 β -D-form [5328-63-2]Mp 172°. [α]_D -244 (H₂O).

2,3,4-Tri-Ac: *Methyl 2,3,4-tri-O-acetyl- β -D-arabinopyranoside*
[32453-59-1]
C₁₂H₁₈O₈ 290.269
[α]_D -184 (7:3 Ac₂O/AcOH).

3,4-O-Isopropylidene: *Methyl 3,4-O-isopropylidene- β -D-arabinopyranoside*
C₉H₁₆O₅ 204.222
Syrup. Bp_{0.01} 90°. [α]_D -201 (CHCl₃).

3,4-O-Isopropylidene, 2-Ac: *Methyl 2-O-acetyl-3,4-O-isopropylidene- β -D-arabinopyranoside*
C₁₁H₁₈O₆ 246.26
Cryst. (H₂O). Mp 76.5-77.5°. [α]_D -125 (H₂O).

3,4-O-Isopropylidene, 2-mesyl: *Methyl 3,4-O-isopropylidene-2-O-mesyl- β -D-arabinopyranoside*
C₁₀H₁₈O₇S 282.314
Mp 138-139°. [α]_D -187 (CHCl₃).

3,4-O-Isopropylidene, 2-tosyl: *Methyl 3,4-O-isopropylidene-2-O-tosyl- β -D-arabinopyranoside*
C₁₆H₂₂O₇S 358.412
Cryst. (EtOH). Mp 134°.

2-Me: *Methyl 2-O-methyl- β -D-arabinopyranoside*
C₇H₁₄O₅ 178.185
Cryst. (MeOH/Et₂O). Mp 48°. [α]_D -205 (MeOH).

2-Me, 3,4-O-isopropylidene: *Methyl 3,4-O-isopropylidene-2-O-methyl- β -D-arabinopyranoside*
C₁₀H₁₈O₅ 218.249
Mp 43°. [α]_D¹⁹ -145 (H₂O).

4-Me: *Methyl 4-O-methyl- β -D-arabinopyranoside*
C₇H₁₄O₅ 178.185
Cryst. (EtOAc). Mp 113-114°. [α]_D²⁰ -241 (c, 0.87 in MeOH).

2,3,4-Tri-Me: *Methyl 2,3,4-tri-O-methyl- β -D-arabinopyranoside*
[2876-86-0]
C₉H₁₈O₅ 206.238
[α]_D -248 (c, 1.0 in H₂O).

 α -L-form [3945-28-6]Mp 131°. [α]_D +17 (H₂O).

2-Tosyl: *Methyl 2-O-tosyl- α -L-arabinopyranoside*
C₁₃H₁₈O₇S 318.347
Cryst. (CH₂Cl₂/petrol). Mp 128°. [α]_D¹⁶ +0.4 (c, 1.8 in Me₂CO).

3-Tosyl: *Methyl 3-O-tosyl- α -L-arabinopyranoside*
C₁₃H₁₈O₇S 318.347
Cryst. (CH₂Cl₂). Mp 128°. [α]_D²⁰ +59.9 (c, 1.1 in CHCl₃). Hydrate (0.5H₂O).

4-Tosyl: *Methyl 4-O-tosyl- α -L-arabinopyranoside*
C₁₃H₁₈O₇S 318.347
Syrup. [α]_D¹⁸ -10 (c, 1.7 in CHCl₃). Hydrate (0.25H₂O).

3,4-Ditosyl: *Methyl 3,4-di-O-tosyl- α -L-arabinopyranoside*
C₂₀H₂₄O₉S₂ 472.536
Foam. [α]_D¹⁹ +27.9 (c, 0.9 in CHCl₃).

2,3,4-Tri-Me: *Methyl 2,3,4-tri-O-methyl- α -L-arabinopyranoside*
C₉H₁₈O₅ 206.238
[α]_D +46 (H₂O).

 β -L-form [1825-00-9]Silky plates or needles (EtOH). Mp 172°. [α]_D²⁰ +246 (c, 1.2 in H₂O).

2-Ac: *Methyl 2-O-acetyl- β -L-arabinopyranoside*
C₈H₁₄O₆ 206.195
Prisms (EtOH/petrol). Mp 172°. [α]_D¹⁶ +252 (c, 1 in H₂O).

2,3,4-Tri-Ac: *Methyl 2,3,4-tri-O-acetyl- β -L-arabinopyranoside*
[14520-32-2]
C₁₂H₁₈O₈ 290.269
Mp 85°. [α]_D²³ +182 (CHCl₃).

2,3-Dibenzoyl: *Methyl 2,3-di-O-benzoyl- β -L-arabinopyranoside*
[13143-91-4]
C₂₀H₂₀O₇ 372.374
Cryst. (Et₂O). Mp 141.5-142.5°. [α]_D²⁰ +210 (c, 1 in CHCl₃).

2-Tosyl: *Methyl 2-O-tosyl- β -L-arabinopyranoside*
C₁₃H₁₈O₇S 318.347
Syrup or needles (EtOH aq.). Mp 48-49°. [α]_D²⁰ +107.2 (c, 2.6 in CHCl₃). [α]_D¹⁸ +110.9 (c, 1.14 in CHCl₃).

4-Tosyl: *Methyl 4-O-tosyl- β -L-arabinopyranoside*
C₁₃H₁₈O₇S 318.347
Needles (CHCl₃). Mp 150-151°. [α]_D²⁰ +129.9 (c, 0.9 in CHCl₃). Monohydrate.

- 2,3-Ditosyl: Methyl 2,3-di-O-tosyl- β -L-arabinopyranoside
C₂₀H₂₄O₉S₂ 472.536
Syrup. $[\alpha]_D^{18} +79.1$ (c, 1.7 in CHCl₃).
- 2,4-Ditosyl: Methyl 2,4-di-O-tosyl- β -L-arabinopyranoside
C₂₀H₂₄O₉S₂ 472.536
Syrup. $[\alpha]_D^{21} +107.8$ (c, 0.6 in CHCl₃).
- 2,3,4-Tritosyl: Methyl 2,3,4-tri-O-tosyl- β -L-arabinopyranoside
[14200-58-9]
C₂₇H₃₀O₁₁S₃ 626.725
Cryst. (MeOH). Mp 116-117°. $[\alpha]_D^{23} +101$ (c, 0.9 in CHCl₃).
- 3,4-O-Ethylidene: Methyl 3,4-O-ethylidene- β -L-arabinopyranoside
C₈H₁₄O₅ 190.196
Cryst. (petrol). Mp 76°. $[\alpha]_D^{18} +204.6$ (c, 3.6 in CHCl₃).
- 3,4-O-Ethylidene, 2-benzoyl: Methyl 2-O-benzoyl-3,4-O-ethylidene- β -L-arabinopyranoside
C₁₅H₁₈O₆ 294.304
Mp 142° (117°). $[\alpha]_D^{20} +125$ (c, 2.6 in CHCl₃).
- 3,4-O-Isopropylidene: See Methyl 3,4-O-isopropylidenearabinopyranoside, M-197
- 3,4-O-Benzylidene: Methyl 3,4-O-benzylidene- β -L-arabinopyranoside
C₁₃H₁₆O₅ 252.266
Syrup. $[\alpha]_D^{15} +112.3$ (c, 4.9 in CHCl₃).
- 3,4-O-Benzylidene, 2-benzoyl: Methyl 2-O-benzoyl-3,4-O-benzylidene- β -L-arabinopyranoside
C₂₀H₂₀O₆ 356.374
Cryst. (petrol). Mp 126-127°. $[\alpha]_D^{18} +174$ (c, 3.2 in CHCl₃).
- 3,4-O-Benzylidene, 2-tosyl: Methyl 3,4-O-benzylidene-2-O-tosyl- β -L-arabinopyranoside
C₂₀H₂₂O₇S 406.456
Mp 144-145°. $[\alpha]_D +188$ (C₆H₆).
- 2-Me: Methyl 2-O-methyl- β -L-arabinopyranoside, 8CI
[14520-38-8]
C₇H₁₄O₅ 178.185
Mp 65° (vac. dried) Mp 47° (hydrate). $[\alpha]_D^{24} +225$ (c, 2.2 in MeOH).
- 2-Me, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-O-methyl- β -L-arabinopyranoside
[14520-21-9]
C₁₁H₁₈O₇ 262.259
 $[\alpha]_D +186$ (MeOH).
- 4-Me: Methyl 4-O-methyl- β -L-arabinopyranoside
C₇H₁₄O₅ 178.185
 $[\alpha]_D +213$ (MeOH).
- 3,4-Di-Me: Methyl 3,4-di-O-methyl- β -L-arabinopyranoside
[2296-48-2]
C₈H₁₆O₅ 192.211
 $[\alpha]_D +210$ (CHCl₃).
- 2,3,4-Tri-Me: Methyl 2,3,4-tri-O-methyl- β -L-arabinopyranoside, 8CI
[2296-43-7]
C₉H₁₈O₅ 206.238
 $[\alpha]_D +223$ (MeOH).
- 2-Benzyl: Methyl 2-O-benzyl- β -L-arabinopyranoside
C₁₃H₁₈O₅ 254.282

Cryst. (EtOAc/petrol). Mp 67°. $[\alpha]_D^{22} +147.4$ (c, 0.6 in CHCl₃).

 α -DL-form

4-Me: Methyl 4-O-methyl- α -DL-arabinopyranoside
C₇H₁₄O₅ 178.185
Fluffy cryst. (CH₂Cl₂/hexane). Mp 116°.

4-Me, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-O-methyl- α -DL-arabinopyranoside
C₁₁H₁₈O₇ 262.259
Cryst. (CH₂Cl₂/hexane). Mp 94-95°.

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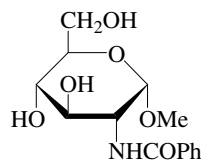
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Methyl 2-benzamido-2-deoxy-glucopyranoside**M-154** α -D-formC₁₄H₁₉NO₆ 297.307

α -D-form [6863-90-7]
Mp 224-227°. $[\alpha]_D^{20} +108$ (c, 0.5 in H₂O).

3,4,6-Tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-benzamido-2-deoxy- α -D-glucopyranoside
C₂₀H₂₅NO₉ 423.419
Cryst. (Et₂O/petrol). Mp 105-106°. $[\alpha]_D^{20} +111$ (c, 1.0 in CHCl₃).

3,4-Di-Ac, 6-tosyl: Methyl 3,4-di-O-acetyl-2-benzamido-2-deoxy-6-O-tosyl- α -D-glucopyranoside
[39727-13-4]
C₂₅H₂₉NO₁₀S 535.571
Mp 129-131°. $[\alpha]_D +115$ (c, 1.4 in CHCl₃).

4,6-Ditosyl, 3-Ac: Methyl 3-O-acetyl-2-benzamido-2-deoxy-4,6-di-O-tosyl- α -D-glucopyranoside
[39031-60-2]
C₃₀H₃₃NO₁₁S₂ 647.723
Cryst. (EtOH). Mp 162-163°. $[\alpha]_D +82.5$ (c, 1.9 in CHCl₃).

3,6-Ditosyl, 4-Ac: Methyl 4-O-acetyl-2-benzamido-2-deoxy-3,6-di-O-tosyl- α -D-glucopyranoside
C₃₀H₃₃NO₁₁S₂ 647.723
Cryst. (EtOH). Mp 171-172°. $[\alpha]_D +126$ (c, 2.1 in CH₂Cl₂).

3-Benzoyl: Methyl 2-benzamido-3-O-benzoyl-2-deoxy- α -D-glucopyranoside
[23193-40-0]
C₂₁H₂₃NO₇ 401.415
Cryst. (EtOH/petrol). Mp 132°. $[\alpha]_D +131$ (c, 0.8 in EtOH).

3-Mesyl: Methyl 2-benzamido-2-deoxy-3-O-mesyl- α -D-glucopyranoside
[28978-59-8]
C₁₅H₂₁NO₈S 375.399
Cryst. (CHCl₃/petrol). Mp 85-90° (133-137°) (as hydrate). $[\alpha]_D +99$ (c, 1.2 in CHCl₃).

3,6-Dibenzoyl: Methyl 2-benzamido-3,6-di-O-benzoyl-2-deoxy- α -D-glucopyranoside
[28978-51-0]
C₂₈H₂₇NO₈ 505.523
 $[\alpha]_D +119.2$ (c, 1.3 in CHCl₃).

3-Benzoyl, 4,6-dimesyl: Methyl 2-benzamido-3-O-benzoyl-2-deoxy-4,6-di-O-mesyl- α -D-glucopyranoside
[23193-41-1]
C₂₃H₂₇NO₁₁S₂ 557.598
Cryst. (EtOH). Mp 177-178°. $[\alpha]_D +120$ (c, 0.81 in CHCl₃).

3,6-Dibenzoyl, 4-mesyl: Methyl 2-benzamido-3,6-di-O-benzoyl-2-deoxy-4-O-mesyl- α -D-glucopyranoside
[28978-52-1]
C₂₉H₂₉NO₁₀S 583.615
Cryst. (2-propanol). Mp 178-180°. $[\alpha]_D +116.3$ (c, 1.2 in CHCl₃).

4,6-Dibenzoyl, 3-mesyl: Methyl 2-benzamido-4,6-di-O-benzoyl-2-deoxy-3-O-mesyl- α -D-glucopyranoside
[28978-60-1]
C₂₉H₂₉NO₁₀S 583.615
Mp 132-133°. $[\alpha]_D +82$ (c, 1.0 in CHCl₃).

3,4,6-Trimesyl: Methyl 2-benzamido-2-deoxy-3,4,6-tri-O-mesyl- α -D-glucopyranoside
[22672-30-6]
C₁₇H₂₅NO₁₂S₃ 531.582
Mp 149-150°. $[\alpha]_D +96.5$ (c, 0.83 in CHCl₃).

- 2-*Ac*: Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- β -*D*-galactopyranoside [37180-53-3]
C₁₆H₂₀O₇ 324.33
Mp 158-160° (194-195°). [α]_D +82 (CHCl₃). [α]₅₇₈ +4 (c, 1.0 in CHCl₃).
- 3-*Ac*: Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- β -*D*-galactopyranoside [37180-54-4]
C₁₆H₂₀O₇ 324.33
Mp 75-78°. [α]_D +87 (c, 1.0 in CHCl₃).
- 2,3-*Di-Ac*: Methyl 2,3-*di-O*-acetyl-4,6-*O*-benzylidene- β -*D*-galactopyranoside
C₁₈H₂₂O₈ 366.367
Mp 158-160°. [α]₅₇₈ +82 (c, 1.0 in CHCl₃).
- 2-*Benzoyl*: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- β -*D*-galactopyranoside [51591-23-2]
C₂₁H₂₂O₇ 386.401
Mp 250-251° (232-233°). [α]_D²³ +43.5 (c, 1.0 in Py). [α]_D +28.7 (c, 0.4 in CHCl₃).
- 3-*Benzoyl*: Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- β -*D*-galactopyranoside [53167-15-0]
C₂₁H₂₂O₇ 386.401
Mp 165°. [α]_D +95 (c, 1.1 in CHCl₃). [α]_D²³ +137 (c, 1.0 in Py).
- 3-*Tosyl*: Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- β -*D*-galactopyranoside
C₂₁H₂₄O₈S 436.482
Mp 171-172°. [α]_D²⁰ +57.4 (c, 1.2 in CHCl₃).
- 2,3-*Ditosyl*: Methyl 4,6-*O*-benzylidene-2,3-*di-O*-tosyl- β -*D*-galactopyranoside [6988-45-0]
C₂₈H₃₀O₁₀S₂ 590.671
Mp 171-172°. [α]_D²⁰ +39.7 (c, 1.3 in CHCl₃).
- 2-*Benzyl*: Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- β -*D*-galactopyranoside
C₂₁H₂₄O₆ 372.417
Mp 118-119°. [α]_D +22.4 (CHCl₃).
- 2,3-*Dibenzyl*: Methyl 2,3-*di-O*-benzyl-4,6-*O*-benzylidene- β -*D*-galactopyranoside
C₂₈H₃₀O₆ 462.541
Cryst. (Et₂O/pentane). Mp 117°. [α]_D²⁵ +47.6.
- 2-(*Tetrahydropyran-2-yl*): [24807-93-0]
Mp 164-165°. [α]_D +29.4 (CHCl₃).
- 2,3-*Di-Me*: Methyl 4,6-*O*-benzylidene-2,3-*di-O*-methyl- β -*D*-galactopyranoside [4261-46-5]
C₁₆H₂₂O₆ 310.346
Needles (Et₂O/petrol). Mp 156-157.5° (148°). [α]_D -27 (CHCl₃) (+18).
- 2,3-*Cyclic carbonate*: [18390-85-7]
Mp 254-257°.
- Oldham, J.W.H. *et al.*, *J.A.C.S.*, 1938, **60**, 323 (*synth, di-Me*)
- Sorkin, E. *et al.*, *Helv. Chim. Acta*, 1945, **28**, 1 (*synth, tosyl, ditosyl*)
- deBelder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219; 1977, **34**, 179 (*rev, derivs*)
- Baggett, N. *et al.*, *Carbohydr. Res.*, 1965, **1**, 22 (*l'-config*)
- Sibral, W. *et al.*, *Tet. Lett.*, 1967, 4239 (*carbonate*)
- Boren, H.B. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 644 (2-*Ac*, 3-*Ac*)
- Veinberg, A.Y. *et al.*, *J. Gen. Chem. USSR (Engl. Transl.)*, 1974, **44**, 867 (2-*benzoyl*, 3-*benzoyl*)

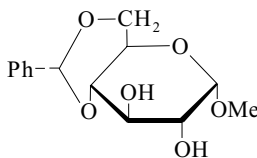
Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 333 (*dibenzyl*)

Abdel-Malik, M.M. *et al.*, *Carbohydr. Res.*, 1987, **159**, 11 (*cmr, pmr*)

Methyl 4,6-*O*-benzylidene- α -*D*-glucopyranoside, 8CI

[3162-96-7]

[57701-27-6]

C₁₄H₁₈O₆ 282.293

The stable isomer (of the 2,3-*di-O*-Me deriv.) has the (*R*)-config. illus. (originally erroneously assigned as (*S*-)). Mp 163-164°. [α]_D²⁰ +110 (c, 2.0 in CHCl₃).

2-*Ac*: Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [25577-40-6]
C₁₆H₂₀O₇ 324.33
Prismatic needles. Mp 133-134° (128-130°). [α]_D²⁶ +106 (c, 1.27 in CHCl₃).

3-*Ac*: Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [18031-57-7]
C₁₆H₂₀O₇ 324.33
Silky needles (Me₂CO/Et₂O/pentane). Mp 159-161° Mp 176-177°. [α]_D²⁵ +114 (c, 0.57 in CHCl₃).

Di-Ac: Methyl 2,3-*di-O*-acetyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [4141-45-1]
C₁₈H₂₂O₈ 366.367
Mp 109-110°. [α]_D²⁴ +72 (c, 1.04 in CHCl₃).

2-*Benzoyl*: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [28642-64-0]
C₂₁H₂₂O₇ 386.401
Cryst. (Me₂CO/Et₂O/pentane). Mp 169°. [α]_D +109 (c, 1.0 in CHCl₃).

2-*Benzoyl*, 3-*tosyl*: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -*D*-glucopyranoside
C₂₈H₂₈O₉S 540.59
Mp 184-186°. [α]_D +83.8 (CHCl₃).

3-*Benzoyl*: Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [33535-04-5]
C₂₁H₂₂O₇ 386.401
Needles (Me₂CO/Et₂O/pentane). Mp 219-220°. [α]_D²⁶ +34 (c, 1.1 in CHCl₃).

3-*Benzoyl*, 2-*tosyl*: Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -*D*-glucopyranoside
C₂₈H₂₈O₉S 540.59
Mp 212-213°. [α]_D +51.6 (CHCl₃).

Dibenzoyl: Methyl 2,3-*di-O*-benzoyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [6748-91-0]
C₂₈H₂₆O₈ 490.509
Cryst. (Me₂CO/Et₂O/pentane). Mp 152-153°. [α]_D +98.6 (CHCl₃).

2-*Mesyl*: Methyl 4,6-*O*-benzylidene-2-*O*-mesyl- α -*D*-glucopyranoside [51016-18-3]
C₁₅H₂₀O₈S 360.384
Mp 135-136°. [α]_D²⁴ +73 (c, 2.2 in CHCl₃).

2-*Tosyl*: Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- α -*D*-glucopyranoside [6698-32-4]
C₂₁H₂₄O₈S 436.482
Mp 153-154°. [α]_D²⁰ +64 (c, 5.0 in CHCl₃).

3-*Tosyl*: Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- α -*D*-glucopyranoside [6698-34-6]
C₂₁H₂₄O₈S 436.482
Mp 164-165°. [α]_D +32.3 (c, 1.1 in CHCl₃).

Ditosyl: Methyl 4,6-*O*-benzylidene-2,3-*di-O*-tosyl- α -*D*-glucopyranoside [6884-01-1]
C₂₈H₃₀O₁₀S₂ 590.671
Mp 154-155°. [α]_D²⁰ +12 (c, 6.0 in CHCl₃).

Di-Me: Methyl 4,6-*O*-benzylidene-2,3-*di-O*-methyl- α -*D*-glucopyranoside [3051-89-6]
C₁₆H₂₂O₆ 310.346
Mp 122-123°. [α]_D²⁰ +94.6 (CHCl₃).

2-*Benzyl*: Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [15384-58-4]
C₂₁H₂₄O₆ 372.417
Powder. Mp 131-132° (126-127°). [α]_D²⁵ +34.7 (c, 0.95 in CHCl₃).

2-*Benzyl*, 3-*Ac*: Methyl 3-*O*-acetyl-2-*O*-benzyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [99212-41-6]
C₂₃H₂₆O₇ 414.454
Mp 133-134°. [α]_D²⁰ +30.2 (c, 1.1 in CHCl₃).

3-*Benzyl*: Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside [14419-69-3]
C₂₁H₂₄O₆ 372.417
Powder. Mp 187-188°. [α]_D²⁰ +79 (c, 1 in CHCl₃).

Dibenzyl: Methyl 2,3-*di-O*-benzyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside
C₂₈H₃₀O₆ 462.541
Mp 93°. [α]_D +31.2 (CHCl₃).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **2**, 378A (*nmr*)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 1943, 260

Jeanloz, R.W. *et al.*, *J.A.C.S.*, 1957, **79**, 2579 (2-*Ac*, 3-*Ac*, *di-Ac*, 2-*benzoyl*, 3-*benzoyl*, *ditosyl*)

Richtmyer, N.K. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 107 (*synth*)

de Belder, A. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219; 1977, **34**, 179 (*rev, derivs*)

Horton, D. *et al.*, *J.O.C.*, 1969, **34**, 86 (*synth, 3-Ac, di-Ac, pmr*)

Szarek, W.A. *et al.*, *Carbohydr. Res.*, 1974, **35**, 203 (3-*tosyl*, *pmr*)

Conway, E. *et al.*, *J.C.S. Perkin 2*, 1974, 542 (*cmr*)

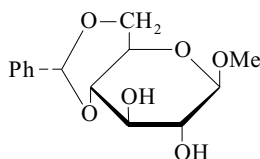
Barnes, J.C. *et al.*, *Carbohydr. Res.*, 1979, **69**, 47 (*di-Me*, *cryst struct*)

Baggett, N. *et al.*, *Carbohydr. Res.*, 1979, **74**, C14 (*config*)

- Hall, D.M. *et al.*, *Carbohydr. Res.*, 1980, **86**, 158 (synth)
 Baer, H.H. *et al.*, *Carbohydr. Res.*, 1982, **110**, 19 (tosyl derivs)
 Paulsen, H. *et al.*, *Carbohydr. Res.*, 1985, **140**, 155-162 (2-benzyl 3-Ac)
 Iacazio, G. *et al.*, *J.C.S. Perkin 1*, 1993, 1099, (2-Ac, 3-Ac, synth, pmr)
 Khanbabaee, K. *et al.*, *J. Prakt. Chem.*, 1999, **341**, 159-166 (2-benzyl, 3-benzyl)
 Spanevello, R.A. *et al.*, *Org. Prep. Proced. Int.*, 1999, **31**, 460-462 (synth)
 Joseph, C.C. *et al.*, *Synth. Commun.*, 2003, **33**, 493-497 (synth)

Methyl 4,6-*O*-benzylidene-β-D-glucopyranoside, 8CI

Methyl 4,6-*O*-(phenylmethylene)-β-D-glucopyranoside, 9CI
 [14155-23-8]



C₁₄H₁₈O₆ 282.293

The benzylidene config. appears to be (*R*-) as illus., but this does not appear to be explicit in the lit. Cryst. (EtOH aq.). Mp 198-199°. [α]_D²⁰ -67.4 (c, 0.98 in CHCl₃). The 2-OH and 3-OH groups show little selectivity in partial etherification or esterification reactions, unlike Methyl 4,6-*O*-benzylidene-α-D-glucopyranoside, M-164.

Di-Ac: Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-β-D-glucopyranoside
 [20750-01-0]
 C₁₈H₂₂O₈ 366.367
 Mp 171-172°. [α]_D²⁰ -90.1 (CHCl₃).

Dibenzoyl: Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene-β-D-glucopyranoside
 C₂₈H₂₆O₈ 490.509
 Mp 185°. [α]_D²⁰ +15.8 (CHCl₃).

2-Tosyl: Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-β-D-glucopyranoside
 [14187-68-9]
 C₂₁H₂₄O₈ 436.482
 Mp 122-123°. [α]_D²⁰ -54.1 (c, 0.22 in CHCl₃).

3-Tosyl: Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-β-D-glucopyranoside
 [14187-69-0]
 C₂₁H₂₄O₈ 436.482
 Mp 155-156°. [α]_D²⁰ -81.4 (c, 0.58 in CHCl₃). The earlier (1939) report of this compound (Mp 175-176°) is an error.

Ditosyl: Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-β-D-glucopyranoside
 [30010-02-7]
 C₂₈H₃₀O₁₀S₂ 590.671
 Mp 160-161° (158°). [α]_D²¹ -60.7 (c, 0.46 in CHCl₃).

2-Mesyl: Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-β-D-glucopyranoside
 [29845-74-7]
 C₁₅H₂₀O₈S 360.384
 Mp 164-165.5°. [α]_D²¹ -69.6 (c, 0.76 in CHCl₃).

3-Mesyl: Methyl 4,6-*O*-benzylidene-3-*O*-mesyl-β-D-glucopyranoside
 [29845-75-8]
 C₁₅H₂₀O₈S 360.384
 Mp 187-189°. [α]_D²¹ -57 (c, 0.52 in CHCl₃).

Dimesyl: Methyl 4,6-*O*-benzylidene-2,3-di-*O*-mesyl-β-D-glucopyranoside
 [26532-07-0]
 C₁₆H₂₂O₁₀S₂ 438.476
 Cryst. (CHCl₃/petrol). Mp 148-149°.

2-Me: Methyl 4,6-*O*-benzylidene-2-*O*-methyl-β-D-glucopyranoside
 C₁₅H₂₀O₆ 296.319
 Needles (EtOH). Mp 175-176° (170-171°). [α]_D²⁰ -69.2 (CHCl₃) (-67.3°).

2-Me, 3-tosyl: Methyl 4,6-*O*-benzylidene-2-*O*-methyl-3-*O*-tosyl-β-D-glucopyranoside
 C₂₂H₂₆O₈S 450.509
 Prisms (EtOH). Mp 139-139.5° (135-136°). [α]_D²⁰ -84.3 (c, 2 in CHCl₃).

3-Me: Methyl 4,6-*O*-benzylidene-3-*O*-methyl-β-D-glucopyranoside
 [35775-68-9]
 C₁₅H₂₀O₆ 296.319
 Mp 174° (164°). [α]_D²⁰ -50 (CHCl₃).

3-Me, 2-mesyl: Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl-β-D-glucopyranoside
 [52260-45-4]
 C₁₆H₂₂O₈S 374.411
 Cryst. (CHCl₃/diisopropyl ether). Mp 126.5°. [α]_D²⁷ -56 (c, 1.0 in CHCl₃).

3-Me, 2-benzoyl: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-methyl-β-D-glucopyranoside
 [52260-49-8]
 C₂₂H₂₄O₇ 400.427
 Cryst. (Me₂CO/diisopropyl ether). Mp 146°. [α]_D²⁷ -9 (c, 1.0 in CHCl₃).

3-Me, 2-tosyl: Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl-β-D-glucopyranoside
 C₂₂H₂₆O₈S 450.509
 Mp 125-126°. [α]_D²⁰ -34.1 (c, 0.76 in CHCl₃).

Di-Me: Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-β-D-glucopyranoside
 [13035-20-6]
 C₁₆H₂₂O₆ 310.346
 Mp 140-141° (132-133°). [α]_D²⁰ -59 (CHCl₃).

2-Benzyl: Methyl 2-*O*-benzyl-4,6-*O*-benzylidene-β-D-glucopyranoside
 [57539-07-8]
 C₂₁H₂₄O₆ 372.417
 Powder. Mp 124-125°. [α]_D²⁰ -28 (c, 1 in CHCl₃).

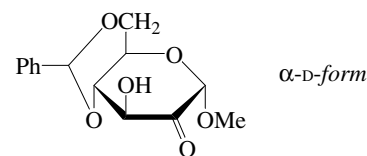
3-Benzyl: Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-β-D-glucopyranoside
 [57539-08-9]
 C₂₁H₂₄O₆ 372.417
 Powder. Mp 188-189°. [α]_D²⁰ -47 (c, 1 in CHCl₃).

Dibenzyl: Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene-β-D-glucopyranoside
 C₂₈H₃₀O₆ 462.541
 Cryst. (petrol). Mp 187-188° (182-183°). [α]_D²⁰ -60 (c, 1.2 in CHCl₃). There is also an unstable lower-melting form.

[71117-37-8]

- Freudenberg, K. *et al.*, *Ber.*, 1928, **61**, 1750 (synth, 3-Me, di-Me)
 Mathers, D.S. *et al.*, *J.C.S.*, 1933, 696 (di-Ac, di-Me)
 Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 264 (rev)
 Oldham, J.W.H. *et al.*, *J.A.C.S.*, 1939, **61**, 1112 (3-tosyl, 3-tosyl-2-Me, 2-Me, di-Me)
 Bolliger, H.R. *et al.*, *Helv. Chim. Acta*, 1946, **29**, 1116 (2-tosyl, di-Me)
 Capon, B. *et al.*, *Tetrahedron*, 1961, **16**, 106 (synth)
 De Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219; 1977, **34**, 179 (rev, derivs)
 Guthrie, R.D. *et al.*, *J.C.S. (C)*, 1970, 1961, (2-tosyl, 2-mesyl, 3-mesyl, dimesyl)
 Brimacombe, J.S. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 376 (dibenzyl)
 Miljković, M. *et al.*, *J.O.C.*, 1974, **39**, 3223, (3-Me, 2-benzoyl)
 Hall, D.M. *et al.*, *Carbohydr. Res.*, 1980, **86**, 158 (synth)
 Baer, H.H. *et al.*, *Carbohydr. Res.*, 1982, **110**, 19 (tosyl derivs)
 Takeo, K. *et al.*, *Carbohydr. Res.*, 1984, **133**, 147 (derivs)
 Lee, E. *et al.*, *Carbohydr. Res.*, 1990, **208**, 231 (cryst struct, pmr, cmr, 2-Me-3-tosyl)
 Khanbabaee, K. *et al.*, *J. Prakt. Chem.*, 1999, **341**, 159-166 (2-benzyl, 3-benzyl)
 Joseph, C.C. *et al.*, *Synth. Commun.*, 2003, **33**, 493-497 (synth)

Methyl 4,6-*O*-benzylidene-arabino-hexopyranosid-2-ulose



C₁₄H₁₆O₆ 280.277

α-D-form

3-Ac: Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-α-D-arabino-hexopyranosid-2-ulose
 [55338-59-5]
 C₁₆H₁₈O₇ 322.314
 Cryst. (EtOH). Mp 103-104°. [α]_D¹⁴ +36 (c, 0.6 in CHCl₃).

3-Benzoyl: Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-α-D-arabino-hexopyranosid-2-ulose
 [38993-01-0]
 C₂₁H₂₀O₇ 384.385
 Needles (CH₂Cl₂/Et₂O/pentane). Mp 51-52° Mp 114-116°. [α]_D²⁰ -18 (c, 0.5 in EtOH). [α]_D²⁰ -8 (c, 0.9 in CHCl₃).

3-Tosyl: Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-α-D-arabino-hexopyranosid-2-ulose
 C₂₁H₂₂O₈S 434.466
 Cryst. (EtOAc/petrol). Mp 162-164°. [α]_D²⁰ +6.3 (c, 1.1 in CHCl₃).

3-Me: Methyl 4,6-*O*-benzylidene-3-*O*-methyl-α-D-arabino-hexopyranosid-2-ulose
 [29774-59-2]
 C₁₅H₁₈O₆ 294.304
 Needles (Me₂CO/diisopropyl ether). Mp 134-135°. [α]_D²⁷ +42 (c, 1.0 in CHCl₃).

3-*C-Me*, 3-*deoxy*: Methyl 4,6-*O*-benzylidene-3-*deoxy*-3-*C-methyl-α-D-arabino-hexopyranosid-2-ulose*
 $C_{15}H_{18}O_5$ 278.304
 Cryst. (EtOAc/hexane). Mp 130-131°. $[\alpha]_D^{25} +58$ (c, 1.3 in $CHCl_3$).

3-*C-Et*, 3-*deoxy*: Methyl 4,6-*O*-benzylidene-3-*deoxy*-3-*C-ethyl-α-D-arabino-hexopyranosid-2-ulose*
 [31022-37-4]
 $C_{16}H_{20}O_5$ 292.331
 Cryst. (petrol). Mp 108°. $[\alpha]_D^{25} +57.5$ (c, 2 in $CHCl_3$).

β-D-form

3-*Benzoyl*: Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-β-*D-arabino-hexopyranosid-2-ulose*
 $C_{21}H_{20}O_7$ 384.385
 Needles (CH_2Cl_2 /Et₂O/pentane). Mp 166-168°. $[\alpha]_D^{25} -126$ (c, 0.6 in $CHCl_3$).

3-*Tosyl*: Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-β-*D-arabino-hexopyranosid-2-ulose*
 $C_{21}H_{22}O_8S$ 434.466
 Cryst. ($CHCl_3$ /petrol). Mp 212-213°. $[\alpha]_D^{25} -94.2$ (c, 0.5 in $CHCl_3$).

3-*Me*: Methyl 4,6-*O*-benzylidene-3-*O*-methyl-β-*D-arabino-hexopyranosid-2-ulose*
 [29774-60-5]
 $C_{15}H_{18}O_6$ 294.304
 Needles (Me_2CO /diisopropyl ether). Mp 167-169°. $[\alpha]_D^{25} -73$ (c, 1.2 in $CHCl_3$).

3-*Me*, phenylhydrazonone: Mp 162-163°.

Inch, T.D. *et al.*, *Carbohydr. Res.*, 1971, **19**, 17 (α-*D*-3-*C-Et* 3-*deoxy*)

Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1972, 2596 (α-*D*-benzoyl, β-*D*-benzoyl)

Kondo, Y. *et al.*, *Agric. Biol. Chem.*, 1974, **38**, 2553 (α-*D*-Ac, α-*D*-Me)

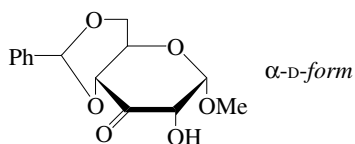
Szarek, W.A. *et al.*, *Carbohydr. Res.*, 1974, **35**, 203 (α-*D*-tosyl, β-*D*-tosyl)

Miljković, M. *et al.*, *J.O.C.*, 1974, **39**, 2118, (α-*D*-Me, β-*D*-Me)

Lichtenthaler, F.L. *et al.*, *Carbohydr. Res.*, 1976, **49**, 57 (α-*D*-benzoyl)

Nakata, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1980, **53**, 3252 (α-*D*-3-*C-Me* 3-*deoxy*)

Methyl 4,6-*O*-benzylidene-ribo-hexopyranosid-3-ulose, 9CI **M-167**
 [3051-92-1]



$C_{14}H_{16}O_6$ 280.277
 Cryst. (EtOH aq.). Mp 193°. $[\alpha]_D^{25} +123$ (c, 0.3 in Me_2CO).

α-D-form

Ac: Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-α-*D*-ribo-hexopyranosid-3-ulose
 [42400-52-2]
 $C_{16}H_{18}O_7$ 322.314
 Mp 187°. $[\alpha]_D^{25} +65$ (c, 1.0 in $CHCl_3$).

Benzoyl: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-ribo-hexopyranosid-3-ulose
 [28642-65-1]
 $C_{21}H_{20}O_7$ 384.385
 Mp 198-199°. $[\alpha]_D^{25} +94$ (c, 0.5 in $CHCl_3$).

Mesyl: Methyl 4,6-*O*-benzylidene-2-*O*-methyl-α-*D*-ribo-hexopyranosid-3-ulose
 $C_{15}H_{18}O_8S$ 358.368
 Cryst. (EtOH). Mp 181-183°. $[\alpha]_D^{25} +40.1$ ($CHCl_3$).

Tosyl: Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-*D*-ribo-hexopyranosid-3-ulose
 $C_{21}H_{22}O_8S$ 434.466
 Needles (EtOH). Mp 165-167°. $[\alpha]_D^{25} +44.9$ ($CHCl_3$).

2-*Me*: Methyl 4,6-*O*-benzylidene-2-*O*-methyl-α-*D*-ribo-hexopyranosid-3-ulose
 $C_{15}H_{18}O_6$ 294.304
 Needles (EtOH/pentane). Mp 198-200°. $[\alpha]_D^{25} +45$ (c, 1 in $CHCl_3$).

β-D-form [64482-53-7]

Mp 156-158°.

Oxime: [72503-81-2]
 $C_{14}H_{17}NO_6$ 295.291
 Cryst. (EtOAc/petrol). Mp 169° dec. $[\alpha]_D^{25} -55.7$ (c, 0.4 in $CHCl_3$).

2-*Ac*: Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-β-*D*-ribo-hexopyranosid-3-ulose
 [51306-39-9]
 $C_{16}H_{18}O_7$ 322.314
 Mp 210-211°. $[\alpha]_D^{25} -95$ (c, 1 in $CHCl_3$).

2-*Benzoyl*: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-β-*D*-ribo-hexopyranosid-3-ulose
 [38993-04-3]
 $C_{21}H_{20}O_7$ 384.385
 Mp 198-199° dec. $[\alpha]_D^{25} -12$ (c, 0.5 in $CHCl_3$).

2-*Tosyl*: Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-β-*D*-ribo-hexopyranosid-3-ulose
 [55338-60-8]
 $C_{21}H_{22}O_8S$ 434.466
 Cryst. (EtOH). Mp 163-165°. $[\alpha]_D^{25} -62.4$ (c, 0.7 in DMF).

2-*Me*: Methyl 4,6-*O*-benzylidene-2-*O*-methyl β-*D*-ribo-hexopyranosid-3-ulose
 [58227-69-3]
 $C_{15}H_{18}O_6$ 294.304
 Mp 217-219°. $[\alpha]_D^{25} -110.5$.

Baker, B.R. *et al.*, *J.O.C.*, 1965, **30**, 2304 (α-*D*-mesyl, tosyl)

Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1972, 1670; 2596 (α-*D*-benzoyl, Me, β-*D*-benzoyl)

Kondo, Y. *et al.*, *Can. J. Chem.*, 1973, **51**, 1476 (α-*D*-Ac)

Kondo, Y. *et al.*, *Carbohydr. Res.*, 1973, **30**, 386 (β-*D*-Ac)

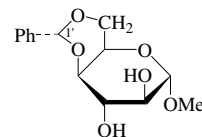
Kondo, Y. *et al.*, *Agric. Biol. Chem.*, 1974, **38**, 2553 (β-*D*-tosyl)

Defaye, J. *et al.*, *Carbohydr. Res.*, 1974, **35**, 264 (α-*D*-synth, Ac)

Sato, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1978, **51**, 2116 (Me, pmr)

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1979, **76**, 141 (α-*D*-oxime)

Methyl 4,6-*O*-benzylideneido-pyranoside **M-168**



α-*D*-(1'*R*)-form

$C_{14}H_{18}O_6$ 282.293

α-D-(1'R)-form

Fine needles (EtOH). Mp 123-125°. $[\alpha]_D^{24} +83$ (c, 1.1 in EtOH). $[\alpha]_D^{24} +59$ (c, 0.7 in $CHCl_3$). Prepared indirectly, referred to as the 'non-natural' isomer.

α-D-(1'S)-form

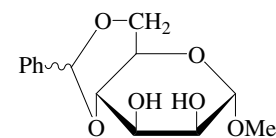
Mp 147-149°. $[\alpha]_D^{20} +49.1$ ($CHCl_3$). The predominant isomer obt. by direct benzylidenation.

Ditosyl: Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-α-*D*-idopyranoside
 $C_{28}H_{30}O_{10}S_2$ 590.671
 Mp 153-155°. $[\alpha]_D^{25} +35.7$ ($CHCl_3$).

Zobáčková, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1971, **36**, 1860 (synth)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1980, **81**, 35 (synth)

Methyl 4,6-*O*-benzylidene-mannopyranoside **M-169**



α-*D*-form

$C_{14}H_{18}O_6$ 282.293

α-D-form

Mp 146-147°. $[\alpha]_D^{25} +71.7$ (c, 1.18 in $CHCl_3$).

2,3-*Di-Ac*: Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-α-*D*-mannopyranoside
 [6748-84-1]
 $C_{18}H_{22}O_8$ 366.367
 Mp 59-63°. $[\alpha]_D^{20} +21.4$ (c, 2 in $CHCl_3$).

2-*Benzoyl*: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-mannopyranoside
 [55169-75-0]
 $C_{21}H_{22}O_7$ 386.401
 Amorph. $[\alpha]_D^{25} -45.1$ (c, 0.3 in $CHCl_3$).

2-*Benzoyl*, 3-*tosyl*: Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl-α-*D*-mannopyranoside
 [56341-64-1]
 $C_{28}H_{28}O_9S$ 540.59
 Mp 186-188°. $[\alpha]_D^{25} -34$ (c, 0.5 in $CHCl_3$).

3-*Benzoyl*: Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-mannopyranoside
 [52260-51-2]
 $C_{21}H_{22}O_7$ 386.401
 Mp 132-133°. $[\alpha]_D^{25} -26.1$ (c, 1.3 in $CHCl_3$).

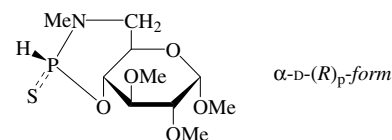
3-*Benzoyl*, 2-*tosyl*: Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl-α-*D*-mannopyranoside
 [53008-55-2]

- $C_{28}H_{28}O_9S$ 540.59
Mp 214-215°. $[\alpha]_D^{25}$ -35 (c, 1 in $CHCl_3$).
- 2,3-Dimesyl:** Methyl 4,6-O-benzylidene-2,3-di-O-mesyl- α -D-mannopyranoside [23819-27-4]
 $C_{16}H_{22}O_{10}S_2$ 438.476
Mp 202-204°. $[\alpha]_D^{25}$ -1.76 (c, 1.1 in $CHCl_3$).
- 3-Tosyl:** Methyl 4,6-O-benzylidene-3-O-tosyl- α -D-mannopyranoside [32934-18-2]
 $C_{21}H_{24}O_8S$ 436.482
Mp 155-156°. $[\alpha]_D^{27}$ +24.5 (c, 2.57 in $CHCl_3$).
- 2,3-Ditosyl:** Methyl 4,6-O-benzylidene-2,3-di-O-tosyl- α -D-mannopyranoside [6748-86-3]
 $C_{28}H_{30}O_{10}S_2$ 590.671
Cryst. (EtOH). Mp 163-164°. $[\alpha]_D^{33}$ -5.5 (c, 1.9 in $CHCl_3$).
- 3-Me:** Methyl 4,6-O-benzylidene-3-O-methyl- α -D-mannopyranoside [52260-48-7]
 $C_{15}H_{20}O_6$ 296.319
Syrup. $[\alpha]_D^{25}$ +76 (c, 1 in $CHCl_3$).
- 3-Me, 2-benzoyl:** Methyl 2-O-benzoyl-4,6-O-benzylidene-3-O-methyl- α -D-mannopyranoside
 $C_{22}H_{24}O_7$ 400.427
Syrup. $[\alpha]_D^{27}$ -48 (c, 1 in $CHCl_3$).
- 3-Me, 2-mesyl:** Methyl 4,6-O-benzylidene-2-O-mesyl-3-O-methyl- α -D-mannopyranoside
 $C_{16}H_{22}O_8S$ 374.411
Mp 185-186°. $[\alpha]_D^{27}$ +22 (c, 0.7 in $CHCl_3$).
- 2,3-Di-Me:** Methyl 4,6-O-benzylidene-2,3-di-O-methyl- α -D-mannopyranoside
 $C_{16}H_{22}O_6$ 310.346
Syrup. Bp_{0.5} 185-190°. $[\alpha]_D^{21}$ +60.7 (c, 2.4 in $CHCl_3$).
- 2-Benzyl:** Methyl 2-O-benzyl-4,6-O-benzylidene- α -D-mannopyranoside [23392-29-2]
 $C_{21}H_{24}O_6$ 372.417
Cryst. (EtOH). Mp 42-44°. $[\alpha]_D$ +2 (c, 1 in $CHCl_3$).
- 3-Benzyl:** Methyl 3-O-benzyl-4,6-O-benzylidene- α -D-mannopyranoside [23392-28-1]
 $C_{21}H_{24}O_6$ 372.417
Cryst. (MeOH). Mp 68-69°. $[\alpha]_D$ +6.7 ($CHCl_3$).
- 2,3-Dibenzyl:** Methyl 2,3-di-O-benzyl-4,6-O-benzylidene- α -D-mannopyranoside
 $C_{28}H_{30}O_6$ 462.541
Syrup. $[\alpha]_D^{25}$ +26.7 (c, 2.2 in $CHCl_3$).
- β -D-form**
Cryst. (C_6H_6). Mp 180-182°. $[\alpha]_D$ -98 (c, 1.3 in $CHCl_3$).
- 3-Me:** Methyl 4,6-O-benzylidene-3-O-methyl- β -D-mannopyranoside [51364-57-9]
 $C_{15}H_{20}O_6$ 296.319
Needles (Me_2CO /diisopropyl ether). Mp 187-188°. $[\alpha]_D^{27}$ -70 (c, 1.0 in $CHCl_3$).

- 3-Me, 2-benzoyl:** Methyl 2-O-benzoyl-4,6-O-benzylidene-3-O-methyl- β -D-mannopyranoside [52260-50-1]
 $C_{22}H_{24}O_7$ 400.427
Syrup. $[\alpha]_D^{27}$ -112 (c, 1.0 in $CHCl_3$).
- 3-Me, 2-mesyl:** Methyl 4,6-O-benzylidene-2-O-mesyl-3-O-methyl- β -D-mannopyranoside [52260-47-6]
 $C_{16}H_{22}O_8S$ 374.411
Mp 182°. $[\alpha]_D^{27}$ -79 (c, 1.0 in $CHCl_3$). AF1200.
- 3-Me, 2-tosyl:** Methyl 4,6-O-benzylidene-3-O-methyl-2-O-tosyl- β -D-mannopyranoside
 $C_{22}H_{26}O_8S$ 450.509
Amorph. $[\alpha]_D^{25}$ -25 (c, 0.5 in $CHCl_3$).
- 2-Benzyl:** Methyl 2-O-benzyl-4,6-O-benzylidene- β -D-mannopyranoside
 $C_{21}H_{24}O_6$ 372.417
Cryst. (EtOH). Mp 153-154°. $[\alpha]_D$ -131 (c, 0.2 in $CHCl_3$).
- 3-Benzyl:** Methyl 3-O-benzyl-4,6-O-benzylidene- β -D-mannopyranoside [2774-19-8]
 $C_{21}H_{24}O_6$ 372.417
Cryst. (EtOH). Mp 120-121°. $[\alpha]_D$ -32 (c, 0.8 in $CHCl_3$).
- 2,3-Anhydro:** Methyl 2,3-anhydro-4,6-O-benzylidene- β -D-mannopyranoside [2880-96-8]
 $C_{14}H_{16}O_5$ 264.277
Mp 185-187°. $[\alpha]_D^{25}$ -28.5 (c, 0.35 in $CHCl_3$).
- [78185-83-8]
Buchanan, J.G. *et al.*, *J.C.S.*, 1962, 4770 (synth, 3-tosyl, ditosyl)
Wiggins, L.F. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 188 (2,3-anhydro)
de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1965, **20**, 219; 1977, **34**, 179 (rev)
Garegg, P.J. *et al.*, *Ark. Kemi*, 1965, **23**, 255 (synth, 2-benzyl, 3-benzyl)
Horton, D. *et al.*, *Carbohydr. Res.*, 1968, **7**, 101 (di-Ac)
Guthrie, R.D. *et al.*, *J.C.S. (C)*, 1970, 1961, (2,3-anhydro)
Borén, H.B. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 1082 (2-benzyl)
Seymour, F.R. *et al.*, *Carbohydr. Res.*, 1974, **34**, 65 (3-benzoyl, 3-benzoyl 2-tosyl, pmr)
Conway, E. *et al.*, *J.C.S. Perkin 2*, 1974, 542 (cmr)
Miljković, M. *et al.*, *J.O.C.*, 1974, **39**, 2118; 3223 (3-Me, 3-Me 2-benzoyl, 3-Me 2-mesyl)
Abbas, S.A. *et al.*, *Carbohydr. Res.*, 1975, **39**, 358 (2-benzoyl 3-tosyl, 2-benzoyl, 3-benzoyl)
Seymour, F.R. *et al.*, *Carbohydr. Res.*, 1976, **46**, 189 (ditosyl)
Srivastava, H.C. *et al.*, *Carbohydr. Res.*, 1977, **58**, 227 (3-benzyl)
Kondo, Y. *et al.*, *Carbohydr. Res.*, 1983, **123**, 157 (dibenzyl)
Misra, A.K. *et al.*, *Synth. Commun.*, 1996, **26**, 2857 (3-benzyl)
Tennant-Eyles, R.J. *et al.*, *Tetrahedron: Asymmetry*, 2003, **14**, 1201-1210 (synth)

Methyl 6-deoxy-2,3-di-O-methyl-6-methylaminoglucopyranoside 4,6-cyclic thiophosphonamide M-170

Octahydro-3-methylpyrano[2,3-e]-1,3,2-oxazaphosphorine 2-sulfide, 8,9,10-Tri-methoxy-4-methyl-2,7,4-dioxaza-3-phosphabicyclo[4.4.0]decane 3-sulfide



$C_{10}H_{20}NO_5PS$ 297.311

α -D-(R)_p-form

P-Me:

$C_{11}H_{22}NO_5PS$ 311.338
Cryst. (petrol). Mp 181-183°. $[\alpha]_D$ +57 (c, 1.8 in $CHCl_3$).

P-Chloro:

$C_{10}H_{19}ClNO_5PS$ 331.756
Cryst. (petrol). Mp 123-127°. $[\alpha]_D$ +57 (c, 1.2 in $CHCl_3$). Has (S)_p-config.

α -D-(S)_p-form

P-Me:

Cryst. (petrol). Mp 123°. $[\alpha]_D$ +142 (c, 1.2 in $CHCl_3$).

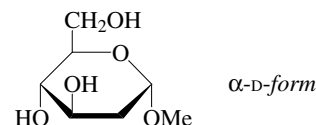
P-Methoxy:

$C_{11}H_{22}NO_6PS$ 327.338
Cryst. (petrol). Mp 70-73°. $[\alpha]_D$ +153 (c, 1 in $CHCl_3$). Has (R)_p-config.

Harrison, J.M. *et al.*, *J.C.S. Perkin 1*, 1975, 1892 (synth, pmr, P nmr)

Methyl 2-deoxy-arabino-hexopyranoside M-171

Methyl 2-deoxyglucopyranoside



$C_7H_{14}O_5$ 178.185

α -D-form [13145-22-7]

Mp 91°. $[\alpha]_D^{20}$ +137.9 (H_2O).

4,6-O-Benzylidene: Methyl 4,6-O-benzylidene-2-deoxy- α -D-arabino-hexopyranoside [6752-48-3]

$C_{14}H_{18}O_5$ 266.293
Mp 152-153°. $[\alpha]_D^{20}$ +82.5 (EtOH).

4,6-O-Benzylidene, 3-mesyl: Methyl 4,6-O-benzylidene-2-deoxy-3-O-mesyl- α -D-arabino-hexopyranoside [16848-72-9]

$C_{15}H_{20}O_7S$ 344.385
Cryst. (MeOH). Mp 131-132°. $[\alpha]_D^{20}$ +77.3 ($CHCl_3$).

4,6-O-Benzylidene, 3-p-nitrobenzenesulfonyl: [14929-18-1]
Mp 121° dec.

4,6-O-Benzylidene, 3-tosyl: Methyl 4,6-O-benzylidene-2-deoxy-3-O-tosyl- α -D-arabino-hexopyranoside [14929-13-6]

$C_{21}H_{24}O_7S$ 420.482
Mp 95° (119°).

4,6-*O*-Benzylidene, 3-*Me*: Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-methyl- α -D-arabino-hexopyranoside
[53131-18-3]
 $C_{15}H_{20}O_5$ 280.32
Cryst. (hexane). Mp 103-104°. $[\alpha]_D^{20} +99$ (c, 1.5 in $CHCl_3$).

4-*O*-(6-Deoxy-3-*O*-methyl- β -D-allopyranoside): α -Methyl dredehongbioside
[117841-36-8]
 $C_{14}H_{26}O_9$ 338.354
Constit. of *Dregea volubilis*.

β -D-form [29084-15-9]
Mp 122°. $[\alpha]_D^{20} -48.4$ (H_2O).

Tri-Ac: Methyl 3,4,6-tri-*O*-acetyl-2-deoxy- β -D-arabino-hexopyranoside
 $C_{13}H_{20}O_8$ 304.296
Mp 99-100°. $[\alpha]_D -26$ (c, 1.1 in $CHCl_3$).

4,6-*O*-Benzylidene: Methyl 4,6-*O*-benzylidene-2-deoxy- β -D-arabino-hexopyranoside
[52612-68-7]
 $C_{14}H_{18}O_5$ 266.293
Mp 155-156°. $[\alpha]_D -67$ ($CHCl_3$).

4,6-*O*-Benzylidene, 3-Ac: Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy- β -D-arabino-hexopyranoside
[52443-47-7]
 $C_{16}H_{20}O_6$ 308.33
Mp 141-142°. $[\alpha]_D -69.3$ (c, 1 in $CHCl_3$).

McNally, S. *et al.*, *J.C.S. (C)*, 1966, 1978,
(α -D-benzylidene nitrobenzenesulfonyl,
 α -D-benzylidene tosyl)

Kovář, J. *et al.*, *Coll. Czech. Chem. Comm.*,
1967, **32**, 2498 (α -D-benzylidene mesyl)

Kumazawa, S. *et al.*, *Angew. Chem., Int. Ed.*,
1973, **12**, 921 (β -D-benzylidene Ac)

Arduini, A. *et al.*, *Carbohydr. Res.*, 1973, **31**,
255 (*pmr*)

Charon, D. *et al.*, *Carbohydr. Res.*, 1974, **34**,
271 (α -D-benzylidene Me)

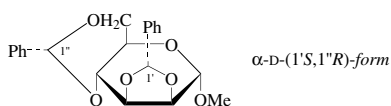
Baer, H.H. *et al.*, *Carbohydr. Res.*, 1975, **39**, C8
(β -D-benzylidene)

Chiu, M. *et al.*, *Zhiwu Xuebao*, 1988, **30**, 297;
C.A. **110**, 4673j (*Methyl dredehongbioside*)

Lee, E. *et al.*, *Carbohydr. Res.*, 1991, **219**, 229
(*synth, pmr, cryst struct, β -D-tri-Ac*)

Evdokimov, A.G. *et al.*, *Acta Cryst. C*, 1997,
53, 264-266 (*cryst struct, α -D-form*)

Methyl 2,3,4,6-di-*O*-benzylidenemannopyranoside M-172



$C_{21}H_{22}O_6$ 370.401
Synthetic intermed. for chiral substances.
The synthetic method of Jones *et al* is
greatly superior but gives only the
(1'S,1''R)-isomer.

α -D-(1'R,1''R)-form
Mp 96-98°. $[\alpha]_D -61$ ($CHCl_3$).

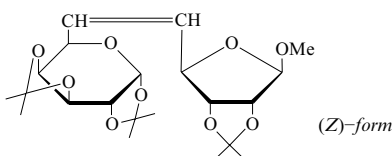
α -D-(1'S,1''R)-form [71484-87-2]
Cryst. (Me_2CO). Mp 182-184°. $[\alpha]_D 0$
(c, 1 in $CHCl_3$).

[4148-71-4]

Robertson, G.J. *et al.*, *J.C.S.*, 1934, 330

Honeyman, J. *et al.*, *J.C.S.*, 1954, 744
Horton, D. *et al.*, *Carbohydr. Res.*, 1975, **44**, 227
Lipták, A. *et al.*, *Carbohydr. Res.*, 1979, **73**, 327
(*pmr*)
Lipták, A. *et al.*, *Tetrahedron*, 1979, **35**, 1111 (*cmr*)
Jones, D.N. *et al.*, *Synth. Commun.*, 1992, **22**,
1687 (*synth, pmr*)

Methyl 5,6-dideoxy-2,3,8,9:10,11-tri-*O*-isopropylidene-L-lyxo- α -L-talo-undec-5-enodialdo-1,4-furanoside-11,7-pyranose M-173



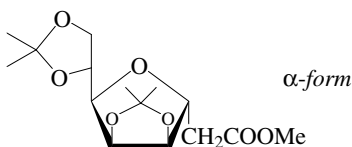
$C_{21}H_{32}O_9$ 428.478

(E)-form [69204-36-0]
Needles (cyclohexane). Mp 141.5-142°. $[\alpha]_D^{25} -105.7$ (c, 0.6 in $CHCl_3$).

(Z)-form [69204-35-9]
Oil. $[\alpha]_D^{28} -94.7$ (c, 0.7 in $CHCl_3$).

Secrist, J.A. *et al.*, *J.O.C.*, 1979, **44**, 1434 (*synth, pmr, cmr*)

Methyl (2,3,5,6-di-*O*-isopropylidenemannofuranosyl)acetate M-174



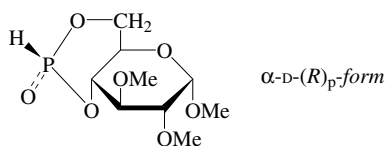
$C_{15}H_{24}O_7$ 316.35

α -D-form
Methyl 3,6-anhydro-2-deoxy-4,5:7,8-di-*O*-isopropylidene-D-glycero-D-talo-octonate, 9CI
[56703-45-8]
Mp 59-60°. $[\alpha]_D^{20} -4.9$ (c, 1.0 in $CHCl_3$).

β -D-form
Methyl 3,6-anhydro-2-deoxy-4,5:7,8-di-*O*-isopropylidene-D-glycero-D-galacto-octonate, 9CI
[56703-46-9]
 $[\alpha]_D^{20} -5.7$ (c, 1.0 in $CHCl_3$).

Ohrui, H. *et al.*, *J.A.C.S.*, 1975, **97**, 4602

Methyl 2,3-di-*O*-methylglucopyranoside 4,6-cyclic phosphonate M-175



$C_9H_{17}O_7P$ 268.203

α -D-(R)_p-form

P-Me:
 $C_{10}H_{19}O_7P$ 282.23
Cryst. (diisopropyl ether). Mp 96-99°. $[\alpha]_D +72$ (c, 2 in $CHCl_3$).

P-Ph:
 $C_{15}H_{21}O_7P$ 344.3
Cryst. (diisopropyl ether). Mp 107-109°. $[\alpha]_D +18$ (c, 0.5 in $CHCl_3$).

P-Ethoxy:
 $C_{11}H_{21}O_8P$ 312.256
 $[\alpha]_D +90$ ($CHCl_3$).

P-Dimethylamino:
 $C_{11}H_{22}NO_7P$ 311.271
Cryst. (diisopropyl ether). Mp 145-147°. $[\alpha]_D +105$ (c, 1.6 in $CHCl_3$).

P-(4-Nitrophenoxy):
 $C_{15}H_{20}NO_{10}P$ 405.297
Cryst. (diisopropyl ether). Mp 112-115°. $[\alpha]_D +43$ (c, 1.1 in $CHCl_3$).

P-(Propylthio):
 $C_{12}H_{23}O_7PS$ 342.349
 $[\alpha]_D +53$ (c, 2 in $CHCl_3$). Has
(S)_p-config.

α -D-(S)_p-form

P-Me:
Cryst. (Me_2CO /petrol). Mp 205°. $[\alpha]_D +114$ (c, 2 in $CHCl_3$).

P-Ph:
Cryst. (diisopropyl ether). Mp 173°. $[\alpha]_D +156$ (c, 1 in $CHCl_3$).

P-Ethoxy:
Cryst. (diisopropyl ether). Mp 115°. $[\alpha]_D +114$ (c, 2 in $CHCl_3$).

P-(4-Nitrophenoxy):
Cryst. Mp 91-93°. $[\alpha]_D +80$ (c, 1.3 in $CHCl_3$).

P-Fluoro:
 $C_9H_{16}FO_7P$ 286.193
Cryst. (diisopropyl ether). Mp 126°. $[\alpha]_D +88$ (c, 1.3 in $CHCl_3$).

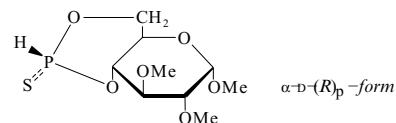
P-Chloro:
 $C_9H_{16}ClO_7P$ 302.648
Cryst. (diisopropyl ether). Mp 127-129°. $[\alpha]_D +114.5$ (c, 1.8 in $CHCl_3$). Has
(R)_p-config.

P-Dimethylamino:
Cryst. (diisopropyl ether). Mp 105-110°. $[\alpha]_D +83$ (c, 1.1 in $CHCl_3$).

P-(Propylthio):
 $[\alpha]_D +29$ (c, 0.5 in $CHCl_3$). Has (R)_p-
config.

Cooper, D.B. *et al.*, *J.C.S. Perkin 1*, 1974, 1043;
1049; 1058 (*synth, ir, pmr, P-31 nmr*)
Harrison, J.M. *et al.*, *J.C.S. Perkin 1*, 1974,
1053 (*synth, ir, pmr, P-31 nmr*)

Methyl 2,3-di-*O*-methylglucopyranoside 4,6-cyclic phosphonothioate M-176



C₉H₁₇O₆PS 284.269**α-D-(R)_p-form**

P-Me:

C₁₀H₁₉O₆PS 298.296Cryst. (Me₂CO/hexane). Mp 167-168°. [α]_D +75 (c, 1.0 in CHCl₃).

P-Ph:

C₁₅H₂₁O₆PS 360.367Cryst. (Me₂CO/cyclohexane). Mp 158-161°. [α]_D +126 (c, 1.0 in CHCl₃).

P-Ethoxy:

C₁₁H₂₁O₇PS 328.322Cryst. (EtOAc/cyclohexane). Mp 81-82°. [α]_D +136 (c, 1.0 in CHCl₃).

P-Chloro:

C₉H₁₆ClO₆PS 318.714Cryst. (Et₂O/petrol). Mp 71-74°. [α]_D +96 (c, 0.8 in CHCl₃). Has (S)_p-config.**α-D-(S)_p-form**

P-Me:

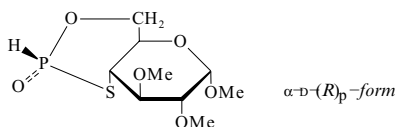
[α]_D +135 (c, 1.0 in CHCl₃).

P-Ph:

Cryst. (cyclohexane). Mp 116-117°. [α]_D +98 (c, 1.0 in CHCl₃).

P-Ethoxy:

Cryst. (EtOH/petrol). Mp 140-141°.

[α]_D +89 (c, 0.1 in CHCl₃).Cooper, D.B. *et al.*, *J.C.S. Perkin 1*, 1974, 1049 (*synth, P nmr*)Harrison, J.M. *et al.*, *J.C.S. Perkin 1*, 1974, 1053 (*chloride*)**Methyl 2,3-di-O-methyl-4-thioglucopyranoside 4,6-cyclic phosphonate***Hexahydro-6,7,8-trimethoxy-3,2-d][1,3,2]oxathiaphosphorine 2-oxide. 8,9,10-Trimethoxy-4,7-dioxo-2-thia-3-phosphabicyclo[4.4.0]decane 3-oxide*C₉H₁₇O₆PS 284.269**α-D-(R)_p-form**

P-Me:

C₁₀H₁₉O₆PS 298.296Cryst. (EtOH). Mp 183°. [α]_D +73 (c, 1 in CHCl₃).

P-Ethoxy:

C₁₁H₂₁O₇PS 328.322Syrup. [α]_D +46 (c, 2 in CHCl₃). Has (S)_p-config.

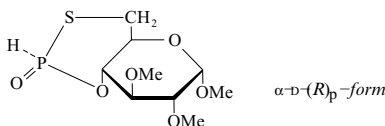
P-Chloro:

C₉H₁₆ClO₆PS 318.714Cryst. (diisopropyl ether). Mp 127°. [α]_D +41 (c, 0.4 in CHCl₃). Has (S)_p-config.**α-D-(S)_p-form**

P-Me:

Cryst. (Et₂O/petrol). Mp 124°. [α]_D +42.5 (c, 1.2 in CHCl₃).

P-Ethoxy:

Cryst. Mp 98°. [α]_D +7 (c, 1.0 in CHCl₃). Has (R)_p-config.Cooper, D.B. *et al.*, *J.C.S. Perkin 1*, 1974, 1049 (*synth, ir, pmr*)Harrison, J.M. *et al.*, *J.C.S. Perkin 1*, 1974, 1053 (*chloride, props*)**Methyl 2,3-di-O-methyl-6-thioglucopyranoside 4,6-cyclic phosphonate***8,9,10-Trimethoxy-2,7-dioxo-4-thia-3-phosphabicyclo[4.4.0]decane 3-oxide. Hexahydro-6,7,8-trimethoxy-2,3-e]-1,3,2-oxathiaphosphorin 2-oxide*C₉H₁₇O₆PS 284.269**α-D-(R)_p-form**

P-Me:

C₁₀H₁₉O₆PS 298.296Cryst. (diisopropyl ether). Mp 203-207°. [α]_D +160 (c, 2 in CHCl₃).

P-Ethoxy:

C₁₁H₂₁O₇PS 328.322Syrup. [α]_D +88 (0.7 in CHCl₃). Has (S)_p-config.

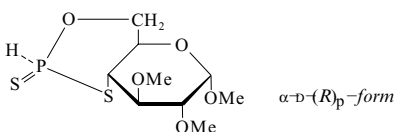
P-Chloro:

C₉H₁₆ClO₆PS 318.714Cryst. (diisopropyl ether). Mp 129-131°. [α]_D +206 (c, 1.7 in CHCl₃). Has (S)_p-config.**α-D-(S)_p-form**

P-Me:

Cryst. (diisopropyl ether). Mp 159-161°. [α]_D +190 (1.7 in CHCl₃).

P-Ethoxy:

Cryst. (diisopropyl ether). Mp 135-138°. [α]_D +207 (c, 0.8 in CHCl₃). Has (R)_p-config.Cooper, D.B. *et al.*, *J.C.S. Perkin 1*, 1974, 1049; 1058 (*synth, ir, pmr, props*)Harrison, J.M. *et al.*, *J.C.S. Perkin 1*, 1974, 1053 (*props*)**Methyl 2,3-di-O-methyl-4-thioglucopyranoside 4,6-cyclic phosphonothioate***Hexahydro-6,7,8-trimethoxy-3,2-d][1,3,2]oxathiaphosphorin 2-sulfide. 8,9,10-Trimethoxy-4,7-dioxo-2-thia-3-phosphabicyclo[4.4.0]decane 3-sulfide*C₉H₁₇O₅PS₂ 300.336**α-D-(R)_p-form**

P-Ethoxy:

C₁₁H₂₁O₆PS₂ 344.389

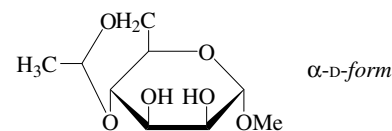
Cryst. (EtOH/petrol). Mp 81-82°.

α-D-(S)_p-form

P-Ethoxy:

Cryst. (EtOAc/petrol). Mp 140-141°.

P-Chloro:

C₉H₁₆ClO₅PS₂ 334.781Cryst. (Et₂O/petrol). Mp 71-74°. [α]_D +96 (c, 0.8 in CHCl₃). Has (R)_p-config.Harrison, J.M. *et al.*, *J.C.S. Perkin 1*, 1974, 1053 (*synth*)**Methyl 4,6-O-ethylidenemannopyranoside**C₉H₁₆O₆ 220.222**α-D-form [42890-23-3]**Mp 117°. [α]_D²⁰ +77 (c, 1.0 in CHCl₃).

2,3-Di-Ac: Methyl 2,3-di-O-acetyl-4,6-O-ethylidene-α-D-mannopyranoside

C₁₃H₂₀O₈ 304.296Mp 132°. [α]_D²² +36.7 (c, 1.0 in CHCl₃).

2-Tosyl: Methyl 4,6-O-ethylidene-2-O-tosyl-α-D-mannopyranoside

C₁₆H₂₂O₈S 374.411Mp 165-166°. [α]_D +10 (CHCl₃).

3-Tosyl: Methyl 4,6-O-ethylidene-3-O-tosyl-α-D-mannopyranoside

C₁₆H₂₂O₈S 374.411Mp 129°. [α]_D +25 (CHCl₃).

2,3-Ditosyl: Methyl 4,6-O-ethylidene-2,3-di-O-tosyl-α-D-mannopyranoside

C₂₃H₂₈O₁₀S₂ 528.6Mp 121-122°. [α]_D²¹ -11.6 (c, 1.2 in CHCl₃).

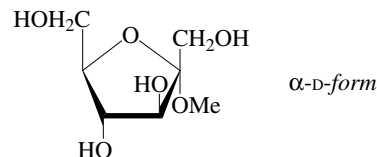
2,3-O-Ethylidene: Methyl 2,3,4,6-di-O-ethylidene-α-D-mannopyranoside

C₁₁H₁₈O₆ 246.26Mp 72°. [α]_D¹⁹ +14.2 (c, 1.0 in CHCl₃).

2,3-Di-Me: Methyl 4,6-O-ethylidene-2,3-di-O-methyl-α-D-mannopyranoside

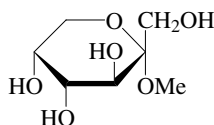
C₁₁H₂₀O₆ 248.275Mp 42-44°. [α]_D¹⁸ +65.8 (c, 0.48 in CHCl₃).**β-D-form**Mp 180-181°. [α]_D -128 (CHCl₃).

2,3-O-Ethylidene: Methyl 2,3,4,6-di-O-ethylidene-β-D-mannopyranoside

C₁₁H₁₈O₆ 246.26Mp 124-125°. [α]_D -176 (CHCl₃).de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219 (*rev, derivs*)Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1973, **27**, 325 (*cmr*)**Methyl fructofuranoside**C₇H₁₄O₆ 194.184

α -D-form**Stocksiol**

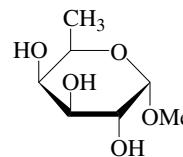
[15219-93-9]

Constit. of the aerial parts of *Stocksia brahuica*.Mp 81°. [α]_D +93 (H₂O).**Tetra-Ac:** Methyl 1,3,4,6-tetra-O-acetyl- α -D-fructofuranoside
[70802-04-9]C₁₅H₂₂O₁₀ 362.333Mp 48-49°. [α]_D¹⁹ +88.1 (CHCl₃).**Tetrabenzoyl:** Methyl 1,3,4,6-tetra-O-benzoyl- α -D-fructofuranoside
C₃₅H₃₀O₁₀ 610.616
Syrup. [α]_D +5 (CHCl₃).**1-Tosyl:** Methyl 1-O-tosyl- α -D-fructofuranosideC₁₄H₂₀O₆S 348.373Mp 79-81°. [α]_D +15.2 (c, 1.0 in MeOH).**3,4-Di-Me, 1,6-ditosyl:** Methyl 3,4-di-O-methyl-1,6-di-O-tosyl- α -D-fructofuranoside
C₂₃H₃₀O₁₀S₂ 530.616Syrup. [α]_D +20 (MeOH).**3,4,6-Tri-Me:** Methyl 3,4,6-tri-O-methyl- α -D-fructofuranosideC₁₀H₂₀O₆ 236.264Syrup. [α]_D +67.6 (MeOH).**3,4,6-Tri-Me, 1-tosyl:** Methyl 3,4,6-tri-O-methyl-1-O-tosyl- α -D-fructofuranoside
C₁₇H₂₆O₈S 390.454Syrup. [α]_D¹⁸ +32 (c, 1.2 in MeOH).**6-Trityl, 3,4-di-Me:** Methyl 3,4-di-O-methyl-6-O-trityl- α -D-fructofuranoside
C₂₈H₃₂O₆ 464.557
[α]_D +14 (MeOH). **β -D-form** [13403-14-0][α]_D -60 (H₂O).**1,3,4-Tribenzyl:** Methyl 1,3,4-tri-O-benzyl- β -D-fructofuranosideC₂₈H₃₂O₆ 464.557[α]_D -8 (c, 1.06 in CHCl₃).**3,4,6-Tribenzyl:** Methyl 3,4,6-tri-O-benzyl- β -D-fructofuranosideC₂₈H₃₂O₆ 464.557[α]_D +6 (c, 0.43 in CHCl₃).Brigl, P. et al., *Ber.*, 1934, **67**, 754 (α -D-tetrabenzoyl)Purves, C.B. et al., *J.A.C.S.*, 1937, **59**, 49 (α -D-form, α -D-tetra-Ac)Hirst, E.L. et al., *J.C.S.*, 1953, 3170 (α -D-tosyl, α -D-tosyl derivs, α -D-di-Me trityl, α -D-tri-Me)Pacsu, E. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 354 (α -D-form)Verstraeten, L.M.J. et al., *Adv. Carbohydr. Chem.*, 1967, **22**, 229 (rev, derivs)O'Donnell, G.W. et al., *Aust. J. Chem.*, 1972, **25**, 907 (α -D-form, synth)Angyal, S.J. et al., *Aust. J. Chem.*, 1976, **29**, 1249 (α -D-form, β -D-form, cmr)Ahmad, V.U. et al., *J. Chem. Soc. Pak.*, 2000, **22**, 66-67 (Stocksiol)Oscarson, S. et al., *J.O.C.*, 2002, **67**, 8457-8462 (β -D-form, tribenzyl, synth, pmr, cmr)**Methyl fructopyranoside****M-182** α -D-formC₇H₁₄O₆ 194.184 **α -D-form** [15219-31-5]Mp 96-97°. [α]_D +44 (H₂O).**Tetra-Ac:** Methyl 1,3,4,5-tetra-O-acetyl- α -D-fructopyranoside
[20701-35-3]C₁₅H₂₂O₁₀ 362.333Mp 112°. [α]_D +45.5 (CHCl₃).**Tetrabenzoyl:** Methyl 1,3,4,5-tetra-O-benzoyl- α -D-fructopyranoside
[70551-19-8]C₃₅H₃₀O₁₀ 610.616Oil. Bp_{0.001} 180°. [α]_D²⁵ +20.4 (c, 1.4 in CHCl₃).**1-Me:** Methyl 1-O-methyl- α -D-fructopyranoside
C₈H₁₆O₆ 208.211Mp 113°. [α]_D +34.1 (H₂O).**1-Me, 3,4,5-tri-Ac:** Methyl 3,4,5-tri-O-acetyl-1-O-methyl- α -D-fructopyranoside
C₁₄H₂₂O₉ 334.322Mp 109°. [α]_D +14.7 (CHCl₃). **β -D-form** [4208-77-9]Mp 119-120°. [α]_D -172.1 (H₂O).**Tetra-Ac:** Methyl 1,3,4,5-tetra-O-acetyl- β -D-fructopyranoside
[20701-34-2]C₁₅H₂₂O₁₀ 362.333Mp 75-76°. [α]_D -124.4 (CHCl₃).**Tetrabenzoyl:** Methyl 1,2,3,4-tetra-O-benzoyl- β -D-fructopyranoside
C₃₅H₃₀O₁₀ 610.616Mp 113°. [α]_D -171.3 (CHCl₃).**1,3-O-Benzylidene:** Methyl 1,3-O-benzylidene- β -D-fructopyranoside
[18610-09-8]C₁₄H₁₈O₆ 282.293

Cryst. (EtOH/petrol). Mp 136-137°.

[α]_D -73 (c, 0.51 in CHCl₃).**1,3-O-Benzylidene, 4-mesyl:** Methyl 1,3-O-benzylidene-4-O-mesyl- β -D-fructopyranoside
[18610-08-7]C₁₅H₂₀O₈S 360.384Cryst. (EtOH). Mp 134-135°. [α]_D -83(c, 0.99 in CHCl₃).**1,3-O-Benzylidene, 4-mesyl:** Methyl 1,3-O-benzylidene-4-O-mesyl- β -D-fructopyranoside
[18610-07-6]C₂₂H₂₄O₉S 464.492Cryst. (2-propanol). Mp 145-146°. [α]_D -107(c, 0.52 in CHCl₃).**1,3-O-Benzylidene, 4-mesyl:** Methyl 1,3-O-benzylidene-4-O-mesyl- β -D-fructopyranoside
[18610-06-5]C₁₆H₂₂O₁₀S₂ 438.476Cryst. (2-propanol). Mp 145-146°. [α]_D -107(c, 0.52 in CHCl₃).**1,3-O-Benzylidene, 5-benzoyl, 4-mesyl:** Methyl 5-O-benzoyl-1,3-O-benzylidene-4-O-mesyl- β -D-fructopyranoside
[18610-07-6]C₂₂H₂₄O₉S 464.492

Cryst. (2-propanol). Mp 146-148° dec.

[α]_D -167 (c, 1.16 in CHCl₃).**5-Me, 1,3-O-benzylidene, 4-mesyl:** Methyl 1,3-O-benzylidene-4-O-mesyl-5-O-methyl- β -D-fructopyranoside
[58794-64-2]C₁₆H₂₂O₈S 374.411Cryst. (EtOH). Mp 145° dec. [α]_D²¹ -82.2(c, 2 in CHCl₃).Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 377(α -D-tetra-Ac, β -D-tetra-Ac)Ness, R.K. et al., *J.A.C.S.*, 1953, **75**, 2619,(β -D-tetrabenzoyl)Verstraeten, L.M.J. et al., *Adv. Carbohydr. Chem.*, 1967, **22**, 229 (rev, derivs)Murphy, D. et al., *J.C.S.(C)*, 1967, 1732,(β -D-benzylidene, β -D-benzylidene derivs)Heyns, K. et al., *Annalen*, 1976, 269 (β -D-benzylidene Me mesyl)Angyal, S.J. et al., *Aust. J. Chem.*, 1976, **29**,1249 (β -D-form, synth)Steinlin, H. et al., *Helv. Chim. Acta*, 1979, **62**,378 (α -D-form, synth, α -D-tetrabenzoyl)Bock, K. et al., *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr)**Methyl fucopyranoside****M-183****Methyl 6-deoxygalactopyranoside, 9CI, 8CI** α -D-formC₇H₁₄O₅ 178.185 **α -D-form** [1128-40-1]Mp 153-154°. [α]_D²⁶ +192.7 (c, 0.9 in H₂O).**2,3,4-Tri-Ac:** Methyl 2,3,4-tri-O-acetyl- α -D-fucopyranoside
[43139-93-1]C₁₃H₂₀O₈ 304.296Cryst. (hexane). Mp 64-65°. [α]_D²⁶ +149.1(c, 0.97 in CHCl₃).**3-Me:** Methyl 3-O-methyl- α -D-fucopyranoside
[35862-73-8]C₈H₁₆O₅ 192.211Syrup. Bp_{0.005} 115-140° (bath). [α]_D²⁰+124.4 (c, 0.94 in Me₂CO).**2,3,4-Tribenzyl:** Methyl 2,3,4-tri-O-benzyl- α -D-fucopyranoside
[156769-28-7]C₂₈H₃₂O₅ 448.558Syrup. [α]_D²⁰ +59.4 (c, 1.9 in CHCl₃). **β -D-form** [1198-82-9]Mp 121.5-122.5°. [α]_D²⁰ -16.4 (c, 1.09 in H₂O).**2,3,4-Tri-Ac:** Methyl 2,3,4-tri-O-acetyl- β -D-fucopyranoside
[53942-13-5]C₁₃H₂₀O₈ 304.296Mp 99-100°. [α]_D -6.6 (c, 1.22 in CHCl₃).**2,3,4-Tribenzoyl:** Methyl 2,3,4-tri-O-benzoyl- β -D-fucopyranoside
[18929-75-4]C₂₈H₂₆O₈ 490.509Cryst. (Et₂O/pentane). Mp 163-164°.[α]_D +190 (c, 0.92 in CHCl₃).

3,4-O-Isopropylidene: See Methyl 3,4-O-isopropylidenefucopyranoside, M-198

α -L-form [14687-15-1]

Cryst. (MeOH). Mp 158°. $[\alpha]_D^{24}$ -197.5 (c, 0.6 in H₂O).

2-Ac: Methyl 2-O-acetyl- α -L-fucopyranoside
[34388-71-1]
C₉H₁₆O₆ 220.222
Mp 82-83°. $[\alpha]_D^{23}$ -196 (c, 0.4 in CHCl₃).

2,4-Di-Ac: Methyl 2,4-di-O-acetyl- α -L-fucopyranoside
[146582-04-9]
C₁₁H₁₈O₇ 262.259
Long blunt needles (petrol). Mp 95°. $[\alpha]_D$ -163 (c, 1.1 in CHCl₃).

3,4-Di-Ac: Methyl 3,4-di-O-acetyl- α -L-fucopyranoside
[146582-03-8]
C₁₁H₁₈O₇ 262.259
Cryst. (CH₂Cl₂/petrol). Mp 134°. $[\alpha]_D$ -211 (c, 0.7 in CHCl₃).

2,3,4-Tri-Ac: Methyl 2,3,4-tri-O-acetyl- α -L-fucopyranoside
[24333-02-6]
C₁₃H₂₀O₈ 304.296
Mp 70°. $[\alpha]_D^{20}$ -152 (c, 1 in CHCl₃).

2,3-Dibenzoyl: Methyl 2,3-di-O-benzoyl- α -L-fucopyranoside
[14917-25-0]
C₂₁H₂₂O₇ 386.401
Syrup. $[\alpha]_D$ -187 (c, 4.03 in CHCl₃).

2,3,4-Tribenzoyl: Methyl 2,3,4-tri-O-benzoyl- α -L-fucopyranoside
[14686-82-9]
C₂₈H₂₆O₈ 490.509
Prisms (Et₂O/petrol). Mp 147-148°. $[\alpha]_D$ -26 (c, 0.85 in CHCl₃).

2-Tosyl: Methyl 2-O-tosyl- α -L-fucopyranoside
C₁₄H₂₀O₇S 332.374
Mp 158°. $[\alpha]_D^{15}$ -85 (c, 1 in CHCl₃).

3,4-O-Isopropylidene: See Methyl 3,4-O-isopropylidenefucopyranoside, M-198

2-Me: Methyl 2-O-methyl- α -L-fucopyranoside
[42822-20-8]
C₈H₁₆O₅ 192.211
Syrup. $[\alpha]_D^{25}$ -196 (c, 1.20 in H₂O).

2-Me, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-O-methyl- α -L-fucopyranoside
[42822-22-0]
C₁₂H₂₀O₇ 276.286
Syrup. $[\alpha]_D^{20}$ -133 (c, 1.41 in CHCl₃).

3-Me: Methyl 3-O-methyl- α -L-fucopyranoside
[42822-17-3]
C₈H₁₆O₅ 192.211
Cryst. (EtOAc). Mp 99-100° (96-97°). $[\alpha]_D$ -136 (c, 0.62 in MeOH).

3-Me, 2,4-di-Ac: Methyl 2,4-di-O-acetyl-3-O-methyl- α -L-fucopyranoside
[42822-18-4]
C₁₂H₂₀O₇ 276.286
Cryst. (Et₂O). Mp 118-119° (115-117°). $[\alpha]_D^{25}$ -177 (c, 1.47 in CHCl₃).

4-Me: Methyl 4-O-methyl- α -L-fucopyranoside
[42822-28-6]
C₈H₁₆O₅ 192.211

Cryst. (Me₂CO/Et₂O). Mp 134-136°. $[\alpha]_D^{24}$ -192 (c, 0.9 in H₂O).

4-Me, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4-O-methyl- α -L-fucopyranoside
[42822-29-7]
C₁₂H₂₀O₇ 276.286
Needles (Et₂O). Mp 93-95°. $[\alpha]_D^{22}$ -138 (c, 1 in CHCl₃).

3,4-Di-Me: Methyl 3,4-di-O-methyl- α -L-fucopyranoside
[99603-83-5]
C₉H₁₈O₅ 206.238
Cryst. (petrol). Mp 100°. $[\alpha]_D^{20}$ -213 (c, 1.3 in H₂O).

2-Benzyl: Methyl 2-O-benzyl- α -L-fucopyranoside
[42822-24-2]
C₁₄H₂₀O₅ 268.309
Cryst. (CHCl₃/petrol). Mp 79-81°. $[\alpha]_D^{25}$ -118 (c, 1.50 in CHCl₃).

2-Benzyl, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-O-benzyl- α -L-fucopyranoside
[42822-25-3]
C₁₈H₂₄O₇ 352.383
Syrup. $[\alpha]_D^{25}$ -77 (c, 0.91 in CHCl₃).

3-Benzyl: Methyl 3-O-benzyl- α -L-fucopyranoside
[80928-20-7]
C₁₄H₂₀O₅ 268.309
 $[\alpha]_D$ -133.5 (CHCl₃).

2,3-Dibenzyl: Methyl 2,3-di-O-benzyl- α -L-fucopyranoside
[42822-27-5]
C₂₁H₂₆O₅ 358.433
Cryst. (Et₂O/petrol). Mp 78-80°. $[\alpha]_D^{25}$ -57.8 (c, 1.12 in CHCl₃).

2,3-Dibenzyl, 4-Ac: Methyl 4-O-acetyl-2,3-di-O-benzyl- α -L-fucopyranoside
[42822-26-4]
C₂₃H₂₈O₆ 400.471
Syrup. $[\alpha]_D^{24}$ -46 (c, 1.06 in CHCl₃).

2,4-Dibenzyl: Methyl 2,4-di-O-benzyl- α -L-fucopyranoside
[42822-12-8]
C₂₁H₂₆O₅ 358.433
Syrup. $[\alpha]_D^{23}$ -61.7 (c, 2.31 in CHCl₃).

2,4-Dibenzyl, 3-Ac: Methyl 3-O-acetyl-2,4-di-O-benzyl- α -L-fucopyranoside
[42822-14-0]
C₂₃H₂₈O₆ 400.471
Syrup. $[\alpha]_D^{22}$ -96 (c, 1.15 in CHCl₃).

2,4-Dibenzyl, 3-Me: Methyl 2,4-di-O-benzyl-3-O-methyl- α -L-fucopyranoside
[42822-16-2]
C₂₂H₂₈O₅ 372.46
Syrup. $[\alpha]_D^{25}$ -25.5 (c, 1.05 in CHCl₃).

3,4-Dibenzyl: Methyl 3,4-di-O-benzyl- α -L-fucopyranoside
[42822-13-9]
C₂₁H₂₆O₅ 358.433
Cryst. (Et₂O). Mp 92-94°. $[\alpha]_D^{27}$ -57 (c, 1.10 in CHCl₃).

3,4-Dibenzyl, 2-Ac: Methyl 2-O-acetyl-3,4-di-O-benzyl- α -L-fucopyranoside
[42822-15-1]
C₂₃H₂₈O₆ 400.471
Syrup. $[\alpha]_D^{22}$ -85 (c, 1.06 in CHCl₃).

3,4-Dibenzyl, 2-Me: Methyl 3,4-di-O-benzyl-2-O-methyl- α -L-fucopyranoside
[42822-21-9]
C₂₂H₂₈O₅ 372.46

Syrup. $[\alpha]_D^{24}$ -21.5 (c, 1.05 in CHCl₃).

2,3,4-Tribenzyl: Methyl 2,3,4-tri-O-benzyl- α -L-fucopyranoside
[33639-74-6]
C₂₈H₃₂O₅ 448.558
Syrup. $[\alpha]_D^{28}$ -20 (c, 1.02 in CHCl₃).

2-Trityl: Methyl 2-O-trityl- α -L-fucopyranoside
[146581-98-8]
C₂₆H₂₈O₅ 420.504
Mp 118-124° approx. Mp 133° (double Mp). $[\alpha]_D$ -55.6 (c, 0.72 in CHCl₃).

2-Trityl, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2-O-trityl- α -L-fucopyranoside
[146582-00-5]
C₃₀H₃₂O₇ 504.579
Cryst. (Me₂CO aq.). Mp 219-220°. $[\alpha]_D$ -40.4 (c, 0.7 in CHCl₃).

3-Trityl: Methyl 3-O-trityl- α -L-fucopyranoside
[146581-99-9]
C₂₆H₂₈O₅ 420.504
Rods +1H₂O (MeOH aq.). Mp 71-73°. $[\alpha]_D$ -107 (c, 0.7 in CHCl₃).

3-Trityl, 2-Ac: Methyl 2-O-acetyl-3-O-trityl- α -L-fucopyranoside
[146582-01-6]
C₂₈H₃₀O₆ 462.541
Cryst. (EtOH aq.). Mp 113-114°. $[\alpha]_D$ -78.5 (c, 0.7 in CHCl₃).

3-Trityl, 2,4-di-Ac: Methyl 2,4-di-O-acetyl-3-O-trityl- α -L-fucopyranoside
[146582-02-7]
C₃₀H₃₂O₇ 504.579
Cryst. (Me₂CO aq.). Mp 184°. $[\alpha]_D$ -100 (c, 1 in CHCl₃).

β -L-form [24332-98-7]

Cryst. (MeOH). Mp 126-127°. $[\alpha]_D$ +10.5 (c, 1 in H₂O).

2,3,4-Tri-Ac: Methyl 2,3,4-tri-O-acetyl- β -L-fucopyranoside
[24332-97-6]
C₁₃H₂₀O₈ 304.296
Cryst. (EtOH). Mp 99-100°. $[\alpha]_D^{20}$ +8 (c, 1 in CHCl₃).

3-Me: Methyl 3-O-methyl- β -L-fucopyranoside
[109959-25-3]
C₈H₁₆O₅ 192.211
Mp 104-105°. $[\alpha]_D$ -12.4 (c, 0.6 in MeOH).

3-Me, di-Ac: Methyl 2,4-di-O-acetyl-3-O-methyl- β -L-fucopyranoside
[53956-72-2]
C₁₂H₂₀O₇ 276.286
Mp 123-125°. $[\alpha]_D$ -27 (c, 0.77 in CHCl₃).

Tamm, C. *et al.*, *Helv. Chim. Acta*, 1949, **32**, 163-172 (α -D-3-Me)

Percival, E.E. *et al.*, *J.C.S.*, 1950, 690-691, (α -L-3,4-di-Me)

Gardiner, J.G. *et al.*, *J.C.S.*, 1958, 1414-1418, (α -L-form, β -L-form, synth)

Richardson, A.C. *et al.*, *Tetrahedron*, 1967, **23**, 1641-1646 (α -L-dibenzoyl, α -L-tribenzoyl)

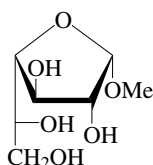
Leaback, D.H. *et al.*, *Biochemistry*, 1969, **8**, 1351-1359 (α -L-form, α -L-tri-Ac, β -L-form, synth, β -L-tri-Ac)

Hanessian, S. *et al.*, *J.O.C.*, 1969, **34**, 1035-1044 (α -D-form, synth, β -D-tribenzoyl)

- Dejter-Juszynski, M. *et al.*, *Carbohydr. Res.*, 1971, **18**, 219-229; 1973, **28**, 61-78 (*Me benzyl derivs*)
- Rafestin, M.-E. *et al.*, *Can. J. Chem.*, 1974, **52**, 210-212 (α -L-tri-Ac)
- Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 2992-3012 (β -D-form, *synth*, β -D-tri-Ac)
- Stevens, C.L. *et al.*, *J.O.C.*, 1974, **39**, 298-302 (α -D-tri-Ac)
- Rana, S.S. *et al.*, *Carbohydr. Res.*, 1980, **83**, 170-174 (2,3-dibenzyl- α -L, 2,4-dibenzyl- α -L)
- Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1982, **99**, 170-174 (α -L-3-benzyl)
- Toman, R. *et al.*, *Carbohydr. Res.*, 1986, **158**, 236-244 (*Me derivs*)
- Lamba, D. *et al.*, *Carbohydr. Res.*, 1993, **243**, 217-224 (*pmr, cryst struct, α -L-form*)
- Lai, W. *et al.*, *Carbohydr. Res.*, 1993, **250**, 185-193 (α -D-tribenzyl)
- Leder, I.G. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 95-103 (α -L-Pyr trityl, *Ac derivs*)
- Liao, W.S. *et al.*, *Carbohydr. Res.*, 1994, **260**, 151-154 (α -L-3-Me, β -L-3-Me)

Methyl galactofuranoside

M-184

 α -D-form $C_7H_{14}O_6$ 194.184 α -D-form [3795-67-3]Mp 91-92°. [α]_D²⁰ +105 (H₂O).

5,6-O-Isopropylidene: Methyl 5,6-O-isopropylidene- α -D-galactofuranoside [20869-13-0]

 $C_{10}H_{18}O_6$ 234.249Cryst. (C₆H₆). Mp 84-85°. [α]_D²⁰ +84.3 (c, 5.3 in CHCl₃).

2,3-Dibenzyl: Methyl 2,3-di-O-benzyl- α -D-galactofuranoside [20869-17-4]

 $C_{21}H_{26}O_6$ 374.433Needles (Et₂O/C₆H₆). Mp 83-85°. [α]_D²⁰ +33.9 (c, 4 in CHCl₃).

2,3-Dibenzyl, 5,6-bis(4-nitrobenzoyl): Cryst. (EtOAc/petrol). Mp 116-118°. [α]_D +55.7 (c, 2 in CHCl₃).

2,3-Dibenzyl, 5,6-O-isopropylidene: Methyl 2,3-di-O-benzyl-5,6-O-isopropylidene- α -D-galactofuranoside [20869-15-2]

 $C_{24}H_{30}O_6$ 414.497Needles (hexane). Mp 61-62°. [α]_D²⁰ +35.3 (c, 4.3 in CHCl₃).

2,3,5,6-Tetrabenzyl: Methyl 2,3,5,6-tetra-O-benzyl- α -D-galactofuranoside [55656-67-2]

 $C_{35}H_{38}O_6$ 554.682Oil. [α]_D +20 (c, 2 in CHCl₃). β -D-form [1824-93-7]Cryst. (EtOAc). Mp 69-70°. [α]_D²⁰ -180 (c, 1.65 in H₂O).

2-Ac: Methyl 2-O-acetyl- β -D-galactofuranoside [33422-92-3]

 $C_9H_{16}O_7$ 236.221Mp 50-54°. [α]_D²⁰ -95 (c, 0.78 in H₂O). Hygroscopic.

6-Ac: Methyl 6-O-acetyl- β -D-galactofuranoside [22323-74-6]

 $C_9H_{16}O_7$ 236.221Mp 86-87°. [α]_D²⁰ -117 (c, 0.5 in EtOH).

Tetrabenzoyl: Methyl 2,3,5,6-tetra-O-benzoyl- β -D-galactofuranoside $C_{35}H_{30}O_{10}$ 610.616

Cryst. (EtOH). Mp 90-92°. [α]_D²⁰ -3 (c, 1 in CHCl₃).

5,6-O-Isopropylidene: Methyl 5,6-O-isopropylidene- β -D-galactofuranoside [20869-14-1]

 $C_{10}H_{18}O_6$ 234.249Syrup. [α]_D²⁰ -82.1 (c, 0.87 in CHCl₃).

5,6-O-Isopropylidene, 2,3-dibenzyl: Methyl 2,3-di-O-benzyl-5,6-O-isopropylidene- β -D-galactofuranoside [20869-16-3]

 $C_{24}H_{30}O_6$ 414.497Syrup. [α]_D²⁰ -61.9 (c, 5.9 in CHCl₃).

2,3-Dibenzyl: Methyl 2,3-di-O-benzyl- β -D-galactofuranoside [20869-18-5]

 $C_{21}H_{26}O_6$ 374.433Needles (Et₂O/C₆H₆). Mp 89-91°. [α]_D²⁰ -79.4 (c, 5.2 in CHCl₃).

2,3-Dibenzyl, 6-benzoyl, 5-tosyl: Methyl 6-O-benzoyl-2,3-di-O-benzyl-5-O-tosyl- β -D-galactofuranoside [23567-76-2]

 $C_{35}H_{36}O_9S$ 632.73Syrup. [α]_D²¹ -7.2 (c, 4.4 in CHCl₃).

2,3-Dibenzyl, 6-tosyl: Methyl 2,3-di-O-benzyl-6-O-tosyl- β -D-galactofuranoside [23567-79-5]

 $C_{28}H_{32}O_8S$ 528.622Syrup. [α]_D¹⁹ -48 (c, 4.6 in CHCl₃).

2,3-Dibenzyl, 5,6-ditosyl: Methyl 2,3-di-O-benzyl-5,6-di-O-tosyl- β -D-galactofuranoside [23567-80-8]

 $C_{35}H_{38}O_{10}S_2$ 682.811Syrup. [α]_D²¹ -31.5 (c, 3.6 in CHCl₃).

2,3,5-Tribenzyl: Methyl 2,3,5-tri-O-benzyl- β -D-galactofuranoside $C_{28}H_{32}O_6$ 464.557

[α]_D²⁰ -41 (c, 1.8 in CHCl₃).

2,3,5-Tribenzyl, 6-Ac: Methyl 6-O-acetyl-2,3,5-tri-O-benzyl- β -D-galactofuranoside [22323-75-7]

 $C_{30}H_{34}O_7$ 506.594[α]_D²⁰ -46.5 (c, 0.7 in CHCl₃).

Tetrabenzyl: Methyl 2,3,5,6-tetra-O-benzyl- β -D-galactofuranoside [18685-21-7]

[α]_D²⁰ -49.2 (c, 2.97 in CHCl₃).

6-Trityl: Methyl 6-O-trityl- β -D-galactofuranoside [18465-51-5]

 $C_{26}H_{28}O_6$ 436.504Amorph. [α]_D²⁰ -49.4 (CHCl₃).

Augustad, I. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 251 (α -D-form, β -D-form, *synth*)

Pacsu, E. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 354 (β -D-form, *synth*)

Capon, B. *et al.*, *J.C.S.(B)*, 1967, 185, (α -D-form, *synth*)

Saeki, H. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 1129; 2410 (α -D-isopropylidene, α -D-isopropylidene dibenzyl, α -D-dibenzyl,

β -D-isopropylidene, β -D-isopropylidene dibenzyl, β -D-dibenzyl derivs)

Fréchet, J.M.J. *et al.*, *Can. J. Chem.*, 1975, **53**, 670 (α -D-dibenzyl bisnitrobenzoyl, α -D-tetrabenzyl, β -D-tetrabenzyl)

Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1975, **53**, 1212 (*pmr*)

Groth, P. *et al.*, *Acta Chem. Scand., Ser. B*, 1976, **30**, 948 (α -D-form, *cryst struct*)

Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1976, **48**, 171 (*cmr*)

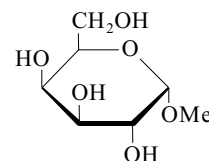
Marino, C. *et al.*, *Carbohydr. Res.*, 1989, **190**, 65 (β -D-form, *synth, pmr, cmr*)

Lubineau, A. *et al.*, *Synth. Commun.*, 1991, **21**, 815 (β -D-form, *synth*)

Methyl α -D-galactopyranoside M-185

[3396-99-4]

[34004-14-3]

 $C_7H_{14}O_6$ 194.184Cryst. (EtOH). Mp 111°. [α]_D²⁰ +178 (c, 1.5 in H₂O).

2-Ac: Methyl 2-O-acetyl- α -D-galactopyranoside [37180-51-1]

 $C_9H_{16}O_7$ 236.221Amorph. solid. [α]_D +206 (c, 1.0 in H₂O).

3-Ac: Methyl 3-O-acetyl- α -D-galactopyranoside [37180-52-2]

 $C_9H_{16}O_7$ 236.221Mp 139-143°. [α]_D +216 (c, 1.0 in H₂O).

6-Ac: Methyl 6-O-acetyl- α -D-galactopyranoside [5540-32-9]

 $C_9H_{16}O_7$ 236.221Mp 154-156°. [α]_D +160 (EtOH).

4,6-Di-Ac: Methyl 4,6-di-O-acetyl- α -D-galactopyranoside [51842-33-2]

 $C_{11}H_{18}O_8$ 278.258[α]_D +111 (EtOH).

2,3,6-Tri-Ac: Methyl 2,3,6-tri-O-acetyl- α -D-galactopyranoside [87924-29-6]

 $C_{13}H_{20}O_9$ 320.296Cryst. (Et₂O/hexane). Mp 105-107°. [α]_D +3.3 (c, 0.7 in CHCl₃).

2,3,4,6-Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- α -D-galactopyranoside [5019-22-7]

 $C_{15}H_{22}O_{10}$ 362.333Mp 86-87°. [α]_D²⁰ +132.5 (CHCl₃).

6-Benzoyl: Methyl 6-O-benzoyl- α -D-galactopyranoside [42927-28-6]

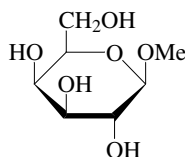
 $C_{14}H_{18}O_7$ 298.292Cryst. (2-propanol). Mp 150-151° (152-154°). [α]_D²⁷ +122 (c, 0.96 in Py).

6-Benzoyl, 2,3,4-trimesyl: Methyl 6-O-benzoyl-2,3,4-tri-O-mesyl- α -D-galactopyranoside [42927-31-1]

- $C_{17}H_{24}O_{13}S_3$ 532.567
Needles (MeOH). Mp 126-128°. $[\alpha]_D^{27}$ +94 (c, 1.37 in Py).
- 3,6-Dibenzoyl: Methyl 3,6-di-O-benzoyl- α -D-galactopyranoside
[14315-83-4]
 $C_{21}H_{22}O_8$ 402.4
Mp 145-146°. $[\alpha]_D$ +103 (c, 1.0 in $CHCl_3$).
- 2,3,6-Tribenzoyl: Methyl 2,3,6-tri-O-benzoyl- α -D-galactopyranoside
[3601-36-3]
 $C_{28}H_{26}O_9$ 506.508
Mp 137-139°. $[\alpha]_D^{25}$ +116.9 ($CHCl_3$).
- 2,3,6-Tribenzoyl, 4-mesyl: Methyl 2,3,6-tri-O-benzoyl-4-O-mesyl- α -D-galactopyranoside
[4137-34-2]
 $C_{29}H_{28}O_{11}S$ 584.6
Cryst. (EtOH). Mp 141-142°.
- 6-Tosyl: Methyl 6-O-tosyl- α -D-galactopyranoside
[34698-19-6]
 $C_{14}H_{20}O_8S$ 348.373
Cryst. (MeOH). Mp 170°. $[\alpha]_D^{18}$ +103.5 (Py).
- 6-Tosyl, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-O-tosyl- α -D-galactopyranoside
[52109-81-6]
 $C_{20}H_{26}O_{11}S$ 474.485
Prisms (MeOH). Mp 128°. $[\alpha]_D^{18}$ +102.4 ($CHCl_3$).
- 2,6-Ditosyl: Methyl 2,6-di-O-tosyl- α -D-galactopyranoside
[69182-51-0]
 $C_{21}H_{26}O_{10}S_2$ 502.562
Cryst. (EtOH). Mp 151-152° (148°). $[\alpha]_D^{17}$ +75 (c, 0.6 in Py).
- 3,6-Ditosyl: Methyl 3,6-di-O-tosyl- α -D-galactopyranoside
[74042-86-7]
 $C_{21}H_{26}O_{10}S_2$ 502.562
Cryst. (EtOH). Mp 89-90° (63-64°). $[\alpha]_D^{18}$ +82.2 (c, 1.1 in $CHCl_3$). $[\alpha]_D^{24}$ +128 (c, 1.34 in $CHCl_3$).
- 2,3,6-Tritosyl: Methyl 2,3,6-tri-O-tosyl- α -D-galactopyranoside
[74052-05-4]
 $C_{28}H_{32}O_{12}S_3$ 656.752
Cryst. (MeOH). Mp 142-143°. $[\alpha]_D^{17}$ +109.7 (c, 1.08 in $CHCl_3$).
- 3,4-O-Methylene: Methyl 3,4-O-methylene- α -D-galactopyranoside
 $C_8H_{14}O_6$ 206.195
Cryst. (EtOAc/Et₂O). Mp 113-116°. $[\alpha]_D^{20}$ +179.
- 4,6-O-Methylene: Methyl 4,6-O-methylene- α -D-galactopyranoside
[50256-51-4]
 $C_8H_{14}O_6$ 206.195
Mp 222-223°. $[\alpha]_D$ +182 (H_2O).
- 4,6-O-Ethylidene: Methyl 4,6-O-ethylidene- α -D-galactopyranoside
 $C_9H_{16}O_6$ 220.222
Mp 117-118°. $[\alpha]_D$ +177 (EtOH).
- 3,4-Isopropylidene: Methyl 3,4-O-isopropylidene- α -D-galactopyranoside
[40269-01-0]
 $C_{10}H_{18}O_6$ 234.249
Flakes (C_6H_6), cryst. (Me_2CO /hexane).
Mp 103-104° (97-98°). $[\alpha]_D^{22}$ +161 (c, 2.0 in $CHCl_3$) (+135, +151).
- 2,3,4,6-Diisopropylidene: Methyl 2,3,4,6-di-O-isopropylidene- α -D-galactopyranoside
[118542-53-3]
 $C_{13}H_{22}O_6$ 274.313
Mp 72-73°. $[\alpha]_D$ +157 (c, 1 in $CHCl_3$).
- 3,4-O-Benzylidene, 6-benzoyl: Methyl 6-O-benzoyl-3,4-O-benzylidene- α -D-galactopyranoside
[42927-29-7]
 $C_{21}H_{22}O_7$ 386.401
Cryst. (EtOH). Mp 154-155.5°. $[\alpha]_D^{27}$ +128 (c, 1.25 in Py).
- 3,4-O-Benzylidene, 6-benzoyl, 2-Ac: Methyl 2-O-acetyl-6-O-benzoyl-3,4-O-benzylidene- α -D-galactopyranoside
[42927-30-0]
 $C_{23}H_{24}O_8$ 428.438
Cryst. (EtOH). Mp 128-129°. $[\alpha]_D^{27}$ +110 (c, 1.2 in Me_2CO).
- 4,6-O-Benzylidene: See Methyl 4,6-O-benzylidene- α -D-galactopyranoside, M-162
- 2,3,4,6-Tetra-Me: Methyl 2,3,4,6-tetra-O-methyl- α -D-galactopyranoside
[3149-64-2]
 $C_{11}H_{22}O_6$ 250.291
Mp 80-84°. $[\alpha]_D^{18}$ +148 (EtOH).
- 3-Benzyl: Methyl 3-O-benzyl- α -D-galactopyranoside
[81371-52-0]
 $C_{14}H_{20}O_6$ 284.308
Cryst. (EtOAc). Mp 146-147° (138-139°).
- 3-Benzyl, tri-Ac: Methyl 2,4,6-tri-O-acetyl-3-O-benzyl- α -D-galactopyranoside
[81348-19-8]
 $C_{20}H_{26}O_9$ 410.42
Needles (EtOH aq.). Mp 80-81°. $[\alpha]_D$ +160 (c, 1.1 in MeOH).
- 2,3-Dibenzyl: Methyl 2,3-di-O-benzyl- α -D-galactopyranoside
[29388-46-3]
 $C_{21}H_{26}O_6$ 374.433
Cryst. (diisopropyl ether). Mp 87-88°. $[\alpha]_D^{25}$ +45.4 (c, 0.8 in $CHCl_3$).
- 2,3-Dibenzyl, 6-Ac: Methyl 6-O-acetyl-2,3-di-O-benzyl- α -D-galactopyranoside
[51842-23-0]
 $C_{23}H_{28}O_7$ 416.47
Mp 139-141°. $[\alpha]_D$ +13 ($CHCl_3$).
- 2,3-Dibenzyl, 4,6-di-Ac: Methyl 4,6-di-O-acetyl-2,3-di-O-benzyl- α -D-galactopyranoside
[51842-32-1]
 $C_{25}H_{30}O_8$ 458.507
 $[\alpha]_D$ +52 ($CHCl_3$).
- 2,3,4-Tribenzyl: Methyl 2,3,4-tri-O-benzyl- α -D-galactopyranoside
[55094-38-7]
 $C_{28}H_{32}O_6$ 464.557
Cryst. (cyclohexane). Mp 103-105°. $[\alpha]_D$ -22 (c, 0.7 in $CHCl_3$).
- 2,3,6-Tribenzyl: Methyl 2,3,6-tri-O-benzyl- α -D-galactopyranoside
[55697-49-9]
 $C_{28}H_{32}O_6$ 464.557
 $[\alpha]_D^{22}$ +40 (+35) ($CHCl_3$).
- 2,4,6-Tribenzyl: Methyl 2,4,6-tri-O-benzyl- α -D-galactopyranoside
[55697-50-2]
 $C_{28}H_{32}O_6$ 464.557
Syrup. $[\alpha]_D$ +46.6 (c, 1.04 in $CHCl_3$).
- 6-Trityl: Methyl 6-O-trityl- α -D-galactopyranoside
[35920-83-3]
 $C_{26}H_{28}O_6$ 436.504
Oil. Not characterised; anomeric config. in doubt.
- 6-Trityl, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-O-trityl- α -D-galactopyranoside
[38982-56-8]
 $C_{32}H_{34}O_9$ 562.615
Cryst. (EtOH). Mp 179-181° (170-173°). $[\alpha]_D$ +60 (c, 1 in $CHCl_3$).
- 6-Trityl, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-6-O-trityl- α -D-galactopyranoside
[53685-07-7]
 $C_{29}H_{32}O_6$ 476.568
Cryst. (hexane). Mp 111-113° (61-64°). $[\alpha]_D$ +52 (c, 1 in $CHCl_3$) (49). Also descr. as a foam.
- Dale, J.K. et al., *J.A.C.S.*, 1930, **52**, 2534-2537 (synth, tetra-Ac)
Valentin, F. et al., *Coll. Czech. Chem. Comm.*, 1932, **4**, 364-375 (6-trityl -tri-Ac)
Ohle, H. et al., *Ber.*, 1933, **66**, 525-532 (tosyl, tosyl tri-Ac)
Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 1943, 342
Wolfrom, M.L. et al., *J.A.C.S.*, 1959, **81**, 3716-3719 (3,4-isopropylidene)
Pacsu, E. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 356-357 (synth)
Reist, E.J. et al., *J.O.C.*, 1965, **30**, 2312-2317 (2,3,6-tribenzoyl)
Williams, J.M. et al., *Tetrahedron*, 1967, **23**, 1369 (3,6-dibenzoyl, 2,3,6-tribenzoyl, pmr)
Kiss, J. et al., *Helv. Chim. Acta*, 1970, **53**, 1000-1011 (dibenzyl)
Rathbone, E.B. et al., *Carbohydr. Res.*, 1971, **20**, 357-365 (pmr)
Borén, H.B. et al., *Acta Chem. Scand.*, 1972, **26**, 644-652; 1973, **27**, 2740-2748 (2-Ac, 3-Ac, 6-Ac, 6-Ac dibenzyl, 4,6-di-Ac, 4,6-di-Ac dibenzyl)
Garegg, P.G. et al., *Acta Chem. Scand.*, 1972, **26**, 3895-3901 (2,3,4-tribenzyl)
Hollenberg, D.H. et al., *Carbohydr. Res.*, 1973, **28**, 135 (6-benzoyl, 6-benzoyl trimethyl, 3,4-benzylidene 6-benzoyl)
Szarek, W.A. et al., *Can. J. Chem.*, 1974, **52**, 3394-3400 (cmr)
De Belder, A.N. et al., *Adv. Carbohydr. Chem. Biochem.*, 1977, **34**, 179-241 (rev. acetals)
Ogawa, T. et al., *Carbohydr. Res.*, 1977, **56**, C1 (6-benzoyl)
Matsuiro, B. et al., *Carbohydr. Res.*, 1980, **81**, 330-334 (2,6-ditosyl, 3,6-ditosyl, 2,3,6-tritosyl)
Thiem, J. et al., *Chem. Ber.*, 1980, **113**, 3058-3066 (3,4-isopropylidene)
Garegg, P.G. et al., *Carbohydr. Res.*, 1982, **108**, 97-101 (2,3,6-tribenzyl)
Bock, K. et al., *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27-66 (cmr, rev)
Kaifu, R. et al., *Carbohydr. Res.*, 1985, **140**, 37-49 (6-trityl 2,3-isopropylidene)
Kovac, P. et al., *Carbohydr. Res.*, 1985, **142**, 158-164 (3-benzyl, pmr, cmr)
Bernotas, R.C. et al., *Carbohydr. Res.*, 1987, **167**, 305-311 (6-trityl)
Barili, P.L. et al., *Carbohydr. Res.*, 1988, **177**, 29-41; 1993, **243**, 165-176; 287 (2,3,4,6-diisopropylidene, 3,4-isopropylidene, synth, cryst struct)

- Catelani, G. *et al.*, *Carbohydr. Res.*, 1988, **182**, 287-289 (synth, 3,4-isopropylidene)
 Rashid, A. *et al.*, *Can. J. Chem.*, 1990, **68**, 1122-1127 (6-trityl tri-Ac, 6-trityl 3,4-isopropylidene)
 Kong, F. *et al.*, *Carbohydr. Res.*, 1990, **198**, 141-148 (2,4,6-tribenzyl)
 Vogt, D.C. *et al.*, *Carbohydr. Res.*, 1990, **206**, 333-339 (pmr, cmr)
 Parra, E. *et al.*, *Carbohydr. Res.*, 1990, **208**, 83-92 (4-benzyl, 4-benzyl tri-Ac)
 Jacobsen, S. *et al.*, *Acta Chem. Scand.*, 1993, **47**, 1012-1018 (3,4-methylene)
 Nouguié, R. *et al.*, *Carbohydr. Res.*, 1995, **277**, 339-345 (4,6-methylene)
 Kawana, M. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 67-78 (3,6-ditosyl)

Methyl β -D-galactopyranoside M-186
 [1824-94-8]



- C₇H₁₄O₆ 194.184
 Mp 178-180°. [α]_D +0.61 (H₂O).
 2-Ac: Methyl 2-O-acetyl- β -D-galactopyranoside
 [37180-55-5]
 C₉H₁₆O₇ 236.221
 Mp 115-120°. [α]_D +12 (c, 1.0 in H₂O).
 3-Ac: Methyl 3-O-acetyl- β -D-galactopyranoside
 [37180-56-6]
 C₉H₁₆O₇ 236.221
 Syrup. [α]_D +41 (c, 0.5 in H₂O).
 4-Ac: Methyl 4-O-acetyl- β -D-galactopyranoside
 [51897-72-4]
 C₉H₁₆O₇ 236.221
 [α]_D -4 (EtOH).
 6-Ac: Methyl 6-O-acetyl- β -D-galactopyranoside
 [40694-69-7]
 C₉H₁₆O₇ 236.221
 Mp 142-145°. [α]_D²² -1.1 (c, 0.6 in H₂O).
 [α]_D²² +1 (c, 1.0 in H₂O).
 2,6-Di-Ac: Methyl 2,6-di-O-acetyl- β -D-galactopyranoside
 [51842-26-3]
 C₁₁H₁₈O₈ 278.258
 Mp 105-111°. [α]_D -12 (CHCl₃).
 3,4-Di-Ac: Methyl 3,4-di-O-acetyl- β -D-galactopyranoside
 [51842-29-6]
 C₁₁H₁₈O₈ 278.258
 [α]_D +32 (CHCl₃).
 4,6-Di-Ac: Methyl 4,6-di-O-acetyl- β -D-galactopyranoside
 [51842-35-4]
 C₁₁H₁₈O₈ 278.258
 Mp 109-112°. [α]_D -1 (EtOH).
 Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- β -D-galactopyranoside
 [5019-23-8]
 C₁₅H₂₂O₁₀ 362.333
 Mp 94°. [α]_D -25.5 (C₆H₆).

- 3-Benzoyl: Methyl 3-O-benzoyl- β -D-galactopyranoside
 [71454-34-7]
 C₁₄H₁₈O₇ 298.292
 Cryst. (petrol/EtOAc). Mp 106-109°. [α]_D²⁰ +56.7 (c, 0.55 in EtOH).
 6-Benzoyl: Methyl 6-O-benzoyl- β -D-galactopyranoside
 [71454-33-6]
 C₁₄H₁₈O₇ 298.292
 Cryst. (petrol/EtOAc). [α]_D²⁰ -4 (c, 0.5 in EtOH).
 3,6-Dibenzoyl: Methyl 3,6-di-O-benzoyl- β -D-galactopyranoside
 [64244-18-4]
 C₂₁H₂₂O₈ 402.4
 Cryst. (EtOAc/diisopropyl ether). Mp 132-133°. [α]_D²⁵ -7.1 (c, 0.85 in CHCl₃).
 2,3,4-Tribenzoyl, 6-tosyl: Methyl 2,3,4-tri-O-benzoyl-6-O-tosyl- β -D-galactopyranoside
 [64244-18-4]
 C₃₅H₃₂O₁₁S 660.697
 Mp 194°. [α]_D²⁰ +148.7 (CHCl₃).
 2,4,6-Tribenzoyl: Methyl 2,4,6-tri-O-benzoyl- β -D-galactopyranoside
 [34820-02-5]
 C₂₈H₂₆O₉ 506.508
 Foam. [α]_D +6 (c, 1.0 in CHCl₃).
 3,4-O-Ethylidene (R-): Methyl 3,4-O-ethylidene- β -D-galactopyranoside
 [54447-48-2]
 C₉H₁₆O₆ 220.222
 Mp 193-196°. [α]_D +8 (H₂O).
 3,4-O-Ethylidene (S-): [54447-49-3]
 Mp 169-171°. [α]_D +13 (H₂O).
 3,4-O-Isopropylidene: Methyl 3,4-O-isopropylidene- β -D-galactopyranoside
 [14897-47-3]
 C₁₀H₁₈O₆ 234.249
 Mp 134-135°. [α]_D¹⁷ +21 (H₂O).
 3,4-O-Isopropylidene, 6-tosyl: Methyl 3,4-O-isopropylidene-6-O-tosyl- β -D-galactopyranoside
 [20688-91-9]
 C₁₇H₂₄O₈S 388.438
 Mp 154-155°. [α]_D 0 (CHCl₃).
 4,6-O-Isopropylidene: Methyl 4,6-O-isopropylidene- β -D-galactopyranoside
 [20688-90-8]
 C₁₀H₁₈O₆ 234.249
 Cryst. (EtOH). Mp 160-162° (155-157°). [α]_D²⁵ -31.2 (c, 0.9 in CHCl₃).
 2,3,4,6-Diisopropylidene: Methyl 2,3,4,6-di-O-isopropylidene- β -D-galactopyranoside
 [118542-52-2]
 C₁₃H₂₂O₆ 274.313
 Mp 105-107°. [α]_D -27 (c, 1 in CHCl₃).
 3,4-O-Benzylidene: Methyl 3,4-O-benzylidene- β -D-galactopyranoside
 [51897-74-6]
 C₁₄H₁₈O₆ 282.293
 Mp 139-141° Mp 165-168°. [α]_D +18 (EtOH) (low-melting isomer). [α]_D -11 (EtOH) (high-melting isomer). Two diastereoisomers obt.
 4,6-O-Benzylidene: See Methyl 4,6-O-benzylidene- β -D-galactopyranoside, M-163

- 2,3-Di-Me, 4,6-O-ethylidene: Methyl 4,6-O-ethylidene-2,3-di-O-methyl- β -D-galactopyranoside
 C₁₁H₂₀O₆ 248.275
 Mp 80-81°. [α]_D +9 (CHCl₃).
 Tetra-Me: Methyl 2,3,4,6-tetra-O-methyl- β -D-galactopyranoside
 [2296-47-1]
 C₁₁H₂₂O₆ 250.291
 Mp 48°. [α]_D²⁰ -24.4 (EtOH).
 2,3-Dibenzyl, 4,6-di-Ac: Methyl 4,6-di-O-acetyl-2,3-di-O-benzyl- β -D-galactopyranoside
 [51842-34-3]
 C₂₅H₃₀O₈ 458.507
 Mp 108-109°. [α]_D +28 (CHCl₃).
 2,6-Dibenzyl, 3,4-di-Ac: Methyl 3,4-di-O-acetyl-2,6-di-O-benzyl- β -D-galactopyranoside
 [51842-28-5]
 C₂₅H₃₀O₈ 458.507
 [α]_D +14 (CHCl₃).
 2,3,4-Tribenzyl: Methyl 2,3,4-tri-O-benzyl- β -D-galactopyranoside
 [40653-32-5]
 C₂₈H₃₂O₆ 464.557
 Foam. [α]_D -22 (c, 1.0 in CHCl₃). [α]_D +42 (c, 0.4 in EtOH). The large discrepancy in reported opt. rotns. is improbable.
 2,3,6-Tribenzyl: Methyl 2,3,6-tri-O-benzyl- β -D-galactopyranoside
 [51842-16-1]
 C₂₈H₃₂O₆ 464.557
 [α]_D +3 (CHCl₃).
 2,3,6-Tribenzyl, 4-Ac: Methyl 4-O-acetyl-2,3,6-tri-O-benzyl- β -D-galactopyranoside
 [51842-17-2]
 C₃₀H₃₄O₇ 506.594
 [α]_D +20 (CHCl₃).
 3,4,6-Tribenzyl: Methyl 3,4,6-tri-O-benzyl- β -D-galactopyranoside
 [73445-27-9]
 C₂₈H₃₂O₆ 464.557
 Oil. [α]_D +2.9 (c, 0.6 in CHCl₃). Sample contained 17% α -anomer.
 6-Trityl: Methyl 6-O-trityl- β -D-galactopyranoside
 [35780-80-4]
 C₂₆H₂₈O₆ 436.504
 Mp 184-185° (167-168°). [α]_D -38 (c, 1.1 in CHCl₃).
 6-Trityl, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-O-trityl- β -D-galactopyranoside
 [87591-35-3]
 C₃₂H₃₄O₉ 562.615
 Cryst. (EtOH). Mp 143-145° (138°). [α]_D -52.7 (c, 1.6 in CHCl₃).
 6-Trityl, tribenzoyl: Methyl 2,3,4-tri-O-benzoyl-6-O-trityl- β -D-galactopyranoside
 [53182-62-0]
 C₄₇H₄₀O₉ 748.828
 Mp 95°. [α]_D²⁰ +78 (CHCl₃).
 2,6-Ditrityl: Methyl 2,6-di-O-trityl- β -D-galactopyranoside
 [81561-86-6]
 C₄₅H₄₂O₆ 678.823
 Cryst. (diisopropyl ether). Mp 134-136°. [α]_D +2 (c, 1.0 in CHCl₃).

2,3,4-Tris(trimethylsilyl): Methyl 2,3,4-tris(trimethylsilyl)- β -D-galactopyranoside
[22875-28-1]
C₁₆H₃₈O₆Si₃ 410.729
Mp 131-132°. [α]_D -1.7.

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 303B (nmr)

Dale, J.K. et al., J.A.C.S., 1930, **52**, 2534 (synth, tetra-Ac)

Müller, A. et al., Ber., 1931, **64**, 1820-1826, (6-trityl tri-Ac, 6-trityl tribenzoyl, tosyl tribenzoyl)

Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, Edwards Bros. Inc., Ann Arbor, 1943, 343 (rev, derivs)

Conchie, J. et al., Adv. Carbohydr. Chem., 1957, **12**, 157 (rev)

De Belder, A.N. et al., Adv. Carbohydr. Chem. Biochem., 1965, **20**, 219; 1977, **34**, 179 (rev, acetals)

Rathbone, E.B. et al., Carbohydr. Res., 1971, **20**, 357 (pmr)

Borén, H.B. et al., Acta Chem. Scand., 1972, **26**, 644; 1973, **27**, 2740 (Ac derivs, dibenzyl and tribenzyl derivs)

Bock, K. et al., Tet. Lett., 1973, 1037 (cmr, rev)

Garegg, P.J. et al., Acta Chem. Scand., Ser. B, 1974, **28**, 381-384 (3,4-ethylidene, config)

Fuchs, E.-F. et al., Chem. Ber., 1974, **107**, 721 (6-Ac)

Takagi, S. et al., Acta Cryst. B, 1979, **35**, 902 (cryst struct)

Das, M.K. et al., Carbohydr. Res., 1979, **73**, 235-244 (6-benzoyl, 3-benzoyl)

Ogawa, T. et al., Tetrahedron, 1981, **37**, 2363 (3,6-dibenzoyl)

Ogawa, T. et al., Carbohydr. Res., 1982, **101**, 263 (2,6-ditriyl)

Bock, K. et al., Adv. Carbohydr. Chem. Biochem., 1983, **41**, 27 (cmr, rev)

Kováč, P. et al., Carbohydr. Res., 1984, **128**, 101 (6-trityl)

Barili, P.L. et al., Carbohydr. Res., 1988, **177**, 29; 1993, **243**, 165 (2,3:4,6-diisopropylidene, 3,4-isopropylidene, synth, cryst struct, pmr, cmr)

Catelan, G. et al., Carbohydr. Res., 1988, **182**, 297 (synth, 3,4-isopropylidene)

Helm, R.F. et al., Carbohydr. Res., 1992, **229**, 183 (tristramethylsilyl, pmr, cmr)

Valdor, J.-F. et al., J. Carbohydr. Chem., 1997, **16**, 429-440 (2,4,6-tribenzoyl, 6-trityl, 2,3,4-tribenzoyl)

Rozenberg, M. et al., Carbohydr. Res., 2000, **328**, 307-319 (ir)

Barbieri, L. et al., Eur. J. Org. Chem., 2004, 468-473 (3,4,6-tribenzoyl)

Cryst. (EtOH/Et₂O). Mp 141° (hydrate). [α]_D²⁵ +128 (c, 0.3 in H₂O).

2,3,4-Tri-Ac, Me ester: Methyl (methyl 2,3,4-tri-O-acetyl- α -D-galactopyranosid)uronate
[35785-35-4]
C₁₄H₂₀O₁₀ 348.306

Cryst. (Et₂O/pentane). Mp 95-96° Mp 118-120°. [α]_D²⁵ +15.3 (c, 1.5 in CHCl₃). [α]_D²² +160 (CHCl₃).

2,3-Dibenzoyl, Me ester: Methyl (methyl 2,3-di-O-benzoyl- α -D-galactopyranosid)uronate
[55610-63-4]
C₂₂H₂₂O₉ 430.41

Syrup. [α]_D +172 (c, 1.0 in CHCl₃).

2,3,4-Tribenzoyl, Me ester: Methyl (methyl 2,3,4-tri-O-benzoyl- α -D-galactopyranosid)uronate
[55610-61-2]
C₂₉H₂₆O₁₀ 534.518

Cryst. (diisopropyl ether). Mp 134-135°. [α]_D +203 (c, 1.0 in CHCl₃).

2,3-Dibenzoyl, 4-mesyl, Me ester: Methyl (methyl 2,3-di-O-benzoyl-4-O-mesyl- α -D-galactopyranosid)uronate
[33012-59-8]
C₂₃H₂₄O₁₁S 508.502

Cryst. (2-propanol). Mp 122-123°. [α]_D +156 (c, 1.0 in CHCl₃).

2-Tosyl, Me ester: Methyl (methyl 2-O-tosyl- α -D-galactopyranosid)uronate
C₁₅H₂₀O₉S 376.384
Mp 71°. [α]_D¹⁸ +61 (c, 1.1 in CHCl₃).

3,4-O-Isopropylidene, Me ester: Methyl (methyl 3,4-O-isopropylidene- α -D-galactopyranosid)uronate
[25253-47-8]
C₁₁H₁₈O₇ 262.259

Needles (petrol). Mp 113-114°. [α]_D²⁵ +117 (c, 1.2 in H₂O).

3,4-O-Isopropylidene, 2-tosyl, Me ester: Methyl (methyl 3,4-O-isopropylidene-2-O-tosyl- α -D-galactopyranosid)uronate
C₁₈H₂₄O₉S 416.448
Mp 157-158°. [α]_D²⁰ +122 (c, 1.1 in MeOH).

2-Me, Me ester: Methyl (methyl 2-O-methyl- α -D-galactopyranosid)uronate
[52545-24-1]
C₉H₁₆O₇ 236.221

Cryst. (butanone/Et₂O). Mp 77-79°. [α]_D²⁵ +140 (c, 0.7 in MeOH).

3,4-Di-Me: Methyl 3,4-di-O-methyl- α -D-galactopyranosiduronic acid
C₉H₁₆O₇ 236.221
Mp 154-155°. [α]_D +158 (CHCl₃).

3,4-Di-Me, Me ester: Methyl (methyl 3,4-di-O-methyl- α -D-galactopyranosid)uronate
[35942-16-6]
C₁₀H₁₈O₇ 250.248

Needles (petrol). Mp 113-114°. [α]_D +165 (CHCl₃).

2,3,4-Tri-Me, Me ester: Methyl (methyl 2,3,4-tri-O-methyl- α -D-galactopyranosid)uronate
[55781-03-8]
C₁₁H₂₀O₇ 264.275

Mp 70°. [α]_D +142.1 (CHCl₃).

2,3-Dibenzyl, Me ester: Methyl (methyl 2,3-di-O-benzyl- α -D-galactopyranosid)uronate
[29600-82-6]
C₂₂H₂₆O₇ 402.443

Cryst. (diisopropyl ether). Mp 66-67°. [α]_D²⁵ +33.3 (c, 0.74 in CHCl₃).

2,3-Dibenzyl, 4-mesyl, Me ester: Methyl (methyl 2,3-di-O-benzyl-4-O-mesyl- α -D-galactopyranosid)uronate
C₂₃H₂₈O₉S 480.535

Cryst. (diisopropyl ether). Mp 96-97°. [α]_D +60.5 (c, 0.64 in CHCl₃).

β -D-form [5241-02-1]

Mp 134° (163-165°) dec. [α]_D²¹ -39.2 (c, 1.4 in H₂O). Sinters at 126°.

Me ester: Methyl (methyl β -D-galactopyranosid)uronate
[10357-03-6]
C₈H₁₄O₇ 222.194

Mp 193-194°. [α]_D²⁰ -45.6 (H₂O).

3,4-O-Isopropylidene, Me ester: Methyl (methyl 3,4-O-isopropylidene- β -D-galactopyranosid)uronate
[52545-22-9]
C₁₁H₁₈O₇ 262.259

Mp 137°. [α]_D²⁵ -28 (c, 0.9 in CHCl₃).

2,3-Di-Me, Me ester: Methyl (methyl 2,3-di-O-methyl- β -D-galactopyranosid)uronate
C₁₀H₁₈O₇ 250.248

Mp 111°. [α]_D -11 (H₂O).

2,3,4-Tri-Me: Methyl 2,3,4-tri-O-methyl- β -D-galactopyranosiduronic acid
C₁₀H₁₈O₇ 250.248
Mp 102°. [α]_D -21 (H₂O).

2,3,4-Tri-Me, Me ester: Methyl (methyl 2,3,4-tri-O-methyl- β -D-galactopyranosid)uronate
C₁₁H₂₀O₇ 264.275
[α]_D¹⁸ -20 (c, 1.0 in MeOH).

Ehrlich, F. et al., Ber., 1933, **66**, 220 (α -D-form, β -D-form, α -D-Me ester, β -D-Me ester)

Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, 4th edn., J.A. Barth, 1935, 358 (rev)

Cadotte, J.E. et al., J.A.C.S., 1952, **74**, 1501, (α -D-Me ester)

Edington, R.A. et al., J.C.S., 1953, 2473, (α -D-Me ester, α -D-Me ester isopropylidene, α -D-Me ester di-Me, α -D-Me ester tri-Me)

Aspinall, G.O. et al., Adv. Carbohydr. Chem., 1954, **9**, 131 (rev, Me ethers)

Kiss, J. et al., Helv. Chim. Acta, 1970, **53**, 1000 (α -D-Me ester dibenzyl, α -D-Me ester dibenzyl mesyl)

Gill, P.L. et al., Carbohydr. Res., 1971, **17**, 213 (α -D-Me ester dibenzoyl, α -D-Me ester tribenzoyl mesyl, α -D-Me ester tribenzoyl)

Llewellyn, J.W. et al., Carbohydr. Res., 1972, **22**, 221 (α -D-Me ester tri-Ac)

Hjortas, J. et al., Acta Chem. Scand., Ser. B, 1974, **28**, 133 (cryst struct)

Kováč, P. et al., Carbohydr. Res., 1974, **32**, 360 (α -D-Me ester isopropylidene, β -D-Me ester isopropylidene, β -D-Me ester, α -D-Me ester Me)

Tjan, S.B. et al., Carbohydr. Res., 1974, **34**, 15 (pmr)

Keglević, D. et al., Adv. Carbohydr. Chem. Biochem., 1979, **36**, 57 (rev)

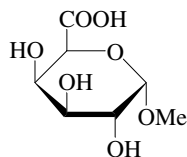
Matsuhiro, B. et al., Carbohydr. Res., 1981, **97**, 11 (cmr, pmr)

Lamba, D. et al., Acta Cryst. C, 1995, **50**, 1494 (cryst struct, Me ester)

Methyl galactopyranosiduronic acid, 9CI

M-187

Methyl galactouronic acid



α -D-form

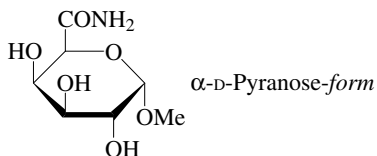
C₇H₁₂O₇ 208.168

α -D-form [5155-53-3]

Mp 109° (sinters) Mp 112-114° dec. [α]_D²⁰ +129.9 (H₂O).

Me ester: Methyl (methyl α -D-galactopyranosid)uronate
[5155-54-4]
C₈H₁₄O₇ 222.194

Schnatbaum, K. *et al.*, *Synthesis*, 1999, 864-872 (α -D-Me ester)

Methyl galactosiduronamide M-188

$C_7H_{13}NO_6$ 207.183

 α -D-Pyranose-form

Methyl α -D-galactopyranosiduronamide, 8CI

[3170-03-4]

Cryst. (EtOH aq.). Mp 231.5° dec. $[\alpha]_D^{25} +126.5$ (H₂O).

2-Tosyl: *Methyl 2-O-tosyl- α -D-galactopyranosiduronamide*

$C_{14}H_{19}NO_8S$ 361.372

Mp 94-95°. $[\alpha]_D^{18} +67$ (c, 0.5 in CHCl₃).

3,4-O-Isopropylidene: *Methyl 3,4-O-isopropylidene- α -D-galactopyranosiduronamide*

$C_{10}H_{17}NO_6$ 247.247

Cryst. (EtOAc/diisopropyl ether). Mp 161.5°. $[\alpha]_D^{25} +133$ (c, 1.0 in CHCl₃).

3,4-O-Isopropylidene, 2-Ac: *Methyl 2-O-acetyl-3,4-O-isopropylidene- α -D-galactopyranosiduronamide*

$C_{12}H_{19}NO_7$ 289.285

Cryst. (EtOAc/cyclohexane). Mp 168-169°. $[\alpha]_D +130$ (CHCl₃).

3,4-O-Isopropylidene, 2-tosyl: *Methyl 3,4-O-isopropylidene-2-O-tosyl- α -D-galactopyranosiduronamide*

$C_{17}H_{23}NO_8S$ 401.437

Cryst. (EtOAc/cyclohexane). Mp 172°. $[\alpha]_D^{20} +119.5$ (c, 1.4 in CHCl₃).

2-Me: *Methyl 2-O-methyl- α -D-galactopyranosiduronamide*

$C_8H_{15}NO_6$ 221.21

Cryst. (EtOH/Et₂O). Mp 174-175°. $[\alpha]_D^{18} +55$ (EtOH).

3,4-Di-Me: *Methyl 3,4-di-O-methyl- α -D-galactopyranosiduronamide*

$C_9H_{17}NO_6$ 235.236

Mp 130-131°. $[\alpha]_D^{17} +108$ (c, 1.1 in EtOH).

2,3,4-Tri-Me: *Methyl 2,3,4-tri-O-methyl- α -D-galactopyranosiduronamide*

$C_{10}H_{19}NO_6$ 249.263

Mp 153-154°. $[\alpha]_D^{27} +121.5$ (CHCl₃).

 β -D-Furanose-form

2,3-Di-Me: *Methyl 2,3-di-O-methyl- β -D-galactofuranosiduronamide*

$C_9H_{17}NO_6$ 235.236

Mp 124°. $[\alpha]_D -151$ (H₂O).

2,3,5-Tri-Me: *Methyl 2,3,5-tri-O-methyl- β -D-galactofuranosiduronamide*

$C_{10}H_{19}NO_6$ 249.263

Cryst. (Et₂O). Mp 106°. $[\alpha]_D -151.5$ (c, 1.0 in H₂O).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1937, **121**, 155 (α -D-pyr tri-Me)

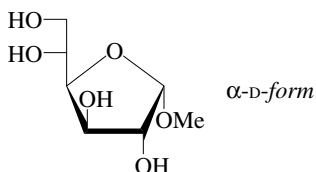
Luckett, S. *et al.*, *J.C.S.*, 1940, 1106 (β -D-fur tri-Me)

Edington, R.A. *et al.*, *J.C.S.*, 1953, 2473,

(α -D-pyr Me, α -D-pyr di-Me)

Aspinall, G.O. *et al.*, *Adv. Carbohydr. Chem.*, 1954, **9**, 131 (rev, Me ethers)

Weidmann, H. *et al.*, *Annalen*, 1964, **679**, 186 (α -D-pyr, synth, α -D-pyr-isopropylidene, α -D-pyr-isopropylidene Ac, α -D-pyr isopropylidene tosyl)

Methyl glucofuranoside, 9CI, 8CI M-189

$C_7H_{14}O_6$ 194.184

 α -D-form [1824-88-0]

Needles (EtOAc). Mp 62-63°. $[\alpha]_D^{20} +118$ (c, 4.5 in H₂O). $[\alpha]_D^{23} +136$ (c, 1 in MeOH).

5,6-Carbonate: *Methyl α -D-glucofuranoside 5,6-carbonate*

$C_8H_{12}O_7$ 220.179

Cryst. (EtOAc). Mp 130°. $[\alpha]_D^{23} +130$ (c, 0.6 in MeOH).

5,6-Carbonate, 2,3-di-Ac: *Methyl 2,3-di-O-acetyl- α -D-glucofuranoside 5,6-carbonate*

$C_{12}H_{16}O_9$ 304.253

Cryst. (Me₂CO/MeOH). Mp 111°. $[\alpha]_D^{18} +148$ (c, 0.5 in Me₂CO).

3-Benzyl, 5,6-carbonate: *Methyl 3-O-benzyl- α -D-glucofuranoside 5,6-carbonate*

[16895-87-7]

$C_{15}H_{18}O_7$ 310.303

Cryst. (EtOH/petrol). Mp 62-63°. $[\alpha]_D^{29} +93.3$ (c, 2.7 in MeOH).

2,3-Dibenzyl, 5,6-carbonate: *Methyl 2,3-di-O-benzyl- α -D-glucofuranoside 5,6-carbonate*

[16895-89-9]

$C_{22}H_{24}O_7$ 400.427

Syrup. $[\alpha]_D^{27} +97.5$ (c, 3.3 in CHCl₃).

 β -D-form [1824-89-1]

Syrup. $[\alpha]_D -77$ (H₂O).

5,6-Carbonate: *Methyl β -D-glucofuranoside 5,6-carbonate*

$C_8H_{12}O_7$ 220.179

Mp 143-145°. $[\alpha]_D^{22} -66$ (c, 0.7 in H₂O).

2,3-Di-Ac, 5,6-carbonate: *Methyl 2,3-di-O-acetyl- β -D-glucofuranoside 5,6-carbonate*

$C_{12}H_{16}O_9$ 304.253

Prisms (Me₂CO/MeOH). Mp 164°. $[\alpha]_D^{18} -41$ (c, 1.5 in Me₂CO).

2,3-Dibenzyl: *Methyl 2,3-di-O-benzyl- β -D-glucofuranoside*

[16895-91-3]

$C_{21}H_{26}O_6$ 374.433

Silky needles (Et₂O). Mp 59-61°. $[\alpha]_D^{27} -59.3$ (c, 2.7 in CHCl₃).

3-Benzyl, 5,6-carbonate: *Methyl 3-O-benzyl- β -D-glucofuranoside 5,6-carbonate*

[16895-88-8]

$C_{15}H_{18}O_7$ 310.303

Syrup. $[\alpha]_D^{20} -51.2$ (c, 3.3 in MeOH).

2,3-Dibenzyl, 5,6-carbonate: *Methyl 2,3-di-O-benzyl- β -D-glucofuranoside 5,6-carbonate*

[16895-90-2]

$C_{22}H_{24}O_7$ 400.427

Syrup. $[\alpha]_D^{27} -52.5$ (c, 3.2 in CHCl₃).

6-Trityl, 2,3-dibenzyl, 5-mesyl: *Methyl 2,3-di-O-benzyl-5-O-mesyl-6-O-trityl- β -D-glucofuranoside*

[16895-92-4]

$C_{41}H_{42}O_8S$ 694.844

Syrup. $[\alpha]_D^{28} +4.7$ (c, 3.0 in CHCl₃).

Haworth, W.N. *et al.*, *J.C.S.*, 1929, 2796; 1932, 2254 (synth, carbonate, carbonate di-Ac)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros., Inc., Ann Arbor, 1943, 258 (rev, derivs)

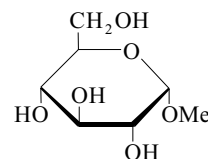
Iwashige, T. *et al.*, *Chem. Pharm. Bull.*, 1967, **15**, 132; 1968, **16**, 1040 (carbonate, benzyl carbonate, dibenzyl carbonate, dibenzyl, dibenzyl mesyl trityl)

Ritchie, R.G.S. *et al.*, *Can. J. Chem.*, 1975, **53**, 1424 (cmr)

Methyl α -D-glucopyranoside, 9CI, 8CI M-190

[97-30-3]

[3149-68-6]



$C_7H_{14}O_6$ 194.184

Obt. using yeast α -glucosidase. Inexpensive starting material for synthesis. V. sol. H₂O. Mp 168°. $[\alpha]_D^{20} +158.9$ (H₂O).

6-Ac: *Methyl 6-O-acetyl- α -D-glucopyranoside*

[4201-66-5]

$C_9H_{16}O_7$ 236.221

Oil. $[\alpha]_D^{21} +151.1$ (c, 1.12 in Me₂CO).

2,3-Di-Ac: *Methyl 2,3-di-O-acetyl- α -D-glucopyranoside*

[29868-42-6]

$C_{11}H_{18}O_8$ 278.258

$[\alpha]_D^{25} +112.4$ (c, 1.0 in H₂O).

2,3,4-Tri-Ac: *Methyl 2,3,4-tri-O-acetyl- α -D-glucopyranoside*

[7432-72-6]

$C_{13}H_{20}O_9$ 320.296

Mp 111°. $[\alpha]_D^{20} +148.8$ (CHCl₃).

2,3,4,6-Tetra-Ac: *Methyl 2,3,4,6-tetra-O-acetyl- α -D-glucopyranoside*

[604-70-6]

$C_{15}H_{22}O_{10}$ 362.333

Mp 105°. $[\alpha]_D^{20} +130.5$ (CHCl₃).

6-Benzoyl: *Methyl 6-O-benzoyl- α -D-glucopyranoside*

[4338-28-7]

$C_{14}H_{18}O_7$ 298.292

No phys. props. reported.

2,6-Dibenzoyl: *Methyl 2,6-di-O-benzoyl- α -D-glucopyranoside*

[26927-44-6]

$C_{21}H_{22}O_8$ 402.4

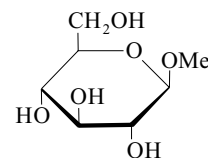
- Obt. in 1 step from methyl α -D-glucopyranoside. Mp 140-142°. $[\alpha]_D^{25} +66.1$ (c, 0.62 in CHCl_3).
- 2,3,4-Tribenzoyl: Methyl 2,3,4-tri-O-benzoyl- α -D-glucopyranoside [52621-71-3] $\text{C}_{28}\text{H}_{26}\text{O}_9$ 506.508 Mp 143°. $[\alpha]_D^{17} +131.4$ (Py).
- 2,3,6-Tribenzoyl: Methyl 2,3,6-tri-O-benzoyl- α -D-glucopyranoside [57784-06-2] $\text{C}_{28}\text{H}_{26}\text{O}_9$ 506.508 Cryst. (Et_2O /hexane). Mp 129-130°. $[\alpha]_D +147.8$ (c, 0.50 in CHCl_3).
- 2,3,4,6-Tetrabenzoyl: Methyl 2,3,4,6-tetra-O-benzoyl- α -D-glucopyranoside [32849-03-9] $\text{C}_{35}\text{H}_{30}\text{O}_{10}$ 610.616 Mp 103-104°. $[\alpha]_D^{21} +78$ (c, 0.5 in CHCl_3).
- 6-Mesyl, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-O-mesyl- α -D-glucopyranoside $\text{C}_{14}\text{H}_{22}\text{O}_{11}\text{S}$ 398.387 Cryst. (MeOH). Mp 113°.
- 6-Tosyl: Methyl 6-O-tosyl- α -D-glucopyranoside [6619-09-6] $\text{C}_{14}\text{H}_{20}\text{O}_8\text{S}$ 348.373 Cryst. (H_2O). Mp 56-58° (hydrate) Mp 124° (anhydr.). $[\alpha]_D^{20} +98.5$ (c, 1.3 in EtOH).
- 2,3-Ditosyl: Methyl 2,3-di-O-tosyl- α -D-glucopyranoside $\text{C}_{21}\text{H}_{26}\text{O}_{10}\text{S}_2$ 502.562 $[\alpha]_D +58.5$ (CHCl_3).
- 2,4-Ditosyl: Methyl 2,4-di-O-tosyl- α -D-glucopyranoside $\text{C}_{21}\text{H}_{26}\text{O}_{10}\text{S}_2$ 502.562 $[\alpha]_D +61.9$ (c, 0.69 in CHCl_3).
- 2,6-Ditosyl: Methyl 2,6-di-O-tosyl- α -D-glucopyranoside [54497-89-1] $\text{C}_{21}\text{H}_{26}\text{O}_{10}\text{S}_2$ 502.562 Syrup. Mp 55-57°. $[\alpha]_D +61.9$ (c, 0.69 in CHCl_3).
- 4,6-O-Methylene: Methyl 4,6-O-methylene- α -D-glucopyranoside [50256-48-9] $\text{C}_8\text{H}_{14}\text{O}_6$ 206.195 Cryst. (EtOAc). Mp 127-128°. $[\alpha]_D^{20} +120.5$ (c, 1.0 in H_2O).
- 4,6-O-Ethylidene: Methyl 4,6-O-ethylidene- α -D-glucopyranoside [13225-11-1] $\text{C}_9\text{H}_{16}\text{O}_6$ 220.222 Mp 75-76°. $[\alpha]_D +111.3$ (H_2O).
- 4,6-O-Ethylidene, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,6-O-ethylidene- α -D-glucopyranoside $\text{C}_{13}\text{H}_{20}\text{O}_8$ 304.296 Mp 81°. $[\alpha]_D^{16} +117$ (CHCl_3).
- 4,6-O-Ethylidene, 2-tosyl: Methyl 4,6-O-ethylidene-2-O-tosyl- α -D-glucopyranoside $\text{C}_{16}\text{H}_{22}\text{O}_8\text{S}$ 374.411 Mp 150°. $[\alpha]_D +82.1$ (CHCl_3).
- 4,6-O-Ethylidene, 3-tosyl: Methyl 4,6-O-ethylidene-3-O-tosyl- α -D-glucopyranoside $\text{C}_{16}\text{H}_{22}\text{O}_8\text{S}$ 374.411 Mp 145-146°. $[\alpha]_D +68.4$ (CHCl_3).

- 4,6-O-Ethylidene, 2,3-ditosyl: Methyl 4,6-O-ethylidene-2,3-di-O-tosyl- α -D-glucopyranoside $\text{C}_{23}\text{H}_{28}\text{O}_{10}\text{S}_2$ 528.6 Mp 155°. $[\alpha]_D +50.9$ (CHCl_3).
- 4,6-O-Propylidene: Methyl 4,6-O-propylidene- α -D-glucopyranoside [2465-70-5] $\text{C}_{10}\text{H}_{18}\text{O}_6$ 234.249 Mp 102-103.5°. $[\alpha]_D +122$ (CHCl_3).
- 2,3:4,6-Di-O-cyclohexylidene: Methyl 2,3:4,6-di-O-cyclohexylidene- α -D-glucopyranoside [18405-23-7] $\text{C}_{19}\text{H}_{30}\text{O}_6$ 354.442 Mp 145.5-146.5° (142-143°). $[\alpha]_D^{25} +77$ (c, 1.0 in Me_2CO).
- 2-Me: See 2-O-Methylglucose, M-255
- 2,3-Di-Me: See 2,3-Di-O-methylglucose, D-738
- 2,3,4,6-Tetra-Me: See 2,3,4,6-Tetra-O-methylglucose, T-43
- 2,3-Dibenzyl: Methyl 2,3-di-O-benzyl- α -D-glucopyranoside [17791-36-5] $\text{C}_{21}\text{H}_{26}\text{O}_6$ 374.433 Needles (EtOH). Mp 79-80°. $[\alpha]_D^{20} +88.7$ (Me_2CO).
- 2,3,4-Tribenzyl: Methyl 2,3,4-tri-O-benzyl- α -D-glucopyranoside [53008-65-4] $\text{C}_{28}\text{H}_{32}\text{O}_6$ 464.557 Needles (Et_2O /petrol). Mp 66.5-67°. $[\alpha]_D^{25} +23.5$ (c, 1 in CHCl_3).
- 2,3,6-Tribenzyl: Methyl 2,3,6-tri-O-benzyl- α -D-glucopyranoside [19488-48-3] $\text{C}_{28}\text{H}_{32}\text{O}_6$ 464.557 Syrup. $[\alpha]_D +13$ (CHCl_3) (+11).
- 2,4,6-Tribenzyl: Methyl 2,4,6-tri-O-benzyl- α -D-glucopyranoside [35303-86-7] $\text{C}_{28}\text{H}_{32}\text{O}_6$ 464.557 Syrup. Bp_{0.002} 253-255°. $[\alpha]_D +67.1$ (c, 2.9 in CHCl_3). n_D^{20} 1.5582.
- 2,3,4,6-Tetranitrate: $\text{C}_7\text{H}_{10}\text{N}_4\text{O}_{14}$ 374.174 Mp 49-50°. $[\alpha]_D +140$ (EtOH).
- 2,4-Bis(trimethylsilyl): Methyl 2,4-bis-O-trimethylsilyl- α -D-glucopyranoside $\text{C}_{13}\text{H}_{30}\text{O}_6\text{Si}_2$ 338.547 Mp 98.5-99.5°. $[\alpha]_D^{24} +91.5$ (c, 5.0 in CHCl_3).
- 2,3,4-Tris(trimethylsilyl): Methyl 2,3,4-tris(trimethylsilyl)- α -D-glucopyranoside [4201-65-4] $\text{C}_{16}\text{H}_{38}\text{O}_6\text{Si}_3$ 410.729 Mp 99-100°. $[\alpha]_D^{24} +91.5$ (c, 5.0 in CHCl_3).
- 4,6-O-Benzylidene: See Methyl 4,6-O-benzylidene- α -D-glucopyranoside, M-164

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- Tollens, B. et al., Kurzes Handbuch der Kohlenhydrate, Edwards Bros. Inc., Ann Arbor, 1943, 260 (rev. derivs)

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Methyl β -D-glucopyranoside M-191
[709-50-2]



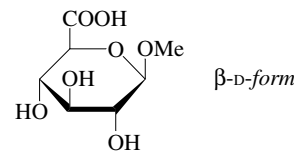
$\text{C}_7\text{H}_{14}\text{O}_6$ 194.184
Present in *Scabiosa succisa* and *Medicago sativa* (alfalfa). Widespread in the Dipsacaceae.
Mp 108-110°. $[\alpha]_D -34.2$ (H_2O).

2-Ac: Methyl 2-O-acetyl- β -D-glucopyranoside [37180-47-5] $\text{C}_9\text{H}_{16}\text{O}_7$ 236.221
Cryst. Mp 141-143°. $[\alpha]_D^{25} -34.1$ (c, 1 in EtOH).

3-Ac: Methyl 3-O-acetyl- β -D-glucopyranoside [20749-98-8] $\text{C}_9\text{H}_{16}\text{O}_7$ 236.221

- Cryst. (Me₂CO). Mp 137-139°. [α]_D²⁵ -9.8 (c, 3.8 in Me₂CO).
- 4-Ac:** Methyl 4-O-acetyl- β -D-glucopyranoside
[51897-71-3]
C₉H₁₆O₇ 236.221
Cryst. Mp 119-126°. [α]_D -20 (H₂O).
- 6-Ac:** Methyl 6-O-acetyl- β -D-glucopyranoside
[20771-12-4]
C₉H₁₆O₇ 236.221
Cryst. (EtOH/Et₂O). Mp 132-134° (128-129°). [α]_D²⁰ -34 (c, 2.0 in H₂O).
- 2,3-Di-Ac:** Methyl 2,3-di-O-acetyl- β -D-glucopyranoside
[27539-67-9]
C₁₁H₁₈O₈ 278.258
Cryst. Mp 113-113.5°.
- 3,6-Di-Ac:** Methyl 3,6-di-O-acetyl- β -D-glucopyranoside
[20750-00-9]
C₁₁H₁₈O₈ 278.258
Cryst. (CH₂Cl₂). Mp ca. 45-47°. [α]_D²⁵ -17.2 (c, 1.8 in CHCl₃).
- 4,6-Di-Ac:** Methyl 4,6-di-O-acetyl- β -D-glucopyranoside
[20771-17-9]
C₁₁H₁₈O₈ 278.258
Cryst. (C₆H₆). Mp 92-95°. [α]_D²⁵ -40.2 (c, 2.0 in CHCl₃).
- 2,3,4-Tri-Ac:** Methyl 2,3,4-tri-O-acetyl- β -D-glucopyranoside
[16668-00-1]
C₁₃H₂₀O₉ 320.296
Mp 134-135°. [α]_D -19.1 (CHCl₃).
- 2,3,6-Tri-Ac:** Methyl 2,3,6-tri-O-acetyl- β -D-glucopyranoside
[31873-37-7]
C₁₃H₂₀O₉ 320.296
Mp 114-115°. [α]_D¹⁸ -64.9 (CHCl₃).
- 2,4,6-Tri-Ac:** Methyl 2,4,6-tri-O-acetyl- β -D-glucopyranoside
C₁₃H₂₀O₉ 320.296
Foamy solid. [α]_D +45.2 (c, 1.0 in CHCl₃).
- 3,4,6-Tri-Ac:** Methyl 3,4,6-tri-O-acetyl- β -D-glucopyranoside
C₁₃H₂₀O₉ 320.296
Mp 95-97°. [α]_D +19 (CHCl₃).
- Tetra-Ac:** Methyl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside
[4860-85-9]
C₁₅H₂₂O₁₀ 362.333
Mp 104-105°. [α]_D²⁰ -18.7 (CHCl₃).
- 6-Benzoyl:** Methyl 6-O-benzoyl- β -D-glucopyranoside. **Scoloposide A**
[21056-50-8]
C₁₄H₁₈O₇ 298.292
Constit. of the stems of *Scopolia spinosa*. Needles (EtOAc).
Mp 131-132°. [α]_D -16 (c, 0.15 in CHCl₃).
- 2,3,4-Tribenzoyl, 6-Ac:** Methyl 6-O-acetyl-2,3,4-tri-O-benzoyl- β -D-glucopyranoside
C₃₀H₂₈O₁₀ 548.545
Mp 150-151°. [α]_D²⁰ -6.5 (CHCl₃).
- Tetrabenzoyl:** Methyl 2,3,4,6-tetra-O-benzoyl- β -D-glucopyranoside
[6605-40-9]
C₃₅H₃₀O₁₀ 610.616
Mp 160-162°. [α]_D²⁰ +31 (CHCl₃).
- 6-O-(3,4-Dihydroxy-E-cinnamoyl):**
Methyl 6-O-trans-caffeoyl- β -D-glucopyranoside
C₁₆H₂₀O₉ 356.329
Constit. of the aerial parts of *Geum rivale*. Amorph. solid.
Mp 163-166°. [α]_D²⁰ -18.1 (c, 0.1 in MeOH).
- 6-O-Malonyl:** **Methyl 6-O-malonyl- β -D-glucopyranoside**
[79384-28-4]
C₁₀H₁₆O₉ 280.231
Constit. of the roots of *Rumex obtusifolius*. Solid. Sol. H₂O. [α]_D¹⁶ -26 (c, 1 in H₂O).
- Tetratosyl:** Methyl 2,3,4,6-tetra-O-tosyl- β -D-glucopyranoside
[19186-53-9]
C₃₅H₃₈O₁₄S₄ 810.941
Prisms (AcOH). Mp 177-178°. [α]_D -6.6 (CHCl₃).
- Tetranitrate:**
C₇H₁₀N₄O₁₄ 374.174
Prisms (MeOH). Mp 118-119°. [α]_D²⁰ +11.6 (CHCl₃).
- 4,6-O-Methylene:** Methyl 4,6-O-methylene- β -D-glucopyranoside
C₈H₁₄O₆ 206.195
Cryst. (EtOAc/hexane). Mp 171-172°. [α]_D²⁵ -77 (c, 0.5 in H₂O).
- 4,6-O-Ethylidene:**
C₉H₁₆O₆ 220.222
Mp 189-190°. [α]_D²² -79.1 (H₂O).
- 4,6-O-Ethylidene, 2,3-di-Ac:** Methyl 2,3-di-O-acetyl-4,6-O-ethylidene- β -D-glucopyranoside
C₁₃H₂₀O₈ 304.296
Mp 180-182°. [α]_D -65.9 (CHCl₃).
- 4,6-O-Ethylidene, 2-tosyl:** Methyl 4,6-O-ethylidene-2-O-tosyl- β -D-glucopyranoside
C₁₆H₂₂O₈S 374.411
Mp 152-153°. [α]_D -45.5 (CHCl₃).
- 4,6-O-Isopropylidene:** See Methyl 4,6-O-isopropylidene-glucopyranoside, M-199
- 4,6-O-Benzylidene:** See Methyl 4,6-O-benzylidene- α -D-glucopyranoside, M-164
- 2,3,4-Tri-Me:** See 2,3,4-Tri-O-methylglucose, T-184
- Tetra-Me:** See 2,3,4,6-Tetra-O-methylglucose, T-43
- 6-Benzyl, 2,3-di-Ac:** Methyl 2,3-di-O-acetyl-6-O-benzyl- β -D-glucopyranoside
[162284-49-3]
C₁₈H₂₄O₈ 368.383
[α]_D²⁵ -29.5 (c, 3.0 in CHCl₃).
- 2,3-Dibenzyl:** Methyl 2,3-di-O-benzyl- β -D-glucopyranoside
C₂₁H₂₆O₆ 374.433
Needles (petrol). Mp 122-123°. [α]_D²⁰ -13.3 (c, 2.7 in CHCl₃).
- 2,3,4-Tribenzyl:** Methyl 2,3,4-tri-O-benzyl- β -D-glucopyranoside
[4356-80-3]
C₂₈H₃₂O₆ 464.557
[α]_D²⁵ +98 (c, 0.48 in CHCl₃).
- 2,3,6-Tribenzyl:** Methyl 2,3,6-tri-O-benzyl- β -D-glucopyranoside
C₂₈H₃₂O₆ 464.557
Mp 64-65°. [α]_D²² -17 (c, 1 in CHCl₃).
- 3,4,6-Tribenzyl:** Methyl 3,4,6-tri-O-benzyl- β -D-glucopyranoside
[40246-30-8]
C₂₈H₃₂O₆ 464.557
Mp 72-75°. [α]_D²² -5 (c, 1.1 in CHCl₃).
- 6-Trityl:** See Methyl 6-O-tritylglucopyranoside, M-213
[3149-68-6, 7000-27-3, 84324-94-7]
- Koenigs, W. *et al.*, *Ber.*, 1901, **34**, 957 (*synth*)
Oldham, J.W.H. *et al.*, *J.A.C.S.*, 1932, **54**, 366 (*tetratosyl*)
Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 1943, 262 (*rev. derivs*)
Dennison, J.C. *et al.*, *J.C.S.*, 1951, 1616 (*dibenzyl*)
Bouveng, H.O. *et al.*, *Acta Chem. Scand.*, 1961, **15**, 87 (*6-Ac*)
Plouvier, V. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1963, **256**, 1397 (*occur*)
Rao, V.S.R. *et al.*, *J. Phys. Chem.*, 1963, **67**, 951 (*pmr*)
De Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219; 1977, **34**, 179 (*rev. derivs*)
Tulloch, A.P. *et al.*, *Can. J. Chem.*, 1968, **46**, 2485 (*3-Ac, 3,6-di-Ac, 4,6-di-Ac*)
Breitmaier, E. *et al.*, *Chem. Ber.*, 1971, **104**, 1147 (*cmr*)
Ekborg, G. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 3287-3292 (*tribenzyl, synth, pmr*)
Borén, H.B. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 2740 (*4-Ac*)
Goodwin, J.C. *et al.*, *Carbohydr. Res.*, 1973, **28**, 213 (*methylene, pmr*)
Horton, D. *et al.*, *Carbohydr. Res.*, 1975, **43**, 9 (*2-Ac, 3-Ac, 2,3-di-Ac, 2,3,4-tri-Ac, 3,4,6-tri-Ac, 2,3,6-tri-Ac, tetra-Ac*)
Lindberg, K.B. *et al.*, *Acta Cryst. B*, 1976, **32**, 642 (*cryst struct, 6-Ac*)
Carighan, Y. *et al.*, *Carbohydr. Res.*, 1977, **58**, 281 (*tetranitrate, pmr*)
Kasai, T. *et al.*, *Phytochemistry*, 1981, **20**, 1131 (*malonate*)
Bock, K. *et al.*, *Annu. Rep. NMR Spectrosc.*, (Webb, G.A. ed.), Acad. Press, London and New York, 1982, **13**, 41 (*pmr, cmr*)
Garegg, P.J. *et al.*, *Carbohydr. Res.*, 1982, **108**, 97 (*tribenzyl*)
Shaari, K. *et al.*, *Phytochemistry*, 1994, **36**, 1021 (*Scopoloside A*)
Liu, C.-J. *et al.*, *J.O.C.*, 1998, **63**, 7364-7369 (*tribenzyl, synth, pmr*)
Ming, D.-S. *et al.*, *J. Asian Nat. Prod. Res.*, 2002, **4**, 217-220 (*6-caffeate*)
Zeng, Y. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2359-2366 (*2,4,6-tri-Ac*)
Roën, A. *et al.*, *J.O.C.*, 2003, **68**, 4615-4630 (*2,3,4-tribenzyl, benzyl di-Ac, synth, pmr, cmr*)

Methyl glucopyranosiduronic acid, 8CI M-192

C₇H₁₂O₇ 208.168 α -D-form [5155-45-3]

2,3-Di-Ac, 4-mesyl, Me ester: Methyl (methyl 2,3-di-O-acetyl-4-O-mesyl- α -D-glucopyranosid)uronate
[29388-40-7]
C₁₃H₂₀O₁₁S 384.36
[α]_D²⁵ +118 (c, 1.12 in CHCl₃).

2,3-Dibenzyl, 4-mesyl, Me ester: Methyl (methyl 2,3-di-O-benzyl-4-O-mesyl- α -D-glucopyranosid)uronate
[25130-02-3]
C₂₃H₂₈O₉S 480.535
Mp 63°. [α]_D²⁵ +33 (c, 0.9 in CHCl₃).
[α]_D²⁵ +77.4 (c, 1.92 in CHCl₃).

4-Me: Methyl 4-O-methyl- α -D-glucopyranosiduronic acid
[73703-00-1]
C₈H₁₄O₇ 222.194
[α]_D +129 (c, 1.27 in H₂O).

4-Me, Me ester: Methyl (methyl 4-O-methyl- α -D-glucopyranosid)uronate
[31506-18-0]
C₉H₁₆O₇ 236.221
[α]_D +128 (H₂O).

Tri-Me, Me ester: Methyl (methyl 2,3,4-tri-O-methyl- α -D-glucopyranosid)uronate
[52729-97-2]
C₁₁H₂₀O₇ 264.275
[α]_D +156 (H₂O).

β -D-form [18486-38-9]

Tri-Ac, Me ester: Methyl (methyl 2,3,4-tri-O-acetyl- β -D-glucopyranosid)uronate
[34213-34-8]
C₁₄H₂₀O₁₀ 348.306
Mp 151-152°. [α]_D²⁵ -28.1.

2,3-Di-Me, 4-Ac: Methyl 4-O-acetyl-2,3-di-O-methyl- β -D-glucopyranosiduronic acid
[38709-35-2]
C₁₁H₁₈O₈ 278.258
Cryst. (Et₂O/petrol). Mp 101-103°. [α]_D -46.8 (c, 2.0 in CHCl₃).

2,3-Di-Me, 4-Ac, Me ester: Methyl (methyl 4-O-acetyl-2,3-di-O-methyl- β -D-glucopyranosid)uronate
[38709-30-7]
C₁₂H₂₀O₈ 292.285
Cryst. (EtOH). Mp 97-99°. [α]_D -51.7 (c, 2.0 in CHCl₃).

2,3-Di-Me, 4-mesyl: Methyl 4-O-mesyl-2,3-di-O-methyl- β -D-glucopyranosiduronic acid
[38709-32-9]
C₁₀H₁₈O₉S 314.313
Cryst. (Et₂O/petrol). Mp 93-95°. [α]_D +10 (c, 2.0 in CHCl₃).

2,3-Di-Me, 4-mesyl, Me ester: Methyl (methyl 4-O-mesyl-2,3-di-O-methyl- β -D-glucopyranosid)uronate
[38709-29-4]
C₁₁H₂₀O₉S 328.34
Cryst. (EtOH). Mp 110-112°. [α]_D -31.6 (c, 2.0 in CHCl₃).

Tri-Me: Methyl 2,3,4-tri-O-methyl- β -D-glucopyranosiduronic acid
[23445-34-3]
C₁₀H₁₈O₇ 250.248
Cryst. (Et₂O/petrol). Mp 132-134°. [α]_D -37.1 (c, 1.0 in H₂O).

Tri-Me, Me ester: Methyl (methyl 2,3,4-tri-O-methyl- β -D-glucopyranosid)uronate
[31506-17-9]
C₁₁H₂₀O₇ 264.275
Cryst. (petrol). Mp 52-53°. [α]_D -36.4 (H₂O).

α -L-form

Me ester: Methyl (methyl α -L-glucopyranosid)uronate
[528584-66-9]
C₈H₁₄O₇ 222.194
Yellow syrup. [α]_D²⁰ -95 (c, 1.0 in H₂O).

Aspinall, G.O. et al., *Adv. Carbohydr. Chem.*, 1954, **9**, 131 (rev, derivs)
Kiss, J. et al., *Helv. Chim. Acta*, 1970, **53**, 1000 (α -D-2,3-di-Ac 4-mesyl Me ester, α -D-2,3-dibenzyl 4-mesyl Me ester)
Aspinall, G.O. et al., *Can. J. Chem.*, 1972, **50**, 2203 (β -D-2,3-di-Me derivs, β -D-2,3,4-tri-Me)
Kegelić, D. et al., *Adv. Carbohydr. Chem. Biochem.*, 1979, **36**, 57 (rev)
Li, K. et al., *Carbohydr. Res.*, 1995, **273**, 249-253 (synth, pmr, 4-Me)
Schämann, M. et al., *Eur. J. Org. Chem.*, 2003, 351-358 (α -L-Me ester)

Methyl glucosinolate M-193

1-Thio- β -D-glucopyranose 1-[N-(sulfoox-y)ethanimidate], 9CI. **Glucocapparin**
[497-77-8]
H₃CC(SGlc)=NOSO₃H
C₈H₁₅NO₉S₂ 333.34

A mustard oil glycoside widely distributed in the Capparidaceae. Needles (aq. EtOH) (as K salt).
Mp 207-209° (K salt). [α]_D²² -28 (c, 1.9 in H₂O).

Tetra-Ac:

Cryst. (EtOH aq.) (as K salt). Mp 215-217° (K salt). [α]_D²² -29 (c, 2 in H₂O).

[15592-33-3]

Kjaer, A. et al., *Acta Chem. Scand.*, 1956, **10**, 335 (isol, ir)

Kjaer, A. et al., *Phytochemistry*, 1963, **2**, 29 (isol)

Benn, M.H. et al., *Can. J. Chem.*, 1964, **42**, 163 (synth)

Helboe, P. et al., *J. Chromatogr.*, 1980, **197**, 199-205 (hplc)

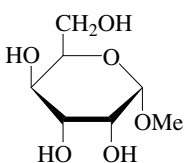
Eagles, J. et al., *Biomed. Mass Spectrom.*, 1981, **8**, 278 (ms)

Kokkonen, P. et al., *Rapid Commun. Mass Spectrom.*, 1989, **3**, 102-106 (hplc, ms)

Verkerk, R. et al., *Natural Toxicants in Food*, 1998, 29-53

Methyl gulopyranoside

M-194



α -D-form

C₇H₁₄O₆ 194.184

α -D-form [51223-62-2]

Mp 77°. [α]_D +109.4 (H₂O).

3-Ac: Methyl 3-O-acetyl- α -D-gulopyranoside
[5540-33-0]
C₉H₁₆O₇ 236.221

Cryst. (EtOAc). Mp 169-170°. [α]_D²² +108 (c, 0.6 in MeOH).

Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- α -D-gulopyranoside

C₁₅H₂₂O₁₀ 362.333
Mp 98°. [α]_D +97.3 (CHCl₃).

4,6-O-Isopropylidene: Methyl 4,6-O-isopropylidene- α -D-gulopyranoside
C₁₀H₁₈O₆ 234.249
Mp 132-133°. [α]_D +88.5 (CHCl₃).

4,6-O-Isopropylidene, 2-Ac: Methyl 2-O-acetyl-4,6-O-isopropylidene- α -D-gulopyranoside
C₁₂H₂₀O₇ 276.286
Mp 176-178°. [α]_D +76.8 (CHCl₃).

4,6-O-Isopropylidene, 2-Ac, 3-tosyl: Methyl 2-O-acetyl-4,6-O-isopropylidene-3-O-tosyl- α -D-gulopyranoside
C₁₉H₂₆O₉S 430.475
Mp 122-123°. [α]_D +52.2 (CHCl₃).

4,6-O-Benzylidene: Methyl 4,6-O-benzylidene- α -D-gulopyranoside
[59168-66-0]
C₁₄H₁₈O₆ 282.293

Cryst. (EtOH). Mp 147-148°. [α]_D²⁰ +79.8 (c, 0.9 in CHCl₃). [α]_D +63 (CHCl₃).

4,6-O-Benzylidene, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,6-O-benzylidene- α -D-gulopyranoside
[59121-47-0]
C₁₈H₂₂O₈ 366.367
Mp 149-150°. [α]_D +53 (CHCl₃).

2,4,6-Tribenzyl: Methyl 2,4,6-tri-O-benzyl- α -D-gulopyranoside
C₂₈H₃₂O₆ 464.557
Oil. [α]_D +4.5 (c, 1 in CHCl₃).

β -D-form [51224-39-6]

Prisms (EtOH/EtOAc). Mp 178-180°. [α]_D -87.9 (H₂O).

Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- β -D-gulopyranoside
C₁₅H₂₂O₁₀ 362.333
Mp 66-67°. [α]_D -32.1 (CHCl₃).

4,6-O-Benzylidene: Methyl 4,6-O-benzylidene- β -D-gulopyranoside
C₁₄H₁₈O₆ 282.293
Rods (EtOH/pentane). Mp 177-178°. [α]_D -87.8 (c, 1.01 in CHCl₃).

4,6-O-Benzylidene, 2,3-dibenzoyl: Methyl 2,3-di-O-benzoyl-4,6-O-benzylidene β -D-gulopyranoside
C₂₈H₂₆O₈ 490.509
Cryst. (EtOH). Mp 155-156°. [α]_D -57.3 (c, 0.61 in CHCl₃).

α -L-form [56688-81-4]

Cryst. (2-propanol). Mp 68-71°.

Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- α -L-gulopyranoside
[41398-87-2]
C₁₅H₂₂O₁₀ 362.333
Mp 96-97°. [α]_D -96.5 (c, 0.8 in CHCl₃).

β -L-form

Mp 176°. [α]_D -83.3 (H₂O).

Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- β -L-gulopyranoside
[25217-94-1]
C₁₅H₂₂O₁₀ 362.333
Mp 64-66.5°. [α]_D +33 (CHCl₃).

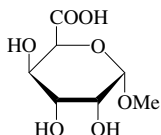
Isbell, H.S. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1932, **8**, 1 (α -D-form, α -D-tetra-Ac, β -D-form, β -D-tetra-Ac)

Fletcher, H.G. et al., *J.A.C.S.*, 1954, **76**, 3029 (α -D-benzylidene, β -D-benzylidene, β -D-benzylidene dibenzoyl)

Antia, N.J. et al., *Can. J. Chem.*, 1960, **38**, 1917

de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 219; 1977, **34**, 179 (rev. cyclic acetals)
 Takita, T. *et al.*, *J. Antibiot., Ser. A*, 1969, **22**, 237
 Buchanan, J.G. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 135 (α -D-3-Ac)
 Grasdalen, H. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 17 (pmr)
 Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1975, **28**, 1541 (α -L-form, synth)
 Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr)
 Mulard, L.A. *et al.*, *Carbohydr. Res.*, 1994, **259**, 21 (α -D-2,4,6-tribenzyl)

Methyl gulopyranosiduronic acid M-195

 α -D-Pyranose-form

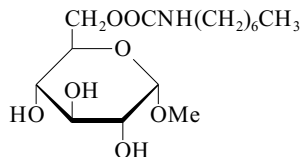
$C_7H_{12}O_7$ 208.168

α - and β -D-Pyranose isomers prepd.

Anthonsen, T. *et al.*, *Carbohydr. Res.*, 1980, **78**, 368 (synth, pmr)

Methyl 6-O-(N-heptylcarbamoyl)- α -D-glucopyranoside M-196

HECAMEG
[115457-83-5]

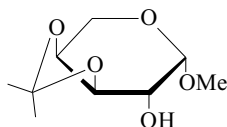


$C_{15}H_{29}NO_7$ 335.397

Powerful surfactant for use in membrane studies.

Engelson, S.B. *et al.*, *Carbohydr. Res.*, 1994, **264**, 161 (cryst struct, bibl)

Methyl 3,4-O-isopropylidene-nearabinopyranoside, 8CI M-197



$C_9H_{16}O_5$ 204.222

β -L-form [6960-39-0] Bp_{0.1} 82°. [α]_D +199.1 (c, 1.0 in CHCl₃).

Ac: Methyl 2-O-acetyl-3,4-O-isopropylidene- β -L-arabinopyranoside [16713-78-3]
 $C_{11}H_{18}O_6$ 246.26
 Cryst. (petrol). Mp 76-77°. [α]_D¹⁶ +123.6 (c, 1.2 in H₂O).

Benzoyl: Methyl 2-O-benzoyl-3,4-O-isopropylidene- β -L-arabinopyranoside
 $C_{16}H_{20}O_6$ 308.33
 Cryst. (EtOH aq.). Mp 78-79°. [α]_D¹⁸ +206.7 (c, 1.3 in CHCl₃).

Tosyl: Methyl 3,4-O-isopropylidene-2-O-tosyl- β -L-arabinopyranoside [6847-76-3]
 $C_{16}H_{22}O_7S$ 358.412
 Needles (EtOH/petrol). Mp 136°. [α]_D¹⁹ +181.3 (c, 1.7 in CHCl₃).

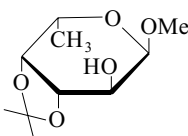
2-Me: Methyl 3,4-O-isopropylidene-2-O-methyl- β -L-arabinopyranoside [53226-15-6]
 $C_{10}H_{18}O_5$ 218.249
 Mp 62°. [α]_D²⁰ +162.5 (c, 4.6 in CHCl₃).

Benzyl: Methyl 2-O-benzyl-3,4-O-isopropylidene- β -L-arabinopyranoside [53226-16-7]
 $C_{16}H_{22}O_5$ 294.347
 Bp_{0.01} 150°. [α]_D²³ +123.8 (c, 0.5 in CHCl₃).

Honeyman, J. *et al.*, *J.C.S.*, 1946, 990 (β -L-form, synth, β -L-Ac, β -L-benzoyl, β -L-tosyl, β -L-Me)
 King, R.D. *et al.*, *Carbohydr. Res.*, 1969, **9**, 423 (pmr)
 Dyong, I. *et al.*, *Chem. Ber.*, 1979, **112**, 1849, (β -L-benzyl)

Methyl 3,4-O-isopropylidene-fucopyranoside, 8CI M-198

Methyl 6-deoxy-3,4-O-isopropylidenegalactopyranoside, 9CI



$C_{10}H_{18}O_5$ 218.249

α -L-form [24577-96-6] Bp_{0.01} 95°. [α]_D¹⁵ -160 (c, 1.0 in H₂O).

2-Ac: Methyl 2-O-acetyl-3,4-O-isopropylidene- α -L-fucopyranoside [34388-70-0]
 $C_{12}H_{20}O_6$ 260.286
 Cryst. (petrol). Mp 100-101°. [α]_D²⁵ -230.1 (c, 0.62 in C₆H₆).

2-Tosyl: Methyl 3,4-O-isopropylidene-2-O-tosyl- α -L-fucopyranoside
 $C_{17}H_{24}O_7S$ 372.438
 Cryst. (MeOH). Mp 182°. [α]_D¹⁵ -146 (c, 1.0 in CHCl₃).

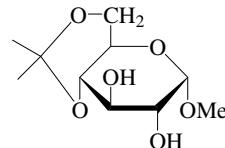
2-Benzyl: Methyl 2-O-benzyl-3,4-O-isopropylidene- α -L-fucopyranoside [37776-54-8]
 $C_{17}H_{24}O_5$ 308.374
 Syrup. [α]_D²⁵ -98.5 (c, 1.16 in CHCl₃).

β -D-form [39981-26-5]
 Cryst. (Et₂O/petrol). Mp 64-66°. [α]_D²⁰ +24.5 (c, 0.96 in CHCl₃).

Percival, E.E. *et al.*, *J.C.S.*, 1950, 690 (α -L-form, synth, α -L-tosyl)
 King, R.D. *et al.*, *Carbohydr. Res.*, 1969, **9**, 423 (pmr)
 Dejter-Juszynski, M. *et al.*, *Carbohydr. Res.*, 1972, **23**, 41 (α -L-benzyl)
 Zehavi, U. *et al.*, *J.O.C.*, 1972, **37**, 2141 (α -L-Ac)
 Paulsen, H. *et al.*, *Chem. Ber.*, 1974, **107**, 2992 (β -D-form, synth)

Methyl 4,6-O-isopropylidene-glucopyranoside, 8CI M-199

Methyl 4,6-O-(1-methylethylidene)glucopyranoside, 9CI

 α -D-form

$C_{10}H_{18}O_6$ 234.249

α -D-form [15354-29-7]
 Needles (C₆H₆). Mp 84-86°. [α]_D²⁵ +105 (c, 5.0 in H₂O). [α]_D²⁰ +94 (c, 5.0 in H₂O).

2,3-O-Isopropylidene: Methyl 2,3:4,6-di-O-isopropylidene- α -D-glucopyranoside [13035-60-4]
 $C_{13}H_{22}O_6$ 274.313
 Plates (hexane). Mp 85°. [α]_D²⁵ +99 (c, 2.0 in C₆H₆).

2,3-Di-Me: [15354-38-8]
 $C_{12}H_{22}O_6$ 262.302
 Mp 84°. [α]_D²⁵ +120 (c, 1.0 in CHCl₃).

2,3-Di-Ac: $C_{14}H_{22}O_8$ 318.323
 Mp 73-75°. [α]_D +106 (c, 0.1 in CHCl₃).

β -D-form [16802-97-4]
 Powder (propanol or EtOAc/petrol). Mp 131° (128-128.5°). [α]_D²⁵ -85 (c, 0.1 in H₂O). [α]_D²⁰ -72 (c, 1.4 in H₂O).

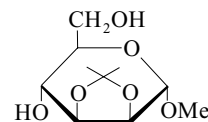
2,3-Di-Ac: Powder (MeOH aq.). Mp 149°. [α]_D -65 (c, 0.1 in CHCl₃).

2,3-O-Isopropylidene: Methyl 2,3:4,6-di-O-isopropylidene- β -D-glucopyranoside
 $C_{13}H_{22}O_6$ 274.313
 Needles (hexane). Mp 71-73°. [α]_D²⁰ -60.5 (c, 0.1 in CHCl₃).

2,3-Di-Me: [16802-91-8]
 Syrup. [α]_D²³ -43 (c, 1.0 in CHCl₃).

Evans, M.E. *et al.*, *Carbohydr. Res.*, 1967, **3**, 453 (synth, α -Me gly; α -di-Me; α -diisopropylidene)
 Parrish, F.W. *et al.*, *J.O.C.*, 1968, **33**, 3165, (β -Me gly; β -di-Me)
 Wolfgram, M.L. *et al.*, *Carbohydr. Res.*, 1974, **35**, 87 (α -Me gly)
 Debost, J.-L. *et al.*, *Carbohydr. Res.*, 1984, **125**, 329 (pmr, cmr)

Methyl 2,3-O-isopropylidene-mannopyranoside M-200



$C_{10}H_{18}O_6$ 234.249

α -D-form
 Cryst. (EtOH/petrol). Mp 104-105°. Bp_{0.02} 145°. [α]_D²⁰ +28 (c, 4.3 in MeOH).

4,6-O-Isopropylidene: Methyl 2,3:4,6-di-O-isopropylidene- α -D-mannopyranoside
 $C_{13}H_{22}O_6$ 274.313
 Mp 76-77°. [α]_D²² +3 (c, 2.4 in MeOH).

4,6-Dimesyl: Methyl 2,3-O-isopropylidene-4,6-di-O-mesyl- α -D-mannopyranoside [22932-29-2]
 $C_{12}H_{22}O_{10}S_2$ 390.432
 Cryst. (EtOH). Mp 105-106°. $[\alpha]_D^{25} +14.7$ (c, 1.32 in $CHCl_3$).

6-Me: Methyl 2,3-O-isopropylidene-6-O-methyl- α -D-mannopyranoside [28140-06-9]
 $C_{11}H_{20}O_6$ 248.275
 Cryst. (Et₂O/petrol). Mp 75-76°. $[\alpha]_D^{23} +19.5$ (c, 1.8 in $CHCl_3$).

4,6-Di-Me: Methyl 2,3-O-isopropylidene-4,6-di-O-methyl- α -D-mannopyranoside
 $C_{12}H_{22}O_6$ 262.302
 Bp_{0.01} 95°. $[\alpha]_D^{20} +51$ (MeOH).

6-Trityl: Methyl 2,3-O-isopropylidene-6-O-trityl- α -D-mannopyranoside
 $C_{29}H_{32}O_6$ 476.568
 Glassy solid. $[\alpha]_D^{27} +11$ (c, 1.1 in EtOH).

6-Me, 4-Ac: Methyl 4-O-acetyl-2,3-O-isopropylidene-6-O-methyl- α -D-mannopyranoside [39523-72-3]
 $C_{13}H_{22}O_7$ 290.313
 Syrup. $[\alpha]_D +10.3$ (c, 1.3 in $CHCl_3$).

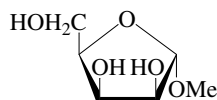
6-Me, 4-(3,5-dinitrobenzoyl): [39523-73-4]
 $[\alpha]_D^{28} +6$ (c, 1.6 in $CHCl_3$).

Ault, R.G. *et al.*, *J.C.S.*, 1935, 517; 1012, (α -D-form, synth, α -D-isopropylidene, α -D-Me)

Smith, F. *et al.*, *J.C.S.*, 1951, 2646 (α -D-trityl)
 de Belder, A.N. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1965, **20**, 219; 1977, **34**, 179 (rev)
 Stevens, C.L. *et al.*, *J.O.C.*, 1970, **35**, 592 (α -D-form, synth, α -D-isopropylidene, α -D-dimesyl)
 Tronchet, J.M.J. *et al.*, *Carbohydr. Res.*, 1972, **24**, 263; 283 (α -D-Me, α -D-Me Ac, α -D-Me dinitrobenzoyl)

Methyl lyxofuranoside

M-201

 α -D-form $C_6H_{12}O_5$ 164.158 α -D-form [22416-73-5]

Cryst. (EtOAc). Mp 98-99°. $[\alpha]_D^{22} +128$ (c, 1.0 in MeOH).

2-Me: Methyl 2-O-methyl- α -D-lyxofuranoside
 $C_7H_{14}O_5$ 178.185

Syrup. $[\alpha]_D^{25} +29$ (c, 1.6 in $CHCl_3$).

5-Benzyl, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-5-O-benzyl- α -D-lyxofuranoside [32780-16-8]
 $C_{17}H_{22}O_7$ 338.357

Bp_{0.05} 165°. $[\alpha]_D^{24} +73.8$ (c, 2.09 in C_6H_6).

5-Benzyl, 2,3-O-isopropylidene: See 2,3-O-isopropylidenelyxose, I-70

5-Trityl: Methyl 5-O-trityl- α -D-lyxofuranoside
 $C_{25}H_{26}O_5$ 406.477
 Syrup. $[\alpha]_D^{25} +51$ (c, 1.3 in $CHCl_3$).

 β -D-form [22861-09-2]

Syrup. $[\alpha]_D -112$ (c, 0.6 in H_2O).

3,5-Dibenzoyl, 2-tosyl: Methyl 3,5-di-O-benzoyl-2-O-tosyl- β -D-lyxofuranoside [30591-85-6]

$C_{27}H_{26}O_9S$ 526.563
 Cryst. (C_6H_6 /petrol). Mp 95-97°. $[\alpha]_D^{23} -41.6$ (c, 0.48 in $CHCl_3$).

Tribenzoyl: Methyl 2,3,5-tri-O-benzoyl- β -D-lyxofuranoside [22861-07-0]

$C_{27}H_{24}O_8$ 476.482
 Cryst. (petrol). Mp 83-85°. $[\alpha]_D^{23} -70$ (c, 0.45 in $CHCl_3$).

2,3-Ditosyl: Methyl 2,3-di-O-tosyl- β -D-lyxofuranoside [30591-72-1]

$C_{20}H_{24}O_9S_2$ 472.536
 Cryst. (EtOAc/petrol). Mp 142-144°. $[\alpha]_D^{24} -62$ (c, 0.6 in $CHCl_3$).

2,3-Ditosyl, 5-benzoyl: Methyl 5-O-benzoyl-2,3-di-O-tosyl- β -D-lyxofuranoside [27646-56-6]

$C_{27}H_{28}O_{10}S_2$ 576.644
 Cryst. (C_6H_6 /petrol). Mp 152-153°. $[\alpha]_D^{25} -47$ (c, 0.66 in $CHCl_3$).

Tritosyl: Methyl 2,3,5-tri-O-tosyl- β -D-lyxofuranoside [27646-54-4]

$C_{27}H_{30}O_{11}S_3$ 626.725
 Cryst. ($CHCl_3$ /petrol). Mp 148-149°. $[\alpha]_D^{23} -26$ (c, 0.69 in $CHCl_3$).

5-Trityl: Methyl 5-O-trityl- β -D-lyxofuranoside

$C_{25}H_{26}O_5$ 406.477
 Syrup. $[\alpha]_D -18$ (c, 4.0 in $CHCl_3$).

Furberg, S. *et al.*, *Acta Chem. Scand.*, 1961, **15**, 1190 (α -D-form, synth)

Reist, E.J. *et al.*, *Carbohydr. Res.*, 1969, **10**, 289 (α -D-form, synth)

Hildesheim, J. *et al.*, *Carbohydr. Res.*, 1970, **14**, 305; 315 (β -D-form, β -D-tribenzoyl, β -D-dibenzoyl tosyl, β -D-tritosyl, β -D-ditosyl, β -D-ditosyl benzoyl)

Koga, K. *et al.*, *Tet. Lett.*, 1971, 263 (α -D-di-Ac benzyl)

Taniguchi, M. *et al.*, *Tetrahedron*, 1974, **30**, 3547 (α -D-di-Ac benzyl)

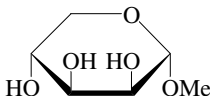
Gorin, P.A.J. *et al.*, *Carbohydr. Res.*, 1976, **48**, 171 (α -D-Me, α -D-trityl, β -D-trityl, cmr)

Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr)

Popsavin, V. *et al.*, *Carbohydr. Res.*, 1999, **321**, 110-115 (α -D-form, synth)

Methyl lyxopyranoside

M-202

 α -form $C_6H_{12}O_5$ 164.158 α -D-form [18449-76-8]

Cryst. (EtOAc). Mp 108-109°. $[\alpha]_D^{22} +51.8$ (H_2O).

2,3,4-Tri-Ac: Methyl 2,3,4-tri-O-acetyl- α -D-lyxopyranoside [32445-37-7]

$C_{12}H_{18}O_8$ 290.269
 Mp 96-97°. $[\alpha]_D^{20} +29.5$ (c, 1.12 in $CHCl_3$).

2,3,4-Tribenzoyl: Methyl 2,3,4-tri-O-benzoyl- α -D-lyxopyranoside [33640-74-3]

$C_{27}H_{24}O_8$ 476.482

Amorph. glass. $[\alpha]_D^{24} -141.5$ (c, 1.14 in $CHCl_3$).

2,3-O-Isopropylidene: Methyl 2,3-O-isopropylidene- α -D-lyxopyranoside [20672-64-4]

$C_9H_{16}O_5$ 204.222
 Mp 40-41°. Bp_{0.02} 65°. $[\alpha]_D^{22} +42.7$ (c, 0.8 in EtOH).

2,3-O-Isopropylidene, 4-tosyl: Methyl 2,3-O-isopropylidene-4-O-tosyl- α -D-lyxopyranoside

$C_{16}H_{22}O_7S$ 358.412
 Cryst. (EtOH). Mp 96-97°. $[\alpha]_D^{22} -10.2$ (c, 1.85 in EtOH).

2,3-O-Isopropylidene, 4-Me: Methyl 2,3-O-isopropylidene-4-O-methyl- α -D-lyxopyranoside [16888-99-6]

$C_{10}H_{18}O_5$ 218.249
 Bp_{0.5} 65°. $[\alpha]_D +60$ (c, 0.7 in $CHCl_3$).

 β -D-form [33509-64-7]

Needles (2-propanol). Mp 115-116°. $[\alpha]_D -127$ (c, 0.25 in H_2O).

2,3,4-Tri-Ac: Methyl 2,3,4-tri-O-acetyl- β -D-lyxopyranoside [32445-38-8]

$C_{12}H_{18}O_8$ 290.269
 Cryst. (Et₂O/petrol). Mp 89°.

Kent, P.W. *et al.*, *J.C.S.*, 1953, 416 (α -D-form, synth, α -D-isopropylidene, α -D-isopropylidene tosyl)

Hughes, N.A. *et al.*, *J.C.S. (C)*, 1967, 1182, (α -D-isopropylidene Me)

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1971, **49**, 1355 (β -D-form, synth)

Durette, P.L. *et al.*, *Carbohydr. Res.*, 1971, **18**, 403 (α -D-tri-Ac, α -D-tribenzoyl, β -D-tri-Ac, pmr)

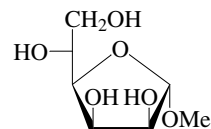
Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (pmr, cmr)

Evdokimov, A.G. *et al.*, *Acta Cryst. C*, 1996, **52**, 3218-3219 (α -D-form, cryst struct)

Popsavin, V. *et al.*, *Carbohydr. Res.*, 1999, **321**, 110-115 (α -D-form, synth, pmr)

Methyl mannofuranoside

M-203

 α -D-form $C_7H_{14}O_6$ 194.184 α -D-form [4097-91-0]

Needles (MeOH). Mp 119°. $[\alpha]_D^{20} +114.4$ (c, 0.7 in H_2O).

2,3,5,6-Tetra-Ac: Methyl 2,3,5,6-tetra-O-acetyl- α -D-mannofuranoside [24916-39-0]
 $C_{15}H_{22}O_{10}$ 362.333

Needles (EtOH aq.). Mp 63°. $[\alpha]_D^{19} +107$ (c, 1.0 in $CHCl_3$).

5-Me, 2,3-O-methylene: Methyl 5-O-methyl-2,3-O-methylene- α -D-mannofuranoside [26922-73-6]

$C_9H_{16}O_6$ 220.222
 Cryst. ($CHCl_3$ /hexane). Mp 70-72°. $[\alpha]_D^{25} +98$ (c, 1.0 in EtOH).

- 6-Me, 2,3-O-methylene: Methyl 6-O-methyl-2,3-O-methylene- α -D-mannofuranoside [26946-17-8]
 $C_9H_{16}O_6$ 220.222
 $[\alpha]_D^{25} +92$ (c, 0.5 in EtOH).
- 2,3:5,6-Di-O-methylene: Methyl 2,3:5,6-di-O-methylene- α -D-mannofuranoside [26922-64-5]
 $C_9H_{14}O_6$ 218.206
 $[\alpha]_D^{25} +78$ (c, 1.3 in $CHCl_3$).
- 2,3-O-Isopropylidene: See 2,3-O-Isopropylidenemannose, I-71
- 2,6-Di-Me: Methyl 2,6-di-O-methyl- α -D-mannofuranoside [26922-74-7]
 $C_9H_{18}O_6$ 222.238
 $[\alpha]_D^{25} +96$ (c, 0.5 in EtOH).
- 3,5-Di-Me: Methyl 3,5-di-O-methyl- α -D-mannofuranoside [22314-34-7]
 $C_9H_{18}O_6$ 222.238
 $[\alpha]_D^{25} +63.5$ (c, 0.5 in EtOH). $[\alpha]_D^{26} +92.3$ (c, 3.87 in H_2O).
- 5,6-Di-Me: Methyl 5,6-di-O-methyl- α -D-mannofuranoside
 $C_9H_{18}O_6$ 222.238
 $[\alpha]_D^{25} +99$ (c, 1.0 in EtOH).
- 3,5,6-Tri-Me: Methyl 3,5,6-tri-O-methyl- α -D-mannofuranoside [25018-59-1]
 $C_{10}H_{20}O_6$ 236.264
 $[\alpha]_D^{29} +61.8$ (c, 5.5 in H_2O).
- 3,5,6-Tri-Me, 2-tosyl: Methyl 3,5,6-tri-O-methyl-2-O-tosyl- α -D-mannofuranoside [25018-58-0]
 $C_{17}H_{26}O_8S$ 390.454
 $[\alpha]_D^{27} +62.2$ (c, 3.05 in $CHCl_3$).
- 2,6-Dibenzyl: Methyl 2,6-di-O-benzyl- α -D-mannofuranoside [27178-05-8]
 $C_{21}H_{26}O_6$ 374.433
 Mp 74-76°. $[\alpha]_D^{25} +100$ (c, 1.0 in EtOH).
- 6-Trityl: See Methyl 6-O-tritylmannopyranoside, M-215

 β -D-form

- $[\alpha]_D^{20} -80.6$ (c, 2.2 in H_2O).
 CaCl₂ complex: [26295-70-5]
 $[\alpha]_D^{20} -54.7$ (c, 1.35 in H_2O).

 α -L-form

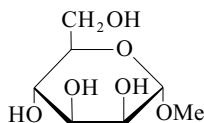
- 2,3-O-Isopropylidene, dimesyl: Methyl 2,3-O-isopropylidene-1,6-di-O-mesyl- α -L-mannofuranoside [57783-61-6]
 Needles (MeOH). Mp 147-148°. $[\alpha]_D^{25} -32.6$ (c, 1.80 in $CHCl_3$).
- Haworth, W.N. *et al.*, *J.C.S.*, 1930, 649; 651, (α -D-form, α -D-tetra-Ac)
- Mowery, D.F. *et al.*, *Methods Carbohydr. Chem.*, 1963, 2, 328 (α -D-form, synth)
- Bhattacharjee, S.S. *et al.*, *Can. J. Chem.*, 1969, 47, 1195; 1207 (α -D-2,6-dibenzyl, α -D-3,5-di-Me, α -D-5,6-di-Me)
- Siddiqui, I.R. *et al.*, *Carbohydr. Res.*, 1969, 9, 344 (α -D-tri-Me, α -D-tri-Me tosyl)
- Randall, M.H. *et al.*, *Carbohydr. Res.*, 1969, 11, 173 (α -D-form, β -D-form, synth)
- Bhattacharjee, S.S. *et al.*, *Carbohydr. Res.*, 1970, 12, 57 (α -D-methylene 5-Me, α -D-methylene 6-Me, dimethylene, α -D-2,6-di-Me)
- Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1975, 28, 1541 (α -D-form, β -D-form, synth)

Leroux, J. *et al.*, *Carbohydr. Res.*, 1976, 47, C8
 Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, 41, 27 (cmr, α , β -forms)

Methyl α -D-mannopyranoside, 9CI, 8CI

[617-04-9]

[27939-30-6]



$C_7H_{14}O_6$ 194.184
 Mp 193-194°. $[\alpha]_D^{20} +79.2$ (c, 1.0 in H_2O).

4-Ac: Methyl 4-O-acetyl- α -D-mannopyranoside
 $C_9H_{16}O_7$ 236.221
 $[\alpha]_D^{20} -5$ ($CHCl_3$).

4,6-Di-Ac: Methyl 4,6-di-O-acetyl- α -D-mannopyranoside
 [51842-36-5]
 $C_{11}H_{18}O_8$ 278.258
 $[\alpha]_D^{20} +38$ (c, 1 in $CHCl_3$).

2,3,4-Tri-Ac: Methyl 2,3,4-tri-O-acetyl- α -D-mannopyranoside
 [7468-47-5]
 $C_{13}H_{20}O_9$ 320.296
 Mp 97-98°. $[\alpha]_D^{25} +54.9$ (c, 1.1 in $CHCl_3$).

2,3,4,6-Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- α -D-mannopyranoside
 [5019-24-9]
 $C_{15}H_{22}O_{10}$ 362.333
 Mp 65°. $[\alpha]_D^{25} +49.2$ (c, 6.5 in $CHCl_3$).

2,4,6-Tri-Ac, 3-tosyl: Methyl 2,4,6-tri-O-acetyl-3-O-tosyl- α -D-mannopyranoside
 $C_{20}H_{26}O_{11}S$ 474.485
 Cryst. (EtOH). Mp 127-128°. $[\alpha]_D^{24} +26.6$ (c, 1.74 in $CHCl_3$).

3,6-Dibenzoyl: Methyl 3,6-di-O-benzoyl- α -D-mannopyranoside
 [14315-85-6]
 $C_{21}H_{22}O_8$ 402.4
 Cryst. (Et₂O/petrol). Mp 145-145.5°. $[\alpha]_D^{24} +61.6$ (c, 1.38 in $CHCl_3$).

3,6-Dibenzoyl, 2,4-di-Ac: Methyl 2,4-di-O-acetyl-3,6-di-O-benzoyl- α -D-mannopyranoside
 [14517-51-2]
 $C_{25}H_{26}O_{10}$ 486.474
 Needles ($CHCl_3$ /petrol). Mp 130-131°. $[\alpha]_D^{24} +29$ (c, 1.09 in $CHCl_3$).

2,3,6-Tribenzoyl: Methyl 2,3,6-tri-O-benzoyl- α -D-mannopyranoside
 [3396-68-7]
 $C_{28}H_{26}O_9$ 506.508
 Cryst. (EtOH aq.). Mp 67-69° (hydrate). $[\alpha]_D^{24} -6.5$ (c, 0.93 in $CHCl_3$). $[\alpha]_D^{27} -21$ (c, 0.89 in Me_2CO) (hydrate).

2,3,6-Tribenzoyl, 4-mesyl: Methyl 2,3,6-tri-O-benzoyl-4-O-mesyl- α -D-mannopyranoside
 [14315-87-8]
 $C_{29}H_{28}O_{11}S$ 584.6
 Cryst. (EtOH). Mp 185-186°. $[\alpha]_D^{24} -53$ (c, 1.17 in $CHCl_3$).

2,3,4,6-Tetrabenzoyl: Methyl 2,3,4,6-tetra-O-benzoyl- α -D-mannopyranoside
 $C_{35}H_{30}O_{10}$ 610.616
 Cryst. (EtOH). Mp 134-135°. $[\alpha]_D^{24} -68$ (c, 0.88 in $CHCl_3$).

2,3-Dimesyl: Methyl 2,3-di-O-mesyl- α -D-mannopyranoside
 [16802-88-3]
 $C_9H_{18}O_{10}S_2$ 350.367
 Cryst. ($CHCl_3$ /heptane). Mp 113-114°. $[\alpha]_D^{20} +22$ (c, 1.3 in Me_2CO).

2,3,6-Trimesyl: Methyl 2,3,6-tri-O-mesyl- α -D-mannopyranoside
 $C_{10}H_{20}O_{12}S_3$ 428.459
 Cryst. (EtOH). Mp 158-160°. $[\alpha]_D^{25} +32$ (c, 1.7 in Py).

2-Tosyl: Methyl 2-O-tosyl- α -D-mannopyranoside
 [53008-59-6]
 $C_{14}H_{20}O_8S$ 348.373
 Mp 149-150°. $[\alpha]_D^{25} +50$ (c, 3.4 in H_2O).

3-Tosyl: Methyl 3-O-tosyl- α -D-mannopyranoside
 $C_{14}H_{20}O_8S$ 348.373
 Cryst. ($CHCl_3$ /petrol). Mp 87-90°. $[\alpha]_D^{22} +51$ (c, 1.0 in $CHCl_3$).

2,3-Ditosyl: Methyl 2,3-di-O-tosyl- α -D-mannopyranoside
 [58720-04-0]
 $C_{21}H_{26}O_{10}S_2$ 502.562
 $[\alpha]_D^{33} -14.5$ (c, 1.5 in $CHCl_3$).

2,6-Ditosyl: Methyl 2,6-di-O-tosyl- α -D-mannopyranoside
 [108825-74-7]
 $C_{21}H_{26}O_{10}S_2$ 502.562
 $[\alpha]_D^{24} +14.7$ (c, 0.92 in $CHCl_3$). Obt. in only 2% yield.

3,6-Ditosyl: Methyl 3,6-di-O-tosyl- α -D-mannopyranoside
 [108825-72-5]
 $C_{21}H_{26}O_{10}S_2$ 502.562
 $[\alpha]_D^{24} +41.4$ (c, 1.1 in $CHCl_3$) (+37).

4,6-O-Methylene: Methyl 4,6-O-methylene- α -D-mannopyranoside
 [50256-50-3]
 $C_8H_{14}O_6$ 206.195
 Cryst. (EtOAc/hexane). Mp 122-123°. $[\alpha]_D^{20} +58$ (c, 1.0 in H_2O).

4,6-O-Methylene, 2,3-di-Ac: Methyl 2,3-di-O-acetyl-4,6-O-methylene- α -D-mannopyranoside
 [50256-58-1]
 $C_{12}H_{18}O_8$ 290.269
 Mp 168-169°. $[\alpha]_D^{20} +43.8$ (c, 1.0 in $CHCl_3$).

2,3:4,6-Di-O-methylene: Methyl 2,3:4,6-di-O-methylene- α -D-mannopyranoside
 [23397-81-1]
 $C_9H_{14}O_6$ 218.206
 Cryst. (EtOAc). Mp 144-145°. $[\alpha]_D^{20} +19.4$ (c, 0.33 in $CHCl_3$).

4,6-O-Ethylidene: See Methyl 4,6-O-ethylidenemannopyranoside, M-180

2,3-O-Isopropylidene: See Methyl 2,3-O-isopropylidenemannopyranoside, M-200

4,6-O-Benzylidene: See Methyl 4,6-O-benzylidenemannopyranoside, M-169

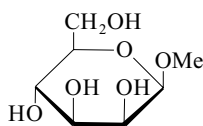
6-Benzyl: [23392-33-8]
 $C_{14}H_{20}O_6$ 284.308
 Oil. $[\alpha]_D^{23} +69.7$ (c, 0.71 in $CHCl_3$).

- 2,3-Dibenzyl: Methyl 2,3-di-O-benzyl- α -D-mannopyranoside
[51842-19-4]
C₂₁H₂₆O₆ 374.433
[α]_D²⁰ -2 (CHCl₃).
- 2,3-Dibenzyl, 6-Ac: Methyl 6-O-acetyl-2,3-di-O-benzyl- α -D-mannopyranoside
[51842-24-1]
C₂₃H₂₈O₇ 416.47
[α]_D²⁰ -9 (EtOH).
- 2,3-Dibenzyl, 4,6-di-Ac: Methyl 4,6-di-O-acetyl-2,3-di-O-benzyl- α -D-mannopyranoside
C₂₅H₃₀O₈ 458.507
[α]_D²⁰ -5 (CHCl₃).
- 3,6-Dibenzyl: Methyl 3,6-di-O-benzyl- α -D-mannopyranoside
[31022-29-4]
C₂₁H₂₆O₆ 374.433
[α]_D +20.3 (c, 0.6 in CHCl₃).
- 3,4,6-Tribenzyl: Methyl 3,4,6-tri-O-benzyl-D-mannopyranoside
[20672-67-7]
C₂₈H₃₂O₆ 464.557
[α]_D²¹ +59.7 (c, 1.85 in CH₂Cl₂).
- 3,4,6-Tribenzyl, 2-Ac: Methyl 2-O-acetyl-3,4,6-tri-O-benzyl- α -D-mannopyranoside
[20672-69-9]
C₃₀H₃₄O₇ 506.594
[α]_D²⁷ +27.9 (c, 2.24 in CH₂Cl₂).
- 2-Me: See 2-O-Methylmannose, M-270
- 4-Me: See 4-O-Methylmannose, M-272
- 6-Me: See 6-O-Methylmannose, M-274
- 2,3-Di-Me: See 2,3-Di-O-methylmannose, D-748
- 2,4-Di-Me: See 2,4-Di-O-methylmannose, D-749
- 3,4-Di-Me: See 3,4-Di-O-methylmannose, D-751
- 4,6-Di-Me: See 4,6-Di-O-methylmannose, D-753
- 2,3,6-Tri-Me: See 2,3,6-Tri-O-methylmannose, T-190
- 2,4,6-Tri-Me: See 2,4,6-Tri-O-methylmannose, T-191
- 3,4,6-Tri-Me: See 3,4,6-Tri-O-methylmannose, T-192
- 6-Trityl: See Methyl 6-O-tritylmannopyranoside, M-215
- 2,3,4-Tris(trimethylsilyl): Methyl 2,3,4-tris(trimethylsilyl)- α -D-mannopyranoside
[146399-85-1]
C₁₆H₃₈O₆Si₃ 410.729
Mp 65°.
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- Watters, A.J. et al., *J.A.C.S.*, 1939, 61, 1528 (tri-Ac)
- Cadotte, J.E. et al., *J.A.C.S.*, 1952, 74, 1501 (synth)
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- Chalk, R.C. et al., *J.O.C.*, 1966, 31, 1509 (trimesyl)

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- Franks, N.E. et al., *Carbohydr. Res.*, 1968, 6, 286 (tribenzyl, tribenzyl Ac)
- Parrish, F.W. et al., *J.O.C.*, 1968, 33, 3165 (dimesyl)
- Bhattacharjee, S.S. et al., *Can. J. Chem.*, 1969, 47, 1195; 1207 (dimethylene)
- Choy, Y.M. et al., *Carbohydr. Res.*, 1971, 17, 439 (3-tosyl)
- Borén, H.B. et al., *Acta Chem. Scand.*, 1973, 27, 2740 (4-Ac, 4,6-di-Ac, 2,3-dibenzyl, dibenzyl Ac, dibenzyl di-Ac)
- Seymour, F.R. et al., *Carbohydr. Res.*, 1976, 46, 189 (2,3-ditosyl)
- Ogawa, T. et al., *Carbohydr. Res.*, 1978, 62, C1 (3,6-dibenzyl)
- Bock, K. et al., *Annu. Rep. NMR Spectrosc.*, (Webb, G.A. ed.), Acad. Press, London and New York, 1982, 13, 41 (pmr, cmr)
- Garegg, P.J. et al., *Carbohydr. Res.*, 1982, 108, 97 (3,6-dibenzyl)
- Meldal, M. et al., *Carbohydr. Res.*, 1992, 235, 115 (2,3,4-tris(trimethylsilyl))
- Nouguier, R. et al., *Carbohydr. Res.*, 1995, 277, 339-345 (methylene, dimethylene)
- Rozenberg, M. et al., *Carbohydr. Res.*, 2000, 328, 307-319 (ir)
- Kawana, M. et al., *J. Carbohydr. Chem.*, 2000, 19, 67-78 (2,6-ditosyl, 3,6-ditosyl)
- Mikkelsen, L.M. et al., *J.O.C.*, 2003, 68, 2123-2128 (tribenzoyl, synth, pmr, cmr, ir)
- Tennant-Eyles, R.J. et al., *Tetrahedron: Asymmetry*, 2003, 14, 1201-1210 (6-benzyl)

Methyl β -D-mannopyranoside, 9CI, 8CI

[22277-65-2]



C₇H₁₄O₆ 194.184
Cryst. (2-propanol). Mp 74-75°. [α]_D²⁰ -53.3 (H₂O). Phys. constants for 2-propanol solvate.

6-Ac: Methyl 6-O-acetyl- β -D-mannopyranoside

C₉H₁₆O₇ 236.221
[α]_D²⁰ +67 (EtOH).

2,3,4,6-Tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl- β -D-mannopyranoside

[5019-25-0]
C₁₅H₂₂O₁₀ 362.333
Mp 161-162°. [α]_D -47 (CHCl₃).

4,6-O-Ethylidene: See Methyl 4,6-O-ethylidenemannopyranoside, M-180

4,6-O-Benzylidene: See Methyl 4,6-O-benzylidenemannopyranoside, M-169

3-Me, 2-benzoyl: Methyl 2-O-benzoyl-3-O-methyl- β -D-mannopyranoside

[54307-90-3]
C₁₅H₂₀O₇ 312.319
Amorph. [α]_D -94 (c, 1.23 in MeOH).

3-Me, 2,6-dibenzoyl: Methyl 2,6-di-O-benzoyl-3-O-methyl- β -D-mannopyranoside

[54307-92-5]
C₂₂H₂₄O₈ 416.427
Needles (Me₂CO/diisopropyl ether). Mp 177.5-178°. [α]_D²⁷ -95 (c, 0.77 in CHCl₃).

3-Me, 2-benzoyl, 4,6-dimesyl: Methyl 2-O-benzoyl-4,6-di-O-mesyl-3-O-methyl- β -D-mannopyranoside

[54307-91-4]
C₁₇H₂₄O₁₁S₂ 468.502
Cryst. (Me₂CO/diisopropyl ether). Mp 165-166°. [α]_D²⁷ -65 (c, 1.11 in CHCl₃).

3-Me, tribenzoyl: Methyl 2,4,6-tri-O-benzoyl-3-O-methyl- β -D-mannopyranoside

[54307-88-9]
C₂₉H₂₈O₉ 520.535
Amorph. [α]_D²⁷ -95 (c, 2.19 in CHCl₃).

Tetra-Me: Methyl 2,3,4,6-tetra-O-methyl- β -D-mannopyranoside

[3445-71-4]
C₁₁H₂₂O₆ 250.291
[α]_D²³ -65.8.

3,4,6-Tribenzyl, 2-mesyl: Methyl 3,4,6-tri-O-benzyl-2-O-mesyl- β -D-mannopyranoside

C₂₉H₂₈O₁₁S 584.6
[α]_D²² -39.4 (c, 0.9 in CHCl₃).

Isbell, H.S. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1940, 24, 125 (synth, tetra-Ac)

Świdorski, S. et al., *Carbohydr. Res.*, 1966, 3, 225 (tetra-Ac)

Bock, K. et al., *Tet. Lett.*, 1973, 1037 (cmr, pmr)

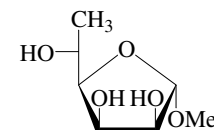
Miljković, M. et al., *J.O.C.*, 1975, 40, 1054 (Me benzoyl, Me dibenzoyl, Me benzoyl dimesyl, Me tribenzoyl)

Srivastava, V.K. et al., *Carbohydr. Res.*, 1980, 79, C13 (tribenzyl mesyl)

Crich, D. et al., *J.O.C.*, 1996, 61, 6189, (tetra-Me, tetra-Ac, synth, pmr, cmr)

Methyl rhamnofuranoside M-206

Methyl 6-deoxymannofuranoside



C₇H₁₄O₅ 178.185

α -D-form

2,3-O-Isopropylidene, 5-benzoyl: Methyl 5-O-benzoyl-2,3-O-isopropylidene- α -D-rhamnofuranoside

[53872-90-5]
C₁₇H₂₂O₆ 322.357
Mp 75-76°. [α]_D²⁷ +19.9 (c, 1.4 in MeOH).

2,3-O-Isopropylidene, 5-mesyl: Methyl 2,3-O-isopropylidene-5-O-mesyl- α -D-rhamnofuranoside

[53872-88-1]
C₁₁H₂₀O₇S 296.341
Mp 65°. [α]_D²⁵ +28.1 (c, 1.4 in CHCl₃).

2,3-O-Isopropylidene, 5-tosyl: Methyl 2,3-O-isopropylidene-5-O-tosyl- α -D-rhamnofuranoside

[53872-89-2]
C₁₇H₂₄O₇S 372.438
Mp 84-85°. [α]_D²⁵ +14.1 (c, 3.2 in MeOH).

α -L-form

[50705-54-9]
Cryst. (Et₂O or C₆H₆). Mp 62° (58°). [α]_D¹⁸ -98.6 (c, 2.2 in H₂O).

- 2,3-O-Isopropylidene: Methyl 2,3-O-isopropylidene- α -L-rhamnopyranoside [53872-92-7]
 $C_{10}H_{18}O_5$ 218.249
 Bp_{0.7} 100-105°. $[\alpha]_D^{25}$ -53.3 (c, 0.9 in $CHCl_3$). $[\alpha]_D$ -66.7 (MeOH).
- 2,3-O-Isopropylidene, 5-benzoyl: Methyl 5-O-benzoyl-2,3-O-isopropylidene- α -L-rhamnopyranoside [53872-93-8]
 $C_{17}H_{22}O_6$ 322.357
 Mp 74-75°. $[\alpha]_D^{27}$ -18.9 (c, 1.4 in MeOH).
- 2,3-O-Isopropylidene, 5-tosyl: Methyl 2,3-O-isopropylidene-5-O-tosyl- α -L-rhamnopyranoside [26706-15-0]
 $C_{17}H_{24}O_7S$ 372.438
 Mp 84-85°. $[\alpha]_D^{25}$ -14.8 (c, 3.2 in MeOH).
- 5-Me: Methyl 5-O-methyl- α -L-rhamnopyranoside
 $C_8H_{16}O_5$ 192.211
 Cryst. (petrol). Mp 59-60°. $[\alpha]_D$ -89.2 (H_2O).
- 5-Me, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene-5-O-methyl- α -L-rhamnopyranoside
 $C_{11}H_{20}O_5$ 232.276
 Bp₁ 65°. $[\alpha]_D$ -54.5 (MeOH).

 β -L-form

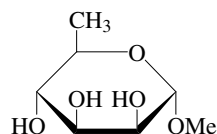
Cryst. (Et₂O). Mp 65-67°. $[\alpha]_D$ +129 (c, 1.3 in H_2O).

- 2,3-O-Isopropylidene, 5-tosyl: Methyl 2,3-O-isopropylidene-5-O-tosyl- β -L-rhamnopyranoside [26706-16-1]
 $C_{17}H_{24}O_7S$ 372.438
 Cryst. (EtOAc/petrol). Mp 61-63°. $[\alpha]_D^{25}$ +100.4 (MeOH).
- 5-Me, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene-5-O-methyl- β -L-rhamnopyranoside
 $C_{11}H_{20}O_5$ 232.276
 Bp_{0.3} 58-60°. $[\alpha]_D$ +6.3 (MeOH).

- Levene, P.A. et al., *J. Biol. Chem.*, 1936, **114**, 9 (α -L-5-Me)
- de Belder, A.N. et al., *Adv. Carbohydr. Chem.*, 1965, **20**, 219 (rev. cyclic acetals)
- Ferguson, A.C. et al., *J.C.S. (C)*, 1969, 2372, (α -L-isopropylidene tosyl, α -L-isopropylidene Me, β -L-isopropylidene Me)
- Lerner, L.M. et al., *Carbohydr. Res.*, 1974, **36**, 392 (α -D-isopropylidene benzoyl, α -D-isopropylidene mesyl, α -D-isopropylidene tosyl)
- Anisuzzaman, A.K.M. et al., *Carbohydr. Res.*, 1977, **55**, 205 (synth, pmr, α -L-isopropylidene)
- Florent, J.C. et al., *Carbohydr. Res.*, 1980, **85**, 243 (α -L-form)
- Stanek, J. et al., *J. Carbohydr. Chem.*, 1985, **4**, 79-90 (isomers, synth, pmr, cmr)

Methyl rhamnopyranoside**M-207**

Methyl 6-deoxymannopyranoside, 9CI, 8CI

 $C_7H_{14}O_5$ 178.185 **α -D-form** [15814-59-2]Mp 106-108°. $[\alpha]_D^{27}$ +64.5 (c, 1.7 in H_2O). α -D-form

- 2,3-Isopropylidene: Methyl 2,3-O-isopropylidene- α -D-rhamnopyranoside [22932-38-3]
 $C_{10}H_{18}O_5$ 218.249
 Gum. Bp_{0.2} 72-82°. $[\alpha]_D$ +16.8 (c, 2 in EtOH). $[\alpha]_D$ +14.8 (c, 1.4 in MeOH).
- 2,3-Isopropylidene, 4-mesyl: Methyl 2,3-O-isopropylidene-4-O-mesyl- α -D-rhamnopyranoside [10503-85-2]
 $C_{11}H_{20}O_7S$ 296.341
 Cryst. (EtOH). Mp 128-129.5°. $[\alpha]_D^{25}$ +14.2 (c, 1.2 in $CHCl_3$).
- 2,3-Isopropylidene, 4-tosyl: Methyl 2,3-O-isopropylidene-4-O-tosyl- α -D-rhamnopyranoside [10515-99-8]
 $C_{17}H_{24}O_7S$ 372.438
 Cryst. (MeOH aq.). Mp 59-61°. $[\alpha]_D^{27}$ -21.7 (c, 1.0 in MeOH).
- 2-Me: Methyl 2-O-methyl- α -D-rhamnopyranoside [112457-11-1]
 $C_8H_{16}O_5$ 192.211
 Syrup. $[\alpha]_D$ +43 (c, 1.2 in $CHCl_3$).
- 4-Me: Methyl 4-O-methyl- α -D-rhamnopyranoside
 $C_8H_{16}O_5$ 192.211
 Oil. $[\alpha]_D^{30}$ +98 (c, 0.57 in $CHCl_3$).
- 2,3-Di-Me: Methyl 2,3-di-O-methyl- α -D-rhamnopyranoside [82159-72-6]
 $C_9H_{18}O_5$ 206.238
 Syrup. $[\alpha]_D^{13}$ +26 (c, 0.5 in $CHCl_3$).
- 2,4-Di-Me: Methyl 2,4-di-O-methyl- α -D-rhamnopyranoside
 $C_9H_{18}O_5$ 206.238
 Oil. $[\alpha]_D^{30}$ +68 (c, 0.12 in $CHCl_3$).
- 4-Benzyl: [109526-95-6]
 $C_{14}H_{20}O_5$ 268.309
 Cryst. (Et₂O). Mp 105-107°. $[\alpha]_D^{25}$ +72 (c, 4 in $CHCl_3$).
- 4-Benzyl, 2,3-isopropylidene: [86447-92-9]
 $C_{17}H_{24}O_5$ 308.374
 Bp_{0.1} 100-120°. $[\alpha]_D^{16}$ +71.1 (c, 1.5 in $CHCl_3$).
- 2,4-Dibenzyl: [112612-46-1]
 $C_{21}H_{26}O_5$ 358.433
 $[\alpha]_D^{16}$ +14.8 (c, 1.9 in $CHCl_3$).
- 2,4-Dibenzyl, 3-Ac: [112612-47-2]
 $C_{23}H_{28}O_6$ 400.471
 Syrup. $[\alpha]_D^{16}$ -2.5 (c, 2.1 in $CHCl_3$).
- 3,4-Dibenzyl: Methyl 3,4-di-O-benzyl- α -D-rhamnopyranoside [125519-98-4]
 $C_{21}H_{26}O_5$ 358.433
 Syrup. $[\alpha]_D^{23}$ +51.5 (c, 0.27 in $CHCl_3$).
- 3,4-Dibenzyl, 2-Me: Methyl 3,4-di-O-benzyl-2-O-methyl- α -D-rhamnopyranoside [83238-32-8]
 $C_{22}H_{28}O_5$ 372.46
 $[\alpha]_D$ +54 (c, 0.49 in $CHCl_3$).

 α -L-form [14917-55-6]Cryst. (EtOAc). Mp 108-109°. $[\alpha]_D^{20}$ -62.5 (H_2O).

- 4-Ac: Methyl 4-O-acetyl- α -L-rhamnopyranoside [14686-87-4]
 $C_9H_{16}O_6$ 220.222
 Mp 112-116°. $[\alpha]_D$ -97.5 (c, 1.2 in $CHCl_3$).

Tri-Ac: Methyl 2,3,4-tri-O-acetyl- α -L-rhamnopyranoside [28251-53-8] $C_{13}H_{20}O_8$ 304.296Mp 88°. $[\alpha]_D^{20}$ -60.1 ($CHCl_3$).2,3-Dibenzoyl: Methyl 2,3-di-O-benzoyl- α -L-rhamnopyranoside [14686-83-0] $C_{21}H_{22}O_7$ 386.401 $[\alpha]_D$ +76 (c, 3.4 in $CHCl_3$).2,3-Dibenzoyl, 4-Ac: Methyl 4-O-acetyl-2,3-di-O-benzoyl- α -L-rhamnopyranoside [14686-84-1] $C_{23}H_{24}O_8$ 428.438Cryst. (EtOH). Mp 60-61°. $[\alpha]_D$ +116.5 (c, 1.1 in $CHCl_3$).2,3-Dibenzoyl, 4-tosyl: Methyl 2,3-di-O-benzoyl-4-O-tosyl- α -L-rhamnopyranoside [14686-85-2] $C_{28}H_{28}O_9S$ 540.59

Cryst. (EtOH). Mp 107-109°.

2,4-Dibenzoyl: Methyl 2,4-di-O-benzoyl- α -L-rhamnopyranoside [88331-96-8] $C_{21}H_{22}O_7$ 386.401Syrup. $[\alpha]_D^{24}$ +57.3 (c, 2.4 in CH_2Cl_2).

2,3-Carbonate: [75100-10-6]

 $C_8H_{12}O_6$ 204.179Cryst. (EtOAc/petrol). Mp 160-162°. $[\alpha]_D^{22}$ -71.3 (c, 1.1 in CH_2Cl_2).2,3-Isopropylidene: Methyl 2,3-O-isopropylidene- α -L-rhamnopyranoside [14133-63-2] $C_{10}H_{18}O_5$ 218.249Bp_{0.8} 104-105°. $[\alpha]_D$ -16.4 (c, 3.1 in Me_2CO). $[\alpha]_D$ -11.9 (c, 1 in MeOH). $[\alpha]_D$ -290.7 (c, 0.22 in $CHCl_3$). Large discrepancy in reported opt. rotns. The largest value is the most recent one.2,3-Isopropylidene, 4-Ac: Methyl 4-O-acetyl-2,3-O-isopropylidene- α -L-rhamnopyranoside [14686-86-3] $C_{12}H_{20}O_6$ 260.286Cryst. (EtOH). Mp 68°. $[\alpha]_D$ -16 (c, 1 in $CHCl_3$).2,3-Isopropylidene, 4-benzoyl: Methyl 4-O-benzoyl-2,3-O-isopropylidene- α -L-rhamnopyranoside [71204-48-3] $C_{17}H_{22}O_6$ 322.357Mp 97-98°. $[\alpha]_D$ -2 (c, 1 in MeOH).2,3-Isopropylidene, 4-mesyl: Methyl 2,3-O-isopropylidene-4-O-mesyl- α -L-rhamnopyranoside [15397-01-0] $C_{11}H_{20}O_7S$ 296.341Cryst. (EtOH aq.). Mp 130-131°. $[\alpha]_D^{20}$ -4.6 (c, 1.6 in $CHCl_3$).2,3-Isopropylidene, 4-tosyl: Methyl 2,3-O-isopropylidene-4-O-tosyl- α -L-rhamnopyranoside [72959-83-2] $C_{17}H_{24}O_7S$ 372.438Mp 61-62°. $[\alpha]_D$ +21.9 (MeOH).2-Me: Methyl 2-O-methyl- α -L-rhamnopyranoside [59013-63-7] $C_8H_{16}O_5$ 192.211Syrup. $[\alpha]_D$ -37 (c, 1.3 in $CHCl_3$) (-49).

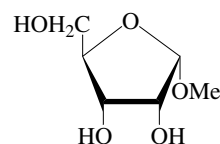
- 3-Me:** Methyl 3-O-methyl- α -L-rhamnopyranoside
[59013-64-8]
C₈H₁₆O₅ 192.211
Syrup. $[\alpha]_D$ -61 (MeOH) (-59).
- 3-Me, di-Ac:** Methyl 2,4-di-O-acetyl-3-O-methyl- α -L-rhamnopyranoside
[56083-41-1]
C₁₂H₂₀O₇ 276.286
Mp 104-105° (101-103°). $[\alpha]_D$ -26 (c, 0.9 in CHCl₃) (-23.6).
- 4-Me:** Methyl 4-O-methyl- α -L-rhamnopyranoside
[53626-10-1]
C₈H₁₆O₅ 192.211
Syrup. $[\alpha]_D$ -50.2 (H₂O).
- 4-Me, 2,3-isopropylidene:** Methyl 2,3-O-isopropylidene-4-O-methyl- α -L-rhamnopyranoside
[26706-17-2]
C₁₁H₂₀O₅ 232.276
Bp_{0.3} 67-68°. $[\alpha]_D$ -24 (H₂O).
- 2,3-Di-Me:** Methyl 2,3-di-O-methyl- α -L-rhamnopyranoside
[4348-80-5]
C₉H₁₈O₅ 206.238
Syrup. $[\alpha]_D$ -27.8 (c, 2.0 in CHCl₃).
- 2,3-Di-Me, 4-tosyl:** Methyl 2,3-di-O-methyl-4-O-tosyl- α -L-rhamnopyranoside
[39687-54-2]
C₁₆H₂₄O₇S 360.427
Cryst. (2-propanol). Mp 114°. $[\alpha]_D$ -33 (c, 2.0 in CHCl₃).
- 2,3,4-Tri-Me:** Methyl 2,3,4-tri-O-methyl- α -L-rhamnopyranoside
[35939-73-2]
C₁₀H₂₀O₅ 220.265
Syrup. $[\alpha]_D$ -15.1 (H₂O).
- 3-Benzyl:** Methyl 3-O-benzyl- α -L-rhamnopyranoside
[75336-82-2]
C₁₄H₂₀O₅ 268.309
Mp 80°. $[\alpha]_D$ -26.1 (c, 1.0 in CHCl₃).
- 4-Benzyl:** Methyl 4-O-benzyl- α -L-rhamnopyranoside
[25019-69-6]
C₁₄H₂₀O₅ 268.309
Cryst. (EtOAc/petrol). Mp 107-109°. $[\alpha]_D^{25}$ -68.3 (c, 1.6 in CHCl₃).
- 4-Benzyl, 2,3-isopropylidene:** Methyl 4-O-benzyl-2,3-O-isopropylidene- α -L-rhamnopyranoside
[25019-68-5]
C₁₇H₂₄O₅ 308.374
Bp_{0.8} 146-147°. $[\alpha]_D^{20}$ -62.6 (c, 3.8 in Me₂CO).
- 2,3-Dibenzyl:** Methyl 2,3-di-O-benzyl- α -L-rhamnopyranoside
[75336-79-7]
C₂₁H₂₆O₅ 358.433
 $[\alpha]_D$ +14.5 (c, 1.0 in CHCl₃).
- 2,4-Dibenzyl:** Methyl 2,4-di-O-benzyl- α -L-rhamnopyranoside
[69850-47-1]
C₂₁H₂₆O₅ 358.433
 $[\alpha]_D^{22}$ -16 (c, 1.2 in CHCl₃).
- 3,4-Dibenzyl:** Methyl 3,4-di-O-benzyl- α -L-rhamnopyranoside
[69558-07-2]
C₂₁H₂₆O₅ 358.433
 $[\alpha]_D^{20}$ -45 (c, 0.8 in CH₂Cl₂).

- 2,3-Thionocarbonate, 4-benzyl:**
[25019-70-9]
C₁₅H₁₈O₅S 310.37
Oil. $[\alpha]_D^{24}$ -50 (c, 2.1 in CHCl₃).
- β -L-form** [42214-00-6]
Mp 138-140°. $[\alpha]_D^{20}$ +95.4 (H₂O).
- Tri-Ac:** Methyl 2,3,4-tri-O-acetyl- β -L-rhamnopyranoside
[31085-67-3]
C₁₃H₂₀O₈ 304.296
Needles (EtOH). Mp 151-152°. $[\alpha]_D^{18}$ +45.7 (1,1,2,2-tetrachloroethane).
- 4-Me:** Methyl 4-O-methyl- β -L-rhamnopyranoside
C₈H₁₆O₅ 192.211
Syrup. Bp_{0.3} 104-105°. $[\alpha]_D$ -13.9 (H₂O).
- 3,4-Di-Me:** Methyl 3,4-di-O-methyl- β -L-rhamnopyranoside
[72398-28-8]
C₉H₁₈O₅ 206.238
Mp 67°. $[\alpha]_D^{20}$ +36 (H₂O).
- Tri-Me:** Methyl 2,3,4-tri-O-methyl- β -L-rhamnopyranoside
[35939-74-3]
C₁₀H₂₀O₅ 220.265
Mp 53-54°. $[\alpha]_D$ +106 (H₂O).
- Haworth, W.N. *et al.*, J.C.S., 1929, 2469 (β -L-tri-Me)
- Levene, P.A. *et al.*, J. Biol. Chem., 1936, **114**, 9 (β -L-4-Me)
- Tollens, B. *et al.*, Kurzes Handbuch der Kohlenhydrate, Edwards Bros., Inc., Ann Arbor, 1943, 170 (β -L-di-Me)
- Maher, G.G. *et al.*, Adv. Carbohydr. Chem., 1955, **10**, 266 (α -L-4-Me, 2,3,5-tri-Me)
- Ballou, C.E. *et al.*, J.A.C.S., 1957, **79**, 984-986 (α -D-4-benzoyl α -D-isopropylidene)
- Pacsu, G. *et al.*, Methods Carbohydr. Chem., 1963, **2**, 357 (α -L-tri-Ac)
- de Belder, A.N. *et al.*, Adv. Carbohydr. Chem., 1965, **20**, 298 (rev. acetals)
- Gunner, S.W. *et al.*, Carbohydr. Res., 1967, **4**, 498 (α -L-isopropylidene mesyl)
- Richardson, A.C. *et al.*, Tetrahedron, 1967, **23**, 1641 (α -L-4-Ac, dibenzoyl derivs, isopropylidene 4-Ac)
- King, R.D. *et al.*, Carbohydr. Res., 1969, **9**, 423 (α -L-isopropylidene, pmr)
- Hemmer, E. *et al.*, Acta Chem. Scand., 1970, **24**, 3019 (β -L-tri-Ac, pmr, ms, ir)
- Stevens, C.L. *et al.*, J.O.C., 1970, **35**, 592 (α -D-isopropylidene, α -D-isopropylidene mesyl, α -D-isopropylidene tosyl, pmr)
- Breitmaier, E. *et al.*, Chem. Ber., 1971, **104**, 1147 (cmr)
- Bebault, G.M. *et al.*, Can. J. Chem., 1972, **50**, 3373 (α -L-4-Ac, isopropylidene, isopropylidene 4-Ac, 2,3-di-Me, 2,3-di-Me tosyl, pmr)
- Haines, A.H. *et al.*, Carbohydr. Res., 1972, **21**, 99 (α -L-4-benzyl, 4-benzyl isopropylidene, 4-benzyl thionocarbonate)
- de Bruyn, A. *et al.*, Carbohydr. Res., 1976, **47**, 158 (pmr)
- Handa, V.K. *et al.*, Carbohydr. Res., 1979, **74**, C5-C7 (2,4-dibenzyl, 3,4-dibenzyl)
- Simon, P. *et al.*, Synthesis, 1979, 951 (α -D-isopropylidene)
- Pozsgay, V. *et al.*, Carbohydr. Res., 1980, **81**, 184 (α -L-2-Me, α -L-3-Me)
- Rana, S.S. *et al.*, Carbohydr. Res., 1980, **85**, 313 (α -L-3-benzyl, 2,3-dibenzyl)
- Collins, P.M. *et al.*, J.C.S. Perkin 1, 1980, 799 (α -L-2,3-carbonate)
- Sato, K.I. *et al.*, Carbohydr. Res., 1982, **103**, 221 (α -D-2,3-di-Me)
- Liptak, A. *et al.*, Carbohydr. Res., 1982, **107**, 300 (α -D-2-Me, 3,4-dibenzyl-2-Me)

- Garegg, P.J. *et al.*, Carbohydr. Res., 1982, **108**, 97 (α -L-2,3-dibenzyl, 2,4-dibenzyl)
- Wessel, H.P. *et al.*, Carbohydr. Res., 1983, **124**, 301 (α -L-2,4-dibenzoyl)
- Stanek, J. *et al.*, J. Carbohydr. Chem., 1985, **4**, 79-90 (synth, pmr, cmr)
- Pozsgay, V. *et al.*, Can. J. Chem., 1987, **65**, 2764 (α -L-3,4-dibenzyl)
- Fang, Y. *et al.*, J. Carbohydr. Chem., 1987, **6**, 169-179 (α -D-2,4-dibenzyl, α -D-2,4-dibenzyl 3-Ac)
- Chen, Q. *et al.*, Carbohydr. Res., 1993, **240**, 107 (α -D-3,4-dibenzyl)
- Shalaby, M.A. *et al.*, Carbohydr. Res., 1994, **258**, 267; **264**, 173 (cryst struct, α -L-tri-Ac)
- Liao, W. *et al.*, Carbohydr. Res., 1994, **260**, 151 (α -L-3-Me, 3-Me di-Ac)
- Ashton, P.R. *et al.*, Chem. Eur. J., 1996, **2**, 580 (α -L-4-Ac, 2,3-isopropylidene 4-Ac, 2,3-dibenzoyl 4-Ac)
- Sone, H. *et al.*, J.O.C., 1996, **61**, 8956-8960, (α -D-4-Me, α -D-2,4-di-Me)
- Capozzi, G. *et al.*, J.O.C., 2001, **66**, 8787-8792 (α -L-2,3-benzylidene, α -L-2,3-benzylidene 4-benzyl)

Methyl ribofuranoside

M-208

 α -D-formC₆H₁₂O₅ 164.158 α -D-form

- [52485-92-4]
Syrup. $[\alpha]_D^{25}$ +147 (c, 1.3 in H₂O).
- 3,5-Dibenzyl:** Methyl 3,5-di-O-benzyl- α -D-ribofuranoside
C₂₀H₂₄O₅ 344.407
 $[\alpha]_D^{23}$ +67 (c, 1.0 in CHCl₃).
- β -D-form** [7473-45-2]
Mp 79-80°. $[\alpha]_D$ -50 (c, 2.0 in H₂O).
- 3,5-Dibenzoyl:** Methyl 3,5-di-O-benzoyl- β -D-ribofuranoside
[50907-84-1]
C₂₀H₂₀O₇ 372.374
Cryst. (EtOH). Mp 132-133°. $[\alpha]_D^{25}$ -8.8 (c, 0.5 in CHCl₃).
- Tribenzoyl:** Methyl 2,3,5-tri-O-benzoyl- β -D-ribofuranoside
[52783-53-6]
C₂₇H₂₄O₈ 476.482
 $[\alpha]_D^{23}$ +55 (c, 1.5 in CHCl₃).
- 5-Benzoyl, 2,3-ditosyl:** Methyl 5-O-benzoyl-2,3-di-O-tosyl- β -D-ribofuranoside
C₂₇H₂₈O₁₀S₂ 576.644
Cryst. (Et₂O). Mp 104-106°. $[\alpha]_D^{28}$ +53 (c, 0.79 in CHCl₃).
- 2,3,5-Tritosyl:** Methyl 2,3,5-tri-O-tosyl- β -D-ribofuranoside
[20701-25-1]
C₂₇H₃₀O₁₁S₃ 626.725
Cryst. (CHCl₃/petrol). Mp 126°. $[\alpha]_D^{10}$ +38.3 (c, 2.5 in CHCl₃).
- 2,3-O-Methylene, 5-benzoyl:** Methyl 5-O-benzoyl-2,3-O-methylene- β -D-ribofuranoside
[42400-23-7]
C₁₄H₁₆O₆ 280.277
Mp 83-84°. $[\alpha]_D$ -55.6 (CHCl₃).

2,3-O-Isopropylidene: See 2,3-O-Isopropylideneribose, I-74

2,3-O-Benzylidene, 5-benzoyl: Methyl 5-O-benzoyl-2,3-O-benzylidene- β -D-ribofuranoside [50907-80-7]
C₂₀H₂₀O₆ 356.374
Cryst. (Et₂O/pentane). Mp 73-75°. [α]_D²⁷ -27.4 (c, 2.4 in CHCl₃).

2-Me: Methyl 2-O-methyl- β -D-ribofuranoside
C₇H₁₄O₅ 178.185
Cryst. (EtOAc/petrol). Mp 73-75°. [α]_D¹⁸ -24.5 (c, 0.55 in CHCl₃).

2-Me, 3,5-dibenzoyl: Methyl 3,5-di-O-benzoyl-2-O-methyl- β -D-ribofuranoside
C₂₁H₂₂O₇ 386.401
Syrup. [α]_D¹⁵ +21.9 (c, 0.3 in CHCl₃).

2,3,5-Tri-Me: Methyl 2,3,5-tri-O-methyl- β -D-ribofuranoside [14520-34-4]
C₉H₁₈O₅ 206.238
Bp₁₂ 126-130°. [α]_D -1.9 (c, 0.4 in CHCl₃).

2,3,5-Tribenzyl: Methyl 2,3,5-tri-O-benzyl- β -D-ribofuranoside [55725-85-4]
C₂₇H₃₀O₅ 434.531
Syrup. [α]_D²⁵ +23 (c, 0.5 in dioxan).

α -L-form [52689-55-1]
[α]_D²⁷ -104 (c, 2.0 in H₂O).

Tri-Ac: Methyl 2,3,4-tri-O-acetyl- α -L-ribofuranoside
C₁₂H₁₈O₈ 290.269
Oil. [α]_D²⁰ -124.5 (c, 1.43 in CH₂Cl₂).

Tribenzoyl: Methyl 2,3,5-tri-O-benzoyl- α -L-ribofuranoside
C₂₇H₂₄O₈ 476.482
[α]_D²⁰ -79.3 (c, 1.09 in CH₂Cl₂).

β -L-form [52689-56-2]
[α]_D²⁷ +46 (c, 1.9 in H₂O).

2,3-O-Isopropylidene: See 2,3-O-Isopropylideneribose, I-74

3-Benzyl: Methyl 3-O-benzyl- β -L-ribofuranoside [390824-26-7]
C₁₃H₁₈O₅ 254.282
[α]_D²⁰ +9.1 (c, 0.5 in MeOH).

3-Benzyl, 2,5-di-Ac: Methyl 2,5-O-diacetyl-3-O-benzyl- β -L-ribofuranoside [390824-27-8]
C₁₇H₂₂O₇ 338.357
Oil. [α]_D²⁰ -13.1 (c, 1.0 in MeOH).

Barker, R. et al., *J.O.C.*, 1961, **26**, 4605 (β -D-form)

Bishop, C.T. et al., *Can. J. Chem.*, 1963, **41**, 2743 (α -D-form, β -D-form)

Cleophax, J. et al., *Bull. Soc. Chim. Fr.*, 1967, 4111 (β -D-benzoyl ditosyl, β -D-tritosyl)

Hanessian, S. et al., *Can. J. Chem.*, 1972, **50**, 233 (β -D-dibenzoyl)

Hanessian, S. et al., *Carbohydr. Res.*, 1973, **26**, 258 (β -D-methylene benzoyl)

Haines, A.H. et al., *Tetrahedron*, 1973, **29**, 2807 (β -D-Me, β -D-Me dibenzoyl, β -D-tri-Me)

Jacobsen, S. et al., *Acta Chem. Scand., Ser. B*, 1974, **28**, 866 (β -D-benzylidene benzoyl)

Walker, T.E. et al., *Carbohydr. Res.*, 1974, **32**, 413 (α -L-form, β -L-form, synth)

Ritzmann, G. et al., *Carbohydr. Res.*, 1975, **39**, 227 (α -D-dibenzyl)

Hanessian, S. et al., *Tet. Lett.*, 1976, 657 (β -D-tribenzoyl)

Bock, K. et al., *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr)

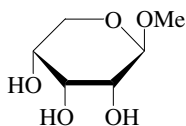
Batch, A. et al., *J. Carbohydr. Chem.*, 1994, **13**, 935-940 (α -L-tri-Ac, α -L-tribenzoyl)

Hirooka, M. et al., *Bull. Chem. Soc. Jpn.*, 2001, **74**, 1679-1694 (β -D-tribenzoyl)

Shi, Z.-D. et al., *Tetrahedron*, 2002, **58**, 3287-3296 (β -L-form, 3-benzyl, 3 benzyl 2,5-di-Ac)

Methyl ribopyranoside

M-209

 β -D-formC₆H₁₂O₅ 164.158 α -D-form [6207-03-0]Syrup. [α]_D +103.3 (MeOH). β -D-form [17289-61-1]Cryst. (Et₂O). Mp 83°. [α]_D -105 (H₂O).2,3-O-Isopropylidene: Methyl 2,3-O-isopropylidene- β -D-ribofuranoside [53796-88-6]C₉H₁₆O₅ 204.222Mp 70-71°. [α]_D -77 (c, 1 in CH₂Cl₂).2,3-O-Isopropylidene, 4-tosyl: Methyl 2,3-O-isopropylidene-4-O-tosyl- β -D-ribofuranoside [53756-36-8]C₁₆H₂₂O₇S 358.412Cryst. (diisopropyl ether/petrol). Mp 99-100°. [α]_D -25 (c, 0.6 in CH₂Cl₂).3,4-O-Isopropylidene: Methyl 3,4-O-isopropylidene- β -D-ribofuranoside [53756-35-7]C₉H₁₆O₅ 204.222Bp_{0.2} 100°. [α]_D -109 (c, 1.2 in CH₂Cl₂).3,4-O-Isopropylidene, 2-tosyl: Methyl 3,4-O-isopropylidene-2-O-tosyl- β -D-ribofuranoside [53796-89-7]C₁₆H₂₂O₇S 358.412Cryst. (diisopropyl ether). Mp 145-146°. [α]_D -110 (c, 0.7 in CH₂Cl₂).2-Me: Methyl 2-O-methyl- β -D-ribofuranoside [60562-99-4]C₇H₁₄O₅ 178.185Bp_{0.02} 85° (bath). [α]_D -113.4 (c, 0.95 in CHCl₃).2-Me, 3,4-O-isopropylidene: Methyl 3,4-O-isopropylidene-2-O-methyl- β -D-ribofuranoside [60551-05-5]C₁₀H₁₈O₅ 218.249Oil. Bp_{0.2} 74°. [α]_D -114.8 (c, 1.5 in CHCl₃).2,3,4-Tri-Me: Methyl 2,3,4-tri-O-methyl- β -D-ribofuranoside [2876-87-1]C₉H₁₈O₅ 206.238Bp_{0.06} 49-50°. [α]_D -81 (c, 1.12 in CHCl₃).Reist, E.J. et al., *J.O.C.*, 1966, **31**, 226 (α -D-form, synth)Durette, P.L. et al., *Carbohydr. Res.*, 1971, **18**, 403 (β -D-form, synth)

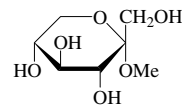
Hughes, N.A. et al., *Carbohydr. Res.*, 1974, **35**, 247 (2,3-isopropylidene, 2,3-isopropylidene tosyl, 3,4-isopropylidene, 3,4-isopropylidene tosyl)

Abbas, S.A. et al., *J.C.S. Perkin 1*, 1976, 1351 (β -D-tri-Me, β -D-isopropylidene Me, β -D-Me)

Bock, K. et al., *Annu. Rep. NMR Spectrosc.*, (Webb, G.A. ed.), Acad. Press, London and New York, 1982, **13**, 38 (pmr, α -D-form, β -D-form, cmr, α -D-tri-Ac, β -D-tri-Ac)

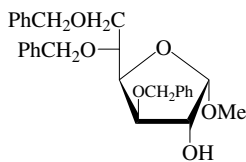
Methyl sorboside

M-210

 α -D-Pyranose-formC₇H₁₄O₆ 194.184 α -D-Pyranose-formMp 119°. [α]_D +89 (H₂O). α -L-Pyranose-form [3765-95-5]Mp 120-122°. [α]_D -88 (H₂O).Tetrabenzoyl: Methyl 1,3,4,5-tetra-O-benzoyl- α -L-sorbopyranosideC₃₅H₃₀O₁₀ 610.616Mp 133-136°. [α]_D²¹ +12.2 (c, 1 in CHCl₃).1,3-O-Benzylidene: Methyl 1,3-O-benzylidene- α -L-sorbopyranosideC₁₄H₁₈O₆ 282.293Cryst. (2-propanol). Mp 183-184°. [α]_D -54.6 (CHCl₃).1,3-O-Benzylidene, 5-Me: Methyl 1,3-O-benzylidene-5-O-methyl- α -L-sorbopyranoside [58801-73-3]C₁₅H₂₀O₆ 296.319Needles (propanol). Mp 133-134°. [α]_D²² -51 (c, 2 in CHCl₃).Tetrabenzyl: Methyl 1,3,4,5-tetra-O-benzyl- α -L-sorbopyranosideC₃₅H₃₈O₆ 554.682Yellow oil. [α]_D -14.2 (c, 3.1 in CHCl₃). β -L-Pyranose-formMp 106°. [α]_D +39 (H₂O). α -L-Furanose-form [51295-56-8][α]_D -85 (EtOH).Tetrabenzoyl: Methyl 1,3,4,5-tetra-O-benzoyl- α -L-sorbopyranoside [51295-54-6]C₃₅H₃₀O₁₀ 610.616[α]_D -115 (c, 0.75 in CHCl₃). β -L-Furanose-form [51295-55-7][α]_D +60 (EtOH).Tetrabenzoyl: Methyl 1,3,4,5-tetra-O-benzoyl- β -L-sorbopyranosideC₃₅H₃₀O₁₀ 610.616Cryst. (MeOH). Mp 110-112°. [α]_D +17 (c, 1.0 in CHCl₃).Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 382 (D-pyr, L-pyr)
Paulsen, H. et al., *Chem. Ber.*, 1967, **100**, 2669 (α -L-pyr tetrabenzoyl)Murphy, D. et al., *J.C.S. (C)*, 1967, 1732 (α -L-pyr benzylidene)Bethell, G.S. et al., *Carbohydr. Res.*, 1973, **31**, 69 (α -L-fur, α -L-fur tetrabenzoyl, β -L-fur, β -L-fur tetrabenzoyl)

Heyns, K. *et al.*, *Annalen*, 1976, 269 (α -*L*-pyr benzylidene Me)
 Helleur, R. *et al.*, *Carbohydr. Res.*, 1981, **89**, 83
 (synth, α -*L*-pyr, *L*-tetra benzyl)

Methyl 3,5,6-tri-*O*-benzylglucofuranoside M-211
Methyl 3,5,6-tris-O-(phenylmethyl) glucofuranoside, 9CI



α -D-form

C₂₈H₃₂O₆ 464.557
 Never marketed Log P 4.54 (calc).

D-form

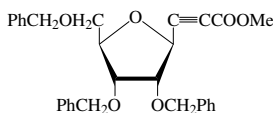
Mebenoside, INN. CB 28046
 [55902-93-7] Antiinflammatory agent.
 Bp_{0.9} 270-280°. [α]_D²⁰ -21 (c, 1.08 in CHCl₃). Props. appear to refer to an anomeric mixt.

α -D-form [20822-88-2]
 Mp 55°. [α]_D +26 (c, 0.88 in CHCl₃).

β -D-form [20822-89-3]
 [α]_D²⁰ -55 (c, 1.16 in CHCl₃).

Huber, G. *et al.*, *Helv. Chim. Acta.*, 1968, **51**, 1185 (synth, pharmacol, pmr, conformn)
 Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1979, **33**, 453 (synth)
 Lee, D.S. *et al.*, *Carbohydr. Res.*, 1984, **125**, 265 (synth)

Methyl 3-(2,3,5-tri-*O*-benzyl-ribofuranosyl)propionate M-212



β -form

C₃₀H₃₀O₆ 486.563

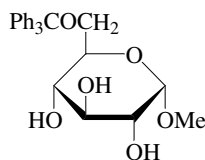
α -D-form

Methyl 4,7-anhydro-5,6,8-tri-O-benzyl-2,3-dideoxy-2,2,3,3-tetrahydro-D-allo-oc-tonoate
 [57361-95-2]
 Mp 38-39°. [α]_D²² +84.3 (c, 1.7 in CHCl₃).

β -D-form

Methyl 4,7-anhydro-5,6,8-tri-O-benzyl-2,3-dideoxy-2,2,3,3-tetrahydro-D-altro-oc-tonoate
 [57361-98-5]
 [α]_D²² +16 (c, 1.0 in CHCl₃).
 Buchanan, J.G. *et al.*, *Carbohydr. Res.*, 1977, **55**, 225

Methyl 6-*O*-tritylglucopyranoside M-213
Methyl 6-O-(triphenylmethyl) glucopyranoside



α -D-form

C₂₆H₂₈O₆ 436.504

α -D-form [18311-26-7]

Cryst. (EtOH). Mp 155-156°. [α]_D¹⁶ +86.3 (Py).

2,3,4-Tri-Ac: *Methyl 2,3,4-tri-O-acetyl-6-O-trityl- α -D-glucopyranoside*
 [18031-49-7]
 C₃₂H₃₄O₉ 562.615
 Mp 136°. [α]_D¹⁵ +136 (Py).

2-Benzoyl: *Methyl 2-O-benzoyl-6-O-trityl- α -D-glucopyranoside*
 [66464-15-1]
 C₃₃H₃₂O₇ 540.612
 Microcryst. solid. Mp 92-94°. [α]_D²⁵ +88 (c, 1.7 in EtOAc) (+120).

2-Benzoyl, 3,4-dimesyl: *Methyl 2-O-benzoyl-3,4-di-O-mesyl-6-O-trityl- α -D-glucopyranoside*
 [51385-37-6]
 C₃₅H₃₆O₁₁S₂ 696.795
 Microcryst. solid. Mp 176-177° (169-170°). [α]_D²³ +103.6 (c, 5 in CHCl₃).

2,3,4-Tribenzoyl: *Methyl 2,3,4-tri-O-benzoyl-6-O-trityl- α -D-glucopyranoside*
 [20231-39-4]
 C₄₇H₄₀O₉ 748.828
 Mp 108-110° Mp 171° (double Mp).

2,3,4-Tri-Me: *Methyl 2,3,4-tri-O-methyl-6-O-trityl- α -D-glucopyranoside*
 [6984-43-6]
 C₂₉H₃₄O₆ 478.584
 Solid. Mp 104-106°. [α]_D +84 (c, 0.9 in CHCl₃).

β -D-form [67412-01-5]

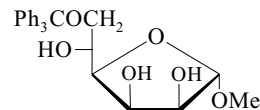
Mp 108-109° Mp 148° (double Mp).

Tri-Ac: *Methyl 2,3,4-tri-O-acetyl-6-O-trityl- β -D-glucopyranoside*
 [31873-39-9]
 C₃₂H₃₄O₉ 562.615
 Mp 126°. [α]_D +32 (Py).

Helferich, B. *et al.*, *Annalen*, 1924, **440**, 1 (α -D-form, α -D-tri-Ac, α -D-tribenzoyl, β -D-form)
 Helferich, B. *et al.*, *Adv. Carbohydr. Chem.*, 1948, **3**, 79 (rev)

Chaudhary, S.K. *et al.*, *Tet. Lett.*, 1979, 95, (α -D-tri-Ac)
 Ho, W.M. *et al.*, *Tetrahedron*, 1995, **51**, 7373, (α -D-2-benzoyl, 2-benzoyl dimesyl)
 Molina Pinilla, I. *et al.*, *Carbohydr. Res.*, 2003, **338**, 549-555 (tri-Me)

Methyl 6-*O*-tritylmannofuranoside M-214



C₂₆H₂₈O₆ 436.504

α -D-form

[α]_D²⁷ +50.6 (c, 5.14 in CHCl₃).

2-Tosyl: [22314-31-4]

[α]_D²⁷ +43 (c, 5.0 in CHCl₃).

2-Tosyl, 3,5-di-Me: [22314-32-5]

[α]_D²⁸ +26 (c, 5.0 in CHCl₃).

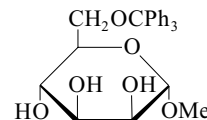
3,5-Di-Me: [22314-33-6]

C₂₈H₃₂O₆ 464.557

[α]_D²⁷ +23.2 (c, 4.3 in CHCl₃).

Siddiqui, I.R. *et al.*, *Carbohydr. Res.*, 1968, **8**, 477; 1969, **9**, 344 (synth, derivs)

Methyl 6-*O*-tritylmannopyranoside, 9CI, 8CI M-215



C₂₆H₂₈O₆ 436.504

α -D-form [20231-36-1]

Mp 100°. [α]_D²⁰ +20 (c, 1.1 in CHCl₃).

2,3,4-Tri-Ac: [7511-40-2]

C₃₂H₃₄O₉ 562.615

Mp 128-129°. [α]_D²⁶ +44.6 (c, 1.0 in CHCl₃).

2,3-Dimesyl: [16802-89-4]

[α]_D²⁰ +7.7 (c, 1.0 in CHCl₃).

2-Tosyl: *Methyl 2-O-tosyl-6-O-trityl- α -D-mannopyranoside*
 [25581-49-1]
 Mp 104°. [α]_D²³ +29.2 (c, 2.4 in CHCl₃).

2-Tosyl, 3-Me: [27409-35-4]

Mp 154-155°. [α]_D²⁵ +3 (c, 1.3 in CHCl₃).

2-Tosyl, 3,4-di-Me: Mp 160-161°. [α]_D¹⁷ +3.6 (c, 1.31 in CHCl₃).

3-Tosyl: *Methyl 3-O-tosyl-6-O-trityl- α -D-mannopyranoside*
 [25581-49-1]
 Mp 104°. [α]_D²³ +29.2 (c, 2.4 in CHCl₃).

3-Tosyl, 2,4-di-Me: [25581-50-4]
 Mp 199-201°. [α]_D²⁴ +38.2 (c, 2.08 in CHCl₃).

4-Tosyl: *Methyl 4-O-tosyl-6-O-trityl- α -D-mannopyranoside*
 [25581-49-1]
 [α]_D¹⁷ +45.6 (c, 2.11 in CHCl₃).

4-Tosyl, 2,3-di-Me: Mp 146-147°. [α]_D²⁰ +35.1 (c, 1.44 in CHCl₃).

4-Benzyl: *Methyl 4-O-benzyl-6-O-trityl- α -D-mannopyranoside*
 [26922-87-2]
 C₃₃H₃₄O₆ 526.628
 Mp 127°. [α]_D²⁰ +46.9 (c, 0.68 in CHCl₃).

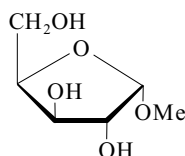
2,3-Dibenzyl:

C₄₀H₄₀O₆ 616.752

[α]_D²² -9 (CHCl₃).

- 2,3,4-Tribenzyl: Methyl 2,3,4-tri-O-benzyl-6-O-trityl- α -D-mannopyranoside [40653-13-2]
C₄₇H₄₆O₆ 706.877
Mp 116-118°. [α]_D²³ +20 (c, 0.51 in CHCl₃).
- 2,3-Di-Me: [27299-03-2]
C₂₈H₃₂O₆ 464.557
Mp 177-178°. [α]_D¹⁹ +76.1 (c, 1.05 in CHCl₃).
- 2,3-Di-Me, 4-Ac: [53767-29-6]
C₃₀H₃₄O₇ 506.594
Mp 205-206°. [α]_D²⁵ +24.6 (c, 1.28 in CHCl₃).
- 2,4-Di-Me: [25581-51-5]
C₂₈H₃₂O₆ 464.557
Mp 167-168°. [α]_D²² +25.2 (c, 2.25 in CHCl₃).
- 3,4-Di-Me: [27299-02-1]
C₂₈H₃₂O₆ 464.557
Syrup. [α]_D²⁰ +51.2 (c, 1.75 in CHCl₃).
- 2,3,4-Tri-Me:
C₂₉H₃₄O₆ 478.584
Mp 106-110°. [α]_D²⁰ +33 (c, 1.04 in CHCl₃).
- Murty, V.L.N. *et al.*, *Carbohydr. Res.*, 1969, **10**, 477; **11**, 273

Methyl xylofuranoside, 9CI, 8CI M-216



- C₆H₁₂O₅ 164.158
- α -D-form [1824-96-0]
Mp 84°. [α]_D +182 (H₂O).
- 2-Mesyl: Methyl 2-O-mesyl- α -D-xylofuranoside [53081-34-8]
C₇H₁₄O₇S 242.249
Plates (Et₂O). Mp 89°. [α]_D²² +166.7 (c, 1.0 in MeOH).
- 3,5-O-Isopropylidene: Methyl 3,5-O-isopropylidene- α -D-xylofuranoside [7045-40-1]
C₉H₁₆O₅ 204.222
Bp_{0.1} 85-88°. [α]_D +16 (c, 2.0 in H₂O).
- 3,5-O-Isopropylidene, 2-benzoyl: Methyl 2-O-benzoyl-3,5-O-isopropylidene- α -D-xylofuranoside
C₁₆H₂₀O₆ 308.33
Cryst. (Et₂O/petrol). Mp 89-90°. [α]_D +128 (c, 2.8 in CHCl₃).
- 3,5-O-Isopropylidene, 2-mesyl: Methyl 3,5-O-isopropylidene-2-O-mesyl- α -D-xylofuranoside [7045-39-8]
C₁₀H₁₈O₇S 282.314
Cryst. (CCl₄). Mp 86-87°. [α]_D²² +103.8 (c, 1.0 in MeOH).
- 2-Me: Methyl 2-O-methyl- α -D-xylofuranoside [32469-86-6]
C₇H₁₄O₅ 178.185
Cryst. (Et₂O). Mp 72-73°. [α]_D²⁵ +159 (c, 1.03 in EtOH).

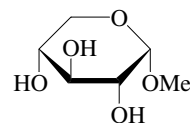
- 2-Me, 5-benzoyl: Methyl 5-O-benzoyl-3-O-methyl- α -D-xylofuranoside
Syrup. [α]_D²⁸ +119.3 (c, 1.25 in CHCl₃).
Incorrectly called 3-O-methyl.
- 2-Me, 3,5-O-isopropylidene: Methyl 3,5-O-isopropylidene-2-O-methyl- α -D-xylofuranoside [50615-84-4]
C₁₀H₁₈O₅ 218.249
Syrup. Bp_{0.07} 77°. [α]_D²³ +105.3 (c, 1.7 in CHCl₃) (+24.6).
- 3-Me: Methyl 3-O-methyl- α -D-xylofuranoside
C₇H₁₄O₅ 178.185
[α]_D²⁵ +143.9 (c, 1.59 in EtOH).
- 2,3-Di-Me: Methyl 2,3-di-O-methyl- α -D-xylofuranoside [15821-56-4]
C₈H₁₆O₅ 192.211
Cryst. (Et₂O). Mp 82-83°. [α]_D²⁴ +17.42 (c, 1.99 in EtOH).
- 2-Benzyl: Methyl 2-O-benzyl- α -D-xylofuranoside
C₁₃H₁₈O₅ 254.282
Cryst. (Et₂O/hexane). Mp 63-63.5°. [α]_D²² +129.9 (c, 0.43 in CHCl₃).
- 2-Benzyl, 3,5-isopropylidene: Methyl 2-O-benzyl-3,5-O-isopropylidene- α -D-xylofuranoside
C₁₆H₂₂O₅ 294.347
Syrup. [α]_D²⁰ +68.6 (c, 0.98 in CHCl₃).
Incorrectly called 3-benzyl in the lit.
- 5-Benzyl, 3-Me: Methyl 5-O-benzyl-3-O-methyl- α -D-xylofuranoside
C₁₄H₂₀O₅ 268.309
Bp_{0.01} 129°. [α]_D²⁵ +96.5 (c, 1.44 in EtOH).
- 5-Benzyl, 2,3-di-Me: Methyl 5-O-benzyl-2,3-di-O-methyl- α -D-xylofuranoside
C₁₅H₂₂O₅ 282.336
Syrup. Bp_{0.01} 129-131°. [α]_D²⁴ +11.4 (c, 1.16 in EtOH).
- 5-Trityl, 2,3-dimesyl: Methyl 2,3-di-O-mesyl-5-O-trityl- α -D-xylofuranoside
C₂₇H₃₀O₉S₂ 562.661
Mp 148°. [α]_D¹⁶ +81 (c, 2 in CHCl₃).

β -D-form

- 3,5-O-Isopropylidene: Methyl 3,5-O-isopropylidene- β -D-xylofuranoside [51754-99-5]
C₉H₁₆O₅ 204.222
Oil. Bp_{0.1} 108-110°. [α]_D -26 (c, 0.6 in H₂O). [α]_D²⁴ -64.2 (c, 2 in H₂O).
- 2-Me, 5-benzoyl: Methyl 5-O-benzoyl-2-O-methyl- β -D-xylofuranoside
C₁₄H₁₈O₆ 282.293
Syrup. [α]_D²⁴ -33.6 (c, 1.0 in CHCl₃).
- 2-Me, 3,5-isopropylidene: Methyl 3,5-O-isopropylidene-2-O-methyl- β -D-xylofuranoside
C₁₀H₁₈O₅ 218.249
Syrup. [α]_D²⁴ -33.5 (c, 1.0 in CHCl₃).
Incorrectly called 3-Me in the lit.
- 2-Benzyl, 3,5-isopropylidene: Methyl 2-O-benzyl-3,5-O-isopropylidene- β -D-xylofuranoside
C₁₆H₂₂O₅ 294.347
Syrup. [α]_D²⁰ -45 (c, 1.3 in CHCl₃).

- 5-Trityl, 2,3-dimesyl: Methyl 2,3-di-O-mesyl-5-O-trityl- β -D-xylofuranoside
C₂₇H₃₀O₉S₂ 562.661
Cryst. (EtOH). Mp 139°. [α]_D²³ -18 (c, 2 in CHCl₃).
- Robertson, G.J. *et al.*, *J.C.S.*, 1934, 824, (α -D-isopropylidene Me)
- Percival, E.E. *et al.*, *J.C.S.*, 1952, 4305, (β -D-isopropylidene)
- Baker, B.R. *et al.*, *J.A.C.S.*, 1955, **77**, 7, (Me β -D-gly 3,5-isopropylidene)
- Kováč, P. *et al.*, *Carbohydr. Res.*, 1971, **16**, 492; **19**, 249 (2-Me, 2,3-di-Me)
- Kováč, P. *et al.*, *Carbohydr. Res.*, 1971, **19**, 249 (α -D-3-Me, α -D-3-Me bisnitrobenzoyl, α -D-benzyl Me, α -D-benzyl-di-Me, α -D-di-Me)
- Buchanan, J.G. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 135 (2-tosyl-3,4-di-Ac)
- Rabelo, J. *et al.*, *Carbohydr. Res.*, 1973, **30**, 202 (isopropylidene Me, α -D-2-Me)
- El Khadem, H.S. *et al.*, *Carbohydr. Res.*, 1974, **33**, 329 (α -D-isopropylidene mesyl, mesyl)
- Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1975, 2163 (α -D-isopropylidene, α -D-isopropylidene benzoyl)
- Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr, α -form)
- Tronchet, J.M. *et al.*, *Carbohydr. Res.*, 1988, **181**, 97 (2-Me derivs, 2-benzyl derivs)
- Lacourt-Gadras, B. *et al.*, *Carbohydr. Res.*, 1992, **235**, 281 (5-trityl-2,3-dimesyl)

Methyl xylopyranoside M-217



- C₆H₁₂O₅ 164.158
- α -D-form [91-09-8]
Cryst. (butanone). Mp 90-91°. [α]_D +153.9 (H₂O).
- 2,3,4-Tri-Ac: Methyl 2,3,4-tri-O-acetyl- α -D-xylopyranoside [20880-54-0]
C₁₂H₁₈O₈ 290.269
Cryst. (EtOH). Mp 85-86°. [α]_D +118 (c, 3.7 in CHCl₃).
- 3-Benzoyl: Methyl 3-O-benzoyl- α -D-xylopyranoside [60551-03-3]
C₁₃H₁₆O₆ 268.266
Cryst. (EtOAc/petrol). Mp 139-141°. [α]_D +111 (c, 1 in dioxan).
- 2,3,4-Tribenzoyl: Methyl 2,3,4-tri-O-benzoyl- α -D-xylopyranoside [10225-78-2]
C₂₇H₂₄O₈ 476.482
Cryst. (EtOH). Mp 107-109°. [α]_D +56.3 (c, 1.10 in CHCl₃).
- 2,3,4-Trimesyl: Methyl 2,3,4-tri-O-mesyl- α -D-xylopyranoside
C₉H₁₈O₁₁S₃ 398.433
Cryst. (EtOAc/EtOH). Mp 131.5-132°. [α]_D²¹ +78.4 (c, 1.0 in Me₂CO).
- 2-Tosyl: Methyl 2-O-tosyl- α -D-xylopyranoside [14187-86-1]
C₁₃H₁₈O₇S 318.347
Cryst. (H₂O). Mp 135-136°. [α]_D +85.9 (c, 0.55 in CHCl₃).

2-Tosyl, 3,4-di-Ac: Methyl 3,4-di-*O*-acetyl-2-*O*-tosyl- α -D-xylopyranoside
[14187-87-2]
C₁₇H₂₂O₉S 402.421
Cryst. (EtOH). Mp 143-144°.

 β -D-form [612-05-5]

Mp 156°. [α]_D²² -65.2 (H₂O). Incorrect sign of rotation given in one ref.

2,3-Di-Ac: Methyl 2,3-di-*O*-acetyl- β -D-xylopyranoside
[70003-50-8]

C₁₀H₁₆O₇ 248.232

Cryst. (EtOAc/petrol). Mp 84°. [α]_D -82.6 (c, 0.5 in CHCl₃).

2,3,4-Tri-Ac: Methyl 2,3,4-tri-*O*-acetyl- β -D-xylopyranoside
[13007-37-9]

C₁₂H₁₈O₈ 290.269

Cryst. (EtOH). Mp 115°. [α]_D -59.6 (c, 1.0 in CHCl₃).

2,3,4-Tribenzoyl: Methyl 2,3,4-tri-*O*-benzoyl- β -D-xylopyranoside
[6638-76-2]

C₂₇H₂₄O₈ 476.482

Needles (MeOH). Mp 93-95°. [α]_D -24.1 (c, 1.63 in CHCl₃).

2,3,4-Trimesyl: Methyl 2,3,4-tri-*O*-mesyl- β -D-xylopyranoside
C₉H₁₈O₁₁S₃ 398.433

Cryst. (EtOH). Mp 141-142°. [α]_D²⁵ -26 (c, 1.4 in Me₂CO).

4-Trityl, 2,3-dibenzyl: Methyl 2,3-di-*O*-benzyl-4-*O*-trityl- β -D-xylopyranoside
C₃₉H₃₈O₅ 586.726

Amorph. [α]_D +22 (c, 1 in CHCl₃).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 303A (nmr)

Hudson, C.S. *et al.*, *J.A.C.S.*, 1925, **47**, 265, (α -D-form, β -D-form)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 144 (derivs, rev)

Janson, J. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 375 (β -D-form)

Ferrier, R.J. *et al.*, *J.C.S.*, 1964, 3330 (α -D-3-benzoyl)

Buchanan, J.G. *et al.*, *J.C.S. (C)*, 1966, 1926, (α -D-2-tosyl, 2-tosyl-di-Ac)

Jennings, H.J. *et al.*, *Can. J. Chem.*, 1971, **49**, 1355 (α -D-tri-Ac, β -D-tri-Ac)

Durette, P.L. *et al.*, *Carbohydr. Res.*, 1971, **18**, 403 (α -D-form, α -D-tribenzoyl, α -D-tri-Ac, β -D-tri-Ac, β -D-tribenzoyl)

Chalk, R.C. *et al.*, *Carbohydr. Res.*, 1973, **28**, 313 (α -D-trimesyl, β -D-trimesyl)

Vangehr, K. *et al.*, *Chem. Ber.*, 1980, **113**, 2609 (β -D-tribenzoyl, *cryst struct*)

Tsuda, Y. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 3223 (β -D-form)

Bock, K. *et al.*, *Annu. Rep. NMR Spectrosc.*, (Webb, G.A. ed.), Acad. Press, London and New York, 1982, **13**, 38 (pmr, α , β -forms, cmr, α , β tri Ac)

Petráková, E. *et al.*, *Carbohydr. Res.*, 1982, **101**, 141 (*synth*, cmr, Ac, benzyl derivs)

McEwan, T. *et al.*, *Carbohydr. Res.*, 1982, **104**, 161 (pmr, cmr, Ac derivs)

Kondo, Y. *et al.*, *Carbohydr. Res.*, 1982, **107**, 303; **110**, 339 (benzoyl, tosyl derivs)

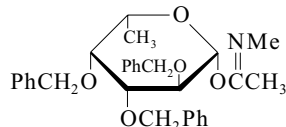
Nifant'ev, N.E. *et al.*, *Carbohydr. Res.*, 1989, **191**, 13 (4-trityl-2,3-dibenzyl)

Nilsson, M. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 23-37 (2,3-di-Ac)

Bardet, M. *et al.*, *Carbohydr. Res.*, 1994, **264**, 135 (cmr)

1-*O*-*N*-Methylacetimidyl-2,3,4-tri-*O*-benzylfucopyranose
6-Deoxy-2,3,4-tris-*O*-phenylmethylgalactopyranose N-methylethanimidate

M-218



C₃₀H₃₅NO₅ 489.61

 β -L-form [70267-04-8]

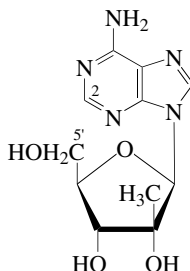
Mp 89-90°. [α]_D -67 (c, 1.0 in C₆H₆).

Jacquinet, J.-C. *et al.*, *J.C.S. Perkin 1*, 1979, 319

2'-*C*-Methyladenosine, 9CI, 8CI

M-219

9-(2'-*C*-Methyl- β -D-ribofuranosyl)adenine
[15397-12-3]



C₁₁H₁₅N₅O₄ 281.271

Mp 257-258°. [α]_D -21 (c, 0.5 in H₂O).

λ _{max} 260 nm (ϵ 15 100) (H₂O).

6N,2',3',5'-Tetrabenzoyl:

C₃₉H₃₁N₅O₈ 697.703

[α]_D -66 (c, 1.0 in CHCl₃).

2',3'-*O*-Isopropylidene:

C₁₄H₁₉N₅O₄ 321.335

Mp 291-292°. [α]_D -89 (c, 0.5 in MeOH).

λ _{max} 260 (ϵ 15100) (MeOH).

2-Chloro, 5'-deoxy: 2-Chloro-5'-deoxy-2'-*C*-methyladenosine, 9CI. **Kumusine**.
Trachycladine A

[164672-56-4]

C₁₁H₁₄ClN₅O₃ 299.716

Isol. from marine sponges *Theonella* sp., *Trachycladus laevispirulifer* and *Theonella cupola*. Cytotoxic and immunosuppressive agent. May have activity against HIV. Mp 210-213°. [α]_D -19.6 (c, 0.41 in MeOH). Kumusine and Trachycladine A not compared. Mp refers to Kumusine, opt. rotn. to Trachycladine A. λ _{max} 264 (ϵ 14200) (MeOH).

Walton, E. *et al.*, *J.A.C.S.*, 1966, **88**, 4524 (*synth*)

Jenkins, S.R. *et al.*, *J.O.C.*, 1968, **33**, 2490 (*synth*, pmr)

Garrett, E.R. *et al.*, *J.A.C.S.*, 1972, **94**, 8532 (*solvolysis*)

Searle, P.A. *et al.*, *J.O.C.*, 1995, **60**, 4296-4298 (*Trachycladine A*)

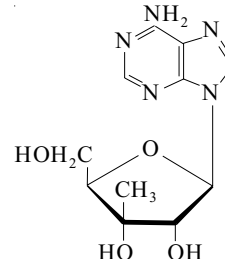
Ichiba, T. *et al.*, *Tet. Lett.*, 1995, **36**, 3977-3980 (*Kumusine*)

Higa, T. *et al.*, *ACS Symp. Ser.*, 2000, **745**, 12-21 (*Kumusine*, *isol*, *activity*)

3'-*C*-Methyladenosine, 9CI, 8CI

M-220

9-(3'-*C*-Methyl- β -D-ribofuranosyl)adenine
[15397-13-4]



C₁₁H₁₅N₅O₄ 281.271

Mp 213-215° (transition at 165°). [α]_D -58 (c, 1.0 in H₂O). λ _{max} 260 (ϵ 14 900) (H₂O), 257.5 (14 800) (pH 1), 260 nm (14 300) (pH 13).

2',3'-*O*-Isopropylidene: Mp 205-207°. [α]_D -39 (c, 5.0 in Py).

2',3'-*O*-Isopropylidene, 5'-tosyl: λ _{max} 259 (ϵ 11 000), 225 (14 000), 215 nm (22 000) (MeOH).

6N,2',3',5'-Tetrabenzoyl: [α]_D -146 (c, 1.5 in CHCl₃).

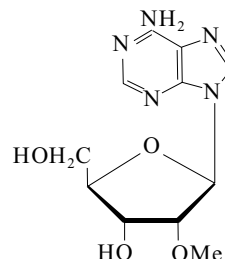
Nutt, R.F. *et al.*, *J.O.C.*, 1968, **33**, 1789 (*synth*, pmr)

Follmann, H. *et al.*, *Eur. J. Biochem.*, 1974, **47**, 187 (*conformn*, pmr)

2'-*O*-Methyladenosine, 9CI, 8CI

M-221

9-(2'-*O*-Methyl- β -D-ribofuranosyl)adenine
[2140-79-6]



C₁₁H₁₅N₅O₄ 281.271

Constit. of yeast and other soluble ribonucleic acids (s-RNA). Cryst. (EtOH). Mp 203-204°. [α]_D²⁴ -58.2 (c, 1.0 in H₂O). λ _{max} 258.5 nm (ϵ 13 900) (pH 11).

6N-Me: 6N,2'-*O*-Dimethyladenosine

C₁₂H₁₇N₅O₄ 295.297

Mp 88-91°.

3'-Sulfamoyl:

Cryst. (EtOH). Mp 195-197° dec. (as hemiethanolate). [α]_D²⁹ -84.5 (c, 1.0 in 60% MeOH aq.).

3'-Me: 2',3'-Di-*O*-methyladenosine

C₁₂H₁₇N₅O₄ 295.297

Prisms (EtOH). Mp 182-184°.

3',6N-Di-Me: 6-N,2'-*O*,3'-*O*-Trimethyladenosine

C₁₃H₁₉N₅O₄ 309.324

Needles (EtOH). Mp 163-166°.

5'-Trityl:

C₃₀H₂₉N₅O₄ 523.59

Mp 118-120°.

Khawaja, T.A. *et al.*, *J.A.C.S.*, 1966, **88**, 3640

(synth, pmr)

Shuman, D.A. *et al.*, *J.A.C.S.*, 1970, **92**, 3434

(sulfamoyl, trityl, pmr)

Prusiner, P. *et al.*, *Acta Cryst. B*, 1976, **32**, 161

(cryst struct)

Kazimierzczuk, Z. *et al.*, *Biochemistry*, 1976, **15**,

2735 (3'-Me, 3',6N-di-Me, pmr)

Beigelman, L. *et al.*, *Tetrahedron*, 2000, **56**,

1047-1056 (synth)

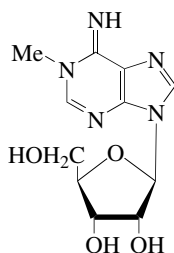
1-Methyladenosine, 12CI

M-222

N,6-Didehydro-1,6-dihydro-1-methyladenosine, 9CI

[15763-06-1]

[34308-25-3, 112120-03-3]

C₁₁H₁₅N₅O₄ 281.271

Modified nucleoside present in t-RNA's. Needles.

Mp 214-217° (dec.). [α]_D²⁶ -58.9 (c, 2 in H₂O). Softens at 210°.Jones, J.W. *et al.*, *J.A.C.S.*, 1963, **85**, 193-201

(synth)

Shaw, S.J. *et al.*, *J.A.C.S.*, 1970, **92**, 2510-2522

(ms)

Yamauchi, K. *et al.*, *J.C.S. Perkin 1*, 1980,

2787-2792 (synth)

Smith, D.L. *et al.*, *Biomed. Mass Spectrom.*,1983, **10**, 269-275 (ms)Chang, C. *et al.*, *Org. Magn. Reson.*, 1984, **22**,

671-675 (cmr)

Sierzputowska-Gracz, H. *et al.*, *Nucleic Acids**Res.*, 1986, **14**, 7783-7801 (pmr, cmr, N-15 nmr)Yamagata, Y. *et al.*, *Acta Cryst. C*, 1987, **43**,

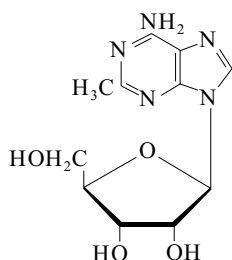
2117-2120 (cryst struct)

2-Methyladenosine, 9CI, 8CI

M-223

2-Methyl-9-β-D-ribofuranosyladenine

[16526-56-0]

C₁₁H₁₅N₅O₄ 281.271Isol. from RNA. Exhibits antiviral activity against Herpes simplex and vaccinia viruses. Hygroscopic cryst. (EtOH). [α]_D²⁵ -66.6 (c, 1.0 in H₂O). Log P -2.38 (calc).λ_{max} 264 nm (ε 14 500) (pH 6). Softens at 130-133°.

Picrate: Mp 200° dec.

2',3'-O-Isopropylidene: [16526-53-7]

C₁₄H₁₉N₅O₄ 321.335Cryst. (EtOH). Mp 202-203°. [α]_D²⁵ -81.5 (c, 1.0 in H₂O). λ_{max} 264 nm (ε 14 300) (pH 6).

6-N-Me: 2,6-N-Dimethyladenosine

[16526-78-6]

C₁₂H₁₇N₅O₄ 295.297Cryst. (EtOH). Mp 179-180°. [α]_D²⁵ -67.6 (c, 1.0 in H₂O).

6,6-N-Di-Me: 2,2,6-N-Trimethyladenosine

[16526-79-7]

C₁₃H₁₉N₅O₄ 309.324Cryst. (EtOH). Mp 159°. [α]_D²⁵ -65.7 (c, 1.0 in H₂O). λ_{max} 272 (ε 16 700) (pH 1), 280 (19 500) (pH 6), 280 nm (19 600) (pH 13).

5'-Phosphate:

C₁₁H₁₆N₅O₇P 361.25Mp 260° (as Ba salt). λ_{max} 264 nm (ε 13 200) (pH 6).

[16526-81-1]

Davoll, J. *et al.*, *J.A.C.S.*, 1952, **74**, 1563 (synth)Littlefield, J.W. *et al.*, *Biochem. J.*, 1958, **70**, 642

(isol)

Yamazaki, A. *et al.*, *J.O.C.*, 1968, **33**, 2583

(synth, phosphate, di-N-Me, N-Me,

isopropylidene)

Hecht, S.M. *et al.*, *Anal. Biochem.*, 1970, **38**,

230 (ms)

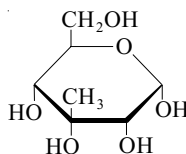
Shanon, W.M. *et al.*, *J. Med. Chem.*, 1974, **17**,

361 (pharmacol)

Hattori, M. *et al.*, *Annalen*, 1978, 1796 (synth)

3-C-Methylallose

M-224

C₇H₁₄O₆ 194.184

α-D-Pyranose-form

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-C-methyl α-D-allopyranoside

[22416-35-9]

C₁₅H₂₀O₆ 296.319Mp 210-212°. [α]_D²³ +95 (c, 0.3 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, 2-Ac:

Methyl 2-O-acetyl-4,6-O-benzylidene-3-C-methyl-α-D-allopyranoside

C₁₇H₂₂O₇ 338.357Mp 95-96°. [α]_D²³ +6.98 (c, 1.2 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, di-Ac:

Methyl 2,3-di-O-acetyl-4,6-O-benzylidene-3-C-methyl-α-D-allopyranoside

[42776-10-3]

C₁₉H₂₄O₈ 380.394Cryst. (Et₂O/hexane). Mp 97-98°. [α]_D²³ +53.5 (c, 1.03 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, 3-Ac, 2-tosyl: Methyl 3-O-acetyl-4,6-O-benzylidene-3-C-methyl-2-O-tosyl-α-D-allopyranoside

C₂₄H₂₈O₉S 492.546Prisms (Et₂O/petrol). Mp 133-134°.

Me glycoside, 4,6-O-benzylidene, 2-tosyl:

Methyl 4,6-O-benzylidene-3-C-methyl-2-O-tosyl-α-D-allopyranoside

C₂₂H₂₆O₈S 450.509Plates (CHCl₃/petrol). Mp 138-139°.[α]_D²³ +45 (c, 2.0 in CHCl₃).

Me glycoside, 3-benzyl, 4,6-O-benzylidene:

Methyl 3-O-benzyl-4,6-O-benzylidene-3-C-methyl-α-D-allopyranoside

C₂₂H₂₆O₆ 386.444Syrup. [α]_D²⁰ +119 (c, 1.2 in THF).

Me glycoside, 3-benzyl, 4,6-O-benzylidene,

2-tosyl: Methyl 3-O-benzyl-4,6-O-benzylidene-3-C-methyl-2-O-tosyl-α-D-allopyranoside

C₂₉H₃₂O₈S 540.633Mp 49-50°. [α]_D²⁰ +54 (c, 0.6 in MeOH).

Me glycoside, 3-benzyl, 4,6-O-benzylidene,

2-Me: Methyl 3-O-benzyl-4,6-O-benzylidene-3-C-methyl-2-O-methyl-α-D-allopyranoside

C₂₃H₂₈O₆ 400.471Needles (petrol). Mp 113-114°. [α]_D²⁰+108 (c, 0.7 in CHCl₃).

Me glycoside, 2-Me: Methyl 3-C-methyl-2-

O-methyl-α-D-allopyranoside

C₉H₁₈O₆ 222.238Viscous syrup. [α]_D²⁰ +107 (c, 0.3 in CHCl₃).

Me glycoside, 2-Me, 6-tosyl: Methyl 3-C-

methyl-2-O-methyl-6-O-tosyl-α-D-allopyranoside

C₁₆H₂₄O₈S 376.427Prisms (CHCl₃/petrol). Mp 116-118°.[α]_D²⁰ +85 (c, 0.3 in CHCl₃).

Me glycoside, 2-Me, 4,6-ditosyl: Methyl 3-

C-methyl-2-O-methyl-4,6-di-O-tosyl-α-D-allopyranoside

C₂₃H₃₀O₁₀S₂ 530.616Needles (CHCl₃/petrol). Mp 129-130°.

α-D-Furanose-form

1,2:5,6-Di-O-isopropylidene: [35784-67-9]

C₁₃H₂₂O₆ 274.313Needles (Et₂O/petrol). Mp 104-105°.[α]_D²³ +28 (c, 0.24 in EtOAc).Howarth, G.B. *et al.*, *Can. J. Chem.*, 1968, **46**,

3375; 3691 (α-D-Me pyr benzylidene, α-D-Me

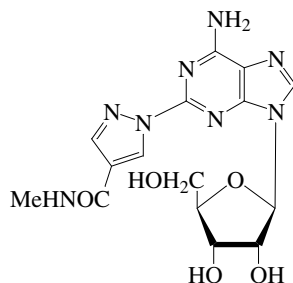
pyr Me, derivs)

Yoshimura, J. *et al.*, *Bull. Chem. Soc. Jpn.*,1973, **46**, 1515 (α-D-Me pyr benzylidene Ac,

α-D-Me pyr benzylidene di-Ac)

Funabashi, M. *et al.*, *Org. Prep. Proced. Int.*,2002, **34**, 432-435 (diisopropylidene-α-D-fur)

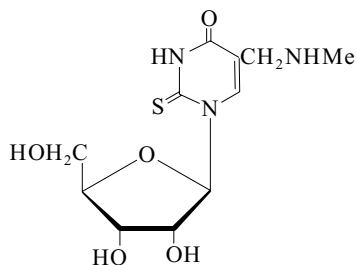
2-[4-[(Methylamino)carbonyl]-1H-pyrazol-1-yl]adenosine, 9CI
CVT 3146
[313348-27-5]



C₁₅H₁₈N₈O₅ 390.358
Adenosine A_{2A} receptor agonist.
Characterised by pmr.

Pat. Coop. Treaty (WIPO), 2000, 00 78 779,
(CV Therapeutics); CA, 134, 56921d (synth,
pharmacol)
Gao, Z. et al., J. Pharmacol. Exp. Ther., 2001,
298, 209-218; 2003, 307, 182-189 (pharmacol)
Palle, V.P. et al., Bioorg. Med. Chem. Lett.,
2002, 12, 2935-2939 (pharmacol)

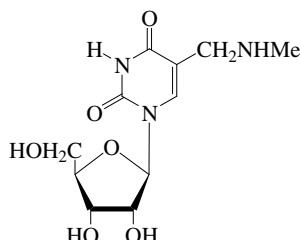
5-(Methylaminomethyl)-2-thiouridine, 9CI, 8CI
[32860-54-1]



C₁₁H₁₇N₃O₅S 303.338
Isol. from t-RNA of *E. coli*. Located at
the first position of the anticodon of
t-RNA. Possible role in translating genetic
information in protein biosynthesis.
Mp 139-140°. λ_{max} 275 (ε 14 700), 220 (15
200) (pH 7); 273.5 (13 700), 219.5 (14 700)
(pH 2); 270.5 (15 700), 241.5 nm (21 100)
(pH 12).

Ikeda, K. et al., Chem. Pharm. Bull., 1975, 23,
2958 (synth, pmr)
Vorbrüggen, H. et al., Angew. Chem., Int. Ed.,
1975, 14, 255 (synth, pmr)

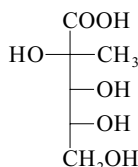
5-(Methylaminomethyl)uridine, 9CI
[72667-55-1]



C₁₁H₁₇N₃O₆ 287.272
Modified nucleoside found in tRNAs.

Sierzputowska-Gracz, H. et al., J.A.C.S., 1987,
109, 7171-7177 (pmr, conformn)
Sekine, M. et al., Nucleosides Nucleotides, 1993,
12, 305-321 (synth)

2-C-Methylarabinonic acid M-228
2-C-Methyl-arabino-pentonic acid. β-
Glucosaccharinic acid



C₆H₁₂O₆ 180.157

D-form

1,4-Lactone: 2-C-Methyl-D-arabinono-1,4-
lactone. β-D-Glucosaccharino-1,4-
lactone

C₆H₁₀O₅ 162.142
Syrup. [α]_D +82.5 (c, 0.9 in H₂O) (+69).

1,4-Lactone, tri-Ac: 2,3,5-Tri-O-acetyl-2-
C-methyl-D-arabinono-1,4-lactone

C₁₂H₁₆O₈ 288.254
Syrup. [α]_D +64.2 (c, 1 in CHCl₃).

L-form

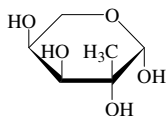
1,4-Lactone: 2-C-Methyl-L-arabinono-1,4-
lactone. β-L-Glucosaccharino-1,4-lactone

C₆H₁₀O₅ 162.142
Syrup. [α]_D²³ -106 (c, 0.6 in H₂O).

Feast, A.A.J. et al., Acta Chem. Scand., 1965,
19, 1127 (synth, L-form lactone)

Lopez Aparicio, F.J. et al., Carbohydr. Res.,
1984, 129, 99 (synth, pmr, D-form derivs)

2-C-Methylarabinose M-229



β-L-Pyranose-form

C₆H₁₂O₅ 164.158

D-form [53008-88-1]

Syrup. [α]_D²⁰ -5.9 (c, 4.4 in H₂O).

Benzylphenylhydrazones: [53008-89-2]

Cryst. (MeOH). Mp 131-132°. [α]_D²⁰ -
32.6 (c, 0.23 in CHCl₃).

D-Pyranose-form

Me glycoside: Methyl 2-C-methyl-D-
arabinopyranoside
[53023-43-1]
C₇H₁₄O₅ 178.185
No phys. props. reported.

β-D-Pyranose-form

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-
isopropylidene-2-C-methyl-β-D-
arabinopyranose
[93635-79-1]
C₁₂H₂₀O₅ 244.287
Mp 66-68°. [α]_D +12 (c, 1.4 in CHCl₃).

L-form

Syrup. [α]_D -2.4 (c, 3.1 in MeOH).

β-L-Pyranose-form

Me glycoside: Methyl 2-C-methyl-β-L-
arabinopyranoside
[4135-40-4]
C₇H₁₄O₅ 178.185
Cryst. (EtOAc). Mp 97-98°. [α]_D²⁰ +125
(c, 0.47 in EtOH).

Benzylglycoside, 3,4-isopropylidene: Benzyl
3,4-O-isopropylidene-2-C-methyl-β-L-
arabinopyranoside
[87598-87-6]
C₁₆H₂₂O₅ 294.347
Liq. Bp_{0.005} 100° (bath). [α]_D²⁵ +129.1
(c, 1.2 in CHCl₃).

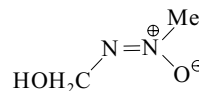
Ferrier, R.J. et al., J.C.S. (C), 1968, 1091,
(L-form, synth, β-L-Me pyr)
Novák, J.J.K. et al., Coll. Czech. Chem. Comm.,
1974, 39, 869 (D-form, synth, D-Me pyr)
Ireland, R.E. et al., J.O.C., 1983, 48, 5186,
(β-L-benzyl pyr isopropylidene)
Lopez Aparicio, F.J. et al., Carbohydr. Res.,
1984, 129, 99 (D-diisopropylidene)

Methylazoxymethanol M-230

(Methyl-ONN-azoxy)methanol, 9CI.

MAM

[590-96-5]



C₂H₆N₂O₂ 90.082

► PC2625000

(Z)-form

Toxic constit. of the nuts of *Cycas*
circularis. Bp_{0.6} 51°.

► Exp. carcinogen and teratogen.
PC2625000

Ac: [592-62-1]

C₄H₈N₂O₃ 132.119

Bp 191° Bp_{0.45} 49°.

► LD₅₀ (rat, orl) 270 mg/kg. Possible human
carcinogen. Exp. carcinogen and
teratogen. PC2800000

O-β-D-Glucopyranoside: **Cycasin**.

β-D-Glucosyloxymethane

[14901-08-7]

C₈H₁₆N₂O₇ 252.224

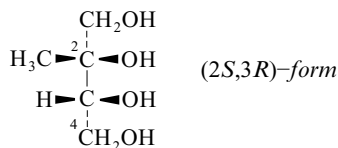
Alkaloid from seeds of the false sago
Cycas circularis and sago cycas *Cycas*
revoluta (Cycadaceae). Carcinogen of
significance in human nutrition.
Mp 154° dec. (144-145° dec.). [α]_D¹⁸ -44

- (c, 0.62 in H₂O). λ_{\max} 218 (ε 7240); 275 (sh) (ε 50) (H₂O) (Derep).
 ▶ Exp. teratogen. Possible human carcinogen (IARC 2B). LZ5950000
 O-β-D-Glucopyranoside, tetra-O-Ac: Mp 137°. $[\alpha]_D^{18}$ -27 (c, 1 in CHCl₃).
 O-[β-D-Xylopyranosyl-(1→6)-D-glucopyranoside]: **Macrozamin** [6327-93-1] C₁₃H₂₄N₂O₁₁ 384.339
 Constit. of *Macrozamia riedlei* and *Macrozamia spiralis*. Prisms (EtOH aq.). Mp 202-203° dec. $[\alpha]_D^{23}$ -71.3 (c, 0.4 in H₂O). λ_{\max} 217 (ε 7940); 275 (sh) (ε 50) (H₂O) (Derep).
 O-[β-D-Glucopyranosyl-(1→3)-β-D-glucopyranoside]: **Neocycasin A** [2288-32-6] C₁₄H₂₆N₂O₁₂ 414.366
 Isol. from *Cycas revoluta*. Cryst. + 1H₂O. Mp 162-163° dec. $[\alpha]_D^{29}$ -35.1. λ_{\max} 217 (ε 7940); 275 (sh) (ε 50) (H₂O) (Derep).
 ▶ QO7500000
 O-[β-D-Glucopyranosyl-(1→4)-β-D-glucopyranoside]: **Neocycasin E** C₁₄H₂₆N₂O₁₂ 414.366
 Alkaloid from *Cycas revoluta* (Cycadaceae). Mp 156-158° dec. $[\alpha]_D^{15}$ -29.2 (c, 0.9 in H₂O).
 O-[α-D-Glucopyranosyl-(1→6)-β-D-glucopyranoside]: **Neocycasin B_x** [97673-88-6] C₁₄H₂₆N₂O₁₂ 414.366
 Isol. from seeds of *Cycas revoluta*.
 O-[β-D-Glucopyranosyl-(1→6)-β-D-glucopyranoside]: **Neocycasin B** [2697-20-3] C₁₄H₂₆N₂O₁₂ 414.366
 Isol. from *Cycas revoluta*. λ_{\max} 217 (ε 7940); 275 (sh) (ε 50) (H₂O) (Derep).
 O-[β-D-Glucopyranosyl-(1→3)-β-D-glucopyranosyl-(1→3)-β-D-glucopyranoside]: **Neocycasin C** [2288-31-5] C₂₆H₄₆N₂O₂₂ 738.65
 Isol. from *Cycas revoluta*.
 O-[β-D-Glucopyranosyl-(1→4)-β-D-glucopyranosyl-(1→3)-β-D-glucopyranoside]: **Neocycasin H** [102770-23-0] C₂₀H₃₆N₂O₁₇ 576.508
 Isol. from *Cycas revoluta*. Artifact formed from Neocycasin A by enzymic transglycosylation.
 O-[β-D-Glucopyranosyl-(1→6)-β-D-glucopyranosyl-(1→3)-β-D-glucopyranoside]: **Neocycasin G** [2288-28-0] C₂₀H₃₆N₂O₁₇ 576.508
 Isol. from seeds of *Cycas circinalis*.
 O-[β-D-Glucopyranosyl-(1→6)-[β-D-glucopyranosyl-(1→3)]-β-D-glucopyranoside]: **Neocycasin I** [102770-22-9] C₂₀H₃₆N₂O₁₇ 576.508
 Artifact of transglycosylation by incubation of *Cycas* sp. with β-glucosidase.

- O-[β-D-Glucopyranosyl-(1→3)-[β-D-xylopyranosyl-(1→6)]-β-D-glucopyranoside]: **Neocycasin J** [102770-21-8] C₁₉H₃₄N₂O₁₆ 546.481
 Isol. from leaves of *Cycas revoluta*. [106251-55-2]
 Riggs, N.V. et al., *Chem. Ind. (London)*, 1956, 926 (isol, uv, struct)
 Nagahama, T. et al., *Agric. Biol. Chem.*, 1961, 25, 937 (Neocycasin E)
 Korsch, B.H. et al., *Tet. Lett.*, 1964, 523 (pmr, struct)
 Kobayashi, A. et al., *Arch. Biochem. Biophys.*, 1965, 110, 373 (isol)
 Palekar, R.S. et al., *Nature (London)*, 1965, 206, 1363
 IARC Monog., 1976, 10, 131; Suppl., 7, 66 (tox, rev, Ac)
 Baldwin, J.E. et al., *J.O.C.*, 1978, 43, 2427 (synth)
 Cannon, J.R. et al., *Aust. J. Chem.*, 1980, 33, 2229 (Macrozamin)
 Moretti, A. et al., *Phytochemistry*, 1981, 20, 1415 (occur)
 Yagi, F. et al., *Agric. Biol. Chem.*, 1983, 47, 137; 1985, 49, 1531; 2985 (Neocycasins)
 Matsumoto, H. et al., *CRC Handb. Nat. Occurring Food Toxicants*, 1983, 39 (rev)
 Zedeck, M.S. et al., *ACS Monogr.*, No. 182, 1984, (rev)
 Hoffmann, G.R. et al., *Environ. Mutagen.*, 1984, 6, 103 (rev)
 Tate, M.E. et al., *Aust. J. Chem.*, 1995, 48, 1059 (cryst struct)
 Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, COU000; HMG000; MGS750

2-Methyl-1,2,3,4-butanetetrol, M-231 9CI

[42933-13-1]

C₅H₁₂O₄ 136.147

The methylerythritol/methylthreitol nomenclature is confusing.

(2S,3R)-form

- 2-C-Methyl-D-erythritol [58698-37-6]
 Constit. of *Convolvulus glomeratus*, *Liriodendron tulipifera* and *Ferula sinaica*. Putative isoprenoid precursor in mevalonate-independent pathway.
 Mp 82-83°. $[\alpha]_D$ +21.4 (c, 7.0 in H₂O).

4-Phosphate: [206440-72-4]

- C₅H₁₃O₇P 216.127
 The first pathway-specific intermediate in the methylerythritol phosphate route for biosynth. of isoprenoid compds. in bacteria, algae and plant chloroplasts. $[\alpha]_D^{21}$ +6.4 (c, 1.0 in H₂O).

- 2,4-Cyclic pyrophosphate: 2,4,7-Trihydroxy-6-methyl-1,3,5,2,4-trioxadiphosphocane-6-methanol 2,4-dioxide [151435-51-7]

C₅H₁₂O₉P₂ 278.092

Isol. from *Brevibacterium ammoniagenes*. Oxidative stress metab. of various nocardioform bacteria incl. *Corynebacterium* and *Micrococcus* spp. Oxidative stress agent.

1-O-β-D-Glucopyranoside: [522653-86-7]

- C₁₁H₂₂O₉ 298.289
 Constit. of anise (*Pimpinella anisum*), coriander (*Coriandrum sativum*) and cumin (*Cuminum cyminum*). Syrup. $[\alpha]_D^{21}$ -15 (c, 1.2 in MeOH).

1-O-[4-Hydroxybenzoyl-(→6)-β-D-glucopyranoside]: [522653-92-5]

- C₁₈H₂₆O₁₁ 418.397
 Constit. of anise (*Pimpinella anisum*). Amorph. powder. $[\alpha]_D^{22}$ -12 (c, 1.6 in MeOH).

1-O-[4-Methoxybenzoyl-(→6)-β-D-glucopyranoside]: [522653-93-6]

- C₁₉H₂₈O₁₁ 432.424
 Constit. of anise (*Pimpinella anisum*). Amorph. powder. $[\alpha]_D^{22}$ -13 (c, 0.3 in MeOH).

3-O-β-D-Glucopyranoside: [522653-87-8]

- C₁₁H₂₂O₉ 298.289
 Constit. of anise (*Pimpinella anisum*) and cumin (*Cuminum cyminum*). Syrup. $[\alpha]_D^{21}$ -13 (c, 1.6 in MeOH).

4-O-β-D-Glucopyranoside: [522653-88-9]

- C₁₁H₂₂O₉ 298.289
 Constit. of anise (*Pimpinella anisum*), coriander (*Coriandrum sativum*) and cumin (*Cuminum cyminum*). Syrup. $[\alpha]_D^{21}$ -8 (c, 0.9 in MeOH).

1-O-β-D-Fructofuranoside: [522653-89-0]

- C₁₁H₂₂O₉ 298.289
 Constit. of anise (*Pimpinella anisum*). Syrup. $[\alpha]_D^{22}$ -28 (c, 1.4 in MeOH).

3-O-β-D-Fructofuranoside: [522653-90-3]

- C₁₁H₂₂O₉ 298.289
 Constit. of anise (*Pimpinella anisum*). Syrup. $[\alpha]_D^{22}$ -15 (c, 0.7 in MeOH).

4-O-β-D-Fructofuranoside: [522653-91-4]

- C₁₁H₂₂O₉ 298.289
 Constit. of anise (*Pimpinella anisum*). Syrup. $[\alpha]_D^{22}$ -19 (c, 1.2 in MeOH).

1,3,4-Tri-Ac: 1,3,4-Tri-O-acetyl-2-C-methyl-D-erythritol

- [77594-07-1]
 C₁₁H₁₈O₇ 262.259
 $[\alpha]_D^{20}$ +18.1 (c, 18.4 in CHCl₃).

(2R,3S)-form 3-C-Methyl-D-erythritol

- [93921-83-6]
 Syrup.
 Tetra-O-benzoyl: 1,2,3,4-Tetra-O-benzoyl-3-C-methyl-D-erythritol [93841-85-1]
 C₃₃H₂₈O₈ 552.579
 Cryst. (MeOH). Mp 81-83°.

(2S,3S)-form 3-C-Methyl-L-threitol

- [93921-84-7]
 Syrup. $[\alpha]_D^{20}$ -7 (c, 2.0 in MeOH).
 Tetra-O-benzoyl: 1,2,3,4-Tetra-O-benzoyl-3-C-methyl-L-threitol [93836-33-0]
 Cryst. Mp 90-92°. $[\alpha]_D^{20}$ -11.2 (c, 2 in CHCl₃).

(2R*,3R*)-form

4-O-[3,4-Dihydroxy-E-cinnamoyl-(→6)-β-D-glucopyranoside]: [167638-48-4]
C₂₀H₂₈O₁₂ 460.434

Constit. of the leaves of *Lonicera gracilipes* var. *glandulosa*. Amorph. powder. [α]_D²⁵ -8 (c, 0.3 in MeOH). Rel. config. only is known.

(2RS,3RS)-form 2-C-Methyl-DL-threitol

[77646-71-0]
Oil.

[58698-38-7, 58698-39-8]

Anthonsen, T. *et al.*, *Acta Chem. Scand., Ser. B*, 1976, **30**, 91-93; 1980, **34**, 41-45 (2S,3R-form, *isol*, *pmr*, *ms*, *synth*)

Shah, S.W. *et al.*, *Acta Chem. Scand., Ser. B*, 1976, **30**, 903 (*abs config*)

Anthonsen, T. *et al.*, *Phytochemistry*, 1980, **19**, 2375-2377 (*synth*, *pmr*, *cmr*)

Witczak, Z.J. *et al.*, *Carbohydr. Res.*, 1984, **133**, 235-245 (*synth*)

Dittrich, P. *et al.*, *Phytochemistry*, 1988, **27**, 935 (2-C-Methyl-D-erythritol, *isol*, *pmr*)

Ostrovsky, D. *et al.*, *Biochem. J.*, 1993, **295**, 901-902 (*cyclopyrophosphate*)

Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1993, **41**, 1667-1669 (*isol*)

Shchipanova, I.N. *et al.*, *Dokl. Akad. Nauk USSR*, 1993, **333**, 666-670 (2-C-Methyl-D-erythritol, *synth*)

Matsuda, N. *et al.*, *Chem. Pharm. Bull.*, 1995, **43**, 1049-1051 (4-caffeoylglucoside)

Ahmed, A.A. *et al.*, *J. Nat. Prod.*, 1996, **59**, 1171-1173 (*isol*, *pmr*, *cmr*)

Duvold, T. *et al.*, *Tet. Lett.*, 1997, **38**, 6181-6184 (*biosynth*)

Sagner, S. *et al.*, *Tet. Lett.*, 1998, **39**, 2091-2094 (*biosynth*)

Kuzuyama, T. *et al.*, *Tet. Lett.*, 1998, **39**, 4509-4512 (2S,3R-form, 4-phosphate, *synth*, *pmr*, *cmr*)

Sakamoto, I. *et al.*, *Biosci., Biotechnol.*,

Biochem., 2000, **64**, 1915-1922 (*synth*)

Kis, K. *et al.*, *J.O.C.*, 2000, **65**, 587-592 (*synth*, *pmr*, *cmr*)

Koppisch, A.T. *et al.*, *Org. Lett.*, 2000, **2**, 215-217 (2S,3R-form, 4-phosphate, *synth*)

Fontana, A. *et al.*, *Tet. Lett.*, 2000, **41**, 7559-7562 (*synth*)

Hecht, S. *et al.*, *J.O.C.*, 2001, **66**, 7770-7775 (*synth*, *bibl*)

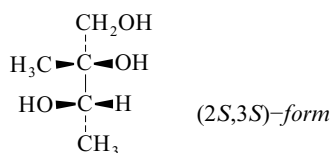
Giner, J.-L. *et al.*, *J.O.C.*, 2002, **67**, 4856-4859 (*synth*)

Seemann, M. *et al.*, *Tet. Lett.*, 2002, **43**, 775-778 (*biosynth*)

Kitajima, J. *et al.*, *Phytochemistry*, 2003, **62**, 115-120 (*glycosides*)

2-Methyl-1,2,3-butanetriol, 8CI

[29602-51-5]



C₅H₁₂O₃ 120.148

(2S,3S)-form

(+)-threo-form

Bp₁₀ 138°. [α]_D²⁶ +8.9 (neat). n_D²⁵ 1.4693.

Tris(4-methylbenzenesulfonyl):Mp 83°. [α]_D²³ -4.5 (c, 5 in CHCl₃).

(±)-form

Bp₁₆ 144-146°. Mixt. of stereoisomers.

Tri-Ac:

C₁₁H₁₈O₆ 246.26

Bp₁₅ 138-140°.

Colonge, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1947, 838 (*synth*)

Christensen, B.W. *et al.*, *Proc. Chem. Soc., London*, 1962, 307 (*synth*, *abs config*)

3-Methyl-3-butenyl glucosinate M-233

late
H₂C=C(CH₃)CH₂CH₂C(SGlc)=NO-SO₃H

C₁₂H₂₁NO₉S₂ 387.431

Isol. from *Capparis linearis*.

Tetra-Ac:

Cryst. + ½ H₂O (EtOH/Et₂O) (as tetramethylammonium salt). Mp 168-171° dec. (tetramethylammonium salt). [α]_D²⁴ -22 (c, 0.3 in H₂O).

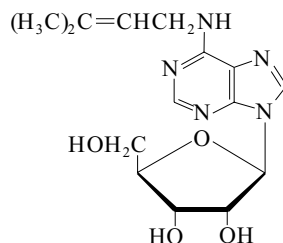
Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1965, **19**, 1989 (*isol*)

N-(3-Methyl-2-butenyl)adenosine, 9CI, 8CI

6-N-(γ,γ-Dimethylallyl)adenosine. *Riboprone*, INN, USAN. NSC 105546.

N⁶-Isopentenyladenosine

[7724-76-7]



C₁₅H₂₁N₅O₄ 335.362

Constit. of yeast soluble ribonucleic acid (s-RNA). Exhibits cytokinin activity.

Antineoplastic agent. Never marketed.

Fine needles (MeCN/EtOH). Sol. H₂O.

Mp 145-147°. [α]_D²⁵ -97 (c, 0.7 in EtOH).

Log P -0.55 (calc). λ_{max} 265 (ε 20 400) (pH 1), 269 nm (20 000) (pH 7-12). λ_{max} 268

(EtOH) (Berdy). λ_{max} 273 (EtOH-HCl) (Berdy). λ_{max} 275 (EtOH-NaOH) (Berdy).

► AU7404910

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **3**, 220B (*nmr*)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 718B (*ir*)

Hall, R.H. *et al.*, *J.A.C.S.*, 1966, **88**, 2614 (*isol*, *pmr*)

Folke, S. *et al.*, *Phytochemistry*, 1967, **6**, 1169

Wilson, M.S. *et al.*, *Biochim. Biophys. Acta*, 1971, **240**, 623 (*ms*)

Chheda, G.B. *et al.*, *Biochem. Pharmacol.*, 1972, **21**, 27 (*metab*)

Fleysher, M.H. *et al.*, *J. Med. Chem.*, 1972, **15**, 187 (*pharmacol*)

Robins, M.J. *et al.*, *Biochemistry*, 1973, **12**, 2179 (*synth*, *ms*, *bibl*)

Chong-Maw, C. *et al.*, *Biochemistry*, 1975, **14**, 3088 (*biosynth*)

2-Methylbutyl glucosinolate M-235

1-Thio-β-D-glucopyranose 1-[3-methyl-N-(sulfooxy)pentanimide], 9CI. *Gluciojaputin*

[119626-63-0]

H₃CCH₂CH(CH₃)CH₂C(SGlc)=NO-SO₃H

C₁₂H₂₃NO₉S₂ 389.447

Isol. from *Putranjiva roxburghii*, *Dentaria pinnata* and *Stanleya pinnata*.

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1962, **16**, 936; 1963, **17**, 2562 (*isol*)

Bertelsen, F. *et al.*, *Phytochemistry*, 1988, **27**, 3743 (*isol*)

3-Methylbutyl glucosinolate M-236

1-Thio-β-D-glucopyranoside 1-[4-methyl-N-(sulfooxy)pentanimide], 9CI

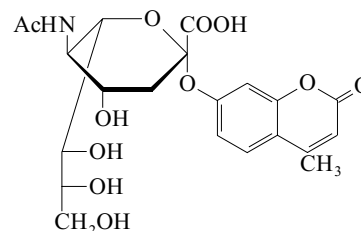
[76265-22-0]

(H₃C)₂CHCH₂CH₂C(SGlc)=NOSO₃H

C₁₂H₂₃NO₉S₂ 389.447

Present in horseradish (*Armoracia lapathifolia*).

Grob, K. *et al.*, *Phytochemistry*, 1980, **19**, 1789 (*occur*)

4-Methylcoumarin-7-yl 5-acetamido-3,5-dideoxy-D-glycero-α-D-galacto-2-nonulopyranosidonic acid M-237

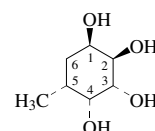
C₂₁H₂₅NO₁₁ 467.429

Fluorogenic substrate for neuraminidase.

Buff powder + 4H₂O. Mp 171° (162°) dec.

[α]_D +70 (c, 0.8 in H₂O).

Baggett, N. *et al.*, *Carbohydr. Res.*, 1982, **110**, 11 (*synth*, *struct*, *pmr*, *cmr*, *bibl*)

5-Methyl-1,2,3,4-cyclohexanetetrol M-238

(1R,2R,3R,4R,5R)-form

C₇H₁₄O₄ 162.185

(1R,2R,3R,4R,5R)-form

3,4-Dideoxy-3-methyl-D-allo-inositol, 9CI.

5a-Carba-α-L-fucopyranose. Pseudo-α-L-fucopyranose

[141436-56-8]

Cryst. (EtOH). Mp 115-117°. [α]_D²⁰ -58 (c, 1 in MeOH).

Me glycoside: Methyl pseudo-α-L-fucopyranoside. Methyl 5a-carba-α-L-fucopyranoside. 3,4-Dideoxy-3-methyl-5-O-

methyl-D-allo-inositol, 9CI

[399511-21-8]

C₈H₁₆O₄ 176.212
Mp 101-103°. [α]_D -39.5 (c, 0.2 in CHCl₃).

(1R,2R,3R,4R,5S)-form 3,4-Dideoxy-4-methyl-D-allo-inositol, 9CI. 6-Deoxy-5a-carba- β -D-altropyranose. Pseudo-6-deoxy- β -D-altropyranose
[141436-57-9]
Solid (EtOAc). Mp 178° (170-172°). [α]_D²⁴ +45 (c, 0.24 in EtOH).

(1S,2S,3S,4S,5R)-form 1,2-Dideoxy-1-methyl-D-allo-inositol, 9CI. Pseudo-6-deoxy- β -L-altropyranose
[200728-85-4]
Cryst. [α]_D²⁴ -53.4 (c, 1 in MeOH).

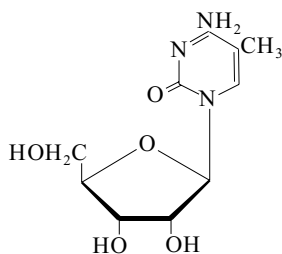
(1RS,2RS,3RS,4RS,5RS)-form 1,2-Dideoxy-2-methyl-DL-allo-inositol, 9CI. Pseudo- α -DL-fucopyranose
[112314-16-6]
Solid (EtOH). Mp 153-155°.
Tetra-Ac: [112347-16-7]
C₁₅H₂₂O₈ 330.334
Prisms (EtOH). Mp 134-135°.

(1RS,2RS,3RS,4SR,5RS)-form 1,2-Dideoxy-2-methyl-DL-chiro-inositol, 9CI
Tetra-Ac: [80124-73-8]
Plates (EtOH). Mp 137-138°.

(1RS,2SR,3SR,4RS,5SR)-form 1,2-Dideoxy-1-methyl-DL-myo-inositol, 9CI
Tetra-Ac: [80124-77-2]
Prisms (EtOH). Mp 110-111°.

Ogawa, S. et al., *Bull. Chem. Soc. Jpn.*, 1981, **54**, 2739-2746 (tetra-Ac)
Ogawa, S. et al., *Carbohydr. Res.*, 1987, **163**, 53-62 (pseudo- α -DL-fucopyranose)
Redlich, H. et al., *Carbohydr. Res.*, 1992, **226**, 57-58 (pseudo- α -L-fucopyranose, pseudo-6-deoxy- β -D-altropyranose)
Carless, H.A.J. et al., *Chem. Comm.*, 1995, 2447-2448 (pseudo- α -L-fucopyranose)
Tran, C.H. et al., *Tetrahedron: Asymmetry*, 1996, **7**, 2403-2406 (pseudo- α -L-fucopyranose, pseudo-6-deoxy- β -D-altropyranose)
Angelaud, R. et al., *Tet. Lett.*, 1997, **38**, 8841-8844 (pseudo-6-deoxy- β -L-altropyranose)
Carpintero, M. et al., *Eur. J. Org. Chem.*, 2000, 1285-1296; 2001, 4127-4135 (pseudo- α -L-fucopyranose, Me glycoside)
Ogawa, S. et al., *Eur. J. Org. Chem.*, 2001, 967-974 (pseudo- α -L-fucopyranose)

5-Methylcytidine, 9CI, 8CI **M-239**
[2140-61-6]

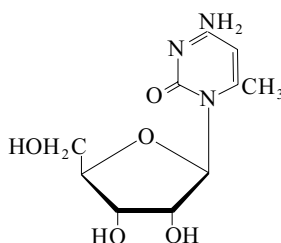


C₁₀H₁₅N₃O₅ 257.246
Metab. of *Brevibacterium ammoniagenes* and from *Azotobacter aerogenes*. Prod. of hydrol. of wheat RNA.

Mp 238-240° (210-211°). [α]_D²³ -3 (1M NaOH). pK_{a1} 4.21; pK_{a2} 13. λ_{\max} 278 (ε 8700) (H₂O).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 387B (nmr)
Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 831B (ir)
Roberts, M. et al., *J.A.C.S.*, 1952, **74**, 669 (synth)
Fox, J.J. et al., *J.A.C.S.*, 1959, **81**, 178 (synth)
Dunn, D.B. et al., *Biochim. Biophys. Acta*, 1960, **38**, 176 (isol)
Ger. Pat., 1971, 2 209 078, (Kyowa Fermentation); *CA*, **78**, 27908z (isol)
Schweizer, M.P. et al., *J.A.C.S.*, 1971, **93**, 277; 1973, **95**, 3770 (conform, pmr, cmr)
Golankiewicz, K. et al., *Nucleic Acids Res.*, 1976, **3**, 709
Padmaja, N. et al., *Acta Cryst. C*, 1991, **47**, 1445 (cryst struct)

6-Methylcytidine
[16710-12-6]



C₁₀H₁₅N₃O₅ 257.246
Cryst. (H₂O/EtOH/2-propanol). Mp 230-232° dec. (236-238° dec.). [α]_D³⁰ -41.5 (c, 1.6 in H₂O). λ_{\max} 278 (ε 14 700) (pH 1), 274 (9 500) (pH 4), 271 (9 300) (pH 11), 273 nm (9 900) (pH 14).

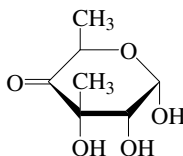
2',3',5'-Tribenzoyl: [23316-79-2]
C₃₁H₂₇N₃O₈ 569.57
Mp 190-192°.

5-Me: 5,6-Dimethylcytidine, 8CI
[23312-45-0]
C₁₁H₁₇N₃O₅ 271.272
Mp 232-234°. λ_{\max} 281 (ε 9 120), 232 (8 913), 216 nm (11 220) (pH 7).

5-Me, 2',3',5'-Tribenzoyl: [23312-61-0]
C₃₂H₂₉N₃O₈ 583.596
Mp 208-211°.

Winkley, M.W. et al., *J.O.C.*, 1968, **33**, 2822 (synth)
Prystaš, M. et al., *Coll. Czech. Chem. Comm.*, 1969, **34**, 331; 2316 (synth, 5-Me deriv, 5-Me tribenzoyl)
Schweizer, M.P. et al., *J.A.C.S.*, 1973, **95**, 3770 (pmr, cmr)

3-C-Methyl-6-deoxy-ribo-hexopyranos-4-ulose **M-241**



C₇H₁₂O₅ 176.169

α -D-form

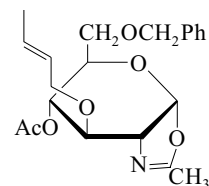
α -D-form

Me glycoside:

C₈H₁₄O₅ 190.196
Cryst. (CHCl₃/hexane). Mp 97-99°. [α]_D +239 (c, 1 in CHCl₃).

Brimacombe, J.S. et al., *Carbohydr. Res.*, 1983, **112**, 320

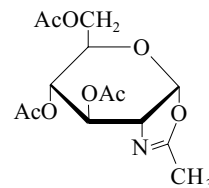
2-Methyl-4,5-dihydro-4-O-acetyl-6-O-benzyl-3-O-(2-butenyl)-1,2-dideoxyglucopyranosyl-2,1-d]-1,3-oxazole **M-242**
4-O-Acetyl-2-amino-6-O-benzyl-3-O-(2-butenyl)-2-deoxy-1-O,2-N-(methylmethylidene)glucopyranose



C₂₁H₂₇NO₆ 389.447
Glycosylating agent used in synth. of oligosaccharides. Syrup. [α]_D²⁷ +11.9 (c, 2 in CHCl₃).

Durette, P.L. et al., *Carbohydr. Res.*, 1981, **89**, 279 (synth, pmr, use)

2-Methyl-4,5-dihydro(3,4,6-tri-O-acetyl-1,2-dideoxyglucopyranosyl-2,1-d]-1,3-oxazole **M-243**
3,4,6-Tri-O-acetyl-2-amino-2-deoxy-1-O,2-N-[6-methylmethylidene]glucopyranose



C₁₄H₁₉NO₈ 329.306

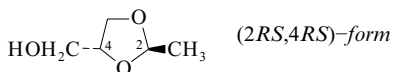
α -D-form [35954-65-5]
[α]_D²⁷ +16.3 (c, 1.6 in CHCl₃). [α]_D +10 (c, 1.0 in CHCl₃).

Khorlin, A.Y. et al., *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1968, **227**, 2094 (synth)
Vul'fson, N.S. et al., *Carbohydr. Res.*, 1969, **10**, 351 (ms)
Lemieux, R.U. et al., *J.A.C.S.*, 1975, **97**, 4063 (synth)
Warren, C.D. et al., *Carbohydr. Res.*, 1977, **53**, 67
Matta, K.L. et al., *Carbohydr. Res.*, 1977, **53**, 209
Auge, C. et al., *Chem. Comm.*, 1977, 449 (synth)
Srivastava, V.K. et al., *Carbohydr. Res.*, 1982, **103**, 286 (synth, pmr)
Foces-Foces, L. et al., *Carbohydr. Res.*, 1984, **135**, 1 (conformn)

2-Methyl-1,3-dioxolane-4-methanol, 9CI, 8CI

M-244

5-Hydroxymethyl-2-methyl-1,3-dioxolane.
1,2-O-Ethylidene-glycerol
[3773-93-1]

C₅H₁₀O₃ 118.132

Constit. of part port and sherry wine,
increases with aging. Liq. Bp₂₂ 94-95°.
Mixt. of stereoisomers.

Benzoyl:

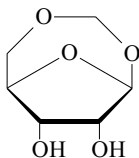
C₁₂H₁₄O₄ 222.24
Liq. Bp₂ 144-145°.

Me ether: 4-(Methoxymethyl)-2-methyl-
1,3-dioxolane, 8CI
C₆H₁₂O₃ 132.159
Liq. Bp₂₃ 56-58°.

(2R,4R)-form (±)-trans-form
[25687-52-9]
Liq. Bp₁₁ 83-85°.

(2R,4S)-form (±)-cis-form
[25687-56-3]
Liq. Bp₁₄ 80.5°.

Maglio, M.M. *et al.*, *J. Chem. Educ.*, 1946, **23**,
174 (*synth*)
Gelas, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1970, 2341;
4041 (*synth, isom, ir, pmr*)
Borremans, F. *et al.*, *Org. Magn. Reson.*, 1973,
5, 299 (*pmr*)
Heyns, K. *et al.*, *Chem. Ber.*, 1976, **109**, 3707
(*synth, pmr*)
Muller, C.J. *et al.*, *Am. J. Enol. Vitic.*, 1978, **29**,
207 (*isol, ms*)
Williams, P.J. *et al.*, *J. Inst. Brewing*, 1978, **84**,
144 (*isol*)
Frydenvang, K. *et al.*, *Acta Cryst. C*, 1992, **48**,
1341 (*cryst struct, tosyl*)
Da Silva Ferreira, A.C. *et al.*, *J. Agric. Food
Chem.*, 2002, **50**, 2560-2564 (*isol*)

1,5-O-Methylenetetrifuranose M-245C₆H₁₀O₅ 162.142**β-D-form**Mp 125-128°. [α]_D²⁰ -13 (c, 1 in MeOH).

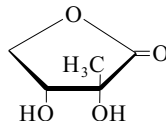
2,3-Isopropylidene: 2,3-O-Isopropylidene-
1,5-O-methylene-β-D-ribofuranose
C₉H₁₄O₅ 202.207
Readily obt. by treating ribose with
Me₂CO/HCHO/H₂SO₄. Cryst.
(hexane). Mp 114-116°. [α]_D²⁰ -17 (c, 2 in
CHCl₃).

Morgenlie, S. *et al.*, *Carbohydr. Res.*, 1988, **173**,
303 (*synth, pmr, cmr*)

**2-C-Methyl-1,4-erythronolac-
tone**

M-246

3,4-Dihydroxy-3-methyldihydro-2(3H)-
furanone, 9CI

C₅H₈O₄ 132.116**D-form** [18465-71-9]

Constit. of *Astragalus lusitanicus*, *Orixa
japonica*, *Trifolium incarnatum* (crimson
clover) and *Phaseolus vulgaris* (kidney
bean).

[α]_D -58.6 (CHCl₃).

2,3-Di-Ac: 2,3-Di-O-acetyl-2-C-methyl-D-
1,4-erythronolactone
[74831-17-7]
C₉H₁₂O₆ 216.19
Mp 87-88°. [α]_D -9 (c, 0.9 in CHCl₃).

3-O-(3,4-Dihydroxycinnamoyl): 3-O-Caf-
feoyl-2-C-methyl-D-1,4-erythronolactone
[144881-15-2]
C₁₄H₁₄O₇ 294.26

Constit. of the leaves of *Bidens pilosa*. Pale
yellow solid. [α]_D²⁵ -93.3 (c, 0.8 in MeOH).

2,3-O-Isopropylidene: 2,3-O-Isopropyl-
idene-2-C-methyl-D-1,4-erythronolactone
C₈H₁₂O₄ 172.18
Mp 40-41°. [α]_D -99 (c, 0.85 in CHCl₃).

2-Benzyl: 2-O-Benzyl-2-C-methyl-D-1,4-
erythronolactone
C₁₂H₁₄O₄ 222.24
[α]_D²² -21.8 (c, 1.2 in CHCl₃).

Ishizu, A. *et al.*, *Acta Chem. Scand.*, 1967, **21**,
424 (*isopropylidene*)

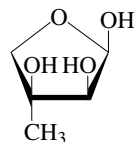
De Pascual Teresa, J. *et al.*, *Tet. Lett.*, 1980,
1359 (*isol, di-Ac, isopropylidene*)

Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1982, **101**,
343 (*di-Ac, benzyl*)

Ono, H. *et al.*, *Biosci., Biotechnol., Biochem.*,
2000, **64**, 1970-1973 (*isol, pmr, cmr*)

3-C-Methylerythrose

M-247



α-L-Furanose-form

C₄H₁₀O₄ 122.121**L-Furanose-form**

2,3-Isopropylidene: 2,3-O-Isopropylidene-
3-C-methyl-α-L-erythrofuranose
[130377-88-7]
C₈H₁₄O₄ 174.196
Syrup. [α]_D²⁰ +59 (c, 2.7 in CHCl₃).
Exists as cyclic hemiacetal.

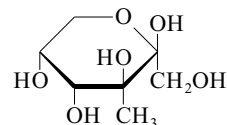
[130548-07-1]

Ando, K. *et al.*, *Heterocycles*, 1989, **29**, 1023
(*synth*)

Dequin, B. *et al.*, *J.O.C.*, 1991, **56**, 405 (*synth*,
pmr)

3-C-Methylfructose

M-248

C₇H₁₄O₆ 194.184**β-D-Pyranose-form**

1,2:4,5-Diisopropylidene: 1,2:4,5-Di-O-iso-
propylidene-3-C-methyl-β-D-fructopyra-
nose

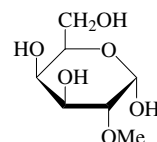
C₁₃H₂₂O₆ 274.313

Cryst. (hexane). Mp 84-86°. [α]_D²⁵ -95
(c, 1.05 in CHCl₃).

Cubero, I.Z. *et al.*, *Carbohydr. Res.*, 1981, **89**, 65
(*synth, pmr, cmr*)

2-O-Methylgalactose, 9CI

M-249



α-D-Pyranose-form

C₇H₁₄O₆ 194.184**D-form** [4060-33-7]

Prisms (EtOH). Mp 148-150°. [α]_D²⁰
+54.5 → +82.9 (c, 1.2 in H₂O).

α-D-Pyranose-form [31505-23-4]

1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-
O-methyl-α-D-galactopyranose

[14199-57-6]

C₁₅H₂₂O₁₀ 362.333

Cryst. (EtOH). Mp 101-102°. [α]_D²⁰ +98
(c, 1 in CHCl₃).

Me glycoside: Methyl 2-O-methyl-α-D-
galactopyranoside

[28542-06-5]

C₈H₁₆O₆ 208.211

Syrup. [α]_D²⁵ +180 (c, 1 in MeOH).

Me glycoside, 4,6-O-benzylidene: Methyl
4,6-O-benzylidene-2-O-methyl-α-D-
galactopyranoside

[28542-07-6]

C₁₅H₂₀O₆ 296.319

Cryst. (EtOH). Mp 152°. [α]_D²⁵ +165.2
(c, 1.6 in MeOH).

Me glycoside, 4,6-O-benzylidene, 3-tosyl:
Methyl 4,6-O-benzylidene-2-O-methyl-3-
O-tosyl-α-D-galactopyranoside

C₂₂H₂₆O₈S 450.509

Needles (MeOH). Mp 145°. [α]_D
+158.4.

Me glycoside, 3,4-O-isopropylidene: Methyl
3,4-O-isopropylidene-2-O-methyl-α-D-
galactopyranoside

C₁₁H₂₀O₆ 248.275

Prisms (petrol). Mp 77-78°. [α]_D +157.4.

β-D-Pyranose-form [14199-60-1]

Me glycoside: Methyl 2-O-methyl-β-D-
galactopyranoside

C₈H₁₆O₆ 208.211

Needles (EtOAc). Mp 131-132°. [α]_D¹⁷
+1.7 (c, 11.25 in H₂O).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-O-methyl-β-D-galactopyranoside
[35780-85-9]
C₁₅H₂₀O₆ 296.319
Cryst. (EtOH). Mp 160°. [α]_D -32.8.

Me glycoside, 4,6-O-benzylidene, 3-tosyl: Methyl 4,6-O-benzylidene-2-O-methyl-3-O-tosyl-β-D-galactopyranoside
C₂₂H₂₆O₈S 450.509
Needles (MeOH). Mp 126°. [α]_D +38.4.

Me glycoside, 3,4-O-isopropylidene: Methyl 3,4-O-isopropylidene-2-O-methyl-β-D-galactopyranoside
C₁₁H₂₀O₆ 248.275
Prisms (Et₂O/petrol). Mp 75-76°. [α]_D¹⁷ +7.16 (c, 4.0 in CHCl₃).

Oldham, J.W. *et al.*, *J.A.C.S.*, 1938, **60**, 323
(*synth, β-D-Me pyr, β-D-Me pyr isopropylidene*)

Bell, D.J. *et al.*, *J.C.S.*, 1938, 1196 (*α-D-Me pyr, α-D-Me pyr benzylidene tosyl, α-D-Me pyr isopropylidene, β-D-Me pyr acetals*)

McCreath, D. *et al.*, *J.C.S.*, 1939, 387 (*synth*)
Mastronardi, I.O. *et al.*, *Carbohydr. Res.*, 1966, **3**, 177 (*synth, α-D-tetra-Ac*)

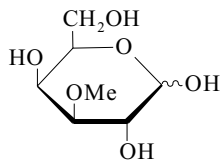
Singh, P.P. *et al.*, *Carbohydr. Res.*, 1970, **13**, 229 (*α-D-Me pyr, α-D-Me pyr benzylidene*)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1971, **20**, 357 (*pmr*)

Vogt, D.C. *et al.*, *Carbohydr. Res.*, 1990, **206**, 333 (*pmr, cmr*)

McArdle, P. *et al.*, *Carbohydr. Res.*, 1993, **241**, 261 (*cryst struct, Me gly 4,6-benzylidene*)

3-*O*-Methylgalactose, 9CI, 8CI M-250



C₇H₁₄O₆ 194.184

D-form [4682-46-6]

Component of polysaccharides of *Ulmus fulva* and *Ulmus glabra*.
Mp 144-146°. [α]_D²³ +168 → +113.2 (c, 1.2 in H₂O).

Di-Et dithioacetal: [15354-65-1]

C₁₁H₂₄O₅S₂ 300.44
Cryst. (C₆H₆). Mp 107-108°. [α]_D +6 (c, 1 in MeOH).

Di-Et dithioacetal, 2,4,5,6-tetra-Ac:

[15354-66-2]
C₁₉H₃₂O₉S₂ 468.588
Cryst. (MeOH aq.). Mp 77.5-78.5°. [α]_D +9.2 (c, 2.7 in CHCl₃).

α-D-Pyranose-form [24807-95-2]

Me glycoside: Methyl 3-O-methyl-α-D-galactopyranoside
[34698-06-1]
C₈H₁₆O₆ 208.211
Syrup. [α]_D²⁵ +163.5 (c, 1.8 in CHCl₃).

Me glycoside, 2,4,6-tri-Ac: Methyl 2,4,6-tri-O-acetyl 3-O-methyl-α-D-galactopyranoside
[55697-58-0]
C₁₄H₂₂O₉ 334.322
Syrup. [α]_D²⁴ +136.4 (c, 1.7 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-O-methyl-α-D-galactopyranoside
C₁₅H₂₀O₆ 296.319
Mp 174-175°. [α]_D¹³ +188.6 (c, 0.9 in CHCl₃).

β-D-Pyranose-form [31505-24-5]

Me glycoside: Methyl 3-O-methyl-β-D-galactopyranoside
[34698-07-2]
C₈H₁₆O₆ 208.211
Syrup. [α]_D¹⁷ +31.9 (c, 5 in H₂O).

Me glycoside, 4,6-dibenzoyl, 2-mesyl: Methyl 4,6-di-O-benzoyl-2-O-mesyl-3-O-methyl-β-D-galactopyranoside
[54307-89-0]
C₂₃H₂₆O₁₀S 494.518
Cryst. (Me₂CO/diisopropyl ether). Mp 152-152.5°. [α]_D²⁷ -24 (c, 1.3 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-O-methyl-β-D-galactopyranoside
C₁₅H₂₀O₆ 296.319
Mp 210°. [α]_D⁵ +33 (c, 1.03 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, 2-mesyl: Methyl 4,6-O-benzylidene-2-O-mesyl-3-O-methyl-β-D-galactopyranoside
[51385-25-2]
C₁₆H₂₂O₈S 374.411
Mp 182-184°. [α]_D +30.2 (c, 1.3 in CHCl₃).

α-D-Furanose-form

1,2-O-Isopropylidene: See 1,2-O-Isopropylidene-galactofuranose, I-64

β-D-Furanose-form

Me glycoside: Methyl 3-O-methyl-β-D-galactofuranoside
[18465-68-4]
C₈H₁₆O₆ 208.211
Syrup. [α]_D²⁸ -142.8 (c, 1.2 in MeOH).

Me glycoside, 6-trityl: Methyl 3-O-methyl-6-O-trityl-β-D-galactofuranoside
[18465-62-8]
C₂₇H₃₀O₆ 450.53
Cryst. (diisopropyl ether). Mp 123-124°. [α]_D²⁷ -46.1 (c, 1.8 in CHCl₃).

Reber, F. *et al.*, *Helv. Chim. Acta*, 1945, **28**, 1164 (*D-form, synth, β-D-Me pyr, β-D-Me pyr benzylidene, α-D-Me pyr benzylidene*)

Hirst, L.E. *et al.*, *J.C.S.*, 1951, 323 (*isol*)
Williams, D.T. *et al.*, *Can. J. Chem.*, 1967, **45**, 741 (*D-di-Et dithioacetal, D-di-Et dithioacetal tetra-Ac*)

Siddiqui, I.R. *et al.*, *Carbohydr. Res.*, 1967, **5**, 210 (*D-form, synth, β-D-Me fur, β-D-Me fur trityl*)

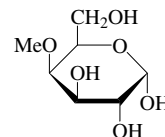
Brimacombe, J.S. *et al.*, *J.C.S. (C)*, 1971, 1363; 3762 (*D-form, synth*)

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1975, **39**, 245 (*α-D-Me pyr, α-D-Me pyr tri-Ac*)

Miljkovic, M. *et al.*, *J.O.C.*, 1975, **40**, 1054 (*β-D-Me pyr dibenzoyl mesyl*)

Liao, W. *et al.*, *Carbohydr. Res.*, 1994, **260**, 151 (*synth, α-D-Me pyr*)

4-*O*-Methylgalactose, 9CI, M-251



α-D-Pyranose-form

C₇H₁₄O₆ 194.184

D-form [18404-81-4]

Prisms (AcOH). Mp 218-221°. [α]_D²² +61 → +83 (c, 2.2 in H₂O).

α-D-Pyranose-form [31505-25-6]

Me glycoside: Methyl 4-O-methyl-α-D-galactopyranoside
[34698-08-3]
C₈H₁₆O₆ 208.211
Cryst. (EtOH). Mp 125-127°. [α]_D²⁵ +169.9 (c, 1 in CHCl₃).

Me glycoside, 2,3,6-tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-O-methyl-α-D-galactopyranoside
[55697-57-9]
C₁₄H₂₂O₉ 334.322
Syrup. [α]_D²⁴ +123 (c, 1.4 in CHCl₃).

β-D-Pyranose-form [25029-37-2]

1,2,3,6-Tetra-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-methyl-β-D-galactopyranoside
[56809-45-1]
C₁₅H₂₂O₁₀ 362.333
Cryst. (diisopropyl ether). Mp 102-105°. [α]_D +32 (c, 0.1 in CHCl₃).

Me glycoside: Methyl 4-O-methyl-β-D-galactopyranoside
[25029-36-1]
C₈H₁₆O₆ 208.211
Cryst. (EtOH). Mp 175-176°. [α]_D²⁰ -39.9 (c, 1.3 in EtOH).

Me glycoside, 2,3,6-tribenzoyl: Methyl 2,3,6-tri-O-benzoyl-4-O-methyl-β-D-galactopyranoside
[25029-35-0]
C₂₉H₂₈O₉ 520.535
Cryst. (EtOH). Mp 135-136°. [α]_D²⁰ +29.1 (c, 1.9 in CHCl₃).

L-form

Residue present in agar from *Gracilaria verrucosa*.

Jeanloz, R.W. *et al.*, *J.A.C.S.*, 1954, **76**, 5684, (*D-form, synth*)

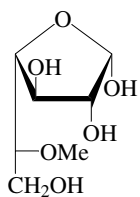
Gros, E.G. *et al.*, *Carbohydr. Res.*, 1969, **10**, 318 (*D-form, β-D-Me pyr, β-D-Me pyr tribenzoyl*)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1971, **20**, 357 (*α/β-D-Me pyr, pmr*)

Flowers, H.M. *et al.*, *Carbohydr. Res.*, 1975, **39**, 245 (*α-D-Me pyr*)

Lee, E.E. *et al.*, *Carbohydr. Res.*, 1975, **41**, 313 (*β-D-pyr tetra-Ac*)

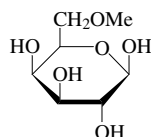
Karamanos, Y. *et al.*, *Carbohydr. Res.*, 1989, **187**, 93 (*occur, L-form*)

5-O-Methylgalactose**M-252** α -D-Furanose-form $C_7H_{14}O_6$ 194.184**D-Furanose-form**Cryst. (1-propanol). Mp 135-137°. $[\alpha]_D^{20}$ -15.7 (c, 0.5 in H_2O).

2,3,6-Tri-Ac: 2,3,6-Tri-O-acetyl-5-O-methyl-D-galactofuranose

 $C_{13}H_{20}O_9$ 320.296Syrup. $[\alpha]_D$ -20.9 (c, 1.0 in $CHCl_3$).Sznajdman, M.L. et al., *Carbohydr. Res.*, 1986, **146**, 233 (synth, pmr, cmr)**6-O-Methylgalactose, 9CI, 8CI****M-253**

6-Methoxyfucose

 β -D-Pyranose-form $C_7H_{14}O_6$ 194.184**D-form** [6779-91-5]Component of *Rhizobium* extracellular polysaccharides. Mp 113-114°. $[\alpha]_D^{18}$ +137.2 \rightarrow +77 (c, 3.1 in H_2O).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-6-O-methyl-D-galactose

[56119-02-9]

 $C_{10}H_{18}O_6$ 234.249Mp 99-100°. $[\alpha]_D^{25}$ +79 (c, 1 in H_2O , 4h.). **α -D-Pyranose-form** [31505-26-7]1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-6-O-methyl- α -D-galactopyranose

[34698-17-4]

 $C_{13}H_{22}O_6$ 274.313Bp_{0.5} 120°. $[\alpha]_D^{25}$ -63 (c, 3 in $CHCl_3$).Me glycoside: Methyl 6-O-methyl- α -D-galactopyranoside

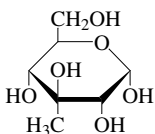
[7045-61-6]

 $C_8H_{16}O_6$ 208.211Mp 138°. $[\alpha]_D^{23}$ +165 (c, 1 in H_2O). **β -D-Pyranose-form** [31505-27-8]Me glycoside: Methyl 6-O-methyl- β -D-galactopyranoside

[34698-11-8]

 $C_8H_{16}O_6$ 208.211Mp 114-115°. $[\alpha]_D^{13}$ 0 (c, 0.7 in H_2O).**L-form** $[\alpha]_D$ -14.4 (c, 1.0 in MeOH). Prepared enzymatically. No comment made on much lower opt. rotn. than D-form.Freudenberg, K. et al., *Ber.*, 1926, **59**, 100, (D-form, α -D-diisopropylidene)Pacsu, E. et al., *J.A.C.S.*, 1940, **62**, 2301,

(D-form, synth)

Rathbone, E.B. et al., *Carbohydr. Res.*, 1971, **20**, 357 (pmr)Haverkamp, J. et al., *Carbohydr. Res.*, 1974, **33**, 319 (cmr)Morgenlie, S. et al., *Carbohydr. Res.*, 1975, **41**, 77 (α -D-isopropylidene)Berry, J.M. et al., *Carbohydr. Res.*, 1976, **47**, 307 (α -D-diisopropylidene)Kennedy, L.D. et al., *Carbohydr. Res.*, 1980, **87**, 156 (occur)Wong, C.-H. et al., *J.O.C.*, 1995, **60**, 7360, (L-form synth, pmr, cmr)**3-C-Methylglucose****M-254** α -D-Pyranose-form $C_7H_{14}O_6$ 194.184 **α -D-Pyranose-form**Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-C-methyl- α -D-glucopyranoside

[42776-05-6]

 $C_{15}H_{20}O_6$ 296.319Cryst. ($CHCl_3$ /hexane). Mp 80-82°. $[\alpha]_D^{23}$ +91 (c, 1.25 in $CHCl_3$).Me glycoside, 4,6-O-benzylidene, di-Ac: Methyl 2,3-di-O-acetyl-4,6-O-benzylidene-3-C-methyl- α -D-glucopyranoside

[42776-07-8]

 $C_{19}H_{24}O_8$ 380.394Cryst. (EtOH/hexane). Mp 156-157°. $[\alpha]_D^{23}$ +15.4 (c, 0.95 in $CHCl_3$). **β -D-Pyranose-form**1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-C-methyl- β -D-glucopyranose

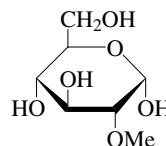
[59156-89-7]

 $C_{15}H_{22}O_{10}$ 362.333Amorph. powder. $[\alpha]_D^{22}$ -23 (c, 2.34 in $CHCl_3$). **α -D-Furanose-form**1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-3-C-methyl- α -D-glucopyranose

[53270-26-1]

 $C_{13}H_{22}O_6$ 274.313Cryst. (hexane). Mp 66-67°. $[\alpha]_D^{23}$ +23 (c, 1.0 in Me_2CO).3-Me, 1,2:5,6-di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-3-C-methyl-3-O-methyl- α -D-glucopyranose

[96918-52-4]

 $C_{14}H_{24}O_6$ 288.34Oil. Bp_{0.1} 70°. $[\alpha]_D^{25}$ +1.3 (c, 2.44 in $CHCl_3$).Yoshimura, J. et al., *Bull. Chem. Soc. Jpn.*, 1973, **46**, 1515-1519; 1976, **49**, 788-790 (α -D-Me pyr benzylidene, β -D-pyr-tetra-Ac, α -D-fur-diisopropylidene)Cubero, I.I. et al., *Carbohydr. Res.*, 1983, **114**, 311-316 (α -D-fur-diisopropylidene)Oikawa, Y. et al., *J.C.S. Perkin 1*, 1985, 1-5, (α -D-fur-diisopropylidene-3-O-Me)**2-O-Methylglucose, 9CI, 8CI****M-255** α -D-Pyranose-form $C_7H_{14}O_6$ 194.184**D-form** [4132-40-5]Cryst. (EtOH). Mp 158.5-159°. $[\alpha]_D^{25}$ +66 (c, 2 in H_2O).Phenylhydrazones: Mp 177-178°. $[\alpha]_D^{19}$ -13.3 (Py).

Di-Et dithioacetal: [3767-34-8]

 $C_{11}H_{24}O_5S_2$ 300.44Mp 156-157°. $[\alpha]_D^{25}$ -25 (Py). **α -D-Pyranose-form** [24436-13-3]1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-O-methyl- α -D-glucopyranose

[14199-55-4]

 $C_{15}H_{22}O_{10}$ 362.333Cryst. (EtOH). Mp 107-108°. $[\alpha]_D^{20}$ +109.2 (c, 0.9 in $CHCl_3$).4,6-O-Ethylidene, 1,3-di-Ac: 1,3-Di-O-acetyl-4,6-O-ethylidene-2-O-methyl- α -D-glucopyranose

[35880-37-6]

 $C_{13}H_{20}O_8$ 304.296Cryst. (2-propanol). Mp 107-108°. $[\alpha]_D^{20}$ +118 (c, 1 in $CHCl_3$).Me glycoside: Methyl 2-O-methyl- α -D-glucopyranoside

[20908-66-1]

 $C_8H_{16}O_6$ 208.211Cryst. (EtOAc). Mp 147-148°. $[\alpha]_D^{24}$ +158 (c, 1 in H_2O).Me glycoside, 3,4,6-tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-O-methyl- α -D-glucopyranoside $C_{14}H_{22}O_9$ 334.322Needles (EtOH). Mp 120-121°. $[\alpha]_D^{22}$ +149 ($CHCl_3$).Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-2-O-methyl- α -D-glucopyranoside

[20770-90-5]

 $C_{15}H_{20}O_6$ 296.319Mp 169-170°. $[\alpha]_D^{24}$ +97 (c, 0.8 in $CHCl_3$). **β -D-Pyranose-form** [14251-16-2]1,3,4,6-Tetra-Ac: 1,3,4,6-Tetra-O-acetyl-2-O-methyl- β -D-glucopyranose

[14199-54-3]

 $C_{15}H_{22}O_{10}$ 362.333Cryst. (EtOH). Mp 107-108°. $[\alpha]_D^{25}$ +22 (c, 2 in $CHCl_3$).Me glycoside: Methyl 2-O-methyl- β -D-glucopyranoside

[15064-82-1]

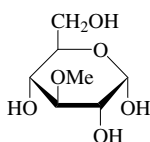
 $C_8H_{16}O_6$ 208.211Mp 96-97°. $[\alpha]_D^{25}$ -41 (c, 2 in H_2O).Me glycoside, 3,4,6-tri-Ac: Methyl 3,4,6-tri-O-acetyl-2-O-methyl- β -D-glucopyranoside

[14982-06-0]

 $C_{14}H_{22}O_9$ 334.322Mp 74-75°. $[\alpha]_D$ +5.9 (EtOH).

Haworth, W.N. *et al.*, *J.C.S.*, 1931, 2858 (*D*-form, synth, α -D-Me pyr, α -D-Me pyr tri-Ac)
 Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 298 (rev, derivs)
 Mastronardi, I.O. *et al.*, *Carbohydr. Res.*, 1966, **3**, 177 (α -D-pyr tetra-Ac, β -D-pyr tetra-Ac)
 De, K.K. *et al.*, *Carbohydr. Res.*, 1967, **4**, 72, (*D*-form, synth, β -D-Me pyr, β -D-Me pyr tri-Ac)
 Gigg, R. *et al.*, *J.C.S. (C)*, 1968, 1903 (α -D-Me pyr benzylidene)
 Dick, W.E. *et al.*, *Carbohydr. Res.*, 1972, **21**, 255 (α -D-ethylidene di-Ac)
 Erbing, B. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 1094 (α -D-Me)
 Usui, T. *et al.*, *J.C.S. Perkin 1*, 1973, 2425 (*cmr*)
 Bock, K. *et al.*, *J.C.S. Perkin 2*, 1974, 293 (*pmr*)
 McArdle, P. *et al.*, *Carbohydr. Res.*, 1993, **241**, 261 (*cryst struct*, Me α -D-pyr)
 De Bruyn, A. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 135-156 (*pmr*)

3-O-Methylglucose, 9CI, 8CI M-256 [146-72-5]

 α -D-Pyranose-formC₇H₁₄O₆ 194.184

D-form

Constit. of *Rhizobium* extracellular polysaccharides.
 Mp 168°. [α]_D +104 → +55 (H₂O).

α -D-Pyranose-form [13224-94-7]

Me glycoside: Methyl 3-O-methyl- α -D-glucopyranoside
 [5149-37-1]
 C₈H₁₆O₆ 208.211
 Cryst. (EtOAc). Mp 81-82°. [α]_D²¹ +148 (c, 0.8 in H₂O).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-3-O-methyl- α -D-glucopyranoside
 [20770-95-0]
 C₁₅H₂₀O₆ 296.319
 Mp 150-151° (133°). [α]_D +119.5 (+49.1) (C₂H₅Cl₄).

β -D-Pyranose-form [13224-95-8]

Mp 133.5-135°. [α]_D +32 → +55 (H₂O).
 1,2,4,6-Tetra-Ac: 1,2,4,6-Tetra-O-acetyl-3-O-methyl- β -D-glucopyranose
 [4163-64-8]
 C₁₅H₂₂O₁₀ 362.333
 Mp 95-96°. [α]_D -5 (c, 2 in CHCl₃).

Me glycoside: Methyl 3-O-methyl- β -D-glucopyranoside
 [14982-01-5]
 C₈H₁₆O₆ 208.211
 Syrup. [α]_D -26 (H₂O).

Me glycoside, 4,6-O-benzylidene: See Methyl 4,6-O-benzylidene- β -D-glucopyranoside, M-165

α -D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-3-O-methyl- α -D-glucopyranose
 [43138-65-4]
 C₁₀H₁₈O₆ 234.249
 Syrup. [α]_D²³ -52.4 (c, 0.4 in CHCl₃). [α]_D -36.8 (EtOH).

1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-3-O-methyl- α -D-glucopyranose
 [43138-64-3]
 C₁₃H₂₂O₆ 274.313
 Syrup. Bp₁₂ 140°. [α]_D²² -33 (c, 0.4 in EtOH).

► LZ4959400

1,2-Cyclohexylidene: 1,2-O-Cyclohexylidene-3-O-methyl- α -D-glucopyranose
 [13322-87-7]
 C₁₃H₂₂O₆ 274.313
 Mp 106° (102°). Bp_{0.005} 170-175°. [α]_D²⁰ -24 (c, 3.3 in H₂O).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 190D (*ir*)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 305B (*nmr*)

Bolliger, H.R. *et al.*, *Helv. Chim. Acta*, 1945, **28**, 465 (α -D-Me pyr benzylidene)

Glen, W.L. *et al.*, *J.C.S.*, 1951, 2568 (*D*-form, synth)

Jeanloz, R.W. *et al.*, *J.A.C.S.*, 1954, **76**, 5793, (α -D-Me pyr)

Van der Veen, J.M. *et al.*, *J.O.C.*, 1963, **28**, 564 (*pmr*)

Hirst, E.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 145 (α -D-form)

Methods Carbohydr. Chem., 1965, **5**, 298 (rev, derivs)

Landor, S.R. *et al.*, *J.C.S. (C)*, 1966, 1822, (α -D-fur 1,2-cyclohexylidene)

De, K.K. *et al.*, *Carbohydr. Res.*, 1967, **4**, 72, (α -D-pyr, β -D-pyr tetra-Ac)

Dorman, D.E. *et al.*, *J.A.C.S.*, 1970, **92**, 1355 (*cmr*)

Roberts, E.J. *et al.*, *Carbohydr. Res.*, 1972, **21**, 357 (β -D-Me pyr)

Kovář, J. *et al.*, *Can. J. Chem.*, 1973, **51**, 1801 (α -D-fur isopropylidene, α -D-fur diisopropylidene)

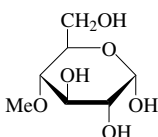
Defaye, J. *et al.*, *Carbohydr. Res.*, 1974, **35**, 264 (α -D-Me pyr)

Barton, D.H.R. *et al.*, *J.C.S. Perkin 1*, 1975, 1773 (4,6-benzylidene)

Kennedy, L.D. *et al.*, *Carbohydr. Res.*, 1980, **87**, 156 (*occur*)

Sheldrick, B. *et al.*, *Acta Cryst. C*, 1983, **39**, 315 (*cryst struct*)

4-O-Methylglucose, 9CI, 8CI M-257

 α -D-Pyranose-formC₇H₁₄O₆ 194.184

D-form [4132-38-1]

Syrup. [α]_D +59 (c, 1.1 in H₂O) (equilib).

α -D-Pyranose-form [31505-21-2]

Me glycoside: Methyl 4-O-methyl- α -D-glucopyranoside
 [27551-99-1]
 C₈H₁₆O₆ 208.211
 Cryst. (heptane). Mp 97-98°. [α]_D²⁰ +165 (c, 1.2 in H₂O).

Me glycoside, 2,3,6-tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-O-methyl- α -D-glucopyranoside
 [24905-15-5]
 C₁₄H₂₂O₉ 334.322
 Mp 122-123°. [α]_D²⁵ +150.4 (CHCl₃).

Me glycoside, 2,3,6-tribenzoyl: Methyl 2,3,6-tri-O-benzoyl-4-O-methyl- α -D-glucopyranoside
 [132556-23-1]
 C₂₉H₂₈O₉ 520.535
 Foam. [α]_D +132.1 (c, 1.0 in CHCl₃).

β -D-Pyranose-form [31505-22-3]

1,2,3,6-Tetra-Ac: 1,2,3,6-Tetra-O-acetyl-4-O-methyl- β -D-glucopyranose
 [14199-56-5]
 C₁₅H₂₂O₁₀ 362.333
 Mp 104°. [α]_D -9.4 (c, 1.58 in CHCl₃).

Me glycoside: Methyl 4-O-methyl- β -D-glucopyranoside
 [3056-43-7]
 C₈H₁₆O₆ 208.211
 Cellulose model compd. Cryst. (EtOAc). Mp 102-103°. [α]_D -19 (H₂O).

Me glycoside, 2,3,6-tri-Ac: Methyl 2,3,6-tri-O-acetyl-4-O-methyl- β -D-glucopyranoside
 [24905-16-6]
 C₁₄H₂₂O₉ 334.322
 Mp 106-108°. [α]_D -34 (CHCl₃).

Bouveng, H.O. *et al.*, *Acta Chem. Scand.*, 1957, **11**, 1788 (*D*-form, synth, β -D-Me pyr tri-Ac)

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 298 (rev, derivs)

De, K.K. *et al.*, *Carbohydr. Res.*, 1967, **4**, 72, (*D*-form, synth, β -D-pyr tetra-Ac, β -D-Me pyr)

Gros, E. *et al.*, *Carbohydr. Res.*, 1971, **16**, 232 (*cmr*)

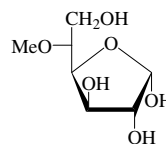
v. Cleve, J.W. *et al.*, *Carbohydr. Res.*, 1972, **25**, 465 (α -D-Me pyr)

Bochkov, A.F. *et al.*, *Carbohydr. Res.*, 1974, **32**, 1 (*D*-form, synth, β -D-pyr tetra-Ac)

Li, K. *et al.*, *Carbohydr. Res.*, 1995, **273**, 249-253 (synth, *pmr*, *cmr*, α -D-Me pyr, α -D-Me pyr 2,3,6-tribenzoyl)

Röhring, J. *et al.*, *Carbohydr. Res.*, 2002, **337**, 691-700 (Me β -D-gly, synth, *pmr*, *cmr*)

5-O-Methylglucose, 9CI M-258

 α -D-Furanose-formC₇H₁₄O₆ 194.184

D-form [4132-41-6]

Syrup. [α]_D²⁰ -10.6 (c, 2 in EtOH).

α -D-Furanose-form

Tetrabenzoyl: 1,2,3,6-Tetra-O-benzoyl-5-O-methyl- α -D-glucopyranose
 [55726-89-1]
 C₃₅H₃₀O₁₀ 610.616
 Plates (C₆H₆/petrol). Mp 174-175°. [α]_D¹⁹ +96 (c, 1.1 in CHCl₃).

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-5-O-methyl- α -D-glucopyranose
 [5488-90-4]
 C₁₀H₁₈O₆ 234.249
 Syrup. [α]_D²⁰ -13.1 (c, 8.0 in CHCl₃).

1,2-O-Isopropylidene, 3,6-di-Ac: 3,6-Di-O-acetyl-1,2-O-isopropylidene-5-O-methyl- α -D-glucopyranose
 [14980-10-0]
 C₁₄H₂₂O₈ 318.323
 Mp 87°. [α]_D²⁰ -15.2 (c, 2.6 in CHCl₃).

1,2-O-Isopropylidene, 3,6-dibenzoyl: 3,6-Di-O-benzoyl-1,2-O-isopropylidene-5-O-methyl- α -D-glucopyranose
[55726-90-4]
C₂₄H₂₆O₈ 442.465
Cryst. (petrol), Mp 93-94°. [α]_D -50.3 (c, 1.1 in CHCl₃).

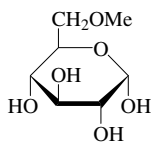
 β -D-Furanose-form

2,3,6-Tribenzoyl: 2,3,6-Tri-O-benzoyl-5-O-methyl- β -D-glucopyranose
C₂₈H₂₆O₉ 506.508
Cryst. (MeOH), Mp 147-148°. [α]_D²⁰ +42.6 (c, 1.4 in CHCl₃) (5 min).

1,2,3,6-Tetrabenzoyl: 1,2,3,6-Tetra-O-benzoyl-5-O-methyl- β -D-glucopyranose
[13096-72-5]
C₃₅H₃₀O₁₀ 610.616
Needles (EtOH), Mp 155-156°. [α]_D¹⁹ +18 (c, 1.8 in CHCl₃).

Vargha, L. *et al.*, *Ber.*, 1936, **69**, 2098 (*D*-form, synth, α -D-fur isopropylidene, α -D-fur isopropylidene di-Ac)

Kuzuhara, H. *et al.*, *J.O.C.*, 1967, **32**, 2531, (β -D-fur tribenzoyl, β -D-fur tetrabenzoyl)
Stevens, J.D. *et al.*, *Aust. J. Chem.*, 1975, **28**, 525 (*D*-form, α -D-fur isopropylidene dibenzoyl, α -D-fur-tetrabenzoyl, β -D-fur-tetrabenzoyl)
Chittenden, G.F. *et al.*, *Carbohydr. Res.*, 1979, **74**, 333-336 (*synth*)

6-O-Methylglucose, 9CI, 8CI M-259 α -D-Pyranose-form

C₇H₁₄O₆ 194.184

D-form [2461-70-3]

Cryst. (EtOH), Mp 143-145°. [α]_D²⁰ +110 → +59 (H₂O).

 α -D-Pyranose-form [14199-58-7]

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-O-methyl- α -D-glucopyranose
C₁₅H₂₂O₁₀ 362.333
Mp 120°. [α]_D +112 (CHCl₃).

Me glycoside: Methyl 6-O-methyl- α -D-glucopyranoside
[5155-48-6]
C₈H₁₆O₆ 208.211
Syrup. [α]_D +128 (H₂O).

Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-O-methyl- α -D-glucopyranoside
[24587-95-9]
C₁₄H₂₂O₉ 334.322
Mp 73.5-74°.

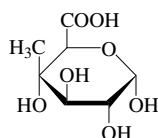
 β -D-Pyranose-form [24436-14-4]

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-O-methyl- β -D-glucopyranoside
[14199-53-2]
C₁₅H₂₂O₁₀ 362.333
Mp 92-94°. [α]_D²⁰ +20.5 (c, 1.2 in CHCl₃).

Me glycoside: Methyl 6-O-methyl- β -D-glucopyranoside
[5155-50-0]
C₈H₁₆O₆ 208.211
Mp 133-135°. [α]_D -27 (H₂O).

Me glycoside, 2,3,4-tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-O-methyl- β -D-glucopyranoside
[24905-12-2]
C₁₄H₂₂O₉ 334.322
Mp 107-108°. [α]_D -14.5 (CHCl₃).

Methods Carbohydr. Chem., 1965, **5**, 298 (*rev, derivs*)
Gros, E.G. *et al.*, *Chem. Ind. (London)*, 1966, 1556 (*D*-form, synth, β -D-pyr tetra-Ac)
Bourne, E.J. *et al.*, *Carbohydr. Res.*, 1972, **25**, 516 (*D*-form, synth)
Colson, P. *et al.*, *Can. J. Chem.*, 1975, **53**, 1030 (*cmr*)
Berry, J. *et al.*, *Carbohydr. Res.*, 1976, **47**, 307 (β -D-pyr tetra-Ac)
Van Cleve, J.W. *et al.*, *Carbohydr. Res.*, 1985, **137**, 259 (*synth*)

4-C-Methylglucuronic acid, 9CI M-260**Moenuronic acid** α -D-Pyranose-form

C₇H₁₂O₇ 208.168

D-form [63124-46-9]

A component of Moenomycin, M-316 where it occurs as its 3-O-carbamoyl-1-phosphate.

 α -D-Pyranose-form

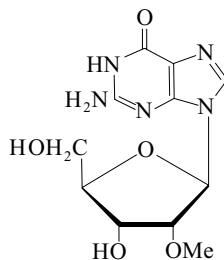
Me glycoside: Methyl 4-C-methyl- α -D-glucopyranosiduronic acid
C₈H₁₄O₇ 222.194
[α]_D +87 (c, 0.7 in MeOH).

Me glycoside, 2,3-di-Ac, *Et ester*: Ethyl (methyl 2,3-di-O-acetyl- α -D-glucopyranosid)uronate
C₁₄H₂₂O₉ 334.322
Mp 99-101°. [α]_D +112 (c, 0.6 in CHCl₃).

Langenfeld, N. *et al.*, *Tet. Lett.*, 1978, 1833 (*occur*)
Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1982, **99**, C1 (α -D-Me pyr, α -D-Me pyr di-Ac *Et ester*)

2'-O-Methylguanosine, 9CI, 8CI M-261

[2140-71-8]

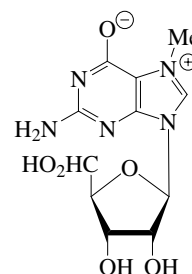


C₁₁H₁₅N₅O₅ 297.27
Constit. of yeast sRNA. Cryst. (MeOH). Mp 234-236°. [α]_D²² -38.4 (c, 0.6 in H₂O). λ_{\max} 255.5 (ε 10 660) (pH 1), 258 nm (9 776) (pH 11).

Morisawa, S. *et al.*, *Biochim. Biophys. Acta*, 1963, **68**, 147
Khwaja, T.A. *et al.*, *J.A.C.S.*, 1966, **88**, 3640 (*synth, pmr*)
Howlett, H.A. *et al.*, *Anal. Biochem.*, 1971, **39**, 429 (*ms*)
Robins, M.J. *et al.*, *J.O.C.*, 1974, **39**, 1891 (*synth*)
Beigelman, L. *et al.*, *Tetrahedron*, 2000, **56**, 1047-1056 (*synth*)
Chow, S. *et al.*, *Bioorg. Med. Chem. Lett.*, 2003, **13**, 1631-1634 (*synth*)

7-Methylguanosine M-262

2-Amino-6,9-dihydro-7-methyl-6-oxo-9- β -D-ribofuranosyl-1H-purinium hydroxide inner salt, 9CI
[20244-86-4]



C₁₁H₁₅N₅O₅ 297.27
Modified nucleoside found rarely in tRNAs. Main prod. of DNA methylation by carcinogenic and mutagenic agents. Mutagenic agent causing base mispairing in DNA. Cryst. + 2H₂O. Mp 160-161°. [α]_D -33.5 (c, 0.4 in H₂O).

► Mutagen.

5'-Phosphate: [10162-58-0]

C₁₁H₁₆N₅O₈P 377.25
 λ_{\max} 258 (ε 10300) (phosphate buffer, pH 6.8).

[22164-16-5, 81100-62-1, 139008-87-0]

Jones, J.W. *et al.*, *J.A.C.S.*, 1963, **85**, 193-201 (*synth*)

McCloskey, J.A. *et al.*, *Acc. Chem. Res.*, 1977, **10**, 403 (*rev*)

Yamauchi, K. *et al.*, *Synthesis*, 1980, 852-853 (*synth*)

Chang, C.J. *et al.*, *Biochemistry*, 1981, **20**, 2657 (*synth*)

Chang, C. *et al.*, *Org. Magn. Reson.*, 1984, **22**, 671-675 (*cmr*)

Schubert, E.M. *et al.*, *J. Het. Chem.*, 1985, **22**, 889-905 (*ms*)

Sierzputowska-Graczyk, H. *et al.*, *Nucleic Acids Res.*, 1986, **14**, 7783 (*pmr, cmr, N-15 nmr*)

Kamiichi, K. *et al.*, *J.C.S. Perkin 2*, 1987, 1739-1745 (*synth, 5'-phosphate*)

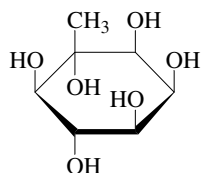
Barbarella, G. *et al.*, *Magn. Reson. Chem.*, 1987, **25**, 864-868 (*N-15 nmr*)

Hettich, R.L. *et al.*, *Biomed. Environ. Mass Spectrom.*, 1989, **18**, 265 (*ms*)

Cho, B.P. *et al.*, *Magn. Reson. Chem.*, 1993, **31**, 1048 (*cmr*)

4-C-Methyl-myo-inositol

M-263

Laminitol
[472-95-7]

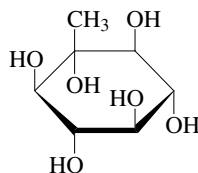
D-form

C₇H₁₄O₆ 194.184**D-form** [134680-68-5]Isol. from red alga *Polysiphonia fastigiata* (Ceramiales) and known alga *Laminaria cloustoni*.Cryst. (H₂O).Mp 270-274° (266-269°). [α]_D²⁰ -3 (c, 2 in H₂O).*Hexa-Ac*: Hexa-O-acetyl-4-C-myo-inositol [52795-38-7]C₁₉H₂₆O₁₂ 446.407Cryst. (EtOH). Mp 151-152°. [α]_D¹⁹ -19 (c, 2 in CHCl₃).**(±)-form**Cryst. (H₂O). Mp 262-268°.*Hexa-Ac*:

Cryst. (EtOH). Mp 157-158°.

Lindberg, L. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 1875-1876 (*isol*)Wickberg, B. *et al.*, *Acta Chem. Scand.*, 1957, **11**, 506-511 (*isol*)Lindberg, B. *et al.*, *Ark. Kemi*, 1958, **13**, 447-455 (*isol*)Posternak, T. *et al.*, *Helv. Chim. Acta*, 1960, **43**, 2142-2147; 1961, **44**, 2080-2085 (*synth, config*)Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1974, **27**, 1075-1086 (*synth, pmr*)Carless, H.A.J. *et al.*, *Tet. Lett.*, 1991, **32**, 1671-1674 (*synth, pmr*)Sata, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1994, **67**, 1633-1640 (*synth*)**1-C-Methyl-scyllo-inositol**

M-264

Mytilitol
[564-92-1]C₇H₁₄O₆ 194.184Isol. from blue mussels *Mytilus edulis*, red alga *Polysiphonia fastigiata* and brown algae. Cryst. (H₂O).

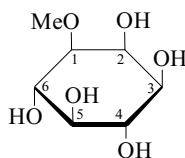
Mp 266-268°.

Hexa-Ac:C₁₉H₂₆O₁₂ 446.407

Mp 186-188°.

Posternak, T. *et al.*, *Helv. Chim. Acta*, 1944, **27**, 457-468 (*synth*)Wickberg, B. *et al.*, *Acta Chem. Scand.*, 1957, **11**, 506-511 (*isol*)Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1974, **27**, 1075-1086 (*pmr*)Sato, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1994, **67**, 1633-1640 (*synth*)**1-O-Methyl-myo-inositol**

M-265

Bornesitol
[144902-49-8]

L-form

C₇H₁₄O₆ 194.184

Some confusion in earlier lit. about abs. config. of D- and L-forms.

D-form [484-71-9]Occurs in several families of Dicotyledons. Mp 205-206°. [α]_D¹⁸ -32.1 (c, 3.5 in H₂O).*2,3-O-Isopropylidene, 4,5,6-tri-Ac*:C₁₆H₂₄O₉ 360.36Mp 157°. [α]_D¹⁸ +9 (c, 1.4 in CHCl₃).*Penta-Ac*: Penta-O-acetyl-1-O-methyl-D-myo-inositol [54324-59-3]C₁₇H₂₄O₁₁ 404.37Mp 142-143° Mp 157°. [α]_D -8.6 (c, 1.1 in CHCl₃).**L-form 3-O-Methyl-D-myo-inositol, 9CI** [22350-68-1]Occurs in seven genera of Apocynaceae and in *Sarcocephalus diderrichii*.Mp 201-202°. [α]_D²⁰ +31.4 (c, 4.2 in H₂O).*Penta-Ac*: Penta-O-acetyl-1-O-methyl-L-myo-inositol [94482-10-7]C₁₇H₂₄O₁₁ 404.37

Mp 138-139° Mp 157°.

King, F.E. *et al.*, *J.C.S.*, 1953, 1192-1195, (*L-form, isol*)Plouvier, V. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1955, **241**, 983-985 (*D-form, isol*)Angyal, S.J. *et al.*, *J.C.S.*, 1957, 1417-1422 (*synth*)Bien, S. *et al.*, *J.C.S.*, 1958, 3189-3194 (*D-form, abs config*)Post, G.G. *et al.*, *J.A.C.S.*, 1962, **84**, 478-480, (*D-form, synth*)Kindl, H. *et al.*, *Prog. Chem. Org. Nat. Prod.*, 1966, **24**, 149 (*rev*)Karrer, W. *et al.*, *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 282 (*bibl, occur*)Jaramillo, C. *et al.*, *J.O.C.*, 1994, **59**, 3135-3141 (*D-form, synth, pmr*)Ichimura, K. *et al.*, *Biosci., Biotechnol., Biochem.*, 1999, **63**, 189-191 (*isol, pmr, cmr*)**2-O-Methyl-myo-inositol**

M-266

[7600-53-5]

C₇H₁₄O₆ 194.184Mp 212°. Opt. inactive (*meso*-).*Penta-Ac*: 1,3,4,5,6-Penta-O-acetyl-2-O-methyl-myo-inositolC₁₇H₂₄O₁₁ 404.37

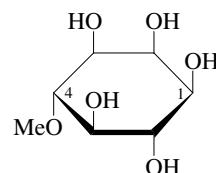
Mp 235-236°.

D-form*3,4,5,6-Tetrabenzoyl*: [28140-43-4]C₃₅H₃₈O₆ 554.682

Solid. Mp 133-135°. Chiral molecule. Props. refer to D-form.

Angyal, S.J. *et al.*, *J.C.S.*, 1957, 1417-1422 (*synth*)Martin, S.F. *et al.*, *J.O.C.*, 1996, **61**, 8016-8023 (*tetrabenzoyl, synth, pmr, cmr*)**4-O-Methyl-myo-inositol**

M-267

Ononitol
[484-69-5]

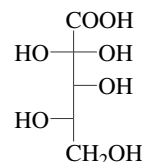
D-form

C₇H₁₄O₆ 194.184**D-form** [6090-97-7]Isol. from *Ononis* spp., *Vigna catjang*, *Kiggelaria africana*, *Medicago sativa* (alfalfa), *Leucaena glauca* and others.Mp 167-168°. [α]_D²³ +5.5 (c, 11.2 in H₂O).*Penta-Ac*: 1,2,3,5,6-Penta-O-acetyl-4-O-methyl-myo-inositolC₁₇H₂₄O₁₁ 404.37Mp 121°. [α]_D²³ -11.1 (c, 0.8 in CHCl₃).**L-form 6-O-Methyl-D-myo-inositol, 9CI.***1-O-Methyl-L-myo-inositol*

[166734-75-4]

Mp 168-169°. [α]_D -5.7 (c, 2.0 in H₂O).Plouvier, V. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1955, **241**, 983-985 (*isol*)Post, G.G. *et al.*, *J.A.C.S.*, 1962, **84**, 478-480 (*synth, D-form*)Kindl, H. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1966, **345**, 257 (*biosynth*)Pietrusiewicz, K.M. *et al.*, *Synth. Commun.*, 1995, **25**, 1863-1867 (*synth, D-form, L-form*)**2-C-Methyllyxonic acid**

M-268

β-Galactosaccharinic acid

L-form

C₆H₁₂O₆ 180.157**L-form***1,4-Lactone, tribenzoyl: 2,3,5-Tri-O-benzoyl-2-C-methyl-L-lyxono-1,4-lactone* [36792-01-5]C₂₇H₂₂O₈ 474.466Needles (EtOH aq.). Mp 109-110.5°. [α]_D¹⁷ -76 (c, 2.1 in CHCl₃).**DL-form***1,4-Lactone: 2-C-Methyl-DL-lyxono-1,4-lactone*

[86204-18-4]

C₆H₁₀O₅ 162.142

Syrup.

1,4-Lactone, tribenzoyl: 2,3,5-Tri-O-benzoyl-DL-lyxono-1,4-lactone

[93636-13-6]

C₂₇H₂₂O₈ 474.466

Mp 110-111°.

D-form [27552-12-1]

$[\alpha]_D^{25} +14$ (c, 0.2 in CHCl_3). $[\alpha]_D^{25} +34.9$ (10 min.) $\rightarrow +32.9$ (8 hr.) (c, 1.10 in H_2O).

Phenylosazone: Mp 173-174°.

 α -D-Pyranose-form

Me glycoside: Methyl 6-O-methyl- α -D-mannopyranoside

[27552-07-4]

$\text{C}_8\text{H}_{16}\text{O}_6$ 208.211

Bp_{0.001} 75-80°. $[\alpha]_D^{25} +78.8$ (c, 1.2 in CHCl_3).

Me glycoside, 4-Ac: Methyl 4-O-acetyl-6-O-methyl- α -D-mannopyranoside

[39523-78-9]

$\text{C}_{10}\text{H}_{18}\text{O}_7$ 250.248

Syrup. $[\alpha]_D^{23} +66.8$ (c, 1.2 in CHCl_3).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-6-O-methyl- α -D-mannopyranoside

[28140-05-8]

$\text{C}_{14}\text{H}_{22}\text{O}_9$ 334.322

Mp 53-55°. Bp_{0.01} 70°. $[\alpha]_D^{26} +56.8$ (c, 1.2 in CHCl_3).

Me glycoside, 2,3-O-isopropylidene: See Methyl 2,3-O-isopropylidenemannopyranoside, M-200

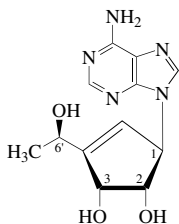
Gros, E.G. *et al.*, *Carbohydr. Res.*, 1970, **14**, 409 (*D-form*, α -D-Me pyr, α -D-Me pyr tri-Ac)

Tronchet, J.M.J. *et al.*, *Carbohydr. Res.*, 1972, **24**, 263; 283 (α -D-Me pyr, α -D-Me pyr Ac, α -D-Me pyr tri-Ac)

6'-C-Methyneplanocin A

M-275

9-[2,3-Dihydroxy-4-(1-hydroxyethyl)-4-cyclopenten-1-yl]adenine. 5-(6-Amino-9H-purin-9-yl)-3-(1-hydroxyethyl)-3-cyclopentene-1,2-diol, 9CI. TJ 13025



(1R,2S,3R,6'R)-form

$\text{C}_{12}\text{H}_{15}\text{N}_5\text{O}_3$ 277.282

Potent antiviral agent against DNA and RNA viruses. Relat. to Neplanocin A, N-29.

(1R,2S,3R,6'R)-form [138571-54-7]

Cryst. Mp 211°. Pharmacol. active isomer. 6'R-config. essential for activity.

(1R,2S,3R,6'S)-form [138662-99-4]

Cryst. Mp 231°.

[161128-66-1]

Shigeta, S. *et al.*, *Antimicrob. Agents*

Chemother., 1992, **36**, 435-439 (activity)

Eur. Pat., 1992, 477 700, (Toyo Jozo); *CA*, **117**, 8368f (synth, pharmacol)

Shuto, S. *et al.*, *J. Med. Chem.*, 1992, **35**,

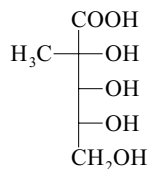
324-331 (synth, activity, pmr)

Shuto, S. *et al.*, *Bioorg. Med. Chem. Lett.*, 1994, **4**, 605-608 (config)

Shuto, S. *et al.*, *Chem. Pharm. Bull.*, 1997, **45**, 138-142 (synth, config)

2-C-Methyl-ribo-pentonic acid

M-276



$\text{C}_6\text{H}_{12}\text{O}_6$ 180.157

D-form

1,4-Lactone, 2,3-isopropylidene, 5-tosyl: 2,3-O-Isopropylidene-2-C-methyl-5-O-tosyl-D-ribo-1,4-pentonolactone

[85963-84-4]

$\text{C}_{16}\text{H}_{20}\text{O}_7\text{S}$ 356.396

Cryst. (Et_2O /petrol). Mp 93-94°. $[\alpha]_D^{22} +3.5$ (c, 2.2 in CHCl_3).

Sowden, J.C. *et al.*, *J.A.C.S.*, 1960, **82**, 3707 (synth)

4-Methylpentyl glucosinolate

M-277

$(\text{H}_3\text{C})_2\text{CHCH}_2\text{CH}_2\text{CH}_2\text{C}(\text{SGlc})=\text{NO}-\text{SO}_3\text{H}$

$\text{C}_{13}\text{H}_{25}\text{NO}_9\text{S}_2$ 403.474

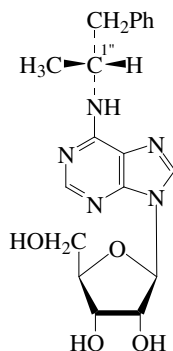
Present in radish (*Raphanus sativus*).

Kjaer, A. *et al.*, *Agric. Biol. Chem.*, 1978, **42**, 1715 (occur)

N-(1-Methyl-2-phenylethyl)-adenosine, 9CI

M-278

[20125-40-0]



(1'R)-form

$\text{C}_{19}\text{H}_{23}\text{N}_5\text{O}_4$ 385.422

Adenosine receptor agonist.

(1''R)-form [38594-96-6]

Mp 143-145°. The pharmacologically more active isomer.

(1''S)-form [38594-97-7]

Mp 105-112°.

(1''RS)-form

Mp 141-142°.

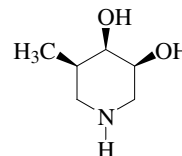
U.K. Pat., 1968, 1 123 245; *CA*, **69**, 87018h (synth)

Bridges, A.J. *et al.*, *J. Med. Chem.*, 1987, **30**, 1709-1711 (synth)

5-Methyl-3,4-piperidinediol, 9CI

M-279

3,4-Dihydroxy-5-methylpiperidine. 2-C-Methyl-1,2,5-trideoxy-1,5-iminopentitol



$\text{C}_6\text{H}_{13}\text{NO}_2$ 131.174

(3S,4R,5R)-form

L-ribo-form. 2-C-Methyl-1,2,5-trideoxy-1,5-imino-L-ribitol

[186204-76-2] α -Fucosidase inhibitor.

Hydrochloride: [176485-25-9]

$[\alpha]_D^{25} -6.3$ (c, 0.75 in H_2O).

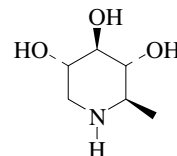
Hansen, A. *et al.*, *Chem. Comm.*, 1996, 2649-2650 (synth, pmr, cmr, use)

Hansen, A. *et al.*, *Tetrahedron*, 1997, **53**, 697-706 (synth)

2-Methyl-3,4,5-piperidinetriol, 9CI

M-280

3,4,5-Trihydroxy-2-methylpiperidine. 1,5-Imino-1,5,6-trideoxyhexitol



$\text{C}_6\text{H}_{13}\text{NO}_3$ 147.174

(2R,3R,4R,5S)-form

1,5-Imino-1,5,6-trideoxy-D-glucitol. 1,6-Dideoxynojirimycin

Alkaloid from the pods of *Angylocalyx pynaertii*.

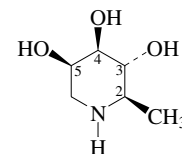
$[\alpha]_D +37.8$ (c, 0.26 in H_2O).

Yasuda, K. *et al.*, *J. Nat. Prod.*, 2002, **65**, 198-202 (isol, pmr, cmr)

2-Methyl-3,4,5-piperidinetriol

M-281

1,5,6-Trideoxy-1,5-iminohexitol



(2R,3R,4R,5R)-form

$\text{C}_6\text{H}_{13}\text{NO}_3$ 147.174

(2R,3R,4R,5R)-form

1,5,6-Trideoxy-1,5-imino-D-mannitol. 1-Deoxy-D-rhamnojirimycin. 1,5-Dideoxy-1,5-imino-D-rhammitol

[134735-70-9]

$[\alpha]_D^{23} -4$ (c, 2.5 in H_2O).

Hydrochloride: [142204-08-8]

Solid. Mp 247-248° dec. $[\alpha]_D^{20} -35.7$ (c, 0.6 in H_2O).

Rearrangement product of D-glucose under mild conditions (Ca(OH)₂ aq. at r.t., 10% yield). V. inexpensive synthon for chiral molecules. Mp 160-161°. [α]_D²⁰ +93 (H₂O).

1,4-Lactone, 2,3,5-tri-Ac: [23669-83-2]
C₁₂H₁₆O₈ 288.254
Syrup. Bp_{0.01} 120° (bath). [α]_D²⁰ +146.5 (c, 0.5 in EtOH).

1,4-Lactone, 2,3,5-tribenzoyl: [7392-74-7]
C₂₇H₃₂O₈ 474.466
Mp 139-140°. [α]_D²⁰ +122.5 (c, 0.5 in EtOH).

1,4-Lactone, 2,3-O-isopropylidene: [23709-41-3]
C₉H₁₄O₅ 202.207
Mp 57-58°. [α]_D²⁰ -44 (c, 0.5 in EtOH).

4,5-Anhydro, Me ester: Methyl 4,5-anhydro-2-C-methyl-D-ribonate [85994-63-4]
C₇H₁₂O₅ 176.169
[α]_D²³ -8.2 (c, 4.29 in CHCl₃).

4,5-Anhydro, 2,3-isopropylidene, Me ester: Methyl 4,5-anhydro-2,3-O-isopropylidene-2-C-methyl-D-ribonate
C₁₀H₁₆O₅ 216.233
Oil. Bp₁₂ 123-127°. [α]_D²³ -8.2 (c, 4.3 in CDCl₃).

L-form

1,4-Lactone: 2-C-Methyl-L-ribo-1,4-lactone [19774-08-4]
C₆H₁₀O₅ 162.142
Cryst. (MeCN). Mp 159-160°. [α]_D -91.1 (c, 1.2 in H₂O).

DL-form

Et ester: [93636-16-9]
C₈H₁₆O₆ 208.211
Mp 125-127°.

1,4-Lactone: 2-C-Methyl-DL-ribo-1,4-lactone [86204-17-3]
C₆H₁₀O₅ 162.142
Mp 155-156°.

Green, J.W. *et al.*, *J.A.C.S.*, 1956, **78**, 1894, (D-anilide)

Sowden, J.C. *et al.*, *Adv. Carbohydr. Chem.*, 1957, **12**, 35 (rev)

Sowden, J.C. *et al.*, *J.A.C.S.*, 1957, **79**, 6450; 1963, **83**, 3707 (D-lactone, 4,5-anhydro)

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 484 (D-lactone)

Ferrier, R.J. *et al.*, *J.C.S. (C)*, 1968, 1091, (L-lactone)

Novák, J.J.K. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 857 (D-lactone, D-lactone isopropylidene, D-lactone tri-Ac, D-lactone tribenzoyl)

Petersson, G. *et al.*, *Org. Mass Spectrom.*, 1972, **6**, 577

Hoffman, R.W. *et al.*, *Chem. Ber.*, 1983, **116**, 1631 (4,5-anhydro)

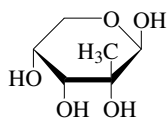
Ireland, R.E. *et al.*, *J.A.C.S.*, 1983, **105**, 1988 (L-lactone 2,3-isopropylidene)

Lopez Aparicio, F.J. *et al.*, *Carbohydr. Res.*, 1984, **129**, 99 (DL-form)

Shalaby, M.A. *et al.*, *Carbohydr. Res.*, 1994, **264**, 191 (cryst struct, D-lactone)

López-Herrera, F.J. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 767-775 (D-1,4-lactone, synth)

2-C-Methylribose



C₆H₁₂O₅ 164.158

D-form

Cryst. (prev. descr. as syrup). Mp 93-95°. [α]_D²³ -12 (c, 0.9 in H₂O).

Tosylhydrazone:

Cryst. (EtOH). Mp 169.5-170°. [α]_D²² +1.8 (c, 0.5 in Py).

β-D-Pyranose-form

Benzyl glycoside: Benzyl 2-C-methyl-β-D-ribofuranoside
C₁₃H₁₈O₅ 254.282
Cryst. (THF/hexane). Mp 109-110.5°. [α]_D -120 (c, 1.0 in Me₂CO).

D-Furanose-form [23669-84-3]

Cryst. (2-propanol). Mp 93-95°. [α]_D²⁰ -23.6 (c, 0.62 in H₂O) (equilib.).

2,3-Carbonate: 2-C-Methyl-D-ribofuranose 2,3-O-carbonate [23661-05-4]
C₇H₁₀O₆ 190.152
Cryst. (EtOAc). Mp 113°.

Tetrazabenzoyl: 1,2,3,5-Tetra-O-benzoyl-2-C-methyl-β-D-ribofuranose [15397-15-6]
C₃₄H₂₈O₉ 580.59
Cryst. Mp 159-160°. [α]_D +68 (c, 1 in CHCl₃).

β-D-Furanose-form

Me glycoside: Methyl 2-C-methyl-β-D-ribofuranoside [23669-86-5]
C₇H₁₄O₅ 178.185
Cryst. (MeOH). Mp 109°. [α]_D²⁰ -82.1 (c, 0.5 in EtOH).

L-form

Syrup. [α]_D²⁰ +111 (c, 0.9 in EtOH).

Tosylhydrazone: [19774-07-3]

Cryst. (MeOH). Mp 169-170°. [α]_D²⁰ +9.3 (c, 1.1 in Py).

β-L-Pyranose-form

Me glycoside: Methyl 2-C-methyl-β-L-ribofuranoside [19774-05-1]
C₇H₁₄O₅ 178.185
Cryst. (Et₂O). Mp 58-59°. [α]_D²⁰ +173.8 (c, 0.5 in MeOH).

Benzyl glycoside, 3,4-isopropylidene:

Benzyl 3,4-O-isopropylidene-2-C-methyl-β-L-ribofuranoside [87598-88-7]
C₁₆H₂₂O₅ 294.347
Liq. Bp_{0.005} 100° (bath). [α]_D²⁵ +186.5 (c, 1.0 in CHCl₃).

Feast, A.A.J. *et al.*, *Acta Chem. Scand.*, 1965, **19**, 1127 (synth, D-form)

Walton, E. *et al.*, *J.A.C.S.*, 1966, **88**, 4524, (D-fur-tetrazabenzoyl)

Ferrier, R.J. *et al.*, *J.C.S. (C)*, 1968, 1091, (L-form, synth, β-L-Me pyr)

M-286

β-D-Pyranose-form

Jenkins, S.R. *et al.*, *J.O.C.*, 1968, **33**, 2490, (D-fur-tetrazabenzoyl)
Novák, J.J.K. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 857 (D-fur form, D-carbonate, β-D-Me fur)
Ireland, R.E. *et al.*, *J.O.C.*, 1983, **48**, 5186 (Benzyl β-L-pyr isopropylidene)
Eilitz, U. *et al.*, *J. Het. Chem.*, 2003, **40**, 329-335 (synth, D-form, 3-D-benzyl pyr)

11-(Methylsulfinyl)undecyl glucosinolate M-287

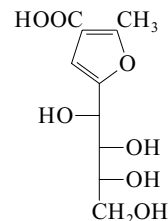
MeSO(CH₂)₁₁C(SGlc)=NOSO₃H

C₁₉H₃₇NO₁₀S₃ 535.7

Present in seeds of *Neslia paniculata*.

Kjaer, A. *et al.*, *Phytochemistry*, 1972, **11**, 3045 (occur)

2-Methyl-5-(1,2,3,4-tetrahydroxybutyl)-3-furancarboxylic acid M-288



C₁₀H₁₄O₇ 246.216

(1'S,2'R,3'R)-form

D-arabino-form

Tetrakis(3-pyridinecarbonyl), Me ester: Nicofurate, INN. Arteriolase. GN 3.

Tetnicoran

[4397-91-5]

C₃₅H₂₈N₄O₁₁ 680.626

No longer marketed

Vasodilator, antilipidaemic agent. Cryst. (MeOH/Et₂O). Mp 122.5-124°. Log P 2.56 (uncertain value) (calc).

Fr. Pat., 1965, 1 404 748, (Fujisawa Pharm); *CA*, **64**, 712d (synth)

Martindale, *The Extra Pharmacopoeia*, 28th/29th edn., Pharmaceutical Press, 1982, 13010

4-(Methylthio)-3-butenyl glucosinolate M-289

1-Thio-β-D-glucopyranose 1-[5-(methylthio)-N-(sulfoxy)-4-pentenimide], 9CI. Glucoraphasatin. Glucosehydroerucin [28463-23-2]
MeSCH=CHCH₂CH₂C(SGlc)=NO-SO₃H
C₁₂H₂₁NO₉S₃ 419.497

Isol. from *Matthiola fruticulosa*.

S-Oxide: 4-(Methylsulfinyl)-3-butenyl glucosinolate. Glucoraphenin [28463-24-3]

C₁₂H₂₁NO₁₀S₃ 435.497

Isol. from *Matthiola bicornis* and *Matthiola fruticulosa*. Needles +H₂O(EtOH) (as tetra-Ac, K salt).

Mp 155-156° (tetra-Ac, K salt). [α]_D²⁷ -23.5 (c, 1.5 in H₂O) (tetra-Ac, K salt).

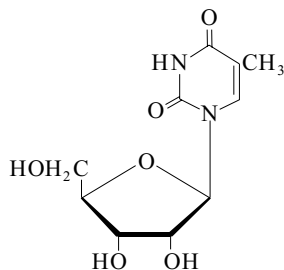
6'-(4-Hydroxy-3,5-dimethoxycinnamoyl), S-oxide: 6-Sinapoylglucoraphenin

[76653-80-0]

C₂₃H₃₁NO₁₄S₃ 641.694

5-Methyluridine **M-302**

Thymine riboside. Ribothymidine. Ribosylthymine
[1463-10-1]



$C_{10}H_{14}N_2O_6$ 258.23

Occurs widely as a modified nucleoside in transfer ribonucleic acids. Cryst. (EtOH). Mp 183-185° (177.5-178.5°). $[\alpha]_D^{23}$ -8 (c, 2.3 in H_2O).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 371C (nmr)

Fox, J.J. et al., J.A.C.S., 1956, **78**, 2117 (synth)

Wittenburg, E. et al., Chem. Ber., 1968, **101**, 1095 (synth)

Watanabe, K.A. et al., J. Het. Chem., 1969, **6**, 109 (synth)

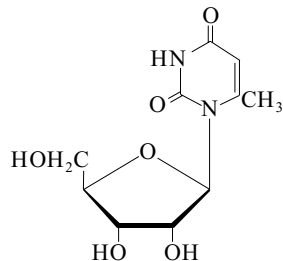
Jones, S.S. et al., Synthesis, 1982, 259 (synth)

Tanaka, H. et al., Tetrahedron, 1986, **42**, 4187 (synth, pmr)

Pfister, M. et al., Helv. Chim. Acta, 1995, **78**, 1705 (synth)

6-Methyluridine, 9CI, 8CI **M-303**

[16710-13-7]



$C_{10}H_{14}N_2O_6$ 258.23

Cryst. (MeOH/EtOAc). Mp 177-178°. $[\alpha]_D^{30}$ -28.6 (c, 1.52 in H_2O). λ_{max} 261 (ε 11 200) (pH 11), 262 (9 400) (pH 11), 264 nm (7 900) (pH 14).

2',3',5'-Tri-Ac:

$C_{16}H_{20}N_2O_9$ 384.342

Mp 152-153°.

2',3',5'-Tribenzoyl:

$C_{31}H_{26}N_2O_9$ 570.554

Cryst. (CH_2Cl_2 /pentane). Mp 126-129°. $[\alpha]_D^{20}$ -5 (c, 1.0 in $CHCl_3$).

3N-Me: 3,6-Dimethyluridine

$C_{11}H_{16}N_2O_6$ 272.257

Mp 155-157°. λ_{max} 261 (ε 9 120), 206 nm (8 128) (pH 7).

3N-Benzyl:

$C_{17}H_{20}N_2O_6$ 348.355

Syrup. λ_{max} 263 (ε 12 590), 210 nm (16 600) (pH 7).

Winkley, M.W. et al., J.O.C., 1968, **33**, 2822 (synth)

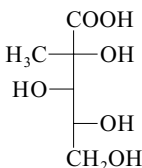
Prystaš, M. et al., Coll. Czech. Chem. Comm., 1969, **34**, 2316 (synth, pmr)

Suck, D. et al., J.A.C.S., 1972, **94**, 6520 (cryst struct)

Klein, R.S. et al., J.O.C., 1972, **37**, 4381 (synth)

Schweizer, M.P. et al., J.A.C.S., 1973, **95**, 3770 (pmr, cmr)

Niedballa, U. et al., J.O.C., 1974, **39**, 3660 (tribenzoyl)

2-C-Methylxylic acid **M-304**

$C_6H_{12}O_6$ 180.157

D-form

1,4-Lactone: 2-C-Methyl-D-xylono-1,4-lactone

$C_6H_{10}O_5$ 162.142

Cryst. (EtOAc). Mp 162-164°. $[\alpha]_D$ +96.5 (c, 3.5 in H_2O).

1,4-Lactone, 3,5-Isopropylidene: 3,5-O-Isopropylidene-2-C-methyl-D-xylono-1,4-lactone

$C_9H_{14}O_5$ 202.207

Mp 153-154°. $[\alpha]_D$ +69 (c, 0.9 in $CHCl_3$).

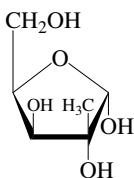
1,4-Lactone, 3,5-Isopropylidene, 2-Ac: 2-O-Acetyl-3,5-O-isopropylidene-2-C-methyl-D-xylono-1,4-lactone

$C_{11}H_{16}O_6$ 244.244

Mp 88-90°. $[\alpha]_D$ +53 (c, 0.8 in $CHCl_3$).

Novak, J.J.K. et al., Coll. Czech. Chem. Comm., 1974, **39**, 869 (lactone)

Lopez Aparicio, F.J. et al., Carbohydr. Res., 1984, **129**, 99 (lactone derivs)

2-C-Methylxylose **M-305**

$C_6H_{12}O_5$ 164.158

D-form

Syrup. $[\alpha]_D$ +1 (c, 1.1 in H_2O).

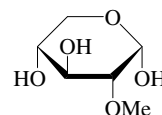
alpha-D-Furanose-form

1,2:3,5-Diisopropylidene: 1,2:3,5-Di-O-isopropylidene-2-C-methyl-alpha-D-xylofuranose

$C_{12}H_{20}O_5$ 244.287

Cryst. Mp 132-134°. $[\alpha]_D$ +18 (c, 1.1 in $CHCl_3$).

Cubero, I.I. et al., Carbohydr. Res., 1982, **105**, 181 (synth, pmr)

2-O-Methylxylose **M-306**

$C_6H_{12}O_5$ 164.158

D-form [7434-28-8]

Isol. from hydrol. of *Prunus domestica* (plum) polysaccharides. Mp 137-138°. $[\alpha]_D$ -21 → +34 (2 hr.) (H_2O).

Di-Et dithioacetal: [54623-12-0]

$C_{10}H_{22}O_4S_2$ 270.413

Cryst. (petrol). Mp 60-61°. $[\alpha]_D^{21}$ +3 (c, 2.6 in $CHCl_3$).

5-Me: 2,5-Di-O-methyl-D-xylose

$C_7H_{14}O_5$ 178.185

Syrup. $[\alpha]_D$ +46 (H_2O).

3,4-Di-Me: 2,3,4-Tri-O-methyl-D-xylose [4060-04-2]

$C_8H_{16}O_5$ 192.211

Mp 91-92°. $[\alpha]_D$ +16 (c, 1.5 in MeOH).

alpha-D-Pyranose-form

Tribenzoyl: 1,3,4-Tri-O-benzoyl-2-O-methyl-alpha-D-xylopyranose [38791-45-6]

$C_{27}H_{24}O_8$ 476.482

Mp 93-95°. $[\alpha]_D^{26}$ -84.1 (c, 1.4 in $CHCl_3$).

3-Me: 2,3-Di-O-methyl-alpha-D-xylopyranose

$C_7H_{14}O_5$ 178.185

Mp 79-80°. $[\alpha]_D$ +70 → +23 (24 hr.) (H_2O).

beta-D-Pyranose-form

Mp 131°. $[\alpha]_D$ -21 → +23.8 (1 d) (EtOH).

Tri-Ac: 1,3,4-Tri-O-acetyl-2-O-methyl-beta-D-xylopyranose

$C_{12}H_{18}O_8$ 290.269

Mp 95°. $[\alpha]_D$ -2.2 ($CHCl_3$).

4-Me: 2,4-Di-O-methyl-beta-D-xylopyranose

$C_7H_{14}O_5$ 178.185

Mp 116-118° (108°). $[\alpha]_D$ -30 → +22 (H_2O). $[\alpha]_D$ -26 ($CHCl_3$).

Me glycoside: Methyl 2-O-methyl-beta-D-xylopyranoside

$C_7H_{14}O_5$ 178.185

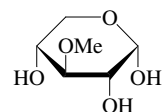
Mp 111-112°. $[\alpha]_D$ -70 (c, 0.23 in $CHCl_3$).

Ehrenthal, I. et al., J.A.C.S., 1954, **76**, 5509, (D-form, beta-D-Me pyr)

Maher, G.G. et al., Adv. Carbohydr. Chem., 1955, **10**, 257 (rev, derivs)

Andrews, P. et al., Chem. Ind. (London), 1956, 1278 (D-form, isol)

van Es, T. et al., Carbohydr. Res., 1974, **37**, 373 (D-di-Et dithioacetal)

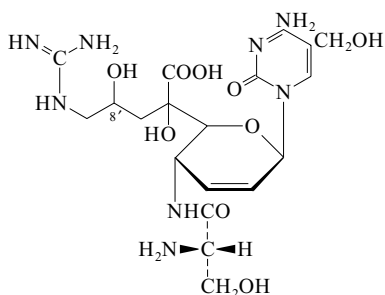
3-O-Methylxylose **M-307**

$C_6H_{12}O_5$ 164.158

- (Derep). λ_{\max} 244 (ϵ 9000); 307 (ϵ 6000) (0.1N NaOH) (Derep). λ_{\max} 218 (ϵ 22900); 244 (ϵ 6580); 307 (ϵ 6770) (HCl salt/H₂O) (Derep). λ_{\max} 218 (ϵ 21200); 244 (ϵ 6100); 307 (ϵ 6320) (H₂O) (Berdy). λ_{\max} 223 (E1%/1cm 568); 314 (E1%/1cm 66) (HCl) (Berdy).
- LD₅₀ (mus, ivn) 5 - 10 mg/kg.
- N³-Deoxy; hydrochloride: [12626-15-2]
Mp 215-218° dec. $[\alpha]_D^{20}$ -63 (c, 1 in H₂O).
- PY5248000
- Tsuruoka, T. *et al.*, *Meiji Seika Kenkyu Nenpo*, 1967, **9**, 1; *CA*, **69**, 26025 (isol)
Japan. Pat., 1971, 71 34 198; *CA*, **76**, 12828 (isol)
- Seto, H. *et al.*, *Tet. Lett.*, 1983, **24**, 1805 (struct, pmr, cmr, uv)
- Hara, K. *et al.*, *Carbohydr. Res.*, 1987, **159**, 65 (partial synth)
- Rauter, A. *et al.*, *Carbohydr. Res.*, 2000, **325**, 1-15 (partial synth)

Mildiomycin**M-312**

B 98891. Antibiotic B 98891
[67527-71-3]



C₁₉H₃₀N₈O₉ 514.494

Nucleoside antibiotic. Isol. from *Streptovorticillium rimofaciens*. Active against gram-positive and -negative bacteria, yeasts and fungi. Fungicide against powdery mildew. Sol. H₂O; fairly sol. Py, DMSO, dioxan, THF; poorly sol. MeOH, hexane.

Mp 300° dec. $[\alpha]_D^{23}$ +100 (c, 1 in H₂O). λ_{\max} 266 (ϵ 8470) (MeOH/HCl) (Derep). λ_{\max} (MeOH) (Derep). λ_{\max} 284 (ϵ 9380) (MeOH) (Derep). λ_{\max} 271 (E1%/1cm 157) (pH 7 buffer) (Berdy). λ_{\max} 271 (E1%/1cm 154) (NaOH) (Berdy). λ_{\max} 280 (E1%/1cm 247) (HCl) (Berdy). λ_{\max} 271 (ϵ 8720) (H₂O) (Berdy).

► LD₅₀ (mus, ivn) 500 - 1500 mg/kg, LD₅₀ (mus, orl) 5000 mg/kg. PY6140000

8'-Deoxy: **Mildiomycin D**
[86432-24-8]

C₁₉H₃₀N₈O₈ 498.495

Isol. from *Streptovorticillium rimofaciens*. Weakly active against gram-positive and -negative bacteria, phytopathogenic fungi and some yeasts. Powder + 2H₂O. Sol. H₂O; poorly sol. MeOH, hexane.

Mp 210° dec. $[\alpha]_D^{20}$ +119.4 (c, 1 in H₂O). λ_{\max} 266 (ϵ 8470) (MeOH/HCl) (Derep). λ_{\max} 284 (ϵ 9380) (MeOH) (Derep). λ_{\max} 271 (ϵ 9100) (H₂O) (Berdy). λ_{\max} 271 (ϵ 9100) (NaOH) (Berdy). λ_{\max} 280 (ϵ 13600) (HCl) (Berdy).

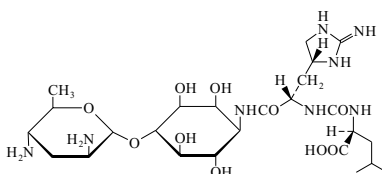
► LD₅₀ (mus, ipr) 1000 - 3000 mg/kg.
UP5960000

[78162-87-5, 78162-88-6, 78162-89-7
78162-90-0, 78162-91-1]

Harada, S. *et al.*, *Tetrahedron*, 1981, **37**, 1317
Tashiro, S. *et al.*, *Agric. Biol. Chem.*, 1984, **48**, 881 (isol, uv, pmr, cmr, deriv)
Sawada, H. *et al.*, *J. Ferment. Technol.*, 1984, **62**, 537 (analogues)
Feduchi, E. *et al.*, *J. Antibiot.*, 1985, **38**, 415
Sawada, H. *et al.*, *J. Ferment. Technol.*, 1985, **63**, 17; *CA*, **102**, 145879c (biosynth)
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MQU000

Minosaminomycin**M-313**

[51746-09-9]



C₂₅H₄₆N₈O₁₀ 618.686

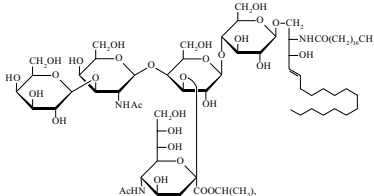
Aminoglycoside antibiotic. Isol. from *Actinomyces aureomonopodrales*. Active against mycobacteria. Amorph. powder. Sol. H₂O; poorly sol. butanol, hexane. Mp 225-260° dec. $[\alpha]_D^{22}$ +30 (c, 1 in H₂O).

► LD₅₀ (mus, ivn) 50 - 100 mg/kg.
NM7522500

Hamada, M. *et al.*, *J. Antibiot.*, 1974, **27**, 81 (isol, ir, uv, nmr)
Inuma, K. *et al.*, *J. Antibiot.*, 1975, **28**, 613 (struct, ir, nmr)
Inuma, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1977, **50**, 1850 (synth)
Kambara, H. *et al.*, *J. Antibiot.*, 1982, **35**, 67 (ms)

Mipragoside, INN**M-314**

AGF 44
[131129-98-1]



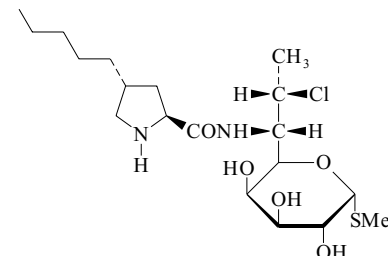
C₇₆H₁₃₇N₃O₃₁ 1588.92

Semisynthetic ganglioside deriv. Antiinflammatory and antinociceptive agent. Log P 2.66 (uncertain value) (calc).

Amico-Roxas, M. *et al.*, *Drugs Exp. Clin. Res.*, 1992, **18**, 251 (pharmacol)
Bucolo, C. *et al.*, *J. Ocul. Pharmacol.*, 1993, **9**, 321 (pharmacol)
Malmberg, A.B. *et al.*, *Neurosci. Lett.*, 1993, **161**, 45 (pharmacol)

Mirincamycin, INN**M-315**

Methyl-7-chloro-6,7,8-trideoxy-6-[[(4-pentyl-2-pyrrolidinyl) carbonyl] amino]-1-thio-galacto-octopyranoside, 9CI. 7-Chloro-N-demethyl-7-deoxy-3'-depropyl-3'-pentyllincomycin
[31101-25-4]



C₁₉H₃₅ClN₂O₅S 439.015

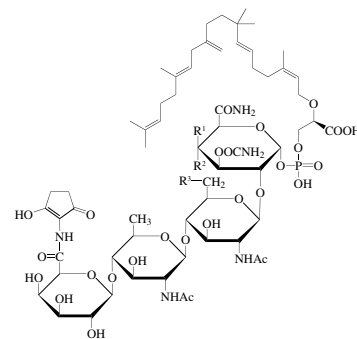
Synthetic. Antibacterial, antimalarial agent. Log P 1.22 (uncertain value) (calc). Related to Lincomycin, L-41.

Hydrochloride: **Mirincamycin hydrochloride, USAN**. U 24729A. Antibiotic U 24729A
[8063-91-0]

Matsen, J.M. *et al.*, *J. Lab. Clin. Med.*, 1971, **77**, 378 (pharmacol)
Magerlein, B.J. *et al.*, *J. Med. Chem.*, 1972, **15**, 1255 (synth, props, resolt)

Moenomycin**M-316**

Bambermycin, BAN, INN. Bambermycins, USAN. Flavofosfolipol. Flavomycin. Flavophospholipol



Moenomycin A. R¹ = CH₃, R² = OH, R³ = OGlc
A₁₂. R¹ = OH, R² = H, R³ = OGlc
C₁. R¹ = OH, R² = R³ = H
C₃. R¹ = CH₃, R² = OH, R³ = H
C₄. R¹ = CH₃, R² = R³ = OH

Phosphoglycolipid antibiotic complex.

Strain also produces Moenomycins B₁ and B₂, later sepd. into Moenomycins D-H. The marketed drug Bambermycin consists of a purified mixt. of Moenomycins A and C. Prod. by *Streptomyces bambergensis*. Antibiotic used in animal nutrition.

Moenomycin A [76095-39-1]

C₆₉H₁₀₈N₅O₃₄P 1582.599

Mp 184-185°. λ_{\max} 246 (ϵ 12300) (0.1N HCl) (Derep). λ_{\max} 258 (ϵ 16700) (H₂O at pH 12) (Derep). λ_{\max} 258 (ϵ 16700) (H₂O pH 7) (Derep).

Na salt: $[\alpha]_D^{23}$ +4 (c, 1 in H₂O).

Moenomycin A₁₂ [162895-32-1]
C₆₈H₁₀₆N₅O₃₄P 1568.572
Sol. MeOH. λ_{max} 258 (MeOH) (Berdy).

Moenomycin C₁ [152509-74-5]
C₆₂H₉₆N₅O₂₈P 1390.431
From *Streptomyces* sp. Active against gram-positive and weakly against gram-negative bacteria. Sol. H₂O. Mp 178-179°. [α]_D²³ +4 (c, 1 in H₂O). Props. refer to Moenomycin C complex which includes other Moenomycin C's below. λ_{max} 258 (MeOH) (Berdy).

Moenomycin C₃ [123589-03-7]
C₆₃H₉₈N₅O₂₈P 1404.458
Component of Moenomycin C from *Streptomyces* sp. Sol. MeOH. λ_{max} 259 (ε 21000) (MeOH) (Berdy). λ_{max} 243 (ε 12000) (MeOH/NaOH) (Berdy).

Moenomycin C₄ [149633-74-9]
C₆₃H₉₈N₅O₂₉P 1420.457
Component of Moenomycin C from *Streptomyces* sp. Sol. MeOH. λ_{max} 259 (ε 21000) (MeOH) (Berdy). λ_{max} 243 (ε 12000) (MeOH/HCl) (Berdy).
6^E-Hydroxy: See Pholipomycin in *The Combined Chemical Dictionary*.

[11015-37-5]

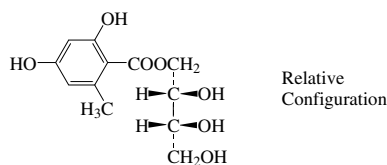
Huber, G. *et al.*, *Antibiotics*, (Hahn, E.E. Ed.), Springer, Berlin, 1979, **51**, 135 (rev)
Welzel, P. *et al.*, *Angew. Chem., Int. Ed.*, 1981, **20**, 121 (isol, pmr, struct)
Welzel, P. *et al.*, *Tetrahedron*, 1983, **39**, 1583; 2219 (isol, uv, cmr)
Ger. Pat., 1988, 3 704 659; CA, **111**, 230656 (Moenomycin C₃)
Fehlhaber, H.W. *et al.*, *Tetrahedron*, 1990, **46**, 1557 (ms, struct)
Metten, K.-H. *et al.*, *Tetrahedron*, 1992, **48**, 8401
Scherkenbeck, J. *et al.*, *Tetrahedron*, 1993, **49**, 3091 (Moenomycins C₃, C₄)
Hessler-Klitz, M. *et al.*, *Tetrahedron*, 1993, **49**, 7667 (Moenomycin C₁)
Donnerstag, A. *et al.*, *Tetrahedron*, 1995, **51**, 1931 (Moenomycin A12)
Donnerstag, A. *et al.*, *Magn. Reson. Chem.*, 1996, **34**, 1031-1035 (pmr)
Subramaniam-Niehaus, B. *et al.*, *Z. Naturforsch., C*, 1997, **52**, 217 (isol, biosynth)
Hennig, L. *et al.*, *Magn. Reson. Chem.*, 1998, **36**, 615-620 (pmr)
Endler, K. *et al.*, *Tet. Lett.*, 1998, **39**, 13-16 (biosynth)
Schuricht, U. *et al.*, *J. Prakt. Chem.*, 2000, **342**, 761-772 (biosynth)
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MRA250

Monastatin **M-317**
Glycoprotein. Isol. from *Alteromonas* B-10-31 isol. from nearshore seawater of Japan. Alkaline protease inhibitor.
Imada, C. *et al.*, *Can. J. Microbiol.*, 1985, **31**, 1089-1094 (isol)

Monguine **M-318**
[106388-34-5]
Glycoprotein, MW 9000, with a high content of Asp/Asn and Glu/Gln. Isol. from seeds of *Croton mongue*. Shows antitumour activity. λ_{max} 228; 280 (H₂O) (Berdy).
► LD₅₀ (mus, ipr) 0.035 mg/kg.

Ralison, C. *et al.*, *Biochimie*, 1986, **68**, 1225-1230 (isol)

Montagnetol **M-319**
Erythrityl orsellinate. Pikroerythrin



C₁₂H₁₆O₇ 272.254

(+)-*form*
Constit. of *Rocella montagnei*.
Mp 135-136°. [α]_D +16 (H₂O). Racemises readily.

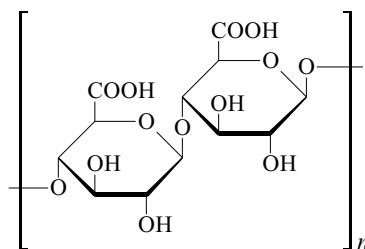
(±)-*form*
Mp 156-157°. λ_{max} 262 (log ε 3.9); 298 (log ε 4.3) (MeOH).
Rao, S. *et al.*, *Proc. - Indian Acad. Sci., Sect. A*, 1941, **13**, 199; 1942, **15**, 18; 429
Manaktala, S.K. *et al.*, *Tetrahedron*, 1966, **22**, 2373 (synth)

Mucoran **M-320**
[9083-39-0]

Heteropolymer of D-glucuronic acid, D-mann and L-fuc, ratio 5:3:2, with small amounts of Gal and Glu. Isol. from cell walls of *Mucor rouxii*. [α]_D²³ +48 (c, 1.0 in H₂O).

Bartnicki-Garcia, S. *et al.*, *Carbohydr. Res.*, 1972, **23**, 75 (isol, struct)
Dow, J.M. *et al.*, *J. Bacteriol.*, 1983, **155**, 1088 (isol)

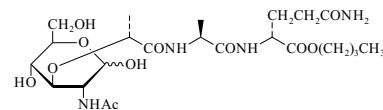
Mucoric acid **M-321**
Poly-β-(1 → 4)-D-glucuronic acid
[94896-57-8]



Isol. from cell walls of *Mucor rouxii* and other zygomycetes. Also isol. from *Trichosporon cutaneum*.
Tan powder. [α]_D²³ -56 (c, 1.0 in 0.1M NaOH).

Bartnicki-Garcia, S. *et al.*, *Biochim. Biophys. Acta*, 1968, **170**, 54 (isol, struct)
Dow, J.M. *et al.*, *J. Bacteriol.*, 1983, **155**, 1088 (isol)
Camacho-Aguero, S. *et al.*, *Exp. Mycol.*, 1990, **14**, 227 (isol)
Depree, J. *et al.*, *J. Gen. Microbiol.*, 1993, **139**, 2123 (isol, pmr)

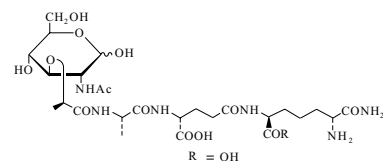
Murabutide, INN **M-322**
N²-[N-(N-Acetylmuramoyl)-L-alanyl]-D-glutamine butyl ester, 9CI
[74817-61-1]



C₂₃H₄₀N₄O₁₁ 548.589
Immunomodulator. [α]_D²⁰ +35 (c, 1.0 in AcOH). Log P -3.18 (calc).

Eur. Pat., 1979, 6 068; CA, **93**, 132812w (synth, pharmacol)
Lafrancier, P. *et al.*, *J. Med. Chem.*, 1982, **25**, 87 (synth, pharmacol)
Femandjian, S. *et al.*, *Carbohydr. Res.*, 1987, **162**, 23 (pmr)
Auci, D.L. *et al.*, *Immunopharmacology*, 1993, **26**, 157 (pharmacol)

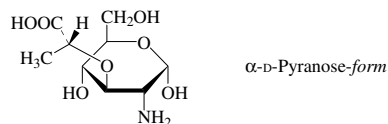
Muracein A **M-323**
[90965-60-9]



C₂₆H₄₄N₆O₁₄ 664.665
Glycopeptide antibiotic. Isol. from *Nocardia orientalis*. Inhibits angiotensin converting enzyme. Powder. Sol. H₂O. Mp 171-174° dec. [α]_D²⁵ +6.7 (c, 0.46 in H₂O).

Bush, K. *et al.*, *J. Antibiot.*, 1984, **37**, 330 (isol, props)
Singh, P.D. *et al.*, *J. Antibiot.*, 1984, **37**, 336 (pmr, cmr, struct)

Muramic acid **M-324**
2-Amino-3-O-(1-carboxyethyl)-2-deoxyglucose, 9CI. 3-O-(1-Carboxyethyl)-glucosamine



C₉H₁₇NO₇ 251.236

D-form [1114-41-6]
Component of bacterial cell walls. Cryst. (EtOH aq.).
Mp 160-162° dec. [α]_D²² +146 → +116 (c, 0.57 in H₂O).

N-Ac: Acetylmuramic acid
[10597-89-4]
C₁₁H₁₉NO₈ 293.273

Component of bacterial cell walls. Prisms (EtOAc/MeOH).
Mp 119-120°. [α]_D²⁰ +60 → +40 (c, 1.2 in H₂O).

l'-Epimer: Isomuramic acid
C₉H₁₇NO₇ 251.236
Mp 130-131°. [α]_D²⁵ +40 (c, 0.8 in H₂O).

1'-Epimer, N-Ac: N-Acetylismuramic acid
 $C_{11}H_{19}NO_8$ 293.273
 Component of the O-specific polysaccharide of *Proteus penneri*.
 $[\alpha]_D -28.7$. $[\alpha]_D -6$ (H_2O).

α -D-Pyranose-form

Me glycoside, N-Ac: Methyl 2-acetamido-3-O-(1-carboxyethyl)-2-deoxy- α -D-glucopyranoside
 Mp 303° dec. (as K salt). $[\alpha]_D^{25} +111$ (c, 0.27 in H_2O).

Me glycoside, 4,6-O-benzylidene, N-Ac: Methyl 2-acetamido-4,6-O-benzylidene-3-O-(1-carboxyethyl)-2-deoxy- α -D-glucopyranoside, 9CI

$C_{19}H_{25}NO_8$ 395.408
 Cryst. (MeOH). Mp 263-266°. $[\alpha]_D^{25} +107$ (c, 0.17 in EtOH).

Benzyl glycoside, N-Ac: Benzyl 2-acetamido-3-O-(1-carboxyethyl)-2-deoxy- α -D-glucopyranoside
 $C_{18}H_{25}NO_8$ 383.397
 Needles (MeOH/EtOAc). Mp 162-163°. $[\alpha]_D^{25} +168$ (c, 0.62 in MeOH).

Benzyl glycoside, N-Ac, Me ester:
 $C_{19}H_{27}NO_8$ 397.424
 Mp 136°. $[\alpha]_D^{20} +151$ (c, 1 in $CHCl_3$).

Benzyl glycoside, N-Ac, Me ester, 6-mesyl:
 $C_{20}H_{29}NO_{10}S$ 475.516
 $[\alpha]_D^{20} +117$ (c, 0.3 in $CHCl_3$).

Benzyl glycoside, 4,6-O-benzylidene, N-Ac: Benzyl 2-acetamido-4,6-O-benzylidene-3-O-(1-carboxyethyl)-2-deoxy- α -D-glucopyranoside
 $C_{25}H_{29}NO_8$ 471.506
 Cryst. (MeOH). Mp 243-244°. $[\alpha]_D^{22} +98$ (c, 0.63 in MeOH).

Benzyl glycoside, 4,6-O-benzylidene, N-Ac, Me ester:
 $C_{26}H_{31}NO_8$ 485.533
 Cryst. (MeOH). Mp 213-214°. $[\alpha]_D^{25} +100$ (c, 1.1 in $CHCl_3$).

[40461-66-3, 40525-29-9]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 597B; 758B (ir)

Kent, L.H. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 250 (isol)

Biochem. Prep., 1963, **10**, 109 (synth, Me gly N-Ac salt, Me gly benzylidene N-Ac)

Lambert, R. *et al.*, *Arch. Biochem. Biophys.*, 1965, **110**, 341 (biosynth)

Osawa, T. *et al.*, *J.O.C.*, 1965, **30**, 448 (synth, N-Ac, benzyl gly N-Ac, benzyl gly N-Ac Me ester, benzyl gly benzylidene N-Ac Me ester, benzyl gly benzylidene N-Ac)

Knox, J.R. *et al.*, *Acta Cryst. B*, 1974, **30**, 365
 Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1980, **79**, C20 (benzyl gly N-Ac Me ester, benzyl gly N-Ac Me ester mesyl)

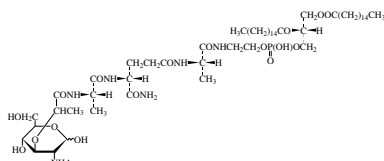
Merten, H. *et al.*, *Carbohydr. Res.*, 1989, **191**, 144 (synth, N-Ac)

Knirel, Y.A. *et al.*, *Carbohydr. Res.*, 1992, **235**, C19 (N-acetylismuramic acid)

Ragoussis, V. *et al.*, *Carbohydr. Res.*, 1997, **297**, 289-295 (synth, pmr, cmr)

Muramyl tripeptide phosphatidylethanolamine

N-(N-Acetylmuramoyl)-L-alanyl-D- α -glutamyl-N-[(7R)-4-hydroxy-4-oxido-10-oxo-[(1-oxohexadecyl)oxy]-3,5,9-trioxa-4-phosphapentacos-1-yl]-L-alaninamide
 [83461-56-7]



$C_{59}H_{109}N_6O_{19}P$ 1237.513
 Used in antibiotic preparations. Antineoplastic agent.

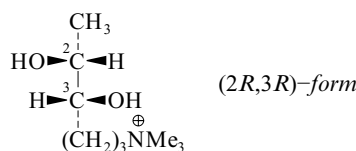
U.S. Pat., 1983, 4 414 204; *CA*, **100**, 161784g (synth)

Murray, J.L. *et al.*, *J. Clin. Oncol.*, 1989, **7**, 1915-1925; 1991, **9**, 259-267; 1992, **10**, 1310-1316 (pharmacol)

Vail, D.M. *et al.*, *Clin. Cancer Res.*, 1995, **1**, 1165-1170; 1595-1601; 1999, **5**, 4249-4258 (pharmacol)

Muscaridine

4,5-Dihydroxy-N,N,N-trimethyl-1-hexanaminium(1+), 9CI



$C_6H_{22}NO_2^+$ 176.278
 Present in *Amanita muscaria*. Mp 129-131° dec. (as tetrachloroaurate). $[\alpha]_D +20.5$ (tetrachloroaurate). Stereochem. of the nat. prod. could not be confirmed. It was claimed to have the erythro-config. but props. do not coincide with those of the well-characterised synthetic stereoisomers later obt.

(2R,3R)-form

D-threo-form

Iodide: Mp 98-100°. $[\alpha]_D +14.2$ (c, 2.8 in H_2O).

Tetrachloroaurate: Mp 98-101°. $[\alpha]_D^{20} +6.2$ (c, 0.5 in H_2O).

(2R,3S)-form D-erythro-form

Iodide:

$C_9H_{22}INO_2$ 303.183
 Mp 101-103°. $[\alpha]_D +14.7$ (c, 2.3 in H_2O).

Tetrachloroaurate: Mp 128-130°. $[\alpha]_D -9$.

(2S,3R)-form L-erythro-form

Iodide: Mp 101-103°. $[\alpha]_D^{20} +14.7$ (c, 1 in H_2O).

(2S,3S)-form L-threo-form

Iodide: Mp 97-98°. $[\alpha]_D -14.9$ (c, 1.2 in H_2O).

(2RS,3RS)-form (±)-threo-form

Tetrachloroaurate: Mp 97-102°.

M-325

(2RS,3SR)-form (±)-erythro-form
 [6801-43-0]

Tetrachloroaurate: Mp 127-131° dec.

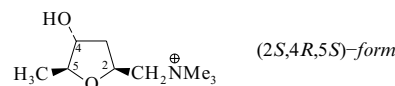
Salemink, C.A. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1963, **82**, 21 (isol, bibl, ir, synth, resoln)

Pedersen, C. *et al.*, *Acta Chem. Scand.*, 1993, **47**, 885 (synth, cmr, bibl)

Muscarine

M-327

Tetrahydro-4-hydroxy-N,N,N,5-tetramethyl-2-furanmethanaminium(1+), 9CI
 [7619-12-7]



$C_9H_{20}NO_2^+$ 174.262
 Sol. EtOH; fairly sol. $CHCl_3$, Et_2O . All 8 stereoisomers have been synthesised.

(2S,4R,5S)-form [300-54-9]

Main toxic constit. of the fly fungus *Amanita muscaria* and various *Inocybe* spp. V. powerful parasympathomimetic agent causing hypotension and bronchoconstriction. Stereoisomers show only a fraction of the activity. V. hygroscopic.

► V. toxic if swallowed. Can cause convulsions, coma, death. LD₅₀ (mus, ivn) 0.23 mg/kg. Antidote atropine sulfate. QG3325000

Chloride: [2303-35-7]

$C_9H_{20}ClNO_2$ 209.715

Needles. Mp 181.5-182° (179-180°). $[\alpha]_D +7.4$ (c, 3.1 in H_2O).

► QG3500000

Iodide: [24570-49-8]

$C_9H_{20}INO_2$ 301.167

Needles (MeCN/Me₂CO). Mp 149-149.5°. $[\alpha]_D +6.3$ (c, 1.1 in H_2O). Turns yellow within a few hours.

Tetraphenylborate: [104487-60-7]

$C_{33}H_{40}BNO_2$ 493.495

Mp 193°. $[\alpha]_D +9.7$ (c, 1.34 in Me₂CO).

Ketone: Tetrahydro-N,N,N,5-tetramethyl-4-oxo-2-furanmethanaminium(1+).

Muscarone

[4780-69-2]

$C_9H_{18}NO_2^+$ 172.247

Acetylcholine mimic.

(2R,4R,5S)-form

5-Allomuscarine

[6252-44-4]

[35119-38-1] Constit. of numerous Agaricales incl. *Amanita* spp. and *Clitocybe* spp. Shows similar biol. activity to Muscarine.

Mp 130.8° (as iodide). $[\alpha]_D -37.7$ (c, 0.8 in H_2O).

(2R,4S,5R)-form [92981-62-9]

[35119-35-8] Mp 179-180° (as chloride). $[\alpha]_D -8.4$ (EtOH).

(2R,4S,5S)-form

3-Epi-5-allomuscarine

[6836-06-2]

[5487-32-1] Mp 199.2° (as iodide). $[\alpha]_D 0$ (c, 1 in H_2O).

(2S,4S,5S)-form
3-Epinuscarine
[6836-08-4]

[93226-49-4] Constit. of various Agaricales incl. *Amanita* spp. and *Clitocybe* spp. Cryst. (2-propanol) (as iodide). Mp 170.4° (iodide). [α]_D +43.2 (c, 0.6 in EtOH).

(2RS,4SR,5RS)-form [71-06-7]

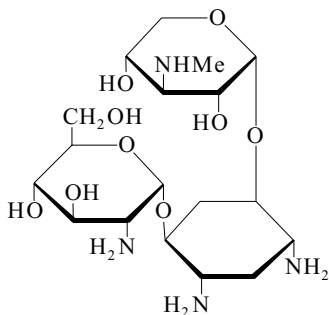
[6032-87-7] Mp 119-120° (as tetrachloroaurate).

[2936-25-6]

Hardegger, E. et al., *Helv. Chim. Acta*, 1957, **40**, 2383-2389 (2S,4R,5S-form, synth, abs config)
 Wilkinson, S. et al., *Q. Rev., Chem. Soc.*, 1961, **15**, 153-171 (rev)
 Eugster, C.H. et al., *Helv. Chim. Acta*, 1969, **52**, 708-715 (occur, glc)
 Matsumoto, T. et al., *Tetrahedron*, 1969, **25**, 5889-5892 ((±)-forms, synth)
 Bollinger, H. et al., *Helv. Chim. Acta*, 1971, **54**, 2704-2730 (synth stereoisomers, abs config, cd)
 Whiting, J. et al., *Can. J. Chem.*, 1972, **50**, 3322-3325 (synth, pmr)
 Stadelmann, R.J. et al., *Helv. Chim. Acta*, 1976, **59**, 2432-2436 (occur, stereoisomers)
 Nitta, K. et al., *Helv. Chim. Acta*, 1977, **60**, 1747-1753 (biosynth)
 Wang, P.-C. et al., *The Alkaloids*, (ed. A. Brossi), Academic Press, 1984, **23**, 327-380 (rev)
 Mulzer, J. et al., *Annalen*, 1987, 7-14 (2S,4R,5S-form, synth, pmr, ir)
 Pirrung, M.C. et al., *Tet. Lett.*, 1988, **29**, 159-162 (synth, bibl)
 Takano, S. et al., *Chem. Comm.*, 1989, 1371-1372 (2S,4R,5S-form, synth)
 Adams, J. et al., *Tet. Lett.*, 1989, **30**, 1753 (synth, pmr, cmr)
 De Amici, M. et al., *J.O.C.*, 1991, **56**, 67-72 (synth, stereoisomers, bibl)
 Frydenvang, K. et al., *Acta Cryst. C*, 1992, **48**, 469; 1993, **49**, 985; 1834 (cryst struct, Muscarone)
 Chan, T.H. et al., *Can. J. Chem.*, 1992, **70**, 2726-2729 (2S,4R,5S-form, synth)
 Mantell, S.J. et al., *J.C.S. Perkin 1*, 1992, 3023-3027 (2S,4R,5S-form synth, bibl)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1391
 Knight, D.W. et al., *Synlett*, 1994, 295-296, ((-)-Muscarine, synth)
 Norild, J.C. et al., *Synthesis*, 1997, 1128-1130 (*Allomuscarine*)
 Popsavin, V. et al., *Carbohydr. Lett.*, 1998, **3**, 1-8 (synth, Epimuscarine)
 Hartung, J. et al., *Eur. J. Org. Chem.*, 2000, 1677-1683 (synth)
 Kang, K.H. et al., *Tet. Lett.*, 2000, **41**, 8137-8140 (synth)
 Popsavin, V. et al., *Tetrahedron*, 2000, **56**, 5929-5940 (synth)
 Knight, D.W. et al., *Tet. Lett.*, 2002, **43**, 6771-6773 (synth)
 Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MRW250

Mutamicin 2_a

[54797-14-7]



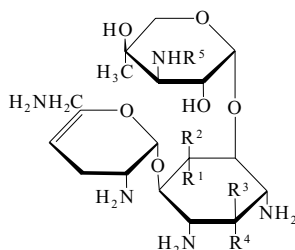
C₁₈H₃₆N₄O₉ 452.504

Isol. from *Micromonospora inyoensis*. Semisynthetic aminoglycoside antibiotic. Sol. H₂O; poorly sol. Me₂CO, hexane.

Testa, R.T. et al., *J. Antibiot.*, 1974, **27**, 917 (synth, isol, struct)
 U.S. Pat., 1974, 4 011 390; CA, **86**, 169333 (synth, struct)

Mutamicin 1

[54830-49-8]



R¹ = R³ = OH, R² = R⁴ = H, R⁵ = Me

C₁₉H₃₇N₅O₈ 463.53

Aminoglycoside-type antibiotic. Isol. from mutants of *Micromonospora inyoensis* which only produced antibiotics in presence of added aminocyclitols. Broad spectrum mutasynthetic antibiotic. Sol. H₂O; poorly sol. Me₂CO, hexane.
 ▶ LD₅₀ (mus, ivn) 110 mg/kg. WK2284700

Testa, R.T. et al., *J. Antibiot.*, 1974, **27**, 917 (isol, synth, struct)
 U.S. Pat., 1974, 4 011 390; CA, **86**, 169333 (synth, struct)

Mutamicin 2

[54830-48-7]

As Mutamicin 1, M-329 with R¹ = R² = R³ = R⁴ = H, R⁵ = Me

C₁₉H₃₇N₅O₆ 431.531

Isol. from *Micromonospora inyoensis*. Semisynthetic aminocyclitol antibiotic. Sol. H₂O; poorly sol. Me₂CO, hexane.

Testa, R.T. et al., *J. Antibiot.*, 1974, **27**, 917 (synth, isol, struct)

M-328

Mutamicin 4

[55820-70-7]

As Mutamicin 1, M-329 with

R¹ = OH, R² = R³ = H, R⁴ = OH, R⁵ = Me

C₁₉H₃₇N₅O₈ 463.53

Isol. from *Micromonospora inyoensis*. Semisynthetic aminocyclitol antibiotic. Sol. H₂O; poorly sol. MeOH, hexane.

U.S. Pat., 1974, 4 011 390; CA, **86**, 169333 (synth, struct)

Mutamicin 5

[55750-88-4]

As Mutamicin 1, M-329 with

R¹ = NH₂, R² = R³ = R⁴ = H, R⁵ = Me

C₁₉H₃₈N₆O₆ 446.546

Isol. from *Micromonospora inyoensis*. Semisynthetic aminocyclitol antibiotic. Sol. H₂O; poorly sol. Me₂CO, hexane. λ_{max} (H₂O) (Berdy).

U.S. Pat., 1974, 4 011 390; CA, **86**, 169333 (synth, struct)

Mutamicin 1A

[54830-50-1]

As Mutamicin 1, M-329 with

R¹ = OH, R² = H, R³ = OH, R⁴ = H, R⁵ = Ac

C₂₀H₃₇N₅O₉ 491.54

Isol. from *Micromonospora inyoensis*. Semisynthetic aminocyclitol antibiotic. Sol. H₂O; poorly sol. Me₂CO, hexane. λ_{max} (H₂O) (Berdy).

Testa, R.T. et al., *J. Antibiot.*, 1974, **27**, 917 (isol, synth, struct)

Mutamicin 1B

[54830-51-2]

As Mutamicin 1, M-329 with

R¹ = OH, R² = H, R³ = OH, R⁴ = R⁵ = H

C₁₈H₃₅N₅O₈ 449.503

Isol. from *Micromonospora inyoensis*. Semisynthetic aminocyclitol antibiotic. Sol. H₂O; poorly sol. Me₂CO, hexane.

Testa, R.T. et al., *J. Antibiot.*, 1974, **27**, 917 (isol, synth, struct)

Mutastein

M-335

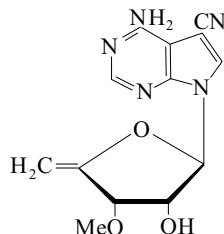
Glycoprotein. Prod. by *Aspergillus terreus* M3328. Chewing-gum ingredient. Inhibits glucosyltransferases of *Streptococcus mutans*; suppresses the formation of dental caries. Sol. H₂O.

Endo, A. et al., *J. Antibiot.*, 1983, **36**, 203-207 (isol)

Hayashida, O. et al., *Biosci., Biotechnol., Biochem.*, 1997, **61**, 588-591 (isol)

Mycalisine A

[98890-73-4]

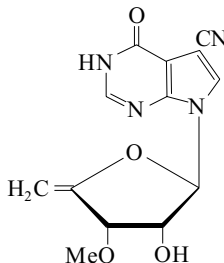
 $C_{13}H_{13}N_5O_3$ 287.277

Nucleoside antibiotic. Related to Toyocamycin. Found in *Mycale* sp., prob. prod. by symbiotic microorganisms. Inhibits cell division in starfish eggs. Oil. Sol. MeOH, $CHCl_3$; poorly sol. H_2O . $[\alpha]_D^{21}$ -88 (c, 0.05 in EtOH). Unstable at r.t. λ_{max} 207 (€ 17000); 233 (sh) (€ 15000); 279 (€ 11000) (pH 2 EtOH) (Derep). λ_{max} 279 (€) (EtOH at pH 12) (Derep). λ_{max} 207 (€ 30000); 233 (sh) (€ 8900); 279 (€ 14000) (pH 7 EtOH) (Derep). λ_{max} 207 (€ 30000); 279 (€ 14000) (EtOH) (Berdy). λ_{max} 207 (€ 15000); 279 (€ 11000) (EtOH-HCl) (Berdy). λ_{max} 279 (EtOH-NaOH) (Berdy).

Kato, Y. et al., *Tet. Lett.*, 1985, **26**, 3483 (isol, struct, nmr, props)

Mycalisine B

5-Cyano-7-(3-O-methyl-5-deoxy-β-D-erythro-pent-4-enofuranosyl)pyrrolo[2,3-d]pyrimidin-4-one [98890-72-3]

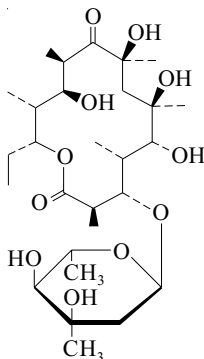
 $C_{13}H_{12}N_4O_4$ 288.262

Isol. from *Mycale* sp., Japanese marine sponge. Oil. Sol. MeOH, $CHCl_3$; poorly sol. H_2O . $[\alpha]_D^{21}$ -75.9 (c, 0.26 in EtOH). Unstable at r.t. λ_{max} 214 (€ 3000); 265 (€ 3000) (pH 2 EtOH) (Derep). λ_{max} 265 (sh) (€) (pH 12 EtOH) (Derep). λ_{max} 210 (€ 6000); 265 (€ 3000) (pH 7 EtOH) (Derep). λ_{max} 210 (€ 6000); 265 (€ 3000) (EtOH) (Berdy). λ_{max} 214 (€ 3000); 265 (€ 3000) (EtOH-HCl) (Berdy). λ_{max} 265 (EtOH-NaOH) (Berdy).

Kato, Y. et al., *Tet. Lett.*, 1985, **26**, 3483 (isol, ir, pmr, cmr, uv)

M-336**3-O-(α-L-Mycarosyl)-8-hydroxyerythronolide B**

12-Deoxy-3-O-(2,6-dideoxy-3-C-methyl-α-L-ribo-hexopyranosyl)erythronolide A, 9CI [38421-35-1]

 $C_{28}H_{50}O_{11}$ 562.696

Isol. from *Streptomyces erythreus*. Antipyretic agent. Needles (MeOH aq.). Mp 205-208°.

8-Deoxy: 3-O-(α-L-Mycarosyl)erythronolide B [34698-88-9]

 $C_{28}H_{50}O_{10}$ 546.697

From *Streptomyces erythreus*. Needles (EtOAc/hexane). Mp 201-203°. $[\alpha]_D^{26}$ -72 (c, 1 in $CHCl_3$).

8-Epimer, 8-deoxy: 3-O-(α-L-Mycarosyl)-8-epi-erythronolide B [42713-53-1]

 $C_{28}H_{50}O_{10}$ 546.697

From *Streptomyces erythreus*. Needles (EtOAc/hexane). Mp 198-200°. $[\alpha]_D^{25}$ -112 (c, 1 in MeOH).

Martin, J.R. et al., *Biochemistry*, 1966, **5**, 2852 (derivs, isol)

Mitscher, L.A. et al., *Tet. Lett.*, 1969, 4505 (deriv, cd)

U.S. Pat., 1972, 3 684 794; CA, **77**, 138339 (isol)

Martin, J.R. et al., *Tetrahedron*, 1973, **29**, 935 (epimer)

Nourse, J.G. et al., *J.A.C.S.*, 1975, **97**, 4584 (cmr)

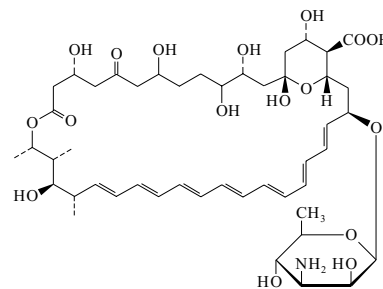
Mycobactocidin**M-339**

Glycoprotein; struct. unknown. Prod. by *Staphylococcus epidermidis*. Shows antimicrobial activity. Sol. H_2O ; poorly sol. MeOH, hexane.

Fregnan, G.B. et al., *J. Bacteriol.*, 1962, **83**, 1069-1076 (isol)

Mycoheptin

5,8,9-Trideoxy-7,10-dihydroxy-5-oxoamphotericin B, 9CI. Micoheptin [12609-89-1]

 $C_{47}H_{71}NO_{17}$ 922.074

Heptaene antibiotic. Isol. from *Streptomyces netropsis* and *Streptoverticillium mycoheptenicum*. Active against fungi and yeasts. Yellow powder. Similar to Candidin.

► **BU2829900**

Severinets, L.Y. et al., *Antibiotiki (Moscow)*, 1977, **22**, 492 (isol)

Borowski, E. et al., *J. Antibiot.*, 1978, **31**, 117 (ir, uv, ms, nmr, struct)

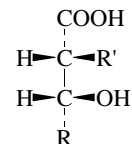
Bolshakova, L.O. et al., *Antibiotiki (Moscow)*, 1980, **25**, 499 (props)

Swiss Pat., 1981, 625 271; CA, **96**, 33348e (isol)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MRW800

Mycolic acid**M-341**

Corynomycolic acid. Nocardic acid. Smegmamycolic acid



Absolute Configuration

Glycolipids of bacterial origin which are homologous mixts. varying with the origin of the sample. On pyrol. they yield $RCHO + R'CH_2COOH$. R' is a saturated alkyl residue. R may be saturated or unsaturated. The following classes have been recognised. (i) From *Corynebacterium diphtheriae* and *Nocardia opaca*: $R = C_{15}$; $R' = C_{14}$ $R = n-C_{31}$, $n-C_{33}$, $n-C_{35}$; $R' = C_8$, C_{10} , C_{12} (ii) Acids containing unsaturated alkyl chains (and in some cases branching methyl groups) from *C. diphtheriae*, *N. spp.* and *Mycobacterium smegmatis*: $R = 8$ -pentadecenyl; $R' = C_{14}H_{29}$ $R = C_{37}$, C_{39} , C_{41} ; $R' = C_{22}H_{45}$ also dienes, $R = C_{49}H_{95}-C_{58}H_{113}$ (10 members), some of which have a branching methyl group. (iii) Acids containing one cyclopropane unit, one double bond and one branching methyl, from *M. smegmatis*: e.g. $R = H_3C(CH_2)_{17}$ -cyclopropyl- $(CH_2)_{13}CH=CHCH(CH_3)$; $R' = C_{22}H_{45}$ (iv) Acids containing two cyclopropane units from *M. tuberculosis* and *M. paratuberculosis*. (v) Acids with additional oxygenated functions

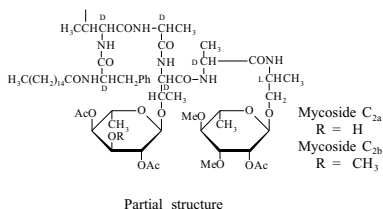
(-OMe, C=O and -COOH) in R': e.g. R' = H₃C(CH₂)₁₇CH(CH₃)CO(CH₂)₁₆-cyclopropyl-(CH₂)₁₉; R = C₂₄H₄₉ R' = HOOC(CH₂)_xCH=CH(CH₂)_y-(x = 14, 16; y = 17, 19); R = C₂₀, C₂₂, C₂₄ R' = HOOC(CH₂)₁₄CH(CH₃)CH=CH(CH₂)₁₆; R = C₂₀, C₂₂, C₂₄.

[23599-54-4, 23642-94-6, 23725-22-6
23950-11-0]

Polgar, N. *et al.*, *Top. Lipid Chem.*, 1971, **2**, 207
Gensler, W.J. *et al.*, *Chem. Phys. Lipids*, 1977, **19**, 128
Asselineau, C. *et al.*, *Prog. Chem. Fats Other Lipids*, 1978, **16**, 59
Wong, M.Y.H. *et al.*, *J. Biol. Chem.*, 1979, **254**, 5734; 5741
Kitano, Y. *et al.*, *Chem. Comm.*, 1985, 498 (synth)
Utaka, M. *et al.*, *Chem. Comm.*, 1987, 1368 (synth)
Fujisawa, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1988, **61**, 1273 (synth)

Mycoside C₂

M-342



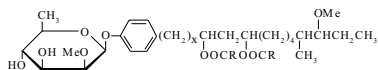
Mycoside C₂ consists of two homologous peptidoglycolipids, mycosides C_{2a} and C_{2b}. The lipid moiety present in these molecules is a complex mixture of fatty acid residues, principally Palmitic and Stearic. Produced by *Mycobacterium avium*.

Mp 200°. [α]_D -28.

Voiland, A. *et al.*, *Eur. J. Biochem.*, 1971, **21**, 285 (struct)

Mycosides

M-343



Occur as mixtures with differing x values and different acyl groups.

Mycoside A [11033-70-8]

Glycolipid from *Mycobacterium kansasii* No. 4.

Mp 108-109°. [α]_D²⁰ -37 (CHCl₃). x varies from 16-20 with 18 predominating. RCO varies from C₁₂-C₁₈ monoene fatty acids and C₂₇-C₃₂ mycerosic acids.

Mycoside B [39379-13-0]

Glycolipid from *Mycobacterium tuberculosis* var. *bovis*.

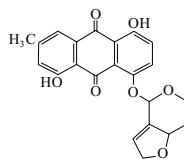
Mp 25°. [α]_D²⁰ -22 (CHCl₃). x varies from 16-20 with 16 predominating. RCO various saturated and methyl-branched fatty acids.

[11113-72-7]

Gastambide-Odier, M. *et al.*, *Tet. Lett.*, 1965, 3135 (struct, ms)

Mycotoxin MT81

M-344



C₂₂H₁₈O₇ 394.38

Anthraquinone antibiotic. Constit. of *Penicillium nigrkans*. Cryst.

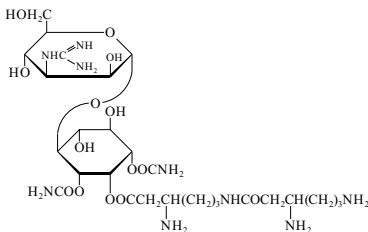
Mp 300° dec. [α]_D²⁵ +50 (MeOH).

Gupta, M. *et al.*, *Indian J. Chem., Sect. B*, 1984, **23**, 393

Myomycin B

M-345

[52955-41-6]



C₂₇H₅₁N₉O₁₄ 725.752

Glycopeptide antibiotic. Obt. from *Nocardia* sp. NRRL5338 and *Corynebacterium* sp. NRRL11072. Active against gram-positive and -negative bacteria. Sol. H₂O; poorly sol. MeOH, hexane. Major component of Myomycin complex. Position of peptide chain linkage not certain. Related to Antibiotic LL-BM 782α₁, A-760, Antibiotic LL-BM 782α_{1a}, A-761 and Antibiotic LL-BM 782α₂, A-762.

► LD₅₀ (mus, ivn) 165 mg/kg, LD₅₀ (mus, ipr) 800 mg/kg, LD₅₀ (mus, scu) 1100 mg/kg, LD₅₀ (mus, orl) 9000 mg/kg.

QH3284000

Sulfate: [53109-99-2]

Dihydrate. [α]_D -4.5 (c, 1.5-2 in H₂O).

Myomycin A [53025-68-6]

From *Nocardia* sp. NRRL5338. Sol. H₂O. Minor component of Myomycin complex. Struct. not known.

Myomycin C [53025-69-7]

From *Nocardia* sp. NRRL5338. Sol. H₂O. Minor component of Myomycin complex. Struct. not known.

U.S. Pat., 1971, 3 795 668; CA, **81**, 89779 (struct)

French, J.C. *et al.*, *J. Antibiot.*, 1973, **26**, 272 (isol)

Japan. Pat., 1978, 78 118 590; CA, **90**, 101945 (isol)

McGahren, W.J. *et al.*, *J.O.C.*, 1981, **46**, 792 (struct)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MRY100

Myxaline

M-346

[116110-99-7]

Heat-stable glycopeptide. Isol. from *Myxococcus xanthus*. Shows anticoagulant activity. Sol. H₂O; poorly sol. MeOH, EtOAc, hexane.

Masson, P.J. *et al.*, *J. Gen. Microbiol.*, 1988, **134**, 801-806 (isol)

Akoum, A. *et al.*, *Chromatographia*, 1989, **28**, 157-160 (isol)

Akoum, A. *et al.*, *Process Biochem.*, 1989, **24**, 55-59 (isol)

Akoum, A. *et al.*, *Thromb. Res.*, 1990, **60**, 9-18 (anticoagulant activity)

Nadroparin

N-1

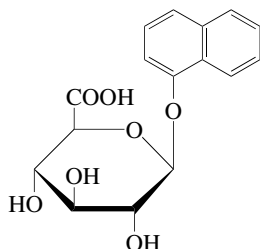
Low MW heparin (see Heparin, H-5).

Ca salt: Nadroparin calcium, BAN, INN.
Fraxiparin. CY 216†

Used for prevention and treatment of thromboembolic disease.

Boucher, M. *et al.*, *Drugs of Today (Barcelona)*, 1987, **23**, 451 (rev, pharmacol, tox)Dautzenberg, M.D. *et al.*, *Thromb.**Haemostasis*, 1990, **64**, 490 (activity)Barradell, L.B. *et al.*, *Drugs*, 1992, **44**, 858 (rev)Beguín, S. *et al.*, *Thromb. Haemostasis*, 1992, **67**, 33 (pharmacol)Cziraky, M.J. *et al.*, *Clin. Pharm.*, 1993, **12**, 892 (use, rev)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 231**1-Naphthalenyl glucopyranosiduronic acid**

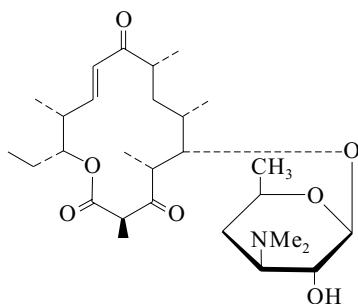
N-2

 $C_{16}H_{16}O_7$ 320.298 **β -D-form** [17238-47-0]Dorough, H.W. *et al.*, *J. Agric. Food Chem.*, 1974, **22**, 642-645 (metab)Mackenzie, P.I. *et al.*, *Anal. Biochem.*, 1980, **109**, 362-368 (anal, fluorescence)**Narbomycin**

N-3

12-Deoxyvicromycin, 9CI

[6036-25-5]

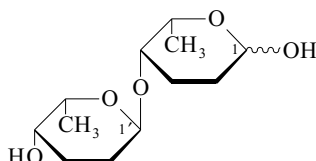
 $C_{28}H_{47}NO_7$ 509.682Macrolide antibiotic. Prod. by *Streptomyces narbonensis*. Inactive *in vivo* but highly active against gram-positive organisms *in vitro*. Cryst. (Et₂O/petrol). Sol. MeOH, Et₂O; fairly sol. hexane; poorly sol. H₂O.Mp 113.5-115°. $[\alpha]_D^{20}$ +68.5 (c, 1.35 in CHCl₃). pK_a 7.7. λ_{max} 225 (ε 11500); 286 (ε 120) (Berdy).▶ LD₅₀ (mus, scu) 600 mg/kg. QN4725000Aglycone: *Narbonolide*

[32885-75-9]

 $C_{20}H_{32}O_5$ 352.47Isol. from *Streptomyces venezuelae*.Sol. MeOH, Et₂O; poorly sol. H₂O.Mp 125-126°. $[\alpha]_D^{23}$ +89 (c, 1 in MeOH). λ_{max} 228 (ε 8200) (MeOH) (Berdy).Corbaz, R. *et al.*, *Helv. Chim. Acta*, 1955, **38**, 935 (isol)Prelog, V. *et al.*, *Helv. Chim. Acta*, 1962, **45**, 4 (isol)Celmer, W.D. *et al.*, *J.A.C.S.*, 1965, **87**, 1799; 1801 (config)Rickards, R.W. *et al.*, *Tet. Lett.*, 1970, 1025 (config)Hori, T. *et al.*, *Chem. Comm.*, 1971, 304 (isol, *Narbonolide*)Noguchi, K. *et al.*, *CA*, 1975, **83**, 120704t (struct)Ogara, H. *et al.*, *J.A.C.S.*, 1975, **97**, 1930 (stereochem)Kaiho, T. *et al.*, *J.O.C.*, 1982, **47**, 1613 (synth, *Narbonolide*)Paterson, I. *et al.*, *Tetrahedron*, 1985, **41**, 3569 (synth, rev)**Narbosine A**

N-4

[133578-67-3, 133646-42-1]

 $C_{12}H_{22}O_5$ 246.303

Carbohydrate antibiotic. Metab. of

Streptomyces spp. Antiviral agent.Oil. Sol. MeOH. $[\alpha]_D^{20}$ -91.7 (c, 0.78 in Me₂CO). Isol. as a 1:1 anomeric mixture.*1-Me glycoside: Narbosine B*

[133646-43-2, 133646-44-3]

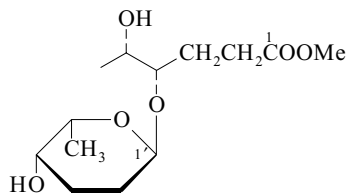
 $C_{13}H_{24}O_5$ 260.33Metab. of *Streptomyces* spp. Oil. Sol.MeOH. $[\alpha]_D^{20}$ -11.8 (c, 0.34 in Me₂CO).

1:1 anomeric mixture.

Henkel, T. *et al.*, *Annalen*, 1991, 575-580 (isol, pmr, cmr, ms)**Narbosine C**

N-5

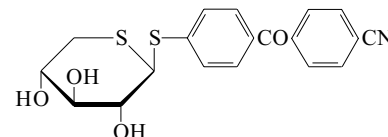
[133578-68-4]

 $C_{13}H_{24}O_6$ 276.329Metab. of *Streptomyces* spp. Antiviral agent. Sol. MeOH.*1-Alcohol: Narbosine D*

[133578-70-8]

 $C_{12}H_{24}O_5$ 248.319Metab. of *Streptomyces* spp. Oil. Sol.MeOH. $[\alpha]_D^{20}$ -65.9 (c, 0.5 in MeOH).Henkel, T. *et al.*, *Annalen*, 1991, 575 (isol, pmr, cmr, ms)**Naroparcil, INN**

N-6

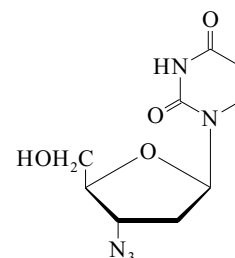
4-[4-[(5-Thio-β-D-xylopyranosyl)thio]-benzoyl]benzonitrile, 9CI. 4-[(4-Cyanobenzoyl)phenyl] 1,5-dithio-β-xylopyranoside. LF 9 0055
[120819-70-7] $C_{19}H_{17}NO_4S_2$ 387.48Antithrombotic agent. Mp 164°. $[\alpha]_D^{20}$ +53 (c, 0.2 in MeOH). Log P 0.98 (calc).*Eur. Pat.*, 1988, 290 321, (Fournier Innov Synergie); *CA*, **110**, 232019f (synth, pharmacol)Millet, J. *et al.*, *Thromb. Res., Suppl.* 1, 1992, **65**, S158 (pharmacol)Bellamy, F. *et al.*, *Eur. J. Med. Chem. (Chim. Ther.)*, 1995, **30** suppl, 101S-115S (synth, pharmacol)Masson, P.J. *et al.*, *J. Biol. Chem.*, 1995, **270**, 2662-2668 (pharmacol)Le Questel, J.L. *et al.*, *Carbohydr. Res.*, 1996, **284**, 35-49 (cryst struct)**Navuridine, INN**

N-7

3'-Azido-2',3'-dideoxyuridine. AZDU.

CS-87

[84472-85-5]

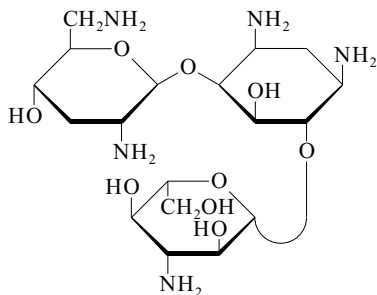
 $C_9H_{11}N_5O_4$ 253.217

Potential antiviral agent. Inhibitor of HIV-1. Tan cryst. Mp 161-163° dec.

Lin, T.S. *et al.*, *J. Med. Chem.*, 1983, **26**, 544 (synth, ir, uv, pmr)Van Roey, P. *et al.*, *J.A.C.S.*, 1988, **110**, 2277 (cryst struct)Chu, C.K. *et al.*, *Tet. Lett.*, 1988, **29**, 5349 (synth)Low, J.N. *et al.*, *Acta Cryst. C*, 1989, **45**, 664 (cryst struct)Zhu, Z. *et al.*, *Mol. Pharmacol.*, 1990, **38**, 929 (metab)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1340

Nebmycin T

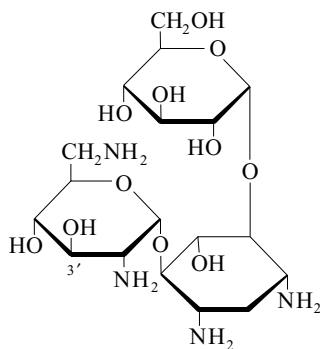
[143731-17-3]

 $C_{18}H_{37}N_5O_9$ 467.518

Aminoglycoside antibiotic. Ref. not available, no source given in abstr.

Li, L. *et al.*, *Bopuxue Zazhi*, 1992, **9**, 1; *CA*, **117**, 171880 (*pmr*, *cmr*, *struct*)**Nebramycin factor 3**

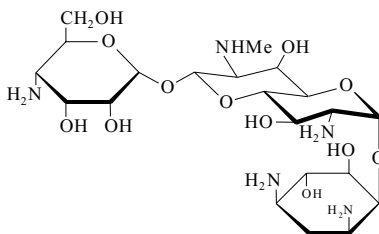
N-9

Nebramycin III. Antibiotic NK 1012-1. NK 1012-1
[31077-70-0] $C_{18}H_{36}N_4O_{11}$ 484.503Aminoglycoside antibiotic. Prod. by *Streptomyces tenebrarius*.
[α]_D²⁰ +136 (H₂O).

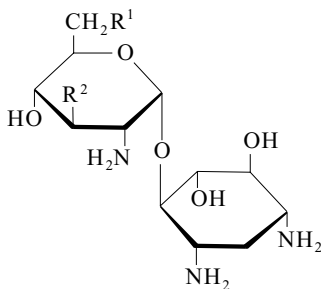
► WK2297000

3'-Deoxy: Nebramycin factor 12. Nebramycin XII
[64332-34-9] $C_{18}H_{36}N_4O_{10}$ 468.503Prod. by *Streptomyces tenebrarius*. Cryst. (MeOH). Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.Suami, T. *et al.*, *Carbohydr. Res.*, 1976, **52**, 187 (*synth*)Koch, K.F. *et al.*, *J.O.C.*, 1978, **43**, 1430 (*isol*, *cmr*, *nmr*, *ms*)

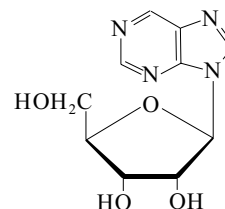
N-8

Nebramycin factor 7Nebramycin VII. Oxyapramycin
[56283-52-4] $C_{21}H_{41}N_5O_{12}$ 555.581Aminoglycoside antibiotic. Isol. from *Streptomyces* spp. Needles. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.
Mp 265° dec. [α]_D²⁷ +170.4 (c, 0.154 in H₂O).

► WK1969500

Koch, K.F. *et al.*, *J.O.C.*, 1978, **43**, 1430
Martin, O.R. *et al.*, *Chem. Comm.*, 1983, 926 (*synth*)**Nebramycin factor 8**Nebramycin VIII. Nebramine
[34051-04-2] $R^1 = NH_2, R^2 = H$ $C_{12}H_{26}N_4O_5$ 306.361Antibiotic. Sol. H₂O; poorly sol. butanol, hexane.
Mp 225°. [α]_D²⁰ +110.Koch, K.F. *et al.*, *J.O.C.*, 1978, **43**, 1430**Nebramycin factor 9**Nebramycin IX. Lividamine
[36019-33-7]As Nebramycin factor 8, N-11 with $R^1 = OH, R^2 = H$ $C_{12}H_{25}N_3O_6$ 307.346Sol. H₂O; poorly sol. butanol, hexane. Mp 222-224°. [α]_D²⁰ +94.Koch, K.F. *et al.*, *J.O.C.*, 1978, **43**, 1430

N-10

Nebularine9- β -D-Ribofuranosyl-9H-purine, 9CI, 8CI.
Purinosine
[550-33-4] $C_{10}H_{12}N_4O_4$ 252.229Nucleoside antibiotic. Isol. from the mushroom *Clitocybe nebularis* (clouded agaric), from *Streptomyces yokosukaensis* and *Microbispora* sp. nov. Shows tuberculostatic and antimitotic activity. Adenosine deaminase inhibitor. Investigated as an antileukaemic agent in combination therapies. Needles (MeOH).Mp 182-183°. [α]_D³⁵ -46.8 (c, 2.0 in H₂O).
 λ_{max} 262.5 (ε 7 020) (H₂O), 262.8 (5 900) (1M HCl), 263 nm (7 110) (pH 9.2).► LD₅₀ (rat, scu) 220 mg/kg. UO9100000
2',3',5'-Tri-Ac: [15981-63-2]
[α]_D²⁶ -10.8 (c, 1.5 in MeOH).

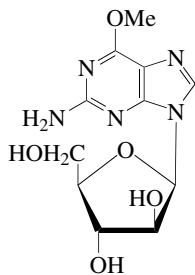
6-Fluoro: See 6-Fluoro-9-ribofuranosyl-9H-purine, F-16

Isono, K. *et al.*, *J. Antibiot., Ser. A*, 1960, **13**, 270-272 (*isol*)Cory, J.G. *et al.*, *Biochemistry*, 1965, **4**, 1729-1732 (*pharmacol*)
Iwamura, H. *et al.*, *J.O.C.*, 1968, **33**, 1796-1799 (*synth*, *tri-Ac*)Takeda, T. *et al.*, *Acta Cryst. B*, 1974, **30**, 825-827 (*cryst struct*)Ohno, M. *et al.*, *J.A.C.S.*, 1974, **96**, 4326-4327 (*tri-Ac*)Chenon, M.T. *et al.*, *J.A.C.S.*, 1975, **97**, 4627-4636 (*cmr*)Westhof, E. *et al.*, *Z. Naturforsch., C*, 1975, **30**, 131-140 (*pmr*)Gupta, P.K. *et al.*, *Indian J. Chem., Sect. B*, 1981, **20**, 534-537 (*synth*)Zavgorodnii, S.G. *et al.*, *Bioorg. Khim.*, 1984, **10**, 1496-1507 (*conformn*)Nair, V. *et al.*, *Synthesis*, 1984, 401-402 (*synth*, *uv*, *pmr*, *cmr*, *ms*)Cooper, R. *et al.*, *J. Ind. Microbiol.*, 1986, **1**, 275-276 (*isol*)Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711-1739 (*rev*)Nair, V. *et al.*, *Tetrahedron*, 1988, **44**, 7001-7006 (*derivs*)Worner, K. *et al.*, *Helv. Chim. Acta*, 1999, **82**, 2094-2104 (*synth*, *pmr*)Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RJF000

N-13

Nelzarabine, INN**N-14**

9-Arabinofuranosyl-6-methoxy-9H-purin-2-amine, 9CI. 2-Amino-6-methoxypurine arabinoside. **Nelzarabine, BAN, USAN.** 506 U 78. GW 506 U 78



$C_{11}H_{15}N_5O_5$ 297.27

Antineoplastic agent. Water sol. prodrug of 9-Arabinofuranosylguanine, A-815.

β-D-form [121032-29-9]

Cryst. Mp 210°. $[\alpha]_D^{20} +55.9$ (c, 0.27 in DMF).

Eur. Pat., 1988, 294 114, (Wellcome Foundation); CA, 111, 7760s (synth, pharmacol)

Averett, D.R. et al., *Antimicrob. Agents Chemother.*, 1991, **35**, 851-857 (pharmacol)

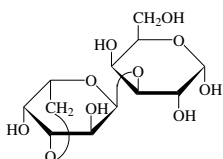
Lambe, C.U. et al., *Cancer Res.*, 1995, **55**, 3352-3356 (pharmacol)

Rodriguez, C.O. et al., *J. Chromatogr. B: Biomed. Appl.*, 2000, **745**, 421-430 (hplc)

Kisor, D.F. et al., *J. Clin. Oncol.*, 2000, **18**, 995-1003 (pharmacokinetics)

Neogagaribiose**N-15**

3-O-(3,6-Anhydro-α-L-galactopyranosyl)-D-galactose, 9CI [484-58-2]



α-Pyranose-form

$C_{12}H_{20}O_{10}$ 324.284

Isol. from the products of enzymic hydrolysis of agar.

Mp 207-208°. $[\alpha]_D +34.4 \rightarrow +20.3$ (H₂O).

Phenylosazone: Mp 199-200°.

Hexa-Ac:

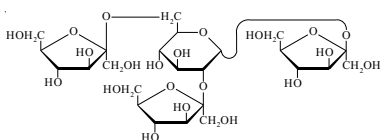
$C_{24}H_{32}O_{16}$ 576.507

Mp 112°. $[\alpha]_D^{27} +1.6$ (CHCl₃).

Araki, C. et al., *Bull. Chem. Soc. Jpn.*, 1956, **29**, 339 (isol)

Vattuone, M.A. et al., *Carbohydr. Res.*, 1975, **39**, 164 (isol)

Van der Meulen, H. et al., *Antonie van Leeuwenhoek*, 1976, **42**, 81; CA, **85**, 42721w (isol)

Neobifurcose**N-16**

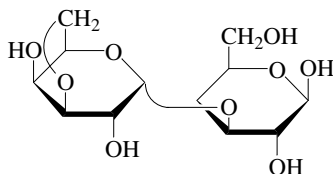
$C_{24}H_{42}O_{21}$ 666.583

Struct. not confirmed. A trifructosyl glucose with the prob. struct. shown. Isol. from cereals. $[\alpha]_D^{20} +14.4$ (H₂O).

Schlubach, H.H. et al., *Annalen*, 1958, **614**, 126; 1961, **647**, 41

Neocarrabiose**N-17**

3-O-(3,6-Anhydro-α-D-galactopyranosyl)-D-galactose [70456-76-7]



β-Pyranose-form

$C_{12}H_{20}O_{10}$ 324.284

Repeating unit of carrageenans. Constit. of Mediterranean red alga *Rissoella verruculosa*.

β-Pyranose-form [79297-08-8]

Cryst. (2-propanol aq.). Mp 164-166°. $[\alpha]_D^{24} +96 \rightarrow +110$ (c, 1.0 in H₂O).

[150571-82-7]

Combaut, G. et al., *Phytochemistry*, 1985, **24**, 1597 (occur)

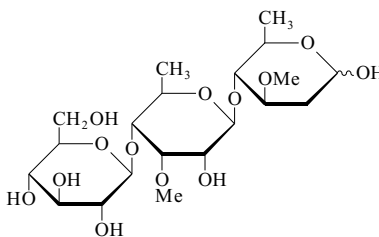
Lamba, D. et al., *Carbohydr. Res.*, 1990, **208**, 215 (cryst struct)

Ueda, K. et al., *Biopolymers*, 1996, **38**, 461 (conformn)

Stortz, C.A. et al., *J. Carbohydr. Chem.*, 2000, **19**, 1115-1130 (conformn)

Neocondurangotriose, 9CI**N-18**

β-D-Glucopyranosyl-(1→4)-6-deoxy-3-O-methyl-β-D-allopyranosyl-(1→4)-β-D-oleandropyranose [75316-70-0]



$C_{20}H_{36}O_{13}$ 484.497

Isol. from Condurango cortex and *Boucerosia aucheriana*.

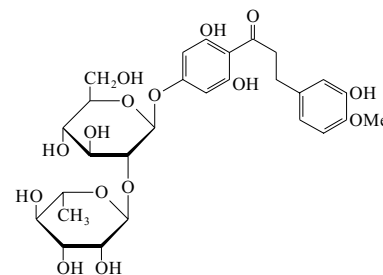
$[\alpha]_D +30.5$ (c, 0.3 in MeOH).

Hayashi, K. et al., CA, 1984, **100**, 135778p

Hayashi, K. et al., *Phytochemistry*, 1988, **27**, 3919 (isol, pmr)

Neohesperidin dihydrochalcone**N-19**

Neohesperidin DHC. E959. FEMA 3811. NHDHC. NHDC [20702-77-6]



$C_{28}H_{36}O_{15}$ 612.583

Derived semisynthetically from 3',5,7-Trihydroxy-4'-methoxyflavanone. Intensely sweet, 612 times more sweet than sucrose. Permitted in EU at low concs. (=10 ppm) for certain applications, e.g. low-alcohol beer. Generally recognised as safe (GRAS) in the USA.

Analogues extensively studied.

► LZ5785000

Horowitz, R.M. et al., *J. Agric. Food Chem.*, 1969, **17**, 696 (rev)

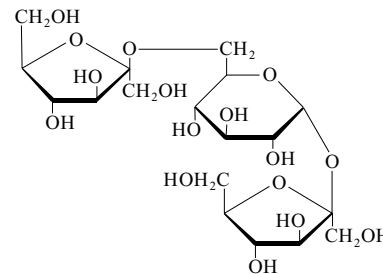
DuBois, G.E. et al., *J. Med. Chem.*, 1981, **24**, 408

Lina, B.A.R. et al., *Food Chem. Toxicol.*, 1990, **28**, 507 (tox)

Bär, A. et al., *Lebensm.-Wiss. Technol.*, 1990, **23**, 371 (rev, prop)

Neokestose**N-20**

O-β-D-Fructofuranosyl-(2→6)-α-D-glucopyranosyl β-D-fructofuranoside. β-D-Fructofuranosyl 6-O-β-D-fructofuranosyl-α-D-glucopyranoside, 8CI. neo-Kestose. 6^G-Kestotriose [3688-75-3]



$C_{18}H_{32}O_{16}$ 504.441

A fructan. See Fructans, F-43. Synthesised together with 1-kestose during the action of yeast invertase on sucrose.

Isol. from the roots of asparagus, the sap of sugar maple, and together with 1-kestose from aq. alcoholic extracts of oat stalks. Amorph. $[\alpha]_D^{20} +22.2$ (c, 2.3 in H₂O).

Gross, D. et al., *J.C.S.*, 1954, 1727 (synth)

Schlubach, H.H. et al., *Annalen*, 1961, **647**, 41 (isol)

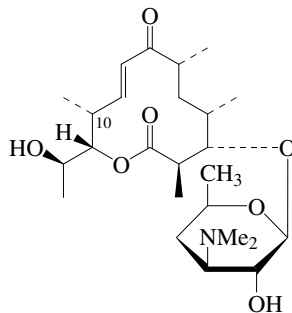
Haq, S. et al., *Can. J. Chem.*, 1961, **39**, 1165 (isol)

Gross, D. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 360 (enzymic synth)

- Kamerling, J.P. *et al.*, *Tetrahedron*, 1972, **28**, 3037 (*pmr*)
 Henry, R.J. *et al.*, *Phytochemistry*, 1980, **19**, 1017
 De Bruyn, A. *et al.*, *Carbohydr. Res.*, 1991, **211**, 131 (*cmr*)
 Liu, J. *et al.*, *Carbohydr. Res.*, 1991, **213**, 43 (*pmr*, *cmr*)
 Fukushi, E. *et al.*, *Magn. Reson. Chem.*, 2000, **38**, 1005-1011 (*isol*, *pmr*, *cmr*)

Neomethymycin N-21

10-Deoxy-12-hydroxymethymycin, 9CI
 [497-73-4]



C₂₅H₄₃NO₇ 469.617

Macrolide antibiotic. Prod. by *Streptomyces venezuelae*. Cryst. (Et₂O/hexane). Sol. MeOH, EtOAc, Et₂O, C₆H₆, butanol, Me₂CO, CHCl₃; fairly sol. H₂O; poorly sol. hexane. Mp 156-158°. [α]_D²⁵ +93 (c, 1.0 in H₂O). (ε 12600); 322 (ε 40) (EtOH) (Berdy).

Me₂CO solvate: Mp 156-158°.

CH₂Cl₂ solvate:

Hexagonal plates. Mp 154-156°.

10-Hydroxy: 12-Hydroxymethymycin.

Novamethymycin

C₂₅H₄₃NO₈ 485.617

Prod. by *Streptomyces venezuelae*. Solid.

Aglycone: **Neomethynolide**

[497-51-8]

C₁₇H₂₈O₅ 312.405

From *Streptomyces venezuelae*.

Mp 102-104°.

Djerassi, C. *et al.*, *Tetrahedron*, 1958, **3**, 255; 1959, **4**, 369 (*isol*, *struct*)

Celmer, W.D. *et al.*, *J.A.C.S.*, 1965, **87**, 1801 (*config*)

Rickards, R.W. *et al.*, *Tet. Lett.*, 1970, 1025 (*abs config*)

Olson, K.A. *et al.*, *CA*, 1972, **77**, 113770j (*synth*)

Maezawa, I. *et al.*, *J. Antibiot.*, 1974, **27**, 84 (*aglycone*)

de Grande, G.G. *et al.*, *CA*, 1975, **82**, 31240a

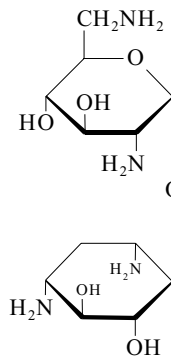
Paterson, I. *et al.*, *Tetrahedron*, 1985, **41**, 3569 (*synth*, *rev*)

Inanaga, J. *et al.*, *Bull. Chem. Soc. Jpn.*, 1986, **59**, 1521 (*synth*)

Zhang, Q. *et al.*, *J. Nat. Prod.*, 2001, **64**, 1447-1450 (*pmr*, *cmr*, *Novamethymycin*)

Neomycin A

Neomin. Myacin. Neamine. Nebramycin factor 10. Nebramycin X. Negamicin†. Dekamycin V [3947-65-7]



C₁₂H₂₆N₄O₆ 322.361

Aminoglycoside antibiotic. Isol. from *Streptomyces fradiae*. Degradn. prod. of Neomycin B, N-23 and Neomycin C, N-24. Shows relatively weak activity primarily against gram-positive organisms. Cryst. (H₂O or EtOH aq.). Mp 225-226° dec. [α]_D²⁵ +112.8 (c, 1.0 in H₂O). Component of Neomycin, BAN, INN.

► LD₅₀ (mus, scu) 1250 mg/kg. QP3860000

Hydrochloride:

Amorph. powder. Mp 250-260° dec. [α]_D²³ +83 (c, 1.0 in H₂O).

N-Ac:

Cryst. (MeOH). Mp 334-336°. [α]_D²⁵ +87 (c, 1.0 in H₂O).

[1404-04-2, 1405-10-3]

Kuehl, F.A. *et al.*, *J.A.C.S.*, 1951, **73**, 881 (*struct*)

Peck, R.L. *et al.*, *J.A.C.S.*, 1953, **75**, 1018 (*isol*)

Rinehart, K.L. *et al.*, *J.A.C.S.*, 1957, **79**, 4567; 4568; 1958, **80**, 6461; 6463 (*struct*)

Kuniaki, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1967, **40**, 2371 (*synth*)

Hanessian, S. *et al.*, *Can. J. Chem.*, 1978, **56**, 1509 (*synth*)

Koch, K.L. *et al.*, *J.O.C.*, 1978, **43**, 1430 (*struct*)

Harayama, A. *et al.*, *Bull. Chem. Soc. Jpn.*, 1979, **52**, 3626 (*synth*)

Ewad, M.J.S. *et al.*, *Chem. Comm.*, 1983, 18; 20 (*biosynth*)

Botto, R.E. *et al.*, *J.A.C.S.*, 1983, **105**, 1021 (*N nmr*)

Goda, S.K. *et al.*, *J. Antibiot.*, 1992, **45**, 984 (*biosynth*)

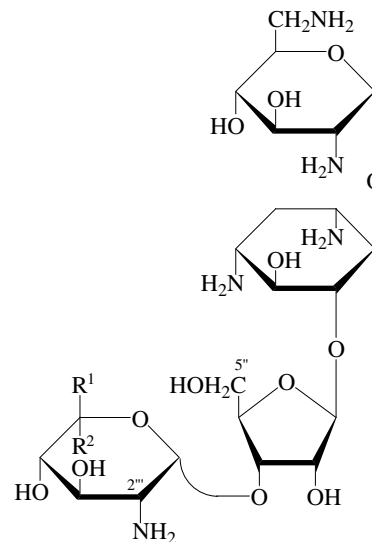
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 185

Ryu, D.H. *et al.*, *Bioorg. Med. Chem. Lett.*, 2003, **13**, 901-903 (*synth*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, NCE500

N-22**Neomycin B****N-23**

Framycetin, BAN, INN. Actilin. Soframycin. Antibiotic 10676. Dextromycin. Streptothricin B₂. Dekamycin III. Many other names [119-04-0]



R¹ = H

R² = CH₂NH₂

C₂₃H₄₆N₆O₁₃ 614.649

Aminoglycoside antibiotic. Prod. by *Streptomyces fradiae* and other spp. Clinically used broad-spectrum antibiotic. Amorph. [α]_D²⁵ +83 (c, 1 in 0.2M H₂SO₄). Log P -9.03 (uncertain value) (calc). Indefinite Mp. Hydrol. → Neomycin A, D-ribose and 2,6-diamino-2,6-dideoxy-L-idose.

► LD₅₀ (mus, scu) 220 mg/kg; LD₅₀ (mus, orl) 1250 mg/kg. QP4025000

Mixt. with Neomycin A and C: **Neomycin**, BAN, INN. Fradiomycin. Many other names

[1404-04-2] Antibiotic complex. Used mainly topically as sulfate and as undecylenate salts.

► Nephrotoxic and ototoxic effects reported when used therapeutically. Other adverse effects. LD₅₀ (mus, scu) 275 mg/kg; LD₅₀ (mus, orl) 2880 mg/kg. QP3850000

O^{5'}-β-D-Glucopyranoside: **Neomycin B glucoside**

[53861-54-4]

C₂₉H₅₆N₆O₁₈ 776.791

From *Streptomyces fradiae* in glucose. Sol. H₂O. [α]_D²⁵ +35.

N-Diphosphate: **Neomycin B pyrophosphate**

[31390-61-1]

C₂₃H₄₈N₆O₁₉P₂ 774.609

Prod. by *Streptomyces fradiae*. Position of pyrophosphate residue not known.

6'''-Deamino, 6'''-hydroxy: 6'''-Deamino-6'''-hydroxynemycin B

[78524-73-9]

C₂₃H₄₅N₅O₁₄ 615.634Prod. by *Streptomyces rimosus* ssp. *paromomyceticus*. Powder.

[1405-10-3, 1406-04-8]

Ford, J.H. *et al.*, *J.A.C.S.*, 1955, **77**, 5311 (*isol*)Rinehart, K.L. *et al.*, *J.A.C.S.*, 1957, **79**, 4567;4568; 1958, **80**, 6461; 6463 (*struct*)Hichens, M. *et al.*, *J.A.C.S.*, 1963, **85**, 1547(*struct*)Haskell, T.H. *et al.*, *J.O.C.*, 1963, **28**, 2598(*struct*)Majumder, M.K. *et al.*, *Biochem. J.*, 1970, **120**,271-278 (*pyrophosphate*)Perlman, D. *et al.*, *J. Antibiot.*, 1974, **27**, 637(*deriv*)Heyes, W.F. *et al.*, *Anal. Profiles Drug Subst.*,1979, **8**, 399 (*rev*)Chernyshev, A.I. *et al.*, *Khim. Prir. Soedin.*,1980, **16**, 686; *Chem. Nat. Compd. (Engl.**Transl.*), 1980, **16**, 500 (*cmr*)Lin, Z.-L. *et al.*, *CA*, 1981, **95**, 220241Autissier, D. *et al.*, *J. Antibiot.*, 1981, **34**, 536-

543 (6'''-Deamino-6'''-hydroxynemycin B)

Ewad, M.J.S. *et al.*, *Chem. Comm.*, 1983, 18; 20(*biosynth*)Botto, R.E. *et al.*, *J.A.C.S.*, 1983, **105**, 1021(N-15 *nmr*)Usui, T. *et al.*, *Carbohydr. Res.*, 1984, **130**, 165;1988, **174**, 133 (*synth*)Botto, R.E. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**,545-563 (*pmr*)Usui, T. *et al.*, *J. Antibiot.*, 1987, **40**, 1464(*synth*)Reid, D.G. *et al.*, *J. Biol. Chem.*, 1987, **262**, 7967(*pmr*, *cmr*)Negwer, M. *et al.*, *Organic-Chemical Drugs and**their Synonyms*, 6th edn., Akademie-Verlag,

1987, 7030

Kirk-Othmer *Encycl. Chem. Technol.*, 4th edn.,Wiley, 1991, **2**, 904 (*rev*)Goda, S.K. *et al.*, *J. Antibiot.*, 1992, **45**, 984(*biosynth*)Martindale, *The Extra Pharmacopoeia*, 30th

edn., Pharmaceutical Press, 1993, 185

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of**Industrial Materials*, 8th edn., Van Nostrand

Reinhold, 1992, NCE000; NCF000; NCG000

Neomycin C

N-24

Streptothricin B₁. Dekamycin II

[66-86-4]

As Neomycin B, N-23 with

R¹ = CH₂NH₂, R² = HC₂₃H₄₆N₆O₁₃ 614.649

Aminoglycoside antibiotic. Prod. by

Streptomyces fradiae and other spp.

Clinically used broad spectrum

antibiotic. Amorph. Sol. H₂O; fairly sol.

MeOH; poorly sol. butanol, hexane.

[α]_D²⁵ +121 (c, 1.0 in 0.2N H₂SO₄).

Log P -9.03 (uncertain value) (calc).

Indefinite Mp. Hydrol. → D-ribose and

Neomycin A, N-22. Component of

Neomycin, BAN, INN and Fradiomy-

cin sulfate, JAN. Also used as palmitate,

sulfate and undecenoate salts.

► LD₅₀ (mus, ipr) 116 mg/kg; LD₅₀ (mus,ivn) 20 mg/kg, LD₅₀ (mus, scu) 290 mg/

kg. QP4200000

N-Diphosphate: Neomycin C *pyropho-**sphate*

[31390-62-2]

C₂₃H₄₈N₆O₁₉P₂ 774.609Prod. by *Streptomyces fradiae*. Powder.Sol. H₂O; poorly sol. EtOH. Point of

phosphorylation not known.

6'''-Deamino, 6'''-hydroxy: 6'''-Deamino-6'''-hydroxynemycin C

[78549-66-3]

C₂₃H₄₅N₅O₁₄ 615.634Prod. by *Streptomyces rimosus* ssp.*paromomyceticus*. Powder. Sol. H₂O.[α]_D +111.4.

[1404-04-2, 1405-10-3]

Ford, J.H. *et al.*, *J.A.C.S.*, 1955, **77**, 5311 (*isol*)Rinehart, K.L. *et al.*, *J.A.C.S.*, 1957, **79**, 4568;4667; 1958, **80**, 6461; 6463; 1962, **84**, 3218(*struct*)Hichens, M. *et al.*, *J.A.C.S.*, 1963, **85**, 1547(*struct*)Majumder, M.K. *et al.*, *Biochem. J.*, 1970, **120**,271-278 (*diphosphate*)Umezawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1980,**53**, 3259 (*synth*, *bibl*)Autissier, D. *et al.*, *J. Antibiot.*, 1981, **34**, 536-

543 (6'''-Deamino-6'''-hydroxynemycin C)

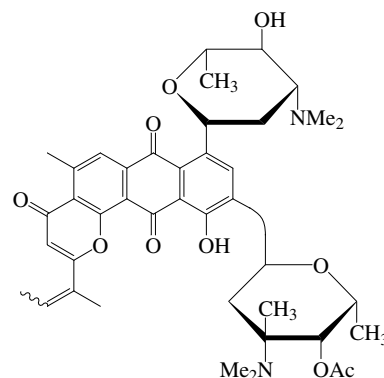
Ewad, M.J.S. *et al.*, *Chem. Comm.*, 1983, 18; 20(*biosynth*)Lewis, R.J. *et al.*, *Sax's Dangerous Properties of**Industrial Materials*, 8th edn., Van Nostrand

Reinhold, 1992, NCF300

Neopluramycin, 9CI, 8CI

N-25

[11081-47-3]

C₄₁H₅₀N₂O₁₀ 730.853

Anthracene antibiotic. Isol. from

Streptomyces pluricologrescens. Antibio-

tic which inhibits the growth of

gram-positive bacteria. Also shows

antitumour activity. Orange-red cryst.

(EtOAc). Sol. MeOH, C₆H₆, acids;poorly sol. Et₂O, H₂O, hexane.Mp 180-184° dec. [α]_D²⁶ +362 (c, 1.05 inCHCl₃). λ_{max} 218 (ε 47300); 243

(ε 59000); 272 (ε 41200); 426 (ε 13400)

(EtOH/HCl) (Derep). λ_{max} 206

(ε 59600); 248 (ε 52100); 260 (sh)

(ε 49800); 320 (ε 16200); 546 (ε 7000)

(EtOH/NaOH) (Derep). λ_{max} 216

(ε 46700); 243 (ε 57700); 270 (ε 41200);

430 (ε 12000) (EtOH) (Derep). λ_{max} 218

(E1%/1cm 648); 243 (E1%/1cm 808);

272 (E1%/1cm 564); 426 (E1%/1cm 184)

(EtOH-HCl) (Berdy).

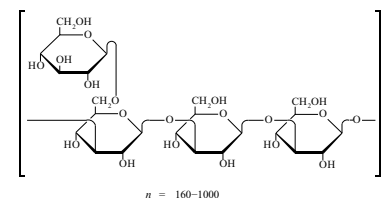
► LD₅₀ (mus, ivn) 12.5 mg/kg, LD₅₀ (mus,

ivn) 2.5 mg/kg. CB4584300

Kondo, S. *et al.*, *J. Antibiot.*, 1970, **23**, 354;1977, **30**, 1143 (*isol*, *synth*, *struct*, *cmr*)**Neoschizophyllan**

N-26

[63440-28-8]



n = 160-1000

Semisynthetic. Shows antineoplastic

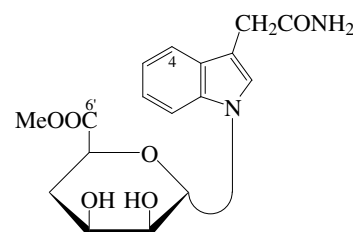
activity.

Possesses 3-stranded helical conformation.

Ger. Pat., 1977, 2 648 834; CA, **87**, 66594 (*synth*)Australian Pat., 1983, 528 005; CA, **99**, 110734(*synth*)**Neosidomycin**

N-27

[72033-44-4]

C₁₇H₂₀N₂O₆ 348.355

Nucleoside-type antibiotic. Metab. from

Streptomyces hygroscopicus. Weakly

active against gram-negative bacteria.

Amorph. powder + 1/2 H₂O. Sol. MeOH,

butanol.

Mp 93-103°. [α]_D²⁶ +51 (c, 0.48 in

MeOH). Similar to Antibiotic SF 2140,

A-773. λ_{max} 270 (ε 8130); 279 (ε 7760);

283 (sh) (ε 7410); 298 (ε 5750) (MeOH)

(Derep).

Di-O-Ac: Mp 78-80°.

4-Methoxy: 4-Methoxyneosidomycin.

Kahakamide AC₁₈H₂₂N₂O₇ 378.381Prod. by the marine *Nocardiopsis das-**sonvillei*. Stereochem. not confirmed.λ_{max} 222; 266; 286; 295 (no solvent

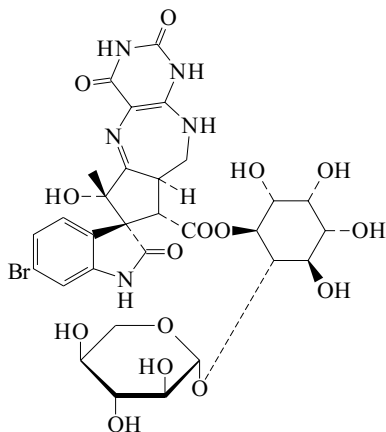
reported).

4-Methoxy, parent acid, 6'-amide:

Kahakamide BC₁₇H₂₁N₃O₆ 363.369Prod. by the marine *Nocardiopsis das-**sonvillei*. Stereochem. not confirmed.Furuta, R. *et al.*, *Tet. Lett.*, 1979, 1701-1704(*isol*, *uv*, *ir*, *pmr*, *ms*, *struct*)Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)Buchanan, J.G. *et al.*, *J.C.S. Perkin I*, 1994,1417-1426 (*synth*)Schumacher, R.W. *et al.*, *Tet. Lett.*, 2001, **42**,5133-5135 (*Kahakamides*)

Neosurugatoxin

[80680-43-9]

 $C_{30}H_{34}BrN_5O_{15}$ 784.527

Toxin from the mid-gut gland of *Babylonia japonica* (Japanese ivory shell) of dietary origin. Shows powerful antitumor activity. Prisms + 1H₂O (H₂O). Sol. H₂O-MeOH.

Mp 331-335° dec. Extremely unstable in alkaline medium and fairly heat-labile. λ_{\max} 220 (ε 44700); 282 (ε 15100); 310 (sh) (ε 9120); 325 (sh) (ε 6310) (H₂O) (Derep). λ_{\max} 220 (ε 44668); 282 (ε 15135); 310; 325 (H₂O) (Berdy).

5'-O-Dexylosyl: **Prosurgatoxin**
[99102-40-6]

 $C_{25}H_{26}BrN_5O_{11}$ 652.411

Isol. from *Babylonia japonica*. Ganglion blocking agent. λ_{\max} 220 (ε 44700); 282 (ε 15100); 310 (sh) (ε 9120); 325 (sh) (ε 6310) (H₂O) (Derep).

Kosuge, T. *et al.*, *Tet. Lett.*, 1981, 3417 (*cryst struct*)

Kosuge, T. *et al.*, *Chem. Pharm. Bull.*, 1982, **30**, 3255; 1985, **33**, 2890; 3059 (*isol*, Prosurgatoxin)

Inoue, S. *et al.*, *CA*, 1983, **100**, 191639 (*synth*)
Hayashi, E. *et al.*, *J. Neurochem.*, 1984, **42**, 1491 (*props*)

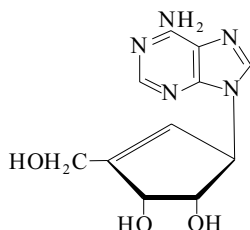
Inoue, S. *et al.*, *Tet. Lett.*, 1986, **27**, 5225 (*synth*)
Inoue, S. *et al.*, *Yakugaku Zasshi*, 1987, **107**, 645 (*rev, synth*)

Wada, A. *et al.*, *Methods Neurosci.*, 1992, **8**, 311 (*rev, props*)

Inoue, S. *et al.*, *Tetrahedron*, 1994, **50**, 2753 (*synth*)

Neplanocin A

A 11079B_{1b}. Antibiotic A 11079B_{1b}
[72877-50-0]

 $C_{11}H_{13}N_5O_3$ 263.255

N-28

Nucleoside antibiotic. Isol. from

Ampullariella regularis. Active against tumours. Cryst. (Me₂CO aq.). Sol. H₂O, DMF, Me₂CO-H₂O, AcOH, DMSO; poorly sol. EtOAc, hexane.

Mp 220-222°. $[\alpha]_D^{25}$ -157 (c, 0.5 in H₂O). λ_{\max} 260 (ε 15100) (H₂O at pH 2) (Derep). λ_{\max} 262 (ε 15800) (H₂O) (Derep). λ_{\max} 263 (E1%/1cm 602.1) (H₂O) (Berdy). λ_{\max} 261 (E1%/1cm 566.4) (pH 3 buffer) (Berdy). λ_{\max} 263 (E1%/1cm 595) (pH 10 buffer) (Berdy).

► LD₅₀ (mus, ipr) 13.7 mg/kg. GY5976500
Fukukawa, K. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 597

Yaginuma, S. *et al.*, *J. Antibiot.*, 1981, **34**, 359 (*isol*)

Hayashi, M. *et al.*, *J. Antibiot.*, 1981, **34**, 675 (*struct*)

Arita, M. *et al.*, *J.A.C.S.*, 1983, **105**, 4049 (*synth*)

Lim, M.-I. *et al.*, *Tet. Lett.*, 1983, **24**, 4051; 5559 (*synth*)

Tseng, C.K.H. *et al.*, *Tet. Lett.*, 1985, **26**, 3617 (*synth*)

Fisher, E.W. *et al.*, *J. Antibiot.*, 1987, **40**, 873 (*props, bibl*)

Medich, J.R. *et al.*, *Tet. Lett.*, 1987, **28**, 4131 (*synth*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)
Arai, Y. *et al.*, *J.C.S. Perkin 1*, 1988, 3133 (*synth, bibl*)

Marquez, V.E. *et al.*, *J.O.C.*, 1988, **53**, 5709 (*synth*)

Bestmann, H.-J. *et al.*, *Angew. Chem., Int. Ed.*, 1990, **29**, 99 (*synth*)

Wolfe, M.S. *et al.*, *J.O.C.*, 1990, **55**, 4712 (*synth, bibl*)

Borthwick, A.D. *et al.*, *Tetrahedron*, 1992, **48**, 571 (*rev, synth*)

Hill, J.M. *et al.*, *J.A.C.S.*, 1995, **117**, 5391 (*biosynth*)

Trost, B.M. *et al.*, *Tet. Lett.*, 1997, **38**, 1707 (*synth*)

Niizuma, S. *et al.*, *Tetrahedron*, 1997, **53**, 13621-13632 (*synth*)

Yoshida, N. *et al.*, *Tet. Lett.*, 1998, **39**, 4677-4678 (*synth*)

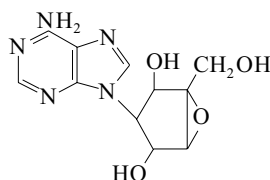
Hegedus, L.S. *et al.*, *J.O.C.*, 2000, **65**, 4204-4207 (*synth*)

Ono, M. *et al.*, *J.O.C.*, 2001, **66**, 8199-8203 (*synth*)

Neplanocin B

N-30

3-(6-Amino-9H-purin-9-yl)-1-(hydroxymethyl)-6-oxabicyclo[3.1.0]hexane-2,4-diol, 9CI
[72877-49-7]

 $C_{11}H_{13}N_5O_4$ 279.255

Nucleoside antibiotic. Isol. from *Ampullariella regularis*. Weakly active against tumours. Platelets. Sol. H₂O, DMSO; poorly sol. EtOAc, hexane.

Mp 269-272° dec. $[\alpha]_D^{24}$ -3.5 (c, 1 in DMSO). λ_{\max} 260 (ε 15100) (H₂O at pH 2) (Derep). λ_{\max} 262 (ε 15800) (H₂O) (Derep). λ_{\max} 262 (E1%/1cm 530.4) (H₂O) (Berdy). λ_{\max} 259 (E1%/1cm

506.7) (HCl) (Berdy). λ_{\max} 263 (E1%/1cm 522.7) (NaOH) (Berdy).

► RN8990000

Ger. Pat., 1979, 2 917 000; *CA*, **92**, 109108 (*isol, props*)

Hayashi, M. *et al.*, *Nucleic Acids Symp. Ser.*, 1980, **8**, 565 (*struct, props*)

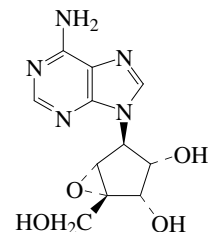
Japan. Pat., 1981, 81 51 414; *CA*, **95**, 175791 (*isol, props*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)

Neplanocin C

N-31

4-(6-Amino-9H-purin-9-yl)-1-(hydroxymethyl)-6-oxabicyclo[3.1.0]hexane-2,3-diol, 9CI. A 11079B₂. Antibiotic A 11079B₂
[72877-48-6]

 $C_{11}H_{13}N_5O_4$ 279.255

Nucleoside antibiotic. Isol. from *Ampullariella regularis*. Weak antitumour agent. Active against phytopathogenic fungi. Platelets. Sol. H₂O, DMSO, DMF; poorly sol. EtOAc, hexane.

Mp 226° dec. $[\alpha]_D^{21}$ -43.6 (c, 0.67 in H₂O). λ_{\max} 260 (ε 15100) (H₂O at pH 2) (Derep). λ_{\max} 262 (ε 15800) (H₂O) (Derep). λ_{\max} 263 (E1%/1cm 538.9) (H₂O) (Berdy). λ_{\max} 259 (E1%/1cm 510.8) (pH 3 buffer) (Berdy). λ_{\max} 263 (E1%/1cm 534.4) (pH 10 buffer) (Berdy).

► LD₅₀ (mus, ipr) 55 mg/kg. RN8990100

Ger. Pat., 1979, 2 917 000; *CA*, **92**, 109108

Hayashi, M. *et al.*, *Nucleic Acids Symp. Ser.*, 1980, **8**, 565 (*isol, props*)

De Clereq, E. *et al.*, *Antimicrob. Agents Chemother.*, 1985, **28**, 84; 1986, **29**, 482 (*props*)

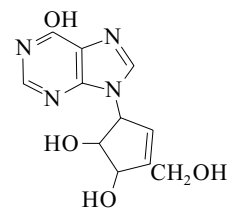
Kinoshita, K. *et al.*, *Nucleosides Nucleotides*, 1985, **4**, 661 (*cryst struct*)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)
Comin, M.J. *et al.*, *Tetrahedron*, 2000, **56**, 4639-4649 (*synth*)

Neplanocin D

N-32

9-[4,5-Dihydroxy-3-(hydroxymethyl)-2-cyclopenten-1-yl]-1,9-dihydro-6H-purin-6-one, 9CI
[72877-47-5]

 $C_{11}H_{12}N_4O_4$ 264.24

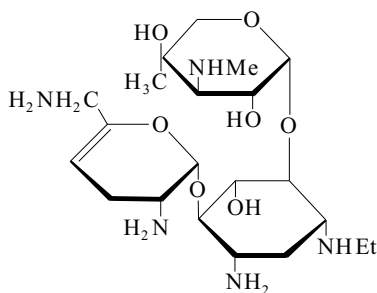
Nucleoside antibiotic. Isol. from *Ampul-lariella regularis*. Weak antitumour agent. Sol. H₂O, Py, DMF, DMSO, AcOH; poorly sol. EtOAc, hexane. λ_{\max} 260 (ϵ 15100) (H₂O at pH 2) (Derep). λ_{\max} 262 (ϵ 15800) (H₂O) (Derep). λ_{\max} 251 (E1%/1cm 479) (H₂O) (Berdy). λ_{\max} 251 (E1%/1cm 453) (HCl) (Berdy). λ_{\max} 256 (E1%/1cm 508) (NaOH) (Berdy).

► UP0791950

Ger. Pat., 1979, 2 917 000; CA, **92**, 109108
Hayashi, M. et al., *Nucleic Acids Symp. Ser.*,
1980, **8**, 565 (isol, struct, props)
Japan. Pat., 1981, 81 51 414; CA, **95**, 175791
Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Netilmicin, BAN, INN N-33

N-Ethylisomicin. Certomycin. Netromycin. Vivicol. Antibiotic Sch 20569. Sch 20569. Many other names [56391-56-1]



C₂₁H₄₁N₅O₇ 475.584

Semisynthetic aminoglycoside antibiotic. Shows broad spectrum activity. Sol. H₂O; poorly sol. EtOH, hexane. Mp 100-103°. [α]_D +129.5 (H₂O). Log P -3.81 (uncertain value) (calc).

► Less ototoxic than congeners. LD₅₀ (rat, ipr) 231 mg/kg. Exp. reprod. and teratogenic effects; LD₅₀ (mus, ivn) 40 mg/kg, LD₅₀ (mus, ipr) 125 mg/kg, LD₅₀ (mus, scu) 175 mg/kg. WK2285000

Sulfate (1:5): **Netilmicin sulfate, JAN, USAN**

[56391-57-2]

► WK2286000

U.S. Pat., 1974, 4 002 742, (Schering); CA, **87**, 6298w (synth)

Watanakunakorn, C. et al., *Antimicrob. Agents Chemother.*, 1976, **10**, 382 (props)

Wright, J.J. et al., *Chem. Comm.*, 1976, 206 (ms, nmr, synth)

Drugs of Today (Barcelona), 1981, **17**, 322 (rev)
Boxler, D.L. et al., *J.C.S. Perkin I*, 1981, 2168 (synth)

Aminoglycosides, (ed. Whelton, A. et al), M. Dekker, 1982, (book)

Nagabhushan, T.L. et al., *Carbohydr. Res.*, 1984, **130**, 243 (synth)

Noone, P. et al., *Drugs*, 1984, **27**, 548 (rev)

Solberg, C.O. et al., *Netilmicin*, Academic Press, London, 1984, (book)

Campoli-Richards, D.M. et al., *Drugs*, 1989, **38**, 703 (rev, pharmacol)

Textbook of Adverse Drug Reactions, 4th edn., (ed. Davies, D.M.), Oxford University Press, 1991, 578

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 186

Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 8766 (synonyms)

Nam, G. et al., *Org. Process Res. Dev.*, 2002, **6**, 78-81 (synth, pmr, cmr)

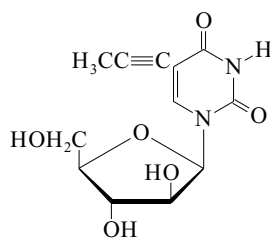
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, NCP550; SBD000

Netivudine, BAN

N-34

1- β -D-Arabinofuranosyl-5-(1-propynyl)-2,4-(1H,3H)-pyrimidinedione, 9CI. 1- β -D-Arabinofuranosyl-5-(1-propynyl)uracil. 882C87

[84558-93-0]



C₁₂H₁₄N₂O₆ 282.252

Antiviral agent. Mp 240-245° dec.

Log P -2.03 (calc).

[140623-73-0]

De Clercq, E. et al., *J. Med. Chem.*, 1983, **26**, 661 (synth, uv, pmr, pharmacol)

Cygler, M. et al., *Can. J. Chem.*, 1984, **62**, 147 (cryst struct)

Eur. Pat., 1988, 272 065, (Wellcome); CA, **110**, 8593f (synth, pharmacol)

Lacey, S.F. et al., *J. Gen. Virol.*, 1991, **72**, 623 (pharmacol)

Rahim, S.G. et al., *Antiviral Chem. Chemother.*, 1992, **3**, 293

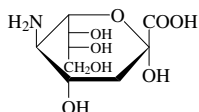
Peck, R.W. et al., *Antimicrob. Agents Chemother.*, 1995, **39**, 20 (pharmacokinetic, human)

Neuraminic acid

N-35

5-Amino-3,5-dideoxy-D-glycero-D-galactonon-2-ulosonic acid, 9CI. Prehemataminic acid

[114-04-5]



α -D-Pyranose-form

C₉H₁₇NO₈ 267.235

The aminononulosonic acid from which the sialic acids are derived. See also Sialic acids, S-37. Occurs in nature in its acylated forms.

N-Ac: See N-Acetylneuraminic acid, A-20

N-Benzoyl:

C₁₆H₂₁NO₉ 371.343

Mp 208-210° dec. [α]_D²⁴ -33 (H₂O).

N-Ethoxycarbonyl:

C₁₂H₂₁NO₁₀ 339.299

Mp 179-180° dec. [α]_D²⁴ -32.8 (H₂O).

N-Benzoyloxycarbonyl:

C₁₇H₂₃NO₁₀ 401.369

Mp 191-193° dec. [α]_D²⁴ -30.4 (H₂O).

[497-43-8, 41546-22-9]

Zilliken, F. et al., *Adv. Carbohydr. Chem.*, 1958, **13**, 237 (rev)

Gottschalk, A. et al., *The Chemistry and Biology of Sialic Acids and Related Substances*, Cambridge Univ. Press, 1960, (rev)

Wesemann, W. et al., *Annalen*, 1966, **695**, 209 (N-benzoyl, N-benzyloxycarbonyl, N-ethoxycarbonyl)

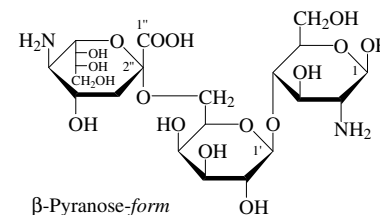
Codington, J.F. et al., *Methods Carbohydr. Chem.*, 1976, **7**, 226 (anal)

Schauer, R. et al., *Sialic Acids: Chem. Metab. and Function*, Springer-Verlag, 1982, (rev)

α -D-Neuraminopyranosyl- N-36

(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose

5-Amino-3,5-dideoxy-D-glycero- α -galacto-2-nonulopyranosonyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, 9CI



β -Pyranose-form

C₂₁H₃₈N₂O₁₇ 590.534

Pyranose-form

N,N'-Di-Ac: [78969-47-8]

C₂₅H₄₂N₂O₁₉ 674.609

Syrup. [α]_D²⁸ -0.7 (c, 1.0 in H₂O).

β -Pyranose-form

2N-Phthaloyl, undeca-Ac, Me ester:

[94537-72-1]

Syrup. [α]_D²⁰ +9.8 (c, 1.0 in CHCl₃).

Benzyl glycoside, 2',3,3',6-tetrabenzyl,

2N,5'-N-di-Ac: [89733-62-0]

C₆₀H₇₂N₂O₁₉ 1125.231

Syrup. [α]_D²⁸ -12.1 (c, 1.0 in CHCl₃).

Benzyl glycoside, 2',3,3',6-tetrabenzyl,

hepta-Ac, Me ester: [89733-61-9]

C₇₁H₈₄N₂O₂₄ 1349.444

Syrup. [α]_D²⁶ -12.2 (c, 1.0 in CHCl₃).

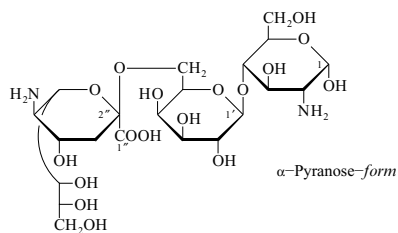
[64364-50-7, 89733-60-8, 89824-82-8, 104039-88-5]

Paulsen, H. et al., *Angew. Chem., Int. Ed.*, 1982, **21**, 927; 1985, **24**, 128 (di-N-Ac, β -pyr Me ester deriv)

Paulsen, H. et al., *Carbohydr. Res.*, 1984, **125**, 147; 1985, **144**, 205 (β -benzyl pyr derivs, pmr)

β-D-Neuraminopyranosyl-(2 → 6)-β-D-galactopyranosyl-(1 → 4)-2-amino-2-deoxy-D-glucose

5-Amino-3,5-dideoxy-D-glycero-β-D-galacto-2-nonulopyranosonyl-(2 → 6)-β-D-galactopyranosyl-(1 → 4)-2-amino-2-deoxy-D-glucose, 9CI



C₂₁H₃₈N₂O₁₇ 590.534

Pyranose-form

N,N'-Di-Ac: [85798-73-8]

C₂₅H₄₂N₂O₁₉ 674.609

Syrup. [α]_D²⁷ -3.5 (c, 1.0 in H₂O).

α-Pyranose-form

2N-Phthaloyl, undeca-Ac, Me ester: [94537-66-3]

C₅₂H₆₄N₂O₃₀ 1197.073

Syrup. [α]_D²⁰ +14 (c, 1.3 in CHCl₃).

Benzyl glycoside, 2',3,3',6-tetrabenzyl, 2N,5''N-di-Ac: [89733-66-4]

C₆₀H₇₂N₂O₁₉ 1125.231

Syrup. [α]_D²⁵ -12.5 (c, 1.0 in CHCl₃).

Benzyl glycoside, 2',3,3',6-tetrabenzyl, hepta-Ac, Me ester: [89733-64-2]

C₇₁H₈₄N₂O₂₄ 1349.444

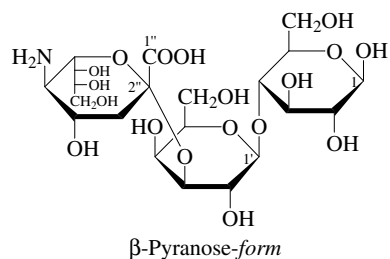
Syrup. [α]_D²² -16 (c, 0.9 in CH₂Cl₂).

[89733-63-1, 89733-65-3, 89824-83-9, 94537-65-2, 104039-89-6]

Paulsen, H. et al., *Carbohydr. Res.*, 1984, **125**, 47; 1985, **144**, 205 (di-N-Ac, α-pyr N-phthaloyl Me ester deriv, α-benzyl pyr Me ester deriv, synth, pmr)

α-D-Neuraminopyranosyl-(2 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose

5-Amino-3,5-dideoxy-D-glycero-α-D-galacto-2-nonulopyranosonyl-(2 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose, 9CI



C₂₁H₃₇NO₁₈ 591.519

Occurs in bovine colostrum, human urine and in Hematoside, a sialosyl ceramide isol. from horse erythrocytes.

Pyranose-form

N-Ac: [35890-38-1]

C₂₃H₃₉NO₁₉ 633.556

Amorph. [α]_D +21.3 (c, 0.62 in H₂O).

β-Pyranose-form

Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, N-Ac: [96520-24-0]
C₆₅H₇₅NO₁₉ 1174.303
Syrup. [α]_D²⁰ -7.1 (c, 1.12 in MeOH).

Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, N-Ac, Me ester: [102727-55-9]
C₆₆H₇₇NO₁₉ 1188.33
Syrup. [α]_D²⁰ -7.8 (c, 0.58 in MeOH).

Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, 4'',5''N,7'',8'',9''-penta-Ac, Me ester: [96520-22-8]
C₇₄H₈₅NO₂₃ 1356.478
Syrup. [α]_D +5.8 (c, 0.93 in CHCl₃).
[α]_D²⁰ -4.8 (c, 0.52 in CHCl₃).

[70472-21-8]

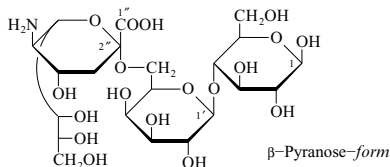
Ogawa, T. et al., *Carbohydr. Res.*, 1985, **135**, C5 (N-Ac, pmr)

Sugimoto, M. et al., *Glycoconjugate J.*, 1985, **2**, 5 (penta-Ac)

Paulsen, H. et al., *Carbohydr. Res.*, 1986, **146**, 147 (N-Ac, β-benzyl pyr pentabenzyl derivs, pmr)

α-D-Neuraminopyranosyl-(2 → 6)-β-D-galactopyranosyl-(1 → 4)-D-glucose

5-Amino-3,5-dideoxy-D-glycero-α-D-galacto-2-nonulopyranosonyl-(2 → 6)-β-D-galactopyranosyl-(1 → 4)-D-glucose, 9CI



C₂₁H₃₇NO₁₈ 591.519

N-Ac: [35890-39-2]

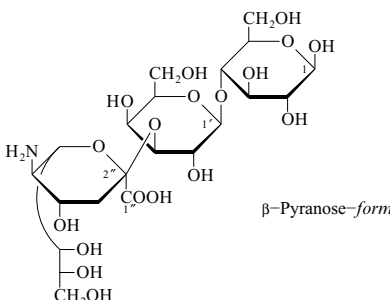
C₂₃H₃₉NO₁₉ 633.556

Amorph. powder. [α]_D²⁷ +5.6 (c, 1.0 in H₂O).

Furuhata, K. et al., *Chem. Pharm. Bull.*, 1986, **34**, 2725 (N-Ac, anhydro Me ester deriv, ir, pmr, ms, hplc)

β-D-Neuraminopyranosyl-(2 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose

5-Amino-3,5-dideoxy-D-glycero-β-D-galacto-2-nonulopyranosonyl-(2 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose, 9CI



C₂₁H₃₇NO₁₈ 591.519

Pyranose-form

N-Ac: [96612-93-0]

[11040-27-0]

C₂₃H₃₉NO₁₉ 633.556

Amorph. [α]_D²⁰ +12.3 (c, 0.47 in H₂O).

β-Pyranose-form

Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, N-Ac: [96520-25-1]

C₆₅H₇₅NO₁₉ 1174.303

Syrup. [α]_D²⁰ -5.3 (c, 1.21 in MeOH).

Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, N-Ac, Me ester: [102716-29-0]

C₆₆H₇₇NO₁₉ 1188.33

Syrup. [α]_D²⁰ -6.1 (c, 0.48 in MeOH).

Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, 4'',5''N,7'',8'',9''-penta-Ac, Me ester: [96520-23-9]

C₇₄H₈₅NO₂₃ 1356.478

Syrup. [α]_D²⁰ -2.8 (c, 1.33 in CHCl₃).

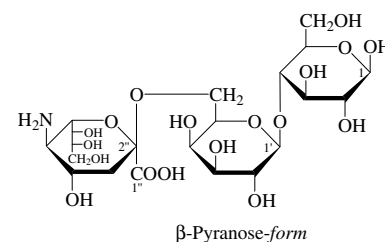
[102778-91-6, 102778-92-7]

Ogawa, T. et al., *Carbohydr. Res.*, 1985, **135**, C5 (N-Ac, pmr)

Paulsen, H. et al., *Carbohydr. Res.*, 1986, **146**, 147 (N-Ac, β-benzyl pyr pentabenzyl derivs, pmr)

β-D-Neuraminopyranosyl-(2 → 6)-β-D-galactopyranosyl-(1 → 4)-D-glucose

5-Amino-3,5-dideoxy-D-glycero-β-D-galacto-2-nonulopyranosonyl-(2 → 6)-β-D-galactopyranosyl-(1 → 4)-D-glucose, 9CI.
β-D-Neuraminopyranosyl-(2 → 6)-lactose



C₂₁H₃₇NO₁₈ 591.519

N-Ac: [56144-12-8]

[11040-27-0]

C₂₃H₃₉NO₁₉ 633.556

Amorph. powder. [α]_D²⁷ +1.8 (c, 1.0 in H₂O).

β-Pyranose-form

1,6-Anhydro, 2,2',3,3',4'-pentabenzyl, 4'',5N'',7'',8'',9''-penta-Ac, Me ester: [90318-50-6]

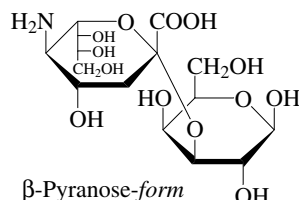
C₆₇H₇₇NO₂₂ 1248.339

Powder. [α]_D²⁶ -27 (c, 1.0 in CHCl₃).

Furuhata, K. et al., *Chem. Pharm. Bull.*, 1986, **34**, 2725 (N-Ac, β-anhydro Me ester deriv, ir, pmr, cmr, ms)

α-D-Neuraminopyranosyl-(2 → 3)-D-galactose

5-Amino-3,5-dideoxy-D-glycero-α-D-galacto-2-nonulopyranosonyl-(2 → 3)-D-galactose, 9CI



C₁₅H₂₇NO₁₃ 429.377
Isol. as a minor component from a ganglioside mixt.

Pyranose-form

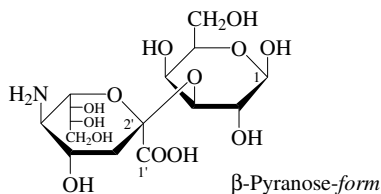
N-Ac: [83563-61-5]
C₁₇H₂₉NO₁₄ 471.414
Oil. [α]_D²⁵ +23.1 (c, 1.18 in H₂O).

β-Pyranose-form

Benzyl glycoside, 2,6-dibenzyl, N-Ac: [96520-19-3]
C₃₈H₄₇NO₁₄ 741.788
Syrup. [α]_D -25.9 (c, 1.62 in MeOH).
Benzyl glycoside, 2,6-dibenzyl, 4'',5''N,7'',8'',9''-penta-Ac, Me ester: [96520-15-9]
C₄₇H₅₇NO₁₈ 923.963
Syrup. [α]_D -21.7 (c, 1.15 in CHCl₃).
Wiegandt, H. et al., Z. Naturforsch., B, 1964, 19, 256; 1965, 20, 164
Handb. Lipid Res., 1983, 3, 165 (isol)
Ogawa, T. et al., Carbohydr. Res., 1985, 135, C5 (N-Ac, β-benzyl pyr dibenzyl derivs, pmr, cmr)

β-D-Neuraminopyranosyl-(2 → 3)-D-galactose

5-Amino-3,5-dideoxy-D-glycero-β-D-galacto-2-nonulopyranosonyl-(2 → 3)-D-galactose, 9CI



C₁₅H₂₇NO₁₃ 429.377

Pyranose-form

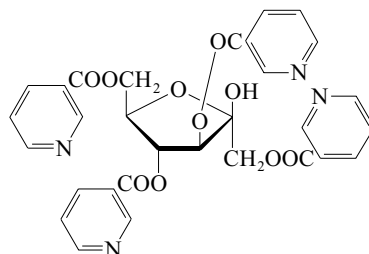
N-Ac: [96520-21-7]
C₁₇H₂₉NO₁₄ 471.414
[α]_D²⁵ +11 (c, 0.3 in H₂O).

β-Pyranose-form

Benzyl glycoside, 2,6-dibenzyl, 4'',5''N,7'',8'',9''-penta-Ac, Me ester: [96520-16-0]
C₄₇H₅₇NO₁₈ 923.963
[α]_D -25.4 (c, 1.40 in CHCl₃).
Ogawa, T. et al., Carbohydr. Res., 1985, 135, C5 (N-Ac, β-benzyl gly Me ester deriv, pmr, cmr)

Nicofuranose, BAN, INN, JAN

β-D-Fructofuranose 1,3,4,6-tetra-3-pyridinecarboxylate, 9CI. D-Fructofuranose 1,3,4,6-tetranicotinate, 8CI. ES 304. Bradilan. Buchidan. Cardilan. Romanil. Vasperdil [15351-13-0]

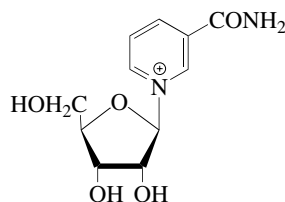


C₃₀H₂₄N₄O₁₀ 600.54
Peripheral vasodilator, antithrombotic agent. Mp 145-146°. [α]_D¹⁸ -8.5 (CHCl₃). Log P 1.17 (calc).

U.K. Pat., 1970, 1 197 978, (Eprova); CA, 73, 77559d (synth, pharmacol)
Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 1311

Nicotinamide ribonucleoside

3-(Aminocarbonyl)-1-β-D-ribofuranosylpyridinium(1+), 9CI. Nicotinamide riboside [1341-23-7]



C₁₁H₁₅N₂O₅[⊕] 255.25
Bromide: [78687-39-5]
C₁₁H₁₅BrN₂O₅ 335.154
Amorph. hygroscopic powder. [α]_D²⁰ -33 (c, 1.42 in H₂O).

5-O-Phosphate inner salt: Nicotinamide ribonucleotide. Nicotinamide ribotide. Nicotinamide mononucleotide [1094-61-7]

C₁₁H₁₅N₂O₈P 334.222
Intermed. in synth. of nicotinamide adenine nucleotide analogues. Subcomponent of coenzymes I and II. Amorph. powder. [α]_D²⁰ -31.4 (c, 1.94 in H₂O).
5'-O-(2ξ-Acetoxy-3ξ-methylpentanoyl): C₁₉H₂₇N₂O₈[⊕] 411.431
Isol. from the beetle *Platyphora opima*. [α]_D²⁵ -1.6 (c, 0.19 in MeOH). Counterion not specified. λ_{max} 210 (log ε 3.8); 260 (log ε 3.44) (MeOH).

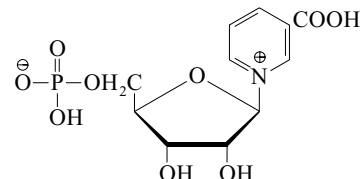
[75414-16-3]

Haynes, L.J. et al., J.C.S., 1957, 3727-3732 (synth, phosphate)
Mikhailopulo, I.A. et al., Synthesis, 1981, 388-389 (synth, pmr, bibl, phosphate)
Walt, D.R. et al., J.A.C.S., 1984, 106, 234-239 (synth, use, phosphate, bibl)

Micheli, V. et al., Arch. Biochem. Biophys., 1990, 283, 40-45 (metab, phosphate)
Liu, R. et al., Nucleosides Nucleotides, 1994, 13, 1215-1216 (synth, phosphate)
Plasman, V. et al., J. Nat. Prod., 2000, 63, 1261-1264 (isol)

Nicotinic acid mononucleotide

3-Carboxy-1-(5-O-phosphono-β-D-ribofuranosyl)pyridinium hydroxide inner salt, 9CI. 3-Carboxy-1-β-D-ribofuranosylpyridinium hydroxide 5'-(dihydrogen phosphate) inner salt, 8CI. Deamido-NMN. Niacin ribonucleotide. Nicotinic acid ribonucleotide [321-02-8]

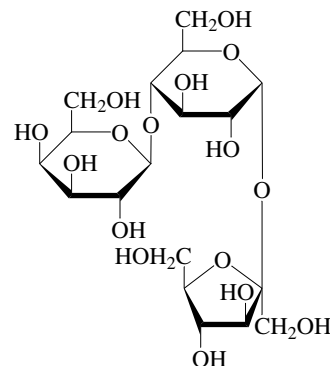


C₁₁H₁₄NO₉P 335.207
Isol. from bacteria. Intermed. in the biosynth. of nicotinic acid.

Konno, K. et al., Nature (London), 1965, 205, 874 (biosynth)
Wagner, C. et al., Anal. Biochem., 1968, 25, 472 (synth)
Honjo, T. et al., Methods Enzymol., 1971, 18B, 132 (enzymic synth)

Nigeglanose

β-D-Galactopyranosyl-(1 → 4)-α-D-glucopyranosyl β-D-fructofuranoside. 4-O-β-D-Galactopyranosyl-D-sucrose [187674-67-5]



C₁₈H₃₂O₁₆ 504.441
Constit. of the seeds of *Nigella gladiifera*.
Hao, H. et al., Yaoxue Xuebao, 1996, 31, 654-659; CA, 126, 183810b

Nigeran

Mycodextran [31799-84-5]
A linear D-glucan containing alternating α-D-(1 → 3) and α-D-(1 → 4) linkages. Prod. by *Aspergillus niger* 152 from a wide range of substrates and by a great variety of fungi. [α]_D²⁵ +225 (c, 1 in 1M NaOH).

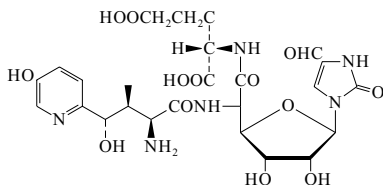
Dox, A.W. et al., J. Biol. Chem., 1914, 18, 167; 1915, 20, 83

Barker, S.A. *et al.*, *J.C.S.*, 1953, 3084; 3588 (isol)
 Reese, E.T. *et al.*, *Can. J. Microbiol.*, 1964, **10**, 103 (isol)
 Barker, S.A. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 165 (isol)
 Bobbitt, T.F. *et al.*, *Carbohydr. Res.*, 1980, **81**, 177 (cmr)
 Painter, T.J. *et al.*, *Carbohydr. Res.*, 1990, **200**, 403 (struct)

Nikkomycin I

N-49

[77368-60-6]

C₂₅H₃₂N₆O₁₃ 624.56

Nucleoside antibiotic. Isol. from *Streptomyces tendae*. Active against insects, fungi and bacteria. Sol. H₂O, Py; poorly sol. EtOH, hexane. λ_{\max} 288 (HCl) (Berdy). λ_{\max} 232; 300 (NaOH) (Berdy).

► MA1269600

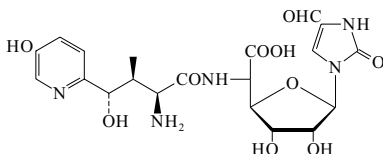
Ger. Pat., 1980, 2 928 137; CA, **95**, 5141 (isol, use)
 Hagenmaier, H. *et al.*, *Annalen*, 1981, 1018 (struct, pmr, ms, hplc)
 Hass, W. *et al.*, *Annalen*, 1982, 1615 (synth)
 Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Nikkomycin X

Neopolyoxin A

[72864-26-7]

N-50

C₂₀H₂₅N₅O₁₀ 495.445

Nucleoside antibiotic. Isol. from *Streptomyces tendae* and *Streptomyces cacaoi*. Chitin synthase inhibitor. Active against insects and fungi. Powder.
 Mp 204-207°. $[\alpha]_D^{21}$ +24.3 (c, 0.325 in H₂O). pK_{a1} 2.9; pK_{a2} 4.3; pK_{a3} 7.3; pK_{a4} 8.7; pK_{a5} 10.3. Amphoteric. λ_{\max} 287 (ε) (MeOH) (Derep).

► BA2928600

5'''-Deoxy: Nikkomycin L_XC₂₀H₂₅N₅O₉ 479.446

Prod. by a genetically engineered *Streptomyces tendae*. Antifungal agent. Lacks the OH group on the pyridine ring.

4-imidazole-Carboxylic acid: Neopolyoxin B
 [75005-71-9]

C₂₀H₂₅N₅O₁₁ 511.444

Nucleoside antibiotic. Prod. by *Streptomyces cacaoi* ssp. *asoensis*. Active against fungi and insects.

Mp 192-196°. $[\alpha]_D^{21}$ +19 (c, 0.722 in H₂O). pK_{a1} 2.4; pK_{a2} 3; pK_{a3} 4.4; pK_{a4} 7.7; pK_{a5} 9.1; pK_{a6} 11.1. Has -COOH replacing -CHO.

► BA2927800

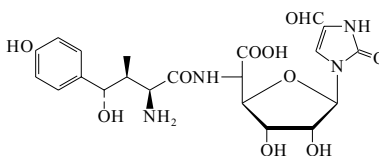
[75044-70-1]

Dahn, U. *et al.*, *Arch. Microbiol.*, 1976, **107**, 143 (isol)
 Hagenmaier, H. *et al.*, *Annalen*, 1979, 1494 (isol, struct)
 Brillinger, G.V. *et al.*, *Arch. Microbiol.*, 1979, **121**, 71 (props)
 Agric. Biol. Chem., 1980, 1709 (Neopolyoxins)
 Ger. Pat., 1980, 2 900 591; CA, **95**, 19726 (isol, use)
 Japan. Pat., 1980, 80 92 395; 1981, 80 26 900; CA, **93**, 202702; **95**, 22946 (Neopolyoxins)
 Fielder, H. *et al.*, *Biotechnol. Lett.*, 1981, **3**, 303 (hplc)
 Uramoto, M. *et al.*, *Tetrahedron*, 1982, **38**, 1599 (Neopolyoxins, biosynth, ir, pmr, cmr, ms)
 Krainer, E. *et al.*, *Biopolymers*, 1990, **29**, 1297 (conformn)
 Baumberg, S. *et al.*, *Tet. Lett.*, 1995, **36**, 2351 (biosynth)
 Bormann, C. *et al.*, *J. Antibiot.*, 1999, **52**, 582-585 (Nikkomycin L_X)

Nikkomycin B_X

N-51

5-[[2-Amino-4-hydroxy-4-(4-hydroxyphenyl)-3-methyl-1-oxobutyl]amino]-1,5-dideoxy-1-(4-formyl-2,3-dihydro-2-oxo-1H-imidazol-1-yl)hexofuranuronic acid, 9CI
 [75410-71-8]

C₂₁H₂₆N₄O₁₀ 494.457

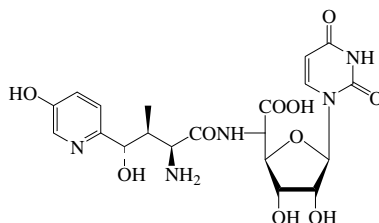
Nucleoside antibiotic. Isol. from *Streptomyces tendae*. Active against fungi and insects esp. *Megoura viciae* larvae. Sol. H₂O, Py; poorly sol. butanol, hexane. $[\alpha]_D^{19}$ +56.7 (c, 0.06 in H₂O). λ_{\max} 280 (HCl) (Berdy). λ_{\max} 240; 242; 299; 300 (NaOH) (Berdy).

Ger. Pat., 1980, 2 900 591; CA, **95**, 19726 (isol, use)
 Hahn, H. *et al.*, *Annalen*, 1987, 803 (synth)
 Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)
 Sormann, C. *et al.*, *J. Antibiot.*, 1999, **52**, 102-108 (isol, ms)

Nikkomycin BNikkomycin B_Z

[74342-20-4]

N-52

C₂₁H₂₆N₄O₁₀ 494.457

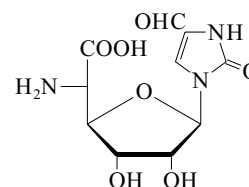
Nucleoside antibiotic. Isol. from *Streptomyces tendae*. Antifungal and insecticide. Powder.

Koenig, W.A. *et al.*, *Annalen*, 1980, 622 (synth, struct, pmr)
 Ger. Pat., 1980, 2 900 591; CA, **95**, 19726 (synth)
 Melnick, M.J. *et al.*, *J.O.C.*, 1988, **53**, 850 (synth)
 Barrett, A.G.M. *et al.*, *J.O.C.*, 1990, **55**, 5818; 1991, **56**, 4875 (bibl, synth)
 Bormann, C. *et al.*, *J. Antibiot.*, 1999, **52**, 102-108 (isol, ms)

Nikkomycin C_x

N-53

[72864-27-8]

C₁₀H₁₃N₃O₇ 287.229

Nucleoside antibiotic. Isol. from *Streptomyces tendae*. Active against insects and fungi. Solid. Sol. H₂O, Py; poorly sol. butanol, hexane. λ_{\max} 287 (ε 16500) (HCl) (Berdy). λ_{\max} 307 (ε 12800) (NaOH) (Berdy).

Hagenmaier, H. *et al.*, *Annalen*, 1979, 1494 (isol, pmr)
 Ger. Pat., 1980, 2 900 591; CA, **95**, 19726 (isol, use)
 Fielder, H. *et al.*, *Biotechnol. Lett.*, 1981, **3**, 303 (hplc)

Nikkomycin J_H

N-54

[89156-91-2]

As Nikkomycin J, N-55 with

R = CH₂OHC₂₆H₃₄N₆O₁₄ 654.586

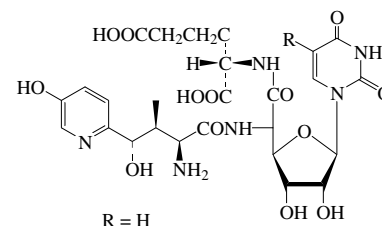
Nucleoside antibiotic. Isol. from *Streptomyces tendae*. Inhibitor of chitin synthase and fungi.

Delzer, J. *et al.*, *J. Antibiot.*, 1984, **37**, 80 (isol, props)

Nikkomycin J

N-55

[77368-59-3]



R = H

C₂₅H₃₂N₆O₁₃ 624.56

Nucleoside antibiotic. Isol. from *Streptomyces tendae*. Active against insects, phytopathogenic fungi and bacteria. Sol. H₂O, Py. λ_{\max} 288 (HCl) (Berdy). λ_{\max} 232; 300 (NaOH) (Berdy).

► MA1253000

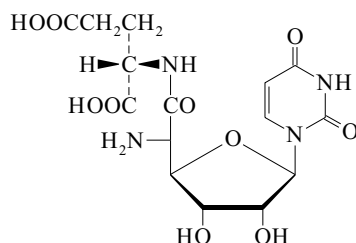
Ger. Pat., 1980, 2 928 137; CA, **95**, 5141 (isol, use)

Hagenmaier, H. *et al.*, *Annalen*, 1981, 1018 (struct, pmr, ms, hplc)
 Hass, W. *et al.*, *Annalen*, 1982, 1615 (synth)
 Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Nikkomycin N

N-56

[77368-58-2]

C₁₅H₂₀N₄O₁₀ 416.344

Nucleoside antibiotic. Isol. from *Streptomyces tendae*. Hydrol. prod. of Nikkomycin J, N-55. Active against insects, phytopathogenic fungi and bacteria.
 Sol. H₂O, Py.

▶ MA1252500

Ger. Pat., 1980, 2 928 137; *CA*, **95**, 5141 (isol, use)

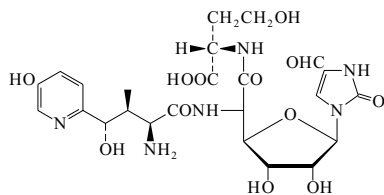
Hagenmaier, H. *et al.*, *Annalen*, 1981, 1018 (struct, pmr, ms, hplc)

Hass, W. *et al.*, *Annalen*, 1982, 1615 (synth)

Nikkomycin Q_x

N-57

[95259-48-6]

C₂₄H₃₂N₆O₁₂ 596.55

Nucleoside antibiotic. From *Streptomyces tendae*. Exhibits lower activity than other Nikkomycins.

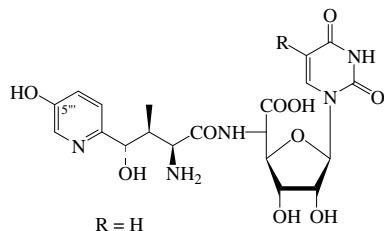
Bormann, C. *et al.*, *J. Antibiot.*, 1985, **38**, 9 (isol, props)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Nikkomycin Z

N-58

Nikkomycin. Neopolyoxin C
 [59456-70-1]



R = H

C₂₀H₂₅N₅O₁₀ 495.445

Nucleoside-type antibiotic. Metab. of *Streptomyces tendae* and from *Streptomyces cacaoi*. Antifungal agent which also inhibits chitin biosynth.

Mp 194-197°. [α]_D²⁵ +49.5 (c, 1 in H₂O).
 pK_{a1} 2.7; pK_{a2} 4.1; pK_{a3} 7.1; pK_{a4} 8.5;
 pK_{a5} 9.7. λ_{max} 264 (ε); 287 (sh) (ε)
 (MeOH) (Derep).

▶ BA2928200

5'''-Deoxy: **Nikkomycin L_Z**C₂₀H₂₅N₅O₉ 479.446

Prod. by a genetically engineered *Streptomyces tendae*. Antifungal agent.

[75044-69-8]

Daehn, U. *et al.*, *Arch. Microbiol.*, 1976, **107**, 143 (isol, ir, uv, ms, mmr, struct)

Koenig, W.A. *et al.*, *Adv. Mass Spectrom.*, 1978, **7B**, 1530 (ms)

Kobinata, K. *et al.*, *Agric. Biol. Chem.*, 1980, **44**, 1709 (*Neopolyoxin C*)

Koenig, W.A. *et al.*, *Annalen*, 1980, 1728; 1984, 1216 (config, struct)

Hagenmaier, H. *et al.*, *Annalen*, 1980, 1728

(config)

Fiedler, H. *et al.*, *Biotechnol. Lett.*, 1981, **3**, 303 (hplc)

Hass, W. *et al.*, *Annalen*, 1982, 1615 (synth)

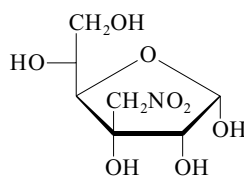
Uramoto, M. *et al.*, *Tetrahedron*, 1982, **38**, 1599 (*Neopolyoxin C*)

Fiedler, H.P. *et al.*, *Clin. Dermatol.*, 1993, **7**, 325 (rev)

Bormann, C. *et al.*, *J. Antibiot.*, 1999, **52**, 582-585 (*Nikkomycin L_Z*)

3-C-(Nitromethyl)allose

N-59

C₇H₁₃NO₈ 239.182**α-D-Furanose-form**

1,2:5,6-Di-O-isopropylidene: 1,2:5,6-Di-O-isopropylidene-3-C-(nitromethyl)-α-D-allofuranose

[26922-49-6]

C₁₃H₂₁NO₈ 319.311

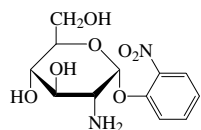
Cryst. Mp 109-110°. [α]_D²² +23.3 (c, 1.1 in CHCl₃).

Albrecht, H.P. *et al.*, *Tet. Lett.*, 1970, 1063

2-Nitrophenyl 2-amino-2-deoxyglucoside

N-60

2-Nitrophenyl glucosamide

C₁₂H₁₆N₂O₇ 300.268**α-D-Pyranose-form**

N-Ac: [10139-01-2]

C₁₄H₁₈N₂O₈ 342.305

Substrate for *N*-acetyl-α-D-glucosaminidase. Cryst. (EtOH). Mp 208-208.5°.

[α]_D +219 (c, 0.48 in H₂O).

N,3,4,6-Tetra-Ac:

C₂₀H₂₄N₂O₁₁ 468.416

Cryst. (EtOAc). Mp 173.5-174.5°.

[α]_D²³ +28.2 (c, 0.49 in CHCl₃).

β-D-Pyranose-form

N-Ac: [13264-92-1]

Cryst. (MeOH). Mp 189-190° (dec.).

[α]_D²³ -34.7 (c, 0.52 in H₂O).

N,3,4,6-Tetra-Ac:

Cryst. Mp 191-191.5°.

[α]_D²³ +64.8 (c, 0.55 in CHCl₃).

Leaback, D.H. *et al.*, *J.C.S.*, 1957, 4754-4760 (synth, derivs)

Weissmann, B. *et al.*, *J.O.C.*, 1966, **31**, 2505-2509 (synth, derivs)

3-Nitrophenyl 2-amino-2-deoxyglucoside

N-61

3-Nitrophenyl glucosamide

C₁₂H₁₆N₂O₇ 300.268**β-D-Pyranose-form**

N,3,4,6-Tetra-Ac:

Cryst. Mp 234-235°.

Fujisu, S. *et al.*, *Nippon Kagaku Kaishi*, 1951, **72**, 728-731

4-Nitrophenyl 2-amino-2-deoxyglucoside

N-62

4-Nitrophenyl glucosamide

C₁₂H₁₆N₂O₇ 300.268**α-D-Pyranose-form**

N-Ac: [10139-02-3]

C₁₄H₁₈N₂O₈ 342.305

Substrate for *N*-acetyl-α-D-glucosaminidase. Cryst. (EtOH). Mp 274° (dec.).

[α]_D²³ +273.4 (c, 0.37 in MeOH).

N,3,4,6-Tetra-Ac:

C₂₀H₂₄N₂O₁₁ 468.416

Cryst. (EtOAc). Mp 197.5-198.5°.

[α]_D²³ +192.8 (c, 0.64 in CHCl₃).

β-D-Pyranose-form

N-Ac: [3459-18-5] Substrate for *N*-acetyl-β-D-glucosaminidase.

Cryst. (EtOH or MeOH). Mp 214°

(206.2-206.7°). [α]_D²³ -19.4 (c, 0.3 in H₂O).

N,3,4-Tri-Ac: [7364-99-0]

C₁₈H₂₂N₂O₁₀ 426.379

Cryst. (EtOH). Mp 210-211°. [α]_D²² -97 (c, 0.4 in MeOH).

N,3,6-Tri-Ac: [61891-87-0]

C₁₈H₂₂N₂O₁₀ 426.379

Cryst. (EtOH). Mp 190-192° (dec.).

[α]_D²² -37 (c, 0.9 in MeOH).

3,4,6-Tri-O-Ac: [41481-07-6]

C₁₈H₂₂N₂O₁₀ 426.379

Needles (MeOH/Et₂O) (as hydrochloride). Mp 218-220° (hydrochloride).

[α]_D²⁰ -42 (c, 0.37 in MeOH). CAS no. refers to hydrochloride.

N,3,4,6-Tetra-Ac: [13089-27-5]

Cryst. (MeOH). Mp 237.4-238.4°.

[α]_D -9.6 (CHCl₃).

3,4-Dibenzoyl, N-Ac: [84564-20-5]

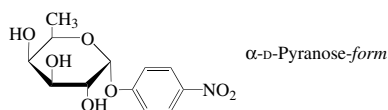
C₂₈H₂₆N₂O₁₀ 550.521

Cryst. (2-propanol). Mp 204-205°.

[α]_D²⁵ -20.4 (c, 3.85 in CHCl₃).

- 4-Me, N-Ac:** [61891-89-2]
 $C_{15}H_{20}N_2O_8$ 356.332
 Cryst. (EtOH). Mp 211-212°. $[\alpha]_D^{22}$ -14 (c, 0.4 in MeOH).
- 6-Me, N-Ac:** [61891-88-1]
 $C_{15}H_{20}N_2O_8$ 356.332
 Cryst. (EtOH). Mp 182-183° (dec.). $[\alpha]_D^{22}$ -36 (c, 0.4 in MeOH).
- 3-Benzyl, N-Ac:** [84564-21-6]
 $C_{21}H_{24}N_2O_8$ 432.429
 Cryst. (EtOH). Mp 213-215°. $[\alpha]_D^{23}$ +15 (c, 1.9 in $CHCl_3$ /MeOH).
- 3,4-Dibenzyl, N-Ac:** [84564-23-8]
 $C_{28}H_{30}N_2O_8$ 522.554
 Cryst. (EtOH aq.). Mp 215-217°. $[\alpha]_D^{23}$ -3.8 (c, 1.1 in $CHCl_3$ /MeOH).
- 3,6-Dibenzyl, N-Ac:** [84564-22-7]
 $C_{28}H_{30}N_2O_8$ 522.554
 Cryst. (EtOH aq.). Mp 191-193°. $[\alpha]_D^{23}$ -11.8 (c, 1.65 in $CHCl_3$ /MeOH).
- 6-Trityl, N,3,4-tri-Ac:**
 $C_{37}H_{36}N_2O_{10}$ 668.699
 Needles ($CHCl_3$ /MeOH). Mp 256° (dec.). $[\alpha]_D^{20}$ +7 (c, 0.5 in $CHCl_3$).
- Westphal, O. *et al.*, *Annalen*, 1952, **575**, 84 (β -D-pyr N-Ac)
- Leaback, D.H. *et al.*, *J.C.S.*, 1957, 4754-4760 (β -D-pyr Ac derivs)
- Findlay, J. *et al.*, *Biochem. J.*, 1958, **69**, 467 (β -D-pyr N-Ac)
- Leaback, D.H. *et al.*, *Biochem. Prep.*, 1963, **10**, 118 (β -D-pyr N-Ac, *synth*)
- Weissmann, B. *et al.*, *J.O.C.*, 1966, **31**, 2505-2509 (α -D-pyr Ac derivs, β -D-pyr Ac derivs)
- Barker, S.A. *et al.*, *Tetrahedron, Suppl.*, No. 8, 1966, 611 (β -D-pyr N-Ac)
- Begbie, R. *et al.*, *Carbohydr. Res.*, 1969, **10**, 311 (β -D-pyr N-Ac, *synth*)
- Shafizadeh, F. *et al.*, *J.O.C.*, 1973, **38**, 1190 (β -D-pyr N-Ac)
- Kolesnikov, V.V. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1976, 2331-2336; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1976, 2175-2180 (β -D-pyr Ac derivs)
- Vafima, M.G. *et al.*, *Carbohydr. Res.*, 1977, **56**, 183-187 (β -D-pyr Ac derivs)
- Ekborg, G. *et al.*, *Carbohydr. Res.*, 1982, **110**, 55-67 (β -D-pyr Ac derivs, *synth*, *pmr*, *cmr*)
- Roy, R. *et al.*, *Can. J. Chem.*, 1991, **69**, 817-821 (β -D-pyr Ac derivs, *synth*, *pmr*)

4-Nitrophenyl fucoside N-63 4-Nitrophenyl 6-deoxygalactoside, 9CI

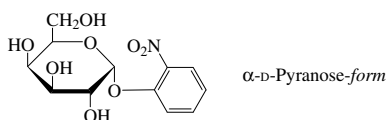


$C_{12}H_{15}NO_7$ 285.253

- α -D-Pyranose-form** [74032-91-0]
 Mp 193-194°. $[\alpha]_D^{20}$ +329 (Me₂CO).
- β -D-Pyranose-form** [1226-39-7]
 Mp 186-188°. $[\alpha]_D^{20}$ -85 (EtOH). $[\alpha]_D^{20}$ -96 (Me₂CO). $[\alpha]_D$ -145 (c, 1.4 in MeOH).
- α -L-Pyranose-form** [10231-84-2]
 Mp 196-197°. $[\alpha]_D^{20}$ -317 (Me₂CO).
- Tri-Ac:** [58902-47-9]
 $C_{18}H_{21}NO_{10}$ 411.365
 Cryst. (MeOH). Mp 178°. $[\alpha]_D^{20}$ -222 ($CHCl_3$).

- β -L-Pyranose-form** [22153-71-5]
 Mp 187-189°. $[\alpha]_D^{20}$ +100 (EtOH).
- Tri-Ac:** Mp 164-166°. $[\alpha]_D^{20}$ +1.5 ($CHCl_3$ or Me₂CO).
- Westphal, O. *et al.*, *Chem. Ber.*, 1956, **89**, 582-588 (*synth*)
- Levvy, G.A. *et al.*, *Biochem. J.*, 1961, **80**, 433-435 (*synth*)
- Chiocconi, A. *et al.*, *Carbohydr. Res.*, 2000, **323**, 7-13 (β -D-Pyr, *synth*, *pmr*)

2-Nitrophenyl galactoside, 9CI N-64 [19710-96-4]



$C_{12}H_{15}NO_8$ 301.252

- α -D-Pyranose-form** [19887-85-5]
 Cryst. (EtOH). Mp 145-147°. $[\alpha]_D$ +198 (c, 0.6 in H₂O).
- Tetra-Ac:** [24624-80-4]
 $C_{20}H_{23}NO_{12}$ 469.401
 Cryst. (EtOH). Mp 170.5-171°. $[\alpha]_D$ +199 (c, 0.56 in $CHCl_3$).
- 2,3,6-Tribenzoyl:** [77988-33-1]
 $C_{33}H_{27}NO_{11}$ 613.576
 Mp 158-159°. $[\alpha]_D$ +178 (c, 0.4 in $CHCl_3$).
- 6-Diphenylphosphate:** [114102-82-8]
 $C_{24}H_{24}NO_{11}P$ 533.428
 Mp 110-114°. $[\alpha]_D$ +153 (c, 0.7 in MeOH).

- β -D-Pyranose-form** [369-07-3]
 Substrate for the assay of β -galactosidase (lactase).
 Yellow needles. Sol. H₂O, MeOH.
 Mp 200-203° (193-194°). $[\alpha]_D^{20}$ -68 (c, 1 in H₂O).
- 6-Ac:** [20943-02-6]
 $C_{14}H_{17}NO_9$ 343.29
 Mp 155-156°. $[\alpha]_D^{22}$ -24.7 (c, 0.43 in H₂O).
- 6-Ac, 2,3,4-tris(trimethylsilyl):** [52416-96-3]
 $C_{23}H_{41}NO_9Si_3$ 559.835
 Cryst. (EtOH). Mp 144°. $[\alpha]_D^{22}$ -70.3 (c, 1 in $CHCl_3$).

- Tetra-Ac:** [3053-17-6]
 Yellow prisms. Mp 173-174° (168-170°). $[\alpha]_D^{20}$ +57. $[\alpha]_D^{20}$ +6.5 ($CHCl_3$).
- 2-Mesyl, 3,4,6-tri-Ac:** [35816-41-2]
 $C_{19}H_{23}NO_{13}S$ 505.456
 Mp 149-150°. $[\alpha]_D^{14}$ +17 (c, 1 in $CHCl_3$).
- 6-Phosphate:** [20943-01-5]
 $C_{12}H_{16}NO_{11}P$ 381.232
 $[\alpha]_D^{22}$ -57.1 (c, 1.4 in H₂O).

- 6-Trityl:**
 $C_{31}H_{29}NO_8$ 543.572
 Cryst. (Et₂O/hexane). Mp 104-107.5°. $[\alpha]_D$ -35 (c, 0.7 in MeOH).
- [369-07-3, 19887-85-5, 118014-27-0]
- Zoltan, C. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1964, **42**, 263-267; *CA*, **62**, 7848h (β -D-pyr, β -D-pyr tetra-Ac)

- Dey, P.M. *et al.*, *Chem. Ind. (London)*, 1967, 1637 (α -D-pyr)
- Hengstenberg, W. *et al.*, *Carbohydr. Res.*, 1968, **7**, 180-183 (β -D-pyr 6-phosphate, β -D-pyr 6-Ac)
- Tsuzuki, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969, **42**, 1052-1059 (α -D-pyr tetra-Ac, β -D-pyr, β -D-pyr tetra-Ac, *synth*, *uv*, *cd*, *ord*)
- Breitmaier, E. *et al.*, *Chem. Ber.*, 1971, **104**, 1147-1154 (β -D-pyr, *cmr*)
- Tenn, J.P. *et al.*, *Eur. J. Biochem.*, 1971, **20**, 363-370 (*biochem*)
- Sekiya, M. *et al.*, *Carbohydr. Res.*, 1972, **22**, 325-336 (β -D-pyr 2-mesyl 3,4,6-tri-Ac, *synth*, *pmr*, *ir*)
- Sinnott, M.L. *et al.*, *Biochem. J.*, 1973, **133**, 89-98 (*synth*, *biochem*)
- Schneider, J. *et al.*, *Carbohydr. Res.*, 1973, 405-408 (α -D-pyr, *chromatog*)
- Fuch, E.-F. *et al.*, *Chem. Ber.*, 1974, **107**, 721-724 (β -D-pyr 6-Ac 2,3,4-tris(trimethylsilyl) ester)
- Iverson, T. *et al.*, *Synthesis*, 1979, 823-824 (β -D-pyr tetra-Ac)
- Apparu, M. *et al.*, *Can. J. Chem.*, 1981, **59**, 314-320 (α -D-pyr, α -D-pyr tetra-Ac, α -D-pyr 2,3,6-tribenzoyl, *synth*, *pmr*, *cmr*)
- Jagota, S.K. *et al.*, *J. Food Sci.*, 1981, **46**, 161-163 (*use*)
- DeVries, N.K. *et al.*, *Carbohydr. Res.*, 1987, **165**, 1-16 (α -D-pyr 6-diphenylphosphate, β -D-pyr 6-trityl, *synth*, *pmr*, *cmr*)

3-Nitrophenyl galactoside N-65 $C_{12}H_{15}NO_8$ 301.252

β -D-Pyranose-form [3150-25-2]
 Mp 181-182°. $[\alpha]_D^{20}$ -67.6 (H₂O).

Tetra-Ac:
 $C_{20}H_{23}NO_{12}$ 469.401
 Mp 108-110°. $[\alpha]_D^{20}$ -8.1 ($CHCl_3$).

- Csuros, Z. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1964, **42**, 263-267; *CA*, **62**, 7848h (*synth*, *tetra-Ac*)
- Breitmaier, E. *et al.*, *Chem. Ber.*, 1971, **104**, 1147-1154 (*cmr*)
- Sinnott, M.L. *et al.*, *Biochem. J.*, 1973, **133**, 89-98 (*synth*, *biochem*)

4-Nitrophenyl galactoside, 9CI N-66 $C_{12}H_{15}NO_8$ 301.252

α -D-Pyranose-form [7493-95-0]
 Cryst. (EtOH). Mp 170-171°. $[\alpha]_D$ +220 (c, 0.4 in H₂O).

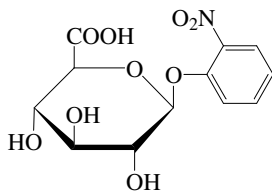
Tetra-Ac: [17042-39-6]
 $C_{20}H_{23}NO_{12}$ 469.401
 Cryst. (EtOH). Mp 132-133°. $[\alpha]_D$ +204 (c, 0.68 in $CHCl_3$).

- β -D-Pyranose-form** [3150-24-1]
 Substrate for detn. of β -galactosidase activity using uv monitoring of 4-nitrophenol release.
 Cryst. (hydrate). Mp 181-182° (hydrate). $[\alpha]_D^{22}$ -84 (c, 0.3 in H₂O).
- Tetra-Ac:** [2872-66-4]
 Cryst. Mp 145-146°. $[\alpha]_D^{22}$ -10 (c, 2 in $CHCl_3$).
- Breitmaier, E. *et al.*, *Chem. Ber.*, 1971, **104**, 1147-1154 (*cmr*)
- Sinnott, M.L. *et al.*, *Biochem. J.*, 1973, **133**, 89-98 (*synth*, *biochem*)
- Wallner, S.J. *et al.*, *Plant Physiol.*, 1975, **55**, 94 (*use*)
- Matta, K.L. *et al.*, *Carbohydr. Res.*, 1977, **53**, 209-216 (*synth*)

- Buonocore, V. *et al.*, *J. Appl. Biochem.*, 1980, **2**, 390 (use)
 Apparau, M. *et al.*, *Can. J. Chem.*, 1981, **59**, 314-320 (α -D-form, synth)
 Dess, D. *et al.*, *Synthesis*, 1981, 883-885 (β -D-form, synth)

2-Nitrophenyl glucopyranosiduronic acid, 9CI

N-67

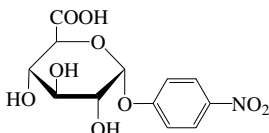
C₁₂H₁₃NO₉ 315.236

β -D-form

- 2,3,4-Tri-Ac, Me ester: [55274-44-7]
 C₁₉H₂₁NO₁₂ 455.374
 Cryst. (AcOH/petrol). Mp 175-176°. [α]_D²⁵ +18.4 (c, 1.2 in CHCl₃).
 Bollenback, G.N. *et al.*, *J.A.C.S.*, 1955, **77**, 3310 (synth, derivs)

4-Nitrophenyl glucopyranosiduronic acid

N-68

C₁₂H₁₃NO₉ 315.236

α -D-form

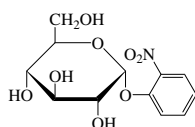
- [71484-85-0]
 Cryst. (EtOH aq.). Mp 211-212° (dec.). [α]_D +161 (c, 1.0 in EtOH).

β -D-form

- [10344-94-2]
 Substrate for assay of β -glucuronidase activity.
 Cryst. (EtOAc/Et₂O aq.). Mp 139°. [α]_D²⁴ -108 (c, 1 in EtOH). Hygroscopic; forms a monohydrate (Mp 95°) in air.
 Tri-Ac, Me ester: [18472-49-6]
 C₁₉H₂₁NO₁₂ 455.374
 Cryst. (EtOH) or needles (MeOH). Mp 153-154°. [α]_D²⁵ -52.1 (c, 1 in CHCl₃).
 Marsh, C.A. *et al.*, *Biochem. J.*, 1958, **68**, 617-621 (synth)
 Kato, K. *et al.*, *Chem. Pharm. Bull.*, 1960, **8**, 239-242 (β -D-form)
 Weintraub, L. *et al.*, *J.C.S. (C)*, 1969, 1562-1564 (β -D-tri-Ac Me ester)
 Asen, S. *et al.*, *Phytochemistry*, 1974, **13**, 1219-1223 (derivs, pmr, ir)
 Kiss, J. *et al.*, *Helv. Chim. Acta*, 1975, **58**, 301-310 (derivs, synth, pmr)
 Honma, K. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 394-399 (β -D-form, synth, ir, pmr, ord)
 Johnson, L.P. *et al.*, *Carbohydr. Res.*, 1979, **73**, 255-259 (β -D-form, synth, pmr, cmr)

2-Nitrophenyl glucoside

N-69

 α -D-Pyranose-formC₁₂H₁₅NO₈ 301.252

α -D-Pyranose-form

- [56193-44-3]
 Prisms (H₂O). Mp 186-188°. [α]_D +228 (c, 0.46 in H₂O).

β -D-Pyranose-form

- [2816-24-2]
 Rosettes of needles (EtOH). Mp 152°
 Mp 168-170° (dimorph.). [α]_D -106 (c, 1 in H₂O).
 Montgomery, E.M. *et al.*, *J.A.C.S.*, 1942, **64**, 690-693; 1943, **65**, 3-7 (α -D-pyr, β -D-pyr, synth)
 Reeves, R.E. *et al.*, *J.A.C.S.*, 1954, **76**, 2219-2221 (β -D-pyr, synth)
 Capon, B. *et al.*, *J.C.S.*, 1961, 5172-5176 (α -D-pyr)
 Angyal, S.J. *et al.*, *Angew. Chem., Int. Ed.*, 1969, **8**, 157-166 (β -D-pyr, conformn)
 Breitmeier, E. *et al.*, *Chem. Ber.*, 1971, **104**, 1147-1154 (β -D-pyr, cmr)

4-Nitrophenyl glucoside, 9CI

N-70

C₁₂H₁₅NO₈ 301.252

α -D-Pyranose-form

- [3767-28-0]
 Substrate for the assay of α -glucosidases (maltase and isomaltase).
 Prisms (H₂O). Sol. (H₂O). Mp 216°. [α]_D²⁰ +220 (c, 1 in H₂O).

Tetra-Ac: [14131-42-1]

- C₂₀H₂₃NO₁₂ 469.401
 Acicular prisms (EtOH). Mp 113°. [α]_D²⁰ +191 (c, 2 in CHCl₃).

3,4,6-Tribenzoyl: [80245-20-1]

- C₃₃H₂₇NO₁₁ 613.576
 Cryst. (EtOH). Mp 202-205°. [α]_D²³ +90.1 (c, 0.75 in CHCl₃).

Tetrabenzoyl: [80245-18-7]

- C₄₀H₃₁NO₁₂ 717.684
 Cryst. (EtOH). Mp 142-143.5°. [α]_D²³ +57.6 (c, 1.65 in CHCl₃).

6-Tosyl, 2,3,4-tri-Ac:

- C₂₅H₂₇NO₁₃S 581.553
 Needles (EtOH/Me₂CO). Mp 178°. [α]_D²⁵ +173 (c, 1.04 in CHCl₃).

β -D-Pyranose-form

- [2492-87-7]
 Isol. from *Sagittaria trifolia*. Substrate for the assay of β -glucosidase (cellobiase).
 Needles (EtOAc/MeOH). Mp 166-167°. [α]_D²⁰ -106 (c, 1 in H₂O).

2-Ac: [40837-81-8]

- C₁₄H₁₇NO₉ 343.29
 Amorph. solid. [α]_D²⁰ -36.9 (c, 0.43 in DMF).

2,3-Di-Ac: [40837-80-7]

- C₁₆H₁₉NO₁₀ 385.327
 Cryst. (EtOH). Mp 183-185°. [α]_D²⁰ -24.9 (c, 0.553 in DMF).

3,4,6-Tri-Ac: [87236-45-1]

- C₁₈H₂₁NO₁₁ 427.364
 Cryst. (CHCl₃/CCl₄). Mp 105-107°. [α]_D²⁰ -42 (c, 1 in CHCl₃).

Tetra-Ac: [5987-78-0]

- Cryst. (CHCl₃/hexane). Mp 174-174.5°. [α]_D²³ -34 (c, 0.85 in CHCl₃).

3,4,6-Tribenzoyl: [80245-21-2]

- Cryst. (EtOH). Mp 159-161°. [α]_D²³ -25.8 (c, 1.32 in CHCl₃).

2,3,4,6-Tetrabenzoyl: [64768-18-9]

- Cryst. (EtOH). Mp 153.5-154.5°. [α]_D²³ +18.7 (c, 1.2 in CHCl₃).

[5779-46-4]

- Montgomery, E.M. *et al.*, *J.A.C.S.*, 1942, **64**, 692-694 (α -D-pyr, α -D-pyr 2,3,4,6-tetra-Ac, β -D-pyr, β -D-pyr 2,3,4,6-tetra-Ac)

- Whistler, R.L. *et al.*, *Carbohydr. Res.*, 1966, **2**, 93-103 (β -D-pyr 6-tosyl 2,3,4-tri-Ac)

- Smale, T.C. *et al.*, *Chem. Comm.*, 1966, 680-681 (β -D-pyr 2,3,4,6-tetra-Ac, ms)

- Tsuzuki, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969, **42**, 1052-1059 (α -D-pyr, α -D-pyr 2,3,4,6-tetra-Ac, β -D-pyr, β -D-pyr 2,3,4,6-tetra-Ac, synth, cd, ord, uv)

- Matsui, M. *et al.*, *Chem. Pharm. Bull.*, 1970, **18**, 2129-2131; 1972, **20**, 1033-1040 (α -D-pyr 2,3,4,6-tetra-Ac, β -D-pyr 2,3,4,6-tetra-Ac, pmr)

- Phillips, G.O. *et al.*, *J.C.S. Dalton*, 1970, 1269-1270 (β -D-pyr, ms)

- Doss, S.H. *et al.*, *Aust. J. Chem.*, 1971, **24**, 2711-2715 (α -D-pyr 2,3,4,6-tetra-Ac, β -D-pyr 2,3,4,6-tetra-Ac, ir)

- Breitmaier, E. *et al.*, *Chem. Ber.*, 1971, **104**, 1147-1154 (α -D-pyr, cmr)

- Audichya, T.D. *et al.*, *Indian J. Chem.*, 1971, **9**, 282-283 (α -D-pyr, β -D-pyr, ir)

- Yamamoto, K. *et al.*, *Bull. Chem. Soc. Jpn.*, 1973, **46**, 290 (β -D-pyr 2-Ac, β -D-pyr 2,3-di-Ac)

- Honma, K. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 394-399 (α -D-pyr, α -D-pyr 2,3,4,6-tetra-Ac, β -D-pyr, β -D-pyr 2,3,4,6-tetra-Ac, synth, pmr)

- Rao, V.S. *et al.*, *Carbohydr. Res.*, 1981, **92**, 141-148 (α -D-pyr, β -D-pyr, cmr)

- Ishido, Y. *et al.*, *Carbohydr. Res.*, 1981, **97**, 51-79 (α -D-pyr 3,4,6-tribenzoyl, α -D-pyr 2,3,4,6-tetrabenzoyl, β -D-pyr 3,4,6-tribenzoyl, β -D-pyr 2,3,4,6-tetrabenzoyl, synth, pmr)

- Swaminathan, P. *et al.*, *Acta Cryst. B*, 1982, **38**, 184-188 (α -D-pyr, cryst struct)

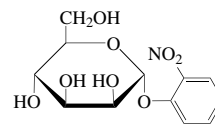
- Baggett, N. *et al.*, *Carbohydr. Res.*, 1983, **119**, 285-291 (β -D-pyr 3,4,6-tri-Ac, β -D-pyr 2,3,4,6-tetra-Ac)

- Yamaguchi, M. *et al.*, *J.C.S. Perkin 1*, 1990, 1079-1082 (α -D-pyr 2,3,4,6-tetra-Ac, β -D-pyr 2,3,4,6-tetra-Ac)

CA, 1998, **128**, 306260y

2-Nitrophenyl mannoside

N-71

 α -D-pyranose-formC₁₂H₁₅NO₈ 301.252

α -D-Pyranose-form

- [18249-33-7]
 Cryst. (MeOH). Mp 183-184°. [α]_D²² +99.8 (c, 1.0 in MeOH).

2,3,4,6-Tetra-Ac: [28541-67-5]

- C₂₀H₂₃NO₁₂ 469.401
 Cryst. Mp 131-133°. [α]_D²² +121.7 (c, 2 in CHCl₃).

- Barnett, J.E.G. *et al.*, *Biochem. J.*, 1967, **105**, 669-672 (synth)

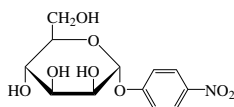
- Vervoort, A. *et al.*, *Carbohydr. Res.*, 1970, **12**, 277-280 (synth, derivs)

3-Nitrophenyl mannoside

N-72

C₁₂H₁₅NO₈ 301.252**α-D-Pyranose-form** [28541-80-2]Cryst. (MeOH). Mp 150-151°. [α]_D²² +130.8 (c, 2 in MeOH).**2,3,4,6-Tetra-Ac:** [28541-68-6]C₂₀H₂₃NO₁₂ 469.401Cryst. Mp 90-92°. [α]_D²² +81.2 (c, 2 in CHCl₃).Vervoort, A. *et al.*, *Carbohydr. Res.*, 1970, **12**, 277-280 (*synth, derivs*)**4-Nitrophenyl mannoside**

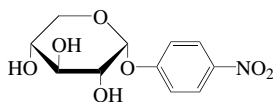
N-73



α-D-Pyranose-form

C₁₂H₁₅NO₈ 301.252**α-D-Pyranose-form** [10357-27-4]Flakes (MeOH/Et₂O). Mp 182-184°. [α]_D²⁰ +155 (c, 0.44 in H₂O).**2,3,4,6-Tetra-Ac:** [13242-51-8]C₂₀H₂₃NO₁₂ 469.401Cryst. Mp 154°. [α]_D²² +48 (c, 5 in MeOH). [α]_D²⁰ +207 (c, 4 in CHCl₃).**2,3,4-Tribenzoyl:** [101455-27-0]C₃₃H₂₇NO₁₁ 613.576Cryst. (EtOAc/hexane). Mp 150-152°. [α]_D²² +5.7 (c, 0.9 in CHCl₃).**β-D-Pyranose-form** [35599-02-1]Cryst. (EtOH). Mp 206-207°. [α]_D²⁰ -125 (c, 0.46 in H₂O).**2,3,4,6-Tetra-Ac:** [58918-67-5]Cryst. (Et₂O). Mp 142-144°. [α]_D -9.8 (c, 0.74 in CHCl₃).Jermol, M.A. *et al.*, *Aust. J. Chem.*, 1955, **8**, 403-408 (*synth, α-D-form, derivs*)
Tsuzuki, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1967, **40**, 1208-1211 (*pmr*)
Breitmaier, E. *et al.*, *Ber.*, 1971, **104**, 1147-1154 (*cmr*)Rosenfeld, L. *et al.*, *Carbohydr. Res.*, 1976, **46**, 155-158 (*synth, β-D-form, pmr*)Maley, F. *et al.*, *Carbohydr. Res.*, 1978, **64**, 279-282 (*synth, β-D-form, derivs*)Garrett, P.J. *et al.*, *Carbohydr. Res.*, 1979, **73**, 313-314 (*synth, β-D-form*)Kohata, K. *et al.*, *Agric. Biol. Chem.*, 1982, **46**, 927-936 (*synth, uv, cd, ord*)Baggett, N. *et al.*, *Carbohydr. Res.*, 1983, **119**, 285-291 (*synth*)Srivastava, O.P. *et al.*, *Carbohydr. Res.*, 1985, **143**, 77-84 (*synth, α-D-form, derivs, pmr*)**4-Nitrophenyl xyloside**

N-74



α-D-form

C₁₁H₁₃NO₇ 271.226**α-D-Pyranose-form** [10238-28-5]Substrate for α-xylosidase.
Pale yellow syrup.**2,3,4-Tri-Ac:**C₁₇H₁₉NO₁₀ 397.338

Pale yellow cryst. (2-propanol). Mp 145-147°.

β-D-Pyranose-form [2001-96-9]

Substrate for detn. of β-xylosidase activity.

Cryst. (EtOH aq.). Mp 159-161°.

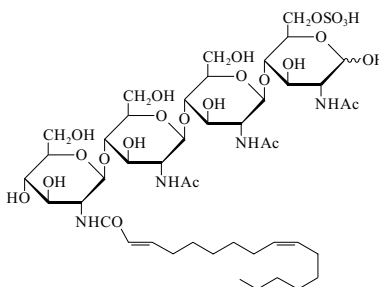
[α]_D²⁴ -56.7 (c, 1 in MeOH).**2,3,4-Tri-Ac:** [24624-78-0]

Cryst. (2-propanol). Mp 149-151°.

[α]_D²⁴ -73.5 (c, 2 in CHCl₃).Loontjens, F.G. *et al.*, *Naturwissenschaften*, 1964, **51**, 359 (*β-D-form, synth, tri-O-Ac*)
Zhdanov, Y.A. *et al.*, *Dokl. Akad. Nauk SSSR, Ser. Khim.*, 1972, **207**, 607-609; *Dokl. Chem. (Engl. Transl.)*, 1972, **207**, 889-891 (*α-D-form, biochem, synth, tri-O-Ac*)Xu, W.Z. *et al.*, *Eur. J. Biochem.*, 1991, **202**, 1197-1203 (*β-D-form, biochem*)
Le Questel, J.Y. *et al.*, *Carbohydr. Res.*, 1994, **265**, 291-298 (*β-D-form, cryst struct*)**Nod Rm 1**

N-75

[128269-59-0]

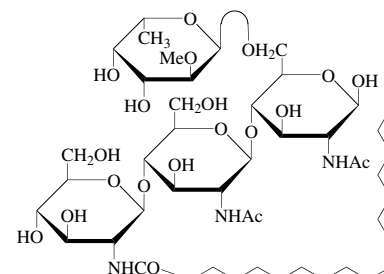
C₄₆H₇₈N₄O₂₄S 1103.201Prod. by *Rhizobium meliloti*. Active against gram-positive bacteria. Believed to be a chemical trigger involved with N fixation in legumes. Induces root hair deformations and nodule organogenesis specifically on alfalfa. Pale brown-yellow powder (as Na salt). [α]_D²⁰ -1.2 (c, 0.1 in H₂O).

[143838-00-0]

Lerouge, P. *et al.*, *Nature (London)*, 1990, **344**, 781 (*isol*)Roche, P. *et al.*, *J. Biol. Chem.*, 1991, **266**, 10933 (*isol, struct*)Nicolaou, N.K. *et al.*, *J.A.C.S.*, 1992, **114**, 8701 (*synth, bibl*)Tailler, D. *et al.*, *Chem. Comm.*, 1994, 1827 (*synth*)Wang, L.-X. *et al.*, *J.C.S. Perkin 1*, 1994, 621 (*synth, pmr, bibl*)**NodRf III**

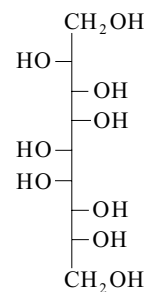
N-76

[159383-81-0]

C₄₇H₈₃N₃O₂₀ 1010.181Nodulation factor prod. by *Rhizobium fredii*.Bec-Ferte, M.-P. *et al.*, *Biochemistry*, 1994, **33**, 11782 (*isol, struct*)Debenham, J.S. *et al.*, *J.O.C.*, 1997, **62**, 4591 (*synth, pmr, cmr*)**D-arabino-L-galacto-Nonitol**

N-77

D-lyxo-D-manno-Nonitol

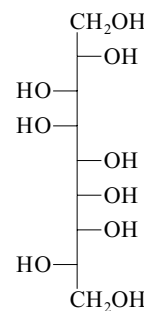
C₉H₂₀O₉ 272.252

Mp 250-255°.

Nona-Ac:C₂₇H₃₈O₁₈ 650.586Mp 147°. [α]_D²⁰ +27.8 (c, 2 in CHCl₃).Zissis, E. *et al.*, *J.O.C.*, 1965, **30**, 79 (*synth*)
Brimacombe, J.S. *et al.*, *The Carbohydrates*, Academic Press, 1972, **1A**, 479Szafranek, J. *et al.*, *Anal. Lett.*, 1973, **6**, 479 (*glc*)**L-lyxo-L-altro-Nonitol**

N-78

L-lyxo-D-galacto-Nonitol

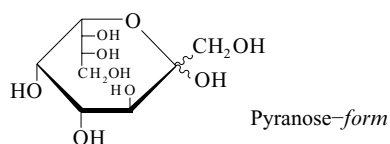
C₉H₂₀O₉ 272.252

Cryst. (MeOH aq.). Mp 169-171°.

[α]_D +2.5 (c, 0.7 in H₂O).Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1986, **158**, 81 (*synth*)

D-erythro-L-galacto-Nonulose

N-79

C₉H₁₈O₉ 270.236

Present in avocado, root of *Primula officinalis* and Crassulaceae spp.
[α]_D²⁰ -36.2 (c, 5.2 in MeOH aq.).

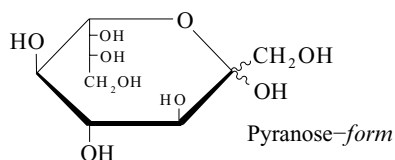
2,5-Dichlorophenylhydrazone: Mp 247-249°.

Begbie, R. *et al.*, *Carbohydr. Res.*, 1966, **2**, 272 (occur)

Sephton, H.H. *et al.*, *Carbohydr. Res.*, 1966, **2**, 289 (synth)

D-erythro-L-gluco-Nonulose

N-80

C₉H₁₈O₉ 270.236

Isol. from dried roots of *Primula officinalis*. Also from fruits of *Persea americana* (avocado). Syrup. [α]_D²⁰ -40 (c, 0.6 in H₂O).

2,5-Dichlorophenylsazone:

Yellow needles. Mp 248-250° dec.

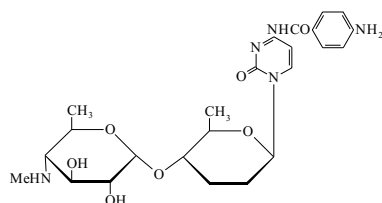
Sephton, H.H. *et al.*, *J.O.C.*, 1963, **28**, 2388 (isol)

Begbie, R. *et al.*, *Carbohydr. Res.*, 1966, **2**, 272 (isol)

Sephton, H.H. *et al.*, *Carbohydr. Res.*, 1966, **2**, 289 (synth)

Norpicacetin

N-81

C₂₄H₃₃N₅O₇ 503.554

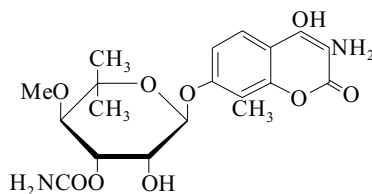
Nucleoside antibiotic. Isol. from *Streptomyces plicatus*. Active against gram-positive bacteria and mycobacteria. Needles (MeOH).

Mp 168-171°. [α]_D²³ +125 (c, 1 in MeOH). λ_{max} 253 (E1%/1cm 230); 325 (E1%/1cm 500) (MeOH) (Berdy).

Evans, J.R. *et al.*, *J. Antibiot.*, 1977, **30**, 604 (isol, uv, ms, nmr)

Novenamamine

[31026-09-2]

C₁₉H₂₄N₂O₉ 424.407

A component of Novobiocin. Shows the same potency as Novobiocin and is prob. the active moiety in inhibition of DNA replication.

Sebek, O.K. *et al.*, *J. Antibiot.*, 1972, **25**, 434 (synth, struct)

Reusser, F. *et al.*, *J. Antibiot.*, 1986, **39**, 272 (props)

Nucleic acid

N-83

General term describing natural macromolecules found in living cells formed by the polymerisation of mixed nucleotides. There are two main types: Deoxyribonucleic acid, D-361 which usually has a very high molecular weight, particularly that present in bacterial and animal cells, and Ribonucleic acid, R-130 which has lower molecular weights. RNA is a polymer of ribonucleotides derived mainly from Adenine, Cytosine, Guanine and Uracil, linked by 3',5'-phosphodiester bonds, whereas DNA consists of similar polymers, but of deoxyribonucleotides, derived mainly from Adenine, Guanine and Cytosine, as in RNA, but with Thymine in place of Uracil.

Charagaff, E. *et al.*, *The Nucleic Acids*, Academic Press, 1955, 1960

Jordon, D.O. *et al.*, *The Chemistry of the Nucleic Acids*, Butterworths, 1960,

Org. Chem. Nucleic Acids, (Kochetkov, N.K. *et al.*, Ed.), Parts A and B, Plenum Press, 1971, *Basic Princ. Nucleic Acid Chem.*, (Ts'o, P.O.P., Ed.), Academic Press, Vols. 1 and 2, 1974, Jankowski, K. *et al.*, *Adv. Heterocycl. Chem.*, 1986, **39**, 79 (ms)

Taillandier, E. *et al.*, *J. Mol. Struct.*, 1989, **214**, 185 (*ir*, Raman, conformn)

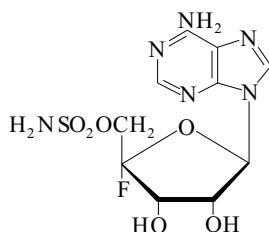
Reid, B.R. *et al.*, *Biochemistry*, 1992, **31**, 3564 (pmr)

Wemmer, D.E. *et al.*, *Biol. Magn. Reson.*, Plenum Press, Vol. 10, 1992, 195 (pmr, cmr, rev)

Nucleocidin

N-84

4'-C-Fluoroadenosine 5'-sulfamate, 9CI, 8CI. T 3018. Antibiotic T 3018 [24751-69-7]

C₁₀H₁₃FN₆O₆S 364.314

Nucleoside-type antibiotic. Produced by *Streptomyces calvus*. Antitrypanosomal which inhibits protein synth. Cryst. + 1H₂O (H₂O). Sol. acids, Me₂CO, bases, MeOH, EtOH; fairly sol. H₂O; poorly sol. butanol, hexane, EtOAc. Mp 190° dec. [α]_D^{24.5} -33.3 (c, 1.05 in EtOH/HCl). Recent attempts (1993) at isol. from *S. calvus* have been unsuccessful. λ_{max} 257 (ε 15000) (0.1N HCl) (Derep). λ_{max} 259 (ε 16000) (0.1N NaOH) (Derep). λ_{max} 258 (ε 15500) (H₂O) (Derep). λ_{max} 256 (E1%/1cm 392) (H₂O) (Berdy). λ_{max} 256 (E1%/1cm 392) (HCl) (Berdy).

► LD₅₀ (mus, ipr) .2 mg/kg, LD₅₀ (mus, orl) 2 mg/kg. AU7400000

Picrate: Mp 145-147°.

Thomas, S.O. *et al.*, *Antibiot. Annu.*, 1956, 716-721 (isol)

Waller, C.W. *et al.*, *J.A.C.S.*, 1957, **79**, 1011-1012 (struct)

Morton, G.O. *et al.*, *J.A.C.S.*, 1969, **91**, 1535-1537 (struct, ms, nmr)

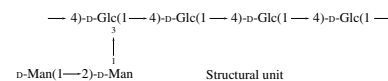
Jenkins, I.D. *et al.*, *J.A.C.S.*, 1971, **93**, 4323-4324; 1976, **98**, 3346-3357 (synth, *ir*, uv, nmr)

Maguire, A.R. *et al.*, *J.C.S. Perkin I*, 1993, 1795-1808 (synth)

Nucleotidicin

N-85

YM 3229G. Antibiotic YM 3229G [87209-37-8]



Polysaccharide antibiotic. Isol. from *Pseudomonas* sp. YM-3229G. Inhibits 5'-Nucleotidase. Shows antitumour activity. Neutral powder. Sol. H₂O, DMSO; poorly sol. MeOH, hexane. Mp 300°. [α]_D²⁰ -140 (c, 0.5 in 0.1M NaOH). Darkens at 180-190°.

Uchino, T. *et al.*, *J. Antibiot.*, 1985, **38**, 153 (isol, *ir*, struct)

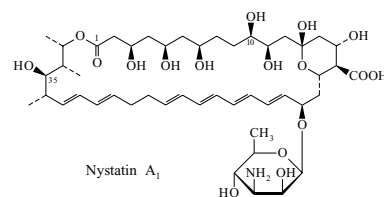
Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Nystatin, BAN, INN

N-86

Fungicidin. Mycostatin. Chinyfungin.

Nyotran [1400-61-9]



Polyene antibiotic complex. Complex separated into Nystatins A₁, A₂ (Polyfungin A₂) and A₃ (Polyfungin A₃). Strain also prod. Nystatin B. Prod. by *Streptomyces noursei* and other spp. Antifungal agent active against yeasts. No significant effect on bacteria or viruses. Phase III clin. trials for systemic fungal infections and cryptococcal meningitis (2002). Light-yellow powder.

Mp 250°. $[\alpha]_D^{25}$ -10 (AcOH). $[\alpha]_D^{25}$ +21 (Py). $[\alpha]_D^{25}$ +12 (DMF). Gradually dec. >160°.

► LD₅₀ (rat, orl) 10000 mg/kg. Exp. teratogen. RF5950000

Me ester: [52439-07-3]

Mp 110-116° dec. $[\alpha]_D^{26}$ +45.3 (DMF).

Nystatin A₁ Polyfungin A₁

[34786-70-4]

C₄₇H₇₅NO₁₇ 926.106

Major component of Nystatin complex.

λ_{\max} 232 (ε 27600); 280 (ε 25500); 291 (ε 50700); 304 (ε 76100); 318 (ε 69700) (MeOH) (Derep).

35-O-(2,6-Dideoxy-L-ribo-hexopyranoside): **Nystatin A₃**. Polyfungin A₃ [62997-67-5]

C₅₃H₈₅NO₂₀ 1056.249

λ_{\max} 290 (ε); 304 (ε 68600); 318 (ε) (MeOH) (Derep). λ_{\max} 240; 305; 318 (MeOH) (Berdy).

10-Deoxy, 35-O-(2,6-dideoxy-L-ribo-hexopyranoside): **Polyfungin B**. Polifungin B [37371-05-4]

C₅₃H₈₅NO₁₉ 1040.25

From *Streptomyces* sp. λ_{\max} 292; 304; 318 (MeOH) (Berdy).

Nystatin A₂ Polyfungin A₂

Prod. by *Streptomyces noursei*.

Yellow powder. λ_{\max} 231 (E1%/1cm 279); 290 (E1%/1cm 530); 303 (E1%/1cm 700); 318 (E1%/1cm 653) (MeOH) (Berdy).

[65086-32-0]

U.K. Pat., 1955, 714 189; CA, 49, 4242 (isol) Walter, D.R. et al., J.A.C.S., 1957, 79, 5076 (struct)

Manwaring, D.G. et al., Tet. Lett., 1969, 5319 (struct)

Chong, C.N. et al., Tet. Lett., 1970, 5145 (struct)

Michel, G.W. et al., Anal. Profiles Drug Subst., 1977, 6, 341 (rev)

Pandey, R.C. et al., J. Antibiot., 1977, 30, 158 (synth)

Holz, R.W. et al., Antibiotics (N.Y.), 1979, 5, 313 (rev)

Travkin, O.V. et al., Antibiotiki (Moscow), 1981, 26, 519 (props)

Peterson, N.O. et al., Can. J. Chem., 1985, 63, 77 (spectra)

Coline, A. et al., J. Antibiot., 1985, 38, 181 (spectra)

Ling, D. et al., Yaoxue Xuebao, 1986, 21, 454 (Polyfungin B)

Ma, J. et al., Kangshengsu, 1987, 12, 83 (isol)

Negwer, M. et al., Organic-Chemical Drugs and their Synonyms, 6th edn., Akademie-Verlag, 1987, 8257

Zielinski, J. et al., J. Antibiot., 1988, 41, 1289 (Nystatin A₃)

Prandi, J. et al., Tet. Lett., 1989, 30, 4517; 4521 (pmr, struct, bibl)

Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, 3, 475 (rev)

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 330

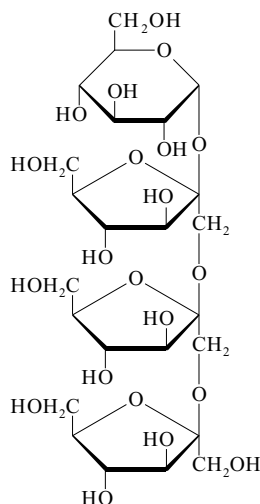
Arikan, S. et al., Curr. Opin. Invest. Drugs, 2001, 2, 488-495 (nystatin, rev)

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, NOH500

Nystose

N-87

β -D-Fructofuranosyl-(2→1)- β -D-fructofuranosyl-(2→1)- β -D-fructofuranosyl α -D-glucopyranoside, 9Cl. Fungitetraose, 1,1-Kestotetraose [13133-07-8]



C₂₄H₄₂O₂₁ 666.583

A fructan. See Fructans, F-43. Prod. comly. by enzymic synthesis from sucrose. Isol. from horse chestnut (*Aesculus hippocastanum*), *Lycoris radiata*, tulips and *Leucojum* spp., seeds of onions and roots of *Asparagus*.

Low-calorie sweetening agent for food and chewing gum. Constit. of neosugar which improves the intestinal flora in humans. Cryst. (MeOH/EtOH); cryst. + 1H₂O; needles + 3MeOH (MeOH aq.).

Mp 129-131° (monohydrate) Mp 134° (trihydrate). $[\alpha]_D^{20}$ +10.3 (c, 0.61 in H₂O). Cmr data published prior to 1993 was incorrect.

Tsuchida, H. et al., Agric. Biol. Chem., 1966, 30, 429 (synth)

Binkley, W.W. et al., Carbohydr. Res., 1971, 17, 127; 1972, 23, 301 (ms, cmr)

Kamerling, J.P. et al., Carbohydr. Res., 1972, 25, 293 (isol, ms, cryst struct)

Shiomi, N. et al., Agric. Biol. Chem., 1979, 43, 2233 (enzymic synth)

Uchiyama, T. et al., Agric. Biol. Chem., 1985, 49, 3315 (isol)

Hidaka, H. et al., Agric. Biol. Chem., 1988, 52, 1181 (enzymic synth)

Handbook of Sweeteners, (eds. Marie, S. et al), Blackie, 1991, 64-65 (rev)

Okuyama, K. et al., Bull. Chem. Soc. Jpn., 1993, 66, 374 (cryst struct)

Timmermans, J.W. et al., Carbohydr. Res., 1993, 243, 379 (pmr, cmr)

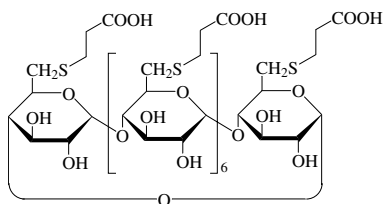
Jeffery, G.A. et al., Carbohydr. Res., 1993, 247, 37 (cryst struct)

French, A.D. et al., Carbohydr. Res., 1993, 247, 51 (struct)

Takeda, H. et al., J. Ferment. Bioeng., 1994, 77, 386-389 (enzymic synth)

Buddington, R.K. et al., Am. J. Clin. Nutr., 1996, 63, 709-716 (pharmacol)

Fukushi, E. et al., Magn. Reson. Chem., 2000, 38, 1005-1011 (isol, pmr, cmr)

Octakis-*S*-(2-carboxyethyl)octathio- γ -cyclodextrin6-*Perdeoxy-6-per*-(2-carboxyethyl)thio- γ -cyclodextrin. Org 25969 $C_{72}H_{112}O_{48}S_8$ 2002.176

Reverses drug induced neuromuscular block.

Octa-Na salt: **Sugammadex sodium, USAN**

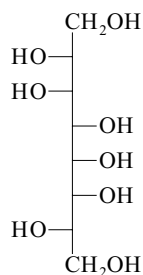
[343306-79-6]

Glassy solid.

Pat. Coop. Treaty (WIPO), 2001, 01 40 316, (Akzo Nobel); CA, 135, 29151s (synth, pharmacol)

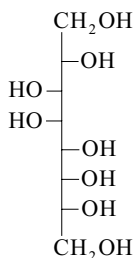
Bom, A. et al., *Angew. Chem., Int. Ed.*, 2002, **41**, 265-270 (pharmacol)Adam, J.M. et al., *J. Med. Chem.*, 2002, **45**, 1806-1816 (synth, pmr, pharmacol)Epemolu, O. et al., *Anesthesiology*, 2003, **99**, 632-637 (pharmacol)***D*-erythro-*L*-altro-Octitol**
L-threo-*D*-manno-Octitol

O-2

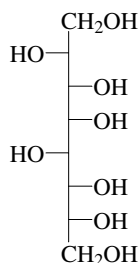
 $C_8H_{18}O_8$ 242.225Mp 144-145°. $[\alpha]_D^{20} +1$ (c, 1 in H_2O).Brimacombe, J.S. et al., *Carbohydr. Res.*, 1987, **168**, C5 (synth)***D*-erythro-*D*-galacto-Octitol**
8CI

[27655-86-3]

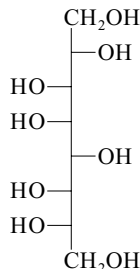
O-3

 $C_8H_{18}O_8$ 242.225Isol. from avocado. Cryst. (EtOH aq.). Mp 170-171°. $[\alpha]_D^{20} -12$ (c, 0.4 in 5% ammonium molybdate) (monohydrate).*Octa*-Ac: $C_{24}H_{34}O_{16}$ 578.523Mp 99-100°. $[\alpha]_D^{20} +1$ (c, 1.0 in $CHCl_3$).Charlson, A.J. et al., *J.A.C.S.*, 1960, **82**, 3428 (isol, synth, octa-Ac)Brimacombe, J.S. et al., *J.C.S. Perkin 1*, 1986, 815 (synth)***D*-erythro-*L*-galacto-Octitol**
9CI*Octane-1,2,3,4,5,6,7,8-octaol*
[162299-70-9]

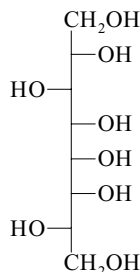
O-4

 $C_8H_{18}O_8$ 242.225Cryst. (EtOH aq.). Mp 148-150°. $[\alpha]_D^{15} +1.9$ (H_2O).*Octa*-Ac: $C_{24}H_{34}O_{16}$ 578.523Prisms (EtOH). Mp 88-89°. $[\alpha]_D^{20} +20.7$ (c, 3.8 in $CHCl_3$).Hann, R.M. et al., *J.A.C.S.*, 1944, **66**, 1912-1921 (synth, octa-Ac)Jorgensen, M. et al., *J.O.C.*, 2001, **66**, 4630-4634 (synth, pmr)***L*-erythro-*D*-galacto-Octitol**
L-threo-*D*-gulo-Octitol

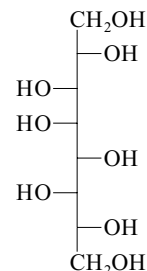
O-5

 $C_8H_{18}O_8$ 242.225Mp 153-154.5°. $[\alpha]_D -2.5$ (c, 0.6 in H_2O).Brimacombe, J.S. et al., *J.C.S. Perkin 1*, 1986, 815 (synth)***L*-threo-*L*-altro-Octitol**
L-threo-*D*-gluco-Octitol

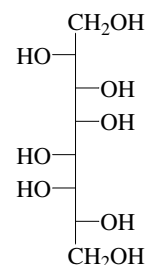
O-6

 $C_8H_{18}O_8$ 242.225Mp 121.5-122.5°. $[\alpha]_D -2.3$ (c, 1 in H_2O).*Octa*-Ac: $C_{24}H_{34}O_{16}$ 578.523 $[\alpha]_D -30$ (c, 1.5 in $CHCl_3$).Brimacombe, J.S. et al., *Carbohydr. Res.*, 1987, **168**, C5 (synth)***D*-threo-*D*-galacto-Octitol**
L-threo-*D*-ido-Octitol

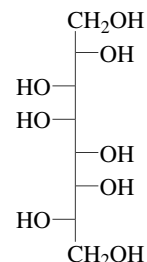
O-7

 $C_8H_{18}O_8$ 242.225Cryst. (EtOH aq.). Mp 168-169°. $[\alpha]_D -0.55$ (c, 1.1 in H_2O).Brimacombe, J.S. et al., *J.C.S. Perkin 1*, 1986, 815 (synth)***D*-threo-*L*-galacto-Octitol**
Octane-1,2,3,4,5,6,7,8-octaol

O-8

 $C_8H_{18}O_8$ 242.225Cryst. (H_2O). Mp 216-218°. Opt. rotn. was too small to be measurable.*Octa*-Ac: $C_{24}H_{34}O_{16}$ 578.523Plates (EtOH aq.). Mp 141°. $[\alpha]_D +40.4$ ($CHCl_3$).MacLay, W. et al., *J.A.C.S.*, 1938, **60**, 1035-1040 (synth, octa-Ac)Jorgensen, M. et al., *J.O.C.*, 2001, **66**, 4630-4634 (synth, pmr)***L*-threo-*D*-galacto-Octitol**

O-9

 $C_8H_{18}O_8$ 242.225

Cryst. (H₂O). Mp 233-236°. [α]_D 0 (H₂O). [α]_D -2.3 (c, 1 in H₂O).

Octa-Ac:

C₂₄H₃₄O₁₆ 578.523

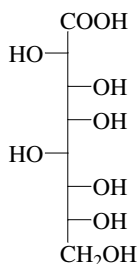
Mp 143-145°. [α]_D -40 (c, 1.1 in CHCl₃).

Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1986, 815 (*synth*)

Köll, P. *et al.*, *Carbohydr. Res.*, 1993, **238**, 317 (*cryst struct, octa-Ac*)

D-erythro-L-galacto-Octonic acid, 9CI **O-10**

2,3,4,5,6,7,8-Heptahydroxyoctanoic acid



C₈H₁₆O₉ 256.209

Cryst. (as Ba salt).

Me ester:

C₉H₁₈O₉ 270.236

Plates (EtOH aq.). Mp 162° dec. [α]_D +8.3 (c, 2.2 in H₂O).

Amide:

C₈H₁₇NO₈ 255.224

Plates (EtOH aq.). Mp 160.5-161.5°. [α]_D -24.4 (c, 3.88 in H₂O).

1,4-Lactone: 3,4-Dihydroxy-5-(1,2,3,4-tetrahydroxybutyl)dihydro-2(3H)-furanone†
[56570-93-5]

C₈H₁₄O₈ 238.194

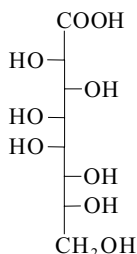
Needles (EtOH aq.). Mp 151-152° (142-144°). [α]_D +51.3 (c, 2 in H₂O).

Hockett, R.C. *et al.*, *J.A.C.S.*, 1938, **60**, 622-623 (*synth, bibl, lactone, amide*)

Hann, R.M. *et al.*, *J.A.C.S.*, 1944, **66**, 1912-1921 (*Me ester*)

Jorgensen, M. *et al.*, *J.O.C.*, 2001, **66**, 4625-4629 (*lactone, synth, pmr, cmr*)

D-erythro-L-gluco-Octonic acid **O-11**



C₈H₁₆O₉ 256.209

Mp 170-172°. [α]_D²⁰ +4 → -17 (c, 3.1 in H₂O).

Hepta-Ac: 2,3,4,5,6,7,8-Hepta-O-acetyl-D-erythro-L-gluco-octonic acid

C₂₂H₃₀O₁₆ 550.469

Cryst. (Et₂O/hexane). Mp 129-131°.

[α]_D²⁰ +14.8 (c, 3.9 in CHCl₃).

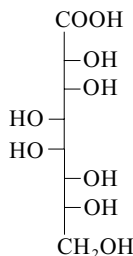
Hepta-Ac, Me ester: Methyl 2,3,4,5,6,7,8-hepta-O-acetyl-D-erythro-L-gluco-octonoate

C₂₃H₃₂O₁₆ 564.496

Cryst. (C₆H₆/petrol). Mp 114-116°. [α]_D²⁰ +9.9 (c, 3.2 in CHCl₃).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1955, **77**, 3096 (*hepta-Ac, Me ester hepta-Ac, synth*)

D-erythro-L-manno-Octonic acid **O-12**



C₈H₁₆O₉ 256.209

Mp 171-172°. [α]_D²⁰ +4 → -31 (c, 1.0 in H₂O).

Hepta-Ac: 2,3,4,5,6,7,8-Hepta-O-acetyl-D-erythro-L-manno-octonic acid

C₂₂H₃₀O₁₆ 550.469

Cryst. (Et₂O/petrol). Mp 141-144°. [α]_D²⁰ +3 (c, 3.2 in CHCl₃).

Chloride, hepta-Ac:

C₂₂H₂₉ClO₁₅ 568.915

Cryst. (C₆H₆/petrol). Mp 138-141°. [α]_D²⁰ +13 (c, 3.7 in CHCl₃).

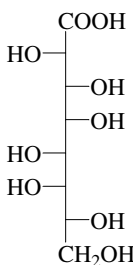
Hepta-Ac, Me ester: Methyl 2,3,4,5,6,7,8-hepta-O-acetyl-D-erythro-L-manno-octonoate

C₂₃H₃₂O₁₆ 564.496

Cryst. (Et₂O/petrol). Mp 172-173°. [α]_D²¹ +10.5 (c, 1.5 in CHCl₃).

Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1955, **77**, 3096

D-threo-L-galacto-Octonic acid, 9CI **O-13**



C₈H₁₆O₉ 256.209

Cryst. (H₂O). Mp 221° dec. [α]_D +5 (H₂O). Readily lactonises. Soln. mutarotates at 20°.

tert-Butyl ester:

C₁₂H₂₄O₉ 312.316

Cryst. (H₂O). Mp 167-169°. [α]_D +10.1 (c, 2 in H₂O).

Amide:

C₈H₁₇NO₈ 255.224

Plates (H₂O). Mp 228°. [α]_D -42 (H₂O).

1,4-Lactone: 3,4-Dihydroxy-5-(1,2,3,4-tetrahydroxybutyl)dihydro-2(3H)-furanone†

C₈H₁₄O₈ 238.194

Cryst. (H₂O). Mp 218-220°. [α]_D +51 (c, 2 in H₂O).

1,4-Lactone, hexa-Ac:

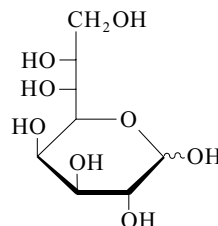
C₂₀H₂₆O₁₄ 490.417

Needles (EtOH). Mp 137-139°. [α]_D +45.4 (CHCl₃).

MacLay, W.D. *et al.*, *J.A.C.S.*, 1938, **60**, 1035-1040 (*synth, lactone, amide*)

Jorgensen, M. *et al.*, *J.O.C.*, 2001, **66**, 4625-4629 (*tert-butyl ester, lactone, synth, pmr, cmr*)

D-erythro-D-galacto-Octose **O-14**



Pyranose-form

C₈H₁₆O₈ 240.21

Mp 174-175°. [α]_D²⁰ +45 → +64 (c, 0.7 in H₂O).

Phenylhydrazone: Mp 188-189°.

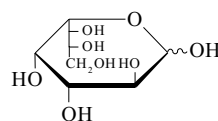
6-Amino-6,8-dideoxy: See Lincosamine, L-43

Charlson, A.J. *et al.*, *J.A.C.S.*, 1960, **82**, 3428

Bannister, B. *et al.*, *J.C.S. Perkin 1*, 1973, 1676

Woolard, G.R. *et al.*, *J.C.S. Perkin 1*, 1976, 950

D-erythro-L-galacto-Octose **O-15**



Pyranose-form

C₈H₁₆O₈ 240.21

Cryst. (monohydrate). Mp 92°. [α]_D²⁰ -63 → -47 (c, 2.0 in H₂O).

α -Hepta-Ac:

C₂₂H₃₀O₁₅ 534.47

Mp 138°. [α]_D²⁰ +75.1 (c, 2.0 in CHCl₃).

β -Hepta-Ac:

C₂₂H₃₀O₁₅ 534.47

Mp 92-93°. [α]_D²⁰ 0 (c, 0.8 in CHCl₃).

Me glycoside:

C₉H₁₈O₈ 254.236

Mp 156-157°. [α]_D²⁰ -138 (c, 1.7 in H₂O).

Me glycoside, hexa-Ac:

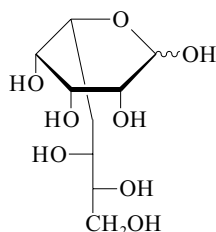
C₂₁H₃₀O₁₄ 506.46

Mp 86-87°. [α]_D²⁰ -99 (c, 0.8 in CHCl₃).

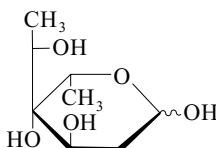
Hann, R.M. *et al.*, *J.A.C.S.*, 1944, **66**, 1912

D-threo-L-talo-Octose, 9CI

[64307-93-3]

 $C_8H_{16}O_8$ 240.21Solid. Mp 144-147° (138-140°) (sealed tube under N_2). $[\alpha]_D^{25}$ -14.1 (c, 3 in H_2O).Neff, D.-P. et al., *Helv. Chim. Acta*, 1991, **74**, 508 (synth, bibl)**v-Octose**

2,6-Dideoxy-4-C-(1S-hydroxyethyl)-L-xylo-hexose. Quinovose A†

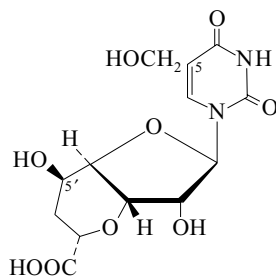
 $C_8H_{16}O_5$ 192.211

Component of Quinocycline A and Isoquinocycline B (see Isoquinocycline A).

1,1'-Anhydro:

 $C_8H_{14}O_4$ 174.196Formed by acid-cat. ring closure of the natural sugar. Cryst. (EtOAc). Mp 153-154°. $[\alpha]_D^{25}$ -144 (c, 2 in H_2O).Webb, J.S. et al., *J.A.C.S.*, 1962, **84**, 3183 (isol, anhydro, struct)Cosulich, D.B. et al., *Tet. Lett.*, 1963, 453 (isol)Tulinsky, A. et al., *J.A.C.S.*, 1964, **86**, 5368 (occur)Matern, U. et al., *Eur. J. Biochem.*, 1972, **29**, 1 (isol, pmr, struct)**Octosyl acid B**

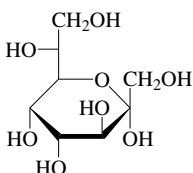
[55728-22-8]

 $C_{13}H_{16}N_2O_9$ 344.277Nucleoside antibiotic. Isol. from *Streptomyces cacaoi asoensis*. Sol. H_2O . Mp 200° dec. λ_{max} 265 (€ 7700) (H_2O) (Berdy). λ_{max} 265 (€ 7700) (HCl) (Berdy). λ_{max} 265 (€ 5500) (NaOH) (Berdy).**O-16****5-Carboxylic acid: Octosyl acid A**

[55728-21-7]

 $C_{13}H_{14}N_2O_{10}$ 358.261Isol. from *Streptomyces cacaoi asoensis*.Cryst. + $1H_2O$. Sol. H_2O .Mp 290-295° dec. $[\alpha]_D^{20}$ +13.3 (c, 0.425 in 1M NaOH). pK_{a1} 3; pK_{a2} 4.3; pK_{a3} 9.4. λ_{max} 220 (€ 9000); 276 (€ 10700) (H_2O) (Berdy). λ_{max} 220 (€ 9000); 276 (€ 10700) (HCl) (Berdy). λ_{max} 272 (€ 7000) (NaOH) (Berdy).**5-Carboxylic acid, 5'-ketone: Octosyl acid C**

[55728-23-9]

 $C_{13}H_{12}N_2O_{10}$ 356.245Isol. from *Streptomyces cacaoi asoensis*.Cryst. + $1H_2O$. Sol. H_2O .Mp 192-198°. pK_{a1} 3.1; pK_{a2} 4.5; pK_{a3} 9.9. λ_{max} 220 (€ 9200); 275 (€ 9200) (H_2O) (Berdy). λ_{max} 220 (€ 9200); 275 (€ 9200) (HCl) (Berdy). λ_{max} 272 (€ 6400) (NaOH) (Berdy).Isono, K. et al., *J.A.C.S.*, 1975, **97**, 943 (isol, struct)Sato, T. et al., *Tet. Lett.*, 1979, 3441 (isol, cmr)Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)**D-glycero-D-altro-2-Octulose****O-19** α -Pyranose-form $C_8H_{16}O_8$ 240.21

1,8-Diphosphate:

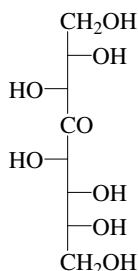
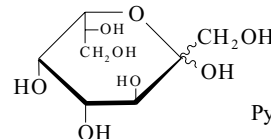
 $C_8H_{18}O_{14}P_2$ 400.169

Present in tissues having active pentose phosphate metabolism. Possible intermed. in an alternative pentose phosphate pathway.

Obt. as mixt. of furanose and pyranose forms.

Franke, F.P. et al., *Carbohydr. Res.*, 1984, **125**, 177 (synth, cmr)**D-glycero-D-galacto-4-Octulose****O-20**

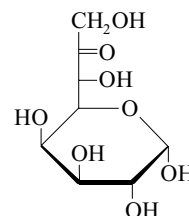
D-arabino-L-threo-4-Octulose, 9CI [177421-52-2]

 $C_8H_{16}O_8$ 240.21 $[\alpha]_D^{27}$ +63 (c, 2.5 in MeOH).Izquierdo, I. et al., *J. Carbohydr. Chem.*, 1996, **15**, 303-315 (synth)**D-glycero-L-galacto-2-Octulose****O-21**

Pyranose-form

 $C_8H_{16}O_8$ 240.21 β -Pyranose form predominates in aq. soln. Present in ripe avocados, dried roots of *Primula officinalis* and several Crassulaceae. $[\alpha]_D^{20}$ -57 (c, 2 in H_2O).

2,5-Dichlorophenylhydrazone: Mp 178-180°.

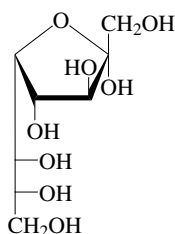
Sephton, H.H. et al., *J.O.C.*, 1963, **28**, 1691 (occur, synth)Sephton, H.H. et al., *Carbohydr. Res.*, 1966, **2**, 289 (occur, synth)Schaffer, R. et al., *The Carbohydrates*, Academic Press, 1972, 69 (rev)Hricoviniova, Z. et al., *Tetrahedron: Asymmetry*, 2002, **13**, 1567-1571 (synth, pmr, cmr)**L-glycero-D-galacto-7-Octulose****O-22** $C_8H_{14}O_8$ 238.194 α -Pyranose-form1,2:3,4-Di-O-isopropylidene, trimethylene dithioacetal: 1,2:3,4-Di-O-isopropylidene-L-glycero- α -D-galacto-7-octulopyranose trimethylenedithioacetal [80582-80-5] $C_{17}H_{28}O_7S_2$ 408.536Mp 125-127°. $[\alpha]_D^{20}$ -57.4 (c, 1.04 in $CHCl_3$).

1,2:3,4-Di-O-isopropylidene, trimethylene dithioacetal, 8-Ac: [80564-75-6]

 $C_{19}H_{30}O_8S_2$ 450.573Mp 156°. $[\alpha]_D^{20}$ -69.4 (c, 1.0 in $CHCl_3$).

1,2:3,4-Di-O-isopropylidene, trimethylene dithioacetal, 6,8-di-Ac: [80564-74-5]

 $C_{21}H_{32}O_9S_2$ 492.61Mp 134-136°. $[\alpha]_D^{20}$ -95.3 (c, 0.5 in $CHCl_3$).Paulsen, H. et al., *Annalen*, 1981, 2009-2027 (synth)

D-glycero-D-ido-2-Octulose**O-23** α -D-Furanose-form $C_8H_{16}O_8$ 240.21

Major sugar of the leaves of the resurrection plant *Craterostigma plantaginifolium*. Appears to be responsible for the ability of the plant to withstand severe dehydration.

1,8-Diphosphate: $C_8H_{18}O_{14}P_2$ 400.169

Present in tissues having active pentose phosphate metabolism. Possible intermed. in an alternative pentose phosphate pathway. Obt. as a mixt. of α - and β - (predominant) furanose forms.

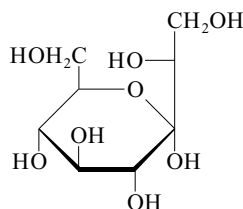
 α -Furanose-form**1,3:4,6:7,8-Triisopropylidene:** $C_{17}H_{28}O_8$ 360.403 $[\alpha]_D^{20} +14.3$ (c, 1.8 in $CHCl_3$).

Francke, F.P. *et al.*, *Carbohydr. Res.*, 1984, **125**, 177 (synth, cmr)

Howarth, O.W. *et al.*, *Carbohydr. Res.*, 1996, **289**, 137-142

D-glycero-D-ido-3-Octulose**O-24**

D-glucio-L-glycero-3-Octulose
[78174-72-8]

 $C_8H_{16}O_8$ 240.21

First reported naturally occurring 3-octulose. Main constit. in aq. extracts of *Laurus nobilis* leaves (bay laurel) and buds.

 α -form

Cryst. (MeOH). Mp 173-176°. $[\alpha]_D^{20} +66$ (c, 1.0 in H_2O) (+55.7).

Hepta-Ac: $C_{22}H_{30}O_{15}$ 534.47

Mp 128-131°. $[\alpha]_D^{20} +69$ (c, 0.41 in $CHCl_3$).

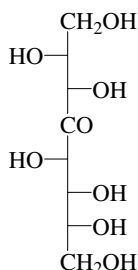
Schaffer, R. *et al.*, *J.O.C.*, 1963, **28**, 1929

Westlund, E. *et al.*, *Carbohydr. Res.*, 1981, **91**, 21 (synth, ms, cmr)

Sakata, K. *et al.*, *Agric. Biol. Chem.*, 1989, **53**, 2539 (isol, cmr, ms)

D-glycero-D-ido-4-Octulose**O-25**

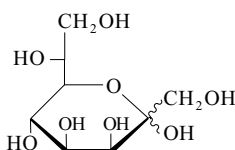
D-arabino-D-threo-4-Octulose, 9CI
[177568-30-8]

 $C_8H_{16}O_8$ 240.21 $[\alpha]_D^{20} +32.6$ (c, 2.4 in MeOH).

Izquierdo, I. *et al.*, *J. Carbohydr. Chem.*, 1996, **15**, 303-315 (synth)

D-glycero-D-manno-2-Octulose, 8CI**O-26**

[13111-79-0]



Pyranose-form

 $C_8H_{16}O_8$ 240.21

Present in avocado (*Persea gratissima*), *Sedum* spp., alfalfa (*Medicago sativa*), roots of *Primula officinalis*, poppy (*Papaver somniferum*) etc. $[\alpha]_D^{20} +20$ (c, 1.1 in MeOH).

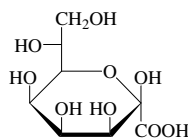
2,5-Dichlorophenylhydrazone: Mp 169-170°.

Charlson, A.J. *et al.*, *J.A.C.S.*, 1960, **82**, 3428 (occur)

Hautsvet, G. *et al.*, *Acta Chem. Scand.*, 1970, **24**, 3059 (occur)

D-glycero-D-talo-2-Octulose-nic acid**O-27**

KO
[189241-22-3]

 β -D-Pyranose-form $C_8H_{14}O_9$ 254.193

Component of the lipopolysaccharides of *Burkholderia cepacia* and *Acinetobacter calcoaceticus* NCTC 10305. Amorph. powder (as Na salt). $[\alpha]_D^{20} +11 \rightarrow +9$ (16h) (c, 0.5 in H_2O) (Na salt).

 α -D-Pyranose-form

4,5,7,8-Tetra-Ac, Me ester: Methyl 4,5,7,8-tetra-O-acetyl-D-glycero- α -D-talo-oct-2-ulopyranosonate [150920-79-9]

 $C_{17}H_{24}O_{13}$ 436.369

Syrup. $[\alpha]_D^{20} +37$ (c, 0.4 in $CHCl_3$).

Hexa-Ac, Me ester: Methyl 2,3,4,5,7,8-hexa-O-acetyl-D-glycero- α -D-talo-oct-2-ulopyranosonate [150920-78-8]
 $C_{21}H_{28}O_{15}$ 520.443
Cryst. (Et_2O /hexane). Mp 143-144°. $[\alpha]_D^{20} +79.5$ (c, 0.5 in $CHCl_3$).

Hexa-Ac, benzyl ester: Benzyl 2,3,4,5,7,8-hexa-O-acetyl-D-glycero- α -D-talo-oct-2-ulopyranosonate [321549-78-4]
 $C_{25}H_{30}O_{13}$ 538.504
Mp 178-179°. $[\alpha]_D^{20} +74$ (c, 1 in $CHCl_3$).

2-O-Allyl glycoside, 4,5:7,8-diisopropylidene, Me ester: Methyl (allyl 4,5:7,8-di-O-isopropylidene-D-glycero- α -D-talo-oct-2-ulopyranoside)onate [271245-02-4]
 $C_{18}H_{28}O_9$ 388.414
Syrup. $[\alpha]_D^{20} +7.9$ (c, 0.25 in $CHCl_3$).

 β -D-Pyranose-form

Me glycoside, penta-Ac, Me ester: Methyl (methyl 3,4,5,7,8-penta-O-acetyl-D-glycero- β -D-talo-oct-2-ulopyranosid)onate [150920-76-6]
 $C_{20}H_{28}O_{14}$ 492.433
Syrup. $[\alpha]_D^{20} +55$ (c, 0.7 in $CHCl_3$).

Me glycoside, 4,5:7,8-diisopropylidene, Me ester: Methyl (methyl 4,5:7,8-di-O-isopropylidene-D-glycero- β -D-talo-oct-2-ulopyranosid)onate [150920-75-5]
 $C_{16}H_{26}O_9$ 362.376
Amorphous solid. $[\alpha]_D^{20} +15$ (c, 0.8 in $CHCl_3$).

 α -D-Furanose-form

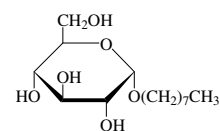
Hexa-Ac, Me ester: Methyl 2,3,4,6,7,8-hexa-O-acetyl-D-glycero- α -D-talo-oct-2-ulofuranosonate [150920-83-5]
 $C_{21}H_{28}O_{15}$ 520.443
 $[\alpha]_D^{20} +46$ (c, 0.7 in $CHCl_3$).

 β -D-Furanose-form

Hexa-Ac, Me ester: Methyl 2,3,4,6,7,8-hexa-O-acetyl-D-glycero- β -D-talo-oct-2-ulofuranosonate [150920-82-4]
 $C_{21}H_{28}O_{15}$ 520.443
Characterised spectroscopically.
Goss, J. *et al.*, *Carbohydr. Res.*, 1993, **244**, 69-84 (Me ester, acetates, diisopropylidene)
Wimmer, N. *et al.*, *Carbohydr. Res.*, 2000, **329**, 549-560 (hexa-Ac benzyl ester, 4-nitrobenzoates)
Reiner, M. *et al.*, *Tetrahedron: Asymmetry*, 2000, **11**, 319-335 (2-allyl derivs)
Isshiki, Y. *et al.*, *Carbohydr. Res.*, 2003, **338**, 2659-2666 (occur)

Octyl glucoside**O-28**

[41444-50-2]

 α -D-Pyranose-form $C_{14}H_{28}O_6$ 292.372

α -D-Pyranose-formOctyl α -D-glucopyranoside

[29781-80-4]

Cryst. (EtOAc). Mp 117-118°. $[\alpha]_D^{25}$ +117.9 (c, 1 in MeOH). **β -D-Pyranose-form**Octyl β -D-glucopyranoside

[29836-26-8]

Constit. of *Rhodiola sachalinensis*.

Non-ionic detergent; solubilising agent for membrane proteins. Used in membrane reconstitution, and characterisation of enzymes, receptors, proteins - including human tumor necrosis factor (TNF). Readily removed by dialysis.

Mp 107-108° (83-84°). $[\alpha]_D^{20}$ -33 (c, 5 in H₂O). $[\alpha]_D^{25}$ -28.1 (c, 1 in MeOH). **β -D-Furanose-form** [158604-09-2]

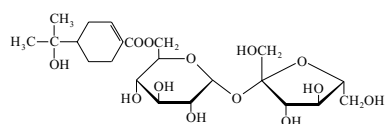
Cryst. (diisopropyl ether). Mp 52-54°.

 $[\alpha]_D^{20}$ -71.5 (c, 0.01 in Me₂CO).

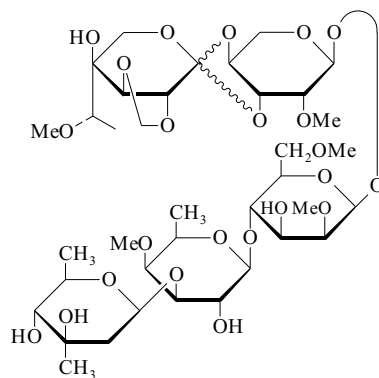
[6801-93-0, 54549-23-4, 65309-84-4, 142925-45-9, 142925-47-1, 166021-55-2]

De Grip, W.J. *et al.*, *Chem. Phys. Lipids*, 1979, **23**, 321-335 (α -D-pyr, synth, pmr)Rosevear, P. *et al.*, *Biochemistry*, 1980, **19**, 4108 (β -D-pyr, synth, cmr, use)Dorset, D.L. *et al.*, *Chem. Phys. Lipids*, 1981, **29**, 299-307 (cryst struct)Landaver, P. *et al.*, *Biochem. Biophys. Res. Commun.*, 1982, **106**, 848-855 (synth)Tsui, D.S.K. *et al.*, *Carbohydr. Res.*, 1985, **144**, 137-147 (cmr)Van Konigsfeld, H. *et al.*, *Acta Cryst. C*, 1988, **44**, 1054-1057 (α -D-pyr, cryst struct)Paternostre, M.T. *et al.*, *Biochemistry*, 1988, **27**, 2668 (use)Hjerten, S. *et al.*, *J. Liq. Chromatogr.*, 1989, **12**, 2471 (use)Focher, B. *et al.*, *Chem. Phys. Lipids*, 1990, **53**, 141-155 (synth, pmr, cmr)Walker, N. *et al.*, *J. Cryst. Growth*, 1990, **100**, 168 (use)Raaijmakers, H.W.C. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1994, **113**, 79-87 (β -D-fur, synth, pmr, cmr, ms)Fan, W. *et al.*, *Chem. Pharm. Bull.*, 2001, **49**, 396-401 (isol)Ducret, A. *et al.*, *Can. J. Chem.*, 2002, **80**, 653-656 (β -D-pyr, synth)Basso, A. *et al.*, *Tet. Lett.*, 2002, **43**, 2005-2008 (synth)**6-O-Oleuropeoylsucrose****O-29**

6-[4-(1-Hydroxy-1-methylethyl)-1-cyclohexene-1-carboxylate] sucrose, 8CI [17651-05-7]

C₂₂H₃₆O₁₃ 508.519Constit. of the root bark of the olive (*Olea europaea*). Cryst. (EtOH).Mp 199-200°. $[\alpha]_D^{28}$ -3.9 (c, 1.1 in H₂O).Scarpati, M.L. *et al.*, *Tet. Lett.*, 1966, 5673 (isol)**Olgose**

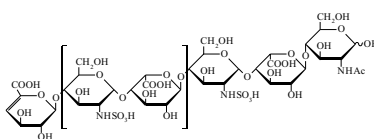
[55539-05-4]

C₃₇H₆₂O₂₂ 858.884

Hydrol. prod. from Everninomicins.

Mp 212-215°. $[\alpha]_D$ -21.8.Per-Me: Mp 194-195°. $[\alpha]_D$ -13.9.

[57903-39-6]

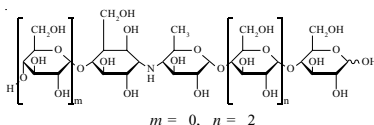
Ganguly, A.K. *et al.*, *J.A.C.S.*, 1975, **97**, 1982Ganguly, A.K. *et al.*, *Chem. Comm.*, 1977, 313Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 283 (stereochem)**Oligo-H tetradecasaccharide****O-31**

A tetradecasaccharide obtained from heparan sulphate on treatment with heparitinase which has a similar binding affinity for basic fibroblast growth factor (bFGF) as the proteoglycan.

Turnbull, J.E. *et al.*, *J. Biol. Chem.*, 1992, **267**, 10337Ornitz, D.M. *et al.*, *Mol. Cell. Biochem.*, 1992, **12**, 240**Oligostatin C****O-32**

SF 1130 X-3. Antibiotic SF 1130 X-3

[80450-14-2]

C₃₁H₅₅NO₂₄ 825.768

Aminocyclitol antibiotic. Isol. from

Streptomyces myxogenes. Antibacterial agent with strong amylase inhibiting props. Sol. H₂O, DMSO; fairly sol. MeOH, EtOH; poorly sol. Me₂CO, hexane.Mp 183° dec. $[\alpha]_D^{23}$ +154 (c, 1 in H₂O).

Strain also produces Oligostatin A and Oligostatin B which were not characterised.

[78025-06-6]

O-30Ger. Pat., 1981, 3 035 193; CA, **95**, 40843v (isol)Itoh, J. *et al.*, *J. Antibiot.*, 1981, **34**, 1424 (isol)Omoto, S. *et al.*, *J. Antibiot.*, 1981, **34**, 1429 (struct)**Oligostatin D****O-33**

SF 1130X-2. Antibiotic SF 1130X-2

[80450-15-3]

As Oligostatin C, O-32 with

m = 0, n = 3

C₃₇H₆₅NO₂₈ 971.91

Aminocyclitol antibiotic. Isol. from

Streptomyces myxogenes. Antibacterial agent with strong amylase inhibiting props. Sol. H₂O; fairly sol. MeOH, EtOH; poorly sol. Me₂CO, hexane.Mp 190° dec. $[\alpha]_D^{23}$ +155 (c, 1 in H₂O).► LD₅₀ (mus, ivn) 500 mg/kg.

[66525-21-1, 80955-61-9]

Ger. Pat., 1978, 2 737 943; CA, **88**, 188137 (isol)Japan. Pat., 1978, 78 26 398; CA, **89**, 22301 (isol)Itoh, J. *et al.*, *J. Antibiot.*, 1981, **34**, 1424 (isol)Omoto, S. *et al.*, *J. Antibiot.*, 1981, **34**, 1429 (struct)**Oligostatin E****O-34**

SF 1130X-1. Antibiotic SF 1130X-1

[80450-16-4]

As Oligostatin C, O-32 with

m = 1, n = 3

C₄₃H₇₅NO₃₃ 1134.052

Aminocyclitol antibiotic. Isol. from

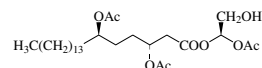
Streptomyces myxogenes. Antibacterial agent with strong amylase inhibiting props. Powder. Sol. H₂O, DMSO; fairly sol. MeOH, EtOH; poorly sol. Me₂CO, hexane.Mp 203-205° dec. $[\alpha]_D^{23}$ +166 (c, 1 in H₂O).► LD₅₀ (mus, ivn) 500-1500 mg/kg.

[66525-20-0, 80955-60-8]

Ger. Pat., 1978, 2 737 943; CA, **88**, 188137 (isol)Japan. Pat., 1978, 78 26 398; CA, **89**, 22301 (isol)Itoh, J. *et al.*, *J. Antibiot.*, 1981, **34**, 1424 (isol)Omoto, S. *et al.*, *J. Antibiot.*, 1981, **34**, 1429 (struct)**Oncidinol****O-35**

Glycerol 1-acetate 2-(3,6-diacetoxyeicosanoate). 1-O-Acetyl-2-O-(3,6-diacetoxyeicosanoyl)glycerol

[638203-64-2]

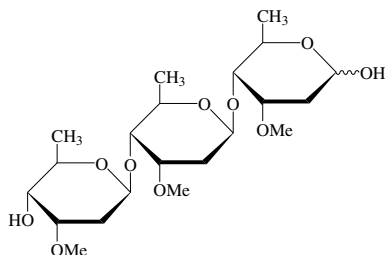


Absolute Configuration

C₂₉H₅₂O₉ 544.724Constit. of the floral oil of *Ornithophora radicans*.Reis, M.G. *et al.*, *Tet. Lett.*, 2003, **44**, 8519-8523 (isol, pmr, cmr)

Ornonin**O-36**

β -D-Cymaropyranosyl-(1 \rightarrow 4)- β -D-cymaropyranosyl-(1 \rightarrow 4)- β -D-cymaropyranose
[254900-85-1]



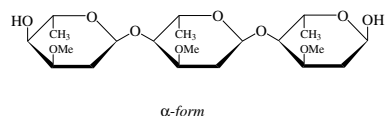
$C_{21}H_{38}O_{10}$ 450.525

Constit. of *Orthenthera viminea*.

Sigler, P. et al., *Trends Carbohydr. Chem.*, 1999, **4**, 11-15

Ornose**O-37**

α -L-Cymaropyranosyl-(1 \rightarrow 4)- α -L-cymaropyranosyl-(1 \rightarrow 4)-L-cymaropyranose
[85120-50-9]



$C_{21}H_{38}O_{10}$ 450.525

Isol. from the dried twigs of *Orthenthera viminea* (Asclepiadaceae).

$[\alpha]_D^{25} +31$ (MeOH).

 α -form

Di-Ac:

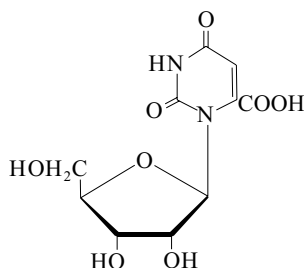
$C_{25}H_{42}O_{12}$ 534.6

$[\alpha]_D^{25} +9$ (c, 0.63 in MeOH).

Tiwari, K.N. et al., *Carbohydr. Res.*, 1983, **112**, C7; **119**, 109 (pmr, ms, isol)

Orotidine**O-38**

1,2,3,6-Tetrahydro-2,6-dioxo-3- β -D-ribofuranosyl-4-pyrimidinecarboxylic acid, 9CI.
3- β -D-Ribofuranosylorotic acid, 8CI.
6-Carboxyuridine, 8CI
[314-50-1]



$C_{10}H_{12}N_2O_8$ 288.213

Prod. by bacteria. Also present in plants, e.g. isol. from *Phaseolus vulgaris* (kidney bean) and *Xanthium pensylvanicum*. Intermediate in pyrimidine nucleotide biosynth.

Mp 200° (turns brown near). λ_{max} 267 (€ 9570) (0.1N HCl) (Derep). λ_{max} 265 (€ 8960) (0.1N NaOH) (Derep). λ_{max} 268 (€ 8900) (MeOH) (Derep).

Cyclohexylammonium salt: Mp 182-183.5° dec. λ_{max} 265 (€ 9700) (0.1M HCl). λ_{max} 265 (€ 7750) (0.1M NaOH).

3N-Me:

$C_{11}H_{14}N_2O_8$ 302.24

Mp 189-190° dec.

3N-Me, Me ester:

$C_{12}H_{16}N_2O_8$ 316.267

Mp 135-137°.

2',3'-O-Isopropylidene, Me ester:

$C_{14}H_{18}N_2O_8$ 342.305

Mp 163-164°.

2',3'-O-Isopropylidene, 3N-Me:

$C_{14}H_{18}N_2O_8$ 342.305

Mp 210-211° (as cyclohexylammonium salt).

2',3'-O-Isopropylidene, 3N-Me, Me ester:

$C_{15}H_{20}N_2O_8$ 356.332

Mp 110-111°.

5'-Phosphate: Orotidine 5'-(dihydrogen phosphate), 8CI. Orotidylic acid. OMP
[2149-82-8]

$C_{10}H_{13}N_2O_{11}P$ 368.193

Formed in the biosynthetic pathway in yeast. Decarboxylation by Orotidylate decarboxylase affords Uridine 5'-phosphate which is the route to Uridine and its derivatives *de novo* and consequently one of the most important processes in nucleic acid synthesis. Trihydrate (as Na salt).

Moffatt, J.G. et al., *J.A.C.S.*, 1963, **85**, 1118

(synth)

Curran, W.V. et al., *J.O.C.*, 1966, **31**, 201 (synth)

Hruska, F.E. et al., *J.A.C.S.*, 1971, **93**, 1795

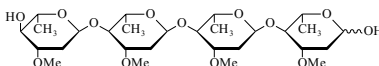
(conform, pmr)

Hermann, E.C. et al., *Anal. Biochem.*, 1973, **53**, 478 (chromatog, phosphate)

Holy, A. et al., *Coll. Czech. Chem. Comm.*, 1975, **40**, 738 (synth)

Orthenthose**O-39**

α -L-Oleandropyranosyl-(1 \rightarrow 4)- α -L-oleandropyranosyl-(1 \rightarrow 4)- α -L-oleandropyranosyl-(1 \rightarrow 4)- β -L-oleandropyranose
[88417-18-9]



$C_{28}H_{50}O_{13}$ 594.695

Isol. from dried twigs of *Orthenthera viminea* (Asclepiadaceae). Amorph. $[\alpha]_D^{25} +47.5$ (c, 0.63 in MeOH).

Di-Ac: [88498-49-1]

Amorph. $[\alpha]_D^{25} +149.5$ (c, 0.63 in MeOH).

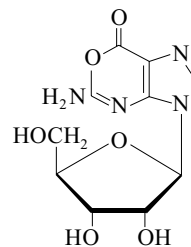
Schaub, F. et al., *Helv. Chim. Acta*, 1968, **51**, 738 (isol)

Tiwari, K.N. et al., *Carbohydr. Res.*, 1983, **123**, 231 (isol, pmr, cmr, ms)

Khare, M.P. et al., *J. Carbohydr. Chem.*, 1987, **6**, 523-535 (isol, ms)

Oxanosine**O-40**

5-Amino-3- β -D-ribofuranosylimidazo[4,5-d][1,3]-oxazin-7(3H)-one, 9CI
[80394-72-5]



$C_{10}H_{12}N_4O_6$ 284.228

Nucleoside antibiotic. Isol. from *Streptomyces capreolus*. Weakly active against *E. coli* and *Shigella* spp. Inhibitor of GMP synthetase and IMP dehydrogenase. Shows immunomodulatory, antileukaemic and anti-HIV activities. Platy needles (H₂O). Sol. H₂O, MeOH; fairly sol. MeOH; poorly sol. Me₂CO, hexane. Mp 199° dec. $[\alpha]_D^{25} -36.7$ (c, 0.3 in H₂O). λ_{max} 249 (€ 11220); 288 (0.1N HCl) (Derep). λ_{max} 272 (€ 9120) (0.1N NaOH) (Derep). λ_{max} 247 (€ 12020); 288 (€ 8510) (H₂O) (Derep). λ_{max} 247 (€ 12200); 288 (€ 8500) (H₂O) (Berdy). λ_{max} 249 (€ 11200); 288 (€ 8130) (HCl) (Berdy). λ_{max} 272 (€ 9120) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) -100 - 300 mg/kg.

NJ5095480

Shimada, N. et al., *J. Antibiot.*, 1981, **34**, 1216 (isol)

Nakamura, H. et al., *J. Antibiot.*, 1981, **34**, 1219 (struct)

Yagisawa, N. et al., *Tet. Lett.*, 1983, **24**, 931 (synth)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Itoh, O. et al., *Cancer Res.*, 1989, **49**, 996-1000 (activity)

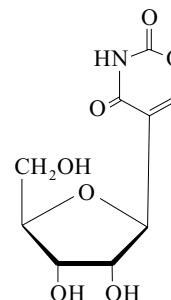
Luk, K.-C. et al., *Tet. Lett.*, 1994, **35**, 1007 (synth, bibl)

De Napoli, L. et al., *Tet. Lett.*, 1998, **39**, 7397-7400 (synth)

Saito, Y. et al., *J. Antibiot.*, 2000, **53**, 309-313 (derivs, activity)

Oxazinomycin**O-41**

5- β -Ribofuranosyl-2H-1,3-oxazine-2,4(3H)-dione, 9CI. Minimycin. EM 5429.
Antibiotic EM 5429
[32388-21-9]



$C_9H_{11}NO_7$ 245.188

Nucleoside-type antibiotic. Isol. from *Streptomyces tanesashinensis*, *Streptomyces hygroscopicus* and *Pseudomonas paucimobilis*. Antibiotic active against gram-positive and gram-negative bacteria.

Mp 164-166° dec. $[\alpha]_D^{20}$ +19.7 (c, 1 in H₂O). λ_{\max} 230 (sh) (ϵ 4610) (0.01M HCl) (Derep). λ_{\max} 232 (ϵ 4120) (H₂O) (Derep).

► LD₅₀ (mus, scu) 20 mg/kg. RP6320000

Haneishi, T. *et al.*, *J. Antibiot.*, 1971, **24**, 797 (cryst struct)

Sasaki, K. *et al.*, *J. Antibiot.*, 1972, **25**, 151 (isol, struct)

Isono, K. *et al.*, *J. Antibiot.*, 1977, **30**, 272; 1988, **41**, 1711 (biosynth, cmr, rev)

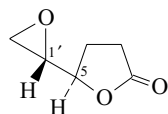
de Bernadino, S. *et al.*, *J.O.C.*, 1977, **42**, 109 (synth, ir, uv, ms, nmr)

Tymiak, A.A. *et al.*, *J. Antibiot.*, 1984, **37**, 416 (isol)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, OMK000

5-Oxiranyl-2(3H)-furanone O-42

5,6-Anhydro-2,3-dideoxyhexono-1,4-lactone



(1'R,5R)-form

C₆H₈O₃ 128.127

(1'R,5R)-form

L-threo-form. 5,6-Anhydro-2,3-dideoxy-L-threo-1,4-hexonolactone

[129151-33-3]

Oil. Bp_{0.4} 101°. $[\alpha]_D^{20}$ +58 (c, 1.97 in H₂O).

(1'R,5S)-form

D-erythro-form. 5,6-Anhydro-2,3-dideoxy-D-erythro-1,4-hexonolactone

[129151-46-8]

Syrup. Bp_{0.2} 95°. $[\alpha]_D^{20}$ +13.1 (c, 1.9 in CHCl₃).

(1'S,5S)-form

D-threo-form. 5,6-Anhydro-2,3-dideoxy-D-threo-1,4-hexonolactone

[129151-43-5]

Oil. $[\alpha]_D^{20}$ -57 (c, 1.5 in H₂O).

Vekemans, J.A.J.M. *et al.*, *J.O.C.*, 1990, **55**, 5336 (synth)

Lundt, I. *et al.*, *Synthesis*, 1992, 669 (synth)

4-Oxoheptyl glucosinolate O-43

1-Thio-β-D-glucopyranose 1-[5-oxo-N-(sulfooxy)octanimidate], 9CI. **Glucocappangulin**

[536-06-1]

H₃CCH₂CH₂CO(CH₂)₃C(SGlc)=NO-SO₃H

C₁₄H₂₅NO₁₀S₂ 431.484

Isol. from *Capparis angulata*.

Tetra-Ac:

Cryst. + 1H₂O (EtOH aq.) (as K salt).

Mp 168-169° (K salt). $[\alpha]_D^{22}$ -16.5 (c, 0.85 in MeOH).

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1960, **14**, 1226 (isol)

Ahmed, Z.F. *et al.*, *Phytochemistry*, 1972, **11**, 251 (isol)

5-Oxoheptyl glucosinolate O-44

Gluconorcappasalin

[20016-82-4]

H₃CCH₂CO(CH₂)₄C(SGlc)=NOSO₃H

C₁₄H₂₅NO₁₀S₂ 431.484

Isol. from *Capparis salicifolia*.

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1963, **17**, 561 (isol)

Brown, I.V. *et al.*, *Phytochemistry*, 1968, **7**, 1409 (isol)

5-Oxoethyl glucosinolate O-45

1-Thio-β-D-glucopyranose 1-[6-oxo-N-(sulfooxy)nonanimidate]. **Glucocappasalin**

[59204-63-6]

H₃CCH₂CH₂CO(CH₂)₄C(SGlc)=NO-SO₃H

C₁₅H₂₇NO₁₀S₂ 445.511

Isol. from seeds of *Capparis salicifolia*.

Tetra-Ac:

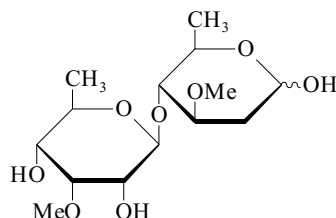
Cryst. + ½H₂O (as K salt). Mp 133-

136° dec. (K salt). $[\alpha]_D^{22}$ -16 (c, 1.0 in H₂O).

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1962, **16**, 2065

Pachybiose

2,6-Dideoxy-4-O-(6-deoxy-3-O-methyl-β-D-allopyranosyl)-3-O-methyl-D-arabino-hexose, 8CI. 6-Deoxy-3-O-methyl-β-D-allopyranosyl-(1→4)-3-O-methyl-D-arabino-hexose
[17063-53-5]



C₁₄H₂₆O₈ 322.355

Acid hydrolytic prod. of Ceolin a pregnane ester glycoside (see 3,8,11,12,14-Pentahydroxypregn-5-en-20-one) isol. from dried roots of *Dregea lanceolata*. Also obt. from *Dregea volubilis* and from the leaves of *Marsdenia erecta*. Component of glycosides of *Pachycarpus lineolatus* and other Asclepiadaceae. Hemihydrate (possibly).

Mp 153-156° (159-161°). [α]_D²⁵ -9.2 (c, 0.16 in H₂O).

α-Pyranose-form

Me glycoside: Methyl α-pachybioside
[17063-57-9]

C₁₅H₂₈O₈ 336.381

Isol. from roots of *Dregea volubilis*.

β-Pyranose-form

Me glycoside: Methyl β-pachybioside
[55902-83-5]

C₁₅H₂₈O₈ 336.381

Extracted from dried aerial parts of *Sarcostemma brevistigma*.

Mp 135-136°. [α]_D²⁵ -38 (MeOH).

Jaeggi, K.A. *et al.*, *Helv. Chim. Acta*, 1967, **50**, 1201 (*isol, ms*)

Allgeier, H. *et al.*, *Helv. Chim. Acta*, 1968, **51**, 311 (*struct*)

Saner, A. *et al.*, *Helv. Chim. Acta*, 1970, **53**, 221 (*isol*)

Yoshimura, S. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 3971

Yugh, S. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 2287

Khare, M.P. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 523-535 (*Me β-gly, isol, ms*)

Chiu, M. *et al.*, *Zhiwu Xuebao*, 1988, **30**, 297-302; *CA*, **110**, 4673 (*isol, α-Me gly*)

Krishna, G. *et al.*, *J. Nat. Prod.*, 1990, **53**, 1399 (*isol, struct*)

Pachymatmin

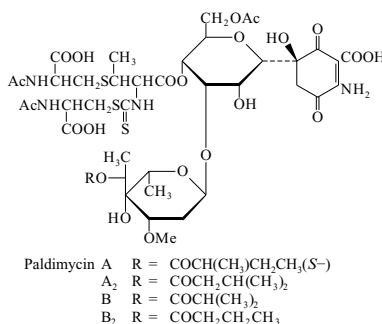
[185702-38-9]

Glycoprotein; MW 46 kDa. Isol. from *Pachymatisma johnstonii*. Shows antitumour activity.

Zidane, M. *et al.*, *Comp. Biochem. Physiol., C: Comp. Pharmacol.*, 1996, **115**, 47-53 (*isol*)

P-1**Paldimycin, INN**

Antibiotic 273a₁. U 70138
[102426-96-0]



Glycoside-type antibiotic complex. Prod. by *Streptomyces paulus*. Active against gram-positive bacteria. Isol. with Antibiotic 273a₂. Related also to Paulomycin.

► RT2600000

Paldimycin A

Antibiotic 273a_{1x}. U 67963
[101411-70-5]

C₄₄H₆₄N₄O₂₃S₃ 1113.201

Sol. MeOH, EtOAc, bases; fairly sol. CHCl₃, CH₂Cl₂; poorly sol. Et₂O, H₂O, hexane. [α]_D -31 (c, 0.9 in MeOH). Dec. begins at ca. 120°. λ_{max} 248 (ε 18000); 274 (ε 9460); 321 (ε 8990) (95% EtOH) (Derep).

► HA1662000

Paldimycin A₂ [101466-00-6]

C₄₄H₆₄N₄O₂₃S₃ 1113.201

No phys. props. reported.

Paldimycin B

Antibiotic 273a_{1β}
[101411-71-6]

C₄₃H₆₂N₄O₂₃S₃ 1099.174

Sol. MeOH, bases, EtOAc; fairly sol. CHCl₃, CH₂Cl₂; poorly sol. Et₂O, hexane, H₂O. [α]_D²⁵ -35 (c, 0.9 in MeOH). Dec. begins at ca. 120°. λ_{max} 248 (ε 18000); 274 (ε 9460); 321 (ε 8990) (95% EtOH) (Derep). λ_{max} 248 (E1%/1cm 163); 274 (E1%/1cm 85.6); 321 (E1%/1cm 82.1) (MeOH) (Berdy).

► HA1663000

Paldimycin B₂ [127319-29-3]

C₄₃H₆₂N₄O₂₃S₃ 1099.174

No phys. props. reported.

[94554-99-1]

Rolston, K.V. *et al.*, *Antimicrob. Agents Chemother.*, 1987, **31**, 653 (*props*)

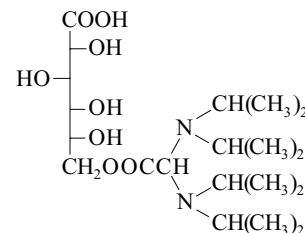
Argoudelis, A.D. *et al.*, *J. Antibiot.*, 1987, **40**, 408; 419 (*isol, struct, synth*)

Brumfitt, W. *et al.*, *J. Antimicrob. Chemother.*, 1987, **19**, 405 (*props*)

Stodola, J.D. *et al.*, *J. Chromatogr.*, 1990, **502**, 401 (*glc*)

P-3**Pangamic acid, 8CI**

Vitamin B₁₅, 8CI. D-Gluconic acid 6-bis[bis(1-methylethyl)amino]acetate, 9CI. D-Gluconic acid 6-bis(diisopropylamino)-acetate
[11006-56-7]



C₂₀H₄₀N₂O₈ 436.545

Struct. dubious, not properly characterised. Isol. from apricot kernel, also said to be present in cereals etc. Said to be a vitamin of significance in, *inter alia*, hypertension control.

[13149-69-4]

Krebs, E.T. *et al.*, *CA*, 1952, **46**, 4622 (*isol*)
Janicki, J. *et al.*, *Bull. Acad. Pol. Sci., Ser. Sci. Biol.*, 1968, **16**, 273; *CA*, **69**, 97040y (*props*)

Siong, T.E. *et al.*, *CA*, 1980, **93**, 192084v

(*struct*)
Riemschneider, R. *et al.*, *CA*, 1984, **100**, 33504d (rev)

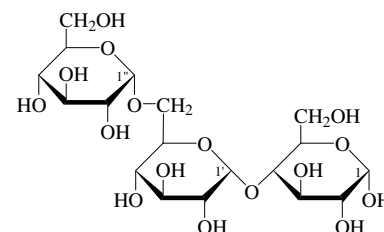
Schneider, D. *et al.*, *Arzneim.-Forsch.*, 1999, **49**, 335-343 (rev)

Merck Index, 13th edn., 2001, No. 7078 (rev)

Panose, 9CI**P-5**

O-α-D-Glucopyranosyl-(1→6)-O-α-D-glucopyranosyl-(1→4)-D-glucose, 9CI. 4-α-Isomaltosylglucose
[33401-87-5]

[25193-53-7]

**α-Pyranose-form**

C₁₈H₃₂O₁₆ 504.441

Metab. of *Aspergillus niger*. Isol. from wort and beer.

Mp 223° dec. (195-198°). [α]_D²⁵ +163 → +155.5 (c, 4.0 in H₂O). [α]_D +147 (H₂O).

α-Pyranose-form

Benzyl glycoside, decabenzyl: [85011-47-8]

C₉₅H₉₈O₁₆ 1495.81

Syrup. [α]_D²⁰ +75 (c, 1.0 in CHCl₃).

β-Pyranose-form

2'',3'',4'',6''-Tetrabenzyl, 1,2,2',3,3',6-hexa-Ac: [93417-47-1]

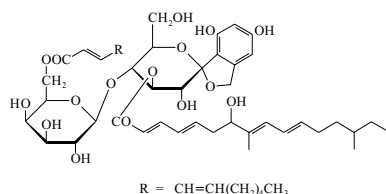
C₅₈H₆₈O₂₂ 1117.162

Cryst. (EtOH/2-propanol). Mp 152-153°. [α]_D²⁰ +51.3 (c, 2.0 in CHCl₃).

Pan, S.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 341 (*enzymic synth*)
 Wolfrom, M.L. *et al.*, *Chem. Comm.*, 1966, **2** (*synth, struct*)
 Bathgate, G.N. *et al.*, *Chem. Ind. (London)*, 1969, 520 (*isol*)
 Helferich, B. *et al.*, *Chem. Ber.*, 1973, **106**, 2508 (*synth*)
 Colson, P. *et al.*, *J.A.C.S.*, 1974, **96**, 8081 (*conformn, cmr*)
 Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1983, **56**, 188 (*synth, α-benzyl gly synth, cmr*)
 Takeo, K. *et al.*, *Carbohydr. Res.*, 1984, **133**, 135 (*synth, β-pyr deriv synth, cmr*)
 Imberty, S. *et al.*, *Carbohydr. Res.*, 1988, **181**, 4 (*cryst struct*)
 Jeffery, G.A. *et al.*, *Carbohydr. Res.*, 1991, **222**, 47 (*cryst struct*)

Papulacandin A**P-6**

[61036-46-2]

C₄₇H₆₆O₁₆ 887.029

Glycoside antibiotic. Isol. from *Papularia sphaerosperma*. Active against yeasts. Inhibitor of glucan synthesis. Amorph. solid. Sol. MeOH, 1-propanol, Me₂CO, DMF, EtOH; fairly sol. EtOAc, CHCl₃, CCl₄; poorly sol. H₂O, hexane-C₆H₆, Et₂O.
 Mp 171-173° dec. [α]_D²² +30 (MeOH). λ_{max} 230 (sh) (ε 21600); 240 (ε 23500); 262 (ε 29800) (MeOH) (Derep). λ_{max} 242 (E1%/1cm 425); 265 (E1%/1cm 520) (EtOH) (Berdy).

- LD₅₀ (mus, scu) 1000 mg/kg. LZ5710000
 Gruner, J. *et al.*, *Experientia*, 1977, **33**, 137 (*isol*)
 Traxler, P. *et al.*, *J. Antibiot.*, 1977, **30**, 289; 1980, **33**, 967 (*struct*)
Japan. Pat., 1979, 79 44 658; *CA*, **91**, 144180z
 Dubois, E. *et al.*, *Carbohydr. Res.*, 1992, **223**, 157

Papulacandin B**P-7**

[61032-80-2]

As Papulacandin A, P-6 with

R = -CH=CHCH=CHCH(OH)CH₂CH₃ (Z,E-)C₄₇H₆₄O₁₇ 901.012

Glycoside antibiotic. Isol. from *Papularia sphaerosperma*. Active against yeasts. Inhibits glucan synthesis. Amorph. solid. Sol. MeOH, 1-propanol, EtOH, Me₂CO, DMSO, DMF; fairly sol. EtOAc, CHCl₃-CCl₄; poorly sol. H₂O, hexane-Et₂O, C₆H₆.
 Mp 193-197° dec. [α]_D²² +50 (MeOH). λ_{max} 232 (ε 42000); 240 (ε 42400); 268 (ε 44800); 300 (sh) (ε 31200) (EtOH) (Derep).

- LD₅₀ (mus, scu) 1000 mg/kg. LZ5700000

Nona-Ac:

Amorph. solid (Et₂O/hexane). [α]_D²² +6 (c, 0.865 in CHCl₃).

Gruner, J. *et al.*, *Experientia*, 1977, **33**, 137 (*isol*)
 Traxler, P. *et al.*, *Helv. Chim. Acta*, 1977, **60**, 578 (*struct*)
 Traxler, P. *et al.*, *J. Antibiot.*, 1977, **30**, 289; 1980, **33**, 967; 1987, **40**, 1146
 Dubois, E. *et al.*, *Carbohydr. Res.*, 1992, **223**, 157

Papulacandin C**P-8**

[61036-48-4]

As Papulacandin A, P-6 with

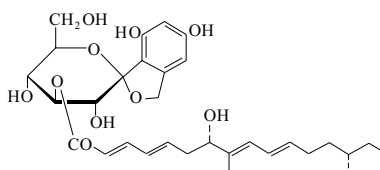
R = CH=CHCH=CHCH(OH)CH₂CH₃ (E,E-)C₄₇H₆₄O₁₇ 901.012

Glycoside antibiotic. Isol. from *Papularia sphaerosperma*. Active against yeasts. Amorph. solid. Sol. MeOH, Py, butanol, DMF, Me₂CO; fairly sol. EtOAc, Et₂O, CHCl₃; poorly sol. C₆H₆, hexane, H₂O.
 Mp 140-150° dec. [α]_D²² +33 (MeOH). λ_{max} 232 (ε 42000); 240 (ε 42400); 268 (ε 44800); 300 (sh) (ε 31200) (EtOH) (Derep).

Gruner, J. *et al.*, *Experientia*, 1977, **33**, 137
 Traxler, P. *et al.*, *J. Antibiot.*, 1977, **30**, 289; 1980, **33**, 967 (*struct*)
 Dubois, E. *et al.*, *Carbohydr. Res.*, 1992, **223**, 157

Papulacandin D**P-9**

[61036-49-5]

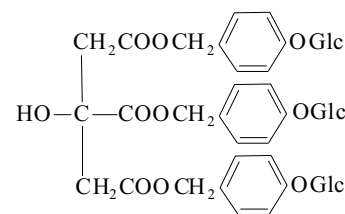
C₃₁H₄₂O₁₀ 574.667

Glycoside antibiotic. Isol. from *Papularia sphaerosperma*. Active against yeasts. Amorph. solid. Sol. MeOH, EtOH, DMF; fairly sol. EtOAc, CHCl₃; poorly sol. H₂O, hexane-C₆H₆, Et₂O.
 Mp 127-130°. [α]_D²² +7 (MeOH). λ_{max} 230 (E1%/1cm 340); 235; 261 (E1%/1cm 320) (EtOH) (Berdy).

Gruner, J. *et al.*, *Experientia*, 1977, **33**, 137 (*isol*)
 Traxler, P. *et al.*, *J. Antibiot.*, 1977, **30**, 289; 1980, **33**, 967 (*struct*)
 Danishefsky, S. *et al.*, *Carbohydr. Res.*, 1987, **171**, 317 (*synth*)
 Dubois, E. *et al.*, *Carbohydr. Res.*, 1992, **223**, 157
 Barrett, A.G.M. *et al.*, *J.O.C.*, 1996, **61**, 1082 (*synth, struct, abs config*)

Parishin**P-10**

[[3-[[[4-(β-D-Glucopyranosyloxy)phenyl]methoxy]carbonyl]-3-hydroxy-1,5-dioxo-1,5-pentenediyl]bis(oxyethylene-4,1-phenylene)]bis-β-D-glucopyranoside, 9CI. Tris(p-glucosyloxybenzyl) citrate [62499-28-9]

C₄₅H₅₆O₂₅ 996.922

Isol. from *Gastrodia elata* and *Vanda parishii*. Amorph. solid. [α]_D -73.9 (c, 1 in MeOH).

1-De-(4-Glucosyloxybenzyl): 1,2-Bis(4-glucosyloxybenzoyl) citrate. **Parishin B⁺**
 C₃₂H₄₀O₁₉ 728.657
 Constit. of *Gastrodia elata*. Amorph. solid + ½H₂O. [α]_D²⁸ -64.6 (c, 1 in MeOH).

Dahmén, J. *et al.*, *Phytochemistry*, 1976, **15**, 1986 (*isol, ir, pmr*)
 Taguchi, H. *et al.*, *Chem. Pharm. Bull.*, 1981, **29**, 55 (*isol*)
 Lin, J.-H. *et al.*, *Phytochemistry*, 1996, **42**, 549 (*Parishin B, isol, uv, ir, pmr, cmr, ms*)

Parnaparin sodium, BAN, INN**P-11***Fluxum. Opocrin. OP 21-23*

Low MW heparin (see Heparin, H-5).

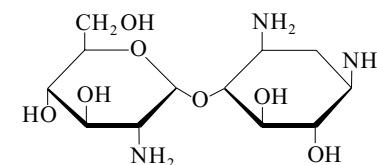
Prepd. by H₂O₂ and Cu(II) acetate degradation of heparin obt. from the intestinal mucosa of pigs. Anticoagulant. Used in the prevention and treatment of thromboembolic and other vascular disorders. Launched 1993 (Italy)

[9041-08-1]

Dettoni, A.B. *et al.*, *Med. Res. Rev.*, 1992, **12**, 373 (*pharmacol*)
 Cziraky, M.J. *et al.*, *Clin. Pharm.*, 1993, **12**, 892 (*use*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 232
 Frampton, J.E. *et al.*, *Drugs*, 1994, **47**, 652 (*rev*)
 Pinhal, M.A.S. *et al.*, *Thromb. Res.*, 1994, **74**, 143 (*pharmacol*)

Paromamine, 9CI**P-12**

4-O-(2-Amino-2-deoxy-α-D-glucopyranosyl)-2-deoxy-D-streptamine, 9CI. Neomycin D. Pseudoneamine. ψ-Neamine [534-47-4]

C₁₂H₂₅N₃O₇ 323.345

Prod. by *Streptomyces kanamyceticus* and *Streptomyces fradiae* and by hydrol. of Paromomycin. Weakly active against gram-positive bacteria. Sol. H₂O, MeOH; poorly sol. butanol, hexane. $[\alpha]_D^{25} +114$ (c, 1.4 in H₂O).

N,N',N''-Tri-Ac: $[\alpha]_D^{25} +108$ (c, 1.0 in H₂O).

O⁵-β-D-Xylofuranosyl: **Antibiotic Z 1159-2**. Z 1159-2. 5-β-D-Xylofuranosylparomamine
[55484-62-3]
C₁₇H₃₃N₅O₁₁ 455.461

Isol. from *Bacillus circulans* and *Bacillus vitellinus*.
 $[\alpha]_D +37.8$ (H₂O).

►WK2127000

[1405-10-3]

Umezawa, S. et al., *J. Antibiot.*, 1966, **19**, 88;

1972, **25**, 530 (synth)

Japan. Pat., 1974, 74 117 685; *CA*, **83**, 7129

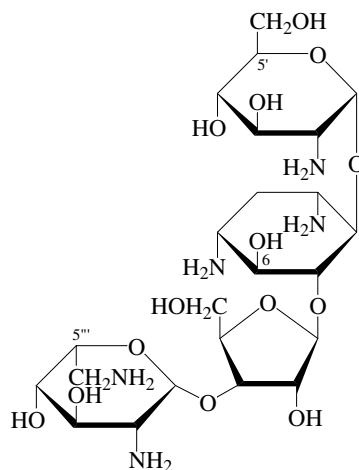
(isol, uv, ir, pmr, deriv)

Nagabhushan, T.L. et al., *Tet. Lett.*, 1975, 747 (cmr)

Paromomycin, BAN, INN

P-13

Aminosidine I. Catenulin. Gabbromycin. Humaycin. Hydroxymycin. Monomycin. Neomycin E. Paramomycin I. Quintomycin C. Zygomycin A₁. 2230D. SF 767B. Antibiotic 2230D. Antibiotic SF 767B. Antibiotic 4915. Many other names [7542-37-2]



C₂₃H₄₅N₅O₁₄ 615.634

Aminocyclitol antibiotic. Produced by *Streptomyces rimosus paramomycinus*. Shows broad spectrum antibiotic activity. Amoebicide. Anticryptosporidial activity, used in AIDS patients. Tuberculostat. Amorph. solid. $[\alpha]_D^{25} +65$ (c, 1 in H₂O). Log P -9.11 (uncertain value) (calc).

►Gastrointestinal, ototoxic, and nephrotoxic effects reported when used therapeutically. LD₅₀ (mus, orl) 2275 mg/kg. LD₅₀ (mus, ipr) 930 mg/kg. WK2315000 Hydrochloride: $[\alpha]_D^{25} +56.5$ (c, 1 in H₂O).

Sulfate: **Paromomycin sulfate, JAN, USAN, Gabroral, Humatin**
[1263-89-4]
 $[\alpha]_D^{25} +50.5$ (c, 1.5 in H₂O).

►LD₅₀ (mus, orl) 23500 mg/kg. WK2320000

N¹-Ac: **N¹-Acetylparomomycin I**

C₂₅H₄₇N₅O₁₅ 657.671

Isol. from *Streptomyces circulatus*.

Active against gram-positive and -negative bacteria. Sol. H₂O; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.

3-N-Me: **3-N-Methylparomomycin I**

C₂₄H₄₇N₅O₁₄ 629.66

From a *Streptoverticillium* sp. Shows similar antimicrobial activity as parent. Powder (as carbonate). Sol. H₂O; poorly sol. butanol, hexane. Mp 163-167° dec. (carbonate). $[\alpha]_D^{20} +67.2$ (c, 1 in H₂O). Log P -8.8 (uncertain value) (calc).

2'-N-Et: **2'-N-Ethylparomomycin**
[57785-97-4]

[66749-20-0]

C₂₅H₄₉N₅O₁₄ 643.687

Semisynthetic. Shows broader antibacterial spectrum than Paramomycin. Mp 285° dec. (as sulfate salt). $[\alpha]_D +36$ (H₂O). Log P -8.13 (uncertain value) (calc).

6-Deoxy: **6-Deoxyparomomycin I**
[61430-99-7]

C₂₃H₄₅N₅O₁₃ 599.634

From *Streptomyces rimosus* forma *paramomycinus*. Less active than Paramomycin I. Sol. H₂O.

6'''-Deamino, 6'''-hydroxy: **6'''-Deamino-6'''-hydroxyparomomycin I**
[78524-72-8]

C₂₃H₄₄N₄O₁₅ 616.618

Prod. by *Streptomyces rimosus paramomyceticus*. Powder. Sol. H₂O.

5'''-Epimer: **Paromomycin II, Neomycin F, Aminosidine II, Zygomycin A₂**

[51795-47-2]

C₂₃H₄₅N₅O₁₄ 615.634

Minor prod. of *Streptomyces rimosus* forma *paramomycinus*. Shows broad-spectrum activity. Sol. H₂O; poorly sol. butanol, hexane.

►LD₅₀ (mus, ivn) 174 mg/kg; LD₅₀ (mus, ivn) 174 mg/kg. WK1977000

5'''-Epimer, 6-deoxy: **6-Deoxyparomomycin II**
[61476-28-6]

C₂₃H₄₅N₅O₁₃ 599.634

From *Streptomyces rimosus* forma *paramomycinus*. Less active than Paramomycin II.

5'''-Epimer, 6'''-deamino, 6'''-hydroxy: **6'''-Deamino-6'''-hydroxyparomomycin II**
[78549-65-2]

C₂₃H₄₄N₄O₁₅ 616.618

Prod. by *Streptomyces rimosus paramomyceticus*. Powder. Sol. H₂O. $[\alpha]_D +54.1$. [59-04-1, 1405-10-3, 54597-56-7]

Haskell, T.H. et al., *J.A.C.S.*, 1959, **81**, 3480;

3482 (isol, uv, ir)

Schillings, R.T. et al., *Antimicrob. Agents*

Chemother., 1961, 274

Hichens, M. et al., *J.A.C.S.*, 1963, **85**, 1547 (abs config)

Haskell, T.H. et al., *J.O.C.*, 1963, **28**, 2598 (struct, stereochem)

Konstantinova, N.V. et al., *Antibiotiki (Moscow)*, 1965, **10**, 989 (deriv)

de Jongh, D.C. et al., *J.A.C.S.*, 1967, **89**, 3364 (ms, struct)

Hessler, E. et al., *J. Antibiot.*, 1970, **23**, 464

Cleophax, J. et al., *J.A.C.S.*, 1976, **98**, 7110 (deriv)

Cassinelli, G. et al., *J. Antibiot.*, 1978, **31**, 379 (deriv)

Autissier, D. et al., *J. Antibiot.*, 1981, **34**, 536 (deriv)

Battistini, C. et al., *J. Antibiot.*, 1982, **35**, 98 (deriv)

Rengaraju, S. et al., *J. Antibiot.*, 1986, **39**, 1598 (deriv)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 190

Verdon, R. et al., *Antimicrob. Agents*

Chemother., 1994, **38**, 1681 (activity)

Kanyok, T.P. et al., *J. Antimicrob. Chemother.*, 1994, **33**, 323 (activity)

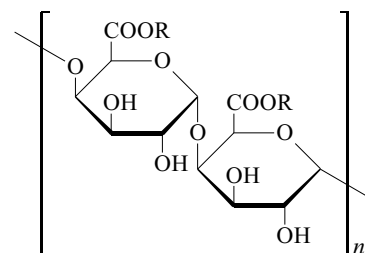
Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 9738 (synonyms)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, APP500; MRJ600; NCF500

Pectic acid

P-14

Pectinic acid, Pectin
[9046-40-6]



Colloidal polygalacturonic acids which are essentially completely deesterified and with varying degrees of neutralisation are referred to as pectic acids. Pectinic acids are colloidal polygalacturonic acids with more than a negligible content of Me ester groups with varying degrees of neutralisation. The term pectins refers to those water-soluble pectinic acids of varying Me ester content and degree of neutralisation that are capable of forming gels with sugar and acid under suitable conditions. In pectins, the α-(1→4)-linked D-polygalacturonate sequences are interrupted with (1→2)-L-rhamnose residues, neutral sugars, e.g. D-galactose and L-arabinose, form side chains on the pectin molecules. The mol. wt. of pectins is 20,000 - 400,000. Present in cell walls of all plant tissues. Up to 30% w/w can be isol. from orange and lemon rind. Pectic gels contg. cations, esp. Ca²⁺, are important components of higher plant cell walls and are also important components of commercial pectin products. Used in food processing as a gelling agent, stabiliser, thickener and emulsifier.

[9000-69-5]

Norris, F.W. et al., *Biochem. J.*, 1937, **31**, 1945 (rev)

Markovic, O. et al., *Coll. Czech. Chem. Comm.*, 1981, **46**, 266 (isol)

Walkinshaw, M.D. *et al.*, *J. Mol. Biol.*, 1981, **153**, 1055 (*cryst struct*)
Japan. Pat., 1988, 63 89 501; *CA*, **109**, 75610b (*manuf*)
 Jarvis, M.C. *et al.*, *Carbohydr. Res.*, 1995, **275**, 131-145 (*cmr*)
 Renard, M.G.C.C. *et al.*, *Carbohydr. Res.*, 1995, **275**, 155-165 (*pmr, cmr*)
 Rees, D.A. *et al.*, *Angew. Chem., Int. Ed.*, 1997, **16**, 214-224 (*struct, rev*)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2104-2108
 Sinitsya, A. *et al.*, *J. Carbohydr. Chem.*, 1998, **17**, 279-292 (*cmr, struct*)
Merck Index, 13th edn., 2001, No. 7135 (*bibl*)
 Ridley, B.L. *et al.*, *Phytochemistry*, 2001, **57**, 929-967 (*rev, struct, biosynth, props*)

Pelvetian, 8CI

P-15

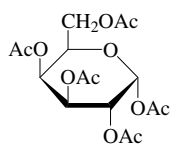
Pelvecyan. Pelvecian
 [39421-88-0]

Branched sulfated polysaccharide based on a linear glucuronomannan chain. Isol. from the brown alga *Pelvetia wrightii*.
 $[\alpha]_{\text{D}}^{20}$ -57 (H₂O).

Ovodov, Y.S. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1970, **6**, 408 (*isol*)
 Khomenko, V.A. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1971, **7**, 375; 378 (*struct*)
 Pavlenko, A.F. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1974, **10**, 155 (*struct*)
 Ovodov, Y.S. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1975, **11**, 317 (*struct, rev*)
 Pavlenko, A.F. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1976, **12**, 515 (*struct*)

1,2,3,4,6-Penta-*O*-acetylga-lactose, 8CI

P-16

 α -D-Pyranose-formC₁₆H₂₂O₁₁ 390.343 **α -D-Pyranose-form** [32445-48-0]

Mp 95.5°. $[\alpha]_{\text{D}}^{20}$ +106.7 (c, 3.25 in CHCl₃).

 β -D-Pyranose-form [4163-60-4]

Needles (MeOH). Mp 142°. $[\alpha]_{\text{D}}^{20}$ +25 (CHCl₃).

 α -D-Furanose-form [22435-12-7]

Component of *Torula* yeast (*Torulopsis utilis*). Mp 87°. $[\alpha]_{\text{D}}^{20}$ +61.2 (CHCl₃).

 β -D-Furanose-form [5531-53-3]

Cryst. (2-propanol). Mp 96-97°. $[\alpha]_{\text{D}}^{22}$ -41.5 (c, 2.0 in CH₂Cl₂).

L-form

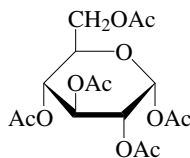
Cryst. (Me₂CO/hexane). Mp 109-110°. $[\alpha]_{\text{D}}^{20}$ +19 → +11 (c, 1 in CHCl₃).
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1056C (*nmr*)
Aldrich Library of Infrared Spectra, 3rd edn., 1981, 372A (*ir*)
 Hudson, C.S. *et al.*, *J.A.C.S.*, 1915, **37**, 1589; 1591 (α -D-pyr, β -D-fur)
 Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 340 (*rev*)
 Hachiro, O. *et al.*, *CA*, 1964, **61**, 11056e (*occur*)

Dey, P.M. *et al.*, *Chem. Ind. (London)*, 1967, 1637 (β -D-pyr synth)
 Chittenden, G.J.F. *et al.*, *Carbohydr. Res.*, 1972, **25**, 35 (β -D-fur, synth)
 González, F.S. *et al.*, *Carbohydr. Res.*, 1990, **202**, 33 (*L-form*)

1,2,3,4,6-Penta-*O*-acetylglucose

P-17

[83-87-4]

 α -D-formC₁₆H₂₂O₁₁ 390.343 **α -D-Pyranose-form** [604-68-2]

Reference material used in elemental microanalysis. Mp 112-114°. $[\alpha]_{\text{D}}^{20}$ +102 (CHCl₃).

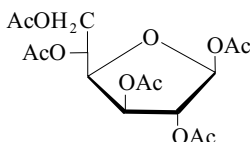
 β -D-Pyranose-form [604-69-3]

Mp 132-135°. $[\alpha]_{\text{D}}^{20}$ +4 (CHCl₃).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 625A (*ir*)
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1056A; 1056B (*nmr*)
 Wolfrom, M.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 211 (*synth*)
 Stanek, J. *et al.*, *The Monosaccharides*, Academic Press, N.Y. and London, 1963, 190 (*rev*)
 Horton, D. *et al.*, *J.O.C.*, 1967, **32**, 1073 (*synth, pmr*)
 Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1969, **102**, 994 (*config*)
Analyst (London), 1972, **97**, 740 (*microanal*)
 Vignon, M.R. *et al.*, *Tet. Lett.*, 1976, 2445 (*cmr*)
 Thibodeaux, D.P. *et al.*, *Carbohydr. Res.*, 2002, **337**, 2301-2310 (β -D-Pyr, *cryst struct*)

1,2,3,5,6-Penta-*O*-acetylglucose, 9CI

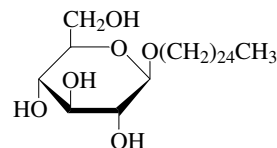
P-18

C₁₆H₂₂O₁₁ 390.343 **β -D-Furanose-form** [40031-23-0]

Syrup. $[\alpha]_{\text{D}}^{23}$ -21.2 (c, 1.5 in CHCl₃).
 Bock, K. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 2360 (*pmr, synth*)
 Akhrem, A.A. *et al.*, *Dokl. Akad. Nauk SSSR*, 1974, **219**, 99; *CA*, **82**, 86532c
 McChesney, J.D. *et al.*, *Heterocycles*, 1976, **4**, 1065 (*synth*)

Pentacosyl glucoside

P-19

C₃₁H₆₂O₆ 530.827 **β -D-Pyranose-form** [449774-90-7]

Constit. of the stems of *Butea monosperma*.

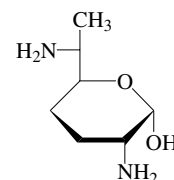
Amorph. powder.

Mp 190°. $[\alpha]_{\text{D}}^{20}$ +34 (Py).

Shukla, Y.N. *et al.*, *Indian J. Chem., Sect. B*, 2002, **41**, 1283-1285 (*isol, pmr, ms*)

2,3,4,6,7-Pentadeoxy-2,6-diamino-ribo-heptose

P-20

 α -D-Pyranose-formC₇H₁₆N₂O₂ 160.216**D-form**

Purpurosamine B

[70636-65-6]

Component of Gentamicin C₂.

Di-Et dithioacetal, N³, N⁶-di-Ac:

C₁₅H₃₀N₂O₃S₂ 350.546

Mp 165-168°. $[\alpha]_{\text{D}}^{26}$ +48.4 (c, 0.3 in MeOH).

N⁶-Me: 2-Amino-2,3,4,6-tetradecoxy-6-methylamino-D-ribo-heptose. *Purpurosamine A*

C₈H₁₈N₂O₂ 174.242

Component of Gentamicin C₁.

Di-Et dithioacetal, N⁶-Me, N³-Ac:

C₁₄H₃₀N₂O₂S₂ 322.535

Mp 97-100°. $[\alpha]_{\text{D}}^{26}$ +15.4 (c, 0.3 in MeOH).

 α -DL-form

Me glycoside, N², N⁶-di-Ac: *Methyl 2,6-diacetamido-2,3,4,6,7-pentadeoxy- α -DL-ribo-heptopyranoside*

C₁₂H₂₂N₂O₄ 258.317

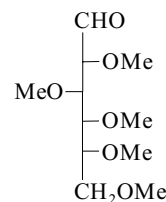
Mp 229-231°.

Cooper, D.J. *et al.*, *J.C.S. (C)*, 1971, 2876 (*isol, di-Et dithioacetal derivs*)

Chmielewski, M. *et al.*, *Carbohydr. Res.*, 1979, **70**, 275 (α -DL-Me pyr di-N-Ac)

2,3,4,5,6-Penta-*O*-methylglucose, 8CI

P-21

C₁₁H₂₂O₆ 250.291**D-form** [14168-89-9]

Syrup. Bp_{0.4} 108-110°. $[\alpha]_{\text{D}}^{25}$ -35.5 (c, 1.0 in CHCl₃).

Di-Me acetal: [14169-21-2]

C₁₃H₂₈O₇ 296.36

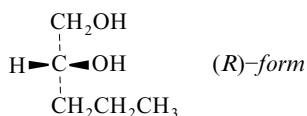
Syrup. Bp_{0.86} 95°. $[\alpha]_{\text{D}}^{25}$ +15 (c, 1.0 in MeOH).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1926, **69**, 175 (*D-form, synth*)

Anet, E.F.L. *et al.*, *Carbohydr. Res.*, 1966, **3**, 251; 1968, **7**, 453 (*D*-form, *synth*, *D*-di-Me acetal, *pmr*)
 Ueda, M. *et al.*, *Plant Physiol.*, 1970, **46**, 715 (*glc*)

1,2-Pentanediol, 9CI
 [5343-92-0]

P-22

C₅H₁₂O₂ 104.149

▶ SA0455000

(R)-form [108340-61-0]
 Bp₁₃ 98-102°. [α]_D²⁰ +0.95.

Bisphenylurethane:
 C₁₉H₂₂N₂O₄ 342.394
 Mp 97-98°.

(S)-form [29117-54-2]
 Oil. [α]_D²⁰ -15.5 (c, 0.81 in EtOH).

(±)-form [91049-43-3]
 Oil. d₂₀ 0.97. Bp 210.5-211.5° Bp_{0.3} 78-80°. n_D²⁰ 1.4400.

Di-Ac: [134172-59-1]
 C₉H₁₆O₄ 188.223
 Bp 219-220° Bp₂ 103-104°.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 133B (*ir*)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 199C (*nmr*)

Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, **3**, 193C (*ir*)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1951, **29**, 678 (*abs config*)

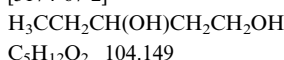
Emmons, W.D. *et al.*, *J.A.C.S.*, 1954, **76**, 3472 (*synth*)

Castro, B. *et al.*, *Bull. Soc. Chim. Fr.*, 1967, 1547 (*synth*)

Kiegiel, K. *et al.*, *Synth. Commun.*, 1999, **29**, 3999-4005 (*S*-form, *synth*, *pmr*, *cmr*, *ms*)

1,3-Pentanediol, 9CI
 [3174-67-2]

P-23

C₅H₁₂O₂ 104.149

▶ SA0489800

(±)-form
 d₂₀ 0.99. Bp₁₆ 120-122°. n_D²⁰ 1.4659.

Di-Ac: [7568-00-5]
 C₉H₁₆O₄ 188.223
 Bp₁₀ 102-103°. n_D²⁰ 1.4108.

Bis-4-nitrobenzoyl: Mp 89°.

Hanschke, E. *et al.*, *Chem. Ber.*, 1955, **88**, 1043 (*synth*)

Warwel, S. *et al.*, *J. Organomet. Chem.*, 1972, **36**, 243 (*Di-Ac*)

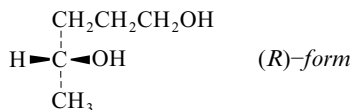
Kikuchi, H. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 552 (*synth*, *pmr*, *ms*)

Hoffmann, R.W. *et al.*, *Annalen*, 1987, 977 (*synth*)

Gajda, T. *et al.*, *Synthesis*, 1987, 1108 (*synth*)

1,4-Pentanediol, 9CI
 [626-95-9]

P-24

C₅H₁₂O₂ 104.149

(R)-form [56718-04-8]
 Bp_{1.5} 95-96°. [α]_D²² -4.9 (EtOH). Clearly optically impure (cf. *S*-isomer preparation below).

Bisphenylurethane: Mp 131-133°.

(S)-form
 Viscous oil. [α]_D²⁰ +19.3 (c, 1.0 in CHCl₃).

(±)-form Sol. H₂O, insol. petrol. d₄⁰ 1. Bp₇₁₃ 219-220° Bp₁₀ 124-126°. n_D¹⁷ 1.4439.

Di-Ac: [32864-71-4]
 C₉H₁₆O₄ 188.223
 Bp₁₃ 107-110°.

1-Benzoyl: [128733-39-1]
 C₁₂H₁₆O₃ 208.257
 Oil.

Bis-1-naphthylurethane: Mp 128-129.5°.

[24347-57-7]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 133A (*ir*)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 199B (*nmr*)

Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, **3**, 193B (*ir*)

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1927, **72**, 593 (*synth*)

Hill, R.M. *et al.*, *J.A.C.S.*, 1938, **60**, 1033 (*synth*)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1951, **29**, 678 (*abs config*)

Fuganti, C. *et al.*, *Gazz. Chim. Ital.*, 1969, **99**, 316 (*abs config*)

Whitney, T.A. *et al.*, *Adv. Chem. Ser.*, 1974, **130**, 270 (*synth*)

Robinson, P.L. *et al.*, *J.A.C.S.*, 1985, **107**, 5210 (*pmr*, *bibl*)

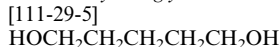
Werschun, B. *et al.*, *J.C.S. Perkin I*, 1995, 2459 (*S*-form)

Tanoue, Y. *et al.*, *J. Het. Chem.*, 2000, **37**, 1351-1353 (*di-Ac*, *synth*, *ir*, *pmr*, *cmr*)

Caddick, S. *et al.*, *Tetrahedron*, 2001, **57**, 6305-6310 (*1-benzoyl*, *synth*, *pmr*)

1,5-Pentanediol, 9CI
Pentamethylene glycol

P-25

C₅H₁₂O₂ 104.149

Manuf. by hydrogenation of glutaric acid or glutaraldehyde. Used in manuf. of pharmaceuticals and pesticides. Monomer for polyamides and polyurethanes.

Oil with bitter taste. Sol. H₂O, EtOH, Me₂CO. d₁₅¹ 1. Mp -18°. Bp 238-239° Bp₁₂ 134°. n_D²⁰ 1.4499.

▶ Eye and skin irritant. SA0480000

Diformyl: [5436-53-3]

C₇H₁₂O₄ 160.169Liq. Bp₂₀ 122-123°.

Di-Ac: [6963-44-6]

C₉H₁₆O₄ 188.223

Liq. with fruity odour. Fp 2. Bp 241°

Bp₃ 122-123°.

Bisphenylurethane:

Needles (EtOH or EtOH/CHCl₃).

Mp 176°.

Bis-4-nitrobenzoyl: [22104-39-8]

Cryst. (C₆H₆ or Me₂CO aq.).

Mp 104.5°.

Mono-Me ether: 5-Methoxy-1-pentanol, 9CI

[4799-62-6]

C₆H₁₄O₂ 118.175Liq. Bp₅₀ 118°.

Di-Me ether: 1,5-Dimethoxypentane

[111-89-7]

C₇H₁₆O₂ 132.202

Liq. Bp 159°.

Mono-Et ether: 5-Ethoxy-1-pentanol, 9CI

[10215-35-7]

C₇H₁₆O₂ 132.202Liq. Bp_{0.005} 45-46°.

Di-Et ether: 1,5-Diethoxypentane

C₉H₂₀O₂ 160.256Liq. Bp₁₆ 68-70°.

Monobenzyl ether: 5-Phenylmethoxy-1-pentanol, 9CI

[4541-15-5]

C₁₂H₁₈O₂ 194.273Oil. Bp_{0.4} 123°.

Mono-Ph ether: 5-Phenoxy-1-pentanol, 9CI

[16654-52-7]

C₁₁H₁₆O₂ 180.246Oil. Bp₁₇ 164-166°.

Mono(triphenylmethyl) ether: [147726-64-5]

C₂₄H₂₆O₂ 346.468

Cryst. (hexane). Mp 68-69°.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 132B (*ir*)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 199A (*nmr*)

Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, **3**, 193A (*ir*)

Aldrich Library of NMR Spectra, **1**, 97B (*pmr*)

Brewster, J.H. *et al.*, *J.A.C.S.*, 1951, **73**, 366-370 (*polyurethanes*)

Org. Synth., Coll. Vol., **3**, 1955, 693-695 (*synth*)

Korshak, V.V. *et al.*, *Zh. Obshch. Khim.*, 1956, **26**, 539-543; *J. Gen. Chem. USSR (Engl. Transl.)*, 1956, **26**, 575-579 (*polyamides*)

Adams, W.R. *et al.*, *Tetrahedron*, 1971, **27**, 2631-2637 (*synth*)

Konno, C. *et al.*, *Tetrahedron*, 1976, **32**, 325-331 (*cmr*)

Blane, P.-A. *et al.*, *Org. Mass Spectrom.*, 1978, **13**, 135-140 (*ms*)

Zahalka, H.A. *et al.*, *Synthesis*, 1986, 763-765 (*diformyl*)

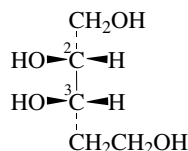
Thalladi, V.R. *et al.*, *Angew. Chem., Int. Ed.*, 2000, **39**, 918-922 (*cryst struct*)

Angehrn, P. *et al.*, *J. Med. Chem.*, 2004, **47**, 1487-1513 (*trityl ether*, *synth*, *pmr*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, PBK750

1,2,3,5-Pentanetetrol

2-Deoxypentitol, 9CI

 $\text{C}_5\text{H}_{12}\text{O}_4$ 136.147

The pentitol numbering starts at the other end of the chain.

(2R,3S)-form

2-Deoxy-D-ribitol

Constit. of the fruit of *Foeniculum vulgare* (fennel).Syrup. $[\alpha]_D^{22}$ -20 (c, 0.3 in H_2O). $[\alpha]_D$ -17 (c, 0.3 in MeOH).Kitajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 988-992 (isol, pmr, cmr)**1,2,4,5-Pentanetetrol**

3-Deoxypentitol, 9CI

[89617-06-1]

 $\text{C}_5\text{H}_{12}\text{O}_4$ 136.147**(2R,4R)-form**

L-threo-form

[41107-44-2]
Syrup. $[\alpha]_D^{18}$ -12.8 (c, 3.1 in H_2O). $[\alpha]_D^{26}$ +25 (c, 12.7 in EtOH). Discrepancy in reported opt. rotns. unexplained.

Tetra-Ac: [41107-45-3]

 $\text{C}_{13}\text{H}_{20}\text{O}_8$ 304.296
Bp_{0.07} 99-103°. $[\alpha]_D$ +13 (c, 2 in CHCl_3). $[\alpha]_D^{21}$ +6.2 (c, 3.0 in Py).

1,5-Bis(4-methylbenzenesulfonyl):

[127785-48-2]
 $\text{C}_{19}\text{H}_{24}\text{O}_8\text{S}_2$ 444.526
Cryst. Mp 88-90°. $[\alpha]_D^{20}$ -8.5 (c, 0.2 in EtOH).

1,5-Di-Me ether, 2,4-di-Ac:

 $\text{C}_{11}\text{H}_{20}\text{O}_6$ 248.275
 $[\alpha]_D^{18}$ -21.2 (c, 3.1 in CHCl_3).

1-Triphenylmethyl ether, 2,4-isopropylidene: [112031-65-9]

 $\text{C}_{27}\text{H}_{30}\text{O}_4$ 418.532
 $[\alpha]_D^{25}$ +29.9 (c, 1 in CHCl_3).**(2R,4S)-form**

D-erythro-form

2,4-Isopropylidene, 1-Ac:

 $\text{C}_{10}\text{H}_{18}\text{O}_5$ 218.249
Oil. $[\alpha]_D^{25}$ -4.6 (c, 1 in CHCl_3).**(2S,4R)-form**

L-erythro-form

2,4-Isopropylidene, 1-Ac: $[\alpha]_D^{27}$ +5.1 (c, 2.8 in CHCl_3).**(2S,4S)-form**

D-threo-form. 3-Deoxy-D-arabinitol

[92691-36-6]

Constit. of the fruit of *Foeniculum vulgare* (fennel).Cryst. (EtOH/Et₂O) or syrup.Mp 73-75° Mp 102° (dimorph.). $[\alpha]_D^{18}$ +31 (c, 0.4 in H_2O) (synthetic), $[\alpha]_D^{22}$ -46 (c, 1.03 in EtOH) (synthetic), $[\alpha]_D^{22}$ -11 (c, 0.1 in H_2O) (nat.), $[\alpha]_D$ -34.5 (c, 0.1 in MeOH) (nat.).**P-26**

Tetrabenzoyl: [116983-10-9]

 $\text{C}_{33}\text{H}_{28}\text{O}_8$ 552.579Gum. $[\alpha]_D^{20}$ -44.8 (c, 1.12 in EtOH).**(2RS,4RS)-form**

threo-form. (±)-form

Bp₂ 185-187°.

1,5-Di-Me ether: 1,5-Dimethoxy-2,4-pentanediol

 $\text{C}_7\text{H}_{16}\text{O}_4$ 164.201 d_4^{20} 1.12. Bp₂₀ 162-164°. n_D^{20} 1.4592.**(2RS,4SR)-form**

meso-form. erythro-form

[17609-05-1]

Cryst. (Et₂O/pentane). Bp₂ 185-187°.

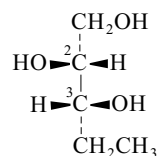
Tetra-Ac: [34213-35-9] Bp 122-128°.

Tetrabenzoyl: Mp 108-109° (104°).

[124867-27-2]

Ritchie, R.G.S. *et al.*, *Can. J. Chem.*, 1978, **56**, 794-802 (derivs, synth, ir, glc, pmr)Tsuda, Y. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 920-925 (synth, derivs)Witczak, Z.J. *et al.*, *Carbohydr. Res.*, 1982, **110**, 326-329 (synth)Xie, Z.-F. *et al.*, *Tetrahedron: Asymmetry*, 1993, **4**, 973-980 (derivs, synth, ir, pmr, cmr, ms)Katajima, J. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 988 (isol)Boydell, A.J. *et al.*, *J.O.C.*, 2003, **68**, 8252-8255 (synth)**1,2,3-Pentanetriol****P-28**

[5371-48-2]



(2R,3R)-form

 $\text{C}_5\text{H}_{12}\text{O}_3$ 120.148**(2R,3R)-form**

1,2-Dideoxy-D-threo-pentitol, 9CI. 1,2-Dideoxy-D-xylitol. 1,2-Dideoxy-D-lyxitol

[54623-21-1]

Syrup. No opt. rotn. recorded.

1,2-Di-O-isopropylidene: [99945-79-6]

 $[\alpha]_D^{20}$ +13.2 (c, 1.7 in CHCl_3).**(2R,3S)-form**

1,2-Dideoxy-D-erythro-pentitol, 9CI. 1,2-Dideoxy-D-ribitol. 1,2-Dideoxy-D-arabinitol

[101221-89-0]

Mp 62-63° (39°). $[\alpha]_D^{25}$ -11.88 (c, 2.23 in EtOH).

Tribenzyl: Mp 111.5-112°.

1-(4-Methylbenzenesulfonyl): [101077-74-1]

Mp 101.5-102.5°. $[\alpha]_D^{30}$ +16.92 (c, 0.39 in EtOH).

1,2-Di-O-isopropylidene: [99838-60-5]

 $[\alpha]_D^{20}$ +23.7 (c, 1.5 in CHCl_3).**(2S,3R)-form**

4,5-Dideoxy-D-erythro-pentitol, 9CI. 1,2-Dideoxy-L-ribitol. 1,2-Dideoxy-L-arabinitol

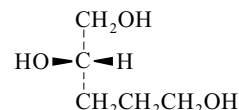
[92622-03-2]

Mp 61-62°. $[\alpha]_D^{25}$ +11.4 (c, 3.03 in EtOH).**(2RS,3SR)-form**

(±)-erythro-form

Tri-Ac: Bp_{0.1} 75-76°. n_D^{20} 1.4285.Raphael, R.A. *et al.*, *J.C.S.*, (Suppl.), 1949, S44 (synth)Wolfson, M.L. *et al.*, *J.A.C.S.*, 1960, **82**, 2817Blumberg, K. *et al.*, *Carbohydr. Res.*, 1981, **88**, 253Williams, J.M. *et al.*, *Carbohydr. Res.*, 1984, **128**, 73 (synth)Mulzer, J. *et al.*, *Annalen*, 1986, 825 (derivs)Yusufoglu, A. *et al.*, *Annalen*, 1986, 1119 (synth, cmr)Classen, A. *et al.*, *Annalen*, 1987, 629 (synth)**1,2,5-Pentanetriol, 9CI****P-29**

[14697-46-2]



(S)-form

 $\text{C}_5\text{H}_{12}\text{O}_3$ 120.148

▶ SA3327000

(S)-form [19131-21-6]Bp_{0.15} 145-150°. $[\alpha]_D^{20}$ -6 (c, 6.4 in MeOH). $[\alpha]_D$ -19.6 (c, 5.0 in EtOH).**(±)-form**Liq. d_4^{20} 1.14. Bp₁₃ 190-191° Bp₆ 180-182°. n_D^{20} 1.4280.

Tri-Ac: [5470-86-0]

 $\text{C}_{11}\text{H}_{18}\text{O}_6$ 246.26Bp₂₀ 173-176°.

1,5-Di-Me ether: 1,5-Dimethoxy-2-pentanol

 $\text{C}_7\text{H}_{16}\text{O}_3$ 148.202Bp₁₃ 94-95°.

Trisphenylurethane: Mp 92°.

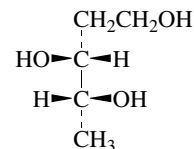
Wilson, C.L. *et al.*, *J.C.S.*, 1945, 49 (synth)

Org. Synth., Coll. Vol., 3, 1955, 833 (synth)

Kuhn, R. *et al.*, *Angew. Chem.*, 1962, **74**, 252 (abs config)Hartman, F.C. *et al.*, *J.O.C.*, 1964, **29**, 873 (synth)Cervinka, O. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2927 (synth)Golding, B.T. *et al.*, *J.C.S. Perkin 2*, 1978, 839 (synth)Cole, A.G. *et al.*, *J.C.S. Perkin 1*, 1995, 2685; 2695 (synth, ir, pmr, cmr, ms)**1,3,4-Pentanetriol****P-30**

1,4-Dideoxypentitol

[101833-59-4]

 $\text{C}_5\text{H}_{12}\text{O}_3$ 120.148Liq. Bp_{0.2} 110-112°. n_D^{20} 1.4721.**(3R,4R)-form**

D-threo

Tri-Ac: [90414-37-2]

 $\text{C}_{11}\text{H}_{18}\text{O}_6$ 246.26 $[\alpha]_D$ +26 (EtOH).

Hanschke, E. *et al.*, *Chem. Ber.*, 1955, **88**, 1048 (synth)
 Kochetkov, N.K. *et al.*, *Tetrahedron*, 1963, **19**, 973 (synth)
 Moore, R.E. *et al.*, *J.O.C.*, 1984, **49**, 2484 (tri-Ac)

1,3,5-Pentanetriol, 9CI P-31

2,4-Dideoxypentitol
 [4328-94-3]
 $\text{HOCH}_2\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{CH}_2\text{OH}$
 $\text{C}_5\text{H}_{12}\text{O}_3$ 120.148
 d_{20}^{20} 1.13. Bp_{11} 188-189°. n_D^{20} 1.4785.

Tri-Ac: [38551-66-5]

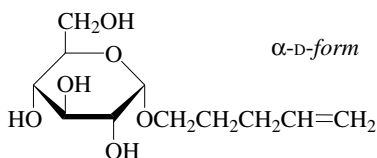
$\text{C}_{11}\text{H}_{18}\text{O}_6$ 246.26

Bp_{12} 166-170°.

Tris-4-nitrobenzoyl: Mp 121-122°.

Olsen, S. *et al.*, *Acta Chem. Scand.*, 1950, **4**, 993 (synth)

Paul, R. *et al.*, *Bull. Soc. Chim. Fr.*, 1951, 550 (synth)

4-Pentenyl glucopyranoside P-32

$\text{C}_{11}\text{H}_{20}\text{O}_6$ 248.275

alpha-D-form [125647-51-0]

Tetra-Ac: 4-Pentenyl 2,3,4,6-tetra-O-acetyl- α -D-glucopyranoside

$\text{C}_{19}\text{H}_{28}\text{O}_{10}$ 416.47

Mp 62-64°. $[\alpha]_D^{21}$ +127 (c, 1.07 in CHCl_3).

4,6-Benzylidene: 4-Pentenyl 4,6-O-benzylidene- α -D-glucopyranoside

$\text{C}_{18}\text{H}_{24}\text{O}_6$ 336.384

Mp 89°. $[\alpha]_D^{21}$ +96 (c, 1.22 in CHCl_3).

4,6-Benzylidene, di-Ac: 4-Pentenyl 2,3-di-O-acetyl-4,6-O-benzylidene- α -D-glucopyranoside

$\text{C}_{22}\text{H}_{28}\text{O}_8$ 420.458

Mp 133-134°. $[\alpha]_D^{21}$ +85.8 (c, 1.03 in CHCl_3).

4,6-Benzylidene, dibenzyl: 4-Pentenyl 2,3-di-O-benzyl-4,6-O-benzylidene- α -D-glucopyranoside

$\text{C}_{32}\text{H}_{36}\text{O}_6$ 516.633

Mp 81-82°. $[\alpha]_D$ +0.65 (c, 9.41 in CHCl_3).

beta-D-form [125631-33-6]

Tetra-Ac: 4-Pentenyl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside

$\text{C}_{19}\text{H}_{28}\text{O}_{10}$ 416.47

Mp 47-48°. $[\alpha]_D^{21}$ -19.5 (c, 1.52 in CHCl_3).

4,6-Benzylidene: 4-Pentenyl 4,6-O-benzylidene- β -D-glucopyranoside

$\text{C}_{18}\text{H}_{24}\text{O}_6$ 336.384

Mp 144-145°. $[\alpha]_D^{21}$ -43.7 (c, 1.01 in CHCl_3).

4,6-Benzylidene, di-Ac: 4-Pentenyl 2,3-di-O-acetyl-4,6-O-benzylidene- β -D-glucopyranoside

$\text{C}_{22}\text{H}_{28}\text{O}_8$ 420.458

Mp 130-131°. $[\alpha]_D^{21}$ -76.8 (c, 1.1 in CHCl_3).

4,6-Benzylidene, dibenzyl: 4-Pentenyl 2,3-di-O-benzyl-4,6-O-benzylidene- β -D-glucopyranoside

$\text{C}_{32}\text{H}_{36}\text{O}_6$ 516.633

Mp 76°. $[\alpha]_D^{21}$ -36.5 (c, 1.02 in CHCl_3).

Mootoo, D.R. *et al.*, *J.A.C.S.*, 1988, **110**, 2662 (synth)

Ratcliffe, A.J. *et al.*, *J.A.C.S.*, 1989, **111**, 7661 (diisopropylidene)

Fraser-Reid, B. *et al.*, *J.O.C.*, 1990, **55**, 6068 (tetrabenzoyl)

Konradsson, P. *et al.*, *Rec. Trav. Chim.*

(*J. R. Neth. Chem. Soc.*), 1991, **110**, 23 (cmr)

Wilson, B.G. *et al.*, *J.O.C.*, 1995, **60**, 317 (tetra-Ac, 4,6-benzylidene, pmr, cmr)

4-Pentenyl glucosinolate P-33

1-Thio- β -D-glucopyranose 1-[N-(sulfooxy)-5-hexenimide], 9CI.

Glucobrassicinapin

[19041-10-2]

$\text{H}_2\text{C}=\text{CH}(\text{CH}_2)_3\text{C}(\text{SGlc})=\text{NOSO}_3\text{H}$

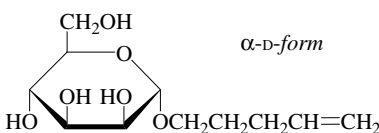
$\text{C}_{12}\text{H}_{21}\text{NO}_9\text{S}_2$ 387.431

Isol. from rape (*Brassica napus*) and other *Brassica* sp.

[37491-62-6]

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1956, **10**, 1365 (isol)

Verkerk, R. *et al.*, *Natural Toxicants in Food*, (ed. Watson, D.H.), CRC Press, 1998, 29-53 (rev)

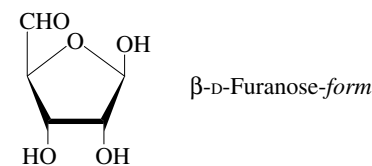
4-Pentenyl mannopyranoside P-34

α -D-form [123487-65-0]

No phys. props. reported.

β -D-form No phys. props. reported.

Konradsson, P. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1991, **110**, 23 (synth, cmr)

ribo-Pentodialdo-1,4-furanose, 8CI P-35

$\text{C}_5\text{H}_8\text{O}_5$ 148.115

beta-D-Furanose-form

Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene- β -D-ribo-pentodialdo-1,4-furanoside

[33985-40-9]

$\text{C}_9\text{H}_{14}\text{O}_5$ 202.207

Needles (Et_2O /petrol). Mp 60-61°. $\text{Bp}_{0.2}$ 75°. $[\alpha]_D^{23}$ -91 (c, 2 in CHCl_3). $[\alpha]_D^{22}$ -220 (c, 1 in CHCl_3).

Me glycoside, 2,3-O-isopropylidene, 4-nitrophenylhydrazonate: [33985-41-0]

$\text{C}_{15}\text{H}_{19}\text{N}_3\text{O}_6$ 337.332

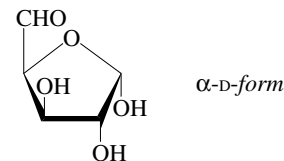
Yellow needles (Et_2O /hexane). Mp 151-152°. $[\alpha]_D^{24}$ -49 (c, 1 in CHCl_3).

Butterworth, R.F. *et al.*, *Can. J. Chem.*, 1971, **49**, 2755 (β -D-Me fur isopropylidene, β -D-Me fur isopropylidene nitrophenylhydrazonate, pmr)

Arrick, R.E. *et al.*, *Carbohydr. Res.*, 1973, **26**, 441 (β -D-Me fur isopropylidene)

Berg, N. *et al.*, *Carbohydr. Res.*, 1977, **57**, 65 (β -D-Me fur isopropylidene)

Binkley, R.W. *et al.*, *J.O.C.*, 1977, **42**, 1216 (β -D-Me fur isopropylidene)

xylol-Pentodialdo-1,4-furanose P-36
xylol-1,4-Pentodialdose

$\text{C}_5\text{H}_8\text{O}_5$ 148.115

alpha-D-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene- α -D-xylol-pentodialdo-1,4-furanose

$\text{C}_8\text{H}_{12}\text{O}_5$ 188.18

Intermed. in synth. of labelled aldoses. Prisms (H_2O) (hydrate); needles (C_6H_6) (anhyd.). Mp 182-184°. $[\alpha]_D^{20}$ -25.9 (H_2O). Dimeric in cryst. state by intermolecular aldol condensation.

1,2-O-Isopropylidene, semicarbazone:

Mp 208-209°.

1,2-O-Isopropylidene, 3-benzyl: 3-O-Benzyl-1,2-O-isopropylidene- α -D-xylol-pentodialdo-1,4-furanose

[23558-05-6]

$\text{C}_{15}\text{H}_{18}\text{O}_5$ 278.304

$\text{Bp}_{0.07}$ 150-155°. $[\alpha]_D^{25}$ -86.5 (c, 2.7 in CHCl_3).

1,2-O-Isopropylidene, 3-benzyl, oxime:

[26928-32-5]

$\text{C}_{15}\text{H}_{19}\text{NO}_5$ 293.319

$[\alpha]_D^{20}$ -121.2 (c, 1.0 in CHCl_3).

1,2-O-Isopropylidene, 3-benzyl, semicarbazone: Mp 127-128°. $[\alpha]_D^{25}$ -50 (c, 1.5 in EtOH).

1,2-O-Cyclohexylidene: 1,2-O-Cyclohexylidene- α -D-xylol-pentodialdo-1,4-furanose, 8CI

[15356-27-1]

$\text{C}_{11}\text{H}_{16}\text{O}_5$ 228.244

Mp 183°. $[\alpha]_D^{17}$ +33 (CHCl_3).

1,2-O-Cyclohexylidene, 3-benzoyl: 3-O-Benzoyl-1,2-O-cyclohexylidene- α -D-xylol-pentodialdo-1,4-furanose

[15356-29-3]

$\text{C}_{18}\text{H}_{20}\text{O}_6$ 332.352

Oil. $[\alpha]_D^{17}$ -17 (CHCl_3).

1,2-O-Cyclohexylidene, 3-benzyl, 2,4-dinitrophenylhydrazonate: [15354-76-4]
Mp 186-188°.

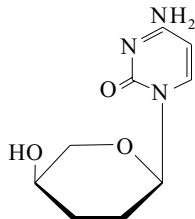
[63593-02-2]

Wolfrom, M.L. *et al.*, *J.O.C.*, 1962, **27**, 1800 (1,2-isopropylidene derivs)

Zhdanov, Yu.A. *et al.*, *Zh. Obshch. Khim.*, 1966, **36**, 1742; 1967, **37**, 98 (1,2-cyclohexylidene derivs)
 Horton, D. *et al.*, *Carbohydr. Res.*, 1970, **14**, 159 (1,2-isopropylidene benzyl)
 Tronchet, J.M.J. *et al.*, *Carbohydr. Res.*, 1973, **29**, 297 (1,2-isopropylidene benzyl oxime)
 Shalaby, M.A. *et al.*, *Carbohydr. Res.*, 1994, **261**, 203 (cryst struct, 1,2-isopropylidene)

Pentopyranine A, 9CI **P-37**

4-Amino-1-(tetrahydro-5-hydroxy-2H-pyran-2-yl)-2(1H)-pyrimidinone, 9CI.
 1-(2,3-Dideoxy- α -L-glycero-pentopyranosyl)cytosine
 [39057-02-8]



C₉H₁₃N₃O₃ 211.22

One of the first known naturally occurring nucleosides with α -L-configuration. Isol. from the fermentation broth of *Streptomyces griseochromogenes*. Presumed byproduct of Blasticidin S, B-39 biosynth. Antiviral antibiotic. Sol. H₂O. Mp 258° dec. [α]_D²¹ 0 (c, 0.75 in H₂O). [α]_D²¹ +31.5 (c, 0.75 in H₂O). pK_a 4.2. λ_{\max} 278 (€ 13 100) (0.1N HCl), 270 nm (€ 8 850) (0.1N NaOH) (Derep). λ_{\max} 278 (€ 13100) (0.1N HCl) (Derep). λ_{\max} 270 (€ 8850) (0.1N NaOH) (Derep). λ_{\max} 278 (€ 13100) (pH 3 H₂O) (Derep).

N,4'-Di-Ac: Mp 200-202.5°.

4'-Epimer: **Pentopyranine B**. 1-(2,3-Dideoxy- β -D-glycero-pentopyranosyl)-cytosine
 [51257-56-8]

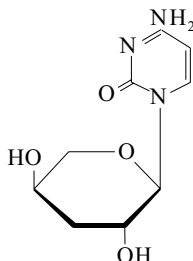
C₉H₁₃N₃O₃ 211.22

From *Streptomyces griseochromogenes*. Shows antitumour props. Sol. H₂O. Mp 242° dec. (233-234°). [α]_D²¹ +12 (c, 4.2 in H₂O). λ_{\max} 278 (€ 13100) (0.1N HCl) (Derep). λ_{\max} 270 (€ 8850) (0.1N NaOH) (Derep). λ_{\max} 278 (€ 13100) (pH 3 H₂) (Derep). λ_{\max} 278 (€ 13100) (HCl) (Berdy). [73416-15-6]

Seto, H. *et al.*, *Tet. Lett.*, 1972, 3991 (struct, ms)
 Seto, H. *et al.*, *Agric. Biol. Chem.*, 1973, **37**, 2415; 2421; 1974, **38**, 3622 (struct, isol, pmr)
 Watanabe, K.A. *et al.*, *J.O.C.*, 1974, **39**, 2482 (synth, pmr)
 Watanabe, K.A. *et al.*, *Can. J. Chem.*, 1981, **59**, 468 (synth)

Pentopyranine C, 9CI

4-Amino-1-(3-deoxy- α -L-threo-pentopyranosyl)-2(1H)-pyrimidinone, 9CI
 [39007-97-1]



C₉H₁₃N₃O₄ 227.219

One of the first known naturally occurring nucleosides with α -L-configuration. Isol. from *Streptomyces griseochromogenes*. Presumed byproduct of Blasticidin S biosynth. Antiviral antibiotic. Sol. H₂O. Mp 143-145°. [α]_D²¹ +20 (c, 1.2 in H₂O). pK_a 4.2. λ_{\max} 278 (€ 12 200) (0.1N HCl), 270 nm (€ 8 450) (0.1N NaOH). λ_{\max} 278 (€ 13100) (0.1N HCl) (Derep). λ_{\max} 270 (€ 8850) (0.1N NaOH) (Derep). λ_{\max} 278 (€ 13100) (pH 3 H₂O) (Derep).
 ▶ LD₅₀ (mus, ipr) 300 - 700 mg/kg.
 N,2',4'-Tri-Ac: Mp 204-205°. [α]_D²⁷ 0 (c, 1.0 in CHCl₃).

4'-Epimer: **Pentopyranine D**. 1-(3-Deoxy- β -D-erythro-pentopyranosyl)cytosine
 [51257-57-9]

C₉H₁₃N₃O₄ 227.219

From *Streptomyces griseochromogenes*. Shows antitumour props. Sol. H₂O. Mp 261° (255-257°) dec. [α]_D²¹ +13.7 (c, 1.3 in H₂O). λ_{\max} 278 (€ 13100) (0.1N HCl) (Derep). λ_{\max} 270 (€ 8850) (0.1N NaOH) (Derep). λ_{\max} 278 (€ 13100) (pH 3 H₂) (Derep).
 ▶ LD₅₀ (mus, ipr) 300 - 700 mg/kg.

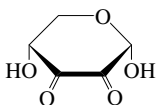
[77870-78-1]

Seto, H. *et al.*, *Tet. Lett.*, 1972, 3991 (struct, pmr, ms)

Seto, H. *et al.*, *Agric. Biol. Chem.*, 1973, **37**, 2415; 2421; 1974, **38**, 3622 (isol, struct)

Chiu, T.M.K. *et al.*, *J.O.C.*, 1973, **38**, 3622 (synth, pmr)

Watanabe, K.A. *et al.*, *Can. J. Chem.*, 1981, **59**, 468 (synth)

glycero-Pentos-2,3-diulose**P-39**

C₅H₆O₅ 146.099

D-form

Bis(diphenylhydrazones):

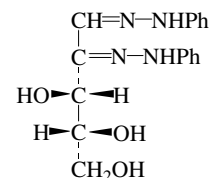
C₂₉H₂₆N₄O₃ 478.549

Yellow needles (MeOH). Mp 141-142°.

Volc, J. *et al.*, *Carbohydr. Res.*, 2000, **329**, 219-225 (synth, pmr)

Pentose phenylosazones**P-40**

Pentosazones



(3R,4R)-form

C₁₇H₂₀N₄O₃ 328.37

Formed from aldopentoses by treatment with phenylhydrazine. The reaction involves a formal oxidation step involving destruction of the chiral centre at C-2. The four (enantiomeric pairs of) pentoses therefore form a total of two different osazones. In addition, the two 2-pentuloses form the same osazones by formal oxidation at C-1. Key compds. for historical characterisation of pentoses and their configurational interconversion. Readily converted to osotriazoles which were used for further characterisation.

(3R,4R)-form

D-threo-form. D-Xylosazone. D-Lyxosazone. D-threo-2-Pentulosazone
 [5934-40-7]

Cryst. (EtOH aq.). Mp 164-165°. [α]_D²⁰ -22.5 → -48 (48h) (c, 0.84 in Py/EtOH (2:3)).

(3R,4S)-form

L-erythro-form. L-Arabinosazone. L-Ribosazone. L-erythro-2-Pentulosazone
 [5985-95-5]

Yellow cryst. (EtOH). Mp 171-172° dec. [α]_D²⁸ +60.5 → +31 (48h) (c, 0.9 in Py/EtOH (2:3)).

(3S,4R)-form

D-erythro-form. D-Arabinosazone. D-Ribosazone. D-erythro-2-Pentulosazone
 [3322-01-8]

Cryst. (EtOH aq.). Mp 171-172°. [α]_D²⁰ -61 → -30 (48h) (c, 0.84 in Py/EtOH (2:3)).

(3S,4S)-form

L-threo-form. L-Xylosazone. L-Lyxosazone. L-threo-2-Pentulosazone
 [80514-36-9]

Yellow cryst. (EtOH aq.). Mp 164° (161-162°). [α]_D¹⁸ +10 → +42 (25h) (c, 1 in py/EtOH aq. (2:3)).

Bayne, S. *et al.*, *Adv. Carbohydr. Chem.*, 1956, **11**, 43-96 (rev)

Richtmyer, N.K. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 127-131 (synth, bibl)

Hough, L. *et al.*, *Rodd's Chem. Carbon Compd. (2nd edn.)*, 1967, **1F**, 440-446 (rev)

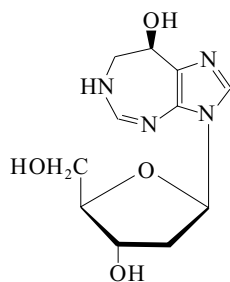
Ho, T. *et al.*, *Agric. Biol. Chem.*, 1969, **33**, 1217-1219 (ms)

Schnarr, G.W. *et al.*, *J.C.S. Perkin 1*, 1979, 496-503 (cmr)

Lichtenthaler, F.W. *et al.*, *Angew. Chem., Int. Ed.*, 1992, **31**, 1541-1556 (rev)

Pentostatin, BAN, INN, USAN

3-(2-Deoxy-β-D-erythro-pentofuranosyl)-3,6,7,8-tetrahydroimidazo[4,5-d][1,3]diazepin-8-ol, 9CI. 2'-Deoxycofomycin. Covidarabine. Oncopent. Nipent. ADAI. CI 825. d-Cof. NSC 218321. PD-ADI. YK 176 [53910-25-1]



C₁₁H₁₆N₄O₄ 268.272

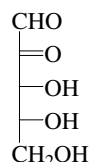
Nucleoside antibiotic. Prod. by *Streptomyces antibioticus* and *Aspergillus nidulans*. Potentiator, antineoplastic. Powerful adenosine deaminase inhibitor. Used to treat hairy cell leukaemia and lymphoid neoplasms. Nucleoside transporter substrate. Launched 1992 (US). Mp 220-225°. [α]_D²⁵ +76.4 (c, 1 in H₂O). Log P -3.1 (uncertain value) (calc). λ_{max} 273 (ε 7500) (H₂O at pH 2) (Derep). λ_{max} 282 (ε 8000) (H₂O at pH 11) (Derep). λ_{max} 282 (ε 8100) (pH 7 H₂O) (Derep).

- Adverse effects on CNS, kidneys and lungs when used therapeutically. Can cause myelosuppression. Mutagen. NI2931000 2'-Chloro: See Adechlorin in *The Combined Chemical Dictionary*.

[63677-95-2]

Woo, P.W.K. *et al.*, *J. Het. Chem.*, 1974, **11**, 641 (isol, cmr, pmr, cryst struct, pharmacol)
Japan. Pat., 1977, 77 128 292; CA, **88**, 73015
Poster, D.S. *et al.*, *Cancer Clin. Trials*, 1981, **4**, 209 (rev, pharmacol)
Chan, E. *et al.*, *J.O.C.*, 1982, **47**, 3457 (synth, uv, ir, pmr)
Chan, E. *et al.*, *J. Het. Chem.*, 1983, **20**, 629 (synth, uv, ir, pmr)
Chen, S.F. *et al.*, *Biochem. Pharmacol.*, 1984, **33**, 4069-4079 (pharmacol)
O'Dwyer, P.J. *et al.*, *NIH Publ.*, 1984, **2**, 1 (revs, pharmacol, props)
Tunac, J.B. *et al.*, *J. Antibiot.*, 1985, **38**, 1344 (struct, synth)
O'Dwyer, P.J. *et al.*, *Ann. Intern. Med.*, 1988, **108**, 733 (pharmacol, rev)
Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)
Eastland, G. *et al.*, *Drugs of Today (Barcelona)*, 1989, **25**, 458 (rev)
Ho, A.D. *et al.*, *Cancer Treat. Rep.*, 1990, **17**, 213 (pharmacol, rev)
Ikeda, T. *et al.*, *Clin. Rep.*, 1990, **24**, 135; 144; 163; 167; 173 (pharmacol, tox)
Arjuman, P. *et al.*, *J. Biomol. Struct. Dyn.*, 1990, **8**, 199 (struct, conformn)
Grever, M. *et al.*, *Invest. New Drugs*, 1992, **10**, 345
Showalter, H.D.H. *et al.*, *J. Antibiot.*, 1992, **45**, 1914 (manuf)
Klohs, W.D. *et al.*, *Pharmacol. Rev.*, 1992, **44**, 459 (rev)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 496
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, PBT100

erythro-Pentos-2-ulose
Arabinosone

D-form

C₅H₈O₅ 148.115

β-D-Pyranose-form

Me glycoside, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-β-D-erythro-pentopyranosid-2-ulose [4096-64-4]

C₉H₁₄O₅ 202.207

Needles (diisopropyl ether). Mp 114° (hydrate) Mp 97-98°. [α]_D²³ -161 (c, 1.4 in EtOH).

Benzyl glycoside, 3,4-isopropylidene: Benzyl 3,4-O-isopropylidene-β-D-erythro-pentopyranosid-2-ulose [28070-06-6]

C₁₅H₁₈O₅ 278.304

Mp 90-93° (hydrate).

Benzyl glycoside, 3,4-isopropylidene, oxime: C₁₅H₁₆NO₅ 293.319
Mp 162-164°. [α]_D²⁰ -232 (c, 1.0 in CHCl₃).

α-L-Pyranose-form

Me glycoside, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-α-L-erythro-pentopyranosid-2-ulose

C₉H₁₄O₅ 202.207

Mp 89-90°. [α]_D +9 (c, 0.5 in CHCl₃).

Isopropyl glycoside, 3,4-isopropylidene: Isopropyl 3,4-O-isopropylidene-α-L-erythro-pentopyranosid-2-ulose

C₁₁H₁₈O₅ 230.26

Mp 103-105°. [α]_D -12 (c, 0.8 in CHCl₃).

tert-Butyl glycoside, 3,4-isopropylidene: tert-Butyl 3,4-O-isopropylidene-α-L-erythro-pentopyranosid-2-ulose

[30652-72-3]

C₁₂H₂₀O₅ 244.287

Needles (petrol). Mp 123-124°. [α]_D²¹ +4.5 (c, 1.2 in CHCl₃).

β-L-Pyranose-form

Me glycoside, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-β-L-erythro-pentopyranosid-2-ulose

[4096-62-2]

C₉H₁₄O₅ 202.207

Mp 99°. [α]_D²⁰ +166 (c, 0.8 in EtOH).

tert-Butyl glycoside, 3,4-isopropylidene: tert-Butyl 3,4-O-isopropylidene-β-L-erythro-pentopyranosid-2-ulose

[30652-73-4]

C₁₂H₂₀O₅ 244.287

Mp 76-78°. [α]_D²⁰ +159 (c, 2.0 in CHCl₃).

Ph glycoside, 3,4-isopropylidene: Phenyl 3,4-O-isopropylidene-β-L-erythro-pentopyranosid-2-ulose

C₁₄H₁₆O₅ 264.277

Cryst. (CH₂Cl₂/petrol). Mp 114-116°. [α]_D²² +197 (c, 1.0 in CH₂Cl₂).

Parikh, V.M. *et al.*, *Can. J. Chem.*, 1965, **43**, 3452 (β-D-Me pyr)

Burton, J.S. *et al.*, *J.C.S.*, 1965, 3433 (β-D-Me pyr, β-L-Me pyr)

Beynon, P.J. *et al.*, *J.C.S. (C)*, 1966, 1131 (β-L-Me pyr)

Rosenthal, A. *et al.*, *Can. J. Chem.*, 1970, **48**, 3253 (β-D-Me pyr)

Follmann, H. *et al.*, *J.A.C.S.*, 1970, **92**, 671 (β-D-benzyl pyr)

Palmer, H.T. *et al.*, *Acta Cryst. B*, 1976, **32**, 377 (β-L-Me pyr, cryst struct)

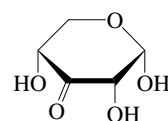
Collins, P.M. *et al.*, *Carbohydr. Res.*, 1976, **46**, 277 (α-L-tert-butyl pyr)

Buchanan, J.G. *et al.*, *Carbohydr. Res.*, 1977, **57**, 85 (α-L-Me pyr)

Collins, P.M. *et al.*, *J. Chem. Res., Synop.*, 1978, 446; *J. Chem. Res., Miniprint*, 5344 (α-L-tert-butyl pyr, β-L-tert-butyl pyr, β-L-Ph pyr)

erythro-Pentos-3-ulose

P-43



α-D-Pyranose-form

C₅H₈O₅ 148.115

α-D-Pyranose-form

Me glycoside: Methyl α-D-erythro-pentopyranosid-3-uloside

C₆H₁₀O₅ 162.142

Mp 80-82°. [α]_D²⁰ +191 (c, 1 in H₂O).

β-D-Pyranose-form

Me glycoside: Methyl β-D-erythro-pentopyranosid-3-uloside

[7045-35-4]

C₆H₁₀O₅ 162.142

Mp 85-88°. [α]_D²⁰ -77 (c, 1 in H₂O).

α-D-Furanose-form

1,2-O-Isopropylidene, oxime: 1,2-O-Isopropylidene-α-D-erythro-pentofuranos-3-ulose oxime

[32453-68-2]

C₈H₁₃NO₅ 203.194

Cryst. (CHCl₃/pentane). Mp 139-140°. [α]_D²⁵ +231 (c, 1.0 in MeOH).

1,2-O-Isopropylidene, 5-benzoyl: 5-O-Benzoyl-1,2-O-isopropylidene-α-D-erythro-pentofuranos-3-ulose

[6698-46-0]

C₁₅H₁₆O₆ 292.288

Cryst. (Et₂O). Mp 98-99°. [α]_D²⁰ +136 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, 5-tosyl: 1,2-O-Isopropylidene-5-O-tosyl-α-D-erythro-pentofuranos-3-ulose

[20514-01-6]

C₁₅H₁₈O₇S 342.369

Needles (MeOH/Et₂O/petrol). Mp 105-106° (as methanolate). [α]_D¹⁸ +70.5 (c, 1.0 in CHCl₃).

1,2-O-Isopropylidene, 5-Ac, tosylhydrazine: 5-O-Acetyl-1,2-O-isopropylidene- α -D-erythro-pentofuranos-3-ulose tosylhydrazine
Mp 174-175°.

1,2-O-Isopropylidene, 5-trityl: 1,2-O-Isopropylidene-5-O-trityl- α -D-erythro-pentofuranos-3-ulose, 8CI
[20590-54-9]
C₂₇H₂₆O₅ 430.499
Cryst. (EtOAc/petrol). [α]_D +132 (c, 4.7 in CHCl₃).

5-Deoxy, 1,2-O-isopropylidene: 5-Deoxy-1,2-O-isopropylidene- α -D-erythro-pentofuranos-3-ulose
[32453-67-1]
C₈H₁₂O₄ 172.18
Mp 39-41°. [α]_D²³ +181.4 (c, 1.6 in CHCl₃).

5-Deoxy, 1,2-O-isopropylidene, oxime: C₈H₁₃NO₄ 187.195
Mp 89°.

5-Deoxy, 1,2-O-isopropylidene, 2,5-dichlorophenylhydrazone: [35827-75-9]
Mp 134-136°. [α]_D²³ +598 (c, 1.3 in CHCl₃).

2-Deoxy, Me glycoside, 5-trityl: Methyl 2-deoxy-5-O-trityl- α -D-glycero-pentofuranosid-3-ulose
C₂₅H₂₄O₄ 388.462
Cryst. (EtOH). Mp 122-123°. [α]_D²⁴ +182.4 (c, 1.2 in CHCl₃).

β -D-Furanose-form

2-Deoxy, Me glycoside, 5-trityl: Methyl 2-deoxy-5-O-trityl- β -D-glycero-pentofuranosid-3-ulose
C₂₅H₂₄O₄ 388.462
Bp_{0.1} 125°. [α]_D²⁷ -26 (c, 0.5 in CHCl₃).

Lindberg, B. et al., *Acta Chem. Scand.*, 1967, **21**, 910 (Me α -D-fur, Me β -D-fur)

Sowa, W. et al., *Can. J. Chem.*, 1968, **46**, 1586 (α -D-trityl isopropylidene)

Onodera, K. et al., *Carbohydr. Res.*, 1968, **6**, 276 (α -D-tosyl isopropylidene)

Nutt, R.F. et al., *J.O.C.*, 1968, **33**, 1789 (α -D-benzoyl isopropylidene)

Tronchet, J.M.J. et al., *Helv. Chim. Acta*, 1972, **55**, 613 (α -D-deoxy isopropylidene, α -D-deoxy isopropylidene dichlorophenylhydrazone)

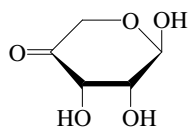
Flaherty, B. et al., *J.C.S. Perkin 1*, 1973, 632 (α -D-benzoyl isopropylidene)

Rosenthal, A. et al., *Carbohydr. Res.*, 1974, **32**, 67 (α -D-Me fur deoxy trityl, β -D-Me fur deoxy trityl)

Nair, V. et al., *J.O.C.*, 1978, **43**, 5013 (α -D-isopropylidene oxime)

erythro-Pentos-4-ulose

erythro-Pentopyranos-4-ulose



β -D-form

C₅H₈O₅ 148.115

β -L-form

Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene- β -L-erythro-pentopyranosid-4-ulose, 8CI
[22596-25-4]
C₉H₁₄O₅ 202.207

Bp_{0.2} 64-66°. [α]_D²³ +71 (c, 1 in EtOH).

Me glycoside, 2,3-O-isopropylidene, oxime: [62819-19-6]
Cryst. (Et₂O/petrol). Mp 96-97°. [α]_D +81 (c, 1.1 in CHCl₃).

β -DL-form

2,3-O-Isopropylidene, 1-benzoyl: 1-O-Benzoyl-2,3-O-isopropylidene- β -DL-erythro-pentopyranos-4-ulose
[63096-98-0]

C₁₅H₁₆O₆ 292.288
Cryst. (hexane/EtOAc). Mp 94-95°.

Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene- β -DL-erythro-pentopyranosid-4-ulose
C₉H₁₄O₅ 202.207
Cryst. (hexane/Et₂O). Mp 64-65°.

Overend, W.G. et al., *Carbohydr. Res.*, 1970, **15**, 185 (β -L-Me pyr isopropylidene)

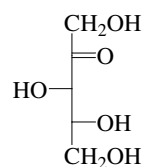
Brimacombe, J.S. et al., *Carbohydr. Res.*, 1976, **52**, 31 (β -L-Me pyr isopropylidene, β -L-Me pyr isopropylidene oxime)

Achmatowicz, O. et al., *Carbohydr. Res.*, 1977, **54**, 193 (β -DL-Me pyr isopropylidene, β -DL-benzoyl isopropylidene)

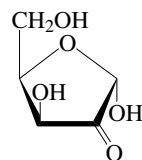
threo-Pentos-2-ulose, 9CI

Lyxosone. Xylosone

[26188-06-7]



D-form



α -D-Furanose-form

C₅H₈O₅ 148.115

Complex mixt. of acyclic, cyclic and bicyclic forms and their hydrates in soln.

D-form [19694-88-3]

Syrup.

Bis(4-methylphenylhydrazone): [18685-56-8]

Cryst. Mp 225-227°.

Bis(thiosemicarbazone):

Yellow needles (H₂O). Mp 225° dec.

Bis(phenylhydrazone), 3,4,5-tri-Ac: [4092-27-7]

Cryst. Mp 196°.

α -D-Furanose-form

Me glycoside, 3,5-dibenzoyl, 4-nitrophenylhydrazone: [58366-00-0]
Mp 173-177°. [α]_D -8 (c, 0.7 in CHCl₃).

Me glycoside, 3,5-O-isopropylidene: Methyl 3,5-O-isopropylidene- α -D-threo-pentofuranosid-2-ulose
[65247-31-6]

C₉H₁₄O₅ 202.207
Cryst. (Et₂O/hexane). Mp 69-70° (hydrate). [α]_D²² +111 (CHCl₃).

β -D-Furanose-form

Me glycoside, 3,5-dibenzoyl: Methyl 3,5-di-O-benzoyl- β -D-threo-pentofuranosid-2-ulose
[58365-96-1]

C₂₀H₁₈O₇ 370.358

Needles (Et₂O). Mp 102-104° (hydrate). [α]_D -92 (c, 0.5 in CHCl₃).

Me glycoside, 3,5-dibenzoyl, 4-nitrophenylhydrazone: [58366-29-3]
Mp 146°. [α]_D -20 (c, 0.2 in CHCl₃).

Me glycoside, 3,5-O-isopropylidene: Methyl 3,5-O-isopropylidene- β -D-threo-pentofuranoside
[65247-30-5]

C₉H₁₄O₅ 202.207
[α]_D²⁰ -36 (CHCl₃).

L-form [3445-23-6]

Degradation product of L-ascorbic acid. Foam.

Saloman, L.L. et al., *J.A.C.S.*, 1952, **74**, 5161 (L-form, synth)

Whiting, G.C. et al., *Nature (London)*, 1960, **185**, 843 (L-form)

El Khadem, H. et al., *Carbohydr. Res.*, 1965, **1**, 31

Stroh, H.H. et al., *Chem. Ber.*, 1968, **101**, 751

Carlsson, F.H.H. et al., *Carbohydr. Res.*, 1974, **36**, 359

Collins, P.M. et al., *J.C.S. Perkin 1*, 1975, 2163 (α -D-Me fur dibenzoyl nitrophenylhydrazone, β -D-Me fur dibenzoyl, β -D-Me fur dibenzoyl nitrophenylhydrazone)

Taylor, E.C. et al., *J.A.C.S.*, 1976, **98**, 2301 (D-form, synth)

Bischofberger, K. et al., *J.C.S. Perkin 1*, 1977, 1472 (α -D-Me fur isopropylidene, β -D-Me fur isopropylidene)

Somogyi, L. et al., *Carbohydr. Res.*, 1985, **145**, 156 (synth, uv, ir)

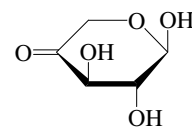
Vuorinen, T. et al., *Carbohydr. Res.*, 1990, **207**, 185 (D-form, synth, cmr)

Seok, Y.J. et al., *J. Carbohydr. Chem.*, 1996, **15**, 1073-1083 (tautom)

threo-Pentos-4-ulose

threo-Pentopyranos-4-ulose

P-46



α -L-form

C₅H₈O₅ 148.115

α -L-form

Me glycoside, O-methyloxime: Methyl α -L-threo-pentopyranosid-4-ulose

O-methyloxime
C₇H₁₃NO₅ 191.183
Flakes (CH₂Cl₂/petrol). Mp 69-70°. [α]_D -135 (c, 1.03 in H₂O).

Benzyl glycoside: Benzyl α -L-threo-pentopyranosid-4-ulose
C₁₂H₁₄O₅ 238.24
Cryst. Mp 80°. [α]_D²⁰ -145 (c, 1 in H₂O).

β -L-form

Me glycoside: Methyl β -L-threo-pentopyranosid-4-ulose

C₆H₁₀O₅ 162.142
Syrup. [α]_D +170 (c, 1.6 in H₂O).

Benzyl glycoside: Benzyl β -L-threo-pentopyranosid-4-ulose

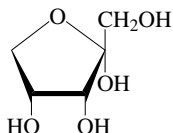
C₁₂H₁₄O₅ 238.24
Cryst. + H₂O. Mp 86° (hydrate). [α]_D²⁰ +166.8 (c, 1.0 in H₂O).

Benzyl glycoside, 2,3-dibenzyl: Benzyl 2,3-di-O-benzyl-β-L-threo-pentopyranosid-4-ulose
 $C_{26}H_{26}O_5$ 418.488
 $[\alpha]_D^{25} +98.3$ (c, 1.25 in $CHCl_3$).

Heyns, K. *et al.*, *Chem. Ber.*, 1962, **95**, 2964 (*benzyl glycosides*)
 Schnarr, G.W. *et al.*, *Can. J. Chem.*, 1978, **56**, 1752 (*α-L-Me pyr methyloxime, β-L-Me pyr*)
 Matsuzawa, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1981, **54**, 2169 (*β-L-benzyl pyr dibenzyl*)

erythro-2-Pentulose, 9CI P-47

Ribulose. Riboketose. Adonose. Erythro-pentulose. Arabulose. Arabinulose. Araboketose
 $[5556-48-9]$



α-D-Furanose-form

$C_5H_{10}O_5$ 150.131

An aq. soln. contains 54.8% α-fur, 18.9% β-fur and 26.4% open-chain forms at 55°.

D-form [488-84-6]

An early prod. in plant photosynth.
 $[\alpha]_D^{21} -16.3$ (H_2O).

2-Nitrophenylhydrazone: [6155-41-5]
 Mp 168-169°. $[\alpha]_D -48.3$ (c, 0.32 in MeOH).

5-Phosphate: [4151-19-3]

$C_5H_{11}O_8P$ 230.111

Intermed. in the oxidative metabolism of glucose in yeast and animal tissue.
 Cryst. + $2H_2O$. $[\alpha]_D^{26} +16.5$ (H_2O).

1,5-Diphosphate: [24218-00-6]

$[2002-28-0]$

$C_5H_{12}O_{11}P_2$ 310.091

A substrate for the key photosynthetic enzyme, ribulose-bisphosphate carboxylase (EC 4.1.1.39). No phys. props. reported. In equil. with 16% covalent hydrate in aq. soln. at 25°.

α-D-Furanose-form [131064-69-2]

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-α-D-erythro-2-pentulose
 $[27294-54-8]$

$C_{11}H_{18}O_5$ 230.26

Mp 87-89°. $[\alpha]_D^{22} -5.7$ (c, 1.0 in MeOH).

β-D-Furanose-form [131064-70-5]

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-β-D-erythro-2-pentulose
 $[25018-66-0]$

$C_{11}H_{18}O_5$ 230.26

$[\alpha]_D^{22} -110$ (c, 1.0 in MeOH).

L-form [2042-27-5]

$[\alpha]_D +17$ (H_2O).

2-Nitrophenylhydrazone: Mp 168-170°.
 $[\alpha]_D^{19} +47.5$ (c, 0.6 in MeOH).

α-L-Furanose-form

Me glycoside: Methyl α-L-erythro-2-pentulofuranoside
 $[53756-34-6]$
 $C_6H_{12}O_5$ 164.158

Cryst. Mp 68-69°. $[\alpha]_D^{25} -42.2$ (c, 1.0 in H_2O).

β-L-Furanose-form

Me glycoside: Methyl β-L-erythro-2-pentulofuranoside
 $[53756-33-5]$

$C_6H_{12}O_5$ 164.158

Syrup. $[\alpha]_D^{25} +109.2$ (c, 1.0 in H_2O).

$[2922-69-2, 136332-88-2]$

Reichstein, T. *et al.*, *Helv. Chim. Acta*, 1934, **17**,

996 (*L-form, synth*)

Glatthaar, C. *et al.*, *Helv. Chim. Acta*, 1935, **18**,

80 (*D-form, L-form, synth*)

Michelson, A.M. *et al.*, *J.C.S.*, 1949, 2476-2486 (*synth, phosphate*)

Dickens, F. *et al.*, *Biochem. J.*, 1960, **64**, 567-578 (*purifn, phosphate*)

Simpson, F.J. *et al.*, *Methods Enzymol.*, 1966, **9**,

41-46 (*uv, phosphate*)

Tipson, R.S. *et al.*, *Carbohydr. Res.*, 1969, **10**,

549 (*D-form, β-D-fur diisopropylidene*)

Gray, G.R. *et al.*, *Biochemistry*, 1970, **9**, 2425-2462 (*1,5-diphosphate, pmr, uv, ir, struct*)

Stanković, L. *et al.*, *Carbohydr. Res.*, 1973, **35**,

242 (*Me L-furanosides*)

Wong, C.H. *et al.*, *J.A.C.S.*, 1980, **102**, 7938-7939 (*1,5-diphosphate*)

Collins, P.M. *et al.*, *J.C.S. Perkin 1*, 1980, 277 (*α-D-fur diisopropylidene, β-D-fur diisopropylidene*)

Wong, C.H. *et al.*, *Methods Enzymol.*, 1982, **89**,

108-121 (*1,5-diphosphate*)

Franke, F.P. *et al.*, *Carbohydr. Res.*, 1985, **143**,

69-76 (*nmr, phosphate*)

Wu, J. *et al.*, *Carbohydr. Res.*, 1990, **206**, 1 (*cmr, equilib*)

Vuorinen, T. *et al.*, *Carbohydr. Res.*, 1990, **207**,

185; **209**, 13 (*synth, pmr, cmr, D-form*)

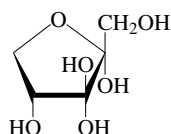
Robitaille, P.M.L. *et al.*, *J. Magn. Reson.*, 1991, **92**, 73-84 (*P-31 nmr, phosphate*)

Ekeberg, D. *et al.*, *Carbohydr. Res.*, 2002, **337**,

779-786 (*synth*)

threo-2-Pentulose, 9CI, 8CI P-48

Xylulose. Xylketose. Threopentulose. Ketoxylulose. Lyxulose
 $[5962-29-8]$



α-D-Furanose-form

$C_5H_{10}O_5$ 150.131

An aq. soln. at 37° contains 16% α-fur, 62% β-fur and 22% ketone.

D-form [551-84-8]

Prod. by microbacteria from xylose.
 Intermed. in carbohydrate metab. of plants. Component of the lipopolysaccharides of the pseudomonad *Pseudomonas vesicularis*.

Syrup. $[\alpha]_D^{18} -33.2$ (H_2O).

p-Bromophenylhydrazone: Mp 128-129°.
 $[\alpha]_D^{20} +23.7 \rightarrow -31.2$ (Py).

2,4-Dinitrophenylhydrazone: [23176-93-4]
 Mp 175-176°.

5-Phosphate: [4212-65-1]

$C_5H_{11}O_8P$ 230.111

Metabolic intermed. Obt. in soln., 95-97% pure.

α-D-Furanose-form

Me glycoside: Methyl α-D-threo-pentulofuranoside
 $[53756-31-3]$
 $C_6H_{12}O_5$ 164.158
 Syrup. $[\alpha]_D^{20} +73.4$ (c, 1 in H_2O).

β-D-Furanose-form

2,3-O-Isopropylidene: 2,3-O-Isopropylidene-β-D-threo-pentulofuranose
 $[25018-68-2]$
 $C_8H_{14}O_5$ 190.196
 Cryst. (Et_2O /pentane). Mp 74°. $[\alpha]_D^{25} +1.6$ (c, 1 in Me_2CO).

Me glycoside: Methyl β-D-threo-pentulofuranoside
 $[53756-32-4]$
 $C_6H_{12}O_5$ 164.158
 Syrup. $[\alpha]_D^{20} -86.3$ (c, 1 in H_2O).

L-form [527-50-4]

Syrup. $[\alpha]_D^{20} +33.1$ (H_2O).

p-Bromophenylhydrazone: Mp 130-131°.
 $[\alpha]_D^{20} -25.8 \rightarrow +31.5$ (Py).

Moses, V. *et al.*, *Biochem. J.*, 1962, **83**, 8 (*D-form*)

Hough, L. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 94 (*synth, D-form*)

Touster, O. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 98 (*synth, D-form, L-form*)

Mortlock, R.P. *et al.*, *Methods Enzymol.*, 1966, **9**, 39 (*D-form*)

Rabinsohn, Y. *et al.*, *J.O.C.*, 1967, **32**, 3452 (*D-form*)

Tipson, R.S. *et al.*, *Carbohydr. Res.*, 1969, **10**,

549 (*β-D-fur isopropylidene*)

Stankovic, L. *et al.*, *Carbohydr. Res.*, 1974, **35**,

242 (*α-D-Me fur, β-D-Me fur*)

Wilkinson, S.G. *et al.*, *Carbohydr. Res.*, 1981, **98**, 247 (*occur*)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (*equilib comp*)

Mocali, A. *et al.*, *Carbohydr. Res.*, 1985, **143**,

288 (*5-phosphate*)

Wu, J. *et al.*, *Carbohydr. Res.*, 1990, **206**, 1 (*cmr, equilib*)

Vuorinen, T. *et al.*, *Carbohydr. Res.*, 1990, **207**,

185; **209**, 13 (*synth, pmr, cmr, D-form*)

Zeng, C. *et al.*, *J.O.C.*, 1997, **62**, 4780-4784 (*β-D-fur isopropylidene, synth, pmr, cmr*)

Pentyl glucosinolate P-49

1-Thio-β-D-glucopyranose 1-[N-(sulfoox-y)hexanimidate], 9CI
 $[127929-24-2]$

$H_3C(CH_2)_4C(SGlc)=NOSO_3H$

$C_{12}H_{23}NO_9S_2$ 389.447

Present in radish (*Raphanus sativus*) and in kohlrabi aroma.

Kjaer, A. *et al.*, *Agric. Biol. Chem.*, 1978, **42**,

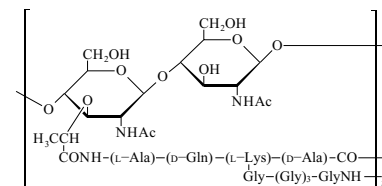
1715 (*occur*)

Macleod, G. *et al.*, *Phytochemistry*, 1990, **29**,

1183 (*occur*)

Peptidoglycan P-50

Murein. Mucopeptide. Glycopeptide



Consists of linear polysaccharide chains cross-linked by oligopeptide units to form a single bag-shaped giant molecule which envelops the cytoplasmic membrane of bacterial cells. Gram-negative bacterial cell walls contain a thin layer of peptidoglycan whereas it is the major component of gram-positive bacterial cell walls. Detailed studies have been made on the peptidoglycan isolated from cell walls of *Micrococcus luteus*, *Staphylococcus aureus* and *E. coli*.

Scheifer, K.H. *et al.*, *Bacteriol. Rev.*, 1972, **36**, 407

Sharon, N. *et al.*, *Complex Carbohydrates*, Addison-Wesley, 1975, 393

Ghuysen, J.M. *et al.*, *J. Gen. Microbiol.*, 1977, **101**, 13 (*biosynth*)

Pestalotan P-51

A highly branched (1 → 3)β-D-glucan, MW = 2×10^6 . Elaborated by the fungus *Pestalotia* sp. Shows mod. growth-inhibitory activity against mouse-implant tumours. Sol. DMSO; fairly sol. H₂O. $[\alpha]_D^{25}$ -0.1 (c, 0.5 in 1M NaOH).

Misaki, A. *et al.*, *Carbohydr. Res.*, 1984, **129**, 209

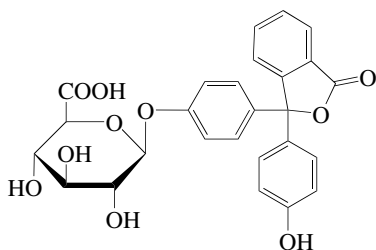
Phallic acids P-52

Glycuronans consisting of (1 → 4) linked α-L-iduronic acid and β-D-glucuronic acid residues in various ratios from 1:2 to 1:4. These with ratio 1:2 appear to be identical with Protuberic acid, P-100 except for molecular size. Widely distributed in fungi of the Phallales.

Tsuchihashi, H. *et al.*, *Carbohydr. Res.*, 1983, **122**, 174 (*isol, pmr, struct, bibl*)

Phenolphthalein glucuronide P-53

4-[1,3-Dihydro-1-(4-hydroxyphenyl)-3-oxo-1-isobenzofuranyl]phenyl glucopyranosiduronic acid, 9Cl. Phenolphthalein glucopyranosiduronic acid



C₂₆H₂₂O₁₀ 494.454

β-D-form [15265-26-6]

Substrate for assay of β-glucuronidase activity. Model compd. for enterohepatic studies. Cryst. (as cinchonidine salt).

Na salt: [6820-54-8]

Amorph. solid (MeOH/2-propanol). Mp 210° (dec.) (as monohydrate). $[\alpha]_D^{18}$ -7.2 (c, 0.14 in MeOH).

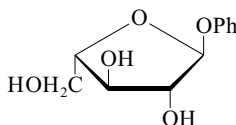
Di Somma, A.A. *et al.*, *J. Biol. Chem.*, 1940, **133**, 277-284 (*isol*)

Marsh, C.A. *et al.*, *Biochim. Biophys. Acta*, 1965, **97**, 597-599 (*synth*)

Nambara, T. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 2869-2870 (*synth*)

Cairns, T. *et al.*, *Anal. Chem.*, 1982, **54**, 2456-2461 (*ms*)

Phenyl arabinofuranoside P-54



α-L-form

C₁₁H₁₄O₅ 226.229

α-L-form

Syrup. $[\alpha]_D^{25}$ -159 (H₂O). $[\alpha]_D^{30}$ -145 (c, 0.8 in CHCl₃).

Tribenzyl: Phenyl 2,3,5-tri-O-benzyl-α-L-arabinofuranoside

C₃₂H₃₂O₅ 496.602

Syrup. $[\alpha]_D^{25}$ -72.4 (c, 0.7 in CHCl₃).

β-L-form

Mp 82-84°. $[\alpha]_D^{25}$ +112 (c, 0.7 in CHCl₃). Satisfactory analysis not obtained.

Tribenzyl: Phenyl 2,3,5-tri-O-benzyl-β-D-arabinofuranoside

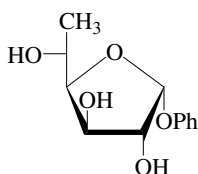
C₃₂H₃₂O₅ 496.602

Syrup. $[\alpha]_D^{25}$ +113.3 (c, 0.7 in CHCl₃).

Sadeh, S. *et al.*, *Carbohydr. Res.*, 1982, **101**, 152

Phenyl 6-deoxyglucofuranoside P-55

Phenyl quinovofuranoside



α-D-form

C₁₂H₁₆O₅ 240.255

α-D-form

3,5-Dibenzoyl, 2-Ac: Phenyl 2-O-acetyl-3,5-di-O-benzoyl-6-deoxy-α-D-glucopyranoside

C₂₈H₂₆O₈ 490.509

Thick syrup. $[\alpha]_D$ +77.3 (c, 0.88 in CHCl₃).

β-D-form

Glass. $[\alpha]_D$ -18.2 (c, 0.88 in MeOH).

3,5-Dibenzoyl: Phenyl 3,5-di-O-benzoyl-6-deoxy-β-D-glucopyranoside

C₂₆H₂₄O₇ 448.471

Glass. $[\alpha]_D$ -235.9 (c, 0.98 in CHCl₃).

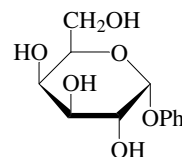
3,5-Dibenzoyl, 2-Ac: Phenyl 2-O-acetyl-3,5-di-O-benzoyl-6-deoxy-β-D-glucopyranoside

C₂₈H₂₆O₈ 490.509

Thick syrup. $[\alpha]_D$ -172.5 (c, 1.09 in CHCl₃).

Buchanan, J.G. *et al.*, *Tetrahedron*, 1995, **51**, 6033

Phenyl galactopyranoside P-56



α-D-form

C₁₂H₁₆O₆ 256.255

α-D-form [2871-15-0]

Mp 146°. $[\alpha]_D$ +217 (H₂O). $[\alpha]_D$ +175.2 (C₆H₆).

Tetra-Ac: Phenyl tetra-O-acetyl-α-D-galactopyranoside

[18463-30-4]

C₂₀H₂₄O₁₀ 424.404

Mp 131-132°. $[\alpha]_D$ +176 (CHCl₃).

4,6-O-Benzylidene: Phenyl 4,6-O-benzylidene-α-D-galactopyranoside

C₁₉H₂₀O₆ 344.363

Cryst. (EtOH). Mp 192-194°. $[\alpha]_D$ +95 (c, 0.54 in Py).

4,6-O-Benzylidene, 2,3-dibenzyl: Phenyl 2,3-di-O-benzyl-4,6-O-benzylidene-α-D-galactopyranoside

C₃₃H₃₂O₆ 524.612

Cryst. (Me₂CO/EtOH). Mp 132°. $[\alpha]_D$ +108 (c, 1.48 in CHCl₃).

2,3,4-Tribenzyl: Phenyl 2,3,4-tri-O-benzyl-α-D-galactopyranoside

C₃₃H₃₄O₆ 526.628

Cryst. (cyclohexane). Mp 57-58°. $[\alpha]_D$ +81 (c, 0.57 in CHCl₃).

2,3,4-Tribenzyl, 6-Me: Phenyl 2,3,4-tri-O-benzyl-6-O-methyl-α-D-galactopyranoside

C₃₄H₃₆O₆ 540.655

Syrup. $[\alpha]_D$ +110.5 (c, 0.3 in CHCl₃).

β-D-form [2818-58-8]

Mp 155-156°. $[\alpha]_D$ -43 (H₂O).

Tetra-Ac: Phenyl tetra-O-acetyl-β-D-galactopyranoside

[2872-72-2]

Mp 123-124°. $[\alpha]_D^{17}$ -26 (C₆H₆).

3,6-Dibenzoyl: Phenyl 3,6-di-O-benzoyl-β-D-galactopyranoside

[34213-09-7]

C₂₆H₂₄O₈ 464.471

Cryst. (CHCl₃). Mp 172-174°. $[\alpha]_D^{22}$ +55 (c, 3.1 in Me₂CO).

2,3,6-Tribenzoyl: Phenyl 2,3,6-tri-O-benzoyl-β-D-galactopyranoside

[34213-07-5]

C₃₃H₂₈O₉ 568.579

Cryst. (C₆H₆/petrol). Mp 167-169°. $[\alpha]_D^{22}$ +80 (c, 1.2 in CHCl₃).

4,6-O-Benzylidene: Phenyl 4,6-O-benzylidene-β-D-galactopyranoside

C₁₉H₂₀O₆ 344.363

Mp 248-249°. $[\alpha]_D$ -116 (c, 1.2 in Py).

4,6-O-Benzylidene, 2,3-di-Ac: Phenyl 2,3-di-O-acetyl-4,6-O-benzylidene-β-D-galactopyranoside

C₂₃H₂₄O₈ 428.438

Cryst. (EtOH). Mp 171-172°. $[\alpha]_D$ +43 (c, 0.8 in CHCl₃).

4-Benzyl, 2,3-di-Me: Phenyl 4-O-benzyl-2,3-di-O-methyl- β -D-galactopyranoside
 $C_{21}H_{26}O_6$ 374.433
 Cryst. (cyclohexane/hexane). Mp 107°. $[\alpha]_D$ -80 (c, 0.94 in $CHCl_3$).

4-Benzyl, 2,3,6-tri-Me: Phenyl 4-O-benzyl-2,3,6-tri-O-methyl- β -D-galactopyranoside
 $C_{22}H_{28}O_6$ 388.46
 Mp 77-78°. $[\alpha]_D$ -65 (c, 0.55 in $CHCl_3$).

6-Benzyl, 2,3-di-Me: Phenyl 6-O-benzyl-2,3-di-O-methyl- β -D-galactopyranoside
 $C_{21}H_{26}O_6$ 374.433
 Cryst. (cyclohexane). Mp 63-65°. $[\alpha]_D$ -34 (c, 0.52 in $CHCl_3$).

6-Benzyl, 2,3,4-tri-Me: Phenyl 6-O-benzyl-2,3,4-tri-O-methyl- β -D-galactopyranoside
 $C_{22}H_{28}O_6$ 388.46
 Mp 88.5-89°. $[\alpha]_D$ -47 (c, 0.46 in $CHCl_3$).

2,3-Dibenzyl: Phenyl 2,3-di-O-benzyl- β -D-galactopyranoside
 $C_{26}H_{28}O_6$ 436.504
 Cryst. (Me_2CO aq.). Mp 115°. $[\alpha]_D$ -7 (c, 1.9 in Py).

2,3,4-Tribenzyl: Phenyl 2,3,4-tri-O-benzyl- β -D-galactopyranoside
 $C_{33}H_{34}O_6$ 526.628
 Cryst. (cyclohexane). Mp 114°. $[\alpha]_D$ -47 (c, 0.68 in $CHCl_3$).

2,3,4-Tribenzyl, 6-Me: Phenyl 2,3,4-tri-O-benzyl-6-O-methyl- β -D-galactopyranoside
 $C_{34}H_{36}O_6$ 540.655
 Cryst. (cyclohexane). Mp 98-100°. $[\alpha]_D$ -20 (c, 0.79 in $CHCl_3$).

2,3,6-Tribenzyl: Phenyl 2,3,6-tri-O-benzyl- β -D-galactopyranoside
 $C_{33}H_{34}O_6$ 526.628
 Cryst. (EtOH). Mp 119°. $[\alpha]_D$ -23 (c, 1.56 in $CHCl_3$).

2,3,6-Tribenzyl, 4-Me: Phenyl 2,3,6-tri-O-benzyl-4-O-methyl- β -D-galactopyranoside
 $C_{34}H_{36}O_6$ 540.655
 Mp 120-122°. $[\alpha]_D$ -32 (c, 0.69 in $CHCl_3$).

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, 2, 396B (nmr)

Helferich, B. *et al.*, *Ber.*, 1933, **66**, 378; 1944, **77**, 194 (β -D-tetra-Ac)

Reeves, R.E. *et al.*, *J.A.C.S.*, 1948, **70**, 3963 (β -D-form, β -D-benzylidene, β -D-benzylidene di-Ac, β -D-dibenzyl)

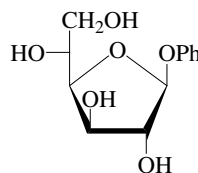
Wollwage, P.C. *et al.*, *J.C.S.(C)*, 1971, 3143 (β -D-dibenzoyl, β -D-tribenzoyl)

Dyong, I. *et al.*, *Carbohydr. Res.*, 1973, **27**, 273 (β -D-dibenzyl, β -D-2,3,6-tribenzyl)

Lipták, A. *et al.*, *Carbohydr. Res.*, 1975, **44**, 1 (α -D-benzylidene, α -D-benzylidene dibenzyl, α -D-2,3,4-tribenzyl, α -D-2,3,4-tribenzyl Me, β -D-benzyl derivs)

Phenyl glucofuranoside, 9CI

P-57


 $C_{12}H_{16}O_6$ 256.255
 β -D-form [6092-22-4]

Cryst. (2-butanone/petrol). Mp 78.5-80.5°. $[\alpha]_D^{20}$ -143.2 (c, 2.0 in H_2O).

Jerkeman, P. *et al.*, *Acta Chem. Scand.*, 1963, **17**, 1709-1711 (synth)

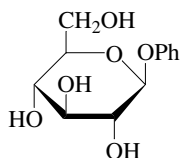
Kohata, K. *et al.*, *Agric. Biol. Chem.*, 1982, **46**, 2077-2086 (cd, ord, uv)

Furneaux, R.H. *et al.*, *J.C.S. Perkin 1*, 2000, 2011-2014 (synth)

Furneaux, R.H. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1999-2004 (synth)

Phenyl glucopyranoside, 8CI

P-58

 β -D-form
 $C_{12}H_{16}O_6$ 256.255
 α -D-form [4630-62-0]

Mp 173-174°. $[\alpha]_D$ +181 (c, 1.0 in H_2O).

► LZ5985500

Tetra-Ac: Phenyl 2,3,4,6-tetra-O-acetyl- α -D-glucopyranoside
 [3427-45-0]
 $C_{20}H_{24}O_{10}$ 424.404
 Mp 114-115°. $[\alpha]_D$ +168 ($CHCl_3$).

4,6-O-Benzylidene: Phenyl 4,6-O-benzylidene- α -D-glucopyranoside
 [22887-10-1]
 $C_{19}H_{20}O_6$ 344.363
 Cryst. (EtOH aq.). Mp 213-215°. $[\alpha]_D^{20}$ +189 (c, 1.0 in $CHCl_3$).

4,6-O-Benzylidene, 2-tosyl: Phenyl 4,6-O-benzylidene-2-O-tosyl- α -D-glucopyranoside
 [22981-77-7]
 $C_{26}H_{26}O_8S$ 498.553
 Cryst. (EtOH aq.). Mp 184-189°. $[\alpha]_D^{20}$ +129 (c, 1.2 in $CHCl_3$).

β -D-form [1464-44-4]
 Mp 175-176°. $[\alpha]_D$ -72 (c, 1.0 in H_2O).

► LZ5985510
2,3-Di-Ac: Phenyl 2,3-di-O-acetyl- β -D-glucopyranoside
 $C_{16}H_{20}O_8$ 340.329
 Cryst. (Me_2CO/Et_2O /hexane). Mp 142-143°. $[\alpha]_D^{23}$ -45 (c, 2.0 in $CHCl_3$).

Tetra-Ac: Phenyl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside
 $C_{20}H_{24}O_{10}$ 424.404
 Mp 125-126°. $[\alpha]_D$ -23 ($CHCl_3$).

4,6-O-Benzylidene, di-Ac: Phenyl 2,3-di-O-acetyl-4,6-O-benzylidene- β -D-glucopyranoside
 [23740-55-8]
 $C_{23}H_{24}O_8$ 428.438
 Cryst. ($CHCl_3$ /EtOH). Mp 228-229°. $[\alpha]_D^{23}$ -64.2 (c, 1.0 in $CHCl_3$).

2-Benzyl, 4,6-O-benzylidene: Phenyl 2-O-benzyl-4,6-O-benzylidene- β -D-glucopyranoside
 $C_{26}H_{26}O_6$ 434.488
 Powder. Mp 138-139°. $[\alpha]_D^{20}$ -24 (c, 1 in $CHCl_3$).

Helferich, B. *et al.*, *Ber.*, 1933, **66**, 378 (α -D-tetra-Ac, β -D-tetra-Ac)

Montgomery, E.M. *et al.*, *J.A.C.S.*, 1942, **64**, 690 (α -D-tetra-Ac, β -D-tetra-Ac)

Conchie, J. *et al.*, *Adv. Carbohydr. Chem.*, 1957, **12**, 157 (α -D-form, β -D-form)

Coleman, G.H. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 397 (β -D-tetra-Ac)

Svensson, S. *et al.*, *Acta Chem. Scand.*, 1968, **22**, 2737 (α -D-benzylidene, α -D-benzylidene tosyl)

Shapiro, D. *et al.*, *J.O.C.*, 1970, **35**, 1464 (β -D-benzylidene di-Ac, β -D-di-Ac)

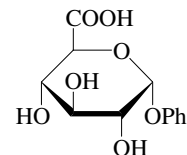
Breitmaier, E. *et al.*, *Chem. Ber.*, 1971, **104**, 1147 (cmr)

Audichya, T.D. *et al.*, *Indian J. Chem.*, 1971, **9**, 282 (pmr)

Khanbabaee, K. *et al.*, *J. Prakt. Chem.*, 1999, **341**, 159-166 (β -D-benzylidene benzyl)

Phenyl glucopyranosiduronic acid, 8CI

P-59

 α -D-form
 $C_{12}H_{14}O_7$ 270.238
 α -D-form [17681-03-7]

Needles (EtOAc). Mp 147-149° (as hemihydrate). $[\alpha]_D$ +154 (c, 1 in H_2O).

Tri-Ac, Me ester: Methyl (phenyl 2,3,4-tri-O-acetyl- α -D-glucopyranosid)uronate
 [30657-75-1]
 $C_{19}H_{22}O_{10}$ 410.377
 Mp 110-112°. $[\alpha]_D^{25}$ +163 (c, 1.27 in $CHCl_3$).

 β -D-form [17685-05-1]

Cryst. (EtOAc). Mp 163-164°. $[\alpha]_D$ -90 (c, 1.0 in H_2O).

Me ester: Methyl (phenyl β -D-glucopyranosid)uronate
 $C_{13}H_{16}O_7$ 284.265
 Mp 152-154°. $[\alpha]_D^{20}$ -83 (c, 0.5 in MeOH).

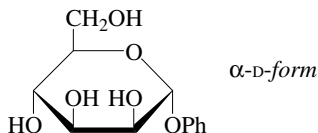
Me ester, tri-Ac: Methyl (phenyl 2,3,4-tri-O-acetyl- β -D-glucopyranosid)uronate
 [4630-61-9]
 $C_{19}H_{22}O_{10}$ 410.377
 Needles (2-propanol). Mp 126.5-127.5°. $[\alpha]_D$ -35.5 (c, 1 in $CHCl_3$).

Bollenback, G.N. *et al.*, *J.A.C.S.*, 1955, **77**, 3310 (α -D-form, α -D-Me ester tri-Ac, β -D-form, β -D-Me ester tri-Ac)

Matsui, M. *et al.*, *Chem. Pharm. Bull.*, 1972, **20**, 1033 (pmr)

Kiss, J. *et al.*, *Helv. Chim. Acta*, 1975, **58**, 301 (β -D-Me ester tri-Ac)
 Kegljević, D. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1979, **36**, 57 (rev)

Phenyl mannopyranoside P-60



$C_{12}H_{16}O_6$ 256.255

α -D-form [21797-50-2]

Cryst. (MeOH). Mp 132-133°. $[\alpha]_D^{23} +113.5$ (H₂O).

Tetra-Ac: Phenyl 2,3,4,6-tetra-O-acetyl- α -D-mannopyranoside
 [37797-56-1]

$C_{20}H_{24}O_{10}$ 424.404

Cryst. Mp 79-80°. $[\alpha]_D^{20} +73.9$ (CHCl₃).

β -D-form [15548-42-2]

Mp 175-176.5° (170-172°). $[\alpha]_D -61.7$ (c, 2.3 in H₂O).

Tetra-Ac: Phenyl 2,3,4,6-tetra-O-acetyl- β -D-mannopyranoside
 [37797-55-0]

$C_{20}H_{24}O_{10}$ 424.404

Cryst. (EtOH). Mp 163-165°. $[\alpha]_D^{20} -61$ (c, 0.8 in CHCl₃).

Helfferich, B. *et al.*, *Ber.*, 1933, **66**, 1556

(α -D-form synth, α -D-tetra Ac, β -D-form synth, β -D-tetra-Ac)

Vervoort, A. *et al.*, *Carbohydr. Res.*, 1970, **12**, 277 (α -D synth)

Åkerfeldt, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1979, **33**, 467 (β -D-tetra-Ac)

Kleine, H.P. *et al.*, *Carbohydr. Res.*, 1988, **182**, 307 (β -D-form, synth)

4-Phenylbutyl glucosinolate P-61

1-Thio- β -D-glucopyranose 1-[N-(sulfoox-y)benzenepentanamide], 9CI
 [76265-26-4]

$Ph(CH_2)_4C(SGlc)=NOSO_3H$

$C_{17}H_{25}NO_9S_2$ 451.518

Present in horseradish (*Armoracia lapathifolia*).

Grob, K. *et al.*, *Phytochemistry*, 1980, **19**, 1789 (occur)

2-Phenylethyl glucosinolate P-62

1-Thio- β -D-glucopyranose 1-[N-(sulfoox-y)benzenepropanamide], 9CI. **Gluconasturtiin**. Phenethyl glucosinolate.

Gluconasturtiin

[499-30-9]

$PhCH_2CH_2C(SGlc)=NOSO_3H$

$C_{15}H_{21}NO_9S_2$ 423.464

Isol. from *Nasturtium officinale* (water cress), *Barbarea vulgaris* (winter cress) and other crucifers. Off-white cryst. (MeOH/EtOH) (as K salt).

Mp 171° (K salt). $[\alpha]_D^{20} -20.7$ (c, 1.0 in H₂O).

Tetra-Ac: [75347-10-3]

Needles (EtOH aq.) (as K salt). Mp 198-200° dec. (K salt). $[\alpha]_D^{24} -11$ (c, 1 in 50% EtOH aq.).

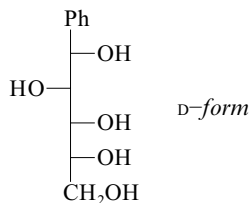
[18425-76-8]

Benn, M.H. *et al.*, *J.C.S.*, 1964, 4072 (synth)
 Doernemann, D. *et al.*, *Can. J. Biochem.*, 1974, **52**, 916 (biosynth)

Fenwick, G.R. *et al.*, *Biomed. Mass Spectrom.*, 1980, **7**, 410; 1981, **8**, 265 (ms)

Gil, V. *et al.*, *Tetrahedron*, 1980, **36**, 779 (synth)

1-C-Phenyl-gluco-pentitol P-63



$C_{11}H_{16}O_5$ 228.244

D-form

2,3:4,5-Di-O-isopropylidene: 2,3:4,5-Di-O-isopropylidene-1-C-phenyl-D-gluco-pentitol

$C_{17}H_{24}O_5$ 308.374

Mp 138-138.5°. $[\alpha]_D^{25} +30.5$ (c, 1.05 in Py).

L-form

2,3:4,5-Di-O-isopropylidene: 2,3:4,5-Di-O-isopropylidene-1-C-phenyl-L-gluco-pentitol

$C_{17}H_{24}O_5$ 308.374

Mp 137°. $[\alpha]_D^{25} -37.7$ (Py).

English, J.E. *et al.*, *J.A.C.S.*, 1945, **67**, 2039

(L-form)

Bonner, W.A. *et al.*, *J.A.C.S.*, 1951, **73**, 3126 (D-form)

3-Phenylpropyl glucosinolate P-64

1-Thio- β -D-glucopyranose 1-[N-(sulfoox-y)benzenebutanamide], 9CI

[76265-25-3]

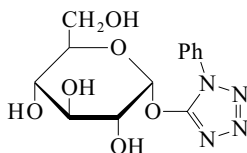
$Ph(CH_2)_3C(SGlc)=NOSO_3H$

$C_{16}H_{23}NO_9S_2$ 437.491

Present in horseradish (*Armoracia lapathifolia*).

Grob, K. *et al.*, *Phytochemistry*, 1980, **19**, 1789 (occur)

1-Phenyl-1H-tetrazol-5-yl glucopyranoside P-65



$C_{13}H_{16}N_4O_6$ 324.293

α -D-form

Tetra-O-benzyl: 1-Phenyl-1H-tetrazol-5-yl 2,3,4,6-tetra-O-benzyl- α -D-glucopyranoside

[162466-17-3]

$C_{41}H_{40}N_4O_6$ 684.79

Glycosylating agent. $[\alpha]_D +70.5$ (c, 0.91 in CHCl₃).

Vessella, A. *et al.*, *Bioorg. Med. Chem.*, 1994, **2**, 1169 (synth, pmr, cmr)

Palme, M. *et al.*, *Helv. Chim. Acta*, 1995, **78**, 959 (synth, use)

Phlean, 11CI

Phlein, 9CI

[39289-27-5]

A β -D-(2 \rightarrow 6)-linked fructan. The principal reserve carbohydrate in stem bases of temperate grasses. Mp 220°. $[\alpha]_D -50$ (c, 1.0 in H₂O). The old isolates Poan from *Poa trivialis* and Graminin from rye are prob. coterminous with phlean.

[55466-18-7]

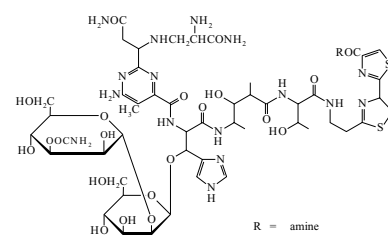
McDonald, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1946, **2**, 253 (rev)

Schlubach, H.H. *et al.*, *Annalen*, 1950, **544**, 101; 111

Yamamoto, S. *et al.*, *Plant Physiol.*, 1985, **78**, 591 (isol)

Phleomycin

[11006-33-0]



Complex of glycopeptide antibiotics related to Bleomycins. Derived from *Streptomyces verticillus*. Active against gram-positive and -negative bacteria and tumours, inhibitor of nucleic acid synth. A complex mixt. of amines Phleomycins A, C, D₁, D₂, E, F, G and H derived by directed biosynth. or semisynth. See also Bleomycins. λ_{max} 245 (€ 23600); 296 (€ 19600) (H₂O) (Derep). λ_{max} 244 (€ 24500); 298 (€ 8300); 615 (€ 100) (MeOH) (Berdy). \blacktriangleright LD₅₀ (mus, ivn) 40 - 50 mg/kg, LD₅₀ (mus, ivn) 150 mg/kg. SY0540000

Reineckate: Mp 195-197°.

Maeda, K. *et al.*, *J. Antibiot., Ser. A*, 1956, **9**, 82 (isol)

Ishizuka, M. *et al.*, *J. Antibiot., Ser. A*, 1966, **19**, 260

Umezawa, H. *et al.*, *Antibiotics*, (Corcoran, J. *et al.*, Eds.), Springer, 1974, **3**, 21 (struct)

Takita, T. *et al.*, *J. Antibiot.*, 1978, **31**, 801 (struct)

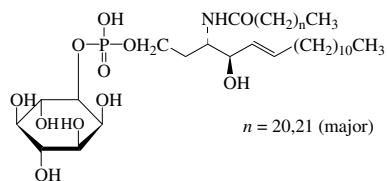
Earhart, C.F. *et al.*, *Antibiotics*, (Hahn, F., Ed.), Springer, 1979, **V2**, 298 (rev)

Hamamichi, N. *et al.*, *J.A.C.S.*, 1993, **115**, 12605 (struct, bibl)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, PGQ500; PGQ750

Comanthus japonica Phosphceramides
CJP 1

P-68



Isol. from the starfish *Comanthus japonica*. Neuritogenic agent. Amorph. powder. Mp 205-210°. $[\alpha]_D^{20} +3.6$ (c, 0.7 in $\text{CHCl}_3/\text{MeOH}$).

CJP 2

Amorph. powder. Mp 203-208°.

CJP3

Amorph. powder. Mp 203-208°.

CJP4

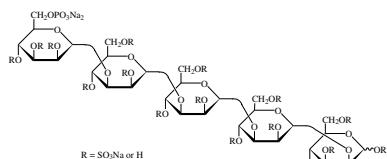
Neuritogenic agent. Amorph. powder. Mp 205-210°.

Arao, K. *et al.*, *Chem. Pharm. Bull.*, 1999, **47**, 687-689; 2001, **49**, 695-698; 2004, **52**, 1140-1142 (*isol, pmr, ms, struct*)

Phosphomannopentaose sulfate

P-69

PI 88
[185077-23-0]



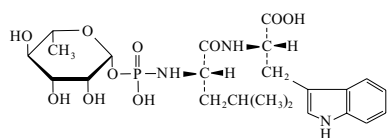
Primarily composed of sulfated phosphomannopentaose (approx. 60%) (shown in diagram) and phosphomannotetraose (approx. 30%) oligosaccharide units. Isol. from the yeast *Hansenula lolstii* (NRRL Y-2448). Inhibitor of heparanase. Antineoplastic agent. Angiogenesis inhibitor. Phase II trials (2004)

Bretthausen, R.K. *et al.*, *Biochemistry*, 1973, **12**, 1251-1256 (*isol, struct*)
Parish, C.R. *et al.*, *Cancer Res.*, 1999, **59**, 3433-3441 (*synth, pharmacol*)
Yu, G. *et al.*, *Eur. J. Med. Chem. (Chim. Ther.)*, 2002, **37**, 783-791 (*synth, pharmacol*)
Cochran, S. *et al.*, *J. Med. Chem.*, 2003, **46**, 4601-4608 (*pharmacol, bibl*)
Khachigian, L.M. *et al.*, *Cardiovasc. Drug Rev.*, 2004, **22**, 1-6 (*rev*)

Phosphoramidon

P-70

N-[N-[[(6-Deoxy- α -L-mannopyranosyl)oxy]hydroxyphosphinyl]-L-leucyl]-L-tryptophan
[36357-77-4]



$\text{C}_{23}\text{H}_{34}\text{N}_3\text{O}_{10}\text{P}$ 543.509

Nucleotide antibiotic. Metabolite of *Streptomyces tanashiensis* and various other actinomycetes. Specific inhibitor of Thermolysin and the related enzyme. Inhibits the formation of spontaneous metastases. Related to Talopeptin. λ_{max} 221 (ϵ 26000); 275 (sh) (ϵ 4130); 282 (ϵ 4400); 290 (ϵ 3770) (H_2O) (Derep).

► YN6688000

Dicyclohexylamine salt:

Cryst. (2-propanol/isopropyl ether). Mp 130-148° dec. $[\alpha]_D^{20} -21$ (c, 1.0 in H_2O).

Na salt: Mp 173-178° dec. $[\alpha]_D^{20} -33.6$ (c, 1.0 in H_2O).

N-Ac, Me ester:

$\text{C}_{26}\text{H}_{38}\text{N}_3\text{O}_{11}\text{P}$ 599.573
Mp 76-78°. $[\alpha]_D^{20} -10$ (CHCl_3).

Umezawa, H. *et al.*, *Methods Enzymol.*, 1976, **45**, 693 (*rev*)

Weaver, L.H. *et al.*, *J. Mol. Biol.*, 1977, **114**, 119 (*cryst struct*)

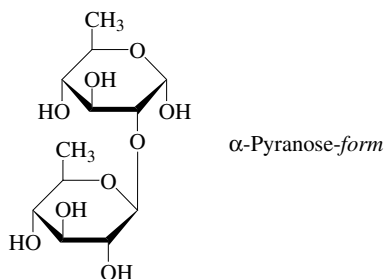
Giraldi, T. *et al.*, *Anticancer Res.*, 1984, **4**, 221 (*props*)

Rose, M.E. *et al.*, *Biomed. Mass Spectrom.*, 1984, **11**, 10 (*ms*)

Phyllanthose

P-71

6-Deoxy-2-O-(6-deoxy- β -D-glucopyranosyl)-D-glucose, 9CI. 2-O-(6-Deoxy- β -D-glucopyranosyl)-6-deoxy-D-glucose. β -D-Quinovosyl(1 \rightarrow 2)- β -D-quinovose
[86826-01-9]



$\text{C}_{12}\text{H}_{22}\text{O}_9$ 310.3
Isolated from *Phyllanthus acuminatus*. Powder. Mp 218-220°. $[\alpha]_D^{26} -3.3$ (c, 1.51 in H_2O).

α -Pyranose-form [134357-73-6]

Hexa-Ac:

$\text{C}_{24}\text{H}_{34}\text{O}_{15}$ 562.524
Cryst. (Me_2CO /hexane). Mp 224-226°. $[\alpha]_D^{26} +71$ (c, 0.83 in CHCl_3) (+64.1).

Kupchan, S.M. *et al.*, *J.A.C.S.*, 1977, **99**, 3199

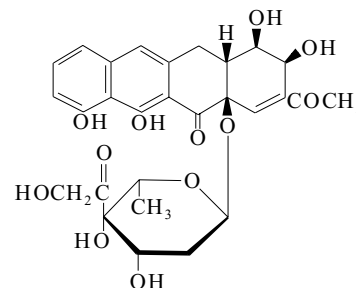
Pettit, G.R. *et al.*, *J.O.C.*, 1984, **49**, 4258 (*isol, pmr, synth*)

Smith, A.B. *et al.*, *J.A.C.S.*, 1987, **109**, 1272; 1991, **113**, 2092 (*derivs*)

Pillaromycin A

P-72

[30361-37-6]



$\text{C}_{28}\text{H}_{30}\text{O}_{12}$ 558.538

Anthracycline-type antibiotic. Isol. from *Streptomyces flavovirens*. Active against gram-positive bacteria and certain tumour cells. Yellow cryst. Sol. MeOH, C_6H_6 ; fairly sol. Et_2O , H_2O ; poorly sol. hexane. $[\alpha]_D^{20} -37$ (MeOH). Shows low cardiotoxicity. λ_{max} 220 (ϵ 37600); 275 (ϵ 41400); 298 (sh) (ϵ 8000); 309 (sh) (ϵ 6500); 431 (ϵ 8750) (EtOH) (Derep).

► LD₅₀ (mus, ipr) 800 mg/kg. Q19457300

Asai, M. *et al.*, *Chem. Pharm. Bull.*, 1970, **18**, 1699; 1713; 1720 (*isol, struct*)

Pezzanite, J.O. *et al.*, *J.A.C.S.*, 1975, **97**, 6250 (*cryst struct*)

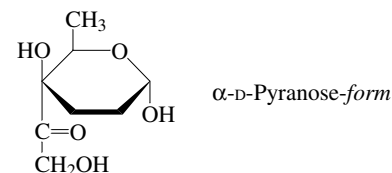
Caldwell, C.G. *et al.*, *Diss. Abstr. Int.*, B, 1982, **42**, 2834 (*synth*)

White, J.D. *et al.*, *J.O.C.*, 1986, **51**, 1150 (*synth*)

Pillarose, 9CI

P-73

4,6-Dihydroxy-4-(1-hydroxyethyl)-5-oxo-hexanal, 9CI. 2,3,6-Trideoxy-4-C-hydroxymethylcarbonyl-threo-hexopyranose. 2,3,6-Trideoxy-4-C-glycolyl-threo-hexose



$\text{C}_8\text{H}_{14}\text{O}_5$ 190.196

α -D-Pyranose-form

Me glycoside, 4'-benzoyl: Methyl 4-C-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -D-threo-hexopyranoside
 $\text{C}_{16}\text{H}_{20}\text{O}_6$ 308.33
Cryst. (Et_2O /hexane). Mp 107-108°. $[\alpha]_D^{25} +94.6$ (c, 0.45 in CHCl_3).

L-form [30080-29-6]

Sugar component of Pillaromycin A, P-72 from *Streptomyces flavovirens*. Syrup. $[\alpha]_D^{22} -16.7$ (c, 1 in H_2O).

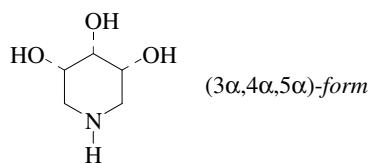
α -L-Pyranose-form

Me glycoside, 4'-benzoyl: Methyl 4-C-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -L-threo-hexopyranoside
 $\text{C}_{16}\text{H}_{20}\text{O}_6$ 308.33
Cryst. (Et_2O /hexane). Mp 107-108°. $[\alpha]_D^{20} -96$ (c, 0.51 in CHCl_3).

Asai, M. *et al.*, *Chem. Pharm. Bull.*, 1970, **18**, 1699; 1713 (*L-form, isol, struct*)

Pezzanite, J.O. *et al.*, *J.A.C.S.*, 1975, **97**, 6250 (cryst struct)
 Walker, D.L. *et al.*, *J.A.C.S.*, 1975, **97**, 6251 (α -D-Me pyr benzoyl, L-form, struct)
 Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 2146 (α -L-Me pyr benzoyl)
 Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1980, **58**, 2694 (α -D-Me pyr benzoyl, pmr, L-form, struct)
 Brimacombe, J.S. *et al.*, *J.C.S. Perkin 1*, 1980, 273 (α -L-Me pyr benzoyl, pmr)

3,4,5-Piperidinetriol, 9CI **P-74**
 3,4,5-Trihydroxypiperidine. 1-Deoxy-5-nor-nojirimycin. 1,5-Dideoxy-1,5-iminopentitol [152689-94-6]



$C_5H_{11}NO_3$ 133.147

(3 α ,4 α ,5 α)-form
 cis,cis-form. 1,5-Dideoxy-1,5-iminoribitol [172588-13-5]

[176597-75-4] β -Glucosidase inhibitor.
 Cryst. (MeOH aq.) (as hydrochloride).
 Mp 161-163° (dec.) Mp 185-187° (hydrochloride). meso-.

N-Benzyl: [177767-33-8]

$C_{12}H_{17}NO_3$ 223.271

Cryst. (EtOAc). Mp 133.8-134.8°.

[3R-(3 α ,4 α ,5 β)]-form
 (-)-cis,trans-form. 1,5-Dideoxy-1,5-imino-D-arabinitol. 1,5-Dideoxy-1,5-imino-D-lyxitol

[130549-94-9] α -L-Fucosidase inhibitor.
 Cryst. (MeOH/Et₂O). Mp 182-185° (dec.). $[\alpha]_D^{25}$ -71 (c, 0.6 in MeOH).

Hydrochloride: [187144-38-3]

Cryst. (MeOH). Mp 194-195°. $[\alpha]_D^{20}$ -22 (c, 0.8 in MeOH).

[3S-(3 α ,4 α ,5 β)]-form
 (+)-cis,trans-form. 1,5-Dideoxy-1,5-imino-L-arabinitol. 1,5-Dideoxy-1,5-imino-L-lyxitol [130693-66-2]

[187144-40-7]

Cryst. (MeOH aq.) (as hydrochloride).
 Mp 195.5-196°. $[\alpha]_D^{20}$ +22.7 (c, 0.8 in MeOH).

N-Me: 1-Methyl-3,4,5-piperidinetriol, 9CI.
 3,4,5-Trihydroxy-N-methylpiperidine [260354-31-2]
 $C_6H_{13}NO_3$ 147.174
 Constit. of the leaves of *Eugenia uniflora* (nangapiry). Viscous oil. $[\alpha]_D$ +19.1 (c, 1.6 in H₂O).

[(\pm)-(3 α ,4 α ,5 β)]-form
 (\pm)-cis,trans-form [130114-77-1]
 Oil.

Tetra-Ac: [130271-87-3]

$C_{13}H_{19}NO_7$ 301.296

Cryst. (EtOAc/diisopropyl ether).

Mp 102-103°.

N-Me: [155549-47-6]
 $C_6H_{13}NO_3$ 147.174
 Oil.

(3 α ,4 β ,5 α)-form trans,trans-form. 1,5-Dideoxy-1,5-iminoxylitol [13042-55-2]

[4451-19-8] β -Glucosidase inhibitor.

Cryst. (MeOH/EtOAc/H₂O). Mp 126.5-127.5°. meso-.

Paulsen, H. *et al.*, *Chem. Ber.*, 1967, **100**, 2467-2473 (3 α ,4 β ,5 α -form)

Bernotas, R.C. *et al.*, *Tet. Lett.*, 1990, **31**, 3393-3396 (synth, pmr, cmr)

Tschamber, T. *et al.*, *Tetrahedron*, 1994, **50**, 1135-1152 (3 α ,4 α ,5 β -form, synth, ir, pmr, derivs)

Legler, G. *et al.*, *Carbohydr. Res.*, 1995, **272**, 17-30 (3R-(3 α ,4 α ,5 β)-form, synth, pmr, cmr)

Godskesen, M. *et al.*, *Bioorg. Med. Chem.*, 1996, **4**, 1857-1865 (synth, pmr, cmr, biochem)

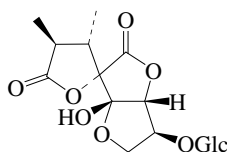
Igarashi, Y. *et al.*, *Bioorg. Med. Chem. Lett.*, 1996, **6**, 553-558 (3 α ,4 α ,5 α -form, synth, pmr, cmr, biochem)

Kim, D.K. *et al.*, *J.C.S. Perkin 1*, 1996, 803 (3 α ,4 α ,5 α -form, synth, pmr, cmr)

Matsumura, T. *et al.*, *Pharm. Biol.*, 2000, **38**, 302-307 (N-Me)

Piptoside, 9CI

[10563-95-8]



Absolute Configuration

$C_{17}H_{24}O_{12}$ 420.369

Constit. of *Piptocalyx moorei*.

Mp 228-230°. $[\alpha]_D^{16}$ -28 (c, 2.0 in H₂O).

Penta-Ac: Mp 194-194.5°. $[\alpha]_D^{26}$ -18 (c, 3.16 in CHCl₃).

Penta-Me ether: Mp 124°. $[\alpha]_D^{27}$ -23 (c, 3.3 in EtOH).

Aglycone: Piptosidine

Platelets (2-propanol). Mp 187.5-190°.

$[\alpha]_D^{16}$ -8 (c, 2 in H₂O).

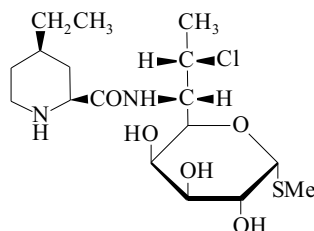
Riggs, N.V. *et al.*, *Aust. J. Chem.*, 1962, **15**, 305; 1966, **19**, 683

Lowry, J.B. *et al.*, *Aust. J. Chem.*, 1975, **28**, 109 (abs config)

Pirlimycin, INN

U 57930E. Antibiotic U 57930E

[79548-73-5]



$C_{17}H_{31}ClN_2O_5S$ 410.961

Antimalarial agent. Active against aerobic gram-positive bacteria. Used to treat bovine mastitis. Cryst. (H₂O). Log P 0.19 (uncertain value) (calc). Clindamycin analogue.

Hydrochloride: **Pirlimycin hydrochloride, USAN**

[78822-40-9]

Cryst. + 1H₂O. Mp 210-212°. $[\alpha]_D^{25}$ +181 (H₂O).

[77495-92-2]

Ahonkhai, V.I. *et al.*, *Antimicrob. Agents*

Chemother., 1982, **21**, 902 (props)

Martindale, *The Extra Pharmacopoeia*, 28th/29th edn., Pharmaceutical Press, 1982, 147

Birkenmeyer, R.D. *et al.*, *J. Med. Chem.*, 1984, **27**, 216 (synth, props)

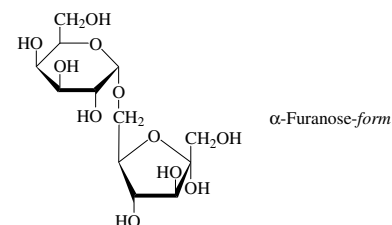
Marshall, V.P. *et al.*, *J. Antibiot.*, 1991, **44**, 895 (pmr, cmr)

Thornberry, C. *et al.*, *Antimicrob. Agents Chemother.*, 1993, **37**, 1122 (use)

Planteobiose

P-77

6-O- α -D-Galactopyranosyl-D-fructose. Melibiulose



$C_{12}H_{22}O_{11}$ 342.299

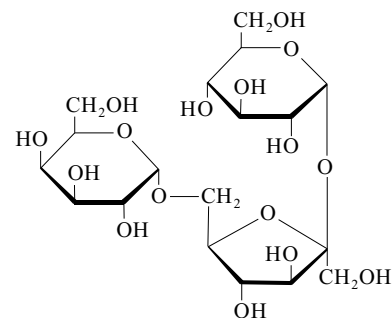
Formed upon mild acid hydrolysis of the trisaccharide Planteose, P-78. $[\alpha]_D$ +55.5 (H₂O). Reduction with NaBH₄ gives a mixt. of 6-O- α -D-galactopyranosyl-D-glucitol and 6-O- α -D-galactopyranosyl-D-mannitol.

French, D. *et al.*, *J.A.C.S.*, 1953, **75**, 709

Planteose

P-78

O- α -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-fructofuranosyl α -D-glucopyranoside, 8CI [470-57-5]



$C_{18}H_{32}O_{16}$ 504.441

Isol. from seeds of *Plantago major* and *Plantago ovata* and members of the Solanaceae and Malvaceae.

Mp 123° (dihydrate). $[\alpha]_D$ +129 (c, 4.0 in H₂O).

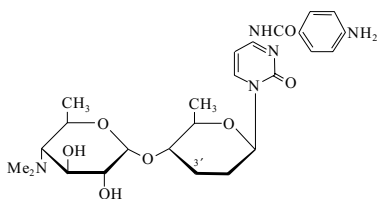
Per-Ac: Mp 135°. $[\alpha]_D^{26}$ +97 (c, 1.0 in CHCl₃).

French, D. *et al.*, *J.A.C.S.*, 1953, **75**, 709

Rohrer, D.C. *et al.*, *Acta Cryst. B*, 1972, **28**, 425 (struct)

Plicacetin

Amicetin B. R 285. Antibiotic R 285
[43043-15-8]



C₂₅H₃₅N₅O₇ 517.581

Nucleoside antibiotic. Prod. by *Streptomyces plicatus*. Potent inhibitor of *in vitro* protein synthesis. Inhibitor of gram-positive and gram-negative bacteria. Needles (MeOH aq.). Mp 182-184°. [α]_D²⁵ +181 (c, 2.7 in MeOH). λ_{\max} 257 (€ 19000); 312 (€ 15100) (0.1N HCl) (Derep). λ_{\max} 329 (€ 33000) (0.1N NaOH) (Derep). λ_{\max} 249 (€ 13800); 321 (€ 27700) (pH 7 phosphate buffer) (Derep).

► CV2150000

3'- β -Hydroxy: **Oxypticacetin**. 3'-Hydroxy-plicacetin. Cytosaminomycin E
[100108-92-7]

C₂₅H₃₅N₅O₈ 533.58

From *Streptomyces ramulosus*. Sol. MeOH, EtOH; fairly sol. H₂O; poorly sol. EtOAc, hexane. λ_{\max} 204 (€ 25100); 215 (sh) (€ 17100); 240 (sh) (€ 11700); 254 (€ 12800); 326 (€ 27700) (MeOH) (Derep). λ_{\max} 204 (€ 25100); 250; 254 (€ 12800); 320; 326 (€ 27700) (MeOH) (Berdy). λ_{\max} 249 (€ 26000); 320 (€ 38000) (H₂O) (Berdy). λ_{\max} 256 (€ 30000); 312 (€ 31000) (HCl) (Berdy). λ_{\max} 327 (€ 4000) (NaOH) (Berdy).

3'- β -Hydroxy, 4''-N-Me: **Cytosaminomycin B**. Antibiotic KO 8119D. KO 8119D
[157878-03-0]

C₂₆H₃₇N₅O₈ 547.607

From *Streptomyces* sp. KO-8119. Anticoccidial agent. Pale yellow cryst. Sol. MeOH, EtOAc; poorly sol. H₂O. [α]_D²⁵ +122 (c, 0.1 in MeOH). λ_{\max} 204 (€ 23000); 242 (sh) (€ 11400); 255 (€ 11800); 339 (€ 26500) (MeOH) (Derep). λ_{\max} 204 (€ 23000); 255 (€ 11800); 339 (€ 26500) (MeOH) (Berdy).

Haskell, T.H. *et al.*, *J.A.C.S.*, 1958, **80**, 743 (isol)

Stevens, C.L. *et al.*, *J.A.C.S.*, 1972, **94**, 3280 (synth)

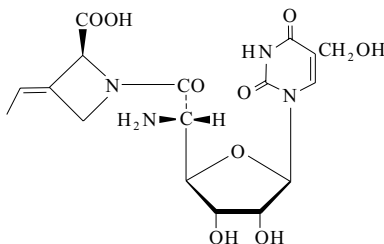
Chen, Y. *et al.*, *CA*, 1986, **104**, 65478 (Oxypticacetin)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Haneda, K. *et al.*, *J. Antibiot.*, 1994, **47**, 774; 782 (Cytosaminomycin B)

P-79**Polyoxin I**

[22886-33-5]



C₁₇H₂₂N₄O₉ 426.382

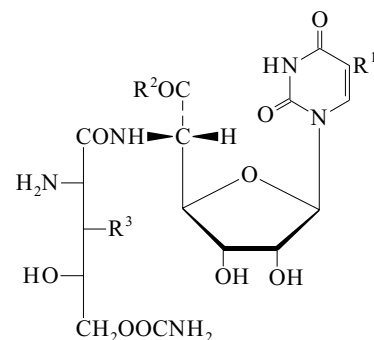
Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic. Amorph. Sol. H₂O; poorly sol. MeOH, hexane. [α]_D²⁰ -35 (c, 1 in H₂O). λ_{\max} 262 (E1%/1cm 165) (HCl) (Berdy). λ_{\max} 264 (E1%/1cm 123) (NaOH) (Berdy).

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 190; 1968, **32**, 1193 (isol, struct)

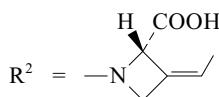
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (struct, ir, uv, nmr)

Polyoxin A

[19396-03-3]



R¹ = CH₂OH



R³ = OH

C₂₃H₃₂N₆O₁₄ 616.538

Member of a large closely related family.

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic. Used as agricultural fungicide. Cryst. Sol. H₂O; poorly sol. MeOH, hexane. [α]_D²⁰ -30 (c, 1.02 in H₂O). pK_{a1} 3; pK_{a2} 7.3; pK_{a3} 9.6. λ_{\max} 262 (E1%/1cm 142) (HCl) (Berdy). λ_{\max} 264 (E1%/1cm 103) (NaOH) (Berdy). λ_{\max} 262 (E1%/1cm 102) (H₂O) (Berdy).

► LD₅₀ (mus, ivn) 200 mg/kg; LD₅₀ (mus, ivn) 800 - 1200 mg/kg. CM4310640

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1966, **30**, 813; 1967, **31**, 190 (struct, isol, props)

Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490; 1978, **100**, 3937 (struct, ir, uv, nmr, biosynth, cmr)

Hanessian, S. *et al.*, *Tet. Lett.*, 1993, **34**, 4153 (struct)

P-80**Polyoxin B****P-82**

Piomycin. Polyoxin AL

[19396-06-6]

As Polyoxin A, P-81 with
R¹ = CH₂OH, R² = R³ = OH

C₁₇H₂₅N₅O₁₃ 507.41

Nucleoside antibiotic. Isol. from *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic. [α]_D²⁰ +34 (c, 1.03 in H₂O).

pK_{a1} 3; pK_{a2} 6.9; pK_{a3} 9.4.

► LD₅₀ (rat, orl) approx. 15000 mg/kg. LD₅₀ (mus, ivn) 200 mg/kg. BA2927000

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 190 (isol, props)

Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (struct, ir, uv, nmr)

Sakurai, H. *et al.*, *Pestic. Sci.*, 1978, **9**, 207 (activity)

Pesticide Manual, 9th edn., 1991, 9890

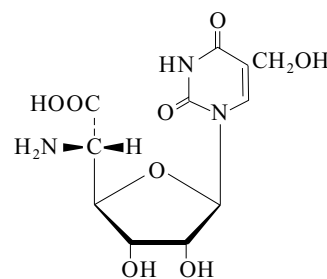
Agrochemicals Handbook, 3rd edn., Royal Society of Chemistry, 1992, A502

Uchida, K. *et al.*, *Heterocycles*, 2000, **53**, 2253 (synth)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, PKE100

Polyoxin C**P-83**

1-(5-Amino-5-deoxy- β -D-allofuranosyl)-5-(hydroxymethyl)uracil
[21027-33-8]



C₁₁H₁₅N₃O₈ 317.255

Nucleoside antibiotic. Metab. of *Streptomyces cacaoi* var. *asoensis*. Antifungal agent. Cryst. + 1H₂O (H₂O). Sol. H₂O; poorly sol. MeOH, hexane.

Mp 260-267° dec. [α]_D²⁴ +11.2 (c, 0.5 in H₂O). pK_{a1} 2.4; pK_{a2} 8.1; pK_{a3} 9.5 (20°, H₂O). Monohydrate loses water on drying at 100°. λ_{\max} 262 (E1%/1cm 297) (H₂O) (Berdy). λ_{\max} 262 (E1%/1cm 297) (HCl) (Berdy). λ_{\max} 264 (E1%/1cm 231) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) 100 mg/kg; LD₅₀ (mus, ivn) 500 - 700 mg/kg. DT3740000

N³-Ac: [53710-54-6]

Mp 220° dec.

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 190 (isol, props)

Asahi, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 1046 (cryst struct)

Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490; 1978, **100**, 3937 (struct, ir, uv, nmr, biosynth, cmr)

Azuma, T. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 1740 (synth, derivs)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Barett, A.G.M. *et al.*, *J.O.C.*, 1990, **55**, 3853 (synth, bibl)

Auberson, Y. *et al.*, *Tetrahedron*, 1990, **46**, 7019 (synth)

Aggarwal, V.K. *et al.*, *J.C.S. Perkin 1*, 1997, 2531-2537 (synth)

Kutterer, K.M.K. *et al.*, *Heterocycles*, 1999, **51**, 1409-1420 (*synth*)

Polyoxin D

[22976-86-9]
As Polyoxin A, P-81 with
 $R^1 = \text{COOH}$, $R^2 = R^3 = \text{OH}$
 $\text{C}_{17}\text{H}_{23}\text{N}_5\text{O}_{14}$ 521.394

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic which inhibits chitin formation. Cryst. powder. Sol. H_2O ; poorly sol. MeOH, hexane. $[\alpha]_{\text{D}}^{20} +30$ (c, 1 in H_2O). Dec. $>190^\circ$. λ_{max} 218 (E1%/1cm 217); 276 (E1%/1cm 276) (HCl) (Berdy). λ_{max} 271 (E1%/1cm 137) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) 500 - 700 mg/kg.
UV7717100

Suzuki, S. *et al.*, *Agric. Biol. Chem.*, 1966, **30**, 817 (*isol, props*)
Isono, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 1193 (*struct*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (*struct, ir, uv, nmr*)
Shenbagamurthi, P. *et al.*, *J. Chromatogr.*, 1982, **245**, 133 (*purifn*)
Uchida, K. *et al.*, *Heterocycles*, 2000, **53**, 2253 (*synth*)
Pesticide Manual, 12th edn., 2000, No. 630

Polyoxin E

[22976-87-0]
As Polyoxin A, P-81 with
 $R^1 = \text{COOH}$, $R^2 = \text{OH}$, $R^3 = \text{H}$
 $\text{C}_{17}\text{H}_{23}\text{N}_5\text{O}_{13}$ 505.394

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic. Amorph. powder. Sol. H_2O ; poorly sol. MeOH, hexane. $[\alpha]_{\text{D}}^{20} +19$ (c, 1 in H_2O). Dec. $>180^\circ$. λ_{max} 218 (E1%/1cm 200); 276 (E1%/1cm 200) (HCl) (Berdy). λ_{max} 271 (E1%/1cm 128) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) 500 - 700 mg/kg.

Suzuki, S. *et al.*, *Agric. Biol. Chem.*, 1966, **30**, 817 (*isol*)
Isono, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 1193 (*struct*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (*struct, ir, uv, nmr*)

Polyoxin F

[23116-76-9]
As Polyoxin A, P-81 with
 $R^1 = \text{COOH}$, $R^3 = \text{OH}$ (R^2 as in Polyoxin A)
 $\text{C}_{23}\text{H}_{30}\text{N}_6\text{O}_{15}$ 630.521

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic. Amorph. powder. Sol. H_2O ; poorly sol. MeOH, hexane. $[\alpha]_{\text{D}}^{20} -18$ (c, 1 in H_2O). Dec. $>190^\circ$. λ_{max} 276 (E1%/1cm 181) (HCl) (Berdy). λ_{max} 271 (E1%/1cm 118) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) 500 - 700 mg/kg.
UV7717000

Suzuki, S. *et al.*, *Agric. Biol. Chem.*, 1966, **30**, 817 (*isol*)
Isono, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 1193 (*struct*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (*struct, ir, uv, nmr*)

Hanessian, S. *et al.*, *Tet. Lett.*, 1993, **34**, 4153 (*struct*)

Polyoxin G

[22976-88-1]
As Polyoxin A, P-81 with
 $R^1 = \text{CH}_2\text{OH}$, $R^2 = \text{OH}$, $R^3 = \text{H}$
 $\text{C}_{17}\text{H}_{25}\text{N}_5\text{O}_{12}$ 491.411

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic. Amorph. powder. Sol. H_2O ; poorly sol. MeOH, hexane. $[\alpha]_{\text{D}}^{20} +37$ (c, 1 in H_2O). Dec. $>190^\circ$. λ_{max} 262 (E1%/1cm 170) (HCl) (Berdy). λ_{max} 264 (E1%/1cm 134) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) 500 - 700 mg/kg.
BA2927400

Suzuki, S. *et al.*, *Agric. Biol. Chem.*, 1966, **30**, 817 (*isol*)
Isono, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 1193 (*struct*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (*struct, ir, uv, nmr*)

Polyoxin H

[24695-54-3]
As Polyoxin A, P-81 with
 $R^1 = \text{CH}_3$, $R^3 = \text{OH}$ (R^2 as in Polyoxin A)
 $\text{C}_{23}\text{H}_{32}\text{N}_6\text{O}_{13}$ 600.538

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal antibiotic. Needles. Sol. H_2O ; poorly sol. MeOH, hexane. $[\alpha]_{\text{D}}^{20} -38$ (c, 1 in H_2O). λ_{max} 265 (E1%/1cm 127) (HCl) (Berdy). λ_{max} 266 (E1%/1cm 103) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) 500 - 1100 mg/kg.
CM4310650

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 190; 1968, **32**, 1193 (*isol, struct*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (*struct, ir, uv, nmr*)
Hanessian, S. *et al.*, *Tet. Lett.*, 1993, **34**, 4153 (*struct*)

Polyoxin J

[22976-89-2]
As Polyoxin A, P-81 with
 $R^1 = \text{CH}_3$, $R^2 = R^3 = \text{OH}$
 $\text{C}_{17}\text{H}_{25}\text{N}_5\text{O}_{12}$ 491.411

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal agent. Amorph. powder. Sol. H_2O ; poorly sol. MeOH, hexane. Mp 195-200° (dec.). $[\alpha]_{\text{D}}^{22} +31.7$ (c, 1 in H_2O).

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 792 (*isol, struct*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (*struct, ir, uv, nmr*)
Kuzuhara, H. *et al.*, *Tet. Lett.*, 1973, 5055 (*synth, ir, nmr*)
Isono, K. *et al.*, *CA*, 1979, **93**, 65606 (*biosynth*)
Chida, N. *et al.*, *Chem. Comm.*, 1994, 111 (*synth*)
Ghosh, A.K. *et al.*, *J.O.C.*, 1999, **64**, 2789-2795 (*synth, bibl*)
Uchida, K. *et al.*, *Synthesis*, 1999, 1678-1686 (*synth, ir, pmr, ms*)

Polyoxin K

[22886-46-0]
As Polyoxin A, P-81 with

P-87

$R^1 = \text{H}$, $R^3 = \text{OH}$ (R^2 as in Polyoxin A)
 $\text{C}_{22}\text{H}_{30}\text{N}_6\text{O}_{13}$ 586.511

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal agent. Sol. H_2O ; poorly sol. MeOH, hexane. $[\alpha]_{\text{D}}^{22} -16.5$ (c, 1 in H_2O). λ_{max} 262 (HCl) (Berdy). λ_{max} 262 (NaOH) (Berdy).

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 792 (*isol*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490 (*struct, ir, uv, nmr*)
Shibuya, K. *et al.*, *Agric. Biol. Chem.*, 1972, **36**, 1229 (*synth, ir, uv, nmr*)
Hanessian, S. *et al.*, *Tet. Lett.*, 1993, **34**, 4153 (*struct*)

Polyoxin L

Piomycin B
[22976-90-5]
As Polyoxin A, P-81 with
 $R^1 = \text{H}$, $R^2 = R^3 = \text{OH}$
 $\text{C}_{16}\text{H}_{23}\text{N}_5\text{O}_{12}$ 477.384

Nucleoside antibiotic. Produced by *Streptomyces cacaoi* var. *asoensis*. Antifungal agent. Mp 180-183° (dec.). $[\alpha]_{\text{D}}^{22} +34.4$ (c, 1 in H_2O).

► BA2926500

5-Fluoro: 5-Fluoropolyoxin L
[50355-67-4]
 $\text{C}_{16}\text{H}_{22}\text{FN}_5\text{O}_{12}$ 495.374

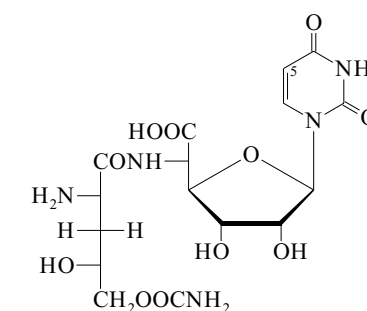
Prod. by *Streptomyces cacaoi* var. *asoensis* with 5-fluorouracil. Antibacterial, inhibits chitin synth. Powder. Sol. H_2O . $[\alpha]_{\text{D}}^{25} +45.1$ (c, 1 in H_2O). λ_{max} 267 (ε 8100) (HCl) (Berdy). λ_{max} 265 (ε 6400) (NaOH) (Berdy).

[59519-82-3]

Isono, K. *et al.*, *Agric. Biol. Chem.*, 1968, **32**, 792 (*isol*)
Isono, K. *et al.*, *J.A.C.S.*, 1969, **91**, 7490; 1973, **95**, 5788 (*struct, ir, uv, nmr, deriv*)
Shibuya, K. *et al.*, *Agric. Biol. Chem.*, 1972, **36**, 1229 (*synth, ir, uv, nmr*)
Japan. Pat., 1975, 75 32 318; *CA*, **85**, 31610 (*isol*)
Azuma, T. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 1740 (*synth, derivs*)
Uchida, K. *et al.*, *Synthesis*, 1999, 1678-1686 (*synth, ir, pmr, cmr*)

Polyoxin M

[34718-88-2]



$\text{C}_{16}\text{H}_{23}\text{N}_5\text{O}_{11}$ 461.385

Nucleoside antibiotic. Semisynthetic. Antifungal agent. Sol. H_2O ; poorly sol. MeOH, hexane. Mp 190° dec. $[\alpha]_{\text{D}}^{20}$

+49.9 (c, 1 in H₂O). Log P -7.88 (calc).
 λ_{\max} 259 (ε 8650) (0.05M HCl). λ_{\max} 261 (ε 6430) (0.05M NaOH).

5-Fluoro: 5-Fluoropolyoxin M

[50355-68-5]

C₁₆H₂₂FN₅O₁₁ 479.375

Prod. by *Streptomyces cacaoi* var.

asoensis ATCC 19093 with 5-fluorouracil. Antibacterial agent. Also inhibits chitin synth. Powder. Sol. H₂O. $[\alpha]_D^{25}$

+42.5 (c, 1 in H₂O). Log P -7.4 (calc).

λ_{\max} 267 (ε 7900) (HCl). λ_{\max} 268

(ε 6400) (NaOH).

Shibuya, K. *et al.*, *Agric. Biol. Chem.*, 1972, **36**, 1229-1236 (synth)

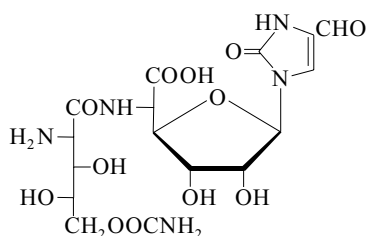
Isono, K. *et al.*, *J.A.C.S.*, 1973, **95**, 5788-5789 (5-Fluoropolyoxin M)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711-1739 (rev)

Polyoxin N

[37362-29-1]

P-93



C₁₆H₂₃N₅O₁₂ 477.384

Nucleoside antibiotic. Isol. from *Streptomyces piomogenus* ATCC21137. Active against phytopathogenic fungi and yeasts. Sol. H₂O; poorly sol. MeOH, hexane.

Mp 190° dec. $[\alpha]_D^{23}$ +15.3 (c, 1.035 in H₂O). pK_{a1} 2.9; pK_{a2} 7.4; pK_{a3} 10.2.

λ_{\max} 286 (E1%/1cm 236) (HCl) (Berdy). λ_{\max} 309 (E1%/1cm 181) (NaOH)

(Berdy).

► BA2925500

Uramoto, M. *et al.*, *Tet. Lett.*, 1980, **21**, 3395 (struct)

Uramoto, M. *et al.*, *Agric. Biol. Chem.*, 1981, **45**, 1901

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

Progoitrin

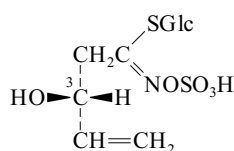
P-94

1-Thio-β-D-glucopyranose 1-[3-hydroxy-N-(sulfooxy)-4-pentenimide], 9CI.

2-Hydroxy-3-butenyl glucosinolate.

Glucorapiferin

[585-95-5]



C₁₁H₁₉NO₁₀S₂ 389.404

Isol. from *Brassica napus* and other *Brassica* spp. Thioglycoside biosynthetic precursor to goitrin.

Na salt:

Long cryst. (EtOH). Mp 145°. $[\alpha]_D$ -22.3 (H₂O). Unstable to air. Browns at

128-130°.

NH₄ salt: [87859-15-2]

Hard hygroscopic solid. Mp 136°. $[\alpha]_D^{20}$ -22.2 (c, 0.5 in H₂O).

Penta-Ac:

Cryst. (as K salt). Mp 178-180°. $[\alpha]_D^{25}$ -9.5 (c, 2.6 in H₂O).

3-Epimer: **Epiprogoitrin**. *Epiglucorapiferin* [19237-18-4]

C₁₁H₁₉NO₁₀S₂ 389.404

The major glucosinolate from crambe seed. Amorph. solid (as K salt). $[\alpha]_D^{25}$ -25 (c, 3.4 in H₂O).

► LZ5778500

3-Epimer, penta-Ac:

Cryst. (EtOH aq.) (as K salt). $[\alpha]_D^{25}$ -14.8 (c, 1.7 in H₂O).

3-Epimer, 3-benzoyl: **3-O-Benzoylepiprogoitrin**

C₁₈H₂₃NO₁₁S₂ 493.512

Constit. of *Arabidopsis thaliana*.

[31362-92-2, 35522-68-0]

Kjaer, A. *et al.*, *Acta Chem. Scand.*, 1956, **10**, 1365; 1959, **13**, 144 (abs config)

Kreula, M. *et al.*, *Acta Chem. Scand.*, 1959, **13**, 1375 (occur)

Greer, M.A. *et al.*, *Arch. Biochem. Biophys.*, 1962, **99**, 369 (isol, ir, uv)

Daxenbichler, M.E. *et al.*, *Biochemistry*, 1965, **4**, 318; 1966, **5**, 692 (*Epiprogoitrin*)

Björkman, R. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 1111 (isol)

Fenwick, G.R. *et al.*, *Biomed. Mass Spectrom.*, 1980, **7**, 410; 1981, **8**, 265 (ms)

Hanley, A.B. *et al.*, *J. Sci. Food Agric.*, 1983, **34**, 869 (isol)

MacLeod, A.J. *et al.*, *J.C.S. Perkin 1*, 1983, 717 (synth)

Cox, J.I. *et al.*, *Carbohydr. Res.*, 1984, **132**, 323 (nmr)

Verkerk, R. *et al.*, *Natural Toxicants in Food*, (ed. Watson, D.H.) Sheffield Academic Press, 1998, 29-53 (rev, occur)

Reichelt, M. *et al.*, *Phytochemistry*, 2002, **59**, 663-671 (isol, pmr, cmr)

2-Propenyl glucosinolate

P-95

1-Thio-β-D-glucopyranose 1-[N-(sulfooxy)-3-butenimide], 9CI. **Sinigrin**.

Allyl glucosinolate. Myronic acid

[534-69-0]

[3952-98-5]

H₂C=CHCH₂C(SGlc)=NOSO₃H

C₁₀H₁₇NO₉S₂ 359.378

Isol. from seeds of black mustard *Brassica nigra* and cabbage, as K salt. Present in many crucifers, major glucosinolate in Brussels sprouts (*Brassica oleraceae*). Biol. precursor of 3-Isothiocyanato-1-propene. Shows antifungal activity. Cryst. (as K salt).

Mp 125-127° (K salt). $[\alpha]_D^{28}$ -17 (c, 0.2 in H₂O).

Tetra-Ac: [5019-27-2]

Cryst. (as K salt). Mp 193-195° (K salt). $[\alpha]_D^{26}$ -16 (c, 0.14 in H₂O).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 904D (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1456C (nmr)

Benn, M.H. *et al.*, *Chem. Comm.*, 1965, 445 (synth)

Matsuo, M. *et al.*, *Tet. Lett.*, 1968, 4101 (biosynth)

Marsh, R.E. *et al.*, *Acta Cryst. B*, 1970, **26**, 1030 (cryst struct)

v. Etten, C.H. *et al.*, *J. Agric. Food Chem.*, 1976, **24**, 452; *CA*, **85**, 3935z

Watson, W.H. *et al.*, *Cryst. Struct. Commun.*, 1977, **6**, 441 (cryst struct)

Fenwick, G.R. *et al.*, *Biomed. Mass Spectrom.*, 1980, **7**, 410; 1981, **8**, 265 (ms)

Parry, R.J. *et al.*, *J.A.C.S.*, 1982, **104**, 3217 (biosynth)

Hanley, A.B. *et al.*, *J. Sci. Food Agric.*, 1983, **34**, 869 (isol)

Cox, I.J. *et al.*, *Carbohydr. Res.*, 1984, **132**, 323 (nmr, pmr)

Mawson, R. *et al.*, *Natural Toxicants - Vol. II, Glycosides*, CRC Press, Boca Raton, 1989, (glucosinolates, tox, rev)

Abramski, W. *et al.*, *J. Carbohydr. Chem.*, 1996, **15**, 109 (synth)

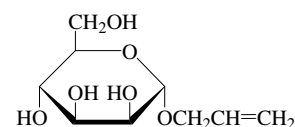
Olivier, C. *et al.*, *J. Chem. Ecol.*, 1999, **25**, 2687-2701 (activity, occur)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AGH125

2-Propenyl mannopyranoside

P-96

Allyl mannopyranoside



C₉H₁₆O₆ 220.222

α-D-form [41308-76-3]

Cryst. (Me₂CO). Mp 138-139°. $[\alpha]_D$ +51.6 (c, 0.23 in H₂O).

4,6-Di-Ac: 2-Propenyl 4,6-di-O-acetyl-α-D-mannopyranoside. Allyl 4,6-di-O-acetyl-α-D-mannopyranoside

C₁₃H₂₀O₈ 304.296

Cryst. (Me₂CO/petrol). Mp 109-110°. $[\alpha]_D^{20}$ +58 (c, 2 in CHCl₃).

2,4,6-Tri-Ac: 2-Propenyl 2,4,6-tri-O-acetyl-α-D-mannopyranoside. Allyl 2,4,6-tri-O-acetyl-α-D-mannopyranoside

C₁₅H₂₂O₉ 346.333

$[\alpha]_D^{20}$ +21.5 (c, 2 in CHCl₃).

2,3-O-Isopropylidene: 2-Propenyl 2,3-O-isopropylidene-α-D-mannopyranoside. Allyl 2,3-O-isopropylidene-α-D-mannopyranoside

C₁₂H₂₀O₆ 260.286

Cryst. (Et₂O/hexane). Mp 76-78°. $[\alpha]_D^{20}$ +37.5 (c, 2 in CHCl₃).

Tetrabenzoyl: 2-Propenyl 2,3,4,6-tetra-O-benzoyl-α-D-mannopyranoside. Allyl 2,3,4,6-tetra-O-benzoyl-α-D-mannopyranoside

C₃₇H₃₂O₁₀ 636.654

Amorph. glass. $[\alpha]_D^{20}$ -54.5 (c, 0.86 in CHCl₃).

2,4-Dibenzyl: Allyl 2,4-di-O-benzyl-α-D-mannopyranoside. 2-Propenyl 2,4-di-O-benzyl-α-D-mannopyranoside

[97576-59-5]

C₂₃H₂₈O₆ 400.471

$[\alpha]_D^{24}$ +35 (c, 0.5 in CHCl₃).

3,4-Dibenzyl: Allyl 3,4-di-O-benzyl-α-D-mannopyranoside. 2-Propenyl 3,4-di-O-benzyl-α-D-mannopyranoside

[106466-83-5]
 $C_{23}H_{28}O_6$ 400.471
 $[\alpha]_D^{25} +45$ (c, 0.3 in $CHCl_3$).

2,3,4-Tribenzyl: Allyl 2,3,4-tri-O-benzyl- α -D-mannopyranoside. 2-Propenyl 2,3,4-tri-O-benzyl- α -D-mannopyranoside
 [93451-42-4]
 $C_{30}H_{34}O_6$ 490.595
 $[\alpha]_D^{25} +38$ (c, 0.6 in $CHCl_3$).

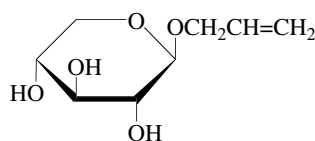
2,4,6-Tribenzyl: Allyl 2,4,6-tri-O-benzyl- α -D-mannopyranoside. 2-Propenyl tri-O-benzyl- α -D-mannopyranoside
 [603962-08-9]
 $C_{30}H_{34}O_6$ 490.595
 $[\alpha]_D^{25} +22$ (c, 0.5 in $CHCl_3$).

 β -D-form

Syrup. $[\alpha]_D$ -55 (c, 1 in H_2O).
 Winnik, F.M. *et al.*, *J.O.C.*, 1982, **47**, 2701-2707 (α -D-form, *synth*, *pmr*)
 Chernyak, A.T. *et al.*, *Carbohydr. Res.*, 1984, **128**, 269-281 (α -D-2,3-O-isopropylidene, α -D-tri-Ac)
 Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1999, **72**, 765-777 (α -D-form, *synth*)
 Utile, J.P. *et al.*, *Carbohydr. Res.*, 2000, **329**, 431-439 (β -D-form, *synth*, *pmr*, *cmr*)
 Hirooka, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2003, **76**, 1409-1421 (α -D-benzyl derivs)
 Pakulski, Z. *et al.*, *Synthesis*, 2003, 2074-2078 (α -D-tetrazabenzoyl)

2-Propenyl xylopyranoside**P-97**

Allyl xylopyranoside



$C_8H_{14}O_5$ 190.196

 α -D-form [140420-69-5]

Mp 106-109°. $[\alpha]_D^{20} +159.5$ (c, 1.0 in MeOH).

Tri-Ac: Allyl 2,3,4-tri-O-acetyl- α -D-xylopyranoside
 [151557-76-5]
 $C_{14}H_{20}O_8$ 316.307
 Oil. $[\alpha]_D^{20} +115.6$ (c, 0.5 in CH_2Cl_2).

2,3-Isopropylidene: Allyl 2,3-O-isopropylidene- α -D-xylopyranoside
 [189076-84-4]
 $C_{11}H_{18}O_5$ 230.26
 Mp 74-76°. $[\alpha]_D^{20} +146.6$ (c, 1.1 in $CHCl_3$).

Tribenzyl: Allyl 2,3,4-tri-O-benzyl- α -D-xylopyranoside
 [196859-38-8]
 $C_{29}H_{32}O_5$ 460.569
 Solid. $[\alpha]_D^{20} +36.1$ (c, 0.4 in $CHCl_3$).

 β -D-form [73787-48-1]

Long needles (Et_2O). Mp 75.5-77.5°. $[\alpha]_D$ -63 (c, 1.5 in Me_2CO).

3,4-Di-Ac: Allyl 3,4-di-O-acetyl- β -D-xylopyranoside
 [185809-29-4]
 $C_{12}H_{18}O_7$ 274.27
 No phys. props. reported.

2,3,4-Tri-Ac: Allyl 2,3,4-tri-O-acetyl- β -D-xylopyranoside

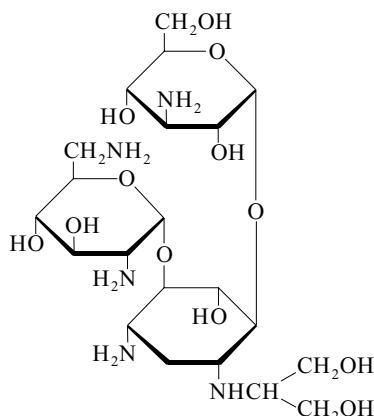
[39102-79-9]
 $C_{14}H_{20}O_8$ 316.307
 Needles ($EtOH$ /petrol).

Tribenzyl: Allyl 2,3,4-tri-O-benzyl- β -D-xylopyranoside
 [138196-11-9]
 $C_{29}H_{32}O_5$ 460.569
 Cryst. Mp 64-66°. $[\alpha]_D^{20} +8$ (c, 0.2 in $CHCl_3$).

Helm, R.F. *et al.*, *J.O.C.*, 1991, **56**, 7015-7021 (*synth*, 2,3,4-tri-Ac)
 Liu, M.Z. *et al.*, *Carbohydr. Res.*, 1996, **290**, 233-237 (3,4-di-Ac)
 Goodby, J.W. *et al.*, *Liq. Cryst.*, 1997, **22**, 497-508 (α -D-form, α -D-2,3-isopropylidene)
 Moitessier, N. *et al.*, *Eur. J. Org. Chem.*, 2000, 995-1005 (α -D-tribenzyl, β -D-tribenzyl)

Propikacin, INN, USAN**P-98**

3-Amino-3-deoxy- α -D-glucopyranosyl-(1 \rightarrow 6)-[2,6-diamino-2,6-dideoxy- α -D-glucopyranosyl-(1 \rightarrow 4)]-2-deoxy-N'-[2-hydroxy-1-(hydroxymethyl)ethyl]-D-streptamine, 9CI. N'-(1,3-Dihydroxy-2-propyl)kanamycin C. UK 31214
 [66887-96-5]



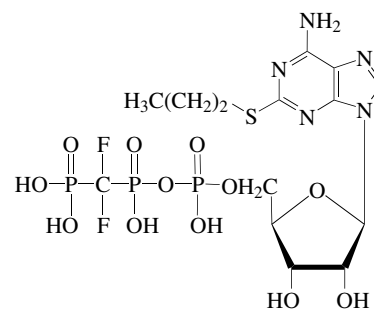
$C_{21}H_{43}N_5O_{12}$ 557.597

Semisynthetic aminoglycoside antibiotic. Active against gram-negative bacteria including some aminoglycoside resistant strains. Amorph. Mp 165-170°.

Brammer, K.W. *et al.*, *Curr. Chemother. Infect. Dis.*, *Proc. Int. Congr. Chemother.*, 11th, 1979, **1**, 389; 390; 392 (*struct*, *synth*, *pharmacol*, *tox*)
 Richardson, K. *et al.*, *J. Antibiot.*, 1979, **32**, 973 (*synth*, *pharmacol*)
 Thomas, M.B. *et al.*, *Tet. Lett.*, 1980, **21**, 4981 (*synth*)

2-Propylthio- β , γ -difluoromethylene ATP**P-99**

2-(Propylthio)-5'-adenylic acid monoanhydride with (difluoromethylene)bis[phosphonic acid], 9CI. ARL 66096. FPL 66096
 [145783-24-0]



$C_{14}H_{22}F_2N_5O_{12}P_3S$ 615.338
 Purinoceptor P_{2T} antagonist. Inhibits ADP-induced platelet aggregation. Characterised by ^{31}P nmr.

[145782-74-7]

Eur. Pat., 1992, 508 687, (Fisons); CA, **118**, 81338u (*synth*)
 Humphries, R.G. *et al.*, *Br. J. Pharmacol.*, 1994, **113**, 1057 (*pharmacol*)
 May, J.A. *et al.*, *Blood Coagulation Fibrinolysis*, 1996, **7**, 221-224 (*pharmacol*)
 Daniel, J.L. *et al.*, *J. Biol. Chem.*, 1998, **273**, 2024-2029 (*pharmacol*)

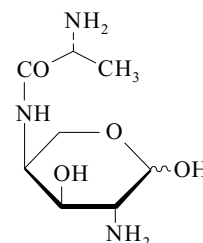
Protuberic acid**P-100**

[55963-73-0]
 [\rightarrow 4)- β -D-GlcA(1 \rightarrow 4)- α -L-IdoA(1 \rightarrow 4)- β -D-GlcA(1 \rightarrow)]
 A phallic acid (see Phallic acids, P-52). Isol. from the fungus *Kobayasia nipponica*.
 $[\alpha]_D^{22} -83.6$ (c, 2.0 in H_2O).

Miyazaki, T. *et al.*, *Biochim. Biophys. Acta*, 1975, **385**, 345 (*isol*, *struct*)
 Tsuchihashi, H. *et al.*, *Carbohydr. Res.*, 1980, **84**, 365; 1981, **98**, 65; 1983, **122**, 174 (*struct*, *bibl*)

Prumycin**P-101**

2-Amino-4-[(2-amino-1-oxopropyl)-amino]-2,4-dideoxyarabinose, 9CI. F 1028. Antibiotic F 1028
 [38819-28-2]



$C_8H_{17}N_3O_4$ 219.24

Isol. from *Streptomyces* sp. No. F-1028 and *Bacillus cereus*. Antifungal and antitumour agent. Sol. H_2O , DMSO, MeOH; fairly sol. EtOH; poorly sol. butanol, $CHCl_3$, Et_2O , C_6H_6 .

► LD₅₀ (mus, ivn) 144 mg/kg; LD₅₀ (mus, orl) 750 mg/kg; LD₅₀ (mus, ipr) 155 mg/kg. CE6230000

N,N'-Di-Ac:

Cryst. (MeOH). Mp 200° dec. $[\alpha]_D^{25} +48.8$ (c, 0.44 in MeOH).

Tetra-Ac:

Powder. $[\alpha]_D^{25} +69.8$ (c, 0.48 in MeOH).

α-form

Hydrochloride (1:2):

Needles. Mp 184-185° dec. $[\alpha]_D^{20} +68.8$ (c, 0.5 in MeOH).

β-form

Hydrochloride (1:2): [57420-47-0]

Cryst. Mp 198-200° dec. $[\alpha]_D^{20} +115$ (c, 0.5 in MeOH).

► CE6235000

Hata, T. *et al.*, *J. Antibiot.*, 1971, **24**, 900 (*isol*)

Omura, S. *et al.*, *J.C.S. Perkin 1*, 1974, 1627

(*struct*, *ir*, *pmr*, *cmr*)

Kuzuhara, H. *et al.*, *Tet. Lett.*, 1975, 1853

(*synth*, *ir*, *pmr*)

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1976, **52**,

137 (*synth*)

Yoshimura, J. *et al.*, *Chem. Lett.*, 1976, 201

(*synth*, *ir*, *pmr*)

U.S. Pat., 1976, 3 951 487; *CA*, **85**, 61432u (*isol*)

Hamada, Y. *et al.*, *Tet. Lett.*, 1982, **23**, 1193

(*synth*)

Hamada, M. *et al.*, *J. Antibiot.*, 1983, **36**, 86

(*isol*)

Iwabuchi, J. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**,

605-616 (*synth*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of*

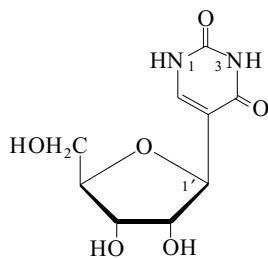
Industrial Materials, 8th edn., Van Nostrand

Reinhold, 1992, AFI500

Pseudouridine C

P-102

5-β-D-Ribofuranosyl-2,4-(1H,3H)-pyrimidinedione, 9CI. 5-β-D-Ribofuranosyluracil, 8CI. Pseudouridine. ψ-Uridine [1445-07-4]



C₉H₁₂N₂O₆ 244.204

Principal minor component in tRNA. Also *isol*. from seeds of *Cicer arietinum* (chickpea). Cryst. (EtOH).

Mp 222-223°. $[\alpha]_D -3$ (H₂O). λ_{\max} 262 (ε 7900); 287 (ε 7800 pH 12) (H₂O).

2',3',5'-Tri-Ac: [24800-34-8]

C₁₅H₁₈N₂O₉ 370.315

Syrup. $[\alpha]_D^{25} +42$ (c, 0.5 in CHCl₃).

2',3'-O-Isopropylidene: [28113-58-8]

C₁₂H₁₆N₂O₆ 284.268

Cryst. (MeOH/Me₂CO/petrol). Mp 233-234°.

2',3'-O-Isopropylidene, 5'-trityl: [74615-79-5]

C₃₁H₃₀N₂O₆ 526.588

Mp 125-140° dec.

2',3'-O-Carbonate, 5'-tosyl: [91298-48-5]

C₁₇H₁₆N₂O₅S 424.387

Mp 235-236°.

1-Me: 1-Methylpseudouridine. Antibiotic U 50228. U 50228

[13860-38-3]

C₁₀H₁₄N₂O₆ 258.23

Prod. by *Streptomyces platensis* var. *clarensis*, also found in archaeobacterial tRNA. Shows weak antiviral props.

Needles (EtOH). Sol. H₂O, MeOH,

EtOH; fairly sol. Me₂CO; poorly sol.

hexane.

Mp 185-186° Mp 181-184°. $[\alpha]_D -25$ (c, 1

in EtOH aq.). $[\alpha]_D^{25} -6.75$ (c, 1.0 in H₂O).

λ_{\max} 209 (sh) (ε 10300); 270 (ε 8920) (H₂O

at pH 1) (Derep). λ_{\max} 267 (ε 6190) (H₂O

at pH 11) (Derep). λ_{\max} 209 (ε 7550); 270

(ε 9080) (H₂O) (Derep).

3-Me: 3-Methylpseudouridine. 3-Methyl-ψ-uridine

[81691-06-7]

C₁₀H₁₄N₂O₆ 258.23

Prod. by *Nocardia lactamdurans*.

Sol. H₂O.

Mp 148-149°. λ_{\max} 285 (H₂O at pH 12)

(Derep). λ_{\max} 263 (ε 10000) (pH 7 buffer)

(Berdy). λ_{\max} 253 (ε 11500) (pH 1 buffer)

(Berdy).

3-Me, 2'-deoxy: 2'-Deoxy-3-methylpseudouridine C

[81691-10-3]

C₁₀H₁₄N₂O₅ 242.231

Cryst. (EtOH/Et₂O). Mp 175°.

1,3-Di-Me: [64272-68-0]

C₁₁H₁₆N₂O₆ 272.257

Cryst. (EtOH). Mp 174°.

1,3-Di-Me, 2',3'-O-isopropylidene:

[116700-55-1]

C₁₄H₂₀N₂O₆ 312.322

Cryst. (CHCl₃/Et₂O). Mp 80-85°.

5'-Phosphate: Pseudouridylic acid

[1157-60-4]

C₉H₁₃N₂O₉P 324.183

Component of yeast tRNA.

1'-Epimer: Pseudouridine B. α-Pseudouridine

[10017-66-0]

C₉H₁₂N₂O₆ 244.204

Produced by acid treatment of Pseudouridine C. Mp 218-219°. The name α-Pseudouridine is confusing.

1'-Epimer, 2',3',5'-tri-Ac: [28455-49-4]

C₁₅H₁₈N₂O₉ 370.315

Mp 175-177°.

Cohn, W. *et al.*, *J. Biol. Chem.*, 1960, **235**, 1488-

1498 (*isol*, *struct*)

Michelson, A. *et al.*, *Biochemistry*, 1962, **1**, 490-

495 (*isopropylidene*)

Bobek, M. *et al.*, *Coll. Czech. Chem. Comm.*,

1969, **34**, 1690-1695 (*tri-Ac*)

Hruska, F.E. *et al.*, *J.A.C.S.*, 1971, **93**, 4334-

4336 (*pmr*)

Sundaralingam, M. *et al.*, *J.A.C.S.*, 1971, **93**,

6644-6647 (*cryst struct*, *epimer*)

Lerch, U. *et al.*, *J.O.C.*, 1971, **36**, 1507-1513

(*synth*, *uv*, *pmr*, *ord*)

Wenkert, E. *et al.*, *Biochem. Biophys. Res.*

Commun., 1973, **51**, 318-322 (*cmr*)

Komoroski, R.A. *et al.*, *Biochemistry*, 1974, **13**,

369-372 (*cmr*)

Hruska, F.E. *et al.*, *Can. J. Chem.*, 1974, **52**,

497-508 (*pmr*)

Argoudelis, A.D. *et al.*, *J. Antibiot.*, 1976, **29**,

818-823 (*1-Me, isol*)

Chu, C.K. *et al.*, *J.O.C.*, 1976, **41**, 2793-2797

(*synth*, *isopropylidene trityl*)

U.S. Pat., 1976, 3 988 314; *CA*, **86**, 28494

(*1-Me*)

Reichman, U. *et al.*, *J. Antibiot.*, 1977, **30**, 129-

131 (*1-Me, synth*)

Earl, R.A. *et al.*, *J. Het. Chem.*, 1977, **14**, 699-

700 (*1-Me, synth*, *uv*, *pmr*)

Habermehl, G. *et al.*, *Annalen*, 1978, 427-430

(*synth*)

Hirota, K. *et al.*, *J.O.C.*, 1978, **43**, 1193-1197

(*di-Me*)

Brown, D.M. *et al.*, *J.C.S. Perkin 1*, 1981, 723-

725 (*synth*)

Matsuda, A. *et al.*, *Carbohydr. Res.*, 1982, **100**,

297-302 (*3-Me, 3-Me 2-deoxy*)

Pang, H. *et al.*, *J. Biol. Chem.*, 1982, **257**, 3589-

3592 (*1-Me, isol*)

Smith, D.L. *et al.*, *Biomed. Mass Spectrom.*,

1983, **10**, 269-275 (*ms*)

Pankiewicz, K.W. *et al.*, *Carbohydr. Res.*, 1984,

127, 227-233 (*O-carbonate tosyl*)

Handa, G. *et al.*, *Phytochemistry*, 1984, **23**,

1779-1780 (*isol*)

Kim, J.-H. *et al.*, *J.O.C.*, 1988, **53**, 5046-5050

(*di-Me isopropylidene, pmr*)

Nielsen, J.B. *et al.*, *J. Antibiot.*, 1989, **42**, 1248-

1252 (*3-Me, isol*)

Hempel, A. *et al.*, *Acta Cryst. C*, 1997, **53**,

1707-1709 (*cryst struct*)

Luyten, I. *et al.*, *J.O.C.*, 1998, **63**, 1033-1044

(*tautom*)

Chui, H.M.-P. *et al.*, *J.O.C.*, 2002, **67**, 8847-

8854 (*3-Me, synth, pmr, cmr*)

Psicofuranine

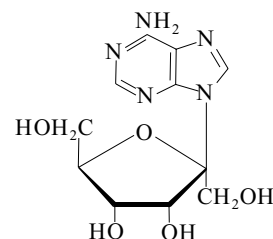
P-103

9-β-D-Psicofuranosyl-9H-purin-6-amine,

9CI. 9-β-D-Psicofuranosyladenine, 8CI.

Angustmycin C. U 9586. Antibiotic U 9586

[1874-54-0]



C₁₁H₁₅N₅O₅ 297.27

Nucleoside-type antibiotic. *Isol*. from

Streptomyces hygroscopicus and

Micromonospora echinospora. Antitu-

mour and antibacterial antibiotic.

Cryst. or needles.

Mp 212-214° dec. $[\alpha]_D^{25} -68$ (c, 1 in

DMF). λ_{\max} 261 (ε 15700) (0.01N

NaOH) (Derep). λ_{\max} 259 (ε 15100)

(H₂O) (Derep).

► LD₅₀ (rat, orl) 10000 mg/kg. AU7100000

1',4'-Anhydro: [79607-61-7]

Cryst. (H₂O). Mp 197-198°.

Schroeder, W. *et al.*, *J.A.C.S.*, 1959, **81**, 1767

(*isol*, *uv, struct*)

Tanaka, N. *et al.*, *J. Antibiot., Ser. A*, 1961, **14**,

98 (*props*)

Sugimori, T. *et al.*, *J.A.C.S.*, 1965, **87**, 1136

(*biosynth*)

Suhadolnik, R.J. *et al.*, *Antibiotics (N.Y.)*,

1967, **2**, 400 (*rev. struct, biosynth*)

Shaw, S.J. *et al.*, *J.A.C.S.*, 1970, **92**, 2510 (*ms*)

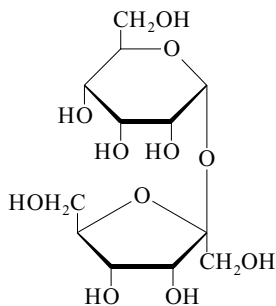
Nichol, C.A. *et al.*, *Handb. Exp. Pharmacol.*,

1975, **38**, 434 (*rev. pharmacol*)

Rosenthal, A. *et al.*, *Carbohydr. Res.*, 1977, **54**, 61 (*synth*)
 Zavgorodny, S.G. *et al.*, *Tet. Lett.*, 1981, **22**, 3003 (*deriv*)
 Grouiller, A. *et al.*, *Acta Chem. Scand., Ser. B*, 1984, **38**, 367 (*synth*)
Japan. Pat., 1985, 24 195; *CA*, **103**, 67976 (*isol*)
 Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (*rev*)
 Sax, N.I. *et al.*, *Dangerous Properties of Industrial Materials*, 7th edn., Van Nostrand Reinhold, 1989, 2320

β -D-Psicofuranosyl α -D-allopyranoside P-104

β -D-ribo-Hexofuranosyl α -D-allopyranoside.
 α -D-Allopyranosyl β -D-psicofuranoside



$C_{12}H_{22}O_{11}$ 342.299

Non-reducing disaccharide.

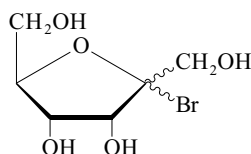
Dianhydro, tetra-Ac: 1,6-Di-O-acetyl-3,4-anhydro-beta-D-psicofuranosyl 4,6-di-O-acetyl-2,3-anhydro-alpha-D-allopyranoside [103949-90-2]

$C_{20}H_{26}O_{13}$ 474.418

$[\alpha]_D^{20} +60$ (c, 1.0 in $CHCl_3$).

Chowdhary, M.S. *et al.*, *Carbohydr. Res.*, 1986, **147**, 49

Psicofuranosyl bromide P-105



$C_6H_{11}BrO_5$ 243.054

D-form

Tetrabenzoyl: 1,3,4,6-Tetra-O-benzoyl-D-psicofuranosyl bromide

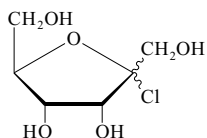
[54401-10-4]

$C_{34}H_{27}BrO_9$ 659.486

Semi-cryst.

Prisbe, E.J. *et al.*, *J.O.C.*, 1976, **41**, 1836 (*tetrabenzoyl*)

Psicofuranosyl chloride P-106



D-Furanose-form

$C_6H_{11}ClO_5$ 198.603

D-form

Tetrabenzoyl: 1,3,4,6-Tetra-O-benzoyl-D-psicofuranosyl chloride

[13019-85-7]

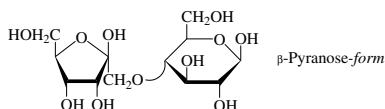
$C_{34}H_{27}ClO_9$ 615.035

Syrup.

Grouiller, A. *et al.*, *Acta Chem. Scand., Ser. B*, 1984, **38**, 367 (*tetrabenzoyl*)

4-O-beta-D-Psicofuranosyl-D-glucose P-107

[218770-13-9]



β -Pyranose-form

$C_{12}H_{22}O_{11}$ 342.299

Constit. of *Morina chinensis* and *Munroia henryi*.

Zhang, G. *et al.*, *CA*, 1999, **130**, 78688c (*isol*)

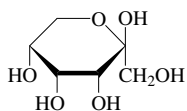
Qi, S.H. *et al.*, *J. Asian Nat. Prod. Res.*, 2003, **5**, 215-221 (*isol*)

Psicose, 9CI, 8CI P-108

ribo-Hexulose. ψ -Fructose. Allulose.

Pseudofructose. Erythroxulose

[23140-52-5]



β -D-Pyranose-form

$C_6H_{12}O_6$ 180.157

An aq. soln. at 27° conts. 22% α -pyr, 24% β -pyr, 39% α -fur, 15% β -fur and 0.3% ketone.

D-form

[551-68-8]
 Isol. from the hydrolysate of Psicofuranine, P-103. Also in plants, e.g. *Itea* spp. Obt. synthetically by isomerisation of Fructose, F-84.

Mp 101-109° (amorph.). $[\alpha]_D^{20} +16.3$ (c, 0.94 in H_2O). Forms D-Allosazone with phenylhydrazine.

β -D-Pyranose-form

[40461-85-6]
1,2:4,5-Di-O-isopropylidene: 1,2:4,5-Di-O-isopropylidene-beta-D-psicopyranose

[18422-54-3]

$C_{12}H_{20}O_6$ 260.286

Mp 68-69° (64-66°). $[\alpha]_D^{25} -126$ (c, 1.1 in $CHCl_3$).

β -D-Furanose-form

[470-24-6]
1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-beta-D-psicofuranose

[34626-95-4]

$C_{12}H_{20}O_6$ 260.286

Mp 56-56.5°. $[\alpha]_D^{20} -90$ (c, 1.0 in $CHCl_3$).

L-form

[16354-64-6]

$[\alpha]_D -3.3$ (H_2O).

L-Furanose-form

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-L-psicofuranose

[35013-19-5]

$C_{12}H_{20}O_6$ 260.286

Cryst. (pentane). Mp 55-56°. $[\alpha]_D^{20} +98.7$ (c, 1.0 in Me_2CO).

[36441-95-9, 38029-84-4, 40461-87-8, 41847-04-5, 41847-06-7, 41847-53-4]

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1945, **67**, 1793-1797 (*D-form, synth*)

Karabinos, J.V. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 99-136 (*rev*)

Garrett, E.R. *et al.*, *J.A.C.S.*, 1960, **82**, 827-832 (*D-form, isol, occur*)

Hough, L. *et al.*, *Phytochemistry*, 1963, **2**, 315-320; 1966, **5**, 215-222 (*isol, biosynth*)

Brady, R.F. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1971, **26**, 197-278 (*rev, acetals*)

Armenakian, A. *et al.*, *J.C.S. Perkin 1*, 1972, 63-65 (*L-form, synth, diisopropylidene*)

Angyal, S.J. *et al.*, *Aust. J. Chem.*, 1976, **29**, 1249-1265 (*conformn, cmr*)

Valentine, K.M. *et al.*, *Carbohydr. Res.*, 1981, **96**, 293-298 (*cmr*)

Beveridge, R.J. *et al.*, *Carbohydr. Res.*, 1982, **101**, 348-349 (*synth*)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15-68 (*equilib*)

Kopper, S. *et al.*, *Chem. Eur. J.*, 1998, **4**, 2442-2455 (*synth, pmr, cmr, ms*)

Psyllium hemicellulose, P-109

USAN

Hemicellulose, 9CI. Masonex

[9034-32-6]

Consists of a combination of highly subst. arabinoxylan polysaccharides. These polysaccharides are linear chains of xylose units to which are attached single units of arabinose and additional xylose. Also present are rhamnose, galactose, glucose and rhamnosyluronic acid residues. Alkali sol. fraction of psyllium (*Plantago ovata*) seed husk. Laxative and cholesterol lowering agent. Source of dietary fibre.

Segawa, K. *et al.*, *Biol. Pharm. Bull.*, 1998, **21**, 184-187 (*pharmacol*)

Anderson, J.W. *et al.*, *Am. J. Clin. Nutr.*, 2000, **71**, 472-479; 1433-1438 (*pharmacol*)

Marlett, J.A. *et al.*, *Am. J. Clin. Nutr.*, 2000, **72**, 784-789 (*pharmacol*)

Jenkins, D.J. *et al.*, *Am. J. Clin. Nutr.*, 2002, **75**, 834-839 (*clin trials*)

Pullulan P-110

[9057-02-7]

M = 60000-240000. Consists mainly of Maltotriose, M-19 joined through $\alpha(1 \rightarrow 6)$ glucosidic linkages plus 5-7% of randomly distributed maltotetraose units. Extracellular α -D-glucan from *Pullularia pullulans* (*Aureobasidium pullulans*). Comply. available; various derivs. are under investigation for applications in the food, cosmetics and other industries (1998).

Poly-O-sulfate: Sulfated polysaccharide with medicinal uses, e.g. shows antiulcer activity. Unbranched struct. leads to differences in props. compared with, *Poly-O-sulfate*.

Bender, H. *et al.*, *Biochem. Z.*, 1961, **334**, 79

Wallenfels, K. *et al.*, *Biochem. Z.*, 1965, **341**, 433

Taguchi, R. *et al.*, *Agric. Biol. Chem.*, 1973, **37**, 1583

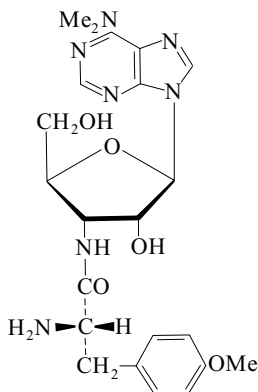
Catley, B.J. *et al.*, *Carbohydr. Res.*, 1986, **153**, 79 (*struct*)

Tezuka, Y. *et al.*, *Carbohydr. Res.*, 1998, **305**, 155-161 (*pmr, cmr, nona-Ac*)
 Mähner, C. *et al.*, *Carbohydr. Res.*, 2001, **331**, 203-208 (*sulfate*)

Puromycin, BAN, INN, USAN

P-111

3'-[[2-Amino-3-(4-methoxyphenyl)-1-oxo-propyl]amino]-3'-deoxy-N,N-dimethyladenosine, 9CI. 3'-(α -Amino-p-methoxyhydrocinnamido)-3'-deoxy-N,N-dimethyladenosine, 8CI. Achromycin†. Stylomycin. Stylomycin. CL 13900. 3123L. P 638. Antibiotic CL 13900. Antibiotic 3123L. Antibiotic P 638. Bacterenomycin [53-79-2]



C₂₂H₂₉N₇O₅ 471.515

Nucleoside-type antibiotic. Isol. from *Streptomyces alboniger*. Antineoplastic and antitrypanosomal agent. Plates (2-propanol). Sol. CHCl₃, Me₂CO-H₂O, EtOH-H₂O, butanol-H₂O: fairly sol. H₂O, butanol, MeOH, EtOH, EtOAc; poorly sol. C₆H₆, hexane, Et₂O, toluene. Mp 175.5-177°. [α]_D²⁵ -11 (c, 1 in EtOH). Log P -0.61 (calc). λ_{\max} 268 (€ 19500) (0.1M HCl) (Derep). λ_{\max} 275 (€ 20300) (0.1M NaOH) (Derep). λ_{\max} 275 (€ 20000) (EtOH) (Derep). λ_{\max} 267 (€ 19500) (HCl) (Berdy). λ_{\max} 267 (H₂O) (Berdy).

► LD₅₀ (mus, orl) 20 mg/kg. Exp. reprod. and teratogenic effects; LD₅₀ (mus, ivn) 335 - 365 mg/kg, LD₅₀ (mus, ipr) 525 - 575 mg/kg, LD₅₀ (mus, orl) 680 - 720 mg/kg. AU7350000

Hydrochloride (1:2): **Puromycin hydrochloride, USAN**. CL 16536. NSC 3055. Antibiotic CL 16536 [58-58-2]

► AU7352000

N,N-Di-Me:

Small plates (2-propanol). Mp 163-164.5°.

Porter, J.N. *et al.*, *Antibiot. Chemother.* (Washington, D.C.), 1952, **2**, 409 (*isol*)

Waller, C.W. *et al.*, *J.A.C.S.*, 1953, **75**, 2025 (*ir, uv, struct*)

Baker, B.R. *et al.*, *J.A.C.S.*, 1954, **76**, 4044 (*synth*)

Johnson, L.F. *et al.*, *J.A.C.S.*, 1963, **85**, 3700 (*nmr, struct*)

Eggers, S.H. *et al.*, *Tet. Lett.*, 1966, 3271 (*ms, struct*)

Nathans, D. *et al.*, *Antibiotics* (N.Y.), 1967, **1**, 259 (*rev*)

Hawtrey, A.O. *et al.*, *Tet. Lett.*, 1967, 1693 (*uv*)
 Daluge, S. *et al.*, *J. Med. Chem.*, 1972, **15**, 171 (*pharmacol*)

de Leeuw, H.P.M. *et al.*, *Eur. J. Biochem.*, 1977, **76**, 209 (*pmr, conformn*)
 Martindale, *The Extra Pharmacopoeia*, 28th/29th edn., Pharmaceutical Press, 1982, 143

Narula, S.S. *et al.*, *Indian J. Biochem. Biophys.*, 1985, **22**, 1; 1986, **23**, 187 (*cmr, pmr, conformn*)

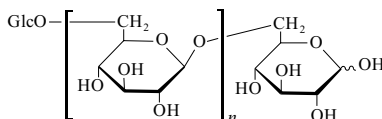
Robins, M.J. *et al.*, *J.O.C.*, 2001, **66**, 8204-8210 (*synth*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, AE1000; POK300

Pustulan, 9CI, 8CI

β -D-(1 \rightarrow 6)-Glucan [37331-28-5]

P-112



Isol. from the lichens *Umbilicaria pustulata* and *Umbilicaria spodochoea*, sometimes in a partially acetylated form (1 Ac group for every 10-11 glycoside units). A similar linear (1 \rightarrow 6)-glucan was isol. from the lichen *Gyrophora esculenta*. Also isol. from *Actinobacillus suis*, an important pig pathogen. The *G. esculenta* isolate was reported to exhibit antitumor props.

Amorph. [α]_D -46 (c, 0.5 in H₂O).

Per-Ac: Sol. H₂O; poorly sol. EtOH, Me₂CO. [α]_D +9.1 (c, 0.3 in CHCl₃).

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1954, **8**, 985 (*isol, struct*)

Hellerqvist, C.G. *et al.*, *Acta Chem. Scand.*, 1968, **22**, 2736

Pfannemueller, B. *et al.*, *Carbohydr. Res.*, 1975, **43**, 151 (*pmr*)

Kjølberg, O. *et al.*, *Acta Chem. Scand., Ser. B*, 1984, **38**, 735-739 (*O-Acetyl*pustulan)

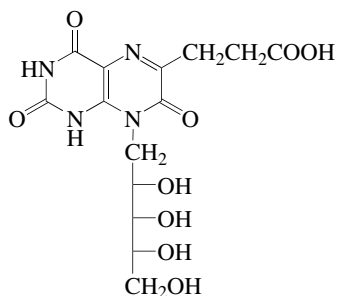
Sone, Y. *et al.*, *Biosci., Biotechnol., Biochem.*, 1996, **60**, 213-215 (*Gyrophora esculenta glucan*)

Monteiro, M.A. *et al.*, *Carbohydr. Res.*, 2000, **329**, 121-130 (*isol, Actinobacillus*)

Putidolumazine

P-113

1-[6-(2-Carboxyethyl)-1,3,4,7-tetrahydro-2,4,7-trioxo-8(2H)-pteridinyl]-1-deoxy-D-ribose, 9CI. 1,2,3,4,7,8-Hexahydro-2,4,7-trioxo-8-(2,3,4,5-tetrahydroxypentyl)pteridine-6-propionic acid [29161-67-9]



C₁₄H₁₈N₄O₉ 386.318

Pteridine nucleoside. Isol. from *Pseudomonas ovalis*. Useful as affinity chromatog. ligand for purifn. of riboflavin. Inhibitor of Riboflavin synthase. Cryst. (H₂O).

Mp 265° dec.

Suzuki, A. *et al.*, *Bull. Chem. Soc. Jpn.*, 1971, **44**, 1869 (*isol*)

Wigglesworth, R. *et al.*, *CA*, 1976, **84**, 175673
 Ginger, C.G. *et al.*, *J.C.S. Perkin 1*, 1984, 953; 959 (*synth, use*)

PX Glycoprotein

P-114

Glycoprotein. Isol. from the carpophore of *Psalliotia xanthoderma*. Shows antiviral activity. Sol. H₂O. λ_{\max} 277 (H₂O) (Berdy).

► LD₅₀ (mus, ivn) 318 mg/kg.

Ger. Pat., 1976, 2 553 971; *CA*, **85**, 166632n (*isol*)

4H-Pyran, 9CI

P-115

γ -Pyran. 1,4-Pyran [289-65-6]



C₅H₆O 82.102

Oil. Bp 80°. n_D^{20} 1.4559. Rapidly dec. in air.

Masamune, S. *et al.*, *J.A.C.S.*, 1962, **84**, 2452 (*nmr*)

Strating, J. *et al.*, *Angew. Chem., Int. Ed.*, 1962, **1**, 399 (*synth*)

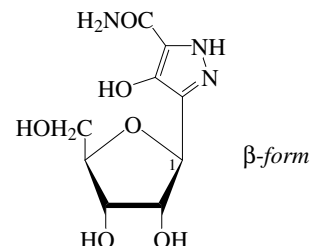
Royer, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1972, 707 (*synth*)

Seoane, C. *et al.*, *Heterocycles*, 1980, **14**, 337 (*rev*)

Pyrazomycin

P-116

4-Hydroxy-3-ribofuranosyl-1H-pyrazole-5-carboxamide, 9CI. A 23813. Antibiotic A 23813



C₉H₁₃N₃O₆ 259.218

Nucleoside antibiotic. Sol. H₂O, EtOH, butanol, MeOH; fairly sol. EtOAc; poorly sol. CHCl₃, hexane. Log P -2.91 (calc). λ_{\max} 232 (€ 7400); 263 (€ 6200) (EtOH/HCl) (Derep). λ_{\max} 235 (€ 5100); 307 (€ 5100) (EtOH/NaOH) (Derep). λ_{\max} 232 (€ 6200); 263 (€ 6210) (pH 7 H₂O) (Derep). λ_{\max} 226 (€ 7600); 267 (€ 6000) (MeOH) (Berdy). λ_{\max} 232 (€ 7400); 263 (€ 6200) (EtOH) (Berdy). λ_{\max} 232 (€ 7000); 263 (€ 6000) (EtOH-HCl) (Berdy). λ_{\max} 263 (€ 6200) (pH 7 buffer) (Berdy). λ_{\max} 307 (€ 8100) (pH 12 buffer) (Berdy).

α -D-form**Pyrazofurin B. Pyrazomycin B**

[41855-21-4]

Isol. from *Streptomyces candidus*.Dihydrate. Sol. H₂O, MeOH; poorly sol.Et₂O, hexane.Mp 69-70°. λ_{\max} 232 (€ 7400); 263 (€ 6200)(EtOH/HCl) (Derep). λ_{\max} 235 (€ 5100);307 (€ 5100) (EtOH/NaOH) (Derep). λ_{\max} 232 (€ 6200); 263 (€ 6210) (pH 7 H₂O)(Derep). λ_{\max} 225 (€ 8000); 276 (€ 6700)(EtOH) (Berdy). λ_{\max} 304 (€ 8400)

(NaOH) (Berdy).

 β -D-form**Pyrazofurin, USAN. Pirazofurin, INN.**

Antibiotic A 23812. NSC 143095. A 23812

[30868-30-5]

From *Streptomyces candidus*. Shows

antibiotic and antineoplastic props.

Cryst. (H₂O).Mp 112-115°. $[\alpha]_D^{25}$ -49.6 (c, 0.80 in H₂O).

- Gastrointestinal disturbances and adverse skin effects reported when used therapeutically. UQ6360000

Ger. Pat., 1971, 2 019 838; CA, **74**, 41133s (isol)

Farkas, J. et al., Tet. Lett., 1972, 2279 (synth)

Wenkert, E. et al., Biochem. Biophys. Res.

Commun., 1973, **51**, 318 (cmr)Sweeney, M.J. et al., Cancer Res., 1973, **33**, 2619Crain, P.F. et al., J. Het. Chem., 1973, **10**, 843 (ms)de Bernardo, S. et al., J.O.C., 1976, **41**, 287 (synth)U.S. Pat., 1976, 3 998 999; CA, **86**, 155899z (synth)Neumann, J.M. et al., Biochim. Biophys. Acta, 1977, **479**, 427 (conformn, nmr)Miles, D.W. et al., J. Phys. Chem., 1983, **87**, 2444 (conformn)

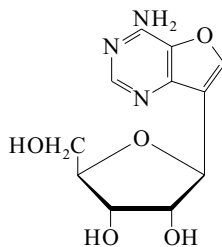
Karagiri, N. et al., J.C.S. Perkin 1, 1984, 553 (synth)

Lopez Herrera, F.J. et al., Carbohydr. Res., 1985, **139**, 95 (analogues)Petrie, C.R. et al., J. Med. Chem., 1986, **29**, 268 (derivs)

Negwer, M. et al., Organic-Chemical Drugs and their Synonyms, 6th edn., Akademie-Verlag, 1987, 1300

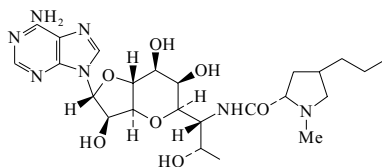
Isono, K. et al., J. Antibiot., 1988, **41**, 1711 (rev)**Pyrrolosine**

[86132-93-6]

P-117C₁₁H₁₃N₃O₅ 267.241Nucleoside-type antibiotic. Struct. revised in 1992. Prod. by *Streptomyces albus*.Inhibitor of RNA synthesis. Hexagonal plates + 1 MeOH (MeOH/EtOAc). Sol. H₂O.Mp 105-110°. λ_{\max} 225 (€ 5800); 268 (sh) (€ 7500); 276 (€ 7800); 285 (sh) (€ 5200) (H₂O at pH 1.5) (Derep). λ_{\max} 220 (€ 10000); 242 (€ 4400); 272 (€ 4200) (H₂O pH 7) (Derep). λ_{\max} 220 (€ 10000); 242 (€ 4400); 272 (€ 4200) (H₂O) (Berdy). λ_{\max} 225 (€ 5800); 276 (€ 7800) (pH 1.5 buffer) (Berdy).Ikegami, S. et al., J.A.C.S., 1990, **112**, 9668 (isol)Otter, B.A. et al., J.A.C.S., 1992, **114**, 668 (struct)

Quantamycin

[91899-90-0]

 $C_{24}H_{37}N_7O_7$ 535.599

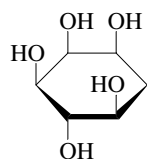
Nucleoside antibiotic. Synthetic. Inhibits bacterial ribosomal binding. Micro-cryst. Mp 205-207° dec. $[\alpha]_D^{25} +4.5$ (c, 0.7 in $CHCl_3$). Log P -1.47 (uncertain value) (calc).

Hanessian, S. *et al.*, *J.A.C.S.*, 1984, **106**, 6114 (synth)

Cheney, B.V. *et al.*, *THEOCHEM*, 1986, **27**, 389 (props)

epi-Quercitol

1,2,3,5/4-Cyclohexanepentol



(+) -form

 $C_6H_{12}O_5$ 164.158

Chiral molecule.

(+) -form

2-Deoxy-D-epi-inositol, 9CI. 6-Deoxy-D-myo-inositol
[131435-06-8]
Cryst. ($CHCl_3$). Mp 197-198°. $[\alpha]_D^{25} +8.9$ (c, 0.5 in H_2O).

(-) -form

4-Deoxy-D-epi-inositol, 9CI. 4-Deoxy-D-myo-inositol
[3411-22-1]
Mp 195-196°. $[\alpha]_D^{25} -8$ (c, 0.64 in H_2O).

(±) -form [19776-68-2]

Cryst. (MeOH aq. or EtOH aq.).
Mp 208-210° (205-215°).

Penta-Ac: [56782-13-9]

 $C_{16}H_{22}O_{10}$ 374.344

Cryst. ($CHCl_3$ /EtOH). Mp 123-124.5° (plates) Mp 142-143° (prisms) (dimorph.).

May, E.L. *et al.*, *J.O.C.*, 1949, **14**, 1137-1140

(± -form, penta-Ac)

Angyal, S.J. *et al.*, *J.C.S.*, 1957, 3682-3691

(± -form, penta-Ac)

McCasland, G.E. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 11-65 (rev)

Buchs, A. *et al.*, *Helv. Chim. Acta*, 1968, **51**, 695-707 (ms)

Suami, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1975, **48**, 1545-1548 (synth)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54 (cmr)

Jiang, C. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 319-355 (± -form, synth)

Ley, S.V. *et al.*, *Tetrahedron*, 1990, **46**, 4995-5026 (synth, cmr)

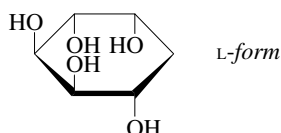
Dubreuil, D. *et al.*, *Tetrahedron*, 1997, **53**, 16747-16766 (synth, pmr, cmr)

Q-1

Biamonte, M.A. *et al.*, *Helv. Chim. Acta*, 1998, **81**, 688-694 (synth)

gala-Quercitol

2-Deoxy-allo-inositol, 9CI. 1,2,5/3,4-Cyclohexanepentol
[81369-62-2]

Q-3

L-form

 $C_6H_{12}O_5$ 164.158

Chiral molecule.

L-form

(+) -form

[81623-40-7]

Cryst. (EtOH aq.). Mp 254-255°.

 $[\alpha]_D^{25} +50$ (c, 1.4 in H_2O).**D-form**

(-) -form

[40617-62-7]

Cryst. (MeOH). Mp 257-258°.

 $[\alpha]_D^{25} -48.6$ (c, 0.5 in H_2O).

Penta-Ac:

 $C_{16}H_{22}O_{10}$ 374.344

Cryst. (2-propanol). Mp 117-118°.

 $[\alpha]_D^{27} -24$ (c, 0.5 in H_2O).**(±) -form** [19776-23-9]

Cryst. (MeOH). Mp 256-257°.

Penta-Ac: [81601-27-6]

Cryst. (2-propanol). Mp 90-92°

Mp 117-118°.

Nakajima, M. *et al.*, *Chem. Ber.*, 1961, **94**, 515-523 (synth)

McCasland, G.E. *et al.*, *J.A.C.S.*, 1961, **83**, 2335-2343 (synth, (-) -form)

Buchs, A. *et al.*, *Helv. Chim. Acta*, 1968, **51**, 695-707 (ms)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54; **101**, 209-219 (synth, (+) -form, cmr)

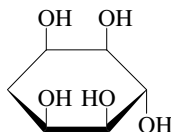
Angelaud, R. *et al.*, *J.O.C.*, 1996, **61**, 5202-5203 (synth, (-) -form)

Salamci, E. *et al.*, *J.O.C.*, 1997, **62**, 2453-2457 (synth, ir, pmr, cmr)

Baran, A. *et al.*, *Synthesis*, 2003, 1500-1502 (synth)

muco-Quercitol**Q-4**

3-Deoxy-epi-inositol, 9CI. 1,2,4,5/3-Cyclohexanepentol. *Kijolanitol*
[81369-59-7]

 $C_6H_{12}O_5$ 164.158

A meso-stereoisomer, but derivs. may be chiral. Care needed with numbering. Constit. of the leaves of *Marsdenia tomentosa*. Cryst. Mp 95°. Dec. at 245°.

Penta-Ac: [20097-36-3]

 $C_{16}H_{22}O_{10}$ 374.344

Cryst. (MeOH or EtOH). Mp 170-172° (167-168°).

4-O-β-D-Glucopyranoside: [209542-56-3]

 $C_{12}H_{22}O_{10}$ 326.3

Constit. of *Marsdenia tomentosa*. Prisms. Mp 229-231°. $[\alpha]_D^{24} -2.4$ (c, 0.9 in MeOH).

Nakajima, M. *et al.*, *Annalen*, 1965, **689**, 235-242 (synth)

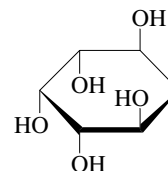
Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54; **101**, 209-219 (synth, cmr)

Kim, K.S. *et al.*, *Chem. Comm.*, 1998, 1945-1946 (synth)

Abe, F. *et al.*, *Phytochemistry*, 1998, **47**, 1297-1301 (isol, pmr, cmr)

neo-Quercitol**Q-5**

5-Deoxy-myo-inositol, 9CI. 1,5/2,3,4-Cyclohexanepentol
[26671-58-9]

 $C_6H_{12}O_5$ 164.158

A meso-stereoisomer. Cryst. (MeOH).
Mp 238-239° dec Mp 248-249° dec.

Penta-Ac: [68907-51-7]

 $C_{16}H_{22}O_{10}$ 374.344

Cryst. (EtOH). Mp 187°.

Anderson, L. *et al.*, *Arch. Biochem. Biophys.*, 1958, **78**, 518-531 (synth, penta-Ac)

McCasland, G.E. *et al.*, *J.A.C.S.*, 1961, **83**, 2335 (synth)

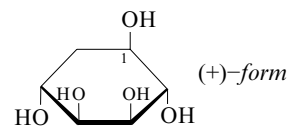
Ogawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1978, **51**, 2957-2963 (penta-Ac, synth, pmr)

Angyal, S. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54 (cmr)

Jiang, C. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 319-355 (synth, pmr)

proto-Quercitol**Q-6**

2-Deoxy-chiro-inositol, 9CI. Protoquercitol. 1,3,4/2,5-Cyclohexanepentol. 1-Deoxymuco-inositol
[90899-07-3]



(+) -form

 $C_6H_{12}O_5$ 164.158**(+) -form**

2-Deoxy-D-chiro-inositol. 1L-1,3,4/2,5-Cyclohexanepentol. Acorn sugar
[488-73-3]

Occurs in acorns of *Quercus* spp. oak barks, leaves of *Chamaerops humilis*, seeds of *Mimusops elengi* and *Achras sapota*. Prisms (H_2O).

Mp 235-237°. $[\alpha]_D^{20} +25.6$ (H_2O).

Pentabenzoyl: [22412-50-6]

 $C_{41}H_{32}O_{10}$ 684.698Mp 155°. $[\alpha]_D^{23} +61.4$ (EtOAc).

1-O-(3,4,5-Trihydroxybenzoyl):

1-O-Galloyl-proto-quercitol

[110170-36-0]

 $C_{13}H_{16}O_9$ 316.264

Isol. from the acorns of *Quercus mongolica*. Needles.

Mp 282–284°. $[\alpha]_D^{17}$ -10.6 (c, 0.4 in MeOH).

1,4-Bis(3,4,5-trihydroxybenzoyl):

1,4-Di-O-galloyl-proto-quercitol

[110082-87-6]

C₂₀H₂₀O₁₃ 468.37

Isol. from the leaf of *Quercus myrsinaefolia*. Needles + 1½H₂O.

Mp 185–187°. $[\alpha]_D^{23}$ -10.1 (c, 0.8 in Me₂CO). λ_{\max} 217 (ε 46000); 276 (ε 19000) (MeOH) (Derep).

3,5-Bis(3,4,5-trihydroxybenzoyl):

3,5-Di-O-galloyl-proto-quercitol

[133201-12-4]

C₂₀H₂₀O₁₃ 468.37

Constit. of *Quercus acuta*. Amorph. powder + 2.5H₂O. $[\alpha]_D^{28}$ +13.9 (c, 0.3 in MeOH). λ_{\max} 217 (ε 46000); 277 (ε 18000) (MeOH).

4,5-Bis(3,4,5-trihydroxybenzoyl):

4,5-Di-O-galloyl-proto-quercitol

[86588-92-3]

C₂₀H₂₀O₁₃ 468.37

Isol. from the bark of *Quercus stenophylla*. Amorph. powder + ½H₂O. $[\alpha]_D^{21}$ -107.2 (c, 0.67 in MeOH). λ_{\max} 217 (ε 46000); 276 (ε 19000) (MeOH) (Derep).

1,3,5-Tris(3,4,5-trihydroxybenzoyl):

1,3,5-Tri-O-galloyl-proto-quercitol

[91431-98-0]

C₂₇H₂₄O₁₇ 620.476

Tannin constit. of *Quercus stenophylla*.

Needles + H₂O (H₂O).

Mp 222–224°. $[\alpha]_D^{20}$ -11.9 (c, 0.81 in Me₂CO).

1,4,5-Tris(3,4,5-trihydroxybenzoyl):

1,4,5-Tri-O-galloyl-proto-quercitol

[91431-96-8]

C₂₇H₂₄O₁₇ 620.476

A tannin isol. from the bark of *Quercus stenophylla*. Granules + 1½H₂O (H₂O).

Mp 219–223°. $[\alpha]_D^{25}$ +39.1 (c, 0.40 in MeOH).

2,4,5-Tris(3,4,5-trihydroxybenzoyl):

2,4,5-Tri-O-galloyl-proto-quercitol

[91431-97-9]

C₂₇H₂₄O₁₇ 620.476

A tannin constit. of *Quercus stenophylla*.

Needles + 4½H₂O (H₂O).

Mp 207–210°. $[\alpha]_D^{21}$ +15 (c, 0.13 in Me₂CO).

3,4,5-Tris(3,4,5-trihydroxybenzoyl):

3,4,5-Tri-O-galloyl-proto-quercitol

[86588-49-0]

C₂₇H₂₄O₁₇ 620.476

Isol. from the bark of *Quercus stenophylla*.

Needles + H₂O (H₂O).

Mp 255–258°. $[\alpha]_D^{18}$ -10.5 (c, 0.68 in Me₂CO).

1,2,4,5-Tetrakis(3,4,5-trihydroxybenzoyl):

1,2,4,5-Tetra-O-galloyl-proto-quercitol

[91432-00-7]

C₃₄H₂₈O₂₁ 772.583

Tannin constit. of *Quercus stenophylla*.

Off-white amorph. powder + 5H₂O. $[\alpha]_D^{21}$ +34.3 (c, 0.14 in MeOH).

1,3,4,5-Tetrakis(3,4,5-trihydroxybenzoyl):

1,3,4,5-Tetra-O-galloyl-proto-quercitol

[91431-99-1]

C₃₄H₂₈O₂₁ 772.583

Isol. from the bark of *Quercus stenophylla*. Off-white amorph. powder + 5H₂O. $[\alpha]_D^{21}$ -2.7 (c, 0.71 in MeOH).

Pentakis-O-(3,4,5-trihydroxybenzoyl):

1,2,3,4,5-Penta-O-galloyl-proto-quercitol

[91432-01-8]

C₄₁H₃₂O₂₅ 924.689

Tannin isol. from the bark of *Quercus stenophylla*. Off-white amorph. powder

+ 4H₂O. $[\alpha]_D^{18}$ +9.9 (c, 0.52 in Me₂CO).

3,4-O-Isopropylidene:

C₉H₁₆O₅ 204.222

Mp 159°. $[\alpha]_D^{21}$ +74 (c, 1.2 in EtOH).

(-)-form

2-Deoxy-L-chiro-inositol, 9CI, 8CI.

1D-1,3,4,2,5-Cyclohexanepentol

[17278-12-5]

Occurs in *Eucalyptus populnea*.

Mp 237°. $[\alpha]_D$ -27 (H₂O).

(±)-form [38836-69-0]

Cryst. (EtOH aq.). Mp 228–229°.

Penta-Ac: [38836-70-3]

C₁₆H₂₂O₁₀ 374.344

Cryst. (EtOAc/petrol). Mp 115–116°.

Posternak, T. et al., *Helv. Chim. Acta*, 1932, **15**, 948–955 (struct)

Bauer, K.H. et al., *Arch. Pharm. (Weinheim, Ger.)*, 1942, **280**, 37–45 (isol)

Buchs, A. et al., *Helv. Chim. Acta*, 1968, **51**, 695–707 (ms)

McCasland, G.E. et al., *J.O.C.*, 1968, **33**, 4220–4227 (synth, pmr)

Anderson, L. et al., *The Carbohydrates*, 2nd edn., Academic Press, 1972, **1A**, 519

Angyal, S.J. et al., *Carbohydr. Res.*, 1982, **100**, 43–54; **101**, 209–219 (cmr, stereoisomers)

Nishimura, H. et al., *Chem. Pharm. Bull.*, 1984, **32**, 1741–1749 (gallates)

Ishimaru, K. et al., *Phytochemistry*, 1987, **26**, 1501–1504 (gallates)

Cambie, R.C. et al., *Aust. J. Chem.*, 1990, **43**, 1597–1602 (synth)

Serit, M. et al., *Agric. Biol. Chem.*, 1991, **55**, 19–23 (3,5-digalloyl, 4,5-digalloyl)

Secen, H. et al., *Synlett*, 1993, 609–610 (synth)

Hudicky, T. et al., *Synlett*, 1994, 899–901 (synth)

Salamci, E. et al., *J.O.C.*, 1997, **62**, 2453–2457 ((±)-form, synth, bibl, pmr, cmr, ir)

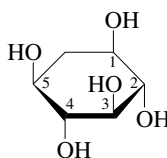
Gütekin, M.S. et al., *Carbohydr. Res.*, 2003, **338**, 1615–1619 (synth)

scyllo-Quercitol, 9CI, 8CI

Q-7

2-Deoxy-myo-inositol, 9CI, 8CI. 1,3,5/2,4-Cyclohexanepentol. Deoxyscylitol. Scyllo-quercitol

[527-42-4]



C₆H₁₂O₅ 164.158

Care needed with numbering. A meso-compound which can be numbered in either direction but the numbering becomes significant for chiral derivs. The numbering system for 2-deoxy-myo-inositol differs from that shown. Cryst. (EtOH aq.). Mp 233–235° Mp 242–243°. Opt. inactive (meso-).

Penta-Ac: [18376-41-5]

C₁₆H₂₂O₁₀ 374.344

Mp 188–190°.

Pentabenzoyl: [19647-40-6]

C₄₁H₃₂O₁₀ 684.698

Needles (EtOH aq.). Mp 295–296°.

2-O-(3,4,5-Trihydroxybenzoyl): 2-O-

Galloyl-scyllo-quercitol

[107693-08-3]

C₁₃H₁₆O₉ 316.264

Isol. from the bark of *Quercus stenophylla*.

Needles + ½H₂O (CHCl₃/EtOH).

Mp 254–257° dec. $[\alpha]_D^{23}$ +3.6 (c, 0.14 in Me₂CO).

1,2-Bis-O-(3,4,5-trihydroxybenzoyl):

1,2-Di-O-galloyl-scyllo-quercitol

[107794-82-1]

C₂₀H₂₀O₁₃ 468.37

Tannin constit. of *Quercus stenophylla*.

Off-white amorph. powder + 3H₂O. $[\alpha]_D^{23}$ -95.6 (c, 0.31 in MeOH).

1,2,3-Tris-O-(3,4,5-trihydroxybenzoyl):

1,2,3-Tri-O-galloyl-scyllo-quercitol

[107794-83-2]

C₂₇H₂₄O₁₇ 620.476

Gallotannin from the bark of *Quercus stenophylla*. Off-white amorph. powder

+ 1H₂O. $[\alpha]_D^{18}$ +15.6 (c, 0.27 in MeOH).

1,2,3,4-Tetrakis-O-(3,4,5-trihydroxybenzoyl):

1,2,3,4-Tetra-O-galloyl-scyllo-quercitol

[107724-19-6]

C₃₄H₂₈O₂₁ 772.583

Isol. from the bark of *Quercus stenophylla*.

Off-white amorph. powder + 2H₂O. $[\alpha]_D^{17}$ -38 (c, 0.48 in Me₂CO).

Pentakis-O-(3,4,5-trihydroxybenzoyl):

1,2,3,4,5-Penta-O-galloyl-scyllo-quercitol

[107794-84-3]

C₄₁H₃₂O₂₅ 924.689

Tannin constit. isol. from the bark of *Quercus stenophylla*. Off-white amorph. powder.

3-Me: 2-Deoxy-5-O-methyl-myo-inositol

C₇H₁₄O₅ 178.185

Mp 215°. Meso-.

3-Me, tetra-O-Ac:

C₁₅H₂₂O₉ 346.333

Mp 184–185°.

Posternak, T. et al., *Helv. Chim. Acta*, 1941, **24**, 1045–1058 (synth)

Post, G.G. et al., *J.A.C.S.*, 1962, **84**, 471–478 (synth, 3-OMe)

Buchs, A. et al., *Helv. Chim. Acta*, 1968, **51**, 695–707 (ms)

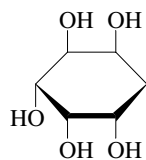
McCasland, G.E. et al., *J.O.C.*, 1969, **34**, 1382–1386 (synth, ir, pmr)

Angyal, S.J. et al., *Carbohydr. Res.*, 1982, **100**, 43–54 (cmr)

Nishimura, H. et al., *Phytochemistry*, 1986, **25**, 2599–2604 (gallates)

talo-Quercitol

1-Deoxy-allo-inositol, 9CI, 1,2,3/4,5-Cyclohexanepentol



(+)-form

C₆H₁₂O₅ 164.158

Chiral molecule.

(+)-form

D-form

[78148-00-2]

Cryst. (EtOH). Mp 246-248°.

Penta-Ac:

C₁₆H₂₂O₁₀ 374.344

Cryst. (2-propanol). Mp 182-183°. [α]_D²⁷ +28 (c, 1 in CHCl₃).

(±)-form DL-form

[19776-72-8]

Cryst. (EtOH aq.). Mp 245-247°.

Penta-Ac: [27088-53-5]

[81601-28-7]

Cryst. (EtOH). Mp 170-171°.

Nakajima, M. *et al.*, *Chem. Ber.*, 1961, **94**, 515-523 (*synth*)

McCasland, G.E. *et al.*, *J.A.C.S.*, 1961, **83**, 2335-2343 (*synth, abs config*)

Buchs, A. *et al.*, *Helv. Chim. Acta*, 1968, **51**, 695-707 (*ms*)

Suami, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969, **42**, 2672-2676 (*synth*)

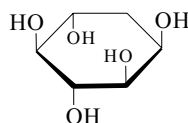
Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54; **101**, 209-219 (*synth, cmr*)

Maras, A. *et al.*, *J.O.C.*, 1998, **63**, 2039-2041 (*synth, ir, pmr, cmr*)

vibo-Quercitol, 9CI, 8CI

Q-9

1-Deoxy-chiro-inositol, 9CI, 8CI, 1,2,4/3,5-Cyclohexanepentol. 1-Deoxy-myoinositol. Viburnitol. Viboquercitol



C₆H₁₂O₅ 164.158

L-form

Isol. from leaves of *Viburnum tinus*, *Gymnema silvestre*, *Stephania hernandifolia*, *Menispermum canadense* and other spp.

Mp 180-181°. [α]_D -49.8 (c, 1.0 in H₂O).

Penta-Ac: [81601-29-8]

C₁₆H₂₂O₁₀ 374.344

Mp 124-125°. [α]_D -22 (CHCl₃).

Pentabenzoyl: [17230-47-6]

C₄₁H₃₂O₁₀ 684.698

Mp 159°. [α]_D -79 (CHCl₃).

1,2-O-Isopropylidene, tri-Ac:

C₁₅H₂₂O₈ 330.334

Mp 104-105° Mp 118-120°. [α]_D²⁶ -66.3 (c, 5.2 in EtOAc).

2-Me: [152884-28-1]

C₇H₁₄O₅ 178.185

Mp 148-149°. [α]_D -71.4 (c, 1.0 in H₂O).

(±)-form [81623-43-0]

Cryst. (EtOH). Mp 161-162°.

Penta-Ac: [20108-58-1]

C₁₆H₂₂O₁₀ 374.344

Cryst. (EtOH). Mp 113-114°.

[22412-50-6]

Posternak, T. *et al.*, *Helv. Chim. Acta*, 1950, **33**, 350-355; 1594-1597 (*synth, config*)

Plouvier, V. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1960, **251**, 131-133; 1961, **253**, 3047-3049; 1964, **258**, 2921-2924; 1965, **260**, 1003-1006 (*isol*)

Post, G.G. *et al.*, *J.A.C.S.*, 1962, **84**, 471-478 (*synth*)

McCasland, G.E. *et al.*, *Adv. Carbohydr. Chem.*, 1965, **20**, 11-65 (*rev*)

Buchs, A. *et al.*, *Helv. Chim. Acta*, 1968, **51**, 695-707 (*ms*)

Angyal, S.J. *et al.*, *Carbohydr. Res.*, 1982, **100**, 43-54 (*cmr*)

Jiang, C. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 319-355 (*synth*)

Kozikowski, A.P. *et al.*, *J.A.C.S.*, 1993, **115**, 4429-4434 (*synth, pmr, cmr*)

Salamci, E. *et al.*, *Synth. Commun.*, 1997, **27**, 2223-2234 (*synth, ir, pmr, cmr*)

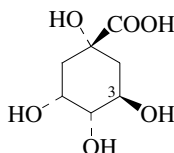
Maras, A. *et al.*, *J.O.C.*, 1998, **63**, 2039-2041 (*synth, ir, pmr, cmr*)

Quinic acid

Q-10

1,3,4,5-Tetrahydroxycyclohexanecarboxylic acid, 9CI. Hexahydro-1,3,4,5-tetrahydroxybenzoic acid. Chincic acid

[36413-60-2]



(-)-form

C₇H₁₂O₆ 192.168

Note that the C atom carrying the OH which is *cis* to the COOH is normally numbered 3. Care is needed; see Eliel (1997). CA numbers the OH *cis* to the COOH, 5.

(+)-form [7216-27-5]

Mp 164°. [α]_D²⁰ +44 (H₂O).

(-)-form [77-95-2]

Occurs in cinchona bark, coffee beans, tobacco leaves and many other plant sources. Food acidulant with good taste characteristics, use limited by cost. Sol. H₂O.

Mp 162-163°. [α]_D²⁶ -42.1 (H₂O). pK_a 3.58 (25°).

► LD₅₀ (mus, scu) 10000 mg/kg. GU8650000

1,3-Lactone: 1,3,4-Trihydroxy-6-oxabicyclo[3.2.1]octan-7-one, 9CI. **Quinide**.

Quinolactone

[665-27-0]

C₇H₁₀O₅ 174.153

Constit. of *Gardenia sootepensis* and *Detarium microcarpum* bark.

Mp 187°. [α]_D²³ -16.75 (c, 8.3 in H₂O).

Lactonised onto the C-3 OH group.

4,5-Isopropylidene, 1,3-lactone: 4,5-O-Isopropylidenequinide. 3aR, 4R, 7S, 8aR-Tetrahydro-7-hydroxy-2,2-dimethyl-4,7-methano-1,3-dioxolo[4,5-c]oxepin-6(4H)-one, 10CI

[32384-42-2]

C₁₀H₁₂O₅ 212.202

Cryst. (EtOAc/C₆H₆/petrol). Mp 139.5-140.5° (136-138). [α]_D¹⁸ -36.6 (1,1,2,2-tetrachloroethane). [α]_D -28 (c, 1.08 in EtOH).

Tetra-Ac: Mp 132-136°. [α]_D²⁰ -22.5 (EtOH).

Tetra-Ac, amide: Mp 186-187° dec. [α]_D -28.6 (C₂H₂Cl₄).

3,4-Bis(4-hydroxy-3-methoxybenzoyl): 3,4-Divanilloylquinic acid. **Burkinabin C** C₂₃H₂₄O₁₂ 492.435

Constit. of the root bark of *Fagara zanthoxyloides*.

3,5-Bis(4-hydroxy-3-methoxybenzoyl):

3,5-Divanilloylquinic acid. **Burkinabin B**

C₂₃H₂₄O₁₂ 492.435

Constit. of the root bark of *Fagara zanthoxyloides*.

4,5-Bis(4-hydroxy-3-methoxybenzoyl):

4,5-Divanilloylquinic acid. **Burkinabin A**

C₂₃H₂₄O₁₂ 492.435

Constit. of the root bark of *Fagara zanthoxyloides*.

3-O-(3,4,5-Trihydroxybenzoyl): 3-O-

Galloylquinic acid. **Theogallin**

[53584-43-3]

C₁₄H₁₆O₁₀ 344.274

Isol. from the bark of *Quercus stenophylla* and from tea. Off-white amorph. powder. [α]_D¹⁸ -36.4 (c, 0.37 in H₂O).

4-O-(3,4,5-Trihydroxybenzoyl):

4-O-Galloylquinic acid

[53505-96-7]

C₁₄H₁₆O₁₀ 344.274

Isol. from the bark of *Quercus stenophylla*. Off-white amorph. powder. [α]_D¹⁷ -30.4 (c, 0.24 in 50% MeOH aq.).

5-O-(3,4,5-Trihydroxybenzoyl): 5-O-Galloylquinic acid

[17365-11-6]

C₁₄H₁₆O₁₀ 344.274

Isol. from the bark of *Quercus stenophylla*. Off-white amorph. powder. [α]_D¹⁷ -13.7 (c, 0.36 in H₂O).

1,4-Bis(3,4,5-trihydroxybenzoyl):

1,4-Di-O-galloylquinic acid

[110082-88-7]

C₂₁H₂₀O₁₄ 496.381

Isol. from the leaf of *Quercus myrsinaefolia*. Needles + H₂O.

Mp 213-215°. [α]_D²³ -18.9 (c, 1.1 in Me₂CO).

1,5-Bis(3,4,5-trihydroxybenzoyl):

1,5-Digalloylquinic acid

[176328-08-8]

C₂₁H₂₀O₁₄ 496.381

Constit. of *Guiera senegalensis* (Combretaceae). Powder. [α]_D²³ -30 (c, 1 in MeOH). Named as 1,3-deriv. in paper.

3,4-Bis(3,4,5-trihydroxybenzoyl):

3,4-Di-O-galloylquinic acid

[86687-37-8]

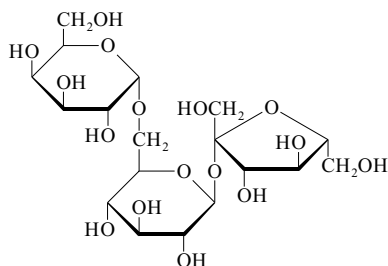
C₂₁H₂₀O₁₄ 496.381

Isol. from the bark of *Quercus stenophylla*. Off-white amorph. powder. [α]_D²⁷ -102.8 (c, 0.32 in Me₂CO).

- 3,5-Bis(3,4,5-trihydroxybenzoyl):**
3,5-Di-O-galloylquinic acid
 [86588-90-1]
 $C_{21}H_{20}O_{14}$ 496.381
 Isol. from the bark of *Quercus stenophylla*.
 Off-white amorph. powder + $1H_2O$. $[\alpha]_D^{26}$ -63 (c, 0.20 in Me_2CO).
- 4,5-Bis(3,4,5-trihydroxybenzoyl):**
4,5-Di-O-galloylquinic acid
 [53505-97-8]
 $C_{21}H_{20}O_{14}$ 496.381
 Isol. from the bark of *Quercus stenophylla*.
 Off-white amorph. powder. $[\alpha]_D^{23}$ -35.5 (c, 0.20 in Me_2CO).
- 1,3,4-Tris(3,4,5-trihydroxybenzoyl):**
1,3,4-Tri-O-galloylquinic acid
 [110082-89-8]
 $C_{28}H_{24}O_{18}$ 648.487
 Isol. from the leaf of *Quercus myrsinaefolia*. Shows anti-HIV activity. Needles.
 Mp 220-225° dec. $[\alpha]_D^{25}$ -5.2 (c, 0.9 in Me_2CO). Log P 0.1 (calc).
- 3,4,5-Tris(3,4,5-trihydroxybenzoyl):**
3,4,5-Tri-O-galloylquinic acid
 [94414-04-7]
 $C_{28}H_{24}O_{18}$ 648.487
 Isol. from the bark of *Quercus stenophylla* and root of *Guiera senegalensis*. Shows anti-HIV activity. Off-white amorph. powder. $[\alpha]_D$ -124 (c, 0.20 in Me_2CO). Log P 0.27 (calc).
- 3,4,5-Tris(3,4,5-trihydroxybenzoyl), Me ester:** [125369-71-3]
 $C_{29}H_{26}O_{18}$ 662.514
 Constit. of *Lepidobotrys stauditi*. Claimed to have anti-HIV props. Powder.
- 3,4,5-Tris(3,4,5-trihydroxybenzoyl), Et ester: Ethyl 3,4,5-tri-O-galloylquininate**
 [211388-30-6]
 $C_{30}H_{28}O_{18}$ 676.54
 Constit. of *Guiera senegalensis*.
- 1,3,4,5-Tetrakis(3,4,5-trihydroxybenzoyl):**
1,3,4,5-Tetra-O-galloylquinic acid
 [123166-70-1]
 $C_{35}H_{28}O_{22}$ 800.593
 Tannin constit. isol. from commercial tannic acid. Shows an inhibition to HIV reverse transcriptase and HIV cell growth. Amorph. powder + $2H_2O$. $[\alpha]_D^{20}$ -72 (c, 0.20 in Me_2CO). Log P 1.51 (calc). λ_{max} 277 (ε 34700) (MeOH) (Derep).
- 3-O-(Galloyl)galloyl: 3-O-Digalloylquinic acid. Pistafolin B**
 [264619-60-5]
 $C_{21}H_{20}O_{14}$ 496.381
 Constit. of *Pistacia weinmannifolia*. Off-white powder. $[\alpha]_D^{22}$ -67.9 (c, 0.24 in MeOH). Exists as an equilibrium mixture of *m*- and *p*-isomers. λ_{max} 217 (log ε 4.53); 278 (log ε 4.11) (MeOH).
- 3-O-(Galloyl)galloyl, 4,5-bis(3,4,5-trihydroxybenzoyl): 3-Digalloyl-4,5-di-O-galloylquinic acid**
 [123166-69-8]
 $C_{35}H_{28}O_{22}$ 800.593
 Isol. from commercial tannic acid. Inhibitory to HIV reverse transcriptase and HIV cell growth. Amorph. powder + H_2O . $[\alpha]_D^{20}$ -106 (c, 0.48 in Me_2CO). λ_{max} 277 (ε 23000) (MeOH) (Berdy).
- 5-O-(Galloyl)galloyl, 3,4-bis(3,4,5-trihydroxybenzoyl): 5-O-Digalloyl-3,4-di-O-galloylquinic acid**
 [123134-20-3]
 $C_{35}H_{28}O_{22}$ 800.593
 Constit. of commercial tannic acid. Exhibits inhibition of HIV reverse transcriptase and HIV cell growth. Amorph. powder + H_2O . $[\alpha]_D^{20}$ -92 (c, 0.60 in Me_2CO). λ_{max} 277 (ε 35000) (MeOH) (Berdy).
- 4-O-(Galloyl)galloyl, 3,5-bis(3,4,5-trihydroxybenzoyl): 4-O-Digalloyl-3,5-di-O-galloylquinic acid**
 [123134-19-0]
 $C_{35}H_{28}O_{22}$ 800.593
 Isol. from commercial tannic acid. Inhibits the activity of HIV reverse transcriptase and the growth of HIV cells. Amorph. powder + H_2O . $[\alpha]_D^{20}$ -91 (c, 0.53 in Me_2CO). λ_{max} 277 (ε 34400) (MeOH) (Berdy).
- 3-O-(Galloyl)galloyl: 3-O-Trigalloylquinic acid. Pistafolin A**
 [264619-17-2]
 $C_{28}H_{24}O_{18}$ 648.487
 Constit. of *Pistacia weinmannifolia*. Off-white powder. $[\alpha]_D^{22}$ -9.9 (c, 0.68 in MeOH). Exists as an equilibrium mixture of *m*- and *p*-isomers. λ_{max} 217 (log ε 4.79); 271 (log ε 4.43) (MeOH).
- 1-O-(3,4-Dihydroxycinnamoyl):** See 1-O-Caffeoylquinic acid in *The Combined Chemical Dictionary*.
- 3-O-(3,4-Dihydroxycinnamoyl):** See 3-O-Caffeoylquinic acid in *The Combined Chemical Dictionary*.
- 4-O-(3,4-Dihydroxycinnamoyl):** See 4-O-Caffeoylquinic acid in *The Combined Chemical Dictionary*.
- 5-O-(3,4-Dihydroxycinnamoyl):** See 5-O-Caffeoylquinic acid in *The Combined Chemical Dictionary*.
- 1,3-Bis-O-(3,4-dihydroxycinnamoyl):** See 1,5-Di-O-caffeoylquinic acid in *The Combined Chemical Dictionary*.
- 3,4-Bis-O-(3,4-dihydroxycinnamoyl):** See 3,4-Di-O-caffeoylquinic acid in *The Combined Chemical Dictionary*.
- 3,5-Bis-O-(3,4-dihydroxycinnamoyl):** See 3,5-Di-O-caffeoylquinic acid in *The Combined Chemical Dictionary*.
- 4,5-Bis-O-(3,4-dihydroxycinnamoyl):** See 4,5-Di-O-caffeoylquinic acid in *The Combined Chemical Dictionary*.
- (±)-form** [1010-25-9]
 Cryst. (EtOH). Mp 155-156° (149°).
- 1,3-Lactone:** [27783-00-2]
 Mp 200° (180-196°).
- Aldrich Library of FT-IR Spectra*, 1st edn., 1985, **1**, 525A (ir)
- Aldrich Library of 13C and 1H FT NMR Spectra*, 1992, **1**, 814C (nmr)
- v. Lippmann, E. et al., *Ber.*, 1901, **34**, 1159-1162 (isol)
- Gorter, K. et al., *Annalen*, 1908, **359**, 217-244 (isol)
- Fischer, H.O.L. et al., *Ber.*, 1932, **65**, 1009-1031 (struct)
- Grewe, R. et al., *Chem. Ber.*, 1954, **87**, 793-802 (synth)
- Haslam, E. et al., *J.C.S.*, 1963, 2173-2181 (gallates)
- Wolinsky, J. et al., *J.O.C.*, 1964, **29**, 3596-3598 (synth, bibl)
- Haslam, E. et al., *J.C.S.(C)*, 1971, 1496-1500 (pmr)
- Stagg, G.V. et al., *Phytochemistry*, 1971, **10**, 1671-1673 (Theogallin)
- Karrer, W. et al., *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 989 (occur)
- De Pooter, H. et al., *Bull. Soc. Chim. Belg.*, 1975, **84**, 835-843 (4,5-isopropylidenefactone)
- Kelley, C.J. et al., *J.O.C.*, 1976, **41**, 449-122 (cmr)
- Nishimura, H. et al., *Phytochemistry*, 1984, **23**, 2621-2623 (gallates)
- Ishimatsu, K. et al., *Phytochemistry*, 1987, **26**, 1501-1504 (gallates)
- Abell, C. et al., *Acta Cryst. C*, 1988, **44**, 1287-1290 (cryst struct, bibl, abs config)
- Nishizawa, M. et al., *J. Nat. Prod.*, 1989, **52**, 762-768 (gallates)
- Scholz-Böttcher, B.M. et al., *Annalen*, 1991, 1029-1036 (bibl, stereoisomers)
- Meier, R.M. et al., *Helv. Chim. Acta*, 1991, **74**, 807-818 (synth)
- Mahmood, N. et al., *Antiviral Chem. Chemother.*, 1993, **4**, 235-240 (3,4,5-trigalloyl, anti-HIV activity)
- Neszmelyi, A. et al., *Planta Med.*, 1993, **59**, 164 (Tetragalloylquinic acid)
- Altmann, R. et al., *Monatsh. Chem.*, 1995, **126**, 1225-1232 (synth, gallates, cd)
- Bokesh, H.R. et al., *Nat. Prod. Lett.*, 1996, **8**, 133-136 (trigalloyl Me ester)
- Bouchet, N. et al., *Phytochemistry*, 1996, **42**, 189-190 (1,5-Digalloylquinic acid)
- Manthey, M.K. et al., *J.C.S. Perkin 1*, 1997, 625-628 (lactone, synth, ir, pmr, cmr)
- Eliel, E.L. et al., *Tetrahedron: Asymmetry*, 1997, **8**, 3551-3554 (stereochem)
- Bouchet, N. et al., *Pharm. Biol.*, 1998, **36**, 63-65 (Ethyl trigalloylquininate)
- Hou, A.-J. et al., *Planta Med.*, 2000, **66**, 624-626 (Pistafolins)
- Abreu, P. et al., *Carbohydr. Res.*, 2002, **337**, 1663-1666 (lactone, isol)
- Ouattara, B. et al., *Phytochemistry*, 2004, **65**, 1145-1151 (Burkinabins)

Raffinose, 8CI

β -D-Fructofuranosyl α -D-galactopyranosyl-
(1 \rightarrow 6)- α -D-glucopyranoside, 9CI.
Melitriose. Gossypose. Melitose
[512-69-6]



$C_{18}H_{32}O_{16}$ 504.441

Occurs in sugar beet, cotton seeds, manna.
Widely distributed in plants, esp. in the
seeds. The only trisaccharide readily
accessible in bulk.

Mp 118° (anhyd.). $[\alpha]_D^{20} +123$ (c, 2 in H_2O)
(anhyd.). Sweet taste. Sweetness 0.48 \times
sucrose. Does not reduce Fehling's soln.
Invertase or raffinase gives 6-O- α -D-
Galactopyranosyl-D-glucose, G-145 and
Fructose.

► LZ5851200

Pentahydrate: [17629-30-0]
Prisms. Mp 78°.

Undeca-Ac:

$C_{40}H_{54}O_{27}$ 966.85

Mp 101°. $[\alpha]_D^{20} +100$ (c, 8 in EtOH).

Undeca-Me:

$C_{29}H_{54}O_{16}$ 658.736

Bp₂ 238-240°. $[\alpha]_D^{17} +128.4$ (c, 1 in H_2O).

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **1**, 310B (nmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985,
1, 197B (ir)

Tanret, G. et al., *Bull. Soc. Chim. Fr.*, 1895, 261

Haworth, N.W. et al., *J.C.S.*, 1923, 3125

French, D. et al., *Adv. Carbohydr. Chem.*

Biochem., 1954, **9**, 149 (rev)

Duperon, R. et al., *C. R. Hebd. Seances Acad.*
Sci., 1955, **241**, 1817 (occur)

Bourne, E.J. et al., *Biochem. J.*, 1965, **97**, 802
(biosynth)

Kamerling, J.P. et al., *Tetrahedron*, 1972, **28**,
4375 (ms)

Karrer, W. et al., *Konstitution und Vorkommen*
der Organischen Pflanzenstoffe, 2nd edn.,
Birkhäuser Verlag, Basel, 1972, no. 671
(occur)

Bock, K. et al., *Tet. Lett.*, 1973, 1037 (cmr)

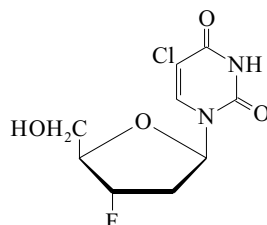
Anteunis, M. et al., *Carbohydr. Res.*, 1975, **44**,
101 (pmr)

Hough, L. et al., *Carbohydr. Res.*, 1980, **80**, 117;
123 (derivs)

Jeffrey, G.A. et al., *Carbohydr. Res.*, 1990, **206**,
173 (cryst struct)

R-1**Raluridine, USAN**

5-Chloro-2',3'-dideoxy-3'-fluorouridine,
9CI. 935U83
[119644-22-3]



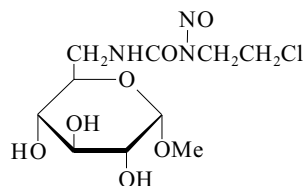
$C_9H_{10}ClFN_2O_4$ 264.64

Selective inhibitor of HIV-1 and HIV-2
replication. Cryst. (Me_2CO /hexane).
Mp 181° dec.

Van Aerschot, A. et al., *J. Med. Chem.*, 1989,
32, 1743; 1990, **33**, 1833 (synth, uv, ms, pmr,
cmr, cryst struct)

Ranimustine, INN, JAN**R-3**

Methyl 6-[[[(2-chloroethyl)nitrosoami-
no]carbonyl]amino]-6-deoxy- α -D-gluco-
pyranoside, 9CI. Ranimustine. Cymerin.
Tymerin. MCNU. NSC 270516
[58994-96-0]



$C_{10}H_{18}ClN_3O_7$ 327.721

Antineoplastic agent. Launched 1987. Pale
yellow needles. Mp 111-112° dec. $[\alpha]_D^{20}$
+93.2 (c, 0.5 in MeOH). Log P -1.59
(calc).

► LD₅₀ (rat, orl) 46.4 mg/kg. LD₅₀ (rat, ipr)
37 mg/kg. Exp. reprod. and mutagenic
effects. LZ5910000

Ger. Pat., 1978, 2 805 185, (Tokyo Tanabe); CA,
90, 6664 (synth)

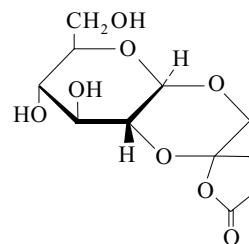
Sekido, S. et al., *Cancer Treat. Rep.*, 1979, **63**,
961 (pharmacol)

Fujimoto, S. et al., *Gann*, 1984, **75**, 937
(pharmacol, tox)

Martindale, *The Extra Pharmacopoeia*, 30th
edn., Pharmaceutical Press, 1993, 499

R-2**Ranuncoside****R-4**

Hexahydro-7,8-dihydroxy-6-(hydroxy-
methyl)spiro[furan-2(5H),2'(3'H)-
[6H]pyrano[2,3-b][1,4]dioxin]-5-one,
9CI. 1,2-O-[2-(S)-2-(2-Oxotetrahydro-5-
furylidene)]ethylene- β -D-glucopyranose
[35879-55-1]



$C_{11}H_{16}O_8$ 276.243

Constit. of *Ranunculus repens* and
Helleborus foetidus. Needles (EtOH aq.).
Mp 206-208°. $[\alpha]_D^{20} +40.2$ (c, 0.5 in EtOH
aq.).

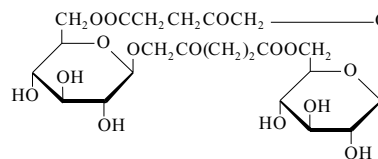
Tri-Ac: Mp 175-176°. $[\alpha]_D^{20} +30$ (c, 1.0 in
 $CHCl_3$).

Tschesche, R. et al., *Chem. Ber.*, 1972, **105**, 290
(isol, pmr, ms)

Mariezcurrena, R.A. et al., *Acta Cryst. B*, 1973,
29, 1030 (struct)

Ranunculoside, 9CI**R-5**

[35879-56-2]



$C_{22}H_{32}O_{16}$ 552.485

Extracted from *Ranunculus repens* and
Helleborus foetidus.

Mp 153-154°. $[\alpha]_D^{20} -4$ (c, 1.0 in MeOH).

Hexa-Ac: Mp 233-234°. $[\alpha]_D^{20} -3$ (c, 0.94 in
 $CHCl_3$).

Tschesche, R. et al., *Chem. Ber.*, 1972, **105**, 290
(synth, pmr)

Reviparin, BAN, INN**R-6**

Clivarin. LU 47311

Low MW heparin, Av. MW 3500-4500.

Obt. and marketed as Na salt. Obt.
from HNO_2 degradn. of heparin from
porcine intestinal mucosa. Anticoagu-
lant, used to prevent deep vein throm-
bosis. Launched 1993 (Germany)

Hoppensteadt, D. et al., *Blood Coagulation*
Fibrinolysis, 1993, **4**, S11 (pharmacol, rev)

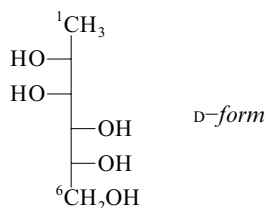
Martindale, *The Extra Pharmacopoeia*, 30th
edn., Pharmaceutical Press, 1993, 232

Baumelou, A. et al., *Nephron*, 1994, **68**, 202
(pharmacokinetic)

Wellington, K. et al., *Drugs*, 2001, **61**, 1185-
1209 (rev)

Rhamnitol**R-7**

1-Deoxymannitol, 9CI, 8CI. 6-Deoxymannitol. Mannomethylitol [1114-16-5]



$C_6H_{14}O_5$ 166.174

Care needed with numbering. Isol. from the hydrosylates of Levan, L-34.

D-form

Prisms (EtOH). Mp 123-124°. $[\alpha]_D^{20}$ -12 (c, 1.0 in H_2O).

L-form [488-28-8]

Mp 123-124°. $[\alpha]_D^{20}$ +12 (H_2O).

4,5-O-Isopropylidene: 4,5-O-Isopropylidene-L-rhamnitol
 $C_9H_{18}O_5$ 206.238
 Characterised spectroscopically.

3,4-O-Isopropylidene: 3,4-O-Isopropylidene-L-rhamnitol
 $C_9H_{18}O_5$ 206.238
 Cryst. (C_6H_6). Mp 79-80°. $[\alpha]_D$ -24 (c, 2.2 in H_2O).

3,4:5,6-Di-O-isopropylidene: 3,4:5,6-Di-O-isopropylidene-L-rhamnitol
 $C_{12}H_{22}O_5$ 246.303
 Cryst. (C_6H_6). Mp 64-66°. $[\alpha]_D$ -16 (c, 1.5 in MeOH).

3,4:5,6-Di-O-isopropylidene, 2-tosyl: 3,4:5,6-Di-O-isopropylidene-2-O-tosyl-L-rhamnitol
 $C_{19}H_{28}O_7S$ 400.492
 Mp 83-84°. $[\alpha]_D$ -13 (c, 2.0 in $CHCl_3$).

2,5:4,6-Di-O-methylene, 3-tosyl: 2,5:4,6-Di-O-methylene-3-O-tosyl-L-rhamnitol
 $C_{15}H_{20}O_7S$ 344.385
 Mp 117-118°. $[\alpha]_D$ +49.3 (c, 1.2 in $CHCl_3$).

2,5-Di-Me: 2,5-Di-O-methyl-L-rhamnitol
 $C_8H_{18}O_5$ 194.227
 Mp 71-73°. $[\alpha]_D$ +27 (c, 2.0 in H_2O).

6-Benzyl, 4,5-isopropylidene: 6-O-Benzyl-4,5-O-isopropylidene-L-rhamnitol
 $C_{16}H_{24}O_5$ 296.363
 Hemihydrate. $[\alpha]_D^{26}$ -18 (c, 1.34 in $CHCl_3$).

DL-form

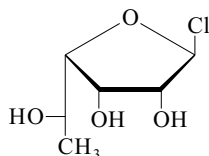
Mp 112-113°.

Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 162; 167 (D-form, L-form)
 Haskins, W.T. et al., *J.A.C.S.*, 1946, **68**, 628 (D-form, DL-form)
 Foster, A.B. et al., *J.C.S.*, 1961, 4649 (L-di-Me)
 Ferreira, M.A. et al., *Garcia de Orla*, 1963, **11**, 97; *CA*, **62**, 9458b (occur)
 Bukhari, M.A. et al., *J.C.S.*, 1963, 2287 (L-isopropylidene, L-diisopropylidene)
 Grindley, T.B. et al., *Can. J. Chem.*, 1974, **52**, 4062 (L-di-methylene tosyl)
 Defaye, J. et al., *Carbohydr. Res.*, 1990, **205**, 191 (synth, D-form)

Munier, P. et al., *Tetrahedron*, 1995, **51**, 1229 (L-2,3-isopropylidene, L-1-benzyl-2,3-isopropylidene)

Rhamnofuranosyl chloride**R-8**

6-Deoxymannofuranosyl chloride, 9CI



$C_6H_{11}ClO_4$ 182.603

 α -L-form

2,3-O-Isopropylidene, 5-tosyl: 2,3-O-Isopropylidene-5-O-tosyl- α -L-rhamnofuranosyl chloride. 6-Deoxy-2,3-O-isopropylidene-5-O-tosyl- α -L-mannofuranosyl chloride
 [32658-92-7]
 $C_{16}H_{21}ClO_6S$ 376.857
 Syrup. Unstable at ambient temp.

Lerner, L.M. et al., *J.O.C.*, 1972, **37**, 477 (isopropylidene deriv, pmr)

Rhamnogalacturonan I**R-9**

Polysaccharide consisting of (\rightarrow 4)- α -D-GalpA-(1 \rightarrow 2)- α -L-Rhap-(1 \rightarrow) backbone with arabinan and oligogalactosyl side-groups attached at O-4 of the Rha residues. Interspecies variation is prob. due to side-chain variation. Isol. from xylem-differentiating zones of *Cryptomeria japonica* and from sycamore (*Acer pseudoplatanus*). Major pectic polysaccharide component of cell walls of dicots and nongraminaceous monocots.

[39280-21-2]

Lau, J.M. et al., *Carbohydr. Res.*, 1985, **137**, 111-125 (struct)

O'Neill, M. et al., *Methods Plant Biochem.*, 1990, **2**, 415-441 (rev)

Lerouge, P. et al., *Carbohydr. Res.*, 1993, **243**, 359-371 (struct)

An, J. et al., *Carbohydr. Res.*, 1994, **252**, 235-243 (struct)

Edashige, Y. et al., *Carbohydr. Res.*, 1997, **304**, 357-365 (isol, bibl)

Rhamnogalacturonan II**R-10**

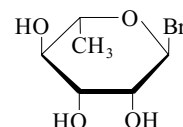
Small complex polysaccharide containing apiose, 2-O-methyl-L-fucose, 2-O-methyl-D-xylose, aceric acid, Penta-Ac, 3-deoxy-D-lyxo-heptulosaric acid and other sugars depending on source. Obt. by the action of liquefying enzymes on apple, tomato and carrot juice pectin. The main nondegraded soluble polysaccharide component of the juice. Also present in various other plant products, e.g. leaves of *Panax ginseng* (ginseng).

Doco, T. et al., *Carbohydr. Res.*, 1997, **297**, 181-186 (isol, bibl)

Shin, K.S. et al., *Carbohydr. Res.*, 1997, **300**, 239-249 (isol, struct)

Vidal, S. et al., *Carbohydr. Res.*, 2000, **326**, 277-294 (struct)

Rodriguez-Carvajal, M.A. et al., *Carbohydr. Res.*, 2003, **338**, 651-671 (struct)

Rhamnopyranosyl bromide**R-11**

$C_6H_{11}BrO_4$ 227.054

 α -L-form

Tri-Ac: Tri-O-acetyl- α -L-rhamnopyranosyl bromide. Acetobromorhamnose
 [5158-64-5]
 $C_{12}H_{17}BrO_7$ 353.166

Mp 64-65°. $[\alpha]_D^{20}$ -170 (c, 1.2 in $CHCl_3$).

Tribenzoyl: [53297-33-9]

$C_{27}H_{23}BrO_7$ 539.378

Mp 163-164°. $[\alpha]_D^{20}$ +64.4 (c, 1.44 in $CHCl_3$).

4-Ac, 2,3-carbonate: 4-O-Acetyl-2,3-O-carbonyl- α -L-rhamnopyranosyl bromide
 [74517-02-5]
 $[\alpha]_D$ -117.5 (c, 1.48 in $CHCl_3$).

Tribenzyl: [59055-61-7]

$C_{27}H_{29}BrO_4$ 497.428

$[\alpha]_D^{20}$ -119 (c, 1.7 in CH_2Cl_2).

Haynes, L.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1955, **10**, 207 (rev)

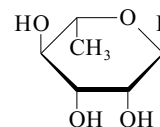
Fréchet, J.M. et al., *Carbohydr. Res.*, 1975, **42**, 369 (benzyl)

Boivin, J. et al., *Carbohydr. Res.*, 1980, **79**, 193 (benzyl)

Backinowsky, L.V. et al., *Carbohydr. Res.*, 1980, **84**, 225 (carbonate)

Rhamnopyranosyl fluoride**R-12**

6-Deoxymannopyranosyl fluoride



$C_6H_{11}FO_4$ 166.149

 α -L-form

Tri-Ac: 2,3,4-Tri-O-acetyl- α -L-rhamnopyranosyl fluoride
 $C_{12}H_{17}FO_7$ 292.261
 Syrup. $[\alpha]_D^{20}$ -30 (c, 0.5 in $CHCl_3$).

Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -L-rhamnopyranosyl fluoride
 [10512-71-7]

$C_{27}H_{23}FO_7$ 478.473

Cryst. (MeOH). Mp 103-105°. $[\alpha]_D^{24}$ +231 (c, 0.8 in $CHCl_3$).

Lundt, I. et al., *Mikrochim. Acta*, 1966, 126 (tribenzoyl)

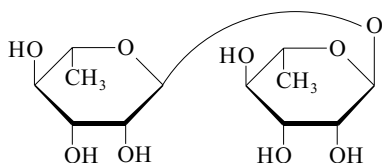
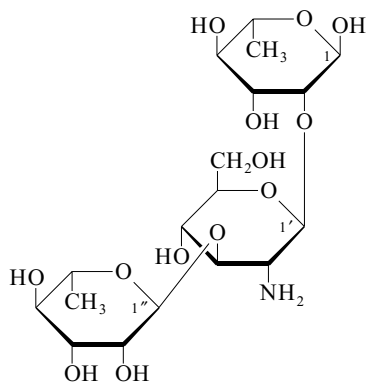
Hall, L.D. et al., *Can. J. Chem.*, 1969, **47**, 1 (pmr, F-19 nmr)

Nishiyama, K. et al., *Biosci., Biotechnol., Biochem.*, 1993, **57**, 107 (α -L-tri-Ac)

Miethchen, R. et al., *Synthesis*, 1997, 159 (α -L-tri-Ac)

α -L-Rhamnopyranosyl α -L-rhamnopyranoside

[49815-06-7]

 $C_{12}H_{22}O_9$ 310.3Non-reducing disaccharide. Cryst. + $2H_2O$ (H_2O). Mp 152° . $[\alpha]_D^{20}$ -97.7 (c, 0.98 in H_2O).Birkofer, L. *et al.*, *Annalen*, 1973, 731 (*synth*) **α -L-Rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose**6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, 9CI $C_{18}H_{33}NO_{13}$ 471.458Constit. of the tetrasaccharide repeating unit of the *Shigella flexneri* lipopolysaccharide. **α -Pyranose-form**

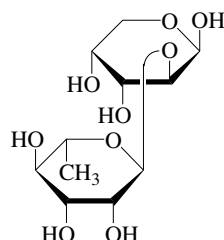
8-Methoxycarbonyloctyl glycoside, N-Ac: [73164-19-9]

 $C_{30}H_{53}NO_{16}$ 683.746Syrup. $[\alpha]_D^{21}$ -46.4 (c, 1.1 in H_2O).

8-Methoxycarbonyloctyl glycoside, 4',6'-O-benzylidene, 3,4-dibenzyl, 2'N,2'',3'',4''-tetra-Ac: [73164-18-8]

 $C_{57}H_{75}NO_{19}$ 1078.215Syrup. $[\alpha]_D^{21}$ -34.3 (c, 1.2 in $CHCl_3$).Bundle, D.R. *et al.*, *J.C.S. Perkin 1*, 1979, 2736 (α -methoxycarbonyloctyl pyr derivs, pmr, conformn)

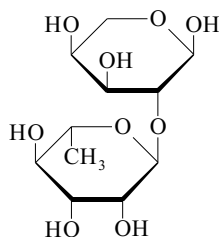
R-13

2-O- α -L-Rhamnopyranosyl-D-arabinose2-O-(6-Deoxy- α -L-mannopyranosyl)-D-arabinose, 9CI [68044-26-8] β -Pyranose-form $C_{11}H_{20}O_9$ 296.274

V. hygroscopic.

 β -Pyranose-formBenzyl glycoside: Benzyl 2-O- α -L-rhamnopyranosyl- β -D-arabinopyranoside $C_{18}H_{26}O_9$ 386.398Cryst. (EtOH). Mp 203° . $[\alpha]_D^{20}$ -188 (c, 1.4 in H_2O).Sarfati, R.S. *et al.*, *Carbohydr. Res.*, 1978, **65**, 11 (*synth*)**2-O- α -L-Rhamnopyranosyl-L-arabinose**

[78229-00-2]

 α -Pyranose-form $C_{11}H_{20}O_9$ 296.274

Occurs as the sugar component of terpenoid glycosides. Cryst. (MeOH).

Mp $141-145^\circ$. $[\alpha]_D$ +12 (c, 0.31 in H_2O). **α -Pyranose-form** [86049-19-6]

Hexa-Ac: [92122-99-1]

 $C_{23}H_{32}O_{15}$ 548.497Prisms (Et₂O/petrol). Mp 155° . $[\alpha]_D^{20}$ -53.3 (c, 1.0 in $CHCl_3$).Me glycoside: Methyl 2-O- α -L-rhamnopyranosyl- α -L-arabinopyranoside [89734-29-2] $C_{12}H_{22}O_9$ 310.3Syrup (monohydrate). $[\alpha]_D^{20}$ -46 (c, 1.0 in EtOH).Me glycoside, penta-Ac: Methyl 3,4-di-O-acetyl-2-O-(2,3,4-tri-O-acetyl- α -L-rhamnopyranosyl)- α -L-arabinopyranoside $C_{22}H_{32}O_{14}$ 520.486Needles (EtOH aq.). Mp $170-172^\circ$. $[\alpha]_D^{20}$ 0 (c, 1.0 in $CHCl_3$).

R-15

tert-Butyl glycoside: tert-Butyl 2-O- α -L-rhamnopyranosyl- α -L-arabinopyranoside [101305-02-6]
 $C_{15}H_{28}O_9$ 352.381
Syrup. $[\alpha]_D^{15}$ -21.1 (c, 2.15 in Py). **β -Pyranose-form** [86049-26-5]

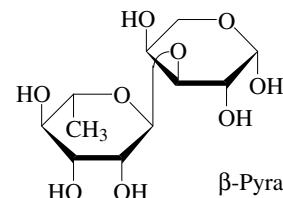
Hexa-Ac: [92123-00-7]

 $C_{23}H_{32}O_{15}$ 548.497Needles (Et₂O/petrol). Mp $114-115^\circ$. $[\alpha]_D^{20}$ +65.5 (c, 1.0 in $CHCl_3$).Benzyl glycoside: Benzyl 2-O- α -L-rhamnopyranosyl- β -L-arabinopyranoside [86049-18-5] $C_{18}H_{26}O_9$ 386.398Cryst. (EtOAc/EtOH). Mp $216-220^\circ$. $[\alpha]_D$ +100 (c, 0.65 in H_2O).Me glycoside: Methyl 2-O- α -L-rhamnopyranosyl- β -L-arabinopyranoside [89734-33-8] $C_{12}H_{22}O_9$ 310.3Needles (EtOH). Mp $184-186^\circ$. $[\alpha]_D^{20}$ +95.7 (c, 0.67 in H_2O).Kizu, H. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 2388 (*occur*)Liptak, A. *et al.*, *Tetrahedron*, 1982, **38**, 3489 (*synth*)Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1984, **48**, 1353; 1985, **49**, 55; 1986, **51**, 2207 (*Me gly, benzyl gly*)Mizutani, K. *et al.*, *Carbohydr. Res.*, 1984, **126**, 77 (*Me gly, synth, pmr*)Mizutani, K. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 2266 (*tert-Butyl gly*)Fujioka, T. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 2355 (*occur*)

R-16

3-O- α -L-Rhamnopyranosyl-L-arabinose

R-17

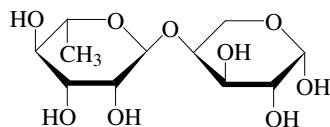
 β -Pyranose-form $C_{11}H_{20}O_9$ 296.274 **β -Pyranose-form**Benzyl glycoside: Benzyl 3-O- α -L-rhamnopyranosyl- β -L-arabinopyranoside. Benzyl 3-O-(6-deoxy- α -L-mannopyranosyl)- β -L-arabinopyranoside [108586-42-1] $C_{18}H_{26}O_9$ 386.398Plates (EtOH). Mp 220° . $[\alpha]_D^{20}$ +78

(c, 1.0 in 50% EtOH aq.).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 2147

4-O- α -L-Rhamnopyranosyl-L-arabinose

R-18

 α -Pyranose-form β -Pyranose-form $C_{11}H_{20}O_9$ 296.274 **β -Pyranose-form**

Me glycoside: Methyl 4-O- α -L-rhamnopyranosyl- β -L-arabinopyranoside [96048-25-8]

 $C_{12}H_{22}O_9$ 310.3

Amorph. powder. Mp 200-203°. $[\alpha]_D^{20}$ +120 (c, 0.4 in H_2O).

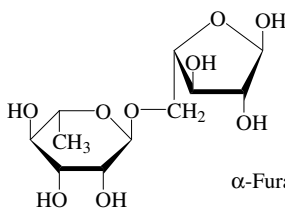
Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl- α -L-rhamnopyranosyl)- β -L-arabinopyranoside $C_{22}H_{32}O_{14}$ 520.486

Needles (EtOH). Mp 98°. $[\alpha]_D^{20}$ +96.6 (c, 0.6 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 55

5-O- α -L-Rhamnopyranosyl-L-arabinose

R-19

 α -Furanose-form $C_{11}H_{20}O_9$ 296.274 **α -Furanose-form**

Me glycoside: Methyl 5-O- α -L-rhamnopyranosyl- α -L-arabinofuranoside [108586-43-2]

 $C_{12}H_{22}O_9$ 310.3

$[\alpha]_D^{20}$ -103 (c, 1.0 in H_2O).

Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-5-O-(2,3,4-tri-O-acetyl- α -L-arabinofuranosyl)- α -L-arabinofuranoside [108586-52-3]

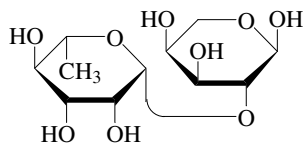
 $C_{22}H_{32}O_{14}$ 520.486

$[\alpha]_D^{15}$ -75 (c, 1.0 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 2147

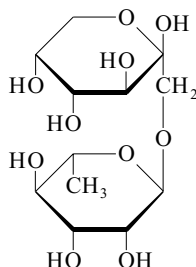
2-O- β -L-Rhamnopyranosyl-L-arabinose

R-20

 α -Pyranose-form $C_{11}H_{20}O_9$ 296.274**1-O- α -L-Rhamnopyranosyl-D-fructose**

R-21

[17074-01-0]

 $C_{12}H_{22}O_{10}$ 326.3

Amorph. solid. $[\alpha]_D$ -4.85 (c, 0.58 in H_2O).

 β -Pyranose-form

2,3:4,5-Di-O-isopropylidene, 2',3',4'-tri-benzoyl: [17073-39-1]

 $C_{39}H_{42}O_{13}$ 718.753

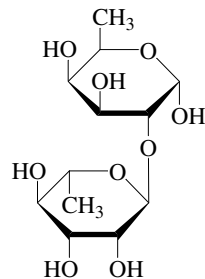
Cryst. (EtOH). Mp 190-191.5°. $[\alpha]_D$ +100 (c, 5 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 267 (synth)

2-O- α -L-Rhamnopyranosyl-D-fucose

R-22

2-O-(6-Deoxy- α -L-mannopyranosyl)-6-deoxy-D-galactose, 9CI. 6-Deoxy-2-O-(6-deoxy- α -L-mannopyranosyl)-D-galactose [50489-31-1]

 α -Pyranose-form $C_{12}H_{22}O_9$ 310.3

Reducing disaccharide. Needles (Me_2CO), cryst. + $\frac{1}{2}H_2O$. Mp 145°. $[\alpha]_D^{20}$ +25.8 \rightarrow -4.5 (24h) (c, 0.66 in H_2O).

 α -Pyranose-form

Hexa-Ac: [96048-35-0]

 $C_{24}H_{34}O_{15}$ 562.524

Pillars (EtOH). Mp 145°. $[\alpha]_D^{15}$ +43.3 (c, 3.1 in $CHCl_3$).

 β -Pyranose-form

Me glycoside:

 $C_{13}H_{24}O_9$ 324.327

Prisms (Me_2CO). Mp 90° (sinters at 79°). $[\alpha]_D^{15}$ -65.6 (c, 4.8 in H_2O).

Me glycoside, penta-Ac: [96048-32-7]

 $C_{23}H_{34}O_{14}$ 534.513

Needles (EtOH). Mp 125°. $[\alpha]_D^{15}$ -19 (c, 1 in $CHCl_3$).

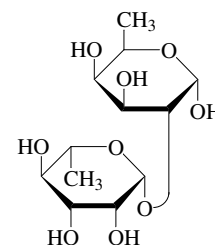
Tsukitani, Y. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 791

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 55 (synth)

2-O- β -L-Rhamnopyranosyl-D-fucose

R-23

2-O-(6-Deoxy- β -L-galactopyranosyl)-6-deoxy-D-mannose. 6-Deoxy-2-O-(6-deoxy- α -L-galactopyranosyl)-D-mannose

 β -Pyranose-form $C_{12}H_{22}O_9$ 310.3 **β -Pyranose-form**

Me glycoside:

 $C_{13}H_{24}O_9$ 324.327

Needles (Me_2CO). Mp 160° (sinters at 155°). $[\alpha]_D$ +55.5 (c, 1.1 in H_2O).

Me glycoside, penta-Ac: [96048-33-8]

 $C_{23}H_{34}O_{14}$ 534.513

Syrup. $[\alpha]_D^{15}$ +50 (c, 1 in $CHCl_3$).

Me glycoside, 3,4-dibenzy, 2',3',4'-tri-Ac: $C_{33}H_{42}O_{12}$ 630.688

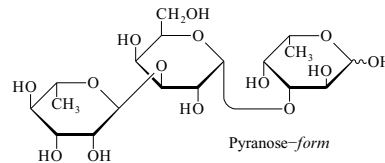
Plates. Mp 151-153°. $[\alpha]_D^{15}$ +9 (c, 1.87 in $CHCl_3$).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 55 (synth)

 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-

R-24

α -D-galactopyranosyl-(1 \rightarrow 3)-L-fucose
6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)- α -D-galactopyranosyl-(1 \rightarrow 3)-6-deoxy-L-galactose, 9CI [71144-75-7]

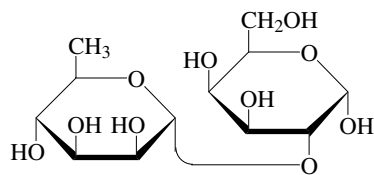


Pyranose-form

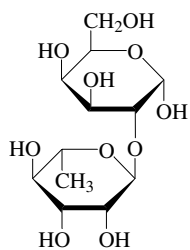
 $C_{18}H_{32}O_{14}$ 472.442

Isol. from the partial acid hydrolysate of mucilage from the edible water plant junsai (*Brasenia schreberi*). $[\alpha]_D^{25}$ +21.6 (c, 2.0 in H_2O).

Kakuta, M. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 1269 (isol)

2-O- α -D-Rhamnopyranosyl-D-galactose R-25 α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3 **α -Pyranose-form***Hepta-Ac*: [87236-43-9] $C_{26}H_{36}O_{17}$ 620.56Plates (EtOH). Mp 150°. $[\alpha]_D^{20}$ +103 (c, 2.0 in $CHCl_3$).Konishi, F. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 1629 (synth, pmr)Ray, A.K. *et al.*, *Carbohydr. Res.*, 1990, **197**, 93**2-O- α -L-Rhamnopyranosyl-D-galactose, 9CI** R-26

[96048-26-9]

 α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3Isol. from the partial acid hydrolysate of acetylated α -solanine. Constituent in the repeating unit of the O-antigen of *E. coli* serotype 069. **α -Pyranose-form***Hepta-Ac*: [35904-56-4] $C_{26}H_{36}O_{17}$ 620.56

Plates (EtOH). Mp 197-199°.

 β -Pyranose-form*Hepta-Ac*: [35904-57-5]Needles (EtOH). Mp 183-184°. $[\alpha]_D^{25}$ +2.53 (c, 1.74 in MeOH).*Me glycoside*: Methyl 2-O- α -L-rhamnopyranosyl- β -D-galactopyranoside, 9CI

[128962-66-3]

 $C_{13}H_{24}O_{10}$ 340.327 $[\alpha]_D^{24}$ -46 (c, 1.0 in MeOH).*Me glycoside*, 4,6-O-benzylidene, 3-benzyl, 2',3',4'-tri-Ac: [129031-02-3] $C_{33}H_{40}O_{13}$ 644.671Mp 98-100°. $[\alpha]_D^{24}$ -8.6 (c, 2.1 in $CHCl_3$).*Me glycoside*, 4,6-O-benzylidene, tetrabenzyl: [129031-03-4] $C_{48}H_{52}O_{10}$ 788.933Mp 149-151°. $[\alpha]_D^{25}$ -20 (c, 2.4 in $CHCl_3$).*Me glycoside*, 2',3,3',4'-tetrabenzyl:

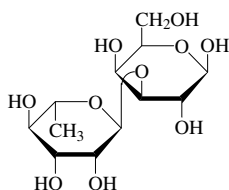
[128962-65-2]

 $C_{41}H_{48}O_{10}$ 700.824Mp 136-138°. $[\alpha]_D^{24}$ -11 (c, 1.2 in $CHCl_3$).*Me glycoside*, 2',3,3',4',6-pentabenzyl: $C_{48}H_{54}O_{10}$ 790.949Mp 142°. $[\alpha]_D^{24}$ -54 (c, 1.3 in $CHCl_3$).

[127753-85-9]

Kuhn, R. *et al.*, *Chem. Ber.*, 1955, **88**, 1492 (isol)
Erbing, C. *et al.*, *Carbohydr. Res.*, 1977, **56**, 371 (occur)Konishi, F. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 1629Ray, A.K. *et al.*, *Carbohydr. Res.*, 1990, **197**, 93 (Me gly)**3-O- α -L-Rhamnopyranosyl-D-galactose, 9CI** R-27

[55639-86-6]

 β -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3Fragment of the main chain of the O-antigenic polysaccharides of *Salmonella* serological groups A,D and B. Cryst. (MeOH).Mp 208-210°. $[\alpha]_D^{23}$ -7.6 (c, 2.23 in MeOH). $[\alpha]_D^{20}$ 0 \rightarrow +7.4 (c, 1.48 in H_2O). $[\alpha]_D^{20}$ +8.1 (H_2O).

2-Ac: [83906-22-3]

 $C_{14}H_{24}O_{11}$ 368.337Constituent of bacterial cell-wall polysaccharides. Cryst. (MeOH/EtOAc). Mp 141-143°. $[\alpha]_D$ +9 (c, 0.3 in H_2O).

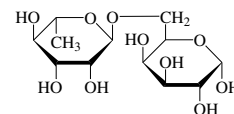
6-Ac: [83906-26-7]

 $C_{14}H_{24}O_{11}$ 368.337Constituent of bacterial cell-wall polysaccharides. Cryst. (MeOH/EtOAc). Mp 178-181°. $[\alpha]_D$ +10 (c, 0.6 in H_2O). **β -Pyranose-form** [79902-94-6]*Hepta-Ac*: [55639-94-6] $C_{26}H_{36}O_{17}$ 620.56 $[\alpha]_D^{19}$ +14.6 (c, 2.23 in $CHCl_3$).*Benzyl glycoside*, 4,6-O-benzylidene, 2-Ac: [83906-20-1] $C_{28}H_{34}O_{11}$ 546.57Cryst. (EtOH). Mp 215-218°. $[\alpha]_D$ +16 (c, 0.3 in Py).*Benzyl glycoside*, 4,6-O-benzylidene, tetrabenzyl: [83906-23-4] $C_{54}H_{56}O_{10}$ 865.03Cryst. (cyclohexane). Mp 108-110°. $[\alpha]_D$ +18 (c, 0.9 in $CHCl_3$).*Benzyl glycoside*, 2-Ac: [83906-21-2] $C_{21}H_{30}O_{11}$ 458.461Cryst. (EtOH). Mp 202-206°. $[\alpha]_D$ -48 (c, 0.5 in Py).*Benzyl glycoside*, 2,2',3',4',6-pentabenzyl: [83906-24-5] $C_{54}H_{58}O_{10}$ 867.046Amorph. $[\alpha]_D$ -26 (c, 1.0 in $CHCl_3$).*Me glycoside*: Methyl 3-O- α -L-rhamnopyranosyl- β -D-galactopyranoside, 9CI

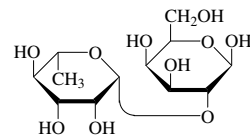
[116981-69-2]

 $C_{13}H_{24}O_{10}$ 340.327 $[\alpha]_D^{25}$ -14 (c, 1.2 in H_2O).*Me glycoside*, 4,6-O-benzylidene, 2-benzyl, 2',3',4'-tri-Ac: [131433-05-1] $C_{33}H_{40}O_{13}$ 644.671Cryst. (EtOH). Mp 152-153°. $[\alpha]_D$ -19 (c, 1.1 in $CHCl_3$).*Me glycoside*, 4,6-O-benzylidene, tetrabenzyl: $C_{48}H_{52}O_{10}$ 788.933Cryst. (EtOH). Mp 204-206°. $[\alpha]_D$ -37 (c, 0.3 in $CHCl_3$).

[76222-16-7]

Luderitz, O. *et al.*, *Angew. Chem.*, 1966, **3**, 172 (occur)Torgov, A.I. *et al.*, *Bioorg. Khim.*, 1980, **6**, 1860; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 989 (synth)Szurmai, Z. *et al.*, *Carbohydr. Res.*, 1982, **107**, 33 (derivs)Maddali, U.B. *et al.*, *Carbohydr. Res.*, 1990, **208**, 59 (Me gly)**6-O- α -L-Rhamnopyranosyl-D-galactose** R-286-O-(6-Deoxy- α -L-mannopyranosyl)-D-galactose, 9CI, 8CI. Robinobiose [17074-00-9] α -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3

Sugar present in various glycosides, esp. flavonoids.

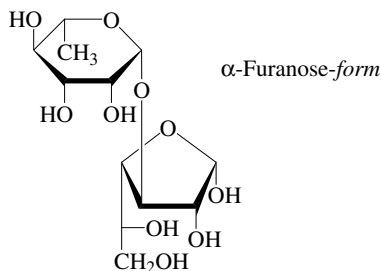
 $[\alpha]_D$ 0 \rightarrow +2.7 (H_2O).*Hepta-Ac*: $C_{26}H_{36}O_{17}$ 620.56Mp 84-85° (113°). $[\alpha]_D$ -9.9 ($CHCl_3$). $[\alpha]_D$ -19 (H_2O).1-Bromo-1-deoxy, hexa-Ac: Hexa-O-acetyl- α -robinobiosyl bromide $C_{24}H_{33}BrO_{15}$ 641.42Mp 180° dec. $[\alpha]_D^{26}$ -5.1.Zemplén, G. *et al.*, *Ber.*, 1935, **68**, 2054; 1938, **71**, 774; 2511 (isol, hepta-Ac)Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 261 (synth)Backinowsky, L.V. *et al.*, *Carbohydr. Res.*, 1980, **85**, 209 (synth)**2-O- β -L-Rhamnopyranosyl-D-galactose** R-29 β -Pyranose-form $C_{12}H_{22}O_{10}$ 326.3Constituent in the repeating unit of the O-antigen of *Salmonella* serogroups C₂ and C₃. **β -Pyranose-form***Me glycoside*: Methyl 2-O- β -L-rhamnopyranosyl- β -D-galactopyranoside, 9CI

[128962-64-1]

 $C_{13}H_{24}O_{10}$ 340.327 $[\alpha]_D^{25}$ +17 (c, 1.2 in MeOH).

Kenne, L. *et al.*, *The Polysaccharides*, Academic press, London and New York, Ed. Aspinall, G.O., 1983, **2**, 300 (*occur*)
 Ray, A.K. *et al.*, *Carbohydr. Res.*, 1990, **197**, 93

3-O- β -L-Rhamnopyranosyl-D-galactose, 9CI **R-30**
 [77777-85-6]



$C_{12}H_{22}O_{10}$ 326.3
 Cryst. (MeOH). Mp 203-204°. $[\alpha]_D^{20} +100 \rightarrow +111$ (c, 1.72 in H_2O). $[\alpha]_D^{20} +41$ (c, 0.9 in MeOH).

α -Furanose-form

1,2:5,6-Di-O-isopropylidene, 2',3',4'-tri-benzyl:
 $C_{39}H_{48}O_{10}$ 676.802
 Syrup. $[\alpha]_D^{20} +15.1$ (c, 0.5 in CH_2Cl_2).

β -Pyranose-form [79902-95-7]

Me glycoside: Methyl 3-O- β -L-rhamnopyranosyl- β -D-galactopyranoside
 [116981-68-1]
 $C_{13}H_{24}O_{10}$ 340.327
 $[\alpha]_D^{25} -1.1$ (c, 1.1 in H_2O).

Me glycoside, 4,6-O-benzylidene, tetrabenzyl:
 $C_{48}H_{52}O_{10}$ 788.933
 Mp 204-206°. $[\alpha]_D -37$ (c, 0.3 in $CHCl_3$).

Benzyl glycoside, 4,6-O-benzylidene, tetra-Ac:
 $C_{34}H_{40}O_{14}$ 672.682
 Mp 268-270°. $[\alpha]_D +38$ (c, 0.8 in $CHCl_3$).

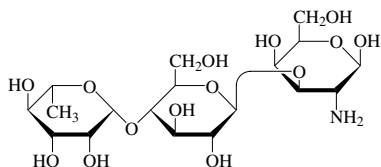
Benzyl glycoside, 4,6-O-benzylidene, 2-benzoyl:
 $C_{33}H_{36}O_{11}$ 608.641
 Mp 220-222°. $[\alpha]_D +42$ (c, 0.9 in $CHCl_3$).

Torgov, V.I. *et al.*, *Bioorg. Khim.*, 1980, **6**, 1860;
Sov. J. Bioorg. Chem. (Engl. Transl.), 1989 (synth)

Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 3233
 Szurmai, Z. *et al.*, *Carbohydr. Res.*, 1982, **107**, 33; 1990, **200**, 201

Maddali, U.B. *et al.*, *Carbohydr. Res.*, 1990, **208**, 59 (*Me gly*)

β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose **R-31**

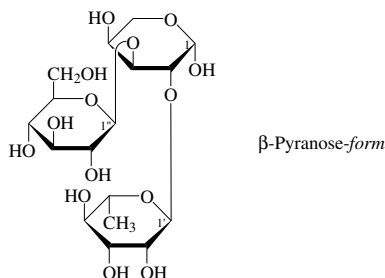


$C_{18}H_{33}NO_{14}$ 487.457

β -Pyranose-form

N-Ac: [143918-38-1]
 $C_{20}H_{35}NO_{15}$ 529.494
 Constit. of the capsular polysaccharide of *Streptococcus pneumoniae* type 7F.
 Van Steijn, A.M.P. *et al.*, *J. Coord. Chem.*, 1992, **11**, 665 (*synth, cmr, pmr*)

α -L-Rhamnopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)]-L-arabinose **R-32**
6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)]-L-arabinose, 9CI
 [86049-17-4]



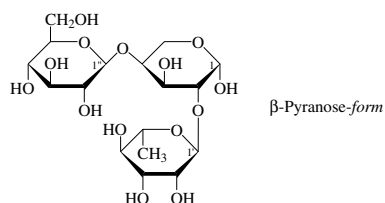
$C_{17}H_{30}O_{14}$ 458.416
 Amorph. $[\alpha]_D 0$ (c, 0.74 in H_2O).

β -Pyranose-form [86117-16-0]

Benzyl glycoside, 2',3',4,4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac: [86049-15-2]
 $C_{60}H_{68}O_{18}$ 1077.186
 Syrup. $[\alpha]_D +45$ (c, 0.36 in $CHCl_3$).
 [86049-29-8, 86117-17-1]

Liptak, A. *et al.*, *Tetrahedron*, 1982, **38**, 3489
 (*synth, β -benzyl pyr tetra-Ac deriv, pmr, cmr*)

α -L-Rhamnopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose **R-33**
6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose, 9CI
 [86049-16-3]



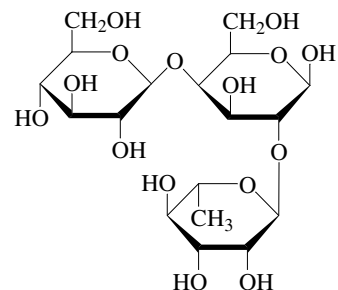
$C_{17}H_{30}O_{14}$ 458.416
 Constit. of Hederacolchiside E (triterpenoid oligosaccharide), isol. from the leaves of *Hedera colchica* (colchis ivy). Amorph. $[\alpha]_D +19$ (c, 0.48 in H_2O).

β -Pyranose-form

Benzyl glycoside, 2',3,3',4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac: [86049-14-1]
 $C_{60}H_{68}O_{18}$ 1077.186
 Syrup. $[\alpha]_D +42$ (c, 0.79 in $CHCl_3$).
 [86117-15-9]

Dekanosidze, G.E. *et al.*, *Khim. Prir. Soedin.*, 1970, **6**, 484; *Chem. Nat. Compd. (Engl. Transl.)*, 1970, **6**, 502 (*isol*)
 Liptak, A. *et al.*, *Tetrahedron*, 1982, **38**, 3489
 (*β -benzyl pyr tetra-Ac deriv, pmr, cmr*)

α -L-Rhamnopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose **R-34**

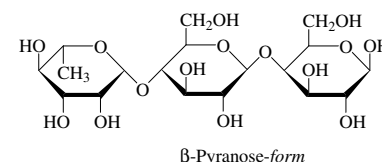


$C_{18}H_{32}O_{15}$ 488.442
 Repeating unit of the capsular polysaccharide from *Streptococcus pneumoniae* type 23.

β -Pyranose-form

Me glycoside:
 $C_{19}H_{34}O_{15}$ 502.469
 $[\alpha]_D^{24} -42$ (c, 1.2 in H_2O).
Me glycoside, 2'',3'',4'',6''-tetra-Ac, penta-benzyl:
 $C_{62}H_{72}O_{19}$ 1121.239
 Mp 163°. $[\alpha]_D^{24} -38$ (c, 1.1 in $CHCl_3$).
 Jones, C. *et al.*, *Carbohydr. Res.*, 1985, **139**, 75 (*pmr, struct*)
 Van Steijn, A.M.P. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1989, **108**, 374
 Ray, A.K. *et al.*, *Carbohydr. Res.*, 1990, **197**, 73

β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose **R-35**



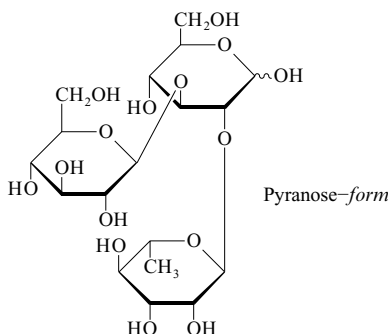
$C_{18}H_{32}O_{15}$ 488.442
 Constit. of the capsular polysaccharide of *Streptococcus pneumoniae* type 23F.

β -Pyranose-form

3-Aminopropyl glycoside: $[\alpha]_D +15$ (c, 0.2 in H_2O).
 Van Steijn, A.M.P. *et al.*, *J. Carbohydr. Chem.*, 1992, **11**, 665 (*synth, cmr, pmr*)

**α -L-Rhamnopyranosyl-(1 \rightarrow 2)-
[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-glucose**
2-O- α -L-Rhamnopyranosyllaminaribiose
[28140-20-7]

R-36



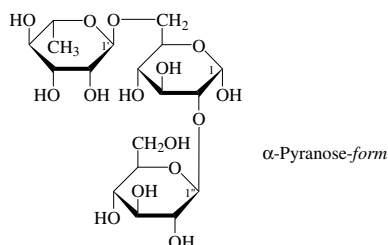
$C_{18}H_{32}O_{15}$ 488.442
Isol. from a polysaccharide of Poplar and from Dode pollen (*Populus yunnanensis*).
Mp 169-170° dec. (softens at 125°). $[\alpha]_D^{20}$ -13.7 (15 min.) \rightarrow +8.2 (24h) (c, 2.08 in H_2O).

Sosa, F. et al., *Bull. Soc. Chim. Belg.*, 1969, **51**, 625

Sosa, F. et al., *Phytochemistry*, 1970, **9**, 441 (isol)

 **α -L-Rhamnopyranosyl-(1 \rightarrow 6)-
[β -D-glucopyranosyl-(1 \rightarrow 2)]-D-glucose**
6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 6)-
[β -D-glucopyranosyl-(1 \rightarrow 2)]-D-glucose,
9CI

R-37



$C_{18}H_{32}O_{15}$ 488.442
Isol. from fruits and flowers of certain *Begonia*, *Clivia*, *Rubus*, *Prunus* and *Ribis* spp.

 α -Pyranose-form

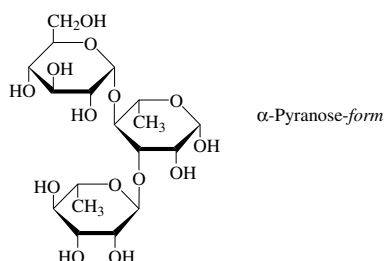
Me glycoside: [130542-01-7]
 $C_{19}H_{34}O_{15}$ 502.469
Amorph. powder. $[\alpha]_D^{21}$ +13.1 (c, 3.0 in MeOH).

Me glycoside, *nona-Ac*: [130542-03-9]
 $C_{37}H_{52}O_{24}$ 880.803
Cryst. (EtOH). Mp 167-169°. $[\alpha]_D^{21}$ +11 (c, 1.1 in $CHCl_3$).

Hausmann, C.F. et al., *Carbohydr. Res.*, 1990, **204**, 221 (occur, α -Me pyr derivs, pmr)

 **α -L-Rhamnopyranosyl-(1 \rightarrow 3)-
[α -D-glucopyranosyl(1 \rightarrow 4)]-L-rhamnose**

R-38



$C_{18}H_{32}O_{14}$ 472.442
Component of *Shigella flexneri* serotype 2a O-antigen.

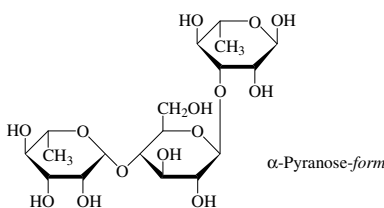
 α -Pyranose-form

Me glycoside:
 $C_{19}H_{34}O_{14}$ 486.469
Powder + $1H_2O$. $[\alpha]_D$ +5 (c, 1.0 in MeOH).

Mulard, L.A. et al., *J. Carbohydr. Chem.*, 2000, **19**, 849-877

 **β -L-Rhamnopyranosyl-(1 \rightarrow 4)-
 β -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose**

R-39



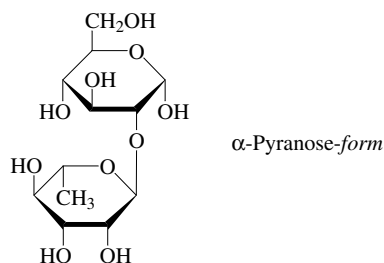
$C_{18}H_{32}O_{14}$ 472.442
Constit. of the capsular polysaccharide of *Streptococcus pneumoniae* type 2.

 α -Pyranose-form

3-Aminopropyl glycoside:
Powder. $[\alpha]_D$ -12 (c, 0.6 in H_2O).
Van Steijn, A.M.P. et al., *J. Carbohydr. Chem.*, 1992, **11**, 665 (synth, cmr, pmr)

2-O- α -L-Rhamnopyranosyl-D-glucose
2-O-(6-Deoxy- α -L-mannopyranosyl)-D-glucose, 9CI. *Neohesperidose*. *Sophorabiose*
[17074-02-1]

R-40



$C_{12}H_{22}O_{10}$ 326.3

Occurs in plants as disaccharide component of and many other glycosides. Prisms + $1H_2O$ (EtOH aq.).
Mp 191-192°. $[\alpha]_D^{22}$ -53.3 (7 min) \rightarrow -3.9 (c, 3.0 in H_2O).

 β -Pyranose-form

Hepta-Ac: [19949-47-4]
 $C_{26}H_{36}O_{17}$ 620.56
Needles (EtOH aq.). Mp 152-153°. $[\alpha]_D^{25}$ +3.4 (c, 4.2 in Me_2CO).

Butyl glycoside: *Butyl neohesperidose*
 $C_{16}H_{30}O_{10}$ 382.407
Constit. of *Geranium caespitosum*.
 $[\alpha]_D$ -76 (c, 0.006 in MeOH).

Butyl glycoside, 4'-O-hexadecanoyl:
[596811-12-0]
 $C_{32}H_{60}O_{11}$ 620.819
Constit. of *Geranium caespitosum*.

Butyl glycoside, 3'-O-butanoyl, 4,4',6-tris-(2-methylpropanoyl): [596811-14-2]
 $C_{32}H_{54}O_{14}$ 662.77
Constit. of *Geranium caespitosum*. Semi-solid. $[\alpha]_D$ -43 (c, 0.012 in $CHCl_3$).

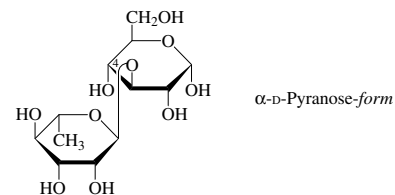
Butyl glycoside, 2'-O-butanoyl, 4,4',6-tris-(2-methylpropanoyl), 3'-Ac: [596811-15-3]
 $C_{34}H_{56}O_{15}$ 704.807
Constit. of *Geranium caespitosum*. Semi-solid. $[\alpha]_D$ -51 (c, 0.017 in $CHCl_3$).

Butyl glycoside, 6-O-hexadecanoyl, 4'-O-butanoyl: [596811-13-1]
 $C_{36}H_{66}O_{12}$ 690.91
Constit. of *Geranium caespitosum*.
Gum. $[\alpha]_D$ -54 (c, 0.016 in $CHCl_3$).

Zemplén, G. et al., *Ber.*, 1938, **71**, 2511 (isol)
Horowitz, R.M. et al., *Tetrahedron*, 1963, **19**, 773 (isol, struct)
Kamiya, S. et al., *Agric. Biol. Chem.*, 1967, **31**, 261 (synth)
Koeppen, B.H. et al., *Tet. Lett.*, 1968, 2393-2394 (cryst struct)
Koeppen, B.H. et al., *Tetrahedron*, 1968, **24**, 4963-4966 (synth)
Stermitz, F.R. et al., *Bioorg. Med. Chem. Lett.*, 2003, **13**, 1915-1918 (*Geranium* esters)

3-O- α -L-Rhamnopyranosyl-D-glucose
3-O-(6-Deoxy- α -L-mannopyranosyl)-D-glucose, 9CI. *Rungiose*
[36506-90-8]

R-41



$C_{12}H_{22}O_{10}$ 326.3
 $[\alpha]_D^{20}$ -15.1 (c, 1.25 in H_2O).

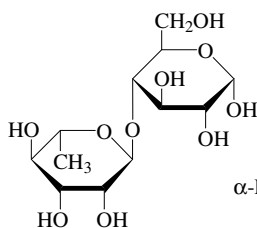
4-O-(4-Hydroxy-E-cinnamoyl): *Cistanoside I*
[104806-91-9]
 $C_{21}H_{28}O_{12}$ 472.445
Isol. from *Cistanche salsa* (crude drug *Cistanche herba*). The crude drug is a tonic in oriental medicine. Hemihydrate.
 $[\alpha]_D^{20}$ -82.2 (c, 1.5 in MeOH).

4-O-(3,4-Dihydroxy-E-cinnamoyl): Cistanoside F

[97411-47-7]

C₂₁H₂₈O₁₃ 488.444Isol. from *Cistanche salsa*. Amorph. powder. $[\alpha]_D^{25}$ -83.5 (c, 0.9 in MeOH).Birkhofer, L. *et al.*, *Annalen*, 1973, 731-739 (synth)Imperato, F. *et al.*, *J.O.C.*, 1976, **41**, 3478-3479 (synth)Kobayashi, H. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 1452-1457 (*Cistanoside F*)Karasawa, H. *et al.*, *Yakugaku Zasshi*, 1986, **106**, 562-566 (*Cistanoside I*)**4-O- α -L-Rhamnopyranosyl-D-glucose, 9CI**

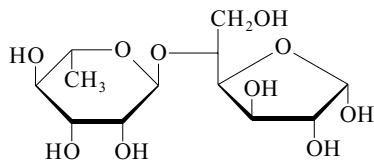
[49815-10-3]

 α -Pyranose-formC₁₂H₂₂O₁₀ 326.3Reducing disaccharide. Isol. from *Acacia senegal* gum (gum arabic). Constit. in Papyriose L-IIA (see 11-Hydroxy-3,21-dioxo-12-oleanen-28-oic acid) and other saponins. $[\alpha]_D$ -6 (c, 1 in H₂O).

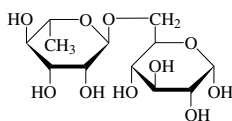
Phenylosazone: Mp 165-167°.

 α -Pyranose-form*Heptabenzoyl*: [72360-34-0]C₆₁H₅₀O₁₇ 1055.056Needles. Mp 108-110°. $[\alpha]_D^{22}$ +84 (c, 0.5 in CHCl₃).Aspinall, G.O. *et al.*, *J.C.S.*, 1963, 1696 (*isol*)Frolova, G.M. *et al.*, *CA*, 1972, **76**, 5996s (*occur*)Imperato, F. *et al.*, *Carbohydr. Res.*, 1977, **58**, 217 (*synth*)Takeda, T. *et al.*, *Carbohydr. Res.*, 1979, **76**, 101Fügedi, P. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 377-398 (*synth*, *pmr*, *cmr*)Battistelli, C.L. *et al.*, *J. Carbohydr. Chem.*, 1999, **18**, 69-86 (*Me* α -gly, *synth*)**5-O- α -L-Rhamnopyranosyl-D-glucose**

R-43

C₁₂H₂₂O₁₀ 326.3 **α -Furanose-form***1,2-O-Isopropylidene, penta-Ac*: [76951-68-3]C₂₅H₃₆O₁₅ 576.55Syrup. $[\alpha]_D$ -35.8 (c, 1.4 in CHCl₃).Backinovskii, L.V. *et al.*, *Carbohydr. Res.*, 1980, **85**, 209**6-O- α -L-Rhamnopyranosyl-D-glucose**

R-44

6-O-(6-Deoxy- α -L-mannopyranosyl)-D-glucose, 9CI, 8CI. Rutinose. Lusitanicose [90-74-4] α -Pyranose-formC₁₂H₂₂O₁₀ 326.3

Sugar moiety of many glycosides, esp. flavonoids. Hygroscopic powder.

Mp 189-192° dec. (softens at 140°). $[\alpha]_D^{10}$ +3.2 \rightarrow -0.8 (H₂O).**Pyranose-form***1-O-(4-Hydroxycinnamoyl): 1-O-p-Coumaroylrutinose*C₂₁H₂₈O₁₂ 472.445Constit. of the petals of *Lathyrus odoratus*. Anomeric form not determined. **α -Pyranose-form***Benzyl glycoside: Benzyl α -rutinose*

[88510-10-5]

C₁₉H₂₈O₁₀ 416.424Constit. of *Margyricarpus setosus*. $[\alpha]_D^{25}$ -50 (c, 1 in MeOH).*1-Chloro, hexa-Ac: Acetochlororutinose*C₂₄H₃₃ClO₁₅ 596.968Mp 149°. $[\alpha]_D$ +68.2 (c, 1 in CHCl₃).*1-Bromo, hexa-Ac: Acetobromorutinose*C₂₄H₃₃BrO₁₅ 641.42Cryst. (Et₂O). Mp 127-128°. $[\alpha]_D$ +91 (c, 0.5 in CHCl₃). **β -Pyranose-form***Hepta-Ac: Hepta-O-acetyl- β -rutinose*C₂₆H₃₆O₁₇ 620.56Cryst. (EtOH). Mp 169°. $[\alpha]_D^{19}$ -30.5 (c, 2.5 in CHCl₃).*1-O-(4-Hydroxybenzoyl): 1-O-(4-Hydroxybenzoyl)rutinose*

[166322-00-5]

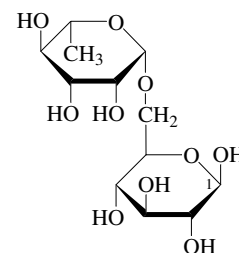
C₁₉H₂₆O₁₂ 446.407Constit. of *Ocotea vellosiana*.*1-O-(3,4-Dihydroxycinnamoyl) (E-):**1-O-Caffeoylrutinose. Swertiamacroside*

[128585-97-7]

C₂₁H₂₈O₁₃ 488.444Constit. of *Swertia macrosperma*.Zemplén, G. *et al.*, *Ber.*, 1934, **67**, 2049; 1935,**68**, 1318; 1937, **70**, 1098 (*synth*, *struct*)Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1959, **37**, 1930 (*abs config*)Harborne, J.B. *et al.*, *Biochem. J.*, 1961, **81**, 242 (*1-p-Coumaroylrutinose*)Bognar, R. *et al.*, *Carbohydr. Res.*, 1967, **5**, 241 (*synth*)Koeppen, B.H. *et al.*, *Carbohydr. Res.*, 1969, **10**, 105 (*synth*)Zhou, H.M. *et al.*, *Yaoxue Xuebao*, 1990, **25**, 123 (*Swertiamacroside*)Garcez, W.S. *et al.*, *Phytochemistry*, 1995, **39**, 815-816 (*4-hydroxybenzoate*)De Tommasi, N. *et al.*, *Phytochemistry*, 1996, **42**, 163-167 (*benzyl glycoside*)**6-O- β -L-Rhamnopyranosyl-D-glucose**

R-45

[53008-87-0]

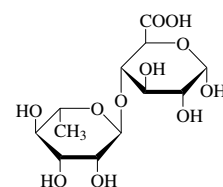
 β -Pyranose-formC₁₂H₂₂O₁₀ 326.3Reducing disaccharide. $[\alpha]_D$ +63.7 (c, 0.8 in H₂O).**Pyranose-form***Hepta-Ac*: [75828-89-6]C₂₆H₃₆O₁₇ 620.56 $[\alpha]_D$ +65 (c, 1 in CHCl₃). **β -Pyranose-form***1,2,3,4,4'-Penta-Ac, 2',3'-carbonate:*

[74526-08-2]

C₂₃H₃₀O₁₆ 562.48 $[\alpha]_D^{20}$ +26.1 (c, 1.1 in CHCl₃).Backinowsky, L.V. *et al.*, *Carbohydr. Res.*, 1980, **85**, 209; 225 (*synth*, *pmr*, *cmr*) **α -L-Rhamnopyranosyl(1 \rightarrow 4)-D-glucuronic acid**

R-46

[115175-82-1, 115175-95-6]

 α -Pyranose-formC₁₂H₂₀O₁₁ 340.283

Fragment in bacterial polysaccharides.

End group in gum arabic. Foam. $[\alpha]_D$ -18.1 (c, 0.99 in H₂O).*Me ester:*

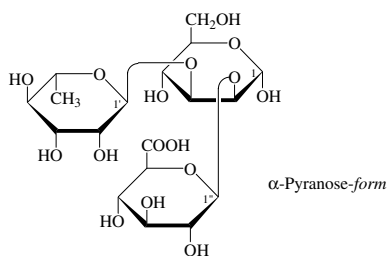
[115193-06-1, 115193-07-2]

C₁₃H₂₂O₁₁ 354.31Foam. $[\alpha]_D$ -7.4 (c, 1.48 in H₂O). **α -Pyranose-form***Me glycoside: Methyl 4-O- α -L-rhamnopyranosyl- α -D-glucopyranosiduronic acid* [221002-16-0]C₁₃H₂₂O₁₁ 354.31

Amorph. solid.

Fügedi, P. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 377-398 (*synth*, *pmr*, *cmr*, *Me ester*)Battistelli, C.L. *et al.*, *J. Carbohydr. Chem.*, 1999, **18**, 69-86 (*Me gly*, *synth*)

**α -L-Rhamnopyranosyl-(1 \rightarrow 3)-
[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-
mannose** R-47
6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-
[β -D-glucopyranuronosyl-(1 \rightarrow 2)]-D-
mannose, 9CI



$C_{18}H_{30}O_{16}$ 502.425
Constit. of the repeating units of capsular
polysaccharides from *Klebsiella* types
K-53 and K-67.

 α -Pyranose-form

Me glycoside: [129230-47-3]

$C_{19}H_{32}O_{16}$ 516.452

Syrup. $[\alpha]_D^{24}$ -11.5 (H₂O).

Me glycoside, 2',3',4,4',6-pentabenzyl,
6''-Me, 2'',3'',4''-tri-Ac: [129230-46-2]

$C_{61}H_{70}O_{19}$ 1107.213

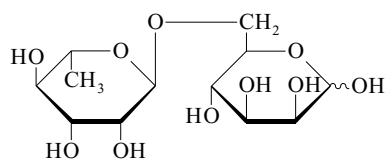
Cryst. (EtOH/EtOAc). Mp 148°. $[\alpha]_D^{24}$
-22.5 (c, 1.2 in CHCl₃).

Dutton, G.G.S. *et al.*, *Carbohydr. Res.*, 1980, **87**,
107; 1983, **119**, 157 (*occur, struct*)

Ray, A.K. *et al.*, *Indian J. Chem., Sect. B*, 1990,
29, 335 (α -Me pyr derivs, pmr)

**6-O- α -L-Rhamnopyranosyl-D-
mannose** R-48

6-O-(6-Deoxy- α -L-mannopyranosyl)-D-
mannose



$C_{12}H_{22}O_{10}$ 326.3

Reducing disaccharide. Amorph. powder.
 $[\alpha]_D^{15}$ -8.2 (c, 1 in H₂O).

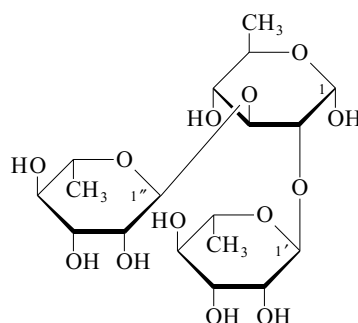
Hepta-Ac:

$C_{26}H_{36}O_{17}$ 620.56

Cryst. (EtOH). Mp 160°. $[\alpha]_D^{15}$ -5.2
(c, 3.2 in CHCl₃).

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1967, **31**,
267 (*synth*)

**α -L-Rhamnopyranosyl-(1 \rightarrow 2)-
[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-6-
deoxy-D-glucose** R-49
6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-
[6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)]-
6-deoxy-D-glucose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

Constit. of saponins in the herb *Luffa*
operculata.

 α -Pyranose-form

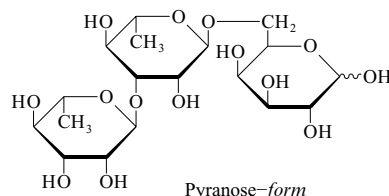
Me glycoside: [124761-27-9]

$C_{19}H_{34}O_{13}$ 470.47

Amorph. powder. $[\alpha]_D^{20}$ -6.2 (c, 1.70 in
MeOH).

Okabe, H. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**,
895 (α -Me pyr, pmr, cmr)

**α -L-Rhamnopyranosyl-(1 \rightarrow 3)-
 α -L-rhamnopyranosyl-(1 \rightarrow 6)-D-galac-
tose** R-50
[50675-72-4]



$C_{18}H_{32}O_{14}$ 472.442

Constituent of polysaccharides of *Rham-
nus rhamnus*.

Mp 140° (153-155°). $[\alpha]_D^{20}$ -43.5 (2 min)
 \rightarrow -40.6 (c, 0.4 in H₂O).

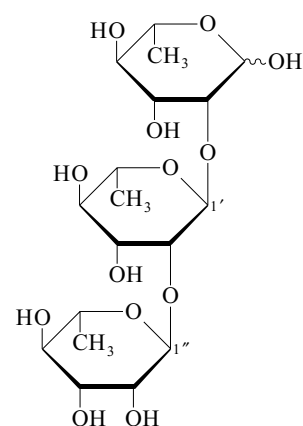
Nona-Ac:

$C_{36}H_{50}O_{23}$ 850.777

Cryst. (EtOH). Mp 215-216°. $[\alpha]_D^{20}$ -2.2
(c, 1.3 in CHCl₃).

Pratviel-Sosa, F. *et al.*, *Carbohydr. Res.*, 1973,
28, 109

**α -L-Rhamnopyranosyl-(1 \rightarrow 2)-
 α -L-rhamnopyranosyl-(1 \rightarrow 2)- α -L-
rhamnopyranose** R-51
6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-
6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-
6-deoxy- α -L-mannopyranose



$C_{18}H_{32}O_{13}$ 456.443

Reducing trisaccharide. Component of the
antigen polysaccharide of group B
streptococci. Inhibitor of antigen
antibody interaction and implicated in
onset of bacterial infection.

Me glycoside: [112107-29-6]

$C_{19}H_{34}O_{13}$ 470.47

Amorph. powder. $[\alpha]_D$ -57.7 (c, 1 in
H₂O).

Me glycoside, 3,3',4,4'-Tetrabenzyl:

[112107-28-5]

$C_{47}H_{58}O_{13}$ 830.967

Syrup. $[\alpha]_D^{20}$ -35.8 (c, 0.43 in CH₂Cl₂).

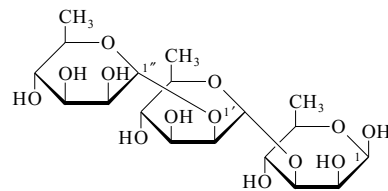
Jennings, H.J. *et al.*, *Adv. Carbohydr. Chem.*
Biochem., 1983, **41**, 155

Michon, F. *et al.*, *Biochemistry*, 1987, **26**, 476

Pozsgay, V. *et al.*, *Can. J. Chem.*, 1987, **65**, 2764
(*synth*, pmr, cmr)

**α -D-Rhamnopyranosyl-(1 \rightarrow 2)-
 α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-
rhamnose** R-52

6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-6-
deoxy- α -D-mannopyranosyl-(1 \rightarrow 3)-6-
deoxy-D-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

 β -Pyranose-form

1,2-O-(1-Cyanoethylidene), 2'',3',4,4',4''-
pentabenzoyl: [121947-65-7]

$C_{56}H_{53}NO_{18}$ 1028.031

Amorph. $[\alpha]_D^{20}$ -99 (c, 2.2 in CHCl₃).

1,2-O-(1-Cyanoethylidene), 2'',3',4,4',4''-
pentabenzoyl, 3''-Ac: [122873-17-0]

$C_{58}H_{55}NO_{19}$ 1070.068

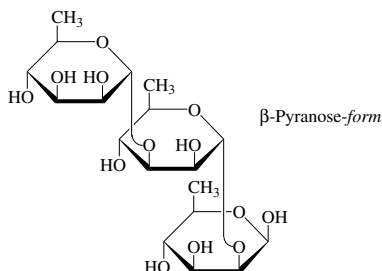
Amorph. $[\alpha]_D^{20}$ -111.5 (c, 1.4 in CHCl₃).

1,2-O-(1-Cyanoethylidene), 2'',3',4,4'',4''-pentabenzoyl, 3''-trityl: [121947-66-8]
 $C_{75}H_{67}NO_{18}$ 1270.35
 Amorph. $[\alpha]_D^{20}$ -61 (c, 2.0 in $CHCl_3$).

Tsvetkov, Y.E. et al., *Carbohydr. Res.*, 1989, **193**, 75 (cyanoethylidene pentabenzoyl derivs, pmr)
 Arsenault, T.L. et al., *Can. J. Chem.*, 1991, **69**, 1273

α -D-Rhamnopyranosyl-(1 \rightarrow 3)- α -D-rhamnopyranosyl-(1 \rightarrow 2)-D-rhamnose

6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 3)-6-deoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-6-deoxy-D-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

Constit. of the repeating unit of the O-specific polysaccharide from *Pseudomonas cepacia*, *Pseudomonas aeruginosa* and *Pseudomonas syringae*.

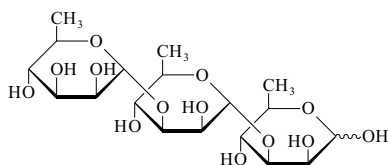
α -Pyranose-form
 Syrup.

β -Pyranose-form [76440-68-1]
 $[\alpha]_D^{20} +22$ (H_2O).

Knirel, Y.A. et al., *Bioorg. Khim.*, 1980, **6**, 1851
 Smith, A.R.W. et al., *Eur. J. Biochem.*, 1985, **149**, 73 (isol, pmr, cmr)
 Shashkov, A.S. et al., *Carbohydr. Res.*, 1986, **146**, 346-349 (nmr)
 Yokota, S. et al., *Eur. J. Biochem.*, 1987, **167**, 203 (struct, occur)
 Hirooka, M. et al., *Bull. Chem. Soc. Jpn.*, 2003, **76**, 1409-1421 (synth, pmr, cmr)

α -D-Rhamnopyranosyl-(1 \rightarrow 3)- α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose

6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 3)-6-deoxy- α -D-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-D-mannose, 9CI



Pyranose-form

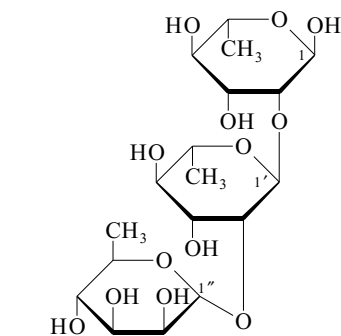
$C_{18}H_{32}O_{13}$ 456.443

Constit. of A-band lipopolysaccharide from a mutant (AK 1401) of *Pseudomonas aeruginosa* strain PA01 (serotype O5).

[122727-12-2]

Arsenault, T.L. et al., *Can. J. Chem.*, 1991, **69**, 1273 (occur, pmr, cmr, chromatog)

α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose
 6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, 9CI



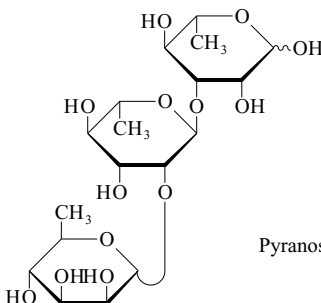
$C_{18}H_{32}O_{13}$ 456.443

α -Pyranose-form

1,4-Dibenzoyl, 3,3'-dibenzoyl, 2'',3'',4',4''-tetra-Ac: [89734-06-5]
 $C_{54}H_{60}O_{19}$ 1013.057
 Amorph. solid. $[\alpha]_D^{18} +42.2$ (c, 0.4 in $CHCl_3$).

Jaworska, A. et al., *Carbohydr. Res.*, 1984, **126**, 205 (dibenzoyl dibenzoyl tetra-Ac, cmr)

α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose
 [89748-04-9]



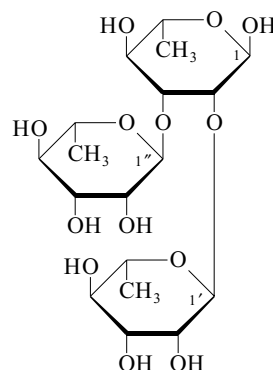
$C_{18}H_{32}O_{13}$ 456.443

Used to generate monoclonal antibodies toward the antigenic determinates of the *Shigella flexneri* variants X and Y. Mp 110-112°. $[\alpha]_D^{18} +2.8$ (c, 0.85 in MeOH).

Jaworska, A. et al., *Carbohydr. Res.*, 1984, **126**, 205 (synth, pmr, cmr)
 Carlin, N.I.A. et al., *J. Immunol.*, 1986, **137**, 2361

α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-[6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

α -Pyranose-form

Me glycoside: [130062-84-9]

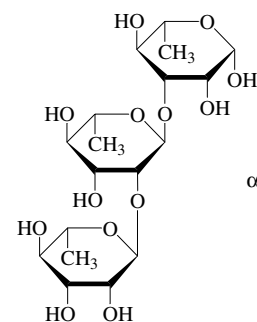
$C_{19}H_{34}O_{13}$ 470.47
 Syrup. $[\alpha]_D^{29} -56.8$ (c, 2.0 in $CHCl_3$).

Me glycoside, 2',2'',3',3'',4,4',4''-heptabenzoyl: [135129-56-5]
 $C_{68}H_{62}O_{20}$ 1199.226
 Syrup. $[\alpha]_D^{28} +178.8$ (c, 0.9 in $CHCl_3$).

Lipkind, G.M. et al., *Can. J. Chem.*, 1990, **68**, 1238 (α -Me pyr, pmr, conformn)
 Nifantev, P.E. et al., *Bioorg. Khim.*, 1991, **17**, 517; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1991, **17**, 292 (α -Me pyr heptabenzoyl)

α -L-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, 9CI
 [89734-07-6]



α -Pyranose-form

$C_{18}H_{32}O_{13}$ 456.443

Constit. of the repeating unit of the O-antigen in *Shigella flexneri* and in the surface layer glycoprotein of *Bacillus stearothermophilus*. Amorph. solid. $[\alpha]_D^{18} -40.9$ (c, 0.5 in MeOH).

α -Pyranose-form [105239-66-5]

3',3'',4,4',4''-Pentabenzoyl, 2-benzoyl, 2''-Ac: [109714-41-2]
 $C_{62}H_{68}O_{15}$ 1053.21
 Syrup.

Allyl glycoside, 3',3'',4,4''-pentabenzyl, 2-benzoyl, 2''-Ac: [109744-31-2]
 $C_{65}H_{72}O_{15}$ 1093.275
 $[\alpha]_D^{25}$ -1 (c, 1.4 in CH_2Cl_2).

[103951-26-4, 105239-66-5, 122805-33-8, 122825-84-7, 122873-14-7, 122920-37-0]

Kenne, L. *et al.*, *Eur. J. Biochem.*, 1976, **64**, 491 (occur)

Jaworska, A. *et al.*, *Carbohydr. Res.*, 1984, **126**, 205 (synth, pmr, cmr)

Christian, R. *et al.*, *Carbohydr. Res.*, 1986, **126**, 265 (occur)

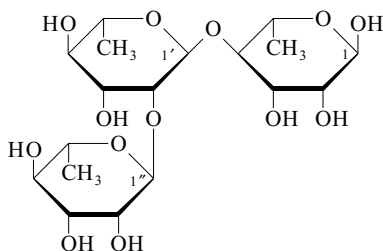
Pinto, B.M. *et al.*, *J.C.S. Perkin 1*, 1987, 9 (α -L deriv synth, pmr, cmr)

Tsvetkov, Y.E. *et al.*, *Bioorg. Khim.*, 1989, **15**, 231; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 126 (β -L derivs)

α -L-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose

R-59

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443
 Oligosaccharide repeating unit of the phenolic glycolipid antigen from *Mycobacterium haemophilum*. Pathogen occurs in immunosuppressed patients.

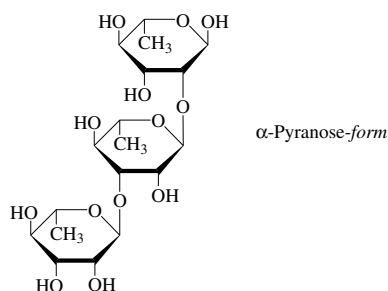
α -Pyranose-form

4-Methylphenyl glycoside, 2,2'',3,3',3''-penta-Me: [134705-43-4]
 $C_{30}H_{48}O_{13}$ 616.701
 Syrup.

Besra, G.S. *et al.*, *Biochemistry*, 1991, **30**, 7772 (occur, isol, pmr, glc, ms)

α -L-Rhamnopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose

R-60



$C_{18}H_{32}O_{13}$ 456.443
 Component of bacterial cell walls. Constit. of the repeating unit of the capsular antigen of *Klebsiella* serotype K9. Amorph. $[\alpha]_D$ -52 (c, 0.5 in H_2O).

α -Pyranose-form [73223-31-1]

Benzyl glycoside, 3,4-dibenzyl: [78161-43-0]
 $C_{39}H_{50}O_{13}$ 726.816
 Foam. $[\alpha]_D$ -66 (c, 1.0 in MeOH).

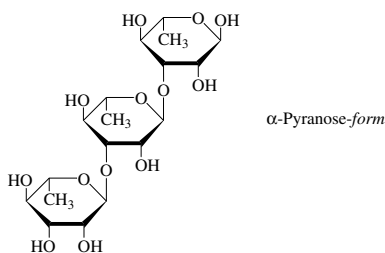
Benzyl glycoside, 3,4-dibenzyl, penta-Ac: [78161-40-7]
 $C_{49}H_{60}O_{18}$ 937.002
 $[\alpha]_D$ -42 (c, 0.9 in $CHCl_3$).

Pozsgay, V. *et al.*, *Chem. Comm.*, 1979, 828 (cmr)

Pozsgay, V. *et al.*, *Carbohydr. Res.*, 1981, **90**, 215-231 (synth, pmr, cmr, benzyl glycoside dibenzyl)

α -L-Rhamnopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose

R-61



$C_{18}H_{32}O_{13}$ 456.443
 Component of bacterial cell walls. Constit. of the repeating unit of the type specific antigen of *Streptococcus pneumoniae* type 2 and the repeating unit of the capsular antigen of *Klebsiella* serotype K36 and other bacteria. Amorph. $[\alpha]_D$ -48 (c, 0.4 in H_2O).

α -Pyranose-form [78161-41-8]

Benzyl glycoside, 2,4-dibenzyl: [78166-78-6]
 $C_{39}H_{50}O_{13}$ 726.816
 Syrup. $[\alpha]_D$ -73.5 (c, 0.7 in MeOH).

Benzyl glycoside, 2,4-dibenzyl, penta-Ac: [72384-20-4]
 $C_{49}H_{60}O_{18}$ 937.002
 Syrup. $[\alpha]_D$ -37 (c, 0.8 in $CHCl_3$).

Kenne, L. *et al.*, *Carbohydr. Res.*, 1975, **40**, 69 (occur)

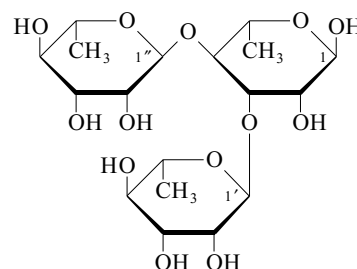
Pozsgay, V. *et al.*, *Carbohydr. Res.*, 1981, **90**, 215-231 (synth, pmr, cmr, occur, benzyl glycoside dibenzyl)

Ferreira, F. *et al.*, *Carbohydr. Res.*, 1991, **210**, 255 (isol, pmr, cmr)

α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 4)]-L-rhamnose

R-62

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-[6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)]-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443
 Constit. of the basic chain of O-antigenic polysaccharides of *Shigella flexneri*.

α -Pyranose-form

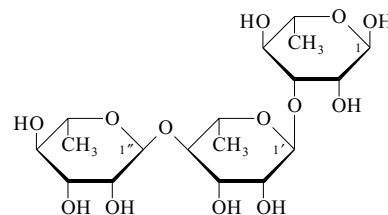
1,2-O-(1-Cyanoethylidene), 3',3'',4',4''-benzoyl, 2',2''-di-Ac: [101069-05-0]
 $C_{53}H_{53}NO_{19}$ 1007.997
 Syrup. $[\alpha]_D^{20}$ +62.4 (c, 1.5 in $CHCl_3$).

Byramova, N.E. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1985, 1134; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1985, 1036 (cyanoethylidene deriv, cmr)

α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose

R-63

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, 9CI



$C_{18}H_{32}O_{13}$ 456.443

α -Pyranose-form

Me glycoside: [92976-04-0]

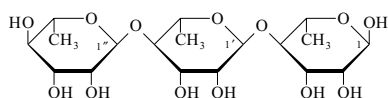
$C_{19}H_{34}O_{13}$ 470.47
 Cryst. Mp 92-96°. $[\alpha]_D^{23}$ -86 (c, 0.6 in H_2O).

Me glycoside, 2',3'-O-isopropylidene, 2,4-dibenzyl, 2'',3'',4''-tri-Ac: [92976-00-6]
 $C_{42}H_{56}O_{16}$ 816.895
 Syrup. $[\alpha]_D$ -47 (c, 1.1 in $CHCl_3$).

Liptak, A. *et al.*, *Carbohydr. Res.*, 1984, **131**, 39 (α -Me pyr derivs, cmr)

**α -L-Rhamnopyranosyl-(1 \rightarrow 4)-
 α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rham-
nose**

R-64

6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)-6-
deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)-6-
deoxy-L-mannose, 9CI $C_{18}H_{32}O_{13}$ 456.443 **α -Pyranose-form**

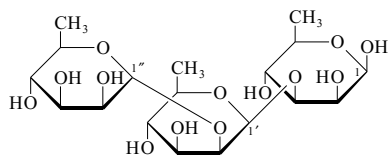
Me glycoside: [87985-51-1]

 $C_{19}H_{34}O_{13}$ 470.47Cryst. Mp 148-151°. $[\alpha]_D$ -113 (c, 0.8 in H_2O).

Me glycoside, 2,3:2',3'-di-O-isopropylidene, 2'',3'',4''-tri-Ac: [92975-99-0]

 $C_{31}H_{48}O_{16}$ 676.711Cryst. (EtOH aq.). Mp 76-81°. $[\alpha]_D$ -72 (c, 0.7 in $CHCl_3$).Liptak, A. et al., Carbohydr. Res., 1984, 131, 39 (α -Me pyr derivs, cmr) **α -D-Rhamnopyranosyl-(1 \rightarrow 2)-
 β -D-rhamnopyranosyl-(1 \rightarrow 3)-D-
rhamnose**

R-65

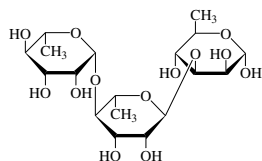
6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-6-
deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-6-
deoxy-D-mannose, 9CI
[103707-66-0] $C_{18}H_{32}O_{13}$ 456.443Constit. of the O-antigen of *Pseudomonas cepacia*. **β -Pyranose-form**1,2-O-(1-Cyanoethylidene), 2'',3',4,4''-
pentabenzoyl, 3''-Ac: [122805-28-1] $C_{58}H_{55}NO_{19}$ 1070.068Amorph. $[\alpha]_D^{20}$ -143.5 (c, 1.9 in $CHCl_3$).

Lipkind, G.M. et al., Bioorg. Khim., 1986, 12, 780; Sov. J. Bioorg. Chem. (Engl. Transl.), 1986, 12, 423 (pmr, cmr, occur)

Tsvetkov, Y.E. et al., Carbohydr. Res., 1989, 193, 75 (cyanoethylidene deriv, pmr)

 **β -L-Rhamnopyranosyl-(1 \rightarrow 4)-
 α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-rham-
nose**

R-66

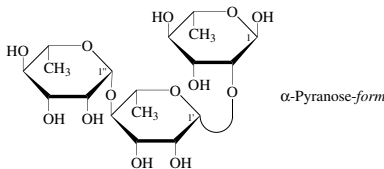
6-Deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-
deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-
deoxy-D-mannose, 9CI α -Pyranose-form $C_{18}H_{32}O_{13}$ 456.443Constit. of the O-specific polysaccharide of *Pseudomonas syringae* pv lachrymans strain 7591 (serogroup IX). **α -Pyranose-form** [135702-91-9]

Syrup.

Shashkov, A.S. et al., Carbohydr. Res., 1991, 212, 301 (isol, chromatog)

 **β -L-Rhamnopyranosyl-(1 \rightarrow 4)-
 β -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rham-
nose**

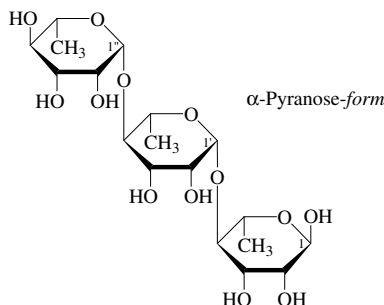
R-67

6-Deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-
deoxy- β -L-mannopyranosyl-(1 \rightarrow 2)-6-
deoxy-L-mannose, 9CI
[88493-97-4] α -Pyranose-form $C_{18}H_{32}O_{13}$ 456.443Constit. of the repeating unit of the O-specific side chain of the lipopolysaccharide isol. from *Shigella flexneri* serotype 6. $[\alpha]_D^{20}$ +2 (c, 0.5 in MeOH). **α -Pyranose-form**Benzyl glycoside, 2'',3,3',3'',4,4''-hexaben-
zyl: [88493-95-2] $C_{67}H_{74}O_{13}$ 1087.314Syrup. $[\alpha]_D^{20}$ +18.5 (c, 1.5 in $CHCl_3$).Benzyl glycoside, 2'',3,3',3'',4,4''-hexaben-
zyl, 2'-Ac: [88493-96-3] $C_{69}H_{76}O_{14}$ 1129.351Syrup. $[\alpha]_D^{20}$ +35.2 (c, 1.0 in $CHCl_3$).

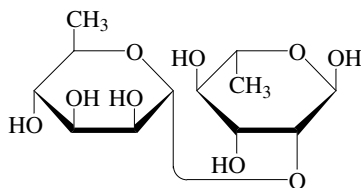
[88493-94-1]

Paulsen, H. et al., Carbohydr. Res., 1983, 120, 25 (L-form, α -L-benzyl pyr derivs, pmr, cmr) **β -L-Rhamnopyranosyl-(1 \rightarrow 4)-
 β -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rham-
nose**

R-68

6-Deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-
deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-
deoxy-L-mannose, 9CI α -Pyranose-form $C_{18}H_{32}O_{13}$ 456.443Constit. of the repeating unit of the O-specific side chain of the lipopolysaccharide isol. from *Shigella flexneri* (serotype 6). **α -Pyranose-form** [86449-28-7]Amorph. powder. $[\alpha]_D^{20}$ +16.6 (c, 1.0 in H_2O).Benzyl glycoside, 2'',3',3'',4''-tetrabenzyl:
[86449-27-6] $C_{53}H_{62}O_{13}$ 907.065Syrup. $[\alpha]_D^{20}$ -1.4 (c, 1.0 in $CHCl_3$).Benzyl glycoside, 2'',3',3'',4''-tetrabenzyl,
2,3-O-isopropylidene: [86449-26-5] $C_{56}H_{66}O_{13}$ 947.13Syrup. $[\alpha]_D^{20}$ +4.3 (c, 0.8 in $CHCl_3$).Paulsen, H. et al., Annalen, 1983, 557 (synth, α -benzyl pyr derivs, pmr, cmr, occur)**2-O- α -D-Rhamnopyranosyl-L-
rhamnose**

R-69

6-Deoxy-2-O-(6-deoxy- α -D-mannopyrano-
syl)-L-mannose
[89734-16-7] α -Pyranose-form $C_{12}H_{22}O_9$ 310.3Reducing disaccharide. Amorph. $[\alpha]_D^{18}$ +49 (c, 0.6 in EtOH).

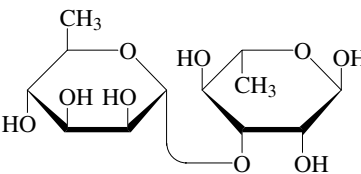
Hexa-Ac: [89734-17-8]

 $C_{24}H_{34}O_{15}$ 562.524 $[\alpha]_D^{18}$ +30 (c, 0.3 in $CHCl_3$). **α -Pyranose-form**Benzyl glycoside, 3-benzoyl, 4-benzyl,
2',3',4'-tri-Ac: [89734-15-6] $C_{39}H_{44}O_{13}$ 720.769Syrup. $[\alpha]_D^{18}$ +51 (c, 1.05 in $CHCl_3$).

Jaworska, A. et al., Carbohydr. Res., 1984, 126, 191 (synth, cmr)

**3-O- α -D-Rhamnopyranosyl-L-
rhamnose**

R-70

6-Deoxy-3-O-(6-deoxy- α -D-mannopyrano-
syl)-L-mannose. 6-Deoxy- α -D-man-
nopyranosyl(1 \rightarrow 3)-6-deoxy-L-mannose
[89734-24-7] α -Pyranose-form $C_{12}H_{22}O_9$ 310.3Reducing disaccharide. Amorph. $[\alpha]_D$ +44 (c, 0.35 in EtOH).

Hexa-Ac:

 $C_{24}H_{34}O_{15}$ 562.524 $[\alpha]_D$ +24.5 (c, 0.4 in $CHCl_3$).

α -Pyranose-form

Benzyl glycoside, 2-benzoyl, 4-benzyl, tri-Ac:

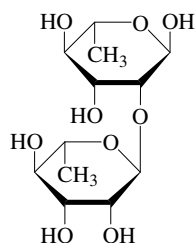
C₃₉H₄₄O₁₃ 720.769

Amorph. [α]_D +56 (c, 0.8 in CHCl₃).

Jaworska, A. *et al.*, *Carbohydr. Res.*, 1984, **126**, 91 (synth)

2-O- α -L-Rhamnopyranosyl-L-rhamnose R-71

6-Deoxy-2-O-(6-deoxy- α -L-mannopyranosyl)-L-mannose. 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannose [70086-87-2]



α -Pyranose-form

C₁₂H₂₂O₉ 310.3

Reducing disaccharide. Constit. of the repeating unit of the capsular antigens of *Klebsiella* K9, K34 and of *E. coli* K12 and K82 and of the O-antigen of *E. coli* 069 and *Shigella flexneri*. [α]_D¹⁸ -29 (c, 0.8 in H₂O) (-24).

 α -Pyranose-form [73246-48-7]

Me glycoside: [71348-36-2]

C₁₃H₂₄O₉ 324.327

[α]_D²⁰ -95 (c, 1 in H₂O).

Me glycoside, penta-Ac:

C₂₃H₃₄O₁₄ 534.513

Needles (EtOH aq.). Mp 151-152°.

[α]_D -45 (c, 1 in CHCl₃).

Me glycoside, 2',3',4'-tri-Ac, 3,4-dibenzyl: [71348-34-0]

C₃₃H₄₂O₁₂ 630.688

Needles (Et₂O). Mp 125-126°.

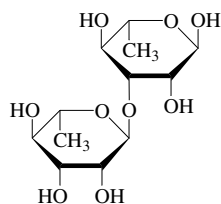
Pozsgay, V. *et al.*, *Carbohydr. Res.*, 1981, **90**, 215
Kenne, L. *et al.*, *The Polysaccharides*, Academic Press, ed. Aspinall, G.O., 1983, **2**, 301; 302; 316; 318; 322 (occur)

Jaworska, A. *et al.*, *Carbohydr. Res.*, 1984, **126**, 191 (synth, cmr)

Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 55 (*Me gly*)

3-O- α -L-Rhamnopyranosyl-L-rhamnose R-72

6-Deoxy-3-O-(6-deoxy- α -L-mannopyranosyl)-L-mannose. 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannose [68355-18-0]



α -Pyranose-form

C₁₂H₂₂O₉ 310.3

Reducing disaccharide. Constit. of the repeating unit of the capsular antigen of *Klebsiella* spp. and of the O-antigens of *Pseudomonas aeruginosa* immunotype 5, *Shigella flexneri*, *Shigella dysenteriae* type 1 and *Klebsiella* 07. Cryst. (MeOH/CHCl₃). Mp 141-142°. [α]_D -41 (c, 0.9 in H₂O) (-21).

 α -Pyranose-form [22393-20-0]

Hexa-Ac: [68355-16-8]

C₂₄H₃₄O₁₅ 562.524

Solid (EtOH). Mp 78-80.5° (75-76°).

[α]_D -43.6 (c, 0.51 in CHCl₃).

Me glycoside: [71348-37-3]

C₁₃H₂₄O₉ 324.327

Cryst. (MeOH/diisopropyl ether).

Mp 181-183.5°. [α]_D -78 (c, 1.52 in H₂O).

[α]_D²⁰ -59 (c, 1 in CHCl₃).

Me glycoside, 2-Me: Methyl 3-O-(α -L-rhamnopyranosyl)-2-O-methyl- α -L-rhamnopyranoside

[136933-77-2]

C₁₄H₂₆O₉ 338.354

Residue present in *Mycobacterium bovis* glycolipids.

[α]_D²⁶ -68.3 (c, 0.44 in CHCl₃).

Me glycoside, 2',3',4',4-tetra-Ac: [73113-82-3]

C₂₁H₃₂O₁₃ 492.476

Cryst. (Et₂O/EtOAc). Mp 166-166.5°.

[α]_D²⁰ -61 (c, 1.2 in CHCl₃).

Me glycoside, penta-Ac: [68355-15-7]

C₂₃H₃₄O₁₄ 534.513

Needles. Mp 134-136° (125°). [α]_D²⁵ -48 (c, 0.5 in CHCl₃).

Benzyl glycoside, 2,4-dibenzyl: [78161-37-2]

C₃₃H₄₀O₉ 580.674

Syrup. [α]_D -59 (c, 1.3 in CHCl₃).

Benzyl glycoside, 2,4-dibenzyl, tri-Ac:

[72384-19-1]

C₃₉H₄₆O₁₂ 706.785

Syrup. [α]_D -57 (c, 1 in CHCl₃).

Octyl glycoside, 4-O-hexanoyl, 2',3'-di-Ac:

Mezzettiaside 9

[215668-61-4]

C₃₀H₅₂O₁₂ 604.734

Constit. of *Mezzettia leptopoda*. Exhibits weak cytotoxic activity. Gum. [α]_D -56.4 (c, 0.1 in CHCl₃).

Octyl glycoside, 4-O-hexanoyl, 2',4'-di-Ac:

Mezzettiaside 10

[215668-79-4]

C₃₀H₅₂O₁₂ 604.734

Constit. of *Mezzettia leptopoda*. Gum. [α]_D -54.4 (c, 0.1 in CHCl₃).

Octyl glycoside, 4-O-hexanoyl, 2',3',4'-tri-Ac: **Mezzettiaside 11**

[215668-80-7]

C₃₂H₅₄O₁₃ 646.771

Constit. of *Mezzettia leptopoda*. Cytotoxic agent. Gum. [α]_D -48.6 (c, 0.1 in CHCl₃).

Laffite, C. *et al.*, *Carbohydr. Res.*, 1978, **67**, 91

Schwarzenbach, D. *et al.*, *Carbohydr. Res.*, 1980, **81**, 323

Liptak, A. *et al.*, *Tetrahedron*, 1980, **36**, 1261

(*Me gly*)

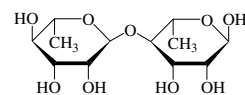
Pozsgay, V. *et al.*, *Carbohydr. Res.*, 1981, **90**, 215

(benzyl gly)

Kenne, L. *et al.*, *The Polysaccharides*, Academic Press, ed. Aspinall, G.O., 1983, **2**, 302 (occur)

4-O- α -L-Rhamnopyranosyl-L-rhamnose R-73

6-Deoxy-4-O-(6-deoxy- α -L-mannopyranosyl)-L-mannose. (6-Deoxy- α -L-mannopyranosyl)-(1 \rightarrow 4)-6-deoxy- α -L-mannose [31675-07-7]



α -Pyranose-form

C₁₂H₂₂O₉ 310.3

Reducing disaccharide. Constit. of the repeating unit of an acid isol. from the cell walls of *Bacillus megaterium* and the O-antigen of *Pseudomonas maltophilia* strain. Syrup. [α]_D -68 (c, 2.2 in H₂O).

 α -Pyranose-form [75364-78-2]

Me glycoside: [31002-15-0]

C₁₃H₂₄O₉ 324.327

Syrup. [α]_D -109 (c, 2.5 in H₂O).

Me glycoside, penta-Ac:

C₂₃H₃₄O₁₄ 534.513

Mp 182-183° (180-181°). [α]_D -52.6 (c, 1.48 in CHCl₃).

Me glycoside, 2,3,2',3'-di-O-isopropylidene:

C₁₉H₃₂O₉ 404.456

[α]_D²³ -46 (c, 1.5 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene,

2',3',4'-tri-Ac: [53130-93-1]

Syrup. [α]_D -74 (c, 2 in CHCl₃). [α]_D -69 (c, 1.5 in CHCl₃).

Bebault, G.M. *et al.*, *Carbohydr. Res.*, 1974, **34**, 174 (synth)

Backinowskii, L.V. *et al.*, *Carbohydr. Res.*, 1980, **85**, 209

Liptak, A. *et al.*, *Tetrahedron*, 1980, **36**, 1261

(cmr, *Me gly*)

Neal, D.J. *et al.*, *Eur. J. Biochem.*, 1982, **128**, 143

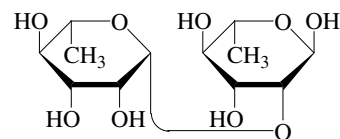
(occur)

Liptak, A. *et al.*, *Carbohydr. Res.*, 1984, **131**, 39

(diisopropylidene)

2-O- β -L-Rhamnopyranosyl-L-rhamnose R-74

6-Deoxy-2-O-(6-deoxy- β -L-mannopyranosyl)-L-mannose [71164-87-9]



α -Pyranose-form

C₁₂H₂₂O₉ 310.3

Reducing disaccharide. [α]_D²⁰ +10.2 (c, 0.9 in MeOH).

α-Pyranose-form [88547-61-9]

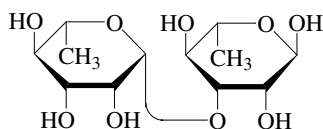
Benzyl glycoside, 2',4'-di-Ac, tribenzyl:

C₄₄H₅₀O₁₁ 754.872Syrup. [α]_D²⁰ +34.2 (c, 1.2 in CHCl₃).

Benzyl glycoside, 3,3',4-tribenzyl, 4'-Ac:

C₄₂H₄₈O₁₀ 712.835Syrup. [α]_D²⁰ +19.2 (c, 1.1 in CHCl₃).Paulsen, H. *et al.*, *Carbohydr. Res.*, 1983, **120**, 25 (synth)Lipkind, G.M. *et al.*, *Bioorg. Khim.*, 1984, **10**, 1670; *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1984, **10**, 912 (noe, conformn)**3-O-β-L-Rhamnopyranosyl-L-rhamnose** R-75

6-Deoxy-3-O-(6-deoxy-β-L-mannopyranosyl)-L-mannose. 6-Deoxy-β-L-mannopyranosyl-(1→3)-6-deoxy-L-mannose



α-Pyranose-form

C₁₂H₂₂O₉ 310.3**α-Pyranose-form**

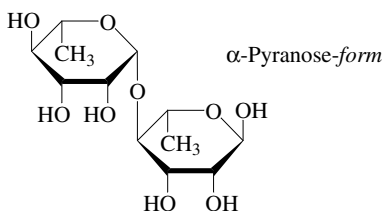
Me glycoside: [79681-54-2]

C₁₃H₂₄O₉ 324.327[α]_D²⁰ +15 (c, 1.6 in H₂O).

Me glycoside, 2',3'-O-cyclohexylidene, 4'-benzoyl, 4-Ac:

C₂₈H₃₈O₁₁ 550.602Syrup. [α]_D²⁰ +44.9 (c, 1 in CHCl₃).Iversen, T. *et al.*, *J.O.C.*, 1981, **46**, 5389 (Me gly)**4-O-β-L-Rhamnopyranosyl-L-rhamnose** R-76

6-Deoxy-4-O-(6-deoxy-β-L-mannopyranosyl)-L-mannose. 6-Deoxy-β-L-mannopyranosyl-(1→4)-6-deoxy-α-L-mannose [71164-86-8]



α-Pyranose-form

C₁₂H₂₂O₉ 310.3Reducing disaccharide. Constit. of the repeating unit of the capsular antigen of *Klebsiella* K32, of the type specific antigen of *Streptococcus pneumoniae* type 17F, and of the extracellular polysaccharides from various strains of *Rhizobium japonicum*. Syrup. [α]_D²⁰ +10.1 (c, 1.3 in MeOH). [α]_D⁵⁰ +4.3 (c, 2 in H₂O).**Pyranose-form**

Hexa-Ac: [75828-91-0]

C₂₄H₃₄O₁₅ 562.524[α]_D²⁰ -14.5 (c, 2.5 in CHCl₃).**α-Pyranose-form**

Me glycoside: [74517-07-0]

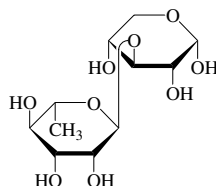
C₁₃H₂₄O₉ 324.327[α]_D²⁰ -12 (c, 1.2 in H₂O). [α]_D²⁰ -16.5 (c, 2.5 in H₂O).

Me glycoside, 2,3-O-isopropylidene,

2',3',4'-tri-Ac: [75795-31-2]

C₂₂H₃₄O₁₂ 490.503Amorph. [α]_D²⁰ +56.2 (c, 1.05 in CHCl₃).

Benzyl glycoside, 2',3',4-tribenzyl, 2,3-O-isopropylidene:

C₄₃H₅₀O₉ 710.863[α]_D²⁰ +15.7 (c, 1.2 in CHCl₃).Bakinovskii, L.V. *et al.*, *Carbohydr. Res.*, 1980, **84**, 225 (Me gly)Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 3233 (synth)Iversen, T. *et al.*, *J.O.C.*, 1981, **46**, 5389 (Me gly)Kenne, L. *et al.*, *The Polysaccharides*, Academic Press, ed. Aspinall, G.O., 1983, **2**, 322; 329; 336 (occur)**3-O-α-L-Rhamnopyranosyl-D-xylose** R-77

α-Pyranose-form

C₁₁H₂₀O₉ 296.274**α-Pyranose-form**

Me glycoside: Methyl 3-O-α-L-rhamnopyranosyl-α-D-xylopyranoside, 9CI

[99104-67-3]

C₁₂H₂₂O₉ 310.3Needles (Me₂CO) or cryst. (H₂O). Mp 113-115°. [α]_D²⁰ +16 (c, 1.0 in MeOH).

Me glycoside, 2',3',4'-tri-Ac: Methyl 3-O-(2,3,4-tri-O-acetyl-α-L-rhamnopyranosyl)-α-D-xylopyranoside

[99104-76-4]

C₁₈H₂₈O₁₂ 436.412Needles (EtOH). Mp 152-154°. [α]_D²⁰ +16 (c, 1.0 in CHCl₃).

Me glycoside, penta-Ac: Methyl 2,4-di-O-acetyl-3-O-(2,3,4-tri-O-acetyl-α-L-rhamnopyranosyl)-α-D-xylopyranoside

[99104-77-5]

C₂₂H₃₂O₁₄ 520.486Amorph. powder. [α]_D²⁰ +33 (c, 1.0 in CHCl₃).

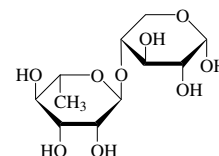
Me glycoside, 2,4-dibenzoyl, tri-Ac: Methyl 2,4-di-O-benzoyl-3-O-(2,3,4-tri-O-acetyl-α-L-rhamnopyranosyl)-α-D-xylopyranoside

[99119-94-5]

C₃₂H₃₆O₁₄ 644.628[α]_D²⁰ +10 (c, 1.2 in CHCl₃).

Me glycoside, 2,4-dibenzyl, tri-Ac: Methyl 2,4-di-O-benzyl-3-O-(2,3,4-tri-O-acetyl-α-L-rhamnopyranosyl)-α-D-xylopyranoside

[99104-75-3]

C₃₂H₄₀O₁₂ 616.661Syrup. [α]_D²⁰ -32 (c, 1.0 in CHCl₃).Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 2351**4-O-α-L-Rhamnopyranosyl-D-xylose** R-78

α-Pyranose-form

C₁₁H₂₀O₉ 296.274Autohydrolytic product from the mucilage of the green seaweed alga *Urospora penicilliformis*.**α-Pyranose-form**

Me glycoside: Methyl 4-O-α-L-rhamnopyranosyl-α-D-xylopyranoside, 9CI

[99104-71-9]

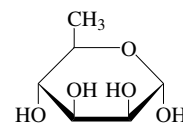
C₁₂H₂₂O₉ 310.3Monohydrate. [α]_D¹⁰ +47 (c, 3.5 in MeOH).

Me glycoside, 2,3-dibenzoyl, tri-Ac: Methyl 2,3-dibenzoyl-4-O-(2,3,4-tri-O-acetyl-α-L-rhamnopyranosyl)-α-D-xylopyranoside

[99104-82-2]

C₃₂H₃₆O₁₄ 644.628Amorph. [α]_D¹⁵ -40 (c, 1.2 in CHCl₃).Bourne, E.J. *et al.*, *J. Carbohydr. Nucleosides*,*Nucleotides*, 1974, **1**, 235 (occur)Kamiya, S. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 2351 (Me gly)**Rhamnose** R-79

6-Deoxymannose. Mannomethyllose



α-D-Pyranose-form

C₆H₁₂O₅ 164.158

An aq. soln. at 44° contains 60% α-pyr, 40% β-pyr and 0.01% aldehyde.

D-form [634-74-2]

Present in the hydrol. prod. of the capsular polysaccharide of some gram-negative bacteria.

Mp 90-91° (monohydrate). [α]_D²⁰ -8.2 (H₂O).

4-Bromophenylhydrazone: Mp 167°.

Phenylosazone: Mp 191°. [α]_D²⁰ -95.2 (Py).

1-O-(3,4-Dihydroxycinnamoyl):

1-O-CaffeoylrhamnoseC₁₅H₁₈O₈ 326.302Isol. from blooms of *Lantana hybrida*.

2-Me: 2-O-Methyl-D-rhamnose

C₇H₁₄O₅ 178.185Component of lipopolysaccharides of *Bacterium faecalis alcaligenes*. Syrup. [α]_D²⁰ -28 (c, 1.12 in H₂O).**α-D-Pyranose-form**

Me glycoside: See Methyl rhamnopyranoside, M-207

D-Furanose-form

Me glycoside: See Methyl rhamnofuranoside, M-206

L-form Isodulcitol. Lokaose

[3615-41-6]

Constit. of many glycosides in plants. Present in leaves of poison ivy *Rhus toxicodendron*, in polysaccharides of gums, mucilages, numerous immunological polysaccharides of bacterial origin and in cardiac glycosides. Quercetin (main constit. of lemon flavin) and Naringin (from grapefruit-canning wastes) have been used as sources. Obt. comly. from oak bark. Relatively inexpensive starting material for chiral synthesis. Crystallises as α - and β -forms which equilibrate in soln. Mp 93-95° (hydrate). $[\alpha]_D +8.9$ (H₂O, at equilibrium).

Phenylhydrazone: Mp 159°. $[\alpha]_D +54.2 \rightarrow +27$ (H₂O).

2,4-Dinitrophenylhydrazone: Mp 164-165°.

Phenylosazone: Mp 190°.

Tetranitrate:

C₆H₈N₄O₁₃ 344.148

Mp 135°. $[\alpha]_D -68.4$ (MeOH).

Di-Me acetal:

C₈H₁₈O₆ 210.227

Mp 123-124°. $[\alpha]_D^{20} +10$ (c, 0.4 in H₂O).

Di-Et dithioacetal:

C₁₀H₂₂O₄S₂ 270.413

Mp 135-137°.

Dibenzyl dithioacetal:

C₂₀H₂₆O₄S₂ 394.555

Mp 125°. $[\alpha]_D +35.3$ (Py).

2-Me: 6-Deoxy-2-O-methyl-L-mannose,

8CI. 2-O-Methyl-L-rhamnose

[29839-06-3]

C₇H₁₄O₅ 178.185

Component of *Rhizobium* extracellular polysaccharides. Cryst. (prev. reported as syrup).

Mp 113-114°. $[\alpha]_D +31$ (+24) (H₂O).

3-Me: 6-Deoxy-3-O-methyl-L-mannose,

9CI. 3-O-Methyl-L-rhamnose. **Acofriose**

[4060-08-6]

[4598-54-3] Hydrol. prod. of plant glycosides, e.g. A constit. of *Klebsiella* K73:010 and *Mycoside* G. Also from *Rhizobium* extracellular polysaccharides. Mp 118-119° (109-111°). $[\alpha]_D^{22} +39.1$ (H₂O) (+30).

3-Me, phenylosazone:

Yellow needles (Et₂O/pentane). Mp 138-142°. $[\alpha]_D^{15} +128.2 \rightarrow +53.2$ (EtOH/Py).

4-Me: 6-Deoxy-4-O-methyl-L-mannose,

4-O-Methyl-L-rhamnose

C₇H₁₄O₅ 178.185

Mp 125-126°. $[\alpha]_D +13$ (MeOH).

5-Me: 6-Deoxy-5-O-methyl-L-mannose,

5-O-Methyl-L-rhamnose

C₇H₁₄O₅ 178.185

Mp 102-103°. $[\alpha]_D -4.3$ (H₂O).

2,3-Di-Me: 6-Deoxy-2,3-di-O-methyl-L-mannose, 9CI. 2,3-Di-O-methyl-L-rhamnose

[39687-52-0]

C₈H₁₆O₅ 192.211

Syrup. $[\alpha]_D +47.6$ (H₂O).

2,4-Di-Me: 6-Deoxy-2,4-di-O-methyl-L-mannose, 2,4-Di-O-methyl-L-rhamnose

C₈H₁₆O₅ 192.211

Hydrol. prod. of *Pneumococcus* and other bacterial polysaccharides and of flax hemicellulose.

Mp 91-93°. $[\alpha]_D +10.6$ (H₂O).

3,4-Di-Me: 6-Deoxy-3,4-di-O-methyl-L-mannose, 9CI, 8CI. 3,4-Di-O-methyl-L-rhamnose

[4060-11-1]

C₈H₁₆O₅ 192.211

Mp 98-99°. $[\alpha]_D +24 \rightarrow +18.5$ (H₂O).

2,3,4-Tri-Me: 6-Deoxy-2,3,4-tri-O-methyl-L-mannose, 9CI. 2,3,4-Tri-O-methyl-L-rhamnose

[7439-05-6]

C₉H₁₈O₅ 206.238

Syrup. $[\alpha]_D +26$ (H₂O).

 α -L-Pyranose-form [6014-42-2]

Rods + 1H₂O (H₂O or EtOH). Mp 93-94°. On heating loses H₂O of cryst. and partly changes to the β -form. V. sweet taste.

1,2,4-Tri-Ac: 1,2,4-Tri-O-acetyl-6-deoxy- α -L-mannopyranose. 1,2,4-Tri-O-acetyl- α -L-rhamnopyranose

C₁₂H₁₈O₈ 290.269

Fine needles. Mp 145-149°. $[\alpha]_D -41$

(c, 1.1 in CHCl₃).

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy- α -L-mannopyranose. 1,2,3,4-Tetra-O-acetyl- α -L-rhamnopyranose

[27821-11-0]

C₁₄H₂₀O₉ 332.307

$[\alpha]_D^{23} -63$ (c, 2.3 in CHCl₃).

2-O-(4-Hydroxycinnamoyl) (E-), 3-Ac:

Ningposide C

C₁₇H₂₀O₈ 352.34

Constit. of *Scrophularia ningpoensis*.

Oil. $[\alpha]_D^{20} +79.6$ (c, 0.38 in Me₂CO).

3-O-(4-Methoxycinnamoyl) (E-), 2-Ac:

Buergeriside B₁

C₁₈H₂₂O₈ 366.367

Constit. of *Scrophularia buergeriana*.

Amorph. powder. λ_{\max} 231 (log ϵ 2.52);

279 (log ϵ 2.35); 311 (log ϵ 1.06)

(MeOH).

3-O-(4-Methoxycinnamoyl) (Z-), 2-Ac:

Buergeriside B₂

Constit. of *Scrophularia buergeriana*.

Amorph. powder. λ_{\max} 231 (log ϵ 2.52);

278 (log ϵ 2.34); 311 (log ϵ 1.04)

(MeOH).

4-O-(4-Methoxycinnamoyl) (E-):

Buergeriside C₁

[163358-97-2]

C₁₆H₂₀O₇ 324.33

Constit. of the roots of *Scrophularia*

ningpoensis and *Scrophularia buergeriana*.

Pale yellow powder. λ_{\max} 232 (log ϵ 2.54);

311 (log ϵ 1.22) (MeOH).

3,4-Bis-O-(4-methoxycinnamoyl) (E,E-),

2-Ac: Buergeriside A₁

C₂₈H₃₀O₁₀ 526.539

Constit. of *Scrophularia buergeriana*.

Yellowish needles. λ_{\max} 232 (log ϵ 2.54);

289 (log ϵ 1.82); 311 (log ϵ 1.22)

(MeOH).

2-O-(4-Hydroxy-3-methoxycinnamoyl)

(E-), 3-Ac: **Ningposide A**

C₁₈H₂₂O₉ 382.366

Constit. of *Scrophularia ningpoensis*.

Oil. $[\alpha]_D^{20} +116.3$ (c, 0.63 in Me₂CO).

2-O-(4-Hydroxy-3-methoxycinnamoyl)

(E-), 4-Ac: 4-O-Acetyl-2-O-feruloyl- α -L-rhamnopyranose. **Ningposide B**

C₁₈H₂₂O₉ 382.366

Constit. of *Scrophularia ningpoensis*.

Oil. $[\alpha]_D^{20} +87.2$ (c, 0.24 in Me₂CO).

4-O-(3,4-Dimethoxy-E-cinnamoyl):

Lagotoside B

C₁₇H₂₂O₈ 354.356

Constit. of *Lagotis yunnanensis*. Pale

yellow powder. λ_{\max} 233 (log ϵ 3.7); 265

(log ϵ 3.22); 321 (log ϵ 3.84) (MeOH).

4-O-(3,4-Dimethoxy-Z-cinnamoyl):

Lagotoside C

C₁₇H₂₂O₈ 354.356

Constit. of *Lagotis yunnanensis*. Pale

yellow powder.

Me glycoside: See Methyl rhamnopyranoside, M-207

Benzyl glycoside: See Benzyl rhamnoside, B-20

Ph glycoside: Phenyl 6-deoxy- α -L-mannopyranoside. Phenyl α -L-rhamnopyranoside

C₁₂H₁₆O₅ 240.255

Constit. of the fruit of *Moringa oleifera*

(horseradish tree).

Mp 75-77°. $[\alpha]_D^{18} -106$ (H₂O).

Ph glycoside, tri-Ac: Phenyl 2,3,4-tri-O-

acetyl-6-deoxy- α -L-mannopyranoside.

Phenyl 2,3,4-tri-O-acetyl- α -L-rhamno-

pyranoside

C₁₈H₂₂O₈ 366.367

Mp 130-131°. $[\alpha]_D^{18} -80$ (CHCl₃).

 β -L-Pyranose-form

Needles (anhyd. Me₂CO/EtOH). Mp 123.5-124.5°. Hygroscopic, converts to the α -form on exp. to moist air.

1,2,3-Tri-Ac: 1,2,3-Tri-O-acetyl-6-deoxy- β -L-mannopyranose. 1,2,3-Tri-O-acetyl- β -L-rhamnopyranose

C₁₂H₁₈O₈ 290.269

Mp 164-167°. $[\alpha]_D +34$ (c, 0.9 in

CHCl₃).

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-6-deoxy- β -L-mannopyranose. 1,2,3,4-Tetra-O-acetyl- β -L-rhamnopyranose

C₁₄H₂₀O₉ 332.307

Mp 98-99°. $[\alpha]_D^{19} +14.1$ (C₂H₂Cl₄).

Me glycoside: See Methyl rhamnopyranoside, M-207

Benzyl glycoside: See Benzyl rhamnoside, B-20

Ph glycoside: Phenyl 6-deoxy- β -L-mannopyranoside. Phenyl β -L-rhamnopyranoside

C₁₂H₁₆O₅ 240.255

Mp 159-161°. $[\alpha]_D^{18} +87.5$ (H₂O).

Ph glycoside, tri-Ac: Phenyl 2,3,4-tri-O-

acetyl-6-deoxy- β -L-mannopyranoside.

Phenyl 2,3,4-tri-O-acetyl- β -L-rhamno-

pyranoside

C₁₈H₂₂O₈ 366.367

Mp 147-148°. $[\alpha]_D^{18} +52.5$ (CHCl₃).

L-Furanose-form

Me glycoside: See Methyl rhamnofuranoside, M-206

Et glycoside: See Ethyl rhamnoside, E-27

Benzyl glycoside: See Benzyl rhamnoside, B-20

[10030-85-0]

Aldrich Library of NMR Spectra, 2nd edn., 1983, **2**, 908B (pmr)

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 191A (ir)

Tollens, B. et al., *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 169 (β -L-pyr tetra-Ac, L-tetranitrate, β -L-Ph pyr, α -L-Ph pyr, α -L-Ph pyr tri-Ac, β -L-Ph pyr tri-Ac)

Maher, G.G. et al., *Adv. Carbohydr. Chem.*, 1955, **10**, 266 (L-Me ethers, rev)

Muhr, H. et al., *Helv. Chim. Acta*, 1955, **38**, 499 (synth, 3-Me)

Wolfson, M.L. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 202 (α -L-form, isol)

Pacsu, E. et al., *Methods Carbohydr. Chem.*, 1963, **2**, 354 (α -L-Me pyr tri-Ac)

Stanek, J. et al., *The Monosaccharides*, Academic Press, N.Y. and London, 1963, 544; 600 (L-form phenylhydrazones, L-form thioacetals, rev)

Killeen, A.C.G. et al., *Acta Cryst. B*, 1971, **27**, 1707 (cryst struct)

Butterworth, R.F. et al., *Adv. Carbohydr. Chem. Biochem.*, 1971, **26**, 279 (deoxy sugars, props, rev)

Brimacombe, J.S. et al., *J.C.S. (C)*, 1971, 613 (synth, pmr, 3-Me)

Karrer, W. et al., *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 589 (occur)

Schaffer, R. et al., *The Carbohydrates*, (Pigman, W. et al., Ed.), Academic Press, N.Y. and London, 2nd Edn., 1972, 98 (rev, isol)

Bebault, G.M. et al., *Carbohydr. Res.*, 1974, **34**, 174 (α -L-pyr tetra-Ac)

Gorin, P.J. et al., *Can. J. Chem.*, 1975, **53**, 1212 (cmr)

Imperato, F. et al., *Phytochemistry*, 1975, **14**, 2725 (1-O-Caffeoylrhamnose)

de Bruyn, A. et al., *Carbohydr. Res.*, 1976, **47**, 158 (pmr)

Pozsgay, V. et al., *Carbohydr. Res.*, 1980, **80**, 196 (cmr, acetates)

Pozsgay, V. et al., *Carbohydr. Res.*, 1980, **81**, 184 (synth, 2-Me, 3-Me)

Kennedy, L.D. et al., *Carbohydr. Res.*, 1980, **87**, 156; 158 (occur, 2-Me, 3-Me)

Lipták, A. et al., *Carbohydr. Res.*, 1982, **107**, 300 (D-2-Me)

Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (equilib)

Joroncic, L.D. et al., *Carbohydr. Res.*, 1989, **191**, 130 (L-Me)

Lee, E. et al., *Carbohydr. Res.*, 1990, **197**, 270 (synth, cryst struct, β -L-pyr 1,2,3-tri-Ac; synth, pmr, α -L-pyr 1,2,4-tri-Ac)

Ogawa, K. et al., *Biosci., Biotechnol., Biochem.*, 1997, **61**, 539 (isol, pmr, 3-Me)

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2421

Kim, S.R. et al., *Phytochemistry*, 2000, **54**, 503-509 (Buergerisides)

Li, Y.M. et al., *Phytochemistry*, 2000, **54**, 923-925 (Ningposides)

Merck Index, 13th edn., 2001, No. 8256 (L-form, bibl)

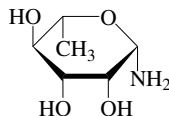
Ramm, M. et al., *Carbohydr. Res.*, 2003, **338**, 109-112 (D-form, isol)

Yang, X.-D. et al., *J. Asian Nat. Prod. Res.*, 2003, **5**, 223-226 (Lagotosides)

Francis, J.A. et al., *Helv. Chim. Acta*, 2004, **87**, 317-326 (Phenyl rhamnoside, isol)

Rhamnosylamine

6-Deoxymannosylamine



β -L-Pyranose-form

C₆H₁₃NO₄ 163.173

L-Pyranose-form [7321-62-2]

Hemi-MeOH solvate: Mp 116° dec. [α]_D +38 (H₂O).

Hemi-EtOH solvate: Mp 80°. [α]_D +28 (H₂O).

N-Me: N-Methyl-L-rhamnopyranosylamine
C₇H₁₅NO₄ 177.2
Mp 126-127°.

N-Et: N-Ethyl-L-rhamnopyranosylamine
C₈H₁₇NO₄ 191.227
Mp 141-142°.

N-Ph: N-Phenyl-L-rhamnopyranosylamine
C₁₂H₁₇NO₄ 239.271
Mp 121-127° dec. (144°). [α]_D +136.9 → +77.1 (EtOH).

N-(p-Nitrophenyl): Mp 208°. [α]_D +320 (Py).

N-(p-Nitrophenyl), 2,3,4-tri-Ac: [38730-26-6]
Bright-yellow needles. Mp 212° (209°). [α]_D +123 (c, 1.0 in CHCl₃). [α]_D +149 (CHCl₃).

N-(4-Methylphenyl): Mp 151-154°. [α]_D +92 → +80 (MeOH).

β -L-Pyranose-form

Mp 116° (105-110°). [α]_D +38 (H₂O).

N-Ac: N-Acetyl- β -L-rhamnopyranosylamine
C₈H₁₅NO₅ 205.21
Mp 210-211°. [α]_D +65.7 (H₂O).

N,2,3,4-Tetra-Ac: IN,2,3,4-Tetra-O-acetyl- β -L-rhamnopyranosylamine
C₁₄H₂₁NO₈ 331.322
Mp 135-137°. [α]_D +6.2 (CHCl₃).

Lobry de Bruyn, C.A. et al., *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1895, **14**, 134 (synth)

Irvine, J.C. et al., *J.C.S.*, 1910, **97**, 1449 (N-Ph)
Votoček, E. et al., *Coll. Czech. Chem. Comm.*, 1934, **6**, 77 (N-Et, N-Me)

Frèrejacque, M. et al., *C. R. Hebd. Seances Acad. Sci.*, 1938, **207**, 638 (N-p-nitrophenyl)

Inoue, Y. et al., *Nippon Nogei Kagaku Kaishi*, 1948, **22**, 70 (N-tolyl)

Ellis, G.P. et al., *Adv. Carbohydr. Chem.*, 1955, **10**, 95 (rev)

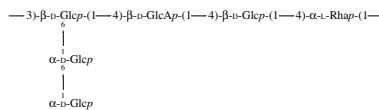
Magnin, A. et al., *Tetrahedron*, 1972, **28**, 3069

Cusack, N.J. et al., *J.C.S. Perkin I*, 1974, 73 (L-Pyr)

Isbell, H.S. et al., *Methods Carbohydr. Chem.*, 1980, **8**, 255 (N-Ac, tri-Ac)

Rhamsan

[96949-21-2]



Isol. from *Alcaligenes* spp.

R-80

Jansson, P.-E. et al., *Carbohydr. Res.*, 1986, **156**, 157 (struct)

Talashek, T.A. et al., *Carbohydr. Res.*, 1987, **160**, 303 (conformn, props)

Lee, E.J. et al., *Carbohydr. Res.*, 1991, **214**, 11 (conformn)

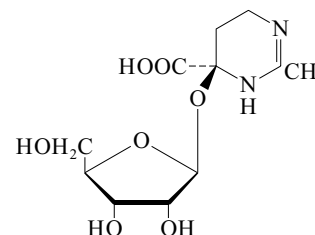
Robinson, G. et al., *Spec. Publ. - R. Soc. Chem.*, 1991, **82**, 22 (conformn)

Campana, S. et al., *Carbohydr. Res.*, 1992, **231**, 31 (struct, props)

Rhizolotine**R-82**

1,4,5,6-Tetrahydro-2-methyl-4-(β -D-ribofuranosyloxy)-4-pyrimidinecarboxylic acid, 9CI

[102731-62-4]



C₁₁H₁₈N₂O₇ 290.272

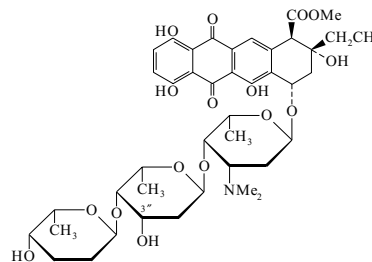
Nucleoside-type antibiotic. Prod. by *Rhizobium loti* on *Lotus* spp. Cryst. (MeOH).

Shaw, G.J. et al., *Chem. Comm.*, 1986, 180 (struct)

Scott, D.B. et al., *J. Bacteriol.*, 1987, **169**, 278 (isol)

Rhodirubin A**R-83**

[64253-73-2]



C₄₂H₅₅NO₁₆ 829.894

Anthracycline antibiotic. Isol. from *Streptomyces* spp. Shows antitumour props.

Mp 141-143°. [α]_D²⁰ +120 (c, 1 in CHCl₃).

► QI9279170

3''-Deoxy: **Rhodirubin B**

[64502-82-5]

C₄₂H₅₅NO₁₅ 813.894

From *Streptomyces* spp. Sol. MeOH, acids, DMSO, C₆H₆, toluene; fairly sol. Et₂O; poorly sol. H₂O, hexane.

Mp 135-137°. [α]_D²⁰ +190 (c, 0.1 in CHCl₃). λ_{\max} 235 (E1%/1cm 593); 257 (E1%/1cm 307); 295 (E1%/1cm 113); 457 (E1%/1cm 153); 490 (E1%/1cm 187) (MeOH) (Berdy).

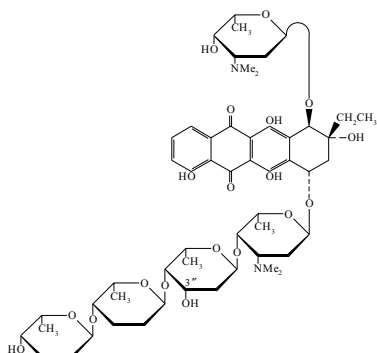
► LD₅₀ (mus, ipr) 10 - 12.6 mg/kg. QI9290000

Kitamura, I. et al., *J. Antibiot.*, 1977, **30**, 616
Matsuzawa, Y. et al., *J. Antibiot.*, 1981, **34**, 1596 (props)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RHA125; RHA150

β -Rhodomycin V
[12628-90-9]

R-84



$C_{54}H_{78}N_2O_{19}$ 1059.212

Anthracycline antibiotic. Isol. from *Streptomyces purpurascens*. Active against gram-positive bacteria, and mycoplasmas. Red powder. Sol. MeOH, $CHCl_3$, bases, acids; fairly sol. C_6H_6 ; poorly sol. H_2O , hexane. $[\alpha]_D^{25} -40$ ($CHCl_3$). λ_{max} 232; 252; 496 (MeOH) (Berdy).

3''-Deoxy:

$C_{54}H_{78}N_2O_{18}$ 1043.213

From *Streptomyces purpurascens*.

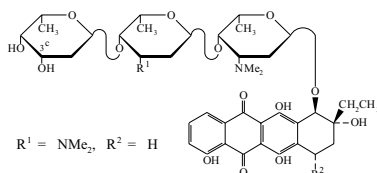
Active against gram-positive bacteria and mycobacteria. Red powder.

Ger. Pat., 1971, 2 012 808; *CA*, 76, 44690 (isol)
Brockmann, H. *et al.*, *Tet. Lett.*, 1973, 3699 (isol, deriv)

γ -Rhodomycin III

R-85

γ -Rhodomycin-Roa₂-deoFuc



$R^1 = NMe_2, R^2 = H$

$C_{42}H_{58}N_2O_{14}$ 814.925

Anthracycline antibiotic. Isol. from *Streptomyces purpurascens*. Active against gram-positive bacteria. Red powder.

3^C-Deoxy: γ -Rhodomycin-Roa₂-Rod

$C_{42}H_{58}N_2O_{13}$ 798.926

Active against gram-positive bacteria and mycobacteria. Red powder. λ_{max} 499 (E1%/1cm 194) ($CHCl_3$) (Berdy).

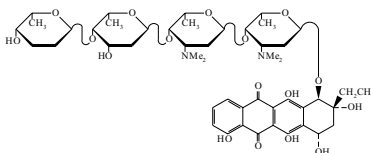
Brockmann, H. *et al.*, *Naturwissenschaften*, 1961, 48, 717; 1963, 50, 43 (isol)

Brockmann, H. *et al.*, *Tet. Lett.*, 1969, 415; 1973, 3699 (struct)

γ -Rhodomycin IV

γ -Rhodomycin-Roa₂-deoFuc-Rod

R-86



$C_{48}H_{68}N_2O_{17}$ 945.068

Anthracycline antibiotic. Isol. from *Streptomyces purpurascens*. Active against gram-positive bacteria. Red powder.

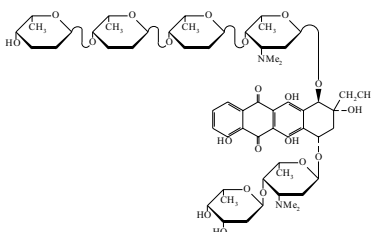
Brockmann, H. *et al.*, *Naturwissenschaften*, 1961, 48, 717; 1963, 50, 43 (isol)

Brockmann, H. *et al.*, *Tet. Lett.*, 1969, 415 (struct)

β -Rhodomycin S3

β -Rhodomycin-Roa₂-Rod₃-deoFuc

[55898-18-5]



$C_{60}H_{88}N_2O_{21}$ 1173.356

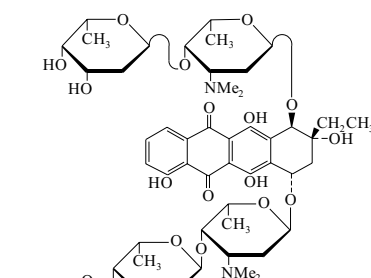
Anthracycline antibiotic. Isol. from *Streptomyces purpurascens*. Active against gram-positive bacteria. Red powder. λ_{max} 500 (E1%/1cm 125) (MeOH) (Berdy).

Brockmann, H. *et al.*, *Tet. Lett.*, 1975, 831 (isol)

β -Rhodomycin S4

β -Rhodomycin-Roa₂-deoFuc₂-Rod

[55898-16-3]



$C_{54}H_{78}N_2O_{20}$ 1075.212

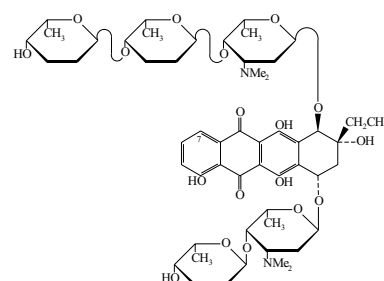
Anthracycline antibiotic. Isol. from *Streptomyces purpurascens*. Active against gram-positive bacteria. Red powder.

Brockmann, H. *et al.*, *Tet. Lett.*, 1975, 831 (isol)

β -Rhodomycin S1B

[55898-17-4]

R-89



$C_{54}H_{78}N_2O_{18}$ 1043.213

Anthracycline antibiotic. Isol. from *Streptomyces purpurascens*. Active against gram-positive bacteria. Red powder.

7-Hydroxy: β -Isorhodomycin S1A

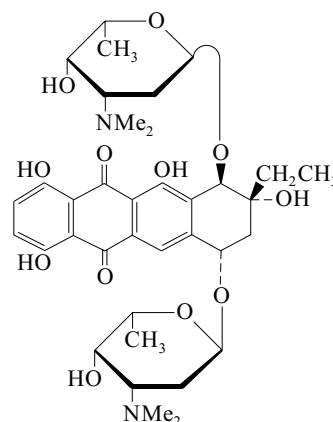
$C_{54}H_{78}N_2O_{19}$ 1059.212

Isol. from *Streptomyces purpurascens*. Active against gram-positive bacteria. Red powder.

Brockmann, H. *et al.*, *Tet. Lett.*, 1975, 831 (isol)

α_2 -Rhodomycin-Roa₂

R-90



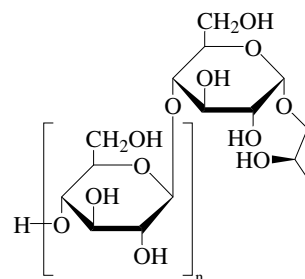
$C_{36}H_{48}N_2O_{12}$ 700.781

Anthracycline antibiotic. Isol. from *Streptomyces* sp. Active against gram-positive bacteria. Red powder.

Brockmann, H. *et al.*, *Tet. Lett.*, 1969, 415 (isol, struct)

Rhynchosporosides

R-91



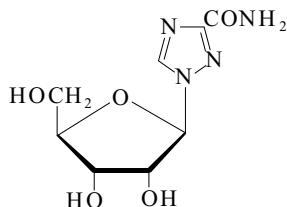
Polysaccharide antibiotics. A family of fungal toxins prod. by *Rhynchosporium*

secalis. Causal agent of scald disease in barley. Isol. and struct. elucidation of these compds. has not been fully completed.

Beier, R.C. *et al.*, *Carbohydr. Res.*, 1983, **121**, 79 (synth, struct)
 Nicolaou, K.C. *et al.*, *J.A.C.S.*, 1985, **107**, 5556 (synth, bibl)

Ribavirin, INN, USAN R-92

1- β -D-Ribofuranosyl-1H-1,2,4-triazole-3-carboxamide, 9CI. **Tribavirin**, BAN. Copegus. Rebetol. Ribamidil. Vilona. Viramid. Viratek. Virazid. Virazide. Virazole. VirustazCotronak [36791-04-5]



C₈H₁₂N₄O₅ 244.207

Antiviral agent. Usually administered as an aerosol. As Ribetron, in combination with Interferon Alfa 2b, used for the treatment of malignant melanoma, Kaposi's sarcoma, warts, hairy cell leukaemia, hepatitis B and C and non-Hodgkin's lymphoma. Marketed drug. Approved for clinical use in the EU (1999). Approved by FDA (July 2003) for treatment of pediatric hepatitis CSol. H₂O. Mp 174-176°. [α]_D²⁵ -36.5. Log P -3.58 (calc). Analogue of Tiazofurine, T-114.

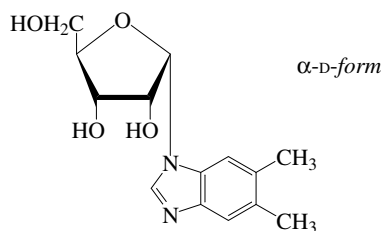
► Possible human teratogen and other adverse effects by inhalation. LD₅₀ (rat, orl) 2700 mg/kg. Exp. reprod. and teratogenic effects. XZ4250000

Kreishman, G.P. *et al.*, *J.A.C.S.*, 1972, **94**, 5894 (pmr, cmr)
 Sidwell, R.W. *et al.*, *Science (Washington, D.C.)*, 1972, **177**, 705 (pharmacol)
 Witkowski, J.T. *et al.*, *J. Med. Chem.*, 1973, **16**, 935 (synth, pharmacol)
 Prusiner, P. *et al.*, *Nature (London)*, *New Biol.*, 1973, **244**, 116 (cryst struct)
 Ito, Y. *et al.*, *Tet. Lett.*, 1979, 2521 (synth)
 Chang, T.W. *et al.*, *Drugs*, 1981, **22**, 111 (rev, pharmacol)
 Canonica, P.G. *et al.*, *Antibiotics (N.Y.)*, 1983, **6**, 161 (rev)
 Canonica, P.G. *et al.*, *Antiviral Res.*, 1985, **75** (rev)
 Smith, R.A. *et al.*, *Int. Congr. Symp. Ser. R. Soc. Med.*, 1986, **108**, 3
 Johnson, E.M. *et al.*, *J. Am. Coll. Toxicol.*, 1990, **9**, 551 (tox, rev)
 Patterson, J.L. *et al.*, *Rev. Infect. Dis.*, 1990, **6**, 1139 (rev)
 Snell, N.J.C. *et al.*, *Antiviral Chem. Chemother.*, 1991, **2**, 257 (rev)
 Arnold, S.D. *et al.*, *Appl. Occup. Environ. Hyg.*, 1991, **6**, 271 (tox)
 Shults, R.A. *et al.*, *J. Occup. Environ. Med.*, 1996, **38**, 257 (tox)
 Harvie, P. *et al.*, *J. Pharmacol. Exp. Ther.*, 1996, **279**, 1009 (pharmacol)
 Omar, R.F. *et al.*, *Toxicol. Appl. Pharmacol.*, 1997, **143**, 140 (tox)
 Nishimura, N. *et al.*, *Carbohydr. Res.*, 1998, **307**, 211-215 (synth)

Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 626
 Scott, L.J. *et al.*, *Drugs*, 2002, **62**, 507-556 (rev)
 Keating, G.M. *et al.*, *Drugs*, 2003, **63**, 701-730 (rev)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RJA500

Ribazole R-93

5,6-Dimethyl-1-ribofuranosylbenzimidazole



C₁₄H₁₈N₂O₄ 278.307

α-D-form [132-13-8]

Obtained by degradn. of Vitamin B₁₂, V-26. Intermed. in biosynth. of Vitamin B₁₂ V-26.
 Mp 192-196°.

Picrate: [19887-69-5]
 Mp 211°. [α]_D²⁰ +13.5 (c, 3 in Py).

2,3,5-Tri-Ac: [16162-41-7]
 C₂₀H₂₄N₂O₇ 404.419
 [α]_D²⁰ +50.7 (c, 2.1 in CHCl₃).

2,3,5-Tribenzoyl: [16205-58-6]
 C₃₅H₃₀N₂O₇ 590.631
 [α]_D²⁰ -53.2 (c, 1.9 in CHCl₃).

2,3-O-Isopropylidene:
 C₁₇H₂₂N₂O₄ 318.372
 Mp 177-179°. [α]_D²⁰ -82.3 (c, 0.91 in CHCl₃).

2,3,5-Tribenzyl:
 C₃₅H₃₆N₂O₄ 548.68
 [α]_D²⁰ +56.7 (c, 2.1 in CHCl₃).

β-D-form [13082-84-3]

Cryst. (MeOH). Mp 202-203° (191-193°). [α]_D²⁰ -51.9 (c, 2 in Py).

Picrate: Mp 192° (174-175°).

2,3,5-Tri-Ac: [30747-25-2]
 [α]_D²⁰ -41.4 (c, 2.2 in CHCl₃).

2,3,5-Tri-Ac, *picrate*: [16162-45-1]
 Mp 173-175°. [α]_D²⁰ -13.2 (c, 1.2 in CHCl₃).

2,3,5-Tribenzoyl: [16205-55-3]
 Mp 136-137°. [α]_D²⁰ -121 (c, 1 in CHCl₃).

2,3,5-Tribenzoyl, *picrate*: [16205-56-4]
 Mp 165-166°. [α]_D²⁰ -85.8 (c, 2 in CHCl₃).

2,3-O-Isopropylidene: Mp 189-190°. [α]_D²⁰ -29.8 (c, 1.3 in CHCl₃).

Brink, N.G. *et al.*, *J.A.C.S.*, 1950, **72**, 1866
 Weygand, F. *et al.*, *Chem. Ber.*, 1952, **85**, 1001 (β-D-form)
 Kaczka, E.A. *et al.*, *J.A.C.S.*, 1952, **74**, 5549 (α-D-form, isol)
 Revankar, G.R. *et al.*, *J. Het. Chem.*, 1968, **5**, 615 (β-D-form)
 Stevens, J.D. *et al.*, *J.O.C.*, 1968, **33**, 1799; 1806 (α-D-tri-Ac, β-D-tri-Ac)
 Renz, P. *et al.*, *Methods Enzymol.*, (Colowick, S.P., Ed.), Academic Press, N.Y., 1971, **18**, 82; *CA*, **75**, 117118j (synth)

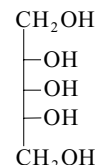
Blanche, F. *et al.*, *Angew. Chem., Int. Ed.*, 1995, **34**, 383 (rev)

Ribitol, 9CI, 8CI

Adonitol

[488-81-3]

R-94



C₅H₁₂O₅ 152.147

A *meso* compd. but chiral derivs. (e.g. isopropylidene derivs.) have been prepd. The abs. config. of these is given by the numbering scheme for the D-ribitol skeleton. Occurs free in the plants *Adonis vernalis* and *Bupleurum falcatum* and in bound form in bacterial cell wall teichoic acids and in Riboflavine, R-95. Cryst. (EtOH). Mp 102°.

► VJ0800000

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoylribitol
 C₂₆H₂₄O₈ 464.471
 Cryst. (Et₂O/petrol). Mp 102°.

2,3,4-Tribenzoyl, 1,5-ditrityl: 2,3,4-Tri-O-benzoyl-1,5-di-O-tritylribitol
 C₆₄H₅₂O₈ 949.11
 Cryst. (EtOH). Mp 161°.

2,3,4-Tribenzoyl, 1,5-ditosyl: 2,3,4-Tri-O-benzoyl-1,5-di-O-tosylribitol
 C₄₀H₃₆O₁₂S₂ 772.849
 Mp 161-162°.

2,3,4-Tribenzoyl, 1,5-diphosphate:
 C₂₆H₂₆O₁₄P₂ 624.43
 Mp 166-168°.

Pentakis(4-hydroxybenzoyl): Buccinulin.
Kelletin A
 [112727-22-7]
 C₄₀H₃₂O₁₅ 752.684

Metab. of the marine mollusc *Buccinum corneum*. HIV reverse transcriptase (HIV-rt) inhibitor. Exhibits antibacterial props.

2,4-O-Methylene, 1,5-dibenzoyl: 1,5-Di-O-benzoyl-2,4-O-methylenribitol
 [31569-33-2]
 C₂₀H₂₀O₇ 372.374
 Mp 164-166°.

2,4-O-Methylene, 1,5-dibenzoyl, 3-mesyl: 1,5-Di-O-benzoyl-3-O-mesyl-2,4-O-methylenribitol
 [31569-37-6]
 C₂₁H₂₂O₉S 450.465
 Cryst. (EtOH). Mp 180-182°.

1,2:3,5-Diisopropylidene: 1,2:3,5-Di-O-isopropylideneribitol
 C₁₁H₂₀O₅ 232.276
 Mp 119-120° (as *p*-Nitrobenzoyl). Referred to as 1,3,4,5-diisopropylidene in the ref.

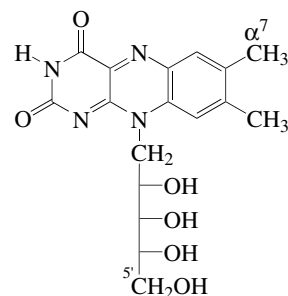
1,2:4,5-Diisopropylidene: 1,2:4,5-Di-O-isopropylideneribitol
 C₁₁H₂₀O₅ 232.276
 Syrup.

- 1,2:4,5-Diisopropylidene, 3-benzoyl: 3-O-Benzoyl-1,2:4,5-di-O-isopropylideneribitol
C₁₈H₂₄O₆ 336.384
Mp 69-71°.
- 1,3:2,5-Diisopropylidene: 1,3:2,5-Di-O-isopropylideneribitol
C₁₁H₂₀O₅ 232.276
Syrup. Mp 128-219° (as *p*-nitrobenzoyl).
- 1,4:2,3-Diisopropylidene: 1,4:2,3-Di-O-isopropylideneribitol
C₁₁H₂₀O₅ 232.276
Cryst. (petrol). Mp 105-107° (101-102°).
- 2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-isopropylidene-D-ribitol
C₁₁H₂₀O₅ 232.276
Syrup. [α]_D +24 (c, 1.8 in CHCl₃) (+7).
- 2,3:4,5-Diisopropylidene, 1-benzoyl: 1-O-Benzoyl-2,3:4,5-di-O-isopropylidene-D-ribitol
C₁₈H₂₄O₆ 336.384
Mp 82-83° (79-80°). [α]_D -33 (c, 1.3 in CHCl₃). DL-form also prepd.
- 2,3:4,5-Diisopropylidene, 1-tosyl: C₁₈H₂₆O₇S 386.465
Cryst. (2-propanol). Mp 91-92°.
Unstable at r.t.
- 2,5:3,4-Di-O-isopropylidene: 2,5:3,4-Di-O-isopropylidene-D-ribitol
C₁₁H₂₀O₅ 232.276
Cryst. (C₆H₆/petrol). Mp 94-100°. [α]_D -84 (c, 1.1 in CHCl₃).
- 2,5:3,4-Diisopropylidene, 1-benzoyl: 1-O-Benzoyl-2,5:3,4-di-O-isopropylidene-D-ribitol
C₁₈H₂₄O₆ 336.384
Syrup. [α]_D -70 (c, 1 in CHCl₃).
- 2,4-O-Benzylidene: 2,4-O-Benzylideneribitol
[20638-70-4]
C₁₂H₁₆O₅ 240.255
Needles (CHCl₃). Mp 133-135°. [α]_D²⁷ 0 (c, 2 in EtOH).
- 2,4-O-Benzylidene, 1,5-dibenzoyl: 1,5-Di-O-benzoyl-2,4-O-benzylideneribitol
[31569-21-8]
C₂₆H₂₄O₇ 448.471
Cryst. (EtOH). Mp 137-138°.
- 2,4-O-Benzylidene, 1,5-dibenzoyl, 3-mesyl: 1,5-Di-O-benzoyl-2,4-O-benzylidene-3-O-mesytribitol
[31569-30-9]
C₂₇H₂₆O₉S 526.563
Cryst. (EtOH). Mp 135-137°.
- 2,3:4,5-Di-O-benzylidene: 2,3:4,5-Di-O-benzylideneribitol
C₁₉H₂₀O₅ 328.364
Needles (petrol). Mp 174-175° (164-165°). [α]_D²⁷ -35.7 (c, 4 in CHCl₃).
- 2,3:4,5-Di-O-benzylidene, 1-Ac: 1-O-Acetyl-2,3:4,5-di-O-benzylideneribitol
C₂₁H₂₂O₆ 370.401
Cryst. (EtOH). Mp 143-144°. [α]_D²⁰ -57 (c, 1.1 in CHCl₃).
- 2,3,4-Tribenzyl, 1,5-ditrityl: 2,3,4-Tri-O-benzyl-1,5-di-O-tritylribitol
C₆₄H₅₈O₅ 907.159
Cryst. (Et₂O/petrol). Mp 106°.

- 3,4-Di-O-α-D-glucopyranoside: C₁₇H₃₂O₁₅ 476.431
Isol. from hydrolyate of *Lactobacillus arabinosaceus* teichoic acid.
Mp 118-121°. [α]_D +137 (H₂O).
- 1-O-β-D-Ribofuranoside: 1-O-β-D-Ribofuranosyl-D-ribitol
C₁₀H₂₀O₉ 284.263
Constit. unit of *Haemophilus influenzae* type b antigen, as the phosphate. [α]_D²² -27 (c, 0.55 in H₂O) (as phosphate di-Na salt).
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- Aslani-shotorbani, G. et al., *Carbohydr. Res.*, 1985, 136, 37 (isopropylidene derivs)
- Cimino, G. et al., *J. Nat. Prod.*, 1987, 50, 1171 (*Buccinulin*)
- Awal, A. et al., *Carbohydr. Res.*, 1990, 205, 173 (diisopropylidene derivs)
- Kopf, J. et al., *Carbohydr. Res.*, 1992, 233, 35 (cryst struct, penta-Ac)
- Rozenberg, M. et al., *Carbohydr. Res.*, 2000, 328, 307-319 (ir)
- Boto, A. et al., *J.O.C.*, 2003, 68, 5310-5319 (2,3:4,5-diisopropylidene, synth, pmr, cmr, ir)
- Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RIF000

Riboflavine, 9CI, BAN, INN R-95

1-Deoxy-1-(3,4-dihydro-7,8-dimethyl-2,4-dioxobenzoyl-10(2H)-yl)-D-ribitol, 9CI. Flavaxin. Lactoflavine. Ovoflavine. Vitamin B₂. Vitamin G. Rus-superidine yellow III. E101. Many other names
[83-88-5]



C₁₇H₂₀N₄O₆ 376.368
Widely distributed, but occurs naturally in free form only in the retina, in whey and in urine. Main forms occurring in tissues and cells are flavine mononucleotide and flavine-adenine dinucleotide. Colour additive in food. Used as adsorption indicator in titrimetric detn. of Ag. Nutrient supplement. Vitamin cofactor. Orange needles. Sol. EtOH; spar. sol. H₂O. Mp 280° dec. [α]_D -9.8 (H₂O). [α]_D -125 (20N NaOH). p*K*_{a1} 1.9; p*K*_{a2} 10.2 (25°). Green fluor. in soln. λ_{max} 220; 265; 365; 455 (H₂O).

- LD₅₀ (rat, ipr) 560 mg/kg. VJ1400000
- 5'-Phosphate: Riboflavine 5'-(dihydrogen phosphate), 9CI. Flavin mononucleotide. Lactoflavin phosphate. Monophosphoriboflavin. Riboflavin monophosphate. Vitamin B₂ phosphate. FMN. Bisulase [146-17-8]
[130-40-5]
C₁₇H₂₀N₄O₉P 455.34
The prosthetic group of various flavine enzymes. Enzyme co-factor, vitamin. Sodium salt used as dietary and nutrient supplement. Yellow cryst. + 2H₂O. Tends to isomerise to isomeric phosphates.
- LD₅₀ (mus, ivn) 365 mg/kg. VJ1350000
- 4',5'-Cyclic phosphate: Riboflavine 4',5'-cyclic phosphate
[986-54-9]
C₁₇H₁₉N₄O₈P 438.333
Isol. from the brown alga *Scytosiphon lomentaria*. Autofluorescent agent.
- 5'-Adenosine diphosphate: See Flavin adenine dinucleotide in *The Combined Chemical Dictionary*.
- 5'-α-D-Ribofuranoside: Lampteroflavin
[114590-52-2]
C₂₂H₂₈N₄O₁₀ 508.484
Isol. from the toxic luminous mushroom *Lampteromyces japonicus*. Fluorescent. λ_{max} 265 (ε); 368 (ε); 445 (ε) (H₂O) (Derep).
- 2',3',4',5'-Tetra-Ac: [752-13-6]
Mp 250-252°.

2',3',4',5'-Tetrabutanoyl: Riboflavine
2',3',4',5'-tetrabutanoate, 9CI. Riboflavine butyrate. Riboflavine tetrabutryate. Vitamin B₂ tetrabutryate. Many other names
[752-56-7]

C₃₃H₄₄N₄O₁₀ 656.731

Widely used food additive. Antiatherosclerotic and antihyperlipidaemic agent. Transparent red plates (MeOH). Mp 149° (142-146°).

▶ VJ1755000

2',3'-Bis(3-pyridinecarbonyl), 4'(5')-phosphate: Riboflavine 2',3'-di-3-pyridinecarboxylate monodihydrogen phosphate (ester), 9CI. FMN-dinicotinate
[36119-03-6]

C₂₉H₂₇N₆O₁₁P 666.54

Used in treatment of diabetic neuropathy.

2',3',4',5'-Tetrakis(3-pyridinecarbonyl): Riboflavine 2',3',4',5'-tetra-3-pyridinecarboxylate, 9CI. Riboflavine nicotinate. RN-4
[14984-66-8]

C₄₁H₃₂N₈O₁₀ 796.751

Antilipidaemic agent. Mp 154-155°.

3N-Me, tetra-Ac: [21066-33-1]

Mp 189-191°.

5'-Carboxylic acid: **Schizoflavin 1**. Vitamin B₂ acid
[59224-03-2]

C₁₇H₁₈N₄O₇ 390.352

Metab. of *Schizophyllum commune* and other basidiomycetes. Shows antifungal activity vs. *Chartonella antiqua* in red tides. Yellow needles (EtOH). Mp 250° dec.

5'-Aldehyde: Vitamin B₂ aldehyde. **Schizoflavin 2**
[59224-04-3]

C₁₇H₁₈N₄O₆ 374.352

Prod. by *Schizophyllum commune*.

α'-Hydroxy: α'-Hydroxyriboflavine, 9CI. **Nekoflavin**
[86073-07-6]

C₁₇H₂₀N₄O₇ 392.368

Isol. from the choroids of cats eye. Fine yellow cryst. (EtOH). Mp 196.5-198°.

[6184-17-4, 129569-92-2, 129569-93-3]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 2, 895B (ir)

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Kotaki, A. et al., *J. Vitaminol.*, 1968, 14, 247 (synth, tetranicotinate)

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Paterson, T. et al., *Chem. Comm.*, 1969, 290 (biosynth)

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Mayhew, S.S. et al., *Biochim. Biophys. Acta*, 1971, 235, 289-302 (synth, uv, 1,5-dihydro 5'-phosphate)

Kainosho, M. et al., *Biochemistry*, 1972, 11, 741 (P-31 nmr, phosphate)

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Karrer, W. et al., *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 2610 (occur)

McCormick, D.A. et al., *J. Het. Chem.*, 1974, 11, 969

Tachibana, S. et al., *J. Nutr. Sci. Vitaminol.*, 1975, 21, 347; 1979, 25, 361; 1980, 66, 333 (Schizoflavins)

Yagi, K. et al., *Biochemistry*, 1976, 15, 2877 (N-15 nmr)

Yoneda, F. et al., *J.A.C.S.*, 1976, 98, 830 (synth) *Kirk-Othmer Encycl. Chem. Technol.*, 3rd edn., Wiley, 1978, 24, 108 (rev. synth)

Holmgren, A. et al., *Experientia*, 1980, 36, 149 (rev. FAD)

Walt, D.R. et al., *J.A.C.S.*, 1980, 102, 7805 (synth, 5'-phosphate)

Merrill, A.H. et al., *Methods Enzymol.*, 1980, 66, 287 (phosphate, synth)

Tachibana, S. et al., *Methods Enzymol.*, 1980, 66, 333 (Schizoflavin I)

Van Schagen, C.G. et al., *Eur. J. Biochem.*, 1981, 120, 33-39 (synth, cmr, 1,5-dihydro 5'-phosphate)

Brown, G.M. et al., *Adv. Enzymol. Relat. Areas Mol. Biol.*, 1982, 53, 345 (rev. biosynth)

Bacher, A. et al., *J.A.C.S.*, 1982, 104, 3754 (biosynth)

Tachibana, S. et al., *Mol. Cell. Biochem.*, 1983, 51, 149-160 (Schizoflavins, isol. struct)

Ulrich, E.L. et al., *Tet. Lett.*, 1983, 24, 473 (pmr)

Keller, P.J. et al., *Tetrahedron*, 1983, 39, 3471 (biosynth)

Moonem, C.T.W. et al., *Biochemistry*, 1984, 23, 4859-4867 (pmr, cmr, conform, tetra-Ac, 5'-phosphate, 1,5-dihydro 5'-phosphate)

Cooperman, J.M. et al., *Food Sci. Technol.*, 1984, 13, 299 (rev. metab. props)

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Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 4425; 4473; 7551

Ebitani, M. et al., *Chem. Pharm. Bull.*, 1989, 37, 2273 (cryst struct, tetrabutryate)

Al-Shammmary, F.J. et al., *Anal. Profiles Drug Subst.*, 1990, 19, 429 (rev)

Isobe, M. et al., *Tet. Lett.*, 1990, 31, 717 (Lampteroflavin)

Uyakul, D. et al., *Tetrahedron*, 1990, 46, 1367 (Lampteroflavin)

Takahashi, H. et al., *Tetrahedron*, 1991, 47, 6215 (Lampteroflavin)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1054

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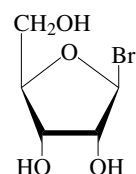
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Ribofuranosyl bromide

R-96



β-D-form

C₅H₉BrO₄ 213.028

β-D-form

3,5-Dibenzoyl: 3,5-Di-O-benzoyl-β-D-ribofuranosyl bromide
C₁₉H₁₇BrO₆ 421.244
[α]_D²⁰ +109 (CHCl₃).

3,5-Dibenzoyl, 2-Ac: 2-O-Acetyl-3,5-di-O-benzoyl-β-D-ribofuranosyl bromide
C₂₁H₁₉BrO₇ 463.281

[α]_D²⁰ -52 (CHCl₃).

3,5-Dibenzoyl, 2-(4-nitrobenzoyl): [α]_D²⁰ +8 (CHCl₃).

Tribenzoyl: 2,3,5-Tri-O-benzoyl-β-D-ribofuranosyl bromide
[16205-60-0]

[22860-91-9]

C₂₆H₂₁BrO₇ 525.352

[α]_D²⁰ -11 (CHCl₃).

Tris(4-nitrobenzoyl): [59279-38-8]
Needles (CH₂Cl₂). Mp 100-105°. [α]_D²⁰ +55.4 (c, 1.6 in CHCl₃).

2,3-O-Isopropylidene, 5-(4-nitrobenzoyl): [57274-19-8]

Cryst. (CH₂Cl₂/Et₂O/petrol). Mp 118.5-120.5°. [α]_D²⁵ -67.5 (c, 1.5 in CHCl₃).

λ_{max} 255 nm (ε 13 200) (Et₂O).

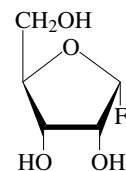
Gorin, P.A.J. et al., *Can. J. Chem.*, 1962, 40, 275 (β-D-dibenzoyl, β-D-dibenzoyl Ac, β-D-dibenzoyl nitrobenzoyl, β-D-tribenzoyl)

El-Khadem, H.S. et al., *Carbohydr. Res.*, 1976, 47, 233 (β-D-trisnitrobenzoyl)

De Bernado, S. et al., *J.O.C.*, 1976, 41, 287 (β-D-isopropylidene nitrobenzoyl)

Ribofuranosyl fluoride

R-97



α-D-form

C₅H₉FO₄ 152.122

α-D-form

Tribenzoyl: 2,3,5-Tri-O-benzoyl-α-D-ribofuranosyl fluoride, 8CI
[2924-33-6]

C₂₆H₂₁FO₇ 464.446

Syrup. [α]_D²² +44.8 (c, 1.1 in CHCl₃).

Tri-Me: 2,3,5-Tri-O-methyl-α-D-ribofuranosyl fluoride
[115130-27-3]

C₈H₁₅FO₄ 194.202

Syrup. [α]_D²⁰ +49 (c, 1.35 in CHCl₃).

5-Benzyl, 2,3-di-Me: 5-O-Benzyl-2,3-di-O-methyl-α-D-ribofuranosyl fluoride
[115130-25-1]

C₁₄H₁₉FO₄ 270.3

Syrup. [α]_D²⁸ +40.1 (c, 2.7 in CHCl₃).

2,3-Dibenzyl, 5-Me: 2,3-Di-O-benzyl-5-O-methyl-α-D-ribofuranosyl fluoride
[115130-29-5]

C₂₀H₂₃FO₄ 346.398

Syrup. [α]_D²⁷ +39.5 (c, 1.33 in CHCl₃).

Tribenzyl: 2,3,5-Tri-O-benzyl-α-D-ribofuranosyl fluoride
C₂₆H₂₇FO₄ 422.495

Oil. [α]_D¹⁹ +32 (c, 1.1 in CHCl₃).

β-D-form

2,5-Dibenzoyl: 2,5-Di-O-benzoyl-β-D-ribofuranosyl fluoride
C₁₉H₁₇FO₆ 360.338

Cryst. (CH₂Cl₂/pentane). Mp 131-133°. [α]_D²² +50.5 (c, 0.2 in CHCl₃).

2,5-Dibenzoyl, 3-Ac: 3-O-Acetyl-2,5-di-O-benzoyl- β -D-ribofuranosyl fluoride
[22224-46-0]
 $C_{21}H_{19}FO_7$ 402.375
Syrup. $[\alpha]_D^{22} +103$ (c, 0.4 in $CHCl_3$).

2,3-Dibenzoyl, 5-Ac: 5-O-Acetyl-2,3-di-O-benzoyl- β -D-ribofuranosyl fluoride
[22224-44-8]
 $C_{21}H_{19}FO_7$ 402.375
Syrup. $[\alpha]_D^{22} +93.6$ (c, 0.5 in $CHCl_3$).

3,5-Dibenzoyl: 3,5-Di-O-benzoyl- β -D-ribofuranosyl fluoride
[10096-02-3]
 $C_{19}H_{17}FO_6$ 360.338
Cryst. (Et_2O /pentane). Mp 102-105°. $[\alpha]_D^{22} +98$ (c, 0.4 in $CHCl_3$).

3,5-Dibenzoyl, 2-Ac: 2-O-Acetyl-3,5-di-O-benzoyl- β -D-ribofuranosyl fluoride
[22224-45-9]
 $C_{21}H_{19}FO_7$ 402.375
Syrup. $[\alpha]_D^{22} +52.7$ (c, 0.9 in $CHCl_3$).

Tribenzoyl: 2,3,5-Tri-O-benzoyl- β -D-ribofuranosyl fluoride
[2924-34-7]
 $C_{26}H_{21}FO_7$ 464.446
Cryst. (Et_2O /pentane). Mp 81-83°. $[\alpha]_D^{22} +120.3$ (c, 4.0 in $CHCl_3$).

Tri-Me: 2,3,5-Tri-O-methyl- β -D-ribofuranosyl fluoride
[115130-26-2]
 $C_8H_{15}FO_4$ 194.202
Syrup. $[\alpha]_D^{20} +81$ (c, 1.68 in $CHCl_3$).

5-Benzyl, 2,3-di-Me: 5-O-Benzyl-2,3-di-O-methyl- β -D-ribofuranosyl fluoride
[115130-24-0]
 $C_{14}H_{19}FO_4$ 270.3
Syrup. $[\alpha]_D^{27} +54.8$ (c, 2.78 in $CHCl_3$).

2,3-Dibenzyl, 5-Me: 2,3-Di-O-benzyl-5-O-methyl- β -D-ribofuranosyl fluoride
[115130-28-4]
 $C_{20}H_{23}FO_4$ 346.398
Cryst. (pentane). Mp 43.9-44°. $[\alpha]_D^{26} +67.9$ (c, 2.01 in $CHCl_3$).

Tribenzyl: 2,3,5-Tri-O-benzyl- β -D-ribofuranosyl fluoride
 $C_{26}H_{27}FO_4$ 422.495
Needles. Mp 45-45.5°. $[\alpha]_D^{21} +52$ (c, 1.0 in $CHCl_3$).

Gregerson, N. *et al.*, *Acta Chem. Scand.*, 1968, **22**, 1307 (synth)

Hall, L.D. *et al.*, *Can. J. Chem.*, 1970, **48**, 1155 (pmr, nmr)

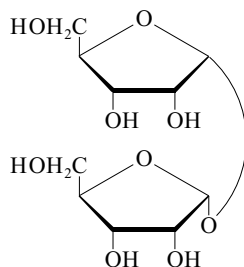
Bock, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1975, **29**, 682; 1976, **30**, 727 (synth, nmr, cmr)

Mukaiyama, T. *et al.*, *Chem. Lett.*, 1983, 935 (tribenzyl, pmr, cmr)

Hayashi, M. *et al.*, *Chem. Lett.*, 1984, 1747 (α/β -D-tribenzyl)

Szarek, W.A. *et al.*, *Chem. Lett.*, 1984, 1751 (α/β -D-tribenzyl)

Araki, Y. *et al.*, *Carbohydr. Res.*, 1987, **171**, 125 (derivs, synth, pmr, F-19 nmr)

 α -D-Ribofuranosyl α -D-ribofuranoside

$C_{10}H_{18}O_9$ 282.247

Hexabenzyl: [91110-25-7]

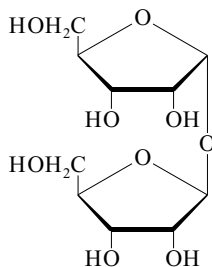
$C_{52}H_{54}O_9$ 822.993

Syrup. $[\alpha]_D +147$ (c, 1.0 in $CHCl_3$).

Araki, Y. *et al.*, *Carbohydr. Res.*, 1984, **127**, C5 (synth)

 β -D-Ribofuranosyl α -D-ribofuranoside, 9CI

α -D-Ribofuranosyl β -D-ribofuranoside
[71508-22-0]



$C_{10}H_{18}O_9$ 282.247

Cryst. (2-propanol). Mp 180-182°. $[\alpha]_{H_g}^{20} +56.4$ (c, 0.93 in H_2O).

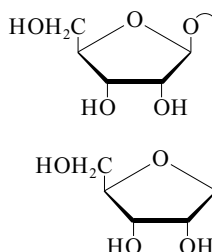
Di-O-isopropylidene: [71508-14-0]

$C_{16}H_{26}O_9$ 362.376

Syrup. $[\alpha]_{H_g}^{20} -22.7$ (c, 2.33 in $CHCl_3$).

Schmidt, R.R. *et al.*, *Chem. Ber.*, 1979, **112**, 2659 (synth, pmr)

Giarcia Ruiz, P.A. *et al.*, *An. Quim., Ser. C*, 1982, **78**, 420; *CA*, **98**, 161055k

 β -D-Ribofuranosyl β -D-ribofuranoside, 9CI

$C_{10}H_{18}O_9$ 282.247

Basic repeating unit of polyribo-phosphate, type-specific substance from *Haemophilus influenzae*. Cryst. ($EtOH$). Mp 158-160°. $[\alpha]_D^{22} -100$ (c, 0.48 in H_2O).

R-98

Hexa-Ac: 2,3,5-Tri-O-acetyl- β -D-ribofuranosyl 2,3,5-tri-O-acetyl- β -D-ribofuranoside, 9CI
[128420-79-1]

$C_{22}H_{30}O_{15}$ 534.47

Long needles ($EtOH$). Mp 107°. $[\alpha]_D^{26} -49.5$ (c, 0.54 in $CHCl_3$).

Hexabenzoyl: 2,3,5-Tri-O-benzoyl- β -D-ribofuranosyl 2,3,5-tri-O-benzoyl- β -D-ribofuranoside, 9CI
[62374-52-1]

$C_{52}H_{42}O_{15}$ 906.895

Cryst. ($EtOH$). Mp 143-145° (softens > 130°). $[\alpha]_D^{25} +34.1$ (c, 0.5 in $CHCl_3$).

Hexabenzyl: 2,3,5-Tri-O-benzyl- β -D-ribofuranosyl 2,3,5-tri-O-benzyl- β -D-ribofuranoside, 9CI
[91110-23-5]

$C_{52}H_{54}O_9$ 822.993

$[\alpha]_D +25$ (c, 1.0 in $CHCl_3$).

Rosenberg, E. *et al.*, *J. Biol. Chem.*, 1961, **236**, 2845; 1962, **237**, 1040 (isol, synth, hexabenzoyl)

Zderic, J.A. *et al.*, *Experientia*, 1964, **20**, 48 (synth, hexabenzoyl)

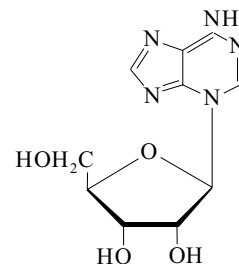
Araki, Y. *et al.*, *Carbohydr. Res.*, 1984, **127**, C5 (hexabenzyl)

Lerner, L.M. *et al.*, *Carbohydr. Res.*, 1990, **199**, 116; **207**, 138 (synth, hexa-Ac, hexabenzoyl)

3-Ribofuranosyladenine, 8CI R-101

3-Ribofuranosyl-3H-purin-6-amine, 9CI.

3-Isoadenosine



$C_{10}H_{13}N_5O_4$ 267.244

β -D-form [2273-78-1]

Mp 210-211° dec. $[\alpha]_D^{25} -29.4$ (c, 0.5 in 0.05N HCl). pK_a 5 (H_2O). λ_{max} 277 (ϵ 10 900) (H_2O), 274 nm (13 900) (0.1N HCl).

2',3',5'-Tri-Ac:

$C_{16}H_{19}N_5O_7$ 393.355

Mp 224-225°. $[\alpha]_D^{26} -11$ (c, 0.54 in DMF). pK_a 5.6 (H_2O).

2',3',5'-Tribenzoyl:

$C_{31}H_{25}N_5O_7$ 579.568

Mp 246-247° dec. $[\alpha]_D^{26} -69$ (c, 0.89 in DMF).

2',3'-O-Isopropylidene:

$C_{13}H_{17}N_5O_4$ 307.308

Mp 250-251°.

5'-Diphenyl phosphate, 2',3'-dibenzoyl:

[2864-26-8]

$C_{36}H_{30}N_5O_9P$ 707.635

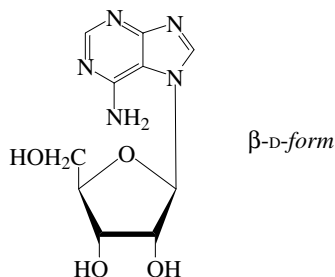
Yellow cryst. Mp 158-160°. $[\alpha]_D^{26} -52$ (c, 0.51 in $CHCl_3$).

Leonard, N.J. *et al.*, *J.A.C.S.*, 1963, **85**, 2027 (synth)

Leonard, N.J. *et al.*, *Biochemistry*, 1965, **4**, 354; 365 (β -D-form, synth)

Asai, M. *et al.*, *Agric. Biol. Chem.*, 1967, **31**, 319
 Miyaki, M. *et al.*, *Chem. Pharm. Bull.*, 1970, **18**, 1446 (*pmr*)
 Schmidt, C.L. *et al.*, *J.O.C.*, 1972, **37**, 2300 (*synth*)
 Tindall, C.G. *et al.*, *J.O.C.*, 1972, **37**, 3985 (*synth, pmr*)

7-Ribofuranosyladenine R-102
 7-Ribofuranosyl-7H-purin-6-amine, 9CI

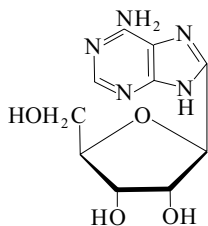


$C_{10}H_{13}N_5O_4$ 267.244

α-D-form [4710-71-8]
 Residue present in Pseudovitamin B₁₂.
 Mp 220-227°. $[\alpha]_D^{25}$ 0 (c, 0.4 in H₂O).

β-D-form [485-08-5]
 Nucleoside from Pseudovitamin B₁₂.
 Mp 246°. $[\alpha]_D^{25}$ -84.9 (c, 0.4 in H₂O).
 Montgomery, J.A. *et al.*, *J.A.C.S.*, 1965, **87**, 5442 (*synth, pmr*)
 Rousseau, R.J. *et al.*, *J.O.C.*, 1968, **33**, 2828 (*β-D-form, synth*)
 Friedmann, H.C. *et al.*, *J.O.C., CA*, 1971, **75**, 136927p (*synth*)
 Chenon, M.T. *et al.*, *J.A.C.S.*, 1975, **97**, 4627 (*cmr*)

8-Ribofuranosyladenine, 8CI R-103
 8-Ribofuranosyl-1H-purin-6-amine, 9CI

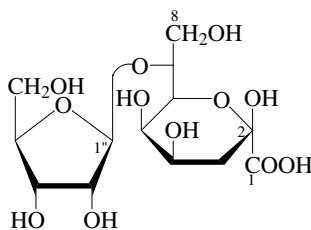


$C_{10}H_{13}N_5O_4$ 267.244

β-D-form [23316-74-7]
 Cryst. (H₂O). Mp 260°. $[\alpha]_D^{25}$ -70.1 (c, 0.3 in H₂O).

Bobek, M. *et al.*, *Coll. Czech. Chem. Comm.*, 1969, **34**, 247 (*synth*)
 Igolen, J. *et al.*, *Eur. J. Med. Chem. (Chim. Ther.)*, 1972, **7**, 207; *CA*, **77**, 114766z (*β-D-tribenzoyl*)
 Lefebvre-Soubeyran, O. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1975, **281**, 655 (*conformn, struct*)

β-D-Ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid, 9CI R-104



β-form

$C_{13}H_{22}O_{12}$ 370.31

β-form

Me glycoside: [93215-11-3]
 $C_{14}H_{24}O_{12}$ 384.336
 Glass + H₂O (as Na salt). $[\alpha]_D^{20}$ -22.6 (c, 1.1 in H₂O). CAS no. refers to Na salt.

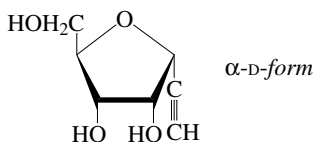
Me glycoside, Me ester: [93215-10-2]
 $C_{15}H_{26}O_{12}$ 398.363
 Syrup + 1.5H₂O. $[\alpha]_D^{20}$ -3.5 (c, 0.87 in MeOH).

[93215-09-9, 94528-58-2]

Kosma, P. *et al.*, *Carbohydr. Res.*, 1984, **132**, 261 (*β-Me gly, β-Me gly Me ester, pmr*)
 Neszmelyi, A. *et al.*, *Carbohydr. Res.*, 1985, **139**, 13 (*cmr*)

Ribofuranosylethyne

R-105



α-D-form

$C_7H_{10}O_4$ 158.154

α-D-form

3,6-Anhydro-1,2-dideoxy-D-altro-hept-1-ynitol
 Cryst. (EtOAc). Mp 102-103°. $[\alpha]_D^{24}$ +9.8 (c, 2.04 in MeOH).

Tri-Ac: 4,5,7-Tri-O-acetyl-3,6-anhydro-1,2-dideoxy-D-altro-hept-1-ynitol
 $C_{13}H_{16}O_7$ 284.265
 Syrup. $[\alpha]_D^{24}$ +109.4 (c, 1.06 in CHCl₃).

2,3-O-Isopropylidene: 3,6-Anhydro-1,2-dideoxy-4,5-O-isopropylidene-D-altro-hept-1-ynitol

$C_{10}H_{14}O_4$ 198.218
 Mp 40-41°. $[\alpha]_D^{22}$ -48.3 (c, 1.1 in CHCl₃).

2,3-O-Isopropylidene, 5-trityl: 3,6-Anhydro-1,2-dideoxy-4,5-O-isopropylidene-7-O-trityl-D-altro-hept-1-ynitol
 $C_{29}H_{28}O_4$ 440.538
 Foam. $[\alpha]_D^{22}$ -23.8 (c, 0.4 in CHCl₃).

Tribenzyl: 3,6-Anhydro-4,5,7-tri-O-benzyl-1,2-dideoxy-D-altro-hept-1-ynitol
 $C_{28}H_{28}O_4$ 428.527
 Cryst. (EtOH aq.). Mp 52-53°.

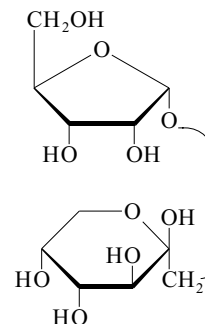
β-D-form 3,6-Anhydro-1,2-dideoxy-D-allo-hept-1-ynitol
 Mp 63-64°. $[\alpha]_D^{23}$ -18.2 (c, 0.71 in MeOH).

2,3-O-Isopropylidene: 3,6-Anhydro-1,2-dideoxy-4,5-O-isopropylidene-D-allo-hept-1-ynitol
 $C_{10}H_{14}O_4$ 198.218
 $[\alpha]_D^{22}$ -21.2 (c, 0.94 in CHCl₃).

Tribenzyl: 3,6-Anhydro-4,5,7-tri-O-benzyl-1,2-dideoxy-D-allo-hept-1-ynitol
 $C_{28}H_{28}O_4$ 428.527
 Cryst. (EtOH). Mp 63-64°. $[\alpha]_D$ +9.7 (c, 4.9 in CHCl₃).

Buchanan, J.G. *et al.*, *J.C.S. Perkin 1*, 1974, 1943; 1975, 1191 (*α-D-form, α-D-isopropylidene, α-D-isopropylidene trityl, α-D-tribenzyl, β-D-form, derivs*)
 Buchanan, J.G. *et al.*, *Carbohydr. Res.*, 1975, **45**, 312 (*α-D-form, α-D-tri-Ac, β-D-isopropylidene*)
 Buchanan, J.G. *et al.*, *Carbohydr. Res.*, 1985, **136**, 37 (*synth*)

1-O-α-D-Ribofuranosyl-D-fructose R-106



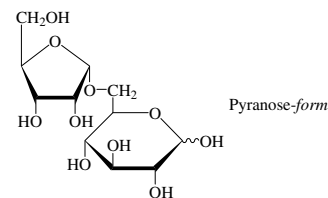
$C_{11}H_{20}O_{10}$ 312.273

β-Pyranose-form

2,3,4,5-Di-O-isopropylidene, tribenzyl: [88999-60-4]
 $C_{38}H_{46}O_{10}$ 662.775
 $[\alpha]_D$ +37.7 (c, 2.5 in CHCl₃).

Dourtoglou, V. *et al.*, *J. Carbohydr. Chem.*, 1983, **2**, 57

6-O-α-D-Ribofuranosyl-D-glucose R-107



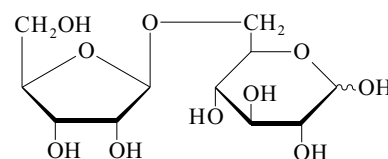
Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273

Reducing disaccharide. $[\alpha]_D$ +77 (H₂O).

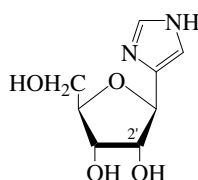
Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1962, **40**, 275

6-O-β-D-Ribofuranosyl-D-glucose R-108



C₁₁H₂₀O₁₀ 312.273
Reducing disaccharide. [α]_D²⁰ 0 (H₂O).
Gorin, P.A.J. *et al.*, *Can. J. Chem.*, 1962, **40**, 275

4(5)-Ribofuranosyl-1*H*-imidazole **R-109**

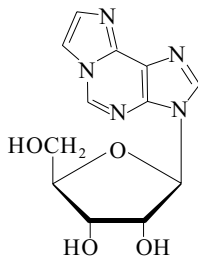


C₈H₁₂N₂O₄ 200.194

β-*D*-form

Amorph. solid. [α]_D²⁰ -30.2 (c, 1.67 in MeOH).
2'-Deoxy: 4(5)-(2-Deoxyribofuranosyl)-1*H*-imidazole
[138806-27-6]
C₈H₁₂N₂O₃ 184.194
Prisms (MeOH/CHCl₃). Mp 164-166°. [α]_D²⁰ +24 (c, 1.0 in MeOH).
Bergstrom, D.E. *et al.*, *J.C.S. Perkin 1*, 1994, 3029 (2'-deoxy)
Harusawa, S. *et al.*, *J.O.C.*, 1996, **61**, 4405 (synth, ir, pmr, cmr)

3-Ribofuranosylimidazo[2,1-*i*]purine **R-110**



C₁₂H₁₃N₅O₄ 291.266

β-*D*-form

1,N⁶-Ethenoadenosine. ε-Adenosine [39007-51-7]
Readily prepd. from Adenosine and chloroacetaldehyde. Fluorescent biol. probe.
Numerous analogues have been synthesised, some showing antitumour props.

3'-Phosphate: 3'-εAMP
C₁₂H₁₄N₅O₇P 371.246
Monohydrate. Mp 190-192° dec.

5'-Phosphate: 5'-εAMP
C₁₂H₁₄N₅O₇P 371.246
Monohydrate. Mp 190-192° dec.

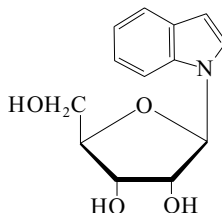
5'-Diphosphate: εADP
[38806-39-2]
C₁₂H₁₅N₅O₁₀P₂ 451.225
Fluorescent analogue of ADP with high affinity for ATPase and ADP binding sites. Monohydrate (as Na salt). Mp 202-204° dec.

5'-Triphosphate: εATP. Etheno-ATP [37482-17-0]
C₁₂H₁₆N₅O₁₃P₃ 531.205

Dihydrate (as Di-Na salt). Mp 192-194° dec. p*K*_{a1} 4.3; p*K*_{a2} 6.7.

Barrio, J.R. *et al.*, *Biochem. Biophys. Res. Commun.*, 1972, **46**, 597-604 (use)
Secrist, J.A. *et al.*, *Biochemistry*, 1972, **11**, 3499-3506 (synth, triphosphate, use)
Hilborn, D.A. *et al.*, *Biochemistry*, 1973, **12**, 983-990 (biochem)
Roberts, R.E. *et al.*, *Bioorg. Chem.*, 1975, **4**, 181-187 (purifn, pmr, biochem, phosphate)
Bhat, G.A. *et al.*, *J.C.S. Perkin 1*, 1981, 2387 (bibl)
Jaskólski, M. *et al.*, *Acta Cryst. B*, 1982, **38**, 3171 (cryst struct)
Schubert, B. *et al.*, *Anal. Biochem.*, 1995, **226**, 288-292 (synth, triphosphate)

1-Ribofuranosylindole, 8CI **R-111**



C₁₃H₁₅NO₄ 249.266

β-*D*-form [15040-74-1]

Cryst. (H₂O). Mp 143-145°. [α]_D -94 (c, 1.0 in H₂O). λ_{max} 287.5 (ε 3 300), 276 (5 300), 264 (6 400), 218 nm (32 700) (H₂O).

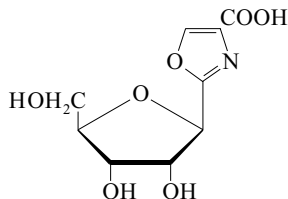
2',3',5'-Tribenzoyl:

C₃₄H₂₇NO₇ 561.59
Glass. [α]_D -57 (c, 1.0 in CHCl₃). λ_{max} 289 (ε 3 800), 266 (9 800), 222.5 nm (55 800) (EtOH).

5'-Trityl, 2',3'-di-Ac:

C₃₆H₃₃NO₆ 575.66
[α]_D²⁰ +18.4 (c, 1.5 in CHCl₃).
Preobrazhenskaya, M.N. *et al.*, *Tetrahedron*, 1967, **23**, 4653 (β-*D*-form, synth)
Walton, E. *et al.*, *J.O.C.*, 1968, **33**, 192 (synth, pmr)
Preobrazhenskaya, M.N. *et al.*, *CA*, 1970, **73**, 45779j (rev)

2-β-*D*-Ribofuranosyl-4-oxazolecarboxylic acid, 9CI **R-112**



C₉H₁₁NO₇ 245.188
Shows antineoplastic activity. Needles. Mp 132-134°. Log P -3.39 (calc). Less potent analogue of antineoplastic agent Tiazofurine, T-114.

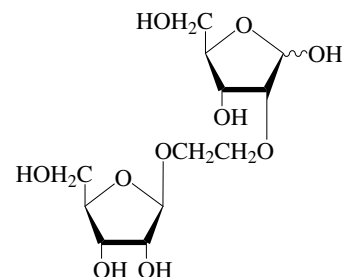
Me ester: [129149-88-8]
C₁₀H₁₃NO₇ 259.215
Needles. Mp 114-115°.

Amide: 2-(β-*D*-Ribofuranosyl)-4-oxazolecarboxamide, 9CI. Oxazofurin [129149-89-9]
C₉H₁₂N₂O₆ 244.204
Oxygen analogue of tiazofurin and Selenazofurin, S-25.

Franchetti, P. *et al.*, *J. Med. Chem.*, 1990, **33**, 2849 (synth, uv, pmr)
Goldstein, B.M. *et al.*, *J. Med. Chem.*, 1994, **37**, 1684 (amide, cryst struct)

2-*O*-[2-(β-*D*-Ribofuranosylox-*y*)ethyl] β-*D*-ribofuranoside, 9CI **R-113**

Ethylene glycol 1,1':2,2''-diribofuranoside [244136-64-9]

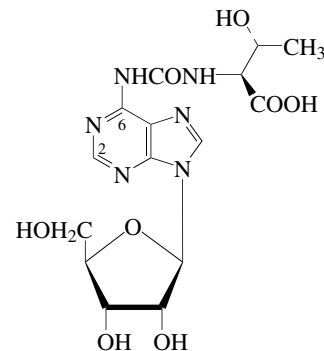


C₁₂H₂₂O₁₀ 326.3
Constit. of *Polianthes tuberosa*. [α]_D²⁰ +14.3 (c, 0.6 in MeOH).

Firdous, S. *et al.*, *Fitoterapia*, 1999, **70**, 203-204

***N*-[[9-β-*D*-Ribofuranosyl-9*H*-purin-6-yl]amino]carbonyl]threonine, 9CI** **R-114**

N-[(9-β-*D*-Ribofuranosylpurin-6-yl)carbamoyl]threonine. N⁶-(*N*-Threonyl-carbonyl)adenosine. *i*^o A [24719-82-2]



C₁₅H₂₀N₆O₈ 412.358
Modified nucleoside present in tRNAs. Cryst. (MeCN). Mp 204-207°.

N⁶-Me: [[1-(9-β-*D*-Ribofuranosylpurin-6-yl)methyl]carbamoyl]threonine. N⁶-Methyl-N⁶-(*N*-threonylcarbonyl)-adenosine. *m*^l A [39667-81-7]
C₁₆H₂₂N₆O₈ 426.385
Modified nucleoside present in tRNAs. Cryst. + 2H₂O (EtOH). Mp 159-160°. [α]_D²³ -5.3 (c, 0.5 in H₂O).

2-(*Methylthio*): N-[(2-*Methylthio*-9-β-D-ribofuranosyl)purin-6-yl]carbamoyl]-threonine. *ms*² *t*⁶ A
[70333-82-3]

C₁₆H₂₂N₆O₈S 458.451

Modified nucleoside present in tRNAs.

Hong, C.I. *et al.*, *J. Med. Chem.*, 1971, **14**, 748; 1973, **16**, 139 (*synth*, *uv*, *ir*, *pmr*)

Dutta, S.P. *et al.*, *Biochemistry*, 1975, **14**, 3144 (*synth*, *Me deriv*)

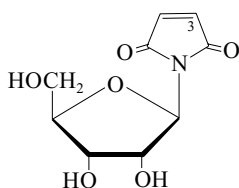
Kasai, H. *et al.*, *Eur. J. Biochem.*, 1976, **69**, 435 (*uv*, *pmr*, *ms*)

Parthasarathy, R. *et al.*, *Biochemistry*, 1977, **16**, 4999 (*cryst struct*)

Yamaizumi, Z. *et al.*, *J.A.C.S.*, 1979, **101**, 2224 (*isol*, *methylthio deriv*)

Vold, B.S. *et al.*, *J. Bacteriol.*, 1981, **148**, 869 (*isol*)

1-Ribofuranosyl-1*H*-pyrrole-2,5-dione R-115
N-Ribofuranosylmaleimide



C₉H₁₁NO₆ 229.189

β-D-form

Synthetic nucleoside antibiotic. Less active analogue of Showdomycin.

Cryst. (MeOH/EtOAc). Mp 75-85°. [α]_D²⁵ -32 (c, 0.11 in H₂O).

3-*Chloro*: [77405-91-5]

C₉H₁₀ClNO₆ 263.634

Shows *in vitro* antineoplastic activity.

Amorph. [α]_D²⁵ -28 (c, 0.11 in H₂O).

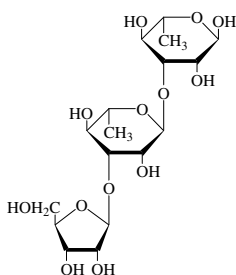
3-*Methyl*: [77405-90-4]

C₁₀H₁₃NO₆ 243.216

Shows *in vitro* antineoplastic activity. Oil. [α]_D²⁵ -26 (c, 0.11 in H₂O).

Numao, N. *et al.*, *J. Med. Chem.*, 1981, **24**, 515 (*synth*)

β-D-Ribofuranosyl-(1 → 3)-α-L-rhamnopyranosyl-(1 → 3)-L-rhamnose R-116



α-Pyranose-form

C₁₇H₃₀O₁₃ 442.416

Repeating trisaccharide unit of the O-specific polysaccharide of *Citrobacter freundii* 028, 1c.

Mp 135-137°. [α]_D²¹ -59 (c, 0.6 in MeOH).

Mixture of α- and β-pyranose anomers.

α-Pyranose-form

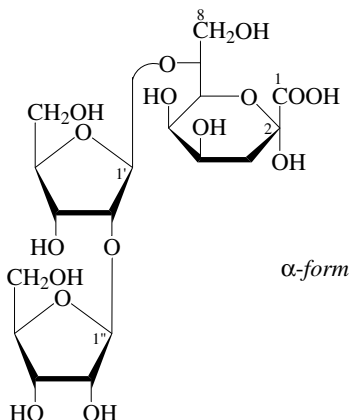
Me glycoside:

C₁₈H₃₂O₁₃ 456.443

Mp 125-127°. [α]_D²² -96 (c, 0.4 in MeOH).

Hirooka, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 2001, **74**, 1679-1694 (*synth*, *pmr*, *cmr*, α-*Me pyr*)

β-D-Ribofuranosyl-(1 → 2)-β-D-ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid, 9CI R-117



α-form

C₁₈H₃₀O₁₆ 502.425

α-form

Me glycoside: [93215-28-2]

C₁₉H₃₂O₁₆ 516.452

Glass (as Na salt). [α]_D²⁰ -10.4 (c, 0.52 in H₂O). CAS no. refers to Na salt.

β-form

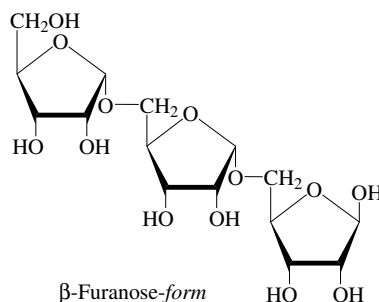
Me glycoside: [93215-21-5]

Glass (as Na salt). [α]_D²⁰ -16.5 (c, 0.4 in H₂O). CAS no. refers to Na salt.

[93215-20-4, 93215-27-1]

Kosma, P. *et al.*, *Carbohydr. Res.*, 1984, **132**, 261 (α-*Me gly*, β-*Me gly*, *pmr*)

α-D-Ribofuranosyl-(1 → 5)-α-D-ribofuranosyl-(1 → 5)-D-ribose, 9CI R-118
[71508-20-8]



β-Furanose-form

C₁₅H₂₆O₁₃ 414.363

Hygroscopic syrup. [α]_{Hg}²⁰ +122.6 (c, 1.34 in MeOH).

β-Furanose-form

2,3;2',3';2'',3''-Tri-O-isopropylidene:

[71508-16-2]

C₂₄H₃₈O₁₃ 534.556

Cryst. (petrol). Mp 111-112°. [α]_{Hg}²⁰ +29.5 (c, 0.77 in CHCl₃).

Me glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene: [60949-71-5]

C₂₅H₄₀O₁₃ 548.583

Mp 106°. [α]_{Hg}²⁰ +20.8 (c, 0.26 in CHCl₃).

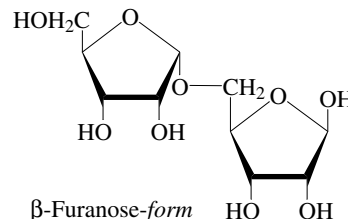
Benzyl glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene: [71508-11-7]

C₃₁H₄₄O₁₃ 624.681

[α]_{Hg}²⁰ -4 (c, 1.93 in CHCl₃).

Schmidt, R.R. *et al.*, *Chem. Ber.*, 1979, **112**, 2659 (*synth*, β-triisopropylidene, β-*Me fur deriv*, β-*benzyl fur deriv*, *pmr*)

5-*O*-α-D-Ribofuranosyl-D-ribose R-119



β-Furanose-form

C₁₀H₁₈O₉ 282.247

Oil. [α]_{Hg}²⁰ +64.8 (c, 1.16 in MeOH).

β-Furanose-form

2,3;2',3'-Di-O-isopropylidene: 2,3-O-Iso-propylidene-5-O-(2,3-O-isopropylidene-α-D-ribofuranosyl)-β-D-ribofuranose [71508-15-1]

C₁₆H₂₆O₉ 362.376

[α]_{Hg}²⁰ +18.8 (c, 0.79 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene-5-O-α-D-ribofuranosyl-β-D-ribofuranoside [71508-18-4]

C₁₄H₂₄O₉ 336.338

[α]_{Hg}²⁰ +11.4 (c, 1.19 in CHCl₃).

Me glycoside, 2,3;2',3'-di-O-isopropylidene: Methyl 2,3-O-isopropylidene-5-O-(2,3-O-isopropylidene-α-D-ribofuranosyl)-β-D-ribofuranoside [70209-78-8]

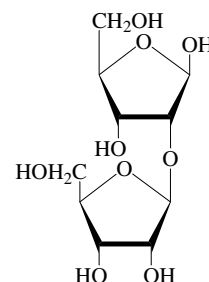
C₁₇H₂₈O₉ 376.403

[α]_D²⁰ -1.7 (c, 1.0 in CHCl₃).

Schmidt, R.R. *et al.*, *Angew. Chem., Int. Ed.*, 1979, **18**, 466 (*synth*, *pmr*, *glycoside*)

Schmidt, R.R. *et al.*, *Chem. Ber.*, 1979, **112**, 2659 (*synth*)

2-*O*-β-D-Ribofuranosyl-D-ribose, 9CI R-120
[85277-34-5]



β-Furanose-form

C₁₀H₁₈O₉ 282.247

β-Furanose-form

2',3',5,5'-Tetrabenzoyl, 1,3-di-Ac: 1,3-Di-O-acetyl-5-O-benzoyl-2-O-(2,3,5-tri-O-benzoyl-β-D-ribofuranosyl)-β-D-ribofuranose, 9CI
C₄₂H₃₈O₁₅ 782.753
Cryst. (EtOAc/pentane). Mp 75-78°. [α]_D²⁰ +38 (c, 0.39 in CHCl₃).

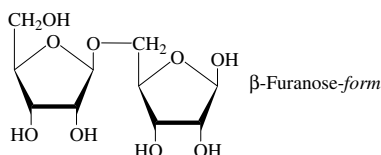
Benzyl glycoside, 3-benzyl, 2',3',5,5'-tetrabenzoyl: Benzyl 5-O-benzoyl-3-O-benzyl-2-O-(2,3,5-tri-O-benzoyl-β-D-ribofuranosyl)-β-D-ribofuranoside [93215-14-6]

C₅₂H₄₆O₁₃ 878.928
Syrup. [α]_D²⁰ +8.6 (c, 0.37 in CHCl₃).

Me glycoside: Methyl 2-O-β-D-ribofuranosyl-β-D-ribofuranoside, 9CI [93245-43-3]

C₁₁H₂₀O₉ 296.274
Syrup. [α]_D²⁰ -59 (c, 0.85 in H₂O).

Kosma, P. *et al.*, *Carbohydr. Res.*, 1984, **132**, 261; 1985, **141**, 239 (synth, pmr)

5-O-β-D-Ribofuranosyl-D-ribose**R-121**C₁₀H₁₈O₉ 282.247**β-Furanose-form**

Me glycoside, 2,3:2',3'-Di-O-isopropylidene: Methyl 2,3-O-isopropylidene-5-O-(2,3-O-isopropylidene-β-D-ribofuranosyl)-β-D-ribofuranoside, 9CI [70209-72-2]

C₁₇H₂₈O₉ 376.403
Oil. [α]_D²⁰ -72.1 (c, 1.0 in CHCl₃).

Benzyl glycoside, 2,3:2',3'-Di-O-isopropylidene: Benzyl 2,3-O-isopropylidene-5-O-(2,3-O-isopropylidene-β-D-ribofuranosyl)-β-D-ribofuranoside, 9CI [70209-73-3]

C₂₃H₃₂O₉ 452.5
Oil. [α]_D²⁰ -83.4 (c, 1.0 in CHCl₃).

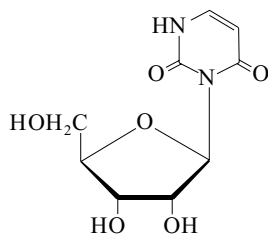
[20881-14-5]

Stoddart, J.F. *et al.*, *Can. J. Chem.*, 1968, **46**, 3061

Schmidt, R.R. *et al.*, *Angew. Chem., Int. Ed.*, 1979, **18**, 466 (synth, pmr, glycosides)

3-Ribofuranosyluracil, 8CI**R-122**

3-Ribofuranosyl-2,4(1H,3H)-pyrimidine-dione, 9CI. Isouridine

C₉H₁₂N₂O₆ 244.204**β-D-form** [6745-33-1]

Mp 200-202°. [α]_D²⁷ -38.7 (c, 1.0 in H₂O).
λ_{max} 262 (ε 7 700) (pH 1), 292 nm (10 600) (pH 11).

2',3',5'-Tri-Ac: [29031-50-3]

C₁₅H₁₈N₂O₉ 370.315

Cryst. (EtOAc/Et₂O/heptane). Mp 132-134°.

2',3',5'-Tribenzoyl: [29706-92-1]

C₃₀H₂₄N₂O₉ 556.528[α]_D²³ +24 (CHCl₃).

2'-Deoxy: 3-(2'-Deoxy-β-D-ribofuranosyl)uracil

C₉H₁₂N₂O₅ 228.204

Cryst. (2-propanol). Mp 82-90° (2-propanolate) Mp 169-170°. [α]_D +105.3 (c, 1.0 in H₂O).

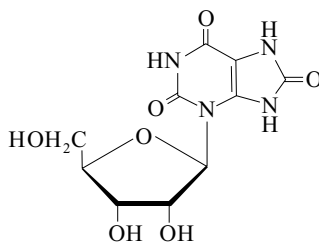
Pichat, L. *et al.*, *Bull. Soc. Chim. Fr.*, 1970, 1833 (β-D-form)

Winkley, M.W. *et al.*, *J.C.S. (C)*, 1970, 1365 (β-D-tri-Ac 2-deoxy)

Polazzi, J.O. *et al.*, *J.O.C.*, 1974, **39**, 3114 (synth, pmr, 2-deoxy)

3-Ribofuranosyluric acid, 8CI**R-123**

7,9-Dihydro-3-ribofuranosyl-1H-purine-2,6,8(3H)-trione, 9CI. Uric acid riboside

C₁₀H₁₂N₄O₇ 300.227**β-D-form** [2124-54-1]

Isol. from beef blood.

Cryst. (MeOH).

Mp 220° dec. [α]_D²⁴ -19 (0.1N NaOH).

2,3,5-Tribenzoyl:

C₃₁H₂₄N₄O₁₀ 612.551Mp 200°. [α]_D²² +38 (c, 6.4 in Me₂CO).

Forrest, H.S. *et al.*, *J.C.S.*, 1961, 963 (isol, uv, struct)

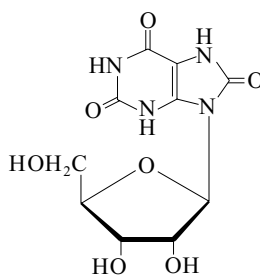
Hatfield, D. *et al.*, *J.C.S.*, 1963, 899 (isol, deriv)

Lohrmann, R. *et al.*, *J.C.S.*, 1964, 451 (synth)

Nishimura, T. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 441 (β-D-form, synth)

9-Ribofuranosyluric acid, 8CI**R-124**

Uric acid riboside. 8-Hydroxyxanthosine

C₁₀H₁₂N₄O₇ 300.227**β-D-form** [21082-30-4]Metab. of *Lactobacillus plantarum*.

Mp 240°. [α]_D²⁹ -41.2 (c, 1.02 in 0.1N NaOH). λ_{max} 293, 241 (H₂O); 288, 238 (pH 1); 302, 251 nm (pH 11).

5'-Phosphate: [21082-31-5]

C₁₀H₁₃N₄O₁₀P 380.207

λ_{max} 289, 240.5 (pH 2); 292, 246.5 nm (pH 11).

Falconer, R. *et al.*, *J.C.S.*, 1939, 1369 (occur)

Hatfield, D. *et al.*, *Biochim. Biophys. Acta*, 1964, **91**, 160

Holmes, R.E. *et al.*, *J.A.C.S.*, 1965, **87**, 1772 (synth, pmr)

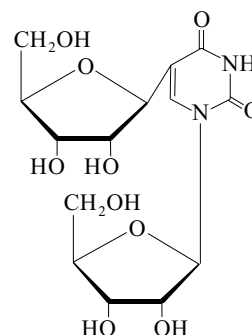
Ikehara, M. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 1330 (synth)

Saneyoshi, M. *et al.*, *Chem. Pharm. Bull.*, 1968, **16**, 1616 (synth)

Schulz, B.S. *et al.*, *Helv. Chim. Acta*, 1987, **70**, 210 (synth)

5-Ribofuranosyluridine**R-125**

1,5-Diribofuranosyluracil

C₁₄H₂₀N₂O₁₀ 376.319**β-D-form** [4089-10-5]

Isol. from *E. coli*. Intermediate in the biochemical interconversion of Uridine and Pseudouridine.

Mp 241-244°. λ_{max} 265 (9 800) (pH 2 and 12).

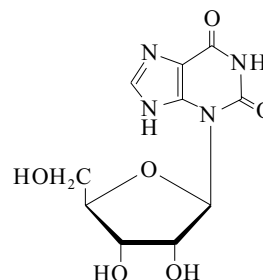
Pollak, J.K. *et al.*, *Biochim. Biophys. Acta*, 1962, **55**, 798

Lis, A.W. *et al.*, *Biochim. Biophys. Acta*, 1962, **61**, 799

Brown, D.M. *et al.*, *J.C.S. (C)*, 1968, 1053 (synth)

3-Ribofuranosylxanthine, 8CI**R-126**

3,7-Dihydro-3-ribofuranosyl-1H-purine-2,6-dione, 9CI. 3-Isoxanthosine

C₁₀H₁₂N₄O₆ 284.228

β-D-form [13601-91-7]

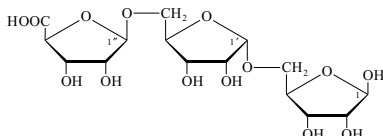
Mp 203-205°. $[\alpha]_D^{25}$ -26.5 (c, 0.36 in H₂O). pK_a 8. λ_{\max} 267 nm (ϵ 11 700) (H₂O).

Lipkin, D. *et al.*, *J. Het. Chem.*, 1969, **6**, 995

(synth)

Schmidt, C.L. *et al.*, *J. Het. Chem.*, 1973, **10**, 687

β-D-Ribofuranuronosyl-(1 → 5)-α-D-ribofuranosyl-(1 → 5)-D-ribose, 9CI



C₁₅H₂₄O₁₄ 428.346

β-Furanose-form

Me glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene, Me ester: [60949-70-4]

C₂₆H₄₀O₁₄ 576.594

Oil.

Benzyl glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene, Me ester: [71536-13-5]

C₃₂H₄₄O₁₄ 652.691

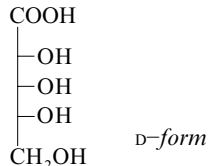
Oil.

Schmidt, R.R. *et al.*, *Chem. Ber.*, 1979, **112**, 2659 (β-Me fur Me ester deriv, β-benzyl fur Me ester deriv, pmr)

Ribonic acid, 9CI, 8CI

[17812-24-7]

R-128



C₅H₁₀O₆ 166.13

D-form [642-98-8]

Readily obt. by equilb. of Arabinonic acid, A-825.

Cryst. (MeOH). Mp 112-113°. $[\alpha]_D^{25}$ -17 (H₂O).

Me ester: Methyl D-ribonate

[20769-97-5]

C₆H₁₂O₆ 180.157

Syrup. $[\alpha]_D$ -5.1 (c, 3.3 in H₂O). n_D^{21} 1.4892.

Tetra-Ac: Tetra-O-acetyl-D-ribonic acid

[61212-28-0]

C₁₃H₁₈O₁₀ 334.279

Cryst. (AcOH). Mp 139-140°. $[\alpha]_D^{25}$ -27.5 (c, 4 in AcOH).

2,4:3,5-Dibenzylidene: 2,4:3,4-Di-O-benzylidene-D-ribonic acid

[20603-34-3]

C₁₉H₁₈O₆ 342.348

Needles (CHCl₃/petrol). Mp 189.5-190.5°. $[\alpha]_D$ -48.8 (c, 2.84 in DMF).

2,4:3,5-Dibenzylidene, Me ester: Methyl

2,4:3,5-di-O-benzylidene-D-ribonate

[20603-37-6]

C₂₀H₂₀O₆ 356.374

Needles (Me₂CO aq.). Mp 135.5-137.5°. $[\alpha]_D$ -44.4 (c, 2.33 in CHCl₃).

1,4-Lactone: D-Ribono-1,4-lactone. D-ribo-1,4-Pentonolactone

[5336-08-3]

C₅H₈O₅ 148.115

Mp 80°. $[\alpha]_D$ +18.4.

1,4-Lactone, tri-Ac: 2,3,5-Tri-O-acetyl-D-ribo-1,4-lactone

[41162-32-7]

C₁₁H₁₄O₈ 274.227

Cryst. (Et₂O/petrol). Mp 55-56°. $[\alpha]_D^{25}$ +27 (CHCl₃).

1,4-Lactone, 2,3-O-isopropylidene: 2,3-O-Isopropylidene-D-ribo-1,4-lactone

[30725-00-9]

C₈H₁₂O₅ 188.18

Cryst. (Me₂CO/cyclohexane). Mp 138-139°. $[\alpha]_D$ -57.5 → -16.1 (c, 2.3 in Py).

1,4-Lactone, 2,3-O-isopropylidene, 5-Ac: 5-O-Acetyl-2,3-O-isopropylidene-D-ribo-1,4-lactone

[32257-17-3]

C₁₀H₁₄O₆ 230.217

Mp 47.5°. $[\alpha]_D^{19}$ -59 (c, 1 in CHCl₃).

1,4-Lactone, 2,3-O-isopropylidene, 5-tosyl: 2,3-O-Isopropylidene-5-O-tosyl-D-ribo-1,4-lactone

[40519-00-4]

C₁₅H₁₈O₇S 342.369

Prisms (MeOH). Mp 117.5-118°. $[\alpha]_D^{24}$ -15.8 (c, 2.4 in AcOH).

1,4-Lactone, 2,3-O-cyclohexylidene: 2,3-O-Cyclohexylidene-D-ribo-1,4-lactone

[27304-20-7]

C₁₁H₁₆O₅ 228.244

Cryst. (EtOAc). Mp 128-130°. $[\alpha]_D^{22}$ -54 (c, 1.53 in CHCl₃).

1,4-Lactone, 5-Me: 5-O-Methyl-D-ribo-1,4-lactone

[78508-92-6]

C₆H₁₀O₅ 162.142

Cryst. (EtOAc). Mp 110-111°. $[\alpha]_D^{25}$ +26.

1,4-Lactone, 5-Me, 2,3-O-isopropylidene: 2,3-O-Isopropylidene-5-O-methyl-D-ribo-1,4-lactone

[71671-16-4]

C₉H₁₄O₅ 202.207

Syrup. Bp_{0.0001} 90-100°. $[\alpha]_D^{27}$ -56.8 (c, 3.0 in EtOH).

1,4-Lactone, 3,5-di-Me: 3,5-Di-O-methyl-D-ribo-1,4-lactone

[41107-30-6]

C₇H₁₂O₅ 176.169

Cryst. (Et₂O/petrol). Mp 55-56.5°. $[\alpha]_D$ +5.6.

1,5-Lactone: See 1,5-Ribonolactone, R-129

L-form

Readily obt. by equilb. of Arabinonic acid, A-825. Mp 105°. $[\alpha]_D^{20}$ +17.6 → -4.6 (H₂O).

1,4-Lactone: L-Ribono-1,4-lactone

[133908-85-7]

C₅H₈O₅ 148.115

Mp 86°. $[\alpha]_D$ -18 → -6.8 (H₂O).

[3327-63-7, 160549-52-0]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 705D (ir)

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **1**, 1136A; 1136B (nmr)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 116; 119 (rev)

Ladenburg, K. *et al.*, *J.A.C.S.*, 1944, **66**, 1217 (D-form, synth)

Hough, L. *et al.*, *Can. J. Chem.*, 1958, **36**, 1720 (D-lactone isopropylidene, D-lactone isopropylidene tosyl, D-lactone isopropylidene Me, D-lactone Me)

Isbell, H.S. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 13 (synth, lactone)

Wolfson, M.L. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 21 (tetra-Ac)

Zinner, H. *et al.*, *Carbohydr. Res.*, 1968, **7**, 38 (D-dibenzylidene)

Sepulchre, A.-M. *et al.*, *Carbohydr. Res.*, 1972, **24**, 311 (D-lactone cyclohexylidene)

Ogura, H. *et al.*, *J.O.C.*, 1972, **37**, 72 (D-lactone isopropylidene, D-lactone isopropylidene Ac)

Aspinall, G.O. *et al.*, *Can. J. Chem.*, 1973, **51**, 394 (D-lactone tri-Ac, D-lactone di-Me)

Kinoshita, Y. *et al.*, *Carbohydr. Res.*, 1981, **92**, 1 (cryst struct, lactone)

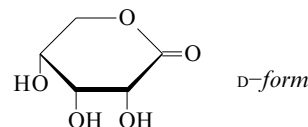
Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**, 111 (pmr, cmr, conformn, lactone)

Kold, H. *et al.*, *Acta Chem. Scand.*, 1994, **48**, 675 (synth, lactone)

Defoin, A. *et al.*, *Synthesis*, 2000, 1719-1726 (D-lactone isopropylidene Ac)

1,5-Ribonolactone

R-129



C₅H₈O₅ 148.115

D-form

2,4-Benzylidene: 2,4-O-Benzylidene-D-ribo-1,5-lactone

C₁₂H₁₂O₅ 236.224

Needles (CHCl₃/C₆H₆). Mp 160-164°. $[\alpha]_D$ -70.2 (c, 1.23 in DMF).

2,4-Benzylidene, 3-Ac: 3-O-Acetyl-2,4-O-benzylidene-D-ribo-1,5-lactone

C₁₄H₁₄O₆ 278.261

Cryst. (MeOH aq.). Mp 143-145.5°. $[\alpha]_D$ -71.2 (c, 1.5 in CHCl₃).

2,4-Benzylidene, 3-benzoyl: 3-O-Benzoyl-2,4-O-benzylidene-D-ribo-1,5-lactone

C₁₉H₁₆O₆ 340.332

Platelets. Mp 181-182.5°. $[\alpha]_D$ -75.4 (c, 1.72 in CHCl₃).

3,4-Cyclohexylidene: 3,4-O-Cyclohexylidene-D-ribo-1,5-lactone

[27304-21-8]

C₁₁H₁₆O₅ 228.244

Cryst. (C₆H₆). Mp 148-150°. $[\alpha]_D$ -133 (c, 1.01 in CHCl₃).

3,4-Benzylidene (R-): 3,4-O-(R)-Benzylidene-D-ribo-1,5-lactone

[20603-45-6]

C₁₂H₁₂O₅ 236.224

Needles (Me₂CO/petrol). Mp 237-238° (230-231.5°). $[\alpha]_D$ -177 (c, 2.4 in DMF).

Originally assigned the 1,4-lactone struct.

L-form

3,4-Benzylidene: 3,4-O-Benzylidene-L-ribo-1,5-lactone
 $C_{12}H_{12}O_5$ 236.224
 Cryst. (Me_2CO). Mp 230-232°. $[\alpha]_D^{20}$ +173 (c, 2 in DMF).

[134877-40-0]

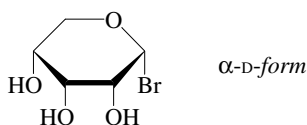
Zinner, H. *et al.*, *Carbohydr. Res.*, 1968, **7**, 38 (2,4-benzylidene derivs)
 Sepulchre, A.M. *et al.*, *Carbohydr. Res.*, 1972, **34**, 311 (D-3,4-cyclohexylidene)
 Chen, S.-Y. *et al.*, *J.O.C.*, 1984, **49**, 2168 (*synth*, D-3,4-benzylidene)
 Baggett, N. *et al.*, *Chem. Comm.*, 1985, 1826 (*synth*, *struct*, D-3,4-benzylidene)
 Gan, L.X. *et al.*, *Carbohydr. Res.*, 1991, **220**, 117 (3,4-benzylidene)

Ribonucleic acid, 9CI, 8CI**R-130****RNA**

Polynucleotide of Adenosine, Guanosine, Cytidine, Uridine and some minor nucleosides linked by phosphate diester bonds from the 3'-hydroxyl of one D-ribose to the 5'-hydroxyl of the next. There are several types of RNA. Ribosomal RNA (rRNA) is a metabolically stable form comprising 80% of DNA in cells and it is an important component of ribosomes. Two high molecular weight (ca. 10^6) spp. have been isol. from bacterial cells and at least one sp. of low molecular weight has been identified. Messenger RNA (mRNA) is a short-lived high molecular weight material which is complementary to one strand of DNA. It acts as a template for protein synthesis in the cell. Transfer RNA (tRNA) is a low molecular weight ($23\text{--}28 \times 10^3$) polymer containing 75-90 nucleotides. Each tRNA is specific for one amino acid and during protein synthesis it binds the amino acid, locates the relevant codon on mRNA, places the amino acid correctly for attachment in the growing polypeptide chain and binds the polypeptide to the ribosome.

ent-form

Readily synthesised from D-glucose. Recommended as a superior material for non-biochemical studies on RNA props.
 Holley, R.W. *et al.*, *Science (Washington, D.C.)*, 1965, **147**, 1462
 Craig, N.C. *et al.*, *MTP Int. Rev. Sci.: Biochem.*, 1974, **6**, 255
 Nishimura, S. *et al.*, *MTP Int. Rev. Sci.: Biochem.*, 1974, **6**, 289
 Watts, R.L. *et al.*, *MTP Int. Rev. Sci.: Biochem.*, 1975, **7**, 255
 Quigley, G.J. *et al.*, *Science (Washington, D.C.)*, 1976, **194**, 796
 Pitsch, S. *et al.*, *Helv. Chim. Acta*, 1997, **80**, 2286-2314 (*synth*, *uv*, *cd*, *ent-form*)

Ribopyranosyl bromide**R-131**

$C_5H_9BrO_4$ 213.028

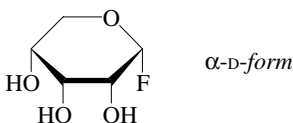
alpha-D-form

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -D-ribopyranosyl bromide
 $[13035\text{--}48\text{--}8]$
 $C_{26}H_{21}BrO_7$ 525.352
 Mp 164-165°. $[\alpha]_D^{20}$ +78 ($CHCl_3$).

beta-D-form

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- β -D-ribopyranosyl bromide. *Acetobromoribose*
 $[3068\text{--}30\text{--}2]$
 $C_{11}H_{15}BrO_7$ 339.139
 Mp 96°. $[\alpha]_D^{25}$ -210 (c, 1.1 in $CHCl_3$).
Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-ribopyranosyl bromide
 $[13035\text{--}44\text{--}4]$
 Mp 155-158°. $[\alpha]_D^{20}$ -203 ($CHCl_3$).
Tris(4-methylbenzoyl): $[\alpha]_D^{21}$ -159 (c, 2.3 in $CHCl_3$).

Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 207 (*rev*, *derivs*)
 Zinner, H. *et al.*, *J. Prakt. Chem.*, 1962, **18**, 79 (β -D-tritoluoyl)
 Capon, B. *et al.*, *J.C.S.*, 1964, 3242 (β -D-tri-Ac)

Ribopyranosyl fluoride**R-132**

$C_5H_9FO_4$ 152.122

alpha-D-form

Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -D-ribopyranosyl fluoride
 $[2924\text{--}35\text{--}8]$
 $C_{26}H_{21}FO_7$ 464.446
 Cryst. Mp 205-206°.

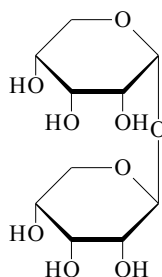
beta-D-form

Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-ribopyranosyl fluoride
 $[4163\text{--}49\text{--}9]$
 $C_{26}H_{21}FO_7$ 464.446
 Cryst. Mp 139-140° (135-137°).

Pedersen, C. *et al.*, *J.A.C.S.*, 1960, **82**, 941; 945 (*deriv*)
 Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **47**, 19 (*tribenzoyl*, *pmr*, *F-19 nmr*)

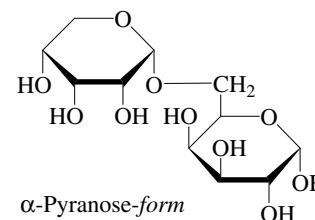
beta-D-Ribopyranosyl alpha-D-ribo-pyranoside, 9CI**R-133**

α -D-Ribopyranosyl β -D-ribopyranoside
 $[133008\text{--}06\text{--}7]$



$C_{10}H_{18}O_9$ 282.247
 Mp 100°. $[\alpha]_D^{20}$ +44 (c, 0.3 in DMSO).

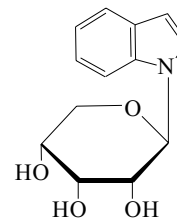
Hexa-Ac: 2,3,4-Tri-O-acetyl- β -D-ribopyranosyl 2,3,4-tri-O-acetyl- α -D-ribopyranoside, 9CI
 $C_{22}H_{30}O_{15}$ 534.47
 Mp 63°. $[\alpha]_D^{20}$ +31.4 (c, 0.5 in $CHCl_3$).
 Dahlhoff, W.V. *et al.*, *Z. Naturforsch., B*, 1990, **45**, 1669 (*synth*, *pmr*, *cmr*, *ms*)

6-O-alpha-D-Ribopyranosyl-D-ga-lactose**R-134**

$C_{11}H_{20}O_{10}$ 312.273

alpha-Pyranose-form

1,2:3,4-Di-O-isopropylidene: $[132970\text{--}05\text{--}9]$
 $C_{17}H_{28}O_{10}$ 392.402
 Mp 128°. $[\alpha]_D^{20}$ +12.2 (c, 0.7 in EtOH).
1,2:3,4-Di-O-isopropylidene, tri-Ac:
 $C_{23}H_{34}O_{13}$ 518.514
 Mp 57-59°. $[\alpha]_D^{20}$ +28 (c, 1.0 in $CHCl_3$).
 Dahlhoff, W.V. *et al.*, *Z. Naturforsch., B*, 1990, **45**, 1669

1-(Ribopyranosyl)indole, 8CI**R-135**

$C_{13}H_{15}NO_4$ 249.266

beta-D-form [7660-91-5]

$[\alpha]_D$ -20 (c, 1.0 in $CHCl_3$). λ_{max} 286 (ε 3 060), 276 (5 150), 265 (6 300), 218 nm (31 900) (H_2O).

2',3',4'-Tri-Ac: $[4627\text{--}31\text{--}0]$

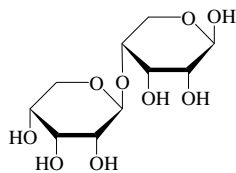
$C_{19}H_{21}NO_7$ 375.377
 Mp 169-171°. $[\alpha]_D$ +40 (c, 1.0 in $CHCl_3$). λ_{max} 288 (ε 2 880), 276 (5 400), 264 (7 240), 220 nm (41 500) (EtOH).

Cushley, R.J. *et al.*, *Chem. Comm.*, 1968, 1611 (*config*, *pmr*)

Walton, E. *et al.*, *J.O.C.*, 1968, **33**, 192 (*synth*)
 Preobrazhenskaya, M.N. *et al.*, *Dokl. Akad. Nauk SSSR*, 1969, **185**, 617; *CA*, **71**, 30653y (*conformn*, *pmr*)

4-O- β -D-Ribopyranosyl-D-ribose

R-136

 β -Pyranose-form $C_{10}H_{18}O_9$ 282.247 **β -Pyranose-form**

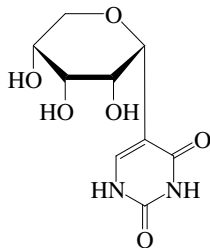
2,3-Anhydro, benzyl glycoside: Benzyl 2,3-anhydro-4-O- β -D-ribopyranosyl- β -D-ribopyranoside, 9CI [69932-63-4]
 $C_{17}H_{22}O_8$ 354.356
 Cryst. (MeOH). Mp 200-205°. $[\alpha]_D^{20}$ -164 (c, 0.5 in H_2O).

De Bruyn, A. et al., *Bull. Soc. Chim. Belg.*, 1978, **87**, 783 (*synth*, *cmr*, *pmr*)

5-Ribopyranosyluracil

R-137

5-Ribopyranosyl-2,4-(1H,3H)-pyrimidine-dione, 9CI. Pseudouridine A

 α -form $C_9H_{12}N_2O_6$ 244.204 **α -D-form**

Produced by acid treatment of Pseudouridine C, P-102. λ_{max} 263 (pH 7), 285 (pH 12), 278 nm (pH 14).

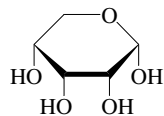
β -D-form [4804-00-6] Produced by acid treatment of Pseudouridine C, P-102. λ_{max} 262 (pH 7), 286 (pH 12), 281 nm (pH 14).

Cohn, W.E. et al., *J. Biol. Chem.*, 1960, **235**, 1488 (*isol*, *struct*)
 Chambers, R.W. et al., *Biochemistry*, 1964, **3**, 326
 Petrissant, G. et al., *Ann. Biol. Anim. Biochim. Biophys.*, 1967, **7**, 105; *CA*, **67**, 96935r (*isol*)
 Kritzyn, A.M. et al., *Coll. Czech. Chem. Comm.*, 1975, **40**, 3211 (*synth*)
 Habermehl, G. et al., *Annalen*, 1978, 427 (*synth*)

Ribose

R-138

Carnose

 α -D-Pyranose-form $C_5H_{10}O_5$ 150.131

An aq. soln at 31° contains 21.5% α -pyr, 58.5% β -pyr, 6.5% α -fur, 13.5% β -fur, and 0.05% aldehyde.

D-form [50-69-1]

A constit. of nucleic acids, several coenzymes and bacterial polysaccharides from *Salmonella*. Also occurs in plant glycosides and free in plants. Obt. comly. from yeast, or by redn. of Ribonic acid, R-128 which can be obt. by oxidn. then epimerisation of Arabinose, A-850. Inexpensive starting material for chiral synth. Hygroscopic. Mp 95° (87°). $[\alpha]_D^{20}$ -21.5 \rightarrow -19.5 (H_2O). pK_{a1} 12.22 (25°). Sweet taste, sweetness = 0.33 x sucrose.

 β -VJ2275000

4-Bromophenylhydrazone: Mp 164-165°. $[\alpha]_D^{20}$ +10 (EtOH).

Di-Et dithioacetal: See Ribose diethyl dithioacetal, R-140

Dipropyl dithioacetal: See Ribose dipropyl dithioacetal, R-142

2,3:4,5-Di-O-isopropylidene: 2,3:4,5-Di-O-isopropylidene-D-ribose

[50866-82-5]

 $C_{11}H_{18}O_5$ 230.26

Mobile liq. $[\alpha]_D^{20}$ -17 (c, 1.1 in $CHCl_3$) (-11.8).

2-Me: 2-O-Methyl-D-ribose

[32452-36-1]

 $C_6H_{12}O_5$ 164.158

$[\alpha]_D^{25}$ -22 (c, 3.4 in MeOH).

3-Me: 3-O-Methyl-D-ribose

[30724-97-1]

 $C_6H_{12}O_5$ 164.158

Component of *Rhizobium* extracellular polysaccharides. Tentative identification.

 α -D-Pyranose-form [7296-59-5]

1,2-O-Isopropylidene: See 1,2-O-Isopropylideneribose, I-73
 1,2-O-Isopropylidene- α -D-ribofuranose

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene- α -D-ribofuranose

 $C_{11}H_{18}O_5$ 230.26Mp 68-69°. $[\alpha]_D^{20}$ -51 ($CHCl_3$).

Me glycoside: See Methyl ribopyranoside, M-209

 β -D-Pyranose-form [7296-60-8]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- β -D-ribofuranose

[4049-34-7]

 $C_{13}H_{18}O_9$ 318.28

Cryst. (EtOH). Mp 109-110°. $[\alpha]_D^{20}$ -57 (c, 1 in $CHCl_3$).

3,4-O-Isopropylidene: 3,4-O-Isopropylidene- β -D-ribofuranose

[58645-35-5]

 $C_8H_{14}O_5$ 190.196

Cryst. (EtOAc). Mp 115-117°. $[\alpha]_D^{20}$ -85 \rightarrow -82 (c, 1.1 in H_2O).

3,4-O-Isopropylidene, 1,2-di-Ac: 1,2-Di-O-acetyl-3,4-O-isopropylidene- β -D-ribofuranose

[58645-38-8]

 $C_{12}H_{18}O_7$ 274.27Syrup. $[\alpha]_D^{20}$ -133 (c, 1.1 in $CHCl_3$).

Me glycoside: See Methyl ribopyranoside, M-209

Benzyl glycoside: See Benzyl riboside, B-21

 α -D-Furanose-form [32445-75-3]

1-Phosphate: [14075-00-4]

 $C_5H_{11}O_8P$ 230.111

No phys. props. reported.

5-Phosphate:

[4300-28-1]

 $C_5H_{11}O_8P$ 230.111

Important constit. of nucleic acids.

1,2,3-Tri-Ac: 1,2,3-Tri-O-acetyl- α -D-ribofuranose

[119240-35-6]

 $C_{11}H_{16}O_8$ 276.243

$[\alpha]_D^{15}$ +77.5 (c, 1.54 in EtOH).

1,3,5-Tribenzoyl: 1,3,5-Tri-O-benzoyl- α -D-ribofuranose

[22224-41-5]

 $C_{26}H_{22}O_8$ 462.455Mp 125-129°. $[\alpha]_D^{20}$ +85 (c, 1 in $CHCl_3$).

1,2-O-Isopropylidene: See 1,2-O-Isopropylideneribose, I-73

2,3-O-Isopropylidene: See 2,3-O-Isopropylideneribose, I-74

1,2-O-Benzylidene: 1,2-O-Benzylidene- α -D-ribofuranose

 $C_{12}H_{14}O_5$ 238.24

Cryst. (EtOAc/petrol). Mp 92-93°. $[\alpha]_D^{23}$ +36.4 (c, 1.05 in $CHCl_3$).

Me glycoside: See Methyl ribofuranoside, M-208

 β -D-Furanose-form [36468-53-8]

1,2,3-Tri-Ac: 1,2,3-Tri-O-acetyl- β -D-ribofuranose

[130792-81-3]

 $C_{11}H_{16}O_8$ 276.243

$[\alpha]_D^{10}$ +3.3 (c, 0.75 in EtOH).

Tetra-Ac: 1,2,3,5-Tetra-O-acetyl- β -D-ribofuranose

[130355-61-5]

 $C_{13}H_{18}O_9$ 318.28

Cryst. (EtOH). Mp 56-58° Mp 82-83° (double mp). $[\alpha]_D^{20}$ -12.4 (c, 5 in $CHCl_3$). $[\alpha]_D^{25}$ -15.4 (c, 7 in MeOH). $[\alpha]_D^{22}$ -13 (c, 1.4 in $CHCl_3$). Dimorphic.

2,3,5-Tribenzoyl, 1-Ac: 1-O-Acetyl-2,3,5-tri-O-benzoyl- β -D-ribofuranose

[6974-32-9]

[14215-97-5]

 $C_{28}H_{24}O_9$ 504.492

Cryst. (2-propanol or EtOH). Mp 131-132°. $[\alpha]_D^{20}$ +24.3 (c, 1 in Py). $[\alpha]_D^{20}$ +44.2 (c, 1 in $CHCl_3$).

2,3-O-Benzylidene (R-): 2,3-O-(R)-Benzylidene- β -D-ribofuranose

[39809-35-3]

 $C_{12}H_{14}O_5$ 238.24

Cryst. (C_6H_6). Mp 125-126°. $[\alpha]_D^{23}$ -27.8 (c, 1.01 in MeOH).

2,3-O-Benzylidene (S-): 2,3-O-(S)-Benzylidene- β -D-ribofuranose

[39809-36-4]

 $C_{12}H_{14}O_5$ 238.24

Needles (EtOAc/petrol). Mp 107-108°. $[\alpha]_D^{23}$ -14 (c, 1.15 in MeOH).

2,3-O-Benzylidene, 1,5-di-Ac (R-):

1,5-Di-O-acetyl-2,3-O-(R)-benzylidene- β -D-ribofuranose

[39809-37-5]

 $C_{16}H_{18}O_7$ 322.314

Needles (EtOH). Mp 78-79°. $[\alpha]_D^{23}$ -68.8 (c, 1.82 in $CHCl_3$).

2,3-O-Benzylidene, 1,5-di-Ac (S-):
1,5-Di-O-acetyl-2,3-O-(S)-benzylidene-
β-D-ribofuranose
[39809-38-6]
C₁₆H₁₈O₇ 322.314
Syrup. Bp_{0.015} 150-160°. [α]_D²³ -44.1
(c, 2.9 in CHCl₃).

Me glycoside: See Methyl ribofuranoside,
M-208

Benzyl glycoside: See Benzyl riboside, B-21

L-form [24259-59-4]

Mp 87°. [α]_D +18.8 (H₂O).

4-Bromophenylhydrazone: Mp 170-172°. [α]_D -11 (EtOH).

2-Me: 2-O-Methyl-L-ribose

C₆H₁₂O₅ 164.158
Syrup. [α]_D +25.3 (H₂O).

Me glycoside: See Methyl ribofuranoside,
M-208

Benzyl glycoside: See Benzyl riboside, B-21

DL-form

Mp 83-84°.

[7296-61-9, 7296-62-0, 41546-19-4, 41546-20-7]

Aldrich Library of FT-IR Spectra, 1st edn., 1985,
1, 189C (ir)

Aldrich Library of 13C and 1H FT NMR
Spectra, 1992, 1, 291B; 292A; 1057A (nmr)

Aldrich Library of FT-IR Spectra: Vapor Phase,
1989, 3, 650B (ir)

Tollens, B. et al., *Kurzes Handbuch der
Kohlenhydrate*, 4th edn., J.A. Barth, 1935,
115; 118

Visconti, M. et al., *Helv. Chim. Acta*, 1954, 37,
1373-1378 (β-D-fur tetra-Ac)

Tener, G.M. et al., *J.A.C.S.*, 1957, 79, 441-443
(I-phosphate)

Ness, R.K. et al., *J.O.C.*, 1957, 22, 1965-1969
(β-D-fur 2,3,5-tribenzoyl 1-Ac)

Whistler, R.L. et al., *Methods Carbohydr.
Chem.*, 1962, 1, 81 (purifn)

Humoller, F.L. et al., *Methods Carbohydr.
Chem.*, 1962, 1, 83 (synth, L-form)

Hughes, N.A. et al., *Carbohydr. Res.*, 1965, 1,
171 (α-D-pyr isopropylidene, α-D-pyr
diisopropylidene)

Guthrie, R.D. et al., *Chem. Ind. (London)*,
1968, 547-548 (furanose tetra-Ac, synth)

Stevens, J.D. et al., *J.O.C.*, 1968, 33, 1799-1805
(β-D-fur 2,3,5-tribenzoyl 1-Ac, pmr)

Guthrie, R.D. et al., *Biochem. Prep.*, 1971, 13, 1
(tetra-Ac)

Grindley, T.B. et al., *Carbohydr. Res.*, 1972, 25,
187 (α-D-fur benzylidene, β-D-fur benzylidene
(R), β-D-fur benzylidene derivs, pmr)

Karrer, W. et al., *Konstitution und Vorkommen
der Organischen Pflanzenstoffe*, 2nd edn.,
Birkhäuser Verlag, Basel, 1972, no. 580
(occur)

Schaffer, R. et al., *The Carbohydrates*,
Academic Press, 1972, 1A, 69

Morgenlie, S. et al., *Carbohydr. Res.*, 1975, 41,
77 (β-D-pyr 3,4-isopropylidene)

Gelas, J. et al., *Carbohydr. Res.*, 1975, 45, 181
(β-D-pyr 3,4-isopropylidene di-Ac, β-D-pyr 3,4-
isopropylidene, β-D-pyr tetra-Ac)

Poppleton, B.J. et al., *Acta Cryst. B*, 1976, 32,
2702-2705 (β-D-fur tetra-Ac, cryst struct)

Kennedy, L.D. et al., *Carbohydr. Res.*, 1976, 52,
259; 1980, 87, 156 (occur, D-3-Me)

de Belder, A.N. et al., *Adv. Carbohydr. Chem.
Biochem.*, 1977, 34, 179 (α-D-fur benzylidene,
α-D-fur isopropylidene, β-D-fur isopropylidene,
β-D-fur benzylidene, rev)

Kam, B.C. et al., *Carbohydr. Res.*, 1979, 69,
135-142 (β-D-fur tetra-Ac, pmr, cmr)

Bock, K. et al., *Annu. Rep. NMR Spectrosc.*,
(Webb, G.A. Ed.), Acad. Press, London and
New York, 1982, 13, 38; 41 (cmr, pmr)

Horton, D. et al., *Carbohydr. Res.*, 1982, 105,
145 (cmr)

Mathlouthi, M. et al., *Carbohydr. Res.*, 1983,
122, 31 (ir, Raman)

Angyal, S.J. et al., *Adv. Carbohydr. Chem.
Biochem.*, 1984, 42, 15 (equilib)

Aslani-shotorbari, G. et al., *Carbohydr. Res.*,
1985, 136, 37 (2,3:4,5-diisopropylidene)

Kozioł, A.E. et al., *Acta Cryst. C*, 1991, 47,
2076 (5-phosphate, cryst struct)

Lacourt-Gadras, B. et al., *Carbohydr. Res.*,
1992, 235, 281 (synth, D-form)

Benesi, A.J. et al., *Carbohydr. Res.*, 1994, 258,
27 (pmr, cmr)

Boryski, J. et al., *Synthesis*, 1999, 625-628
(β-D-fur tetra-Ac)

Agaki, M. et al., *Chem. Pharm. Bull.*, 2002, 50,
866-868 (L-form, synth)

Takahashi, H. et al., *Org. Lett.*, 2002, 4, 2401-
2403 (ribose, synth)

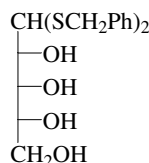
Shi, Z.-D. et al., *Tetrahedron*, 2002, 58, 3287-
3296 (L-form, synth)

Bombicz, P. et al., *Angew. Chem., Int. Ed.*, 2003,
42, 1957-1960 (β-D-fur tetra-Ac,
polymorphism, cryst struct, bibl)

Ribose dibenzyl dithioacetal

R-139

Ribose dibenzyl mercaptal. 5,5-Bis(ben-
zylthio)-1,2,3,4-pentanetetrol†



D-form

C₁₉H₂₄O₄S₂ 380.528

D-form [64780-55-8]

Cryst. (H₂O). Mp 79.5-80°. [α]_D²⁴ -24.2
(MeOH).

2,3,5-Tribenzoyl: 2,3,5-Tri-O-benzoyl-D-
ribose dibenzyl dithioacetal

C₄₀H₃₆O₇S₂ 692.852

Cryst. (MeOH). Mp 92-93°.

2,3,5-Tri-Me: 2,3,5-Tri-O-methyl-D-ribose
dibenzyl dithioacetal

[58886-12-7]

C₂₂H₃₀O₄S₂ 422.609

Syrup. [α]_D²¹ -142 (c, 3.0 in CHCl₃).

Zinner, H. et al., *Chem. Ber.*, 1950, 83, 275-277
(D-form)

Hardegger, E. et al., *Helv. Chim. Acta*, 1950, 33,
1159-1164 (D-form)

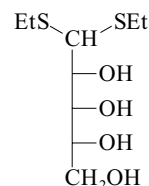
Van Es, T. et al., *Chem. Ber.*, 1976, 46, 237-244
(D-2,3,5-tri-Me)

Birtwistle, I. et al., *Synth. Commun.*, 2001, 31,
3807-3815 (D-2,3,5-tribenzoyl)

Ribose diethyl dithioacetal

R-140

5,5-Bis(ethylthio)-1,2,3,4-pentanetetrol



D-form

C₉H₂₀O₄S₂ 256.387

D-form [7152-47-8]

Mp 82-83°. [α]_D -41.5 (H₂O). [α]_D -25.9
(MeOH).

2,4-Isopropylidene: 2,4-O-Isopropylidene-
D-ribose diethyl dithioacetal

[25572-72-9]

C₁₂H₂₄O₄S₂ 296.451

[α]_D -17 (c, 1 in CHCl₃).

3,4-Isopropylidene: 3,4-O-Isopropylidene-
D-ribose diethyl dithioacetal

[100423-66-3]

C₁₂H₂₄O₄S₂ 296.451

[α]_D -26 (c, 2.3 in CHCl₃). Minor
component (yield 1%) of the mixt. from
kinetic acetalisation.

4,5-Isopropylidene: 4,5-O-Isopropylidene-
D-ribose diethyl dithioacetal

[25572-71-8]

C₁₂H₂₄O₄S₂ 296.451

[α]_D +10 (3.7 in CHCl₃).

2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-iso-
propylidene-D-ribose diethyl dithioacetal

[70337-20-1]

C₁₅H₂₈O₄S₂ 336.516

Syrup. [α]_D -94 (c, 1 in CHCl₃). The
structs. of the main isopropylidene
prods. have been confused before 1985
according to Aslani-Shotorbari et al.

2,5:3,4-Diisopropylidene: 2,5:3,4-Di-O-iso-
propylidene-D-ribose diethyl dithioacetal

[76491-02-6]

C₁₅H₂₈O₄S₂ 336.516

Syrup. [α]_D -21.5 (c, 0.9 in CHCl₃).

4,5-Cyclohexylidene: 4,5-O-Cyclohexyli-
dene-D-ribose diethyl dithioacetal

[99773-15-6]

C₁₅H₂₈O₄S₂ 336.516

Syrup. [α]_D²⁴ +6 (c, 2.43 in CHCl₃).

Aslani-Shotorbari, G. et al., *Carbohydr. Res.*,
1985, 136, 37 (synth, struct, pmr, cmr, bibl,
isopropylidene derivs)

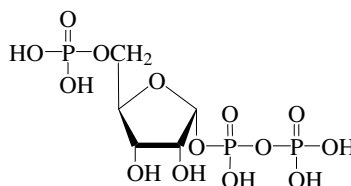
Grindley, T.B. et al., *Carbohydr. Res.*, 1985, 140,
215 (4,5-cyclohexylidene)

Ribose 1-diphosphate 5-phos- phate

R-141

5-Phosphoribosyl-1-pyrophosphate.

5-(Dihydrogen phosphate) 1-(trihydrogen-
diphosphate) ribose. pRpp



C₅H₁₃O₁₄P₃ 390.071

Obt. by enzymatic transfer of pyrophos-
phate from ATP to ribose 5-phosphate.
Intermed. in biosynth. of histidine and
tryptophan, also in biosynth. of purines
and pyrimidines.

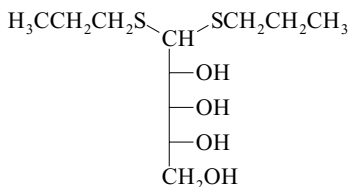
α-D-Furanose-form [7540-64-9]

[13270-65-0]

Solid. Unstable in acid and alkaline soln.

Tener, G.M. et al., *J.A.C.S.*, 1958, 80, 1999-
2004 (synth)

Flaks, J.G. *et al.*, *Methods Enzymol.*, 1963, **6**, 473-479 (*isol*)
 Becker, M.A. *et al.*, *Adv. Enzymol.*, 1979, **49**, 281-306 (*rev*)
 Smithers, G.W. *et al.*, *J. Appl. Biochem.*, 1979, **1**, 344-353; *CA*, **92**, 15992x (*purifn*)
 Gross, A. *et al.*, *J.A.C.S.*, 1983, **105**, 7428-7435 (*synth*, *P-31 nmr*)

Ribose dipropyl dithioacetal R-142

$\text{C}_{11}\text{H}_{24}\text{O}_4\text{S}_2$ 284.44

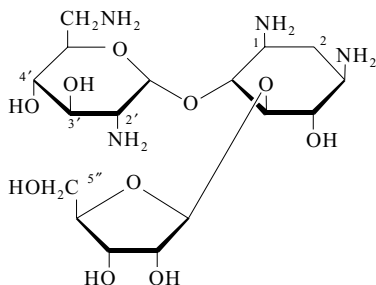
D-form

2,4-Benzylidene: 2,4-O-Benzylidene-D-ribose dipropyl dithioacetal
 $\text{C}_{18}\text{H}_{28}\text{O}_4\text{S}_2$ 372.549
 Cryst. (C_6H_6 /petrol). Mp 101.5-102.5°. $[\alpha]_{\text{D}}^{24}$ -27.1 (c, 4 in MeOH).
2,4:3,5-Dibenzylidene: 2,4:3,5-Di-O-benzylidene-D-ribose dipropyl dithioacetal
 $\text{C}_{25}\text{H}_{32}\text{O}_4\text{S}_2$ 460.657
 Needles (EtOH). Mp 110.5-111.5°. $[\alpha]_{\text{D}}^{27}$ -61.5 (c, 4 in CHCl_3).

Potgieter, D.J.J. *et al.*, *J.O.C.*, 1961, 3934 (*synth*)

Ribostamycin, BAN, INN R-143

2,6-Diamino-2,6-dideoxy- α -D-glucopyranosyl-(1 \rightarrow 4)-[β -D-ribofuranosyl-(1 \rightarrow 5)]-2-deoxy-D-streptamine, 8Cl. Hetangmycin. SF 733. Antibiotic SF 733. Dekamycin IV [25546-65-0]



$\text{C}_{17}\text{H}_{34}\text{N}_4\text{O}_{10}$ 454.476

Aminoglycoside antibiotic belonging to the Neomycin group. Isol. from *Streptomyces ribosidificus* and *Pseudomonas* BN-246. Active against gram-positive and -negative bacteria. Cryst. (MeOH). Mp 192-195° dec. $[\alpha]_{\text{D}}^{23}$ +42 (c, 1 in H_2O). Log P -6.97 (uncertain value) (calc). Isomeric with Xylostacin, X-87.
LD₅₀ (rat, ipr) 4400 mg/kg. Exp. reprod. and teratogenic effects (large doses). WK2299000

Sulfate (2:1): Ribostamycin sulfate, JAN. Vistamycin
 $[\alpha]_{\text{D}}^{20}$ +39 (c, 1 in H_2O). Powder. $[\alpha]_{\text{D}}^{20}$ +39 (c, 1 in H_2O).

LD₅₀ (rat, scu) 5600 mg/kg. LD₅₀ (rat, ipr) 3080 mg/kg. WK2300000

N³-Ac: Antibiotic SF 733D. SF 733D.

N³-Acetylribostamycin

[52212-97-2]

$\text{C}_{19}\text{H}_{36}\text{N}_4\text{O}_{11}$ 496.514

Prod. by *Streptomyces ribosidificus* SF-733. Powder.

Mp 160°. $[\alpha]_{\text{D}}^{24}$ +18 (c, 1 in H_2O).

N¹-Me: 1-N-Methylribostamycin

[52275-05-5]

$\text{C}_{18}\text{H}_{36}\text{N}_4\text{O}_{10}$ 468.503

Semisynthetic. Sol. H_2O .

LD₅₀ (mus, ivn) 100 mg/kg; LD₅₀ (mus, ivn) 100 - 300 mg/kg. WK2299500

N³-Carboxymethyl: Antibiotic SF 733X.

SF 733X. N³-Carboxymethylribostamycin

[52212-98-3]

$\text{C}_{19}\text{H}_{36}\text{N}_4\text{O}_{12}$ 512.513

Prod. by *Streptomyces ribosidificus* SF-733. Powder.

Mp 172-178°. $[\alpha]_{\text{D}}^{24}$ +63 (c, 1.32 in H_2O).

3',4'-Dideoxy: 3',4'-Dideoxyribostamycin

[39535-80-3]

$\text{C}_{17}\text{H}_{34}\text{N}_4\text{O}_8$ 422.478

Semisynthetic. Shows similar activity to parent compd. Mp 155-156° dec. $[\alpha]_{\text{D}}^{20}$ +35 (c, 1 in H_2O).

3',4',5''-Trideoxy: [39535-84-7]

$\text{C}_{17}\text{H}_{34}\text{N}_4\text{O}_7$ 406.478

Semisynthetic. Less active than parent compd. $[\alpha]_{\text{D}}^{25}$ +56 (c, 0.7 in H_2O).

2 α -Hydroxy: 2-Hydroxyribostamycin.

2-Hydroxy-scyllo-ribostamycin

[52198-59-1]

$\text{C}_{17}\text{H}_{34}\text{N}_4\text{O}_{11}$ 470.476

Semisynthetic. Sol. H_2O .

LD₅₀ (mus, ivn) 100 - 300 mg/kg. WK2298000

2 β -Hydroxy: 2-Hydroxy-myo-ribostamycin

[52248-05-2]

$\text{C}_{17}\text{H}_{34}\text{N}_4\text{O}_{11}$ 470.476

Semisynthetic. Sol. H_2O .

LD₅₀ (mus, ivn) 100 - 300 mg/kg. NM7524500

Ito, T. *et al.*, *Antimicrob. Agents Chemother.*, 1970, **33**; *Agric. Biol. Chem.*, 1970, **34**, 980 (*synth*, *ir*, *pmr*)

Akita, E. *et al.*, *J. Antibiot.*, 1970, **23**, 155; 173 (*isol*, *struct*)

Ikeda, D. *et al.*, *Bull. Chem. Soc. Jpn.*, 1973, **46**, 3210 (*synth*, *derivs*)

Kojima, M. *et al.*, *J. Antibiot.*, 1973, **26**, 784 (*biosynth*, *derivs*)

Kojima, M. *et al.*, *J. Antibiot.*, 1975, **28**, 42-47; 48-55 (SF 733C, SF 733X)

Fukami, H. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 1689 (*synth*)

Suami, T. *et al.*, *Carbohydr. Res.*, 1977, **56**, 415 (*synth*)

Kumar, V. *et al.*, *J.O.C.*, 1981, **46**, 4298 (*synth*)

Miyadoh, S. *et al.*, *CA*, 1982, **96**, 50625 (*isol*)

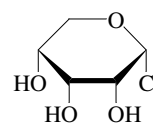
Inouye, S. *et al.*, *CA*, 1982, **98**, 83105 (*rev*, *pharmacol*)

Yoshikawa, M. *et al.*, *Chem. Lett.*, 1984, 2097 (*synth*)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 4622

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 196

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RIP000; XQJ650

Ribosyl chloride**R-144**

α -D-Pyranose-form

$\text{C}_5\text{H}_9\text{ClO}_4$ 168.576

 α -D-Pyranose-form

Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -D-ribo-pyranosyl chloride

[13035-47-7]

$\text{C}_{26}\text{H}_{21}\text{ClO}_7$ 480.9

Needles ($\text{CHCl}_3/\text{Et}_2\text{O}$). Mp 203-204°. $[\alpha]_{\text{D}}^{20}$ +60 (c, 0.9 in CHCl_3).

 β -D-form

Tri-Ac: 2,3,4-Tri-O-acetyl- β -D-ribo-pyranosyl chloride

[4049-36-9]

$\text{C}_{11}\text{H}_{15}\text{ClO}_7$ 294.688

Cryst. (Et_2O). Mp 95°. $[\alpha]_{\text{D}}^{22}$ -169.6 (CHCl_3).

Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-ribo-pyranosyl chloride

[13035-43-3]

$\text{C}_{26}\text{H}_{21}\text{ClO}_7$ 480.9

Prisms ($\text{CH}_2\text{Cl}_2/\text{Et}_2\text{O}$). Mp 162-163°. $[\alpha]_{\text{D}}^{20}$ -147 (CHCl_3).

Tris(chlorosulfate): [18417-46-4]

Cryst. (EtOH aq.). Mp 132°. $[\alpha]_{\text{D}}$ -108 (c, 0.8 in CHCl_3).

D-Furanose-form

3,5-Dibenzoyl: 3,5-Di-O-benzoyl-D-ribofuranosyl chloride

[63592-86-9]

$\text{C}_{19}\text{H}_{17}\text{ClO}_6$ 376.792

Cryst. ($\text{CH}_2\text{Cl}_2/\text{CCl}_4/\text{pentane}$). Mp 123-124° dec Mp 94-96°. Mp dependent on rate of heating.

2-Benzyl, 3,5-di-Ac: 3,5-Di-O-acetyl-2-O-benzyl-D-ribofuranosyl chloride

[70798-07-1, 70798-08-2]

$\text{C}_{16}\text{H}_{19}\text{ClO}_6$ 342.775

No phys. props. reported.

2,3-O-Isopropylidene, 5-methoxymethyl:

2,3-O-Isopropylidene-5-O-methoxy-methyl-D-ribofuranosyl chloride

[72050-22-7, 72050-23-8]

$\text{C}_{10}\text{H}_{17}\text{ClO}_5$ 252.694

Oil. Bp_{0.005} 70-80° (kugelrohr). $[\alpha]_{\text{D}}^{25}$ -45 (c, 1.14 in CHCl_3). Anomeric ratio α/β 1:10.

 α -D-Furanose-form

Tri-Ac: 2,3,5-Tri-O-acetyl- α -D-ribofuranosyl chloride

[105499-44-3]

$\text{C}_{11}\text{H}_{15}\text{ClO}_7$ 294.688

Syrup. $[\alpha]_{\text{D}}^{22}$ +40 (c, 4.03 in CHCl_3) (approx.).

Tribenzoyl: 2,3,5-Tri-O-benzoyl- α -D-ribofuranosyl chloride

[50909-47-2]

$\text{C}_{26}\text{H}_{21}\text{ClO}_7$ 480.9

Characterised spectroscopically.

2,3-O-Isopropylidene, 5-(tert-butyl-di-methylsilyl): 5-O-tert-Butyldimethylsilyl-2,3-O-isopropylidene- α -D-ribofuranosyl chloride
[102690-94-8]
 $C_{14}H_{27}ClO_4Si$ 322.903
[α]_D²⁵ +56 (c, 0.015 in CCl₄).

β -D-Furanose-form [143291-70-7]

Tri-Ac: 2,3,5-Tri-O-acetyl- β -D-ribofuranosyl chloride
[53402-29-2]
Cryst. (diisopropyl ether). Mp 50-51.5°.
[α]_D²⁵ -25.9 (c, 1.5 in CHCl₃).

Tribenzoyl: 2,3,5-Tri-O-benzoyl- β -D-ribofuranosyl chloride
[29706-90-9]
 $C_{26}H_{21}ClO_7$ 480.9
Syrup.

2,3-O-Isopropylidene, 5-(tert-butyl-di-methylsilyl): 5-O-tert-Butyldimethylsilyl-2,3-O-isopropylidene- β -D-ribofuranosyl chloride
[102690-95-9]
 $C_{14}H_{27}ClO_4Si$ 322.903
[α]_D²⁵ -44 (c, 0.16 in CCl₄).

2,3-O-Isopropylidene, 5-mesyl: 2,3-O-Isopropylidene-5-O-mesyl- β -D-ribofuranosyl chloride
[162518-81-2]
 $C_9H_{15}ClO_6S$ 286.733
[α]_D²² -43.5 (c, 1.5 in CH₂Cl₂).

2,3-O-Isopropylidene, 5-Me: 2,3-O-Isopropylidene-5-O-methyl- β -D-ribofuranosyl chloride
[65904-36-1]
 $C_9H_{15}ClO_4$ 222.668
Oil. [α]_D²⁷ -71 (c, 1.8 in CHCl₃). Evaporative distillation carried out at 60-70° (0.03 mmHg).

2,3-O-Isopropylidene, 5-methoxymethyl: 2,3-O-Isopropylidene-5-O-methoxymethyl- α -D-ribofuranosyl chloride
[72050-22-7]
 $C_{10}H_{17}ClO_5$ 252.694
Syrup. Bp_{0.005} 70-80°. [α]_D²⁵ -45 (c, 1.1 in CHCl₃).

5-Trityl, 2,3-O-isopropylidene: 2,3-O-Isopropylidene-5-O-trityl- β -D-ribofuranosyl chloride
 $C_{27}H_{27}ClO_4$ 450.961
Cryst. Mp 114-115°.

Zinner, H. et al., *Chem. Ber.*, 1950, **83**, 153-156
(α -D-fur tri-Ac, β -D-tri-Ac)

Ness, R.K. et al., *J.A.C.S.*, 1951, **73**, 959
(α -D-tribenzoyl, β -D-tribenzoyl)

Ali, S.S. et al., *Carbohydr. Res.*, 1967, **5**, 118
(β -D-trichlorosulfate)

Durette, P.L. et al., *Carbohydr. Res.*, 1971, **18**, 57
(β -D-tri-Ac, pmr, conformm)

Guibe, L. et al., *J. Chem. Phys.*, 1973, **58**, 5579
(conformm, nmr)

Ohrui, H. et al., *Tet. Lett.*, 1973, 1951-1954
(β -D-fur isopropylidene trityl)

Hanessian, S. et al., *Can. J. Chem.*, 1974, **52**, 1280-1293
(β -D-tribenzoyl)

Earl, R.A. et al., *J. Carbohydr. Nucleosides, Nucleotides*, 1974, **1**, 177
(β -D-fur tri-Ac, pmr)

Klein, R.S. et al., *J. Carbohydr. Nucleosides, Nucleotides*, 1974, **1**, 265-269
(β -D-fur isopropylidene trityl)

Ireland, R.E. et al., *J.O.C.*, 1978, **43**, 786-787
(β -D-fur isopropylidene Me)

Schmidt, R.R. et al., *Chem. Br.*, 1979, **112**, 1689-1704
(β -D-fur di-Ac benzyl)

Ireland, R.E. et al., *J.O.C.*, 1980, **45**, 48-61

(β -D-fur isopropylidene methoxymethyl)

Dommissie, R.A. et al., *J. Carbohydr. Nucleosides, Nucleotides*, 1981, **8**, 331-343
(β -D-fur 3,5-dibenzoyl, pmr, cmr)

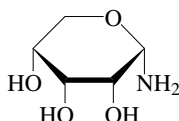
Wilcox, C.S. et al., *Tet. Lett.*, 1986, **27**, 1011-1014
(α -D-fur tert-butylidimethylsilyl isopropylidene, β -D-fur tert-butylidimethylsilyl isopropylidene)

Chin, T.-M. et al., *J. Chin. Chem. Soc. (Taipei)*, 1997, **44**, 413-416
(α -D-fur tribenzoyl)

Fleetwood, A. et al., *Carbohydr. Res.*, 1999, **317**, 204-209
(β -D-fur isopropylidene mesyl)

Ribosylamine

R-145



α -D-Pyranose-form

$C_5H_{11}NO_4$ 149.146

D-Pyranose-form

D-Ribopyranosylamine

[43179-09-5]

Mp 128-129° dec. [α]_D -35.3 → -17.4
(c, 1.0 in H₂O). Crystallises as β -anomer.

N,2,3,4-Tetra-Ac: N-Acetyl-2,3,4-tri-O-acetyl-D-ribosylamine
 $C_{13}H_{19}NO_8$ 317.295
Cryst. Mp 128-130°. [α]_D²² +35.3 (c, 1.3 in CHCl₃).

α -D-Pyranose-form

N-Ac: N- α -D-Ribopyranosylacetamide

$C_7H_{13}NO_5$ 191.183

Cryst. (EtOH). Mp 198-200°. [α]_D²³ +17.8 (c, 1.0 in H₂O).

N-Ph: N-Phenyl- α -D-ribopyranosylamine.
Ribose anilide

[79549-86-3]

$C_{11}H_{15}NO_4$ 225.244

Mp 135-136°. [α]_D +129 (c, 1 in Py).
[α]_D +178 (Py). The usual reaction of ribose and aniline produces crystalline anomeric mixtures of the pyranose isomer; one crystalline isolate Mp 115° was formerly erroneously assigned a furanose struct.

β -D-Pyranose-form

N-Ac: N- β -D-Ribopyranosylacetamide

$C_7H_{13}NO_5$ 191.183

Cryst. (EtOH). Mp 195-197°. [α]_D²¹ -23.4
(c, 1.0 in H₂O).

α -D-Furanose-form

N-Ac: N- α -D-Ribofuranosylacetamide.

N-Acetyl- α -D-ribofuranosylamine

$C_7H_{13}NO_5$ 191.183

Syrup. [α]_D²⁰ +70.9 (c, 0.5 in MeOH).

Tipson, R.S. et al., *J.O.C.*, 1961, **26**, 2462; 4698
(D-form, synth, α -D-pyr N-Ac, β -D-pyr N-Ac)

Cusack, N.J. et al., *J.C.S. Perkin 1*, 1973, 1720
(synth)

De Bruyn, A. et al., *Bull. Soc. Chim. Belg.*, 1976, **85**, 605 (pmr)

Ellis, G.P. et al., *Carbohydr. Res.*, 1981, **95**, 304
(N-Ph)

Chavis, C. et al., *Carbohydr. Res.*, 1983, **113**, 1
(D-form, D-N-Ph)

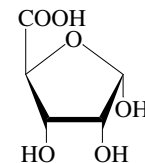
Klemer, A. et al., *J. Carbohydr. Chem.*, 1988, **7**, 785-797
(α -D-fur N-Ac)

Rajsekhar, G. et al., *Carbohydr. Res.*, 2003, **338**, 801-805
(synth, cryst struct)

Riburonic acid, 8CI

R-146

[30923-20-7]



α -D-Furanose-form

$C_5H_8O_6$ 164.115

Aq. solns. contain mixts. of acyclic (hydrated) furanose and lactone forms.

D-form [77481-15-3]

Constit. of an extracellular polysaccharide of *Rhizobium meliloti*.

Syrup. [α]_D²⁰ +24.8 (c, 0.8 in H₂O).

Brucine salt: Mp 196-197°.

α -D-Furanose-form

1,2-O-Isopropylidene, Me ester: Methyl 1,2-O-isopropylidene- α -D-ribofuranuronate
[35570-20-8]
 $C_9H_{14}O_6$ 218.206
Bp₅ 110° (bath). [α]_D +34 (c, 1.0 in MeOH).

β -D-Furanose-form

2,3-O-Isopropylidene: 2,3-O-Isopropylidene- β -D-riburonofuranose
[68673-90-5]
 $C_8H_{12}O_6$ 204.179
Cryst. (toluene). Mp 154-156°.

2,3-O-Isopropylidene, Me ester: Methyl 2,3-O-isopropylidene- β -D-ribofuranuronate
[68673-88-1]
 $C_9H_{14}O_6$ 218.206
Cryst. (petrol). Mp 77°. [α]_D²⁰ +19.9
(c, 1.3 in CHCl₃).

1,5-Lactone, 2,3-O-isopropylidene: 2,3-O-Isopropylidene- β -D-riburonofuran-1,5-lactone
 $C_8H_{10}O_5$ 186.164
Cryst. (petrol). Mp 99-100°. Bp₁₂ 130°.

Me glycoside, Me ester: Methyl (methyl- β -D-ribofuranosid)uronate
[72086-43-2]
 $C_7H_{12}O_6$ 192.168
[α]_D²⁵ +79.5 (c, 0.6 in DMSO).

Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene- β -D-ribofuranuronoside
[54622-95-6]
 $C_9H_{14}O_6$ 218.206
Needles. Mp 125-126°. Bp_{0.1} 100° subl.

Me glycoside, 2,3-O-isopropylidene, Me ester: Methyl (methyl 2,3-O-isopropylidene- β -D-ribofuranosid)uronate
[50767-74-3]
 $C_{10}H_{16}O_6$ 232.233
Bp_{0.001} 80°. n_D²⁵ 1.4437.

Me glycoside, 2,3-O-isopropylidene, isopropyl ester: Isopropyl (methyl 2,3-O-isopropylidene- β -D-ribofuranosid)uronate
[54837-40-0]
 $C_{12}H_{20}O_6$ 260.286

Bp_{0.001} 57°. n_D^{20} 1.4434.

Benzyl glycoside: Benzyl β -D-ribofuranosiduronic acid

C₁₂H₁₄O₆ 254.239

Cryst. (EtOAc). Mp 104-105°. $[\alpha]_D^{20}$ -63.3 (c, 1.0 in H₂O).

Benzyl glycoside, 2,3-O-isopropylidene: Benzyl 2,3-O-isopropylidene- β -D-ribofuranuronoside

[68673-83-6]

C₁₅H₁₈O₆ 294.304

Cryst. (petrol). Mp 80-82°.

Benzyl glycoside, 2,3-O-isopropylidene, Me ester: Methyl (benzyl 2,3-O-isopropylidene- β -D-ribofuranosid)uronate

[68673-85-8]

C₁₆H₂₀O₆ 308.33

Bp_{0.01} 125°.

L-form

Viscous syrup. $[\alpha]_D^{26}$ -21.9 (c, 4.8 in H₂O).

Brucine salt:

Cryst. (EtOH aq.). Mp 201-203°.

[134616-29-8, 134679-12-2, 134679-16-6]

Heyns, K. et al., *Chem. Ber.*, 1961, **94**, 348 (D-form)

Schmidt, R.R. et al., *Annalen*, 1974, 1856

(β -D-Me fur isopropylidene, β -D-Me fur isopropylidene Me ester, β -D-Me fur isopropylidene isopropyl ester)

Walker, T.E. et al., *Carbohydr. Res.*, 1974, **32**, 413 (L-form)

Hampton, A. et al., *Carbohydr. Res.*, 1974, **37**, 359 (β -D-Me fur isopropylidene)

Schmidt, R.R. et al., *Chem. Ber.*, 1978, **111**, 3311 (β -D-fur isopropylidene, β -D-fur isopropylidene lactone, β -D-benzyl fur isopropylidene, β -D-benzyl fur isopropylidene Me ester)

Jung, K.-H. et al., *Annalen*, 1979, 1426 (β -D-Me fur Me ester)

Morgenlie, S. et al., *Carbohydr. Res.*, 1979, **59**, 73 (α -D-fur isopropylidene Me ester)

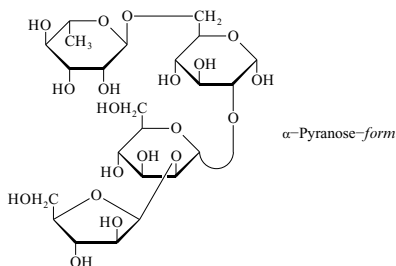
Amemura, A. et al., *Carbohydr. Res.*, 1981, **91**, 59 (D-form, isol)

Wu, J. et al., *Carbohydr. Res.*, 1991, **210**, 51 (pmr, cmr)

Ristotetrose

R-147

β -D-Arabinofuranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 6)]-D-glucose



C₂₃H₄₀O₁₉ 620.558

The Ara residue was originally considered to be in the pyranose-form. Equilib. appears to take place under the conditions of hydrol. Obt. from the acid catalysed acetolysis of Ristomycin A.

Propyl glycoside:

C₂₆H₄₆O₁₉ 662.638

Syrup. $[\alpha]_D^{20}$ +42 (c, 0.6 in H₂O).

Neszmelyi, A. et al., *J. Antibiot.*, 1978, **31**, 974

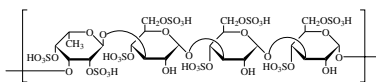
(cmr)

Sztaricskai, F. et al., *J.A.C.S.*, 1980, **102**, 7093 (isol, pmr)

Medakovic, D. et al., *Carbohydr. Res.*, 1990, **198**, 15 (struct, synth)

Rosacelose

R-148



Polymer of sulfated D-glucose/L-fucose in approx. 3:1 ratio. Idealised struct. shown. Isol. from the marine sponge *Mixylla rosacea*. Shows anti-HIV props.

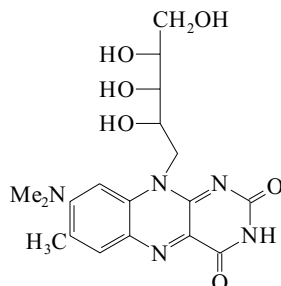
Cimino, P. et al., *Carbohydr. Res.*, 2001, **334**, 39-47 (isol, pmr, cmr, struct)

Roseoflavin

R-149

8-Demethyl-8-(dimethylamino)riboflavin, 9CI

[51093-55-1]



C₁₈H₂₃N₅O₆ 405.41

Prod. by *Streptomyces davawensis*.

Riboflavin antagonist. Active against gram-positive bacteria. Deep-red needles. Mp 276-278°. $[\alpha]_D$ -315 (c, 1 in 0.1M NaOH). pK_a 10.8.

► VJ1300000

Tetra-Ac: [51093-57-3]

Red-brown cryst. (MeOH). Mp 279-280°.

Miuri, R. et al., *Chem. Comm.*, 1973, 703 (cryst struct)

Otani, S. et al., *J. Antibiot.*, 1974, **27**, 88 (isol) Kasai, S. et al., *Bull. Chem. Soc. Jpn.*, 1975, **48**, 2877 (uv, nmr)

Rudziv, E.A. et al., *Khim.-Farm. Zh.*, 1978, **12**, 52 (synth)

Light, D.R. et al., *Anal. Biochem.*, 1980, **109**, 87 (hplc)

Matsui, K. et al., *CA*, 1980, **93**, 200647

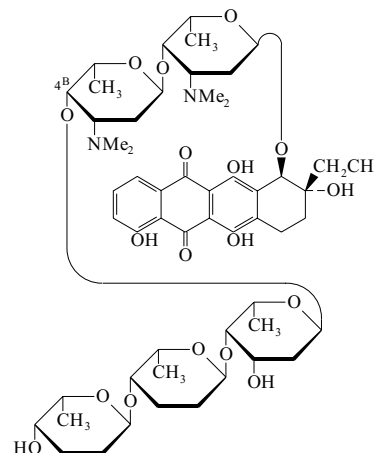
(biosynth)

Otani, S. et al., *Methods Enzymol.*, 1980, **66**, 235 (rev)

Roseorubicin A

R-150

[70559-00-1]



C₅₄H₇₈N₂O₁₈ 1043.213

Anthracycline antibiotic. Isol. from

Actinomyces roseoviolaceus. Active against gram-positive and -negative bacteria. Red powder. Sol. MeOH, CHCl₃; poorly sol. H₂O. Mp 143-147°. λ_{max} 237 (E1%/1cm 354); 256 (E1%/1cm 300); 295 (E1%/1cm 80); 495 (E1%/1cm 152); 530 (E1%/1cm 117); 580 (E1%/1cm 26) (MeOH) (Berdy).

► QI9425400

4^B-Deglycosyl: γ -Rhodomycin II. Roseorubicin B. γ -Rhodomycin-Roa₂

[70559-01-2]

C₃₆H₄₈N₂O₁₁ 684.782

Isol. from *Actinomyces roseoviolaceus* and *Streptomyces purpurascens*. Active against gram-positive and -negative bacteria. Red powder.

Mp 122-124°.

► QI9425300

Brockmann, H. et al., *Tet. Lett.*, 1969, 415

(γ -Rhodomycin II)

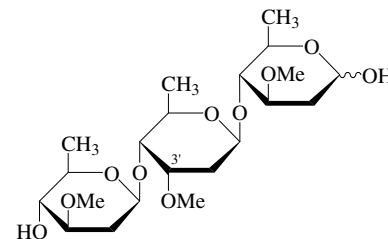
Matsuzawa, Y. et al., *J. Antibiot.*, 1979, **32**, 420; 1981, **34**, 1596 (Roseorubicins)

Royleose

R-151

2,6-Dideoxy-3-O-methyl- β -D-arabino-hexopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-3-O-methyl- β -D-ribo-hexopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-3-O-methyl- β -D-arabino-hexopyranoside. β -D-Oleandropyranosyl-(1 \rightarrow 4)- β -D-cymaropyranosyl-(1 \rightarrow 4)- β -D-oleandropyranose

[205488-06-8]



C₂₁H₃₈O₁₀ 450.525

Constit. of *Marsdenia roylei*.

$[\alpha]_D +12$ (c, 0.34 in CHCl_3).

3'-O-De-Me: β -D-Oleandropyranosyl-(1 \rightarrow 4)- β -D-digitoxopyranosyl-(1 \rightarrow 4)- β -D-oleandropyranose. **Deniose**

$\text{C}_{20}\text{H}_{36}\text{O}_{10}$ 436.498

Constit. of *Marsdenia roylei*.

$[\alpha]_D +25$ (c, 0.4 in CHCl_3).

Kumar, A. *et al.*, *Phytochemistry*, 1999, **52**, 675-679

RP 31177

R-152

Glycopeptide. Prod. by *Streptomyces calidus* NRRL 8141. Inhibits glucosidases such as amylase, maltase and sucrase. Sol. H_2O .

Ger. Pat., 1977, 2 702 417; *CA*, **87**, 116426u (isol)

RP 34129

R-153

[69913-45-7]

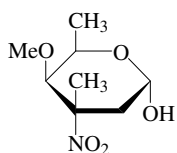
Glycopeptide; struct. unknown. Prod. by *Streptomyces stimulosus* DS 25556. Shows immunostimulating properties. Amorph. powder. Sol. H_2O .

Ger. Pat., 1979, 2 833 799; *CA*, **90**, 184901g (isol)

Rubranitrose

R-154

2,3,6-Trideoxy-3-C-methyl-4-O-methyl-3-nitro-xylo-hexopyranose



α -D-Pyranose-form

$\text{C}_8\text{H}_{15}\text{NO}_5$ 205.21

D-form

Mp 154-156°. $[\alpha]_D +115 \rightarrow +86$ (c, 0.5 in EtOH).

L-form

Mp 152-154° (147-148°). $[\alpha]_D^{22} -76$ (c, 0.48 in EtOH). $[\alpha]_D -114.5 \rightarrow -83$ (c, 0.4 in EtOH).

α -L-form

Me glycoside: Methyl 2,3,6-trideoxy-3-C-methyl-4-O-methyl-3-nitro- α -L-xylo-hexopyranoside

$\text{C}_9\text{H}_{17}\text{NO}_5$ 219.237

Mp 92-93°. $[\alpha]_D -171$ (c, 0.7 in CHCl_3).

Mizsak, S.A. *et al.*, *J. Antibiot.*, 1979, **32**, 771; 773 (occur, struct)

Brimacombe, J.S. *et al.*, *Carbohydr. Res.*, 1983, **114**, C1 (D-form, L-form, α -L-Me pyr, synth)

Yoshimura, J. *et al.*, *Carbohydr. Res.*, 1986, **155**, 236 (synth)

Giuliano, R.M. *et al.*, *J.O.C.*, 1986, **51**, 2304

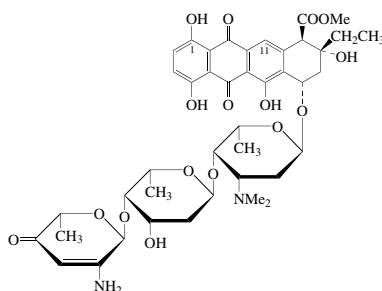
(partial synth, D-form)

Rudolfomycin

R-155

Pyrrocycline C. *Rudolphomycin*

[69245-38-1]



$\text{C}_{42}\text{H}_{52}\text{N}_2\text{O}_{16}$ 840.877

Anthracycline-type antibiotic. Component of Bohemic acid complex. Isol. from *Actinosporangium* spp. Antimicrobial and antitumour agent. Red solid. Sol. MeOH, CHCl_3 ; poorly sol. H_2O , hexane.

Mp 171-175°. λ_{max} 233 (ϵ 44600); 257 (ϵ 27900); 280 (ϵ 29800); 490 (ϵ 13800) (MeOH) (Berdy).

► QI9279600

1-Deoxy: **Aclacinomycin X**[†]

$\text{C}_{42}\text{H}_{52}\text{N}_2\text{O}_{15}$ 824.877

Prod. by *Streptomyces galilaeus*. Antitumour agent. Yellow powder.

Mp 169-172°. $[\alpha]_D^{20} +103.4$ (c, 0.09 in MeOH). λ_{max} 228 (log ϵ 4.77); 262 (log ϵ 4.64); 280 (log ϵ 4.65); 431 (log ϵ 4.26) (MeOH).

1-Deoxy, 11-hydroxy: **11-Hydroxyaclacinomycin X**

[176665-19-3]

$\text{C}_{42}\text{H}_{52}\text{N}_2\text{O}_{16}$ 840.877

Prod. by *Streptomyces galilaeus*. Red powder.

Mp 184-187°. $[\alpha]_D +56$ (c, 0.1 in CHCl_3). λ_{max} 234 (log ϵ 4.55); 254 (log ϵ 4.37); 284 (log ϵ 4.33); 492 (log ϵ 4.08) (MeOH).

U.S. Pat., 1978, 4 123 608; *CA*, **91**, 18343c (isol)

DuVernay, V.H. *et al.*, *Anthracyclines* [Proc.

Workshop], Academic Press, N.Y., 1979, 61 (rev)

Doyle, T.W. *et al.*, *J.A.C.S.*, 1979, **101**, 7041 (struct, cmr)

DuVernay, V.H. *et al.*, *Mol. Pharmacol.*, 1979, **15**, 341 (struct)

Nettleton, D.E. *et al.*, *J. Nat. Prod.*, 1980, **43**, 242

Matsuzawa, Y. *et al.*, *J. Antibiot.*, 1981, **34**, 1596 (props)

Kim, H.S. *et al.*, *Biosci., Biotechnol., Biochem.*, 1996, **60**, 906 (Aclacinomycin X)

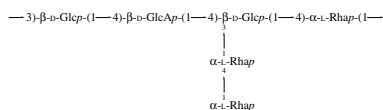
Kim, H.S. *et al.*, *J. Antibiot.*, 1996, **49**, 355 (11-Hydroxyaclacinomycin X)

S2

Glycoprotein. Isol. from *Coriolus versicolor*. Shows antitumour activity.
Eur. Pat., 1996, 725 077; CA, 125, 216871g (isol)

S-657

[125005-87-0]



Elaborated by *Xanthomonas* ATCC 53159.

Chowdhury, T.A. et al., *Carbohydr. Res.*, 1987, **164**, 117 (struct)

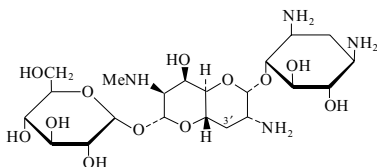
Lee, E.J. et al., *Carbohydr. Res.*, 1991, **214**, 11 (struct)

Campana, S. et al., *Carbohydr. Res.*, 1992, **231**, 31 (struct, props)

Saccharocin

S-3

4''-Deamino-4''-hydroxyapramycin. KA 5685. Antibiotic KA 5685
[86630-31-1]



C₂₁H₄₀N₄O₁₂ 540.567

Aminoglycoside antibiotic. Prod. by *Saccharopolyspora hirsuta* and *Saccharopolyspora* sp. AC 3440. Highly active against gram-positive and -negative bacteria incl. aminoglycoside resistant strains, except *E. coli*. Basic powder + 2H₂O.

Mp 188-190°. [α]_D²⁴ +163.5 (c, 1 in H₂O).

3'-Hydroxy: 3'-Hydroxysaccharocin.

3'-Oxysaccharocin

C₂₁H₄₀N₄O₁₃ 556.566

From *Saccharopolyspora* sp. AC 3440. Active against gram-positive and -negative bacteria. Sol. H₂O; poorly sol. Me₂CO, C₆H₆, EtOAc. Mp 230° dec. [α]_D²⁴ +162 (c, 0.25 in H₂O).

Ger. Pat., 1983, 3 245 836; CA, 99, 211136 (isol) Awata, M. et al., *J. Antibiot.*, 1983, **36**, 651 (isol, uv, ir, pmr, cmr, props)

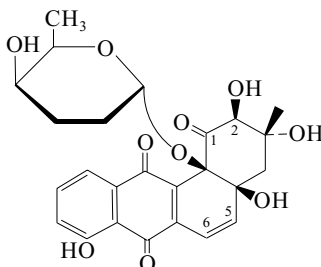
Kamiya, K. et al., *J. Antibiot.*, 1983, **36**, 738 (isol, ir, pmr)

Tatsuta, K. et al., *Bull. Chem. Soc. Jpn.*, 1984, **57**, 529 (synth, pmr)

S-1

Sakyomicin A

[86413-75-4]



C₂₅H₂₆O₁₀ 486.474

Angucycline antibiotic. Isol. from *Nocardia* sp. Active against gram-positive bacteria. Orange cryst. (hexane/Me₂CO). Sol. MeOH, CHCl₃; poorly sol. H₂O.

Mp 205-207°. [α]_D²⁰ -99.4 (c, 0.8 in EtOH). λ_{max} 216 (ε 28500); 238 (ε 15900); 310 (ε 5300); 415 (ε 4500) (EtOH) (Derep).

► LD₅₀ (mus, ipr) 20 mg/kg.

2-Deoxy: **Sakyomicin C**

[86413-76-5]

C₂₅H₂₆O₉ 470.475

From *Nocardia* spp. Active against gram-positive bacteria. Orange cryst. Sol. MeOH, CHCl₃; poorly sol. H₂O.

Mp 143-145°. [α]_D²¹ -82.7 (c, 0.8 in MeOH). λ_{max} 216 (ε 28500); 238 (ε 15900); 310 (ε 5300); 415 (ε 4500) (EtOH) (Derep). λ_{max} 216 (ε 2000); 240 (ε 11500); 310 (ε 3500); 415 (ε 4400) (EtOH) (Berdy).

Irie, H. et al., *Chem. Comm.*, 1983, 174 (isol, cryst struct)

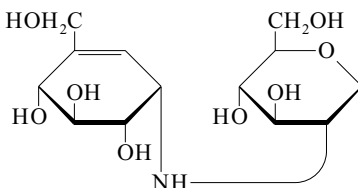
Nagasawa, T. et al., *J. Antibiot.*, 1984, **37**, 693 (isol, props)

Nagasawa, T. et al., *J. Antibiot.*, 1986, **39**, 550-556; 557-561 (isol, props)

Salbostatin

S-5

1,5-Anhydro-2-deoxy-2-[[4,5,6-trihydroxy-3-(hydroxymethyl)-2-cyclohexen-1-yl]amino]-L-arabino-hexitol, 9CI
[128826-89-1]



C₁₃H₂₃NO₈ 321.327

Aminoglycoside antibiotic. Prod. by *Streptomyces albus*. Inhibitor of trehalase and potential plant pesticide. Amorph. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²⁰ +115 (c, 1 in H₂O).

Vertesy, L. et al., *Angew. Chem., Int. Ed.*, 1994, **33**, 1844 (isol, pmr, cmr, struct)

Yamagishi, T. et al., *Bioorg. Med. Chem. Lett.*, 1995, **5**, 487 (synth)

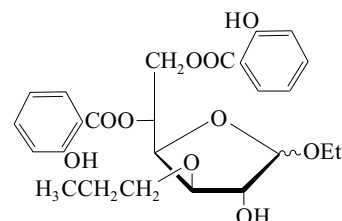
Yamagishi, T. et al., *Chem. Eur. J.*, 1995, **1**, 634 (synth, pmr, cmr)

S-4

Salprotoside, INN

S-6

Ethyl 3-O-propyl-D-glucufuranoside 5,6-bis(2-hydroxybenzoate), 9CI. Ethyl 3-O-propyl-D-glucufuranoside 5,6-disalicylate [33779-37-2]



C₂₅H₃₀O₁₀ 490.506

Antiinflammatory agent, analgesic. Never marketed [α]_D²⁰ -43 (c, 1.3 in CHCl₃). Log P 4.79 (calc).

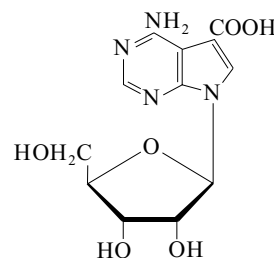
[50452-43-2]

Swiss Pat., 1973, 535 757, (Ciba-Geigy); CA, 79, 79131f (synth, pharmacol)

Sangivamycic acid

S-7

4-Amino-7-β-D-ribofuranosyl-7H-pyrrolo-[2,3-d]pyrimidine-5-carboxylic acid, 8CI
[18418-00-3]



C₁₂H₁₄N₄O₆ 310.266

Cryst. (H₂O). Mp 238° dec.

Hydrochloride: [21090-38-0]

Plates (MeOH). Mp 236-238°.

Me ester: 5-(Methoxycarbonyl)tubercidin

[18440-68-1]

C₁₃H₁₆N₄O₆ 324.293

Isol. from the sponge *Jaspis johnstoni*. Cytotoxic agent. Cryst. (MeOH/CHCl₃). Sol. MeOH, CHCl₃; poorly sol. hexane. Mp 216-218°. λ_{max} 211; 232 (sh); 281 (MeOH).

Me ester; hydrochloride:

Prisms (MeOH). Mp 216-218°.

Amide: **Sangivamycin. B** 14437. BA 90912.

NSC 65346. OS 1998. Antibiotic B 14437. Antibiotic BA 90912

[18417-89-5]

C₁₂H₁₅N₅O₅ 309.281

Produced by a strain of *Streptomyces rimosus*. Possesses cytotoxicity against HeLa cells and exhibits significant activity against leukaemia 1210 in mice.

Mp 260°. [α]_D²⁶ -45.7 (c, 1 in 0.1M HCl). λ_{max} 229 (ε 8200); 278 (ε 15100) (EtOH).

► LD₅₀ (mus, orl) 11 mg/kg. UY9355000

Nitrile: 4-Amino-7-β-D-ribofuranosyl-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile, 9CI. **Toyocamycin**. Cyanotubercidin.

Unamycin B. Vengicide. E 212. Antibiotic

1037. Antibiotic E 212. *Anhygroscopin B. Naritheracin*

[606-58-6]
C₁₂H₁₃N₅O₄ 291.266

Isol. from *Streptomyces toyocaensis* and *Streptomyces fungicidicus*. Active against gram-positive organisms; shows some exp. antineoplastic activity. Needles or prisms + 1H₂O.

Mp 243°. [α]_D²⁶ -55.6 (c, 1 in 0.1M HCl). λ_{max} 235 (ε 22100); 273 (ε 16300) (0.1N HCl) (Derep). λ_{max} 235 (ε 11600); 280 (ε 16600) (0.1N NaOH) (Derep). λ_{max} 207 (ε); 232 (ε 11060); 274 (sh) (ε); 278 (ε 15700); 289 (sh) (ε) (MeOH) (Derep). ▶ LD₅₀ (mus, orl) 8 mg/kg. UY9100000

Nitrile, 5'-O-α-D-glucopyranoside: **Toyocamycin 5'-α-D-glucopyranoside** [117456-79-8]

C₁₈H₂₃N₅O₉ 453.408

From *Tolypothrix tenuis* and *Plectonema radiosum*. Cytotoxic and antifungal agent. Amorph. Sol. H₂O. [α]_D²⁵ +2.1 (c, 0.03 in H₂O). λ_{max} 230 (ε 7400); 278 (ε 10000) (H₂O) (Derep).

5'-Deoxy, nitrile: **5'-Deoxytoyocamycin** [65562-55-2]

C₁₂H₁₃N₅O₃ 275.266

Prod. by *Streptomyces* sp. A14345. Cryst. + ½H₂O (H₂O).

Mp 187-188°. λ_{max} 235 (ε 22100); 273 (ε 16300) (0.1N HCl) (Derep). λ_{max} 235 (ε 11600); 280 (ε 16600) (0.1N NaOH) (Derep). λ_{max} 207 (ε); 232 (ε 11060); 274 (sh) (ε); 278 (ε 15700); 289 (sh) (ε) (MeOH) (Derep).

Suzuki, S. et al., *J. Antibiot.*, Ser. A, 1961, **14**, 343

Aszalos, A. et al., *J. Antibiot.*, 1966, **19**, 285
Rao, K.V. et al., *J. Med. Chem.*, 1968, **11**, 939
(*Sangivamycin*, isol, struct)

Tolman, R.L. et al., *J.A.C.S.*, 1968, **90**, 524;
1969, **91**, 2102 (*Sangivamycin acid*,
Sangivamycin, *Toyocamycin*, struct, synth)

U.S. Pat., 1969, 3 423 398; CA, **70**, 86268y
(*Sangivamycin*)

Uematsu, T. et al., *J. Biol. Chem.*, 1970, **245**, 4365 (*biosynth*)

Japan. Pat., 1970, 70 19 638; CA, **73**, 108253f
(*isol*)

Nichol, C.A. et al., *Handb. Exp. Pharmacol.*, 1975, **38**, 434 (rev. pharmacol)

Chenon, M.-T. et al., *J.A.C.S.*, 1975, **97**, 4627
(*nmr*)

Wang, Y. et al., *Carbohydr. Res.*, 1977, **59**, 449
(*5'-Deoxytoyocamycin*)

Prusiner, P. et al., *Acta Cryst. B*, 1978, **34**, 517
(*cryst struct, deriv*)

Bergstrom, D.E. et al., *J.O.C.*, 1981, **46**, 1423-1431 (*synth*, *Methoxycarbonyltubercidin*)

Stewart, J.B. et al., *J. Antibiot.*, 1988, **41**, 1048
(*deriv*)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Osada, H. et al., *J. Antibiot.*, 1989, **42**, 102
(*props*)

Zabriskie, T.M. et al., *J. Nat. Prod.*, 1989, **52**, 1353-1356 (*Methoxycarbonyltubercidin*)

Isaac, B.G. et al., *J. Antibiot.*, 1991, **44**, 729
(*5'-Deoxytoyocamycin*)

Iimori, T. et al., *Tet. Lett.*, 1991, **32**, 7273 (*pmr, conformn*)

Sharma, M. et al., *Nucleosides Nucleotides*, 1993, **12**, 643 (*synth*, *Toyocamycin*)

Porcari, A.R. et al., *Nucleosides Nucleotides*, 1999, **18**, 153-159 (*synth*, *Toyocamycin*)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SAU000; VGZ000

Sankaranin

S-8

Peptidoglycan. Isol. from Sangkarani (*Baleria* roots). Shows antimicrobial activity; immunostimulant. Sol. H₂O; fairly sol. DMSO, DMF, Py; poorly sol. EtOH, hexane, Me₂CO.

Japan. Pat., 1987, 87 19 526; CA, **106**, 182631u
(*isol*)

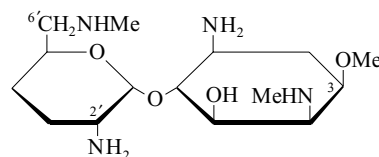
Sannamycin C

S-9

KA 7038 VI. Antibiotic KA 7038 VI.

3-Episannamycin B

[73522-71-1]



C₁₅H₃₂N₄O₄ 332.442

Aminoglycoside antibiotic. Prod. by *Streptomyces sannanensis*. Weakly active against gram-positive bacteria. Solid + ½ H₂O. Sol. H₂O, MeOH; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, hexane. [α]_D²⁵ +59 (c, 1 in H₂O). This strain also prod. Istamycins A, Ao, Xo, Yo and Antibiotic KA 7038-IV.

▶ LD₅₀ (mus, ivn) 300 - 700 mg/kg. NM7521620

N²-(N-Formylglycyl): **Sannamycin F. KA 7038 VIII. Antibiotic KA 7038 VIII**

[83931-91-3]

C₁₈H₃₅N₅O₆ 417.504

Prod. by *Streptomyces sannanensis*. Weakly active against gram-positive and -negative bacteria. Solid. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²⁵ +100.5 (c, 1 in H₂O).

6'-N-De-Me: **Sannamycin J. KA 7038 IX. Antibiotic KA 7038 IX**

[83997-42-6]

C₁₄H₃₀N₄O₄ 318.415

Prod. by *Streptomyces sannanensis*. Weakly active against gram-positive and -negative bacteria. Solid. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²³ +82 (c, 1 in H₂O).

Ger. Pat., 1980, 2 928 373; CA, **92**, 196387

Deushi, T. et al., *J. Antibiot.*, 1980, **33**, 1274
(*isol, struct, ir, nmr*)

Iwasaki, A. et al., *Int. J. Syst. Bacteriol.*, 1981, **31**, 280 (*isol*)

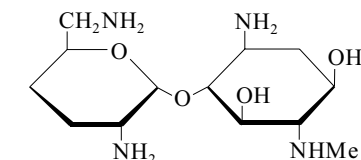
Watanabe, I. et al., *Nippon Kagaku Kaishi*, 1982, 1696; CA, **98**, 14108 (*isol*)

Sannamycin E

S-10

KA 7038 II. Antibiotic KA 7038 II

[73051-92-0]



C₁₃H₂₈N₄O₄ 304.389

Aminoglycoside antibiotic. Prod. by *Streptomyces sannanensis*. Weakly active against gram-positive bacteria. Powder. Sol. H₂O, MeOH; fairly sol. EtOH; poorly sol. Me₂CO, hexane. Mp 85-102°. [α]_D²⁵ +61 (c, 1 in H₂O). This strain also produces Istamycins A, Ao, Xo, Yo and Antibiotic KA 7038 IV. ▶ NM7522567

N-De-Me: **Sannamycin L. KA 7038 XI. Antibiotic KA 7038 XI**

[83946-32-1]

C₁₂H₂₆N₄O₄ 290.362

Prod. by *Streptomyces sannanensis*.

Weakly active against gram-positive and -negative bacteria. Solid. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²³ +95 (c, 1 in H₂O).

Japan. Pat., 1979, 79 141 701; CA, **93**, 6123
(*isol*)

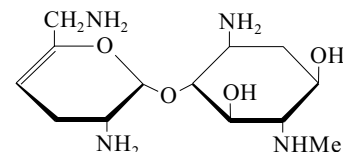
Watanabe, I. et al., *Nippon Kagaku Kaishi*, 1982, 1696; CA, **98**, 14108 (*isol, struct*)

Sannamycin K

S-11

4',5'-Didehydrosannamycin E. KA 7038 X. Antibiotic KA 7038 X

[83919-30-6]



C₁₃H₂₆N₄O₄ 302.373

Aminoglycoside antibiotic. Prod. by *Streptomyces sannanensis*. Weakly active against gram-positive and -negative bacteria. Solid. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²³ +103.5 (c, 1 in H₂O).

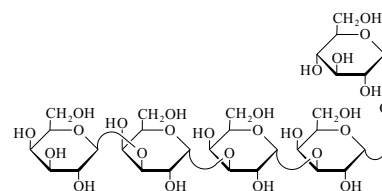
Watanabe, I. et al., *Nippon Kagaku Kaishi*, 1982, 1696; CA, **98**, 14108 (*isol*)

Saponarose

S-12

α-D-Glucopyranosyl β-D-galactopyranosyl-(1→3)-α-D-galactopyranosyl-(1→3)-α-D-galactopyranosyl-(1→3)-α-D-galactopyranoside

[28441-40-9]



C₃₀H₅₂O₂₆ 828.725

Isol. from the roots of *Saponaria officinalis*. Cryst. (MeOH/Me₂CO).

Mp 272-275°. [α]_D²⁰ +167 (c, 1.2 in H₂O).

Heptadeca-Ac: [28441-39-6]

C₆₄H₈₆O₄₃ 1543.358

Cryst. (EtOH aq.). Mp 105-107°. [α]_D²⁰ +154 (c, 2.4 in CHCl₃).

Heptadeca-Me: [28441-41-0]

C₄₇H₈₆O₂₆ 1067.181

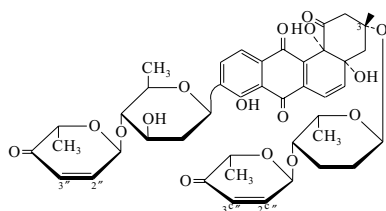
Oil. [α]_D²⁰ +132 (c, 6.0 in CHCl₃).

Bukharov, V.G. *et al.*, *Khim. Prir. Soedin.*, 1969, 5, 469; *Chem. Nat. Compd. (Engl. Transl.)*, 1969, 5, 391 (isol)

Saqayamycin A

S-13

[99260-65-8]

C₄₃H₄₈O₁₆ 820.843

Anthracycline-type antibiotic. Isol. from *Streptomyces nodosus*. Active against gram-positive bacteria and P388 leukaemia cells. Orange powder. Sol. MeOH, CHCl₃, butyl acetate; poorly sol. H₂O, hexane. Mp 149-152° dec. [α]_D²⁴ +77 (c, 0.4 in CHCl₃). λ_{max} 218 (ε 30500); 317 (ε 4840); 425 (ε 5250) (MeOH/HCl) (Derep). λ_{max} 217 (ε 49300); 285 (ε 9540); 390 (ε 3210); 540 (ε 5260) (0.01N NaOH) (Derep). λ_{max} 218 (ε 25000); 317 (ε 4000); 425 (ε 5000) (MeOH) (Derep). λ_{max} 215 (E1%/1cm 1120); 269 (E1%/1cm 138); 520 (E1%/1cm 68) (MeOH-NaOH) (Berdy).

► LD₅₀ (mus, ipr) 8 - 12 mg/kg. CX4900300

3-O-Deglycosyl: **Saqayamycin A₁**

[99260-66-9]

C₃₁H₃₂O₁₂ 596.587

Prod. by a *Streptomyces* sp. Active against gram-positive bacteria and P388 leukaemia cells.

2'',3'',2''',3'''-Tetrahydro: **Saqayamycin C**

[99260-70-5]

C₄₃H₅₂O₁₆ 824.874

From *Streptomyces nodosus*. Active against gram-positive bacteria and P388 leukaemia cells. Orange powder. Sol. MeOH, CHCl₃, butyl acetate; poorly sol. H₂O, hexane. Mp 142-142.5° dec. [α]_D²⁴ -53.3 (c, 0.3 in CHCl₃). λ_{max} 218 (ε 30500); 317 (ε 4840); 425 (ε 5250) (MeOH/HCl) (Derep). λ_{max} 217 (ε 49300); 285 (ε 9540); 390 (ε 3210); 540 (ε 5260) (0.01N NaOH) (Derep). λ_{max} 218 (ε 25000); 317 (ε 4000); 425 (ε 5000) (MeOH) (Derep). λ_{max} 218 (E1%/1cm 318); 316 (E1%/1cm 58); 425 (E1%/1cm 65) (MeOH-HCl) (Berdy). λ_{max} 215 (E1%/1cm 1198); 520 (E1%/1cm 67) (MeOH-NaOH) (Berdy).

3-O-Deglycosyl, 2'',3'''-dihydro: **Saqayamycin C₁**

[99260-69-2]

C₃₁H₃₄O₁₂ 598.602

Prod. by a *Streptomyces* sp. Active against gram-positive bacteria and P388 leukaemia cells.

2^C,3^C-Dihydro: **Saqayamycin E**

[178484-51-0]

C₄₃H₅₀O₁₆ 822.858

Prod. by Actinomycetes strain MK290-AF1. Inhibitor of farnesyl protein transferase. Orange powder. Sol. MeOH,

CHCl₃, EtOAc; poorly sol. H₂O, hexane. Mp 150-153° dec. [α]_D²⁵ -11.5 (c, 0.2 in CHCl₃). λ_{max} 218 (ε 28183); 318 (ε 4571); 425 (ε 5754) (MeOH) (Berdy).

2'',3'''-Dihydro: **Saqayamycin F**

[178484-52-1]

C₄₃H₅₀O₁₆ 822.858

Prod. by Actinomycetes strain MK290-AF1. Inhibitor of farnesyl protein transferase. Orange powder. Sol. MeOH, EtOAc, CHCl₃; poorly sol. H₂O, hexane. Mp 148-152° dec. [α]_D²⁵ -120 (c, 0.2 in CHCl₃). λ_{max} 218 (ε 30900); 318 (ε 4571); 425 (ε 5754) (MeOH) (Berdy).

Uchida, T. *et al.*, *J. Antibiot.*, 1985, 38, 1171

(isol, uv, ir, pmr, cmr, ms)

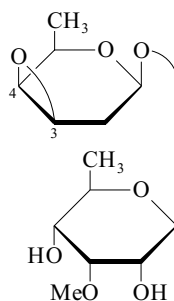
Eur. Pat., 1986, 191 399; CA, 105, 189468 (isol, struct)

Sekizawa, R. *et al.*, *J. Antibiot.*, 1996, 49, 487 (*Saqayamycins E,F*)**Sarcobiose**

S-14

3,4-Anhydro-2,6-dideoxy-β-D-lyxo-hexopyranosyl 6-deoxy-3-O-methyl-β-D-allopyranoside, 9CI

[73852-93-4]

C₁₃H₂₂O₇ 290.313

Isol. from the dried twigs of *Sarcostemma brevistigma* (Asclepiadaceae). Rhombs. Mp 103-104° Mp 169-172°. [α]_D¹⁶ +68 (c, 0.7 in MeOH).

3,4-Diepimer: 3,4-Anhydro-2,6-dideoxy-β-D-ribo-hexopyranosyl 6-deoxy-3-O-methyl-β-D-allopyranoside

C₁₃H₂₂O₇ 290.313

Isol. from *Gymnema tingens*, *Dregea volubilis* and *Dregea abyssinica*. Rhombs (Me₂CO/Et₂O).

Mp 203-206°. [α]_D +129 (c, 0.63 in MeOH).Khare, D.P. *et al.*, *Carbohydr. Res.*, 1980, 81, 275; 285 (isol, pmr, ms)**Sargassan, 8CI**

S-15

[37271-13-9]

Branched sulfated polysaccharide based on a linear glucuronomannan chain. Isol. from the brown alga *Sargassum pallidum*.

[α]_D²⁰ -40 (H₂O).Ovodov, Y.S. *et al.*, *Khim. Prir. Soedin.*, 1970, 6, 285; *Chem. Nat. Compd. (Engl. Transl.)*, 1970, 6, 285 (isol)Khomeenko, V.A. *et al.*, *Khim. Prir. Soedin.*, 1971, 7, 393; 396; *Chem. Nat. Compd. (Engl. Transl.)*, 1971, 7, 375; 378 (struct)Ovodov, Y.S. *et al.*, *Khim. Prir. Soedin.*, 1975, 11, 300; *Chem. Nat. Compd. (Engl. Transl.)*, 1975, 11, 319 (struct, rev)

Pavlenko, A.F. *et al.*, *Chem. Nat. Compd. (Engl. Transl.)*, 1976, 12, 515 (struct)

Sargamostim, BAN, INN, USAN

S-16

23-L-Leucine colony-stimulating factor 2 (human clone pHG₂₅ protein moiety). Granulocyte-macrophage colony-stimulating factor. Leukine. Prokine. BI 61.012.

GM-CSF

[123774-72-1]

C₆₃₉H₁₀₀₂N₁₆₈O₁₉₆S₈ 14430.481

Single chain, glycosylated polypeptide of 127 AA residues. Isol. from *Saccharomyces cerevisiae*. Used as an adjuvant in cancer chemotherapies. Immunostimulant. Used for treatment of secondary neutropenia. Launched 1991 (US)

Burr, J.M. *et al.*, *Clin. Pharm.*, 1991, 10, 947 (use)Gibaldi, M. *et al.*, *Perspect. Clin. Pharm.*, 1991, 9, 57Milkovich, G. *et al.*, *Pharmacotherapy (Carlisle, Mass.)*, 2000, 20, 1432-1440 (rev)Balducci, L. *et al.*, *Drugs*, Suppl. 1, 2002, 62, 47-63 (rev)Smith, J.W. *et al.*, *J. Immunother.*, 2003, 26, 130-138 (clin trial)Xu, J. *et al.*, *Trends Pharmacol. Sci.*, 2004, 25, 254-258 (pharmacol)**SATS 6504**

S-17

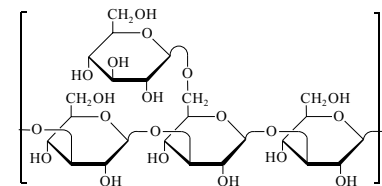
Glycoprotein, MW >100000. Isol. from *Vibrio* SCRC-6504. Shows antitumour activity. Sol. H₂O; fairly sol. MeOH; poorly sol. Me₂CO, hexane.

Japan. Pat., 1991, 91 22 994; CA, 115, 112817w (isol)

Schizophyllan

S-18

Sizofiran, 9CI, INN, JAN. Sonfilan. SPG [9050-67-3]

C₂₄H₄₀O₂₀ 648.568

Polysaccharide antibiotic. Minimum formula given. A highly (1 → 6) branched (1 → 3) β-D-glucan. Polymeric. Isol. from *Schizophyllum commune*. Antineoplastic agent showing activity against sarcoma-180 ascites. Also augments antineoplastic props. of Interleukin 2 in mice. Immunostimulant. Launched 1985Sol. H₂O; poorly sol. MeOH, hexane, EtOH. Possesses triple-helical struct.

► VX2600000

Stereoisomer: **Scleroglucan. Betasizofiran, INN. Sclerosan. Sclerogum** [39464-87-4]

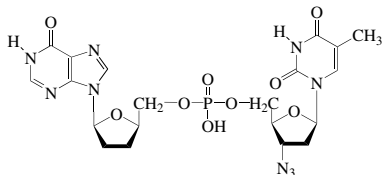
C₂₄H₄₀O₂₀ 648.568

Isol. from *Sclerotium glaucum*. Used for coating paper, and used in the food industry as a noncaloric, stable gelling agent. Shows antineoplastic activity. Sol. H₂O, MeOH; poorly sol. EtOH, Me₂CO, hexane. [α]_D -1 (NaOH aq.).

Belg. Pat., 1964, 639 361, (*Pillsbury*); CA, **62**, 11119e (*Scleroglucan, isol*)
Komatsu, N. *et al.*, *Gann*, 1969, **60**, 137 (*isol, props*)
Kikumoto, S. *et al.*, *Nippon Nogei Kagaku Kaishi*, 1970, **44**, 337; 1971, **45**, 162 (*isol, struct*)
Singh, P.P. *et al.*, *Carbohydr. Res.*, 1974, **37**, 245 (*Scleroglucan, pharmacol*)
Saito, H. *et al.*, *Carbohydr. Res.*, 1979, **74**, 227 (*cmr, struct*)
Cottrell, I.W. *et al.*, *ACS Symp. Ser.*, 1980, **126**, 251 (rev)
Rinaudo, M. *et al.*, *Carbohydr. Res.*, 1980, **100**, 117 (*deriv*)
Tabata, K. *et al.*, *Carbohydr. Res.*, 1981, **89**, 121
Rinaudo, M. *et al.*, *Carbohydr. Polym.*, 1982, **2**, 135 (*deriv, cmr, struct, conformn*)
Bluhm, T.L. *et al.*, *Carbohydr. Res.*, 1982, **100**, 117 (*conformn*)
Van, K. *et al.*, *Polym. J. (Tokyo)*, 1984, **16**, 61 (*ord*)
Takeo, K. *et al.*, *Carbohydr. Res.*, 1986, **145**, 293 (*synth*)
Furue, H. *et al.*, *Drugs of Today (Barcelona)*, 1987, **23**, 335 (rev)
Pretus, H.A. *et al.*, *J. Pharmacol. Exp. Ther.*, 1991, **257**, 500 (*Scleroglucan*)
Ikeuchi, K. *et al.*, *Keio J. Med.*, 1991, **40**, 132 (*pharmacol*)
Martindale, *The Extra Pharmacopoeia, 30th edn.*, Pharmaceutical Press, 1993, 1412
Teramoto, A. *et al.*, *Biopolymers*, 1995, **36**, 803 (*conformn*)
Coviello, T. *et al.*, *Molecules*, 2005, **10**, 6-33 (*Scleroglucan, rev, use*)

Scriptene

3'-Azido-3'-deoxythymidylyl-(5' → 5')-
2',3'-dideoxyinosine, 9CI. IVX-E-59.
AZT-P-DDI
[12]135-53-3]



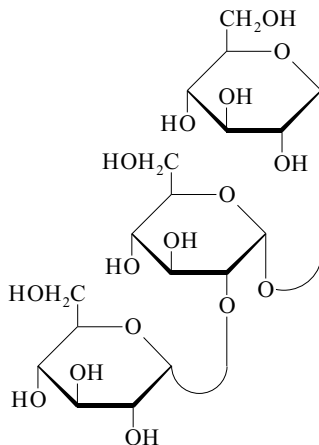
C₂₀H₂₄N₉O₉P 565.438
Anti-HIV agent. No phys. props. accessible.

[188631-03-0, 188631-43-8]

Schinazi, R.F. *et al.*, *Antimicrob. Agents Chemother.*, 1990, **34**, 1061-1067 (*pharmacol*)
Zhou, X-J. *et al.*, *J. Clin. Pharmacol.*, 1997, **37**, 201-213 (*pharmacokinetic*)
Japan. Pat., 1997, 09 48 793, (Yamasa Shoyu); *CA*, **126**, 251356k (*synth. salts*)

Selaginose

*α -D-Glucopyranosyl α -D-glucopyranosyl-
(1 \rightarrow 2)- α -D-glucopyranoside. 2-O- α -D-
Glucopyranosyl- α - α -trehalose*
[58546-68-2]

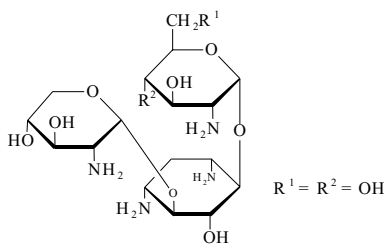


$C_{18}H_{32}O_{16}$ 504.441
Isol. from *Selaginella kraussiana*.
[α]_D²² +185 (c, 2.46 in H₂O).

Fischer, M. *et al.*, *Phytochemistry*, 1975, **14**, 2629 (*isol*)

Seldomycin 1

XK 88-1, Antibiotic XK 88-1
[56276-04-1]


$$\text{C}_{17}\text{H}_{34}\text{N}_4\text{O}_{10} \quad 454.476$$

Aminoglycoside antibiotic. Isol. from *Streptomyces hofuensis*. Active against gram-positive bacteria. Amorph. powder. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane, EtOH.

LD₅₀ (mus, ivn) 1000 - 2000 mg/kg.
WK1969240

Sulfate: Mp 200-240° dec. $[\alpha]_{\text{D}}^{25} +77.9$
(c, 1.08 in H₂O).

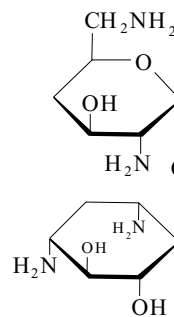
Nara, T. *et al.*, *J. Antibiot.*, 1977, **30**, 17 (isol)
Sato, S. *et al.*, *J. Antibiot.*, 1977, **30**, 25 (synth,
chromatog. ir)

Egan, R.S. *et al.*, *J. Antibiot.*, 1977, **30**, 31
(struct)

S-20

Seldomycin 2

XK 88-2. Antibiotic XK 88-2
[54333-78-7]

C₁₂H₂₆N₄O₅ 306.361

Aminoglycoside antibiotic. Isol. from *Streptomyces hofunensis*. Active against a number of gram-positive organisms. Amorph. powder.

► WK2210000

Sulfate: Mp 225-250° dec. $[\alpha]_{\text{D}}^{25} +74.7$
(c, 0.56 in H₂O).

Nara, T. *et al.*, *J. Antibiot.*, 1977, **30**, 17 (isol, props)

Sato, S. *et al.*, *J. Antibiot.*, 1977, **30**, 25 (*props.*

chromatog, ir, synth)
Egan, R.S. *et al.*, *J. Antibiot.*, 1977, **30**, 31
(struct)

S-21

Seldomycin 3

XK 88-3. Antibiotic XK 88-3
[56276-05-2]

As Seldomycin 1, S-21 with
 $R^1 = NH_2$, $R^2 = OH$

$$\text{C}_{17}\text{H}_{35}\text{N}_5\text{O}_9 \quad 453.492$$

Aminoglycoside antibiotic. Isol. from *Streptomyces hofunensis*. Shows antibacterial activity similar to Seldomycin 1, S-21. Amorph. powder. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane, EtOH.

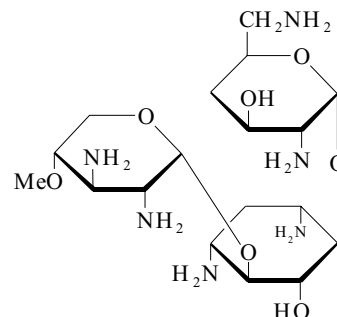
Sulfate: Mp 215–240° dec. $[\alpha]_{\text{D}}^{25} +87.3$
(c, 0.53 in H₂O).

Nara, T. *et al.*, *J. Antibiot.*, 1977, **30**, 17 (isol)
Sato, S. *et al.*, *J. Antibiot.*, 1977, **30**, 25

(ir, chromatog, synth)
Egan, R.S. *et al.*, *J. Antibiot.*, 1977, **30**, 31
(struct)

Seldomycin 5

XK 88-5. Antibiotic XK 88-5
[56276-26-7]



C₁₈H₃₈N₆O₇ 450.534

Aminoglycoside antibiotic. Isol. from *Streptomyces hofunensis*. Similar antibacterial spectrum to other components but more active. Amorph. powder. Sol. H₂O; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.

► LD₅₀ (mus, ivn) 365 mg/kg, LD₅₀ (mus, ipr) 500 mg/kg. WK2360000

Sulfate: Mp 215-240° dec. [α]_D²⁵ +93.9 (c, 0.54 in H₂O).

Nara, T. et al., *J. Antibiot.*, 1977, **30**, 17 (isol)
Sato, S. et al., *J. Antibiot.*, 1977, **30**, 25 (chromatog, ir)

McAlpine, J.B. et al., *J. Antibiot.*, 1977, **30**, 39 (struct)

Matsushima, H. et al., *Bull. Chem. Soc. Jpn.*, 1978, **51**, 3553 (pharmacol)

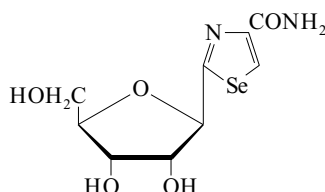
Shimizu, M. et al., *Agric. Biol. Chem.*, 1978, **42**, 653 (manuf)

Selenazofurin

S-25

2- β -D-Ribofuranosyl-4-selenazolecarboxamide, 9CI. Selenazole†. NSC 340847. CI 935

[83705-13-9]



C₉H₁₂N₂O₅Se 307.164

Nucleoside-type antibiotic. Synthetic. Antineoplastic and antiviral agent. Cryst. (2-propanol). Mp 131-133°. Log P -2.9 (calc). Five times more cytotoxic than S analogue Tiazofurine, T-114.

► VS6551500

Srivastava, P. et al., *J. Med. Chem.*, 1983, **26**, 445 (synth)

Sidwell, R.W. et al., *Antimicrob. Agents Chemother.*, 1985, **28**, 375 (activity)

Boritzki, T.J. et al., *Biochem. Pharmacol.*, 1985, **34**, 1109 (pharmacol)

Goldstein, B.M. et al., *J.A.C.S.*, 1985, **107**, 1394; 1990, **112**, 8265 (cryst struct, Se nmr)

Hennen, W.J. et al., *J.O.C.*, 1985, **50**, 1741 (synth, cmr)

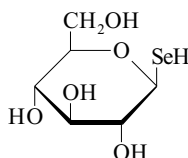
Cook, P.D. et al., *J. Het. Chem.*, 1986, **23**, 155 (synth)

Smee, D.F. et al., *Antiviral Res.*, 1993, **20**, 57 (activity)

1-Selenoglucose

S-26

1-Deoxy-1-selenoglucose



C₆H₁₂O₅Se 243.118

β -D-Pyranose-form

Cryst. powder. Mp 190-200°. [α]_D²⁰ +11.6 (c, 4 in H₂O). Mp varies with rate of heating, turns brown >100°. Dec. with further heating (gas evolved) and residue resolidifies above 215°.

Se-Na salt: Mp 190-200°. [α]_D²⁰ +11.6 (c, 4 in H₂O).

1-Se-benzoyl, tetra-Ac:

C₂₁H₂₄O₁₀Se 515.375

Mp 112-115°. [α]_D²⁰ -15.2 (c, 4 in CHCl₃).

Ph glycoside, tetra-Ac: Phenyl 2,3,4,6-tetra-O-acetyl-1-seleno- β -glucopyranoside

C₂₀H₂₄O₉Se 487.364

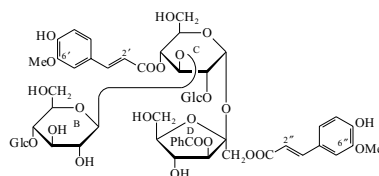
[α]_D²² +240 (c, 1.0 in CH₂Cl₂).

Kocourek, J. et al., *Chem. Ind. (London)*, 1963, 1397 (synth)

Mehta, S. et al., *J.O.C.*, 1993, **58**, 3269 (Ph glycoside)

Senegose D

[151466-63-6]



C₅₇H₇₂O₃₃ 1285.176

Constit. of the roots of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 2H₂O. [α]_D²³ -6.9 (c, 1 in MeOH). λ_{\max} 220 (€ 28180); 233 (€ 29510); 284 (sh) (€ 17780); 299 (sh) (€ 24550); 325 (€ 33880) (MeOH).

6^B-Ac: Senegose C

[151466-62-5]

C₅₉H₇₄O₃₄ 1327.213

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 2H₂O. [α]_D²³ -16 (c, 1.3 in MeOH). λ_{\max} 219 (€ 33110); 233 (€ 33880); 284 (sh) (€ 20420); 297 (sh) (€ 26910); 327 (€ 40740) (MeOH).

6^C-Ac: Senegose B

[151466-61-4]

C₅₉H₇₄O₃₄ 1327.213

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 1H₂O. [α]_D²³ -10.2 (c, 1.2 in MeOH). λ_{\max} 220 (€ 38020); 233 (€ 38020); 284 (sh) (€ 24550); 299 (sh) (€ 30200); 327 (€ 43650) (MeOH).

6^B,6^C-Di-Ac: Senegose A

[151466-60-3]

C₆₁H₇₆O₃₅ 1369.25

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 4½H₂O. [α]_D²³ -9.9 (c, 1.2 in MeOH). λ_{\max} 220 (€ 33110); 233 (€ 33110); 284 (sh) (€ 20420); 299 (sh) (€ 26300); 328 (€ 38900) (MeOH).

6^B,6^C-Di-Ac, 2'-Z-isomer: Senegose E

[151530-27-7]

C₆₁H₇₆O₃₅ 1369.25

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 3H₂O.

[α]_D²³ +64.5 (c, 0.6 in MeOH). λ_{\max} 220 (€ 35480); 232 (€ 35480); 284 (sh) (€ 19500); 301 (sh) (€ 25700); 327 (€ 36310) (MeOH).

4^B-Deglucosyl, 6^B-Ac: Senegose G

[156031-87-7]

C₅₃H₆₄O₂₉ 1165.071

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 3H₂O. [α]_D +1.2 (c, 1.2 in MeOH). λ_{\max} 220 (€ 29510); 233 (€ 30200); 285 (sh) (€ 17380); 299 (sh) (€ 22910); 327 (€ 34670) (MeOH).

4^B-Deglucosyl, 6^C-Ac: Senegose H

[156031-88-8]

C₅₃H₆₄O₂₉ 1165.071

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 2½H₂O. [α]_D -3 (c, 0.66 in MeOH). λ_{\max} 219 (€ 38020); 233 (€ 38020); 286 (sh) (€ 22390); 301 (sh) (€ 29510); 328 (€ 43650) (MeOH).

4^B-Deglucosyl, 6^B,6^C-di-Ac: Senegose F

[156031-89-9]

C₅₅H₆₆O₃₀ 1207.108

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 3H₂O. [α]_D²⁵ -11.5 (c, 1.2 in MeOH). λ_{\max} 219 (€ 38020); 233 (€ 38020); 285 (sh) (€ 22910); 299 (sh) (€ 28840); 327 (€ 43650) (MeOH).

2^C-Deglucosyl, 6^B,6^C-Di-Ac: Senegose I

[156031-86-6]

C₅₅H₆₆O₃₀ 1207.108

Constit. of *Polygala senega* var. *latifolia* (Polygalaceae). Amorph. powder + 2½H₂O. [α]_D²² -29.1 (c, 0.8 in MeOH). λ_{\max} 220 (€ 35480); 234 (€ 35480); 287 (sh) (€ 21880); 300 (sh) (€ 26910); 328 (€ 40740) (MeOH).

6''-Demethoxy, 6^C-Ac: Senegose K

[156250-47-4]

C₅₈H₇₂O₃₃ 1297.187

Constit. of *Polygala senega* (Polygalaceae). Amorph. powder + 3H₂O. [α]_D²⁵ -2.6 (c, 1 in MeOH). λ_{\max} 223 (€ 26910); 231 (€ 28840); 287 (sh) (€ 20890); 302 (sh) (€ 28180); 319 (€ 33880) (MeOH).

6'-Demethoxy, 6^C-Ac: Senegose M

[156250-49-6]

C₅₈H₇₂O₃₃ 1297.187

Constit. of *Polygala senega* (Polygalaceae). [α]_D²⁵ +4.4 (c, 0.6 in MeOH). λ_{\max} 223 (€ 32360); 232 (€ 34670); 287 (sh) (€ 22910); 302 (sh) (€ 29510); 320 (€ 36310) (MeOH).

6'-Demethoxy, 6^B,6^C-di-Ac: Senegose L

[156250-48-5]

C₆₀H₇₄O₃₄ 1339.224

Constit. of *Polygala senega* (Polygalaceae). Amorph. powder + 4H₂O. [α]_D²⁵ -6.3 (c, 1 in MeOH). λ_{\max} 222 (€ 22910); 232 (€ 25120); 286 (sh) (€ 16980); 302 (sh) (€ 23440) (MeOH).

6''-Demethoxy, 6^B,6^C-di-Ac: Senegose J

[156250-46-3]

C₆₀H₇₄O₃₄ 1339.224

Constit. of *Polygala senega* (Polygalaceae). Amorph. powder + 4H₂O. [α]_D²⁵ -6.6 (c, 1.1 in MeOH). λ_{\max} 224 (€ 27540); 231 (€ 30200); 288 (sh) (€ 22910); 303 (sh) (€ 30900); 320 (€ 38020) (MeOH).

6''-Demethoxy, 6^B,6^C-di-Ac, 2'-Z-isomer:

Senegose N

[156317-48-5]

C₆₀H₇₄O₃₄ 1339.224

Constit. of *Polygala senega* (Polygalaceae). Amorph. powder + 5H₂O. [α]_D²⁵ +39.6 (c, 0.8 in MeOH). λ_{max} 224 (ε 23990); 230 (ε 25120); 286 (sh) (ε 18620); 302 (sh) (ε 25120); 318 (ε 30200) (MeOH).

6''-Demethoxy, 6^B,6^C-di-Ac, 2''Z-isomer:

Senegose O

[156317-49-6]

C₆₀H₇₄O₃₄ 1339.224

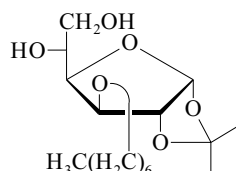
Constit. of *Polygala senega* (Polygalaceae). Amorph. powder + 4H₂O. [α]_D²⁵ -13.1 (c, 0.7 in MeOH). λ_{max} 220 (ε 2690); 230 (ε 2630); 286 (sh) (ε 1740); 301 (sh) (ε 2240); 320 (ε 2630) (MeOH).

Saitoh, H. *et al.*, *Chem. Pharm. Bull.*, 1993, **41**, 1127; 2125; 1994, **42**, 641 (isol, uv, pmr, cmr)

Seprilose, USAN

S-28

3-O-Heptyl-1,2-O-(1-methylethylidene)-α-D-glucopyranose. 3-O-Heptyl-1,2-O-isopropylidene-α-D-glucopyranose. GW 80126 [133692-55-4]



C₁₆H₃₀O₆ 318.409

Investigated for the treatment of autoimmune disorders, including rheumatoid arthritis. No phys. props. reported.

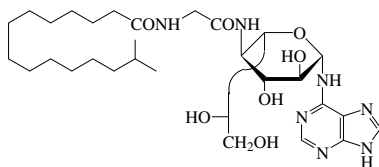
Eur. Pat., 1990, 379 397, (Greenwich); *CA*, **114**, 229286t (synth, pharmacol, pmr)

Septacidin

S-29

LIA 0191A. Antibiotic LIA 0191A. NSC 65104

[62362-59-8]



C₃₀H₅₁N₇O₇ 621.776

Nucleoside antibiotic. Diastereoisomer of Spicamycin, S-65. Prod. by *Streptomyces fimbriatus* ATCC15051 and *Streptomyces spheroides* NRRL15600. Active against fungi and tumours. Cryst. Sol. DMF, bases, AcOH, Py; fairly sol. MeOH, 1-propanol, Me₂CO, butanol, EtOH; poorly sol. H₂O, EtOAc, acids, hexane. Mp 215-220° dec. [α]_D²³ +6.6 (c, 1 in DMF). Darkens at 188°. λ_{max} 273 (ε 16000) (MeOH/HCl) (Derep). λ_{max} 272 (ε 14000) (MeOH/NaOH) (Derep). λ_{max} 264 (ε 16000) (MeOH) (Derep). λ_{max} 265 (E1%/1cm 253); 271 (E1%/1cm 220) (MeOH) (Berdy). λ_{max} 272 (E1%/

1cm 275) (NaOH) (Berdy). λ_{max} 273 (E1%/1cm 229) (HCl) (Berdy).

► LD₅₀ (mus, ipr) .5 - 1.5 mg/kg. MJ9850000

Dutcher, J.D. *et al.*, *Antimicrob. Agents*

Chemother., 1963, 8

Agahigin, H. *et al.*, *J.O.C.*, 1965, **30**, 1085

(struct)

Acton, E.M. *et al.*, *J. Med. Chem.*, 1977, **20**,

1362

Mitrofanova, V.G. *et al.*, *Antibiotiki (Moscow)*,

1978, **23**, 579 (isol, props)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)

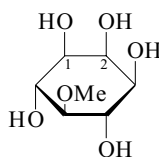
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SBZ000

Sequoyitol

S-30

5-O-Methyl-myo-inositol

[523-92-2]



C₇H₁₄O₆ 194.184

Occurs in all gymnosperms and two families of dicotyledons. Also isol. from ferns *Nephrolepis auriculata* and *Nephrolepis biserrata*.

Mp 243°. Opt. inactive (meso-). The sample from *N. auriculata* was reported to have [α]_D + 40°, which is impossible.

1,2-O-Isopropylidene:

C₁₀H₁₈O₆ 234.249

Mp 115°.

1,2-O-Isopropylidene, 3,4,6-tri-Ac:

C₁₆H₂₄O₉ 360.36

Mp 107-108°.

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-O-methyl-myo-inositol

[20254-33-5]

C₁₇H₂₄O₁₁ 404.37

Mp 203-204°.

Anderson, L. *et al.*, *J.A.C.S.*, 1957, **79**, 1171-1174 (isol, synth, struct)

Angyal, S.J. *et al.*, *J.C.S.*, 1957, 1417-1422

(synth)

Kindl, H. *et al.*, *Prog. Chem. Org. Nat. Prod.*,

1966, **24**, 149 (rev)

Karrer, W. *et al.*, *Konstitution und Vorkommen*

der Organischen Pflanzenstoffe, 2nd edn.,

Birkhäuser Verlag, Basel, 1972, no. 281 (bibl, occur)

Cannon, J.R. *et al.*, *Aust. J. Chem.*, 1980, **33**, 2229-2236 (cryst struct)

Murakami, T. *et al.*, *Yakugaku Zasshi*, 1985,

105, 649 (isol)

Sultana, N. *et al.*, *Phytochemistry*, 1999, **50**,

1249-1253 (isol, pmr, cmr)

Serum gonadotrophin, BAN,

S-31

INN

PMSG. Pregnant mare serums gonadotrophin. Equine cyonin. Gormon. Eleagol.

Priatin. Serotropin. Gestyl. Antostab.

Many other names

[9002-70-4]

Glycoprotein from blood of pregnant

mares. Gonadotropic hormone.

► Exp. reprod. effects. TU4517000

Goss, H. *et al.*, *Endocrinology (Baltimore)*,

1940, **26**, 244 (isoln)

Allen, W.R. *et al.*, *Curr. Top. Vet. Med. Anim. Sci.*, 1978, **1**, 50 (rev, biol)

Moore, W.T. *et al.*, *Chorionic Gonadotropin*,

[*Proc. Conf.*], 1979, 89 (rev, props, activity)

Combarous, Y. *et al.*, *Biochim. Biophys. Acta*,

1981, **667**, 267 (props)

Martindale, *The Extra Pharmacopoeia*, 28th/29th

edn., Pharmaceutical Press, 1982, 5932

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of*

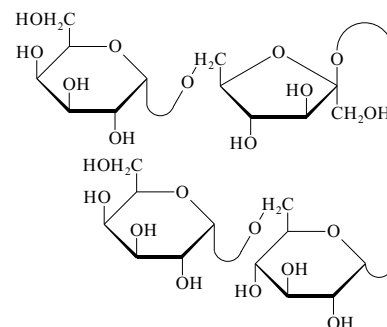
Industrial Materials, 8th edn., Van Nostrand

Reinhold, 1992, SCA750

Sesamose

S-32

α-D-Galactopyranosyl-(1→6)-[α-D-galactopyranosyl-(1→6)-α-D-glucopyranosyl-(1→2)]-β-D-fructofuranoside. α-D-Galactopyranosyl-(1→6)-β-D-fructofuranosyl-(2→1)-[α-D-galactopyranosyl-(1→6)]-α-D-glucopyranoside



C₂₄H₄₂O₂₁ 666.583

Tentative struct. Isol. from seeds of *Sesamum indicum* (sesame). Not obt. pure.

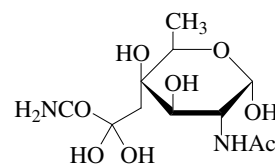
Hatanaka, S. *et al.*, *Arch. Biochem. Biophys.*, 1959, **82**, 188

Shewanellose

S-33

2-Acetamido-4-C-(2-carboxamido-2,2-dihydroxyethyl)-2,6-dideoxygalactose.

2-Acetamido-4-C-(3-amino-2,2-dihydroxy-3-oxopropyl)-2,6-dideoxygalactopyranose [463963-03-3]



C₁₁H₂₀N₂O₈ 308.288

Hydrated α-ketoamide.

D-form

Constit. of the O-specific polysaccharides of *Morganella morganii* and of *Shewanella putrefaciens* strain A6.

Shashkov, A.S. *et al.*, *Carbohydr. Res.*, 2002,

337, 1119-1127 (occur, struct, pmr, cmr)

Kilcoyne, M. *et al.*, *Carbohydr. Res.*, 2002, **337**,

1697-1702 (occur, struct, pmr, cmr)

Knirel, Yu. A. *et al.*, *Adv. Carbohydr. Chem.*

Biochem., 2003, **58**, 371-417 (rev)

Shinnamins**S-34**

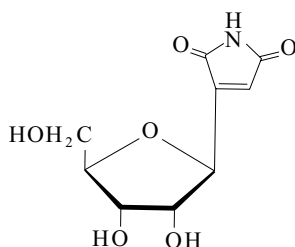
Glycoproteins. Isol. from *Flammulina velutipes*. Shows antitumour activity. Sol. H₂O; poorly sol. hexane. Phys. and chem. props. of 9 Shinnamins are reported.

[80456-09-3, 80456-10-6, 80456-11-7, 80456-12-8, 80456-13-9, 80456-14-0, 80456-15-1, 80456-16-2, 80456-17-3, 80456-18-4, 80456-19-5]

Japan. Pat., 1981, 81 127 317; *CA*, **96**, 40890d (isol)

Showdomycin**S-35**

3-(β -D-Ribofuranosyl)-1H-pyrrole-2,5-dione, 9CI. 2-(β -D-Ribofuranosyl)maleimide, 8CI. NSC 93047 [16755-07-0]



C₉H₁₁NO₆ 229.189

Nucleoside antibiotic. Isol. from *Streptomyces showdoensis*. Exhibits antitumour activity. Leaflets (Me₂CO/C₆H₆). Sol. H₂O, EtOH, Me₂CO, dioxan, DMF, butanol, MeOH; fairly sol. EtOAc, CHCl₃; poorly sol. C₆H₆, hexane, Et₂O. Mp 160-161°. [α]_D²⁵ +49.9 (c, 1 in H₂O). pK_a 9.29 (H₂O). λ_{max} 222 (ε 12600); 272 (sh) (ε 6000) (95% EtOH) (Derep). λ_{max} 221 (E1%/1cm 442) (H₂O) (Berdy). λ_{max} 222 (ε 12600) (EtOH) (Berdy).

► LD₅₀ (mus, ipr) 25 mg/kg; LD₅₀ (mus, ivn) 110 mg/kg; LD₅₀ (mus, scu) 18 mg/kg. ON6200000

Tri-Ac:

C₁₅H₁₇NO₉ 355.301
Mp 115-116°.

2',3'-Isopropylidene:

C₁₂H₁₃NO₆ 267.238
Mp 140.5-141°.

1'-Epimer: 3-(α -D-Ribofuranosyl)-1H-pyrrole-2,5-dione, 9CI [79934-05-7]

C₉H₁₁NO₆ 229.189

Cryst. Mp 137-139°. [α]_D²⁰ -75.6 (c, 0.1 in H₂O).

Tsukuda, Y. et al., *Chem. Comm.*, 1967, 975 (cryst struct)

Darnall, K.R. et al., *Proc. Natl. Acad. Sci. U.S.A.*, 1967, **57**, 548 (ir, uv, ms, struct, nmr, cryst struct)

Kalvoda, L. et al., *Tet. Lett.*, 1970, 2297 (synth, ir, uv, nmr)

Trummlitz, G. et al., *J.O.C.*, 1973, **38**, 1841 (synth, ir, uv, nmr)

Sato, T. et al., *Tet. Lett.*, 1978, 1829 (synth, uv, ir, nmr)

Visser, D.W. et al., *Antibiotics (N.Y.)*, 1979, **5**, 363 (rev, props)

Buchanan, J.G. et al., *J.C.S. Perkin I*, 1979, 225 (synth)

Buchanan, J.G. et al., *Chem. Comm.*, 1984, 1515; 1517 (biosynth)

Barrett, A.G.M. et al., *J.O.C.*, 1984, **49**, 3673; 1986, **51**, 495 (synth, bibl)

Takayama, H. et al., *Chem. Pharm. Bull.*, 1987, **35**, 433 (synth)

Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)

Araki, Y. et al., *Tet. Lett.*, 1988, **29**, 351 (synth)

Pino Gonzalez, M.S. et al., *Tetrahedron*, 1988, **44**, 3715 (synth)

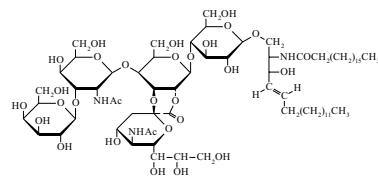
Trost, B.M. et al., *J.O.C.*, 1999, **64**, 5427-5435 (synth, pmr, cmr)

Hungerford, N.L. et al., *Synthesis*, 2003, 1837-1843 (synth, ir, pmr, cmr, 1' epimer)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RIU000

Siagosome, INN**S-36**

II² α -N-Acetylneuraminosyl-II² β internal ester gangliotetraglycosyl-ceramide. GM₁ Monosialoganglioside inner ester. Sinassial. AGF₂ [100345-64-0]



C₇₃H₁₂₉N₃O₃₀ 1528.824

Synthetic ganglioside. Neuroprotective agent. Used to treat ischaemic stroke in acute phase.

Martindale, *The Extra Pharmacopoeia*, 28th/29th edn., Pharmaceutical Press, 1982, 16820

Aldinio, C. et al., *Int. J. Dev. Neurosci.*, 1984, **2**, 267 (pharmacol)

Raiteri, M. et al., *Eur. J. Pharmacol.*, 1985, **118**, 347 (pharmacol)

Samson, J.C. et al., *Drugs of Today (Barcelona)*, 1986, **22**, 73 (rev)

Sialic acids**S-37**

Nonulosaminic acid. Neuraminic acids

A family of acylated amino nonulosonic acids of which Neuraminic acid, N-35 is the parent. They are widely distributed throughout the animal kingdom in mucopolysaccharides, mucoproteins and lipolysaccharides (mucolipids), mostly in association with 2-Amino-2-deoxyglucose, A-266 and 2-Amino-2-deoxygalactose, A-206. Involved in receptor recognition, cell adhesion, aggregation, antigenicity masking, metastatic potential, nerve-signal transmission, viral replication and some genetic disorders.

α (2→8)-Homopolymer: See N-Acetylneuraminic acid, A-20

Zilliken, F. et al., *Adv. Carbohydr. Chem.*, 1958, **13**, 237-263 (rev)

Gottschalk, A. et al., *The Chemistry and Biology of Sialic Acids and Related Substances*, Cambridge Univ. Press, 1960, (book)

Blix, G. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 246-250 (isol)

Sharon, N. et al., *Complex Carbohydrates*, Addison-Wesley Publishing Co., 1975, 142

Codington, J.F. et al., *Methods Carbohydr. Chem.*, 1976, **7**, 226-232 (isol, detn)

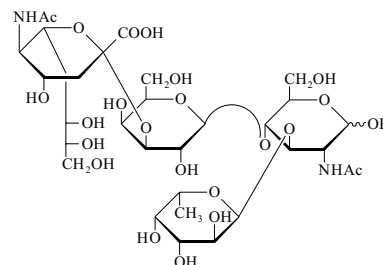
Downs, F. et al., *Methods Carbohydr. Chem.*, 1976, **7**, 233-240 (detn)

Schauer, R. et al., *Adv. Carbohydr. Chem. Biochem.*, 1982, **40**, 131-234 (rev)

Sialic Acids: Chem. Metab. and Function, Ed. Schauer, R., Springer-Verlag, 1982, (book)

Sialyl-Lewis x tetrasaccharide**S-38**

α -(N-Acetylneuraminosyl)-(2→3)- β -D-galactopyranosyl)-(1→4)-[α -L-fucopyranosyl-(1→3)]-2-acetamido-2-deoxy-D-glucose. S Le^x [98603-84-0] [136514-66-4, 136599-51-4]



C₃₁H₅₂N₂O₂₃ 820.751

Present at the terminus of glycolipids attached to the surface of white blood cells. Ligand for cell surface receptors of selectins. Plays an important role in inflammatory response by mediating the binding of the. Solid. [α]_D²⁵ +5.8 (c, 0.24 in MeOH). Opt. rotn. refers to anomeric mixture (α : β 3:2).

Nicolaou, C. et al., *Chem. Comm.*, 1991, 870-872 (synth, pmr)

Ichikawa, Y. et al., *J.A.C.S.*, 1992, **114**, 9283-9298 (synth, pmr, cmr)

de Vries, T. et al., *FEBS Lett.*, 1993, **330**, 243-248 (synth, pmr)

Ichikawa, Y. et al., *Chem. Br.*, 1994, 117 (rev)

Schuster, M. et al., *J.A.C.S.*, 1994, **116**, 1135 (synth)

Jahnke, W. et al., *Angew. Chem., Int. Ed.*, 1997, **36**, 2603-2607 (conformn)

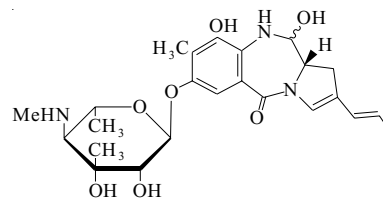
Dekany, G. et al., *J. Carbohydr. Chem.*, 1997, **16**, 983-999 (synth, pmr, ms)

Baba, K. et al., *Biosci., Biotechnol., Biochem.*, 1998, **62**, 590-592 (synth)

Sibiromycin**S-39**

Antibiotic 4761

[12684-33-2]



C₂₄H₃₃N₃O₇ 475.541

Isol. from *Streptosporangium sibiricum*. DNA intercalator. Antineoplastic antibiotic. Sol. MeOH, CHCl₃, CH₂Cl₂, acids, bases, Py, DMF, EtOAc, butanol; fairly sol. C₆H₆; poorly sol. H₂O, hexane, CCl₄, Et₂O.

Mp 120° dec. [α]_D +525 (DMF). Log P 0.13 (uncertain value) (calc). λ_{max} 235 (ε 14300); 303 (ε 16800); 445 (ε 2400) (HCl for 1h) (Derep). λ_{max} 247 (ε 13000); 309

- (ϵ 19100) (MeOH/NaOH) (Derep). λ_{\max} 230 (ϵ 19200); 310 (ϵ 19900) (MeOH) (Derep). λ_{\max} 230 (E1%/1cm 405); 310 (E1%/1cm 420) (MeOH) (Berdy). λ_{\max} 270 (E1%/1cm 315); 305 (E1%/1cm 410) (HCl) (Berdy). λ_{\max} 244 (E1%/1cm 330); 319 (E1%/1cm 445) (NaOH) (Berdy).
- V. toxic by all routes of administration. LD₅₀ (rat, ipr) 0.006 mg/kg. LD₅₀ (mus, orl) 0.46 mg/kg. Mutagenic props. ;LD₅₀ (mus, ivn) 58 mg/kg. LD₅₀ (mus, ipr) 32 mg/kg. LD₅₀ (mus, scu) 84 mg/kg. LD₅₀ (mus, orl) 459 mg/kg. UY8495000
- Brazhnikova, M.G. *et al.*, *J. Antibiot.*, 1972, **25**, 668 (*isol*, *uv*)
- Hurley, L.H. *et al.*, *Tet. Lett.*, 1976, 1419 (*biosynth*)
- Hurley, L.H. *et al.*, *Biochemistry*, 1979, **18**, 4230 (*biosynth*, *cmr*)
- Hurley, L.H. *et al.*, *Acc. Chem. Res.*, 1980, **13**, 263 (*rev*)
- Giuliano, R.M. *et al.*, *Diss. Abstr. Int.*, B, 1982, **42**, 3687 (*rev*)
- Parker, K.A. *et al.*, *J.A.C.S.*, 1982, **104**, 7330 (*struct*)
- Leber, J.D. *et al.*, *J.A.C.S.*, 1988, **110**, 2992 (*pmr*, *struct*)

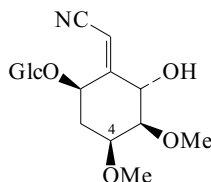
Silenan**S-40**

Pectic polysaccharide consisting of linear α -(1 \rightarrow 4)-galacturonan backbone with α -Rha sidechains. Isol. from *Silene vulgaris*. Shows immunomodulating activity.

Günter, E.A. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1641-1645 (*isol*, *bibl*)

Simmondsin**S-41**

[6-(β -D-Glucopyranosyloxy)-2-hydroxy-3,4-dimethoxycyclohexylidene]acetonitrile, 9CI. 2-Cyanomethylene-1-glucosyloxy-3-hydroxy-4,5-dimethoxycyclohexane [51771-52-9]



C₁₆H₂₅NO₉ 375.375
 Constit. of *Simmondsia californica* and *Simmondsia chinensis* (jojoba). Appetite suppressant. Waxy solid. Mp 95-100°. [α]_D²⁵ -78 (c, 1 in MeOH).

► AM0250000

Penta-Ac: Mp 165-166°.

2'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl): *Simmondsin* 2'-ferulate

[179466-18-3]

[67411-22-7, 179466-19-4]

C₂₆H₃₃NO₁₂ 551.546

Constit. of the seeds of jojoba.

3-O-De-Me, 2'-(4-hydroxy-3-methoxy-Z-cinnamoyl): [162290-39-3]

[179466-20-7]

C₂₅H₃₁NO₁₂ 537.519

Constit. of jojoba meal.

4-O-De-Me: *De-O-methylsimmondsin*

[135105-75-8]

C₁₅H₂₃NO₉ 361.348

Constit. of jojoba meal.

4-O-De-Me, 2'-(4-hydroxy-3-methoxy-E-cinnamoyl): [162290-38-2]

[179601-21-9]

C₂₅H₃₁NO₁₂ 537.519

Constit. of jojoba meal.

Di-O-de-Me: *Dide-O-methylsimmondsin*

[135074-86-1]

C₁₄H₂₁NO₉ 347.321

Constit. of jojoba meal. Amorph. [α]_D²⁰ -50 (c, 0.52 in H₂O). λ_{\max} 215 (log ϵ 3.97) (H₂O).

Di-O-de-Me, 4-O- α -D-glucopyranoside:

Dide-O-methyl-4-O- α -D-glucopyranosyl-simmondsin

[370068-00-1]

C₂₀H₃₁NO₁₄ 509.463

Constit. of jojoba meal (*Simmonsia chinensis*).

Di-O-de-Me, 2-O-(3-methyl-2-butenoyl):

Ehretioside A₃

[156368-87-5]

C₁₉H₂₇NO₁₀ 429.423

Constit. of *Ehretia philippinensis*. Waxy solid. [α]_D²⁵ -53 (c, 1 in MeOH). Has (E)-config. (change of Cahn-Ingold-Prelog priorities).

Di-O-de-Me, 3-O-(3-methyl-2-butenoyl):

Ehretioside A₁

[156368-85-3]

C₁₉H₂₇NO₁₀ 429.423

Constit. of *Ehretia philippinensis*.

Amorph. [α]_D²⁵ +39 (c, 1 in Py).

Di-O-de-Me, 4-O-(3-methyl-2-butenoyl):

Ehretioside A₂

[156368-86-4]

C₁₉H₂₇NO₁₀ 429.423

Constit. of *Ehretia philippinensis*. Waxy solid. [α]_D²⁵ -53 (c, 1 in MeOH).

Di-O-de-Me, 2-O-benzoyl: *Lanceolin A*

[158022-45-8]

C₂₁H₂₅NO₁₀ 451.429

Constit. of *Lophira lanceolata*. Amorph. solid. Has (E)-config. (change of Cahn-Ingold priorities).

Di-O-de-Me, 3-O-benzoyl: *Lanceolin C*

[221149-42-4]

C₂₁H₂₅NO₁₀ 451.429

Constit. of *Lophira alata*. Amorph. solid.

Di-O-de-Me, 4-O-benzoyl: *Lanceolin B*

[151197-19-2]

C₂₁H₂₅NO₁₀ 451.429

Constit. of *Lophira lanceolata*. Amorph. solid.

Di-O-de-Me, 2,4-di-O-benzoyl: *Lophiroside*

A₂

[151171-81-2]

C₂₈H₂₉NO₁₁ 555.537

Constit. of the bark of *Lophira alata*. Amorph. [α]_D²⁰ -22.6 (c, 0.93 in MeOH). λ_{\max} 229 (log ϵ 4.54); 274 (log ϵ 3.26) (MeOH).

Di-O-de-Me, 3,4-di-O-benzoyl: *Lophiroside*

A₁

[151171-80-1]

C₂₈H₂₉NO₁₁ 555.537

Constit. of the bark of *Lophira alata*. Amorph. [α]_D²⁰ +11.5 (c, 0.87 in MeOH). λ_{\max} 229 (log ϵ 4.54); 274 (log ϵ 3.26) (MeOH).

Di-O-de-Me, 2-O-E-cinnamoyl, 4-O-benzoyl: *Lophiroside B₂*

[151171-83-4]

C₃₀H₃₁NO₁₁ 581.575

Constit. of the bark of *Lophira alata*.

Amorph. [α]_D²⁰ -22.9 (c, 0.83 in MeOH).

Has (E)-config. (change of Cahn-Ingold-Prelog priorities). λ_{\max} 222 (log ϵ 4.25); 279 (log ϵ 4.14) (MeOH).

Di-O-de-Me, 3-O-E-cinnamoyl, 4-O-benzoyl: *Lophiroside B₁*

[151171-82-3]

C₃₀H₃₁NO₁₁ 581.575

Constit. of the bark of *Lophira alata*.

Amorph. [α]_D²⁰ +63 (c, 0.54 in MeOH).

λ_{\max} 222 (log ϵ 4.25); 279 (log ϵ 4.14) (MeOH).

Elliger, C.A. *et al.*, *J.O.C.*, 1974, **39**, 2930 (*struct*)

Elliger, C.A. *et al.*, *Phytochemistry*, 1974, **13**, 2319 (*isol*)

Verbiscar, A.J. *et al.*, *J. Agric. Food Chem.*, 1978, **26**, 1456-1459 (2'-ferulate)

Chida, N. *et al.*, *J.C.S. Perkin I*, 1992, 1131 (*synth*, *abs config*)

Van Boven, M. *et al.*, *J. Agric. Food Chem.*, 1993, **41**, 1605; 1994, **42**, 2684; 1996, **44**, 2239-2243 (*isol*, *cryst struct*, *derivs*)

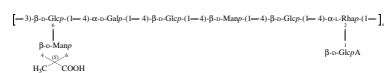
Murakami, A. *et al.*, *Phytochemistry*, 1993, **32**, 1461-1466 (*Lophirosides*)

Tih, A.E. *et al.*, *J. Nat. Prod.*, 1994, **57**, 971-974 (*Lanceolin A*, *Lanceolin B*)

Simpol, L.R. *et al.*, *Phytochemistry*, 1994, **36**, 91-95 (*Ehretiosides*)

Messanga, B.B. *et al.*, *Fitoterapia*, 1998, **79**, 439-442 (*Lanceolin C*)

Van Boven, M. *et al.*, *J. Agric. Food Chem.*, 2001, **49**, 4278-4283 (*Didemethyl-4-glucosylsimmondsin*)

Simusan**S-42**

Major exopolysaccharide prod. by an ethanol-utilising *Arthrobacter* sp.

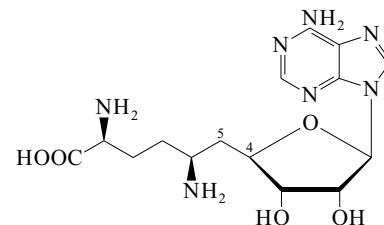
Senchenkova, S.N. *et al.*, *Carbohydr. Res.*, 1995, **266**, 103-113 (*isol*, *struct*, *pmr*, *cmr*)

Sinefungin, INN, USAN**S-43**

A 9145. RP 32232. Antibiotic A 9145.

Antibiotic RP 32232. Lilly 57926

[58944-73-3]



C₁₅H₂₃N₇O₅ 381.391

Nucleoside antibiotic. From *Streptomyces griseolus* and *Streptomyces incarnatus*. Antiviral agent with antifungal props.

Never marketed. Log P -6.43 (calc).

λ_{\max} 207 (ϵ 15900); 258 (ϵ 11100) (H₂O/HCl) (Derep). λ_{\max} 256 (ϵ 14400) (0.1N NaOH) (Derep). λ_{\max} 207 (ϵ 19800); 258 (ϵ 12400) (H₂O) (Derep).

► LD₅₀ (mus, orl) 1000 mg/kg. HE3140000

δ -Lactam: *Antibiotic RP 35391*. RP 35391

[67214-43-1]

C₁₅H₂₁N₇O₄ 363.375From *Streptomyces griseolus* and *Streptomyces incarnatus*. Antifungal agent.

▶ AU7356000

4,5-Didehydro: **Dehydrosinefungin**. A

9145C. Antibiotic A 9145C. C-Factor.

SF 1306A. Antibiotic SF 1306A

[66753-47-7]

[52934-70-0]

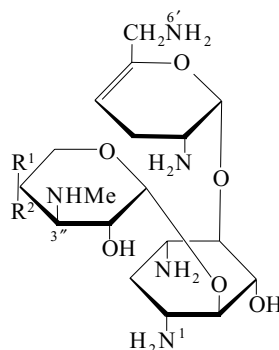
C₁₅H₂₁N₇O₅ 379.375From *Streptomyces griseolus* and *Streptomyces echinatus*. Antifungal agent. [α]_D²⁵ -15.8 (H₂O).Boeck, L.D. et al., *Antimicrob. Agents Chemother.*, 1973, **3**, 49 (isol)Nagarajan, R. et al., *J. InterSci. Conf. Antimicrob. Agents Chemother.*, 17th, 1977, Abstr. 50 (struct)Berry, D.R. et al., *J. Antibiot.*, 1978, **31**, 185-191 (biosynth)Pugh, C.S.G. et al., *J. Biol. Chem.*, 1978, **253**, 4075-4077 (props)U.K. Pat., 1980, 1 567 871; CA, **94**, 2930 (isol)Geze, M. et al., *J.A.C.S.*, 1983, **105**, 7638-7640 (synth)Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711-1739 (rev)Japan. Pat., 1988, 88 132 839; CA, **110**, 88607b (SF 1306A)Maguire, M.P. et al., *J.O.C.*, 1990, **55**, 948-955 (synth, abs config, bibl)Barton, D.H.R. et al., *J.C.S. Perkin 1*, 1991, 981-985 (synth)Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **3**, 594 (activity)Parry, R.J. et al., *Tetrahedron*, 1991, **47**, 6069-6078 (biosynth)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 526Ghosh, A.K. et al., *J.C.S. Perkin 1*, 1999, 3597-3601 (synth, bibl)**Sinistrin****S-44**

[37311-25-4]

A mixed-type β-D-fructan comprising (2→1)-linked and (2→6)-linked unbranched β-D-Fruf residues and α-D-Glcp residues. Isol. from red squill (*Urginea maritima*). Used as a diagnostic test of renal function (alternative to inulin). Sol. H₂O. [α]_D²⁰ -45.5 (c, 1 in H₂O). Molecular weight distribution 800-16000.

Schlubach, H.H. et al., *Annalen*, 1940, **544**, 111McDonald, E.J. et al., *Adv. Carbohydr. Chem.*, 1946, **2**, 253 (rev)Nitsch, E. et al., *Carbohydr. Res.*, 1979, **72**, 1 (isol, struct)Eigner, W.-D. et al., *Carbohydr. Res.*, 1988, **180**, 87 (struct)Praznik, W. et al., *Carbohydr. Res.*, 1992, **235**, 221; 1993, **243**, 91 (struct)Soper, C.P.R. et al., *Eur. J. Clin. Chem. Clin. Biochem.*, 1995, **33**, 497 (use)**Sisomicin, INN, USAN****S-45**

Sisomicin, BAN. Rickamicin. Antibiotic 6640. Many other names [32385-11-8]

R¹ = OH, R² = CH₃C₁₉H₃₇N₅O₇ 447.531

Aminoglycoside antibiotic. Isol. from *Micromonospora inyoensis*. Shows broad-spectrum activity. Similar to Gentamicins. Cryst. + 1H₂O (EtOH). Sol. H₂O; fairly sol. MeOH, CHCl₃; poorly sol. Me₂CO, hexane. Mp 198-201°. [α]_D²⁶ +189 (c, 0.3 in H₂O). Log P -4.65 (uncertain value) (calc).

▶ Renal and otological effects reported when used therapeutically. LD₅₀ (mus, scu) 288 mg/kg. Exp. reprod. effects; LD₅₀ (mus, ivn) 34 mg/kg, LD₅₀ (mus, ipr) 221 mg/kg, LD₅₀ (mus, scu) 288 mg/kg. WK2284900 Sulfate (1:2.5): **Sisomicin sulfate**, JAN, USAN. Siseptin [53179-09-2]

▶ LD₅₀ (rat, scu) 500 mg/kg; LD₅₀ (mus, scu) 272 mg/kg. WK2288000

Penta-Ac:

C₂₀H₃₉N₅O₇ 461.557

Amorph. powder. Mp 185-190°.

[α]_D²⁶ +194.6 (MeOH).2'-N-Formyl: **Antibiotic G 367S₁**. G 367S₁.

2-N'-Formylsisomicin. G 367-1

[76647-54-6]

C₂₀H₃₇N₅O₈ 475.541Prod. by *Dactylosporangium thailandense*.

Active against gram-positive and -negative bacteria. Powder. Sol. H₂O, MeOH; poorly sol. Me₂CO, C₆H₆. Mp 130-133°. [α]_D²⁴ +188.9 (c, 1 in H₂O).

N¹-Me: N¹-Methylsisomicin

[59711-89-6]

C₂₀H₃₉N₅O₇ 461.557Semisynthetic. Sol. H₂O. [α]_D +153 (H₂O).6'-N-Me: **Antibiotic G 52**. G 52

[51909-61-6]

C₂₀H₃₉N₅O₇ 461.557

From *Micromonospora inyoensis*. Broad spectrum antibiotic. Sol. H₂O. [α]_D²⁶ +157.

▶ LD₅₀ (mus, scu) 400 mg/kg; LD₅₀ (mus, ivn) 50 mg/kg, LD₅₀ (mus, ipr) 200 mg/kg, LD₅₀ (mus, scu) 400 mg/kg. WK2195000

N-De-Me: 3''-N-Demethylsisomicin.

Antibiotic 66-40G

[66762-58-1]

C₁₈H₃₅N₅O₇ 433.504

Isol. from *Micromonospora inyoensis* and *Micromonospora sagamiensis*. Active against gram-positive and -negative bacteria.

Mp 168-178°. [α]_D²⁶ +158.4 (H₂O).Stereoisomer: **Antibiotic G 367S₂**. G 367S₂. G 367-2

[78779-60-9]

C₁₉H₃₇N₅O₇ 447.531Prod. by *Dactylosporangium thailandense*.

Active against gram-negative bacteria.

Powder. Sol. H₂O, MeOH; poorly sol.Me₂CO, C₆H₆.Mp 151-155°. [α]_D²⁴ +159.8 (c, 1 in H₂O).N-De-Me, 3''-N-Et: 3''-N-Demethyl-3''-N-ethylsisomicin. **Etisomicin**, BAN.

BAY VI 4718

[70639-48-4]

C₂₀H₃₉N₅O₇ 461.557Semisynthetic. [α]_D²⁰ +179 (c, 1 in H₂O).

[79056-20-5]

Weinstein, M.J. et al., *J. Antibiot.*, 1970, **23**, 551 (isol)Cooper, D.J. et al., *Chem. Comm.*, 1971, 285 (pmr, ir, struct)Reimann, H. et al., *Chem. Comm.*, 1971, 924 (pmr)Reimann, H. et al., *J.O.C.*, 1974, **39**, 1451

(struct, nmr, ir, ms)

Cleophax, J. et al., *Chem. Comm.*, 1975, 11 (synth, struct)Testa, R.T. et al., *J. Antibiot.*, 1975, **28**, 573 (biosynth)U.S. Pat., 1977, 4 002 742; CA, **87**, 6298 (derivs)Nagabhushan, T.L. et al., *J. Antibiot.*, 1978, **31**, 43 (synth)Kugelman, M. et al., *J. Antibiot.*, 1978, **31**, 643 (isol, pmr, cmr, deriv)Davies, D.M. et al., *J. Med. Chem.*, 1978, **21**, 189 (deriv)Ger. Pat., 1979, 2 737 264; CA, **91**, 57416y (Etisomicin)Belg. Pat., 1980, 884 925; CA, **95**, 148692j (N-formyl)Japan. Pat., 1980, 133 394; CA, **94**, 101309 (N-formyl)Ger. Pat., 1981, 3 000 841; CA, **95**, 187602z (Etisomicin)Japan. Pat., 1981, 81 01 893; CA, **95**, 5118 (isol, deriv)U.K. Pat., 1981, 2 053 895; CA, **95**, 130966 (deriv)Satoi, S. et al., *J. Antibiot.*, 1983, **36**, 1 (N-formyl)Noone, P. et al., *Drugs*, 1984, **27**, 548 (rev, pharmacol, props)Negwer, M. et al., *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 5531Eneva, G.I. et al., *Magn. Reson. Chem.*, 1992, **30**, 841 (pmr, cmr)Eneva, G.I. et al., *J. Mol. Struct.*, 1993, **291**, 191 (pmr, conformn)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 201

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, APY500; GAA100; SDY750

Sisomicin B**S-46**

Antibiotic 66-40B

[53797-16-3]

As Sisomicin, S-45 with

R¹ = H, R² = OHC₁₈H₃₅N₅O₇ 433.504

Aminoglycoside antibiotic. Minor prod.

from *Micromonospora inyoensis*. Shows

broad-spectrum activity. Amorph. Sol. H_2O .
Mp 91-102° (111-114°). $[\alpha]_D^{25} +152.8$ (c, 0.3 in H_2O).

- LD₅₀ (mus, ivn) 70 mg/kg. WK2280000
Davies, D.H. *et al.*, *J.C.S. Perkin 1*, 1975, 814 (struct)
Lee, B.K. *et al.*, *J. Antibiot.*, 1976, **29**, 677 (isol)
Daniels, P.J.L. *et al.*, *J.C.S. Perkin 1*, 1976, 1078; 1981, 2209 (ms, cmr)
Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 843 (synth)
Daniels, P.J.L. *et al.*, *J.C.S. Perkin 1*, 1981, 2209 (cmr, ms)

Sisomicin D S-47

Antibiotic 66-40D

[53759-50-5]

As Sisomicin, S-45 with

$R^1 = OH$, $R^2 = H$

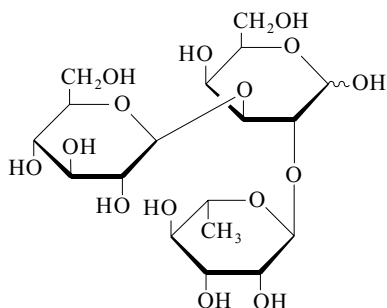
$C_{18}H_{35}N_5O_7$ 433.504

Aminoglycoside antibiotic. Minor component from *Micromonospora inyoensis*. Broad spectrum antibiotic. Sol. H_2O . Mp 102-103°. $[\alpha]_D^{25} +158.1$ (c, 0.3 in H_2O).

- LD₅₀ (mus, ivn) 83 mg/kg. CB9395750
Davies, D. *et al.*, *J.C.S. Perkin 1*, 1975, 814 (struct)
Paulsen, H. *et al.*, *Chem. Ber.*, 1981, **114**, 843 (synth)

Solatriose S-48

O- α -L-Rhamnopyranosyl-(1 → 2)-[O- β -D-glucopyranosyl-(1 → 3)]-D-galactopyranose



$C_{18}H_{32}O_{15}$ 488.442

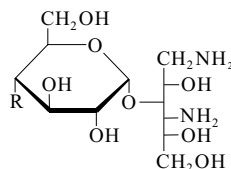
Present in alkaloidal glycosides α -Solanine, α -Solamarine and Solasonine (see for example under Spirosol-5-en-3-ol).

Mp 160-200° dec Mp 145-160° (foaming)
Mp 195-197° dec. $[\alpha]_D^{20} -4.5$ (c, 1.64 in H_2O) (equilib).

Deca-Ac: Mp 73-77°.

- Kühn, R. *et al.*, *Chem. Ber.*, 1955, **88**, 1492
Boll, P.M. *et al.*, *Acta Chem. Scand.*, 1963, **17**, 2126
Briggs, L.H. *et al.*, *J.C.S.*, 1963, 2848
Bohlmann, F. *et al.*, *Chem. Ber.*, 1969, **102**, 1037; 1970, **103**, 3419
Takeo, K. *et al.*, *Carbohydr. Res.*, 1983, **121**, 328 (synth)

Sorbistin A



Sorbistin A₁ R = $NHCOCH_2CH_3$

Sorbistin A₂ R = $NHCOCH_2CH_2CH_3$

Aminoglycoside antibiotic complex. Isol. from *Pseudomonas fluorescens* and *Streptovorticillium netropsis*. Active against gram-positive and -negative bacteria.

Sorbistin A₁

Antibiotic P 2563I. Antibiotic P 2563P. Antibiotic BN 186A. Antibiotic BU 2183A. Antibiotic GIA1. BN 186A. BU 2183A. GIA1. P 2563I. P 2563P [60534-70-5]

$C_{15}H_{31}N_3O_9$ 397.425
 $[\alpha]_D^{25} +87.1$ (c, 1 in H_2O).

► LZ4377000

Hydrochloride:

Prisms + 2 H_2O . Mp 105-115°. $[\alpha]_D^{25} +60.3$ (c, 1 in H_2O).

Carbonate (2:1): $[\alpha]_D^{25} +78.5$ (c, 1 in H_2O).

Sorbistin A₂ BU 2183A₂. Antibiotic BU 2183A₂

[60534-69-2]

$C_{16}H_{33}N_3O_9$ 411.451

Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.

► LD₅₀ (mus, ivn) 2000 mg/kg. LZ4376000

Carbonate (2:1): $[\alpha]_D^{25} +79.1$ (c, 1 in H_2O).

- Tsukiura, H. *et al.*, *J. Antibiot.*, 1976, **29**, 1137; 1147; 1152 (isol, uv, ir, pmr)
Kirby, J.P. *et al.*, *J. Antibiot.*, 1977, **30**, 344 (isol)
Nara, K. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 1075; 1083; 1091; 20 (abs config, cryst struct, cmr)
Kamiya, K. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 2040 (cryst struct)
Ponpipom, M.M. *et al.*, *J. Med. Chem.*, 1978, **21**, 221 (synth, analogues)
Japan. Pat., 1978, 78 116 312; CA, **90**, 166564 (isol)
Ogawa, T. *et al.*, *Tetrahedron*, 1980, **36**, 2727 (synth)

Sorbistin B

S-50

P 2563 II. Antibiotic P 2563 II. BN 186B. Antibiotic BN 186B. BU 2183B. Antibiotic BU 2183B. GIA₂. Antibiotic GIA₂. P 2563A. Antibiotic P 2563A [60502-99-0]

As Sorbistin A, S-49 with

R = NHAc

$C_{14}H_{29}N_3O_9$ 383.398

Aminoglycoside antibiotic. Isol. from *Pseudomonas sorbicini* and *Pseudomonas fluorescens*. Shows antibiotic props. against gram-negative and -positive bacteria. Powder.

Mp 148-150° dec. $[\alpha]_D^{23} +76.1$ (c, 1 in H_2O). pK_{a1} 7.2; pK_{a2} 9.5 (20°, H_2O).

► LZ4290800

S-49

Carbonate:

Amorph. $[\alpha]_D^{25} +85$ (c, 1 in H_2O).

N-Di-Ac: Mp 159-162°.

- Tsukiura, H. *et al.*, *J. Antibiot.*, 1976, **29**, 1137 (isol, pmr, ir, ms, struct)
Konishi, M. *et al.*, *J. Antibiot.*, 1976, **29**, 1152 (isol, ir, uv, pmr, pharmacol)
Nara, K. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 1075; 1083; 1091 (isol, props, abs config)
U.S. Pat., 1978, 4 108 724; CA, **90**, 136232t (synth)

Sorbistin C

S-51

[61566-57-2]

As Sorbistin A, S-49 with

R = OH

$C_{12}H_{26}N_2O_9$ 342.345

Aminoglycoside antibiotic. Isol. from *Pseudomonas sorbicini*. Shows antibiotic props. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.

► LD₅₀ (mus, ivn) 2500 mg/kg, LD₅₀ (mus, scu) 1000 mg/kg.

Carbonate:

Amorph. $[\alpha]_D^{25} +81.5$ (c, 1 in H_2O).

N-Di-Ac: Mp 121-124°.

- Tsukiura, H. *et al.*, *J. Antibiot.*, 1976, **29**, 1137 (isol, ir, ms, pmr, struct)
Konishi, M. *et al.*, *J. Antibiot.*, 1976, **29**, 1152 (isol, ir, uv, nmr, pharmacol)

Sorbistin D

S-52

P 2563 III. Antibiotic P 2563 III. BU

2183D. Antibiotic BU 2183D

[60502-98-9]

As Sorbistin A, S-49 with

R = NH_2

$C_{12}H_{27}N_3O_8$ 341.361

Aminoglycoside antibiotic. Isol. from *Pseudomonas sorbicini* and *Pseudomonas fluorescens*. Active against gram-positive and -negative bacteria. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. butanol, hexane.
Mp 110-117°.

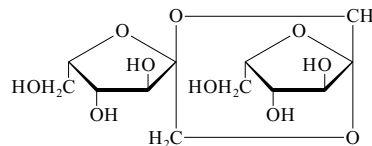
Carbonate:

Amorph. $[\alpha]_D^{25} +71$ (c, 1 in H_2O).

N-Tri-Ac: Mp 160-162°.

- Tsukiura, H. *et al.*, *J. Antibiot.*, 1976, **29**, 1137 (isol, ir, ms, pmr, struct)
Konishi, M. *et al.*, *J. Antibiot.*, 1976, **29**, 1152 (isol, ir, uv, nmr, pharmacol)
Nara, K. *et al.*, *Chem. Pharm. Bull.*, 1978, **26**, 1075 (isol, props)
U.S. Pat., 1978, 4 108 724; CA, **90**, 136232t (synth)

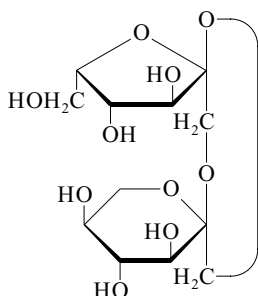
α -L-Sorbofuranose β -L-sorbofuranose 1,2':2,1'-dianhydride S-53



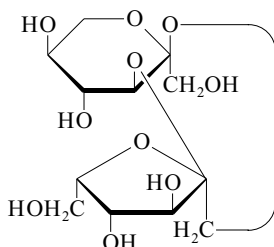
$C_{12}H_{20}O_{10}$ 324.284

Non-reducing disaccharide. Product formed from Sorbose, S-60 under acidic or Fischer glycosidation conditions.
Mp 198-200°. $[\alpha]_D^{25} -11$ (c, 1.3 in H_2O).

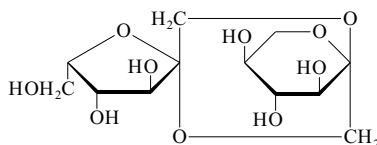
Hexa-Ac:

 $C_{24}H_{32}O_{16}$ 576.507Mp 155-156°. $[\alpha]_D$ -25.3 (c, 1.2 in $CHCl_3$).Defaye, J. et al., *Carbohydr. Res.*, 1986, **152**, 89 (synth) **α -L-Sorbofuranose α -L-sorbo-pyranose 1,2':2,1'-dianhydride** S-54
[90366-22-6] $C_{12}H_{20}O_{10}$ 324.284Non-reducing disaccharide. Prod. formed from Sorbose, S-60 under dehydrating conditions. Mp 198-199°. $[\alpha]_D$ -118 (c, 0.5 in $CHCl_3$).

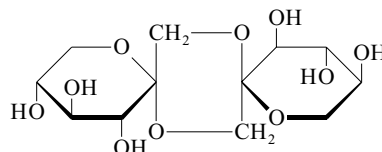
Hexa-Ac: [90335-41-4]

 $C_{24}H_{32}O_{16}$ 576.507Syrup. $[\alpha]_D$ -106.6 (c, 0.44 in $CHCl_3$).Defaye, J. et al., *Carbohydr. Res.*, 1986, **152**, 89 (synth) **α -L-Sorbofuranose α -L-sorbo-pyranose 1,2':2,3'-dianhydride** S-55
[110044-77-4] $C_{12}H_{20}O_{10}$ 324.284Non-reducing disaccharide. Prod. formed from Sorbose, S-60 under dehydrating conditions. Syrup. $[\alpha]_D$ -21.5 (c, 2.6 in H_2O).

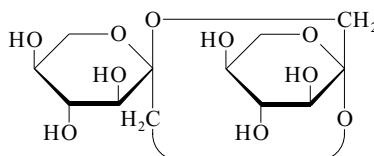
Hexa-Ac: [108787-30-0]

 $C_{24}H_{32}O_{16}$ 576.507Mp 157-158°. $[\alpha]_D$ -52.9 (c, 1.4 in $CHCl_3$).Defaye, J. et al., *Carbohydr. Res.*, 1986, **152**, 89 (synth) **β -L-Sorbofuranose α -L-sorbo-pyranose 1,2':2,1'-dianhydride** S-56 $C_{12}H_{20}O_{10}$ 324.284Non-reducing disaccharide. Prod. formed together with the isomeric anhydride from Sorbose, S-60 dehydration. Mp 189-190°. $[\alpha]_D$ 0 (c, 1 in H_2O).

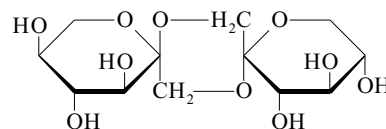
Hexa-Ac:

 $C_{24}H_{32}O_{16}$ 576.507Mp 177-179° (171-172°). $[\alpha]_D$ -19 (c, 2.1 in $CHCl_3$).Wolf from, M.L. et al., *J.A.C.S.*, 1952, **74**, 5334 (synth)Defaye, J. et al., *Carbohydr. Res.*, 1986, **152**, 89 (synth) **α -D-Sorbopyranose α -L-sorbo-pyranose 1,2':2,1'-dianhydride** S-57
[137253-44-2] $C_{12}H_{20}O_{10}$ 324.284Readily obt. from DL-sorbose/anhyd. HF. Almost insol. cold H_2O ; spar. sol. hot H_2O . Mp 320°.

Hexa-Ac:

 $C_{24}H_{32}O_{16}$ 576.507Cryst. (CH_2Cl_2/Et_2O). Mp 280-282°. $[\alpha]_D$ 0 (c, 1.2 in $CHCl_3$).Bock, K. et al., *Carbohydr. Res.*, 1991, **216**, 141 (synth, pmr, cmr) **α -L-Sorbopyranose β -L-sorbo-pyranose 1,2':2,1'-dianhydride, 9CI** S-58
[108865-41-4] $C_{12}H_{20}O_{10}$ 324.284Non-reducing disaccharide. Prod. formed from Sorbose, S-60 under dehydrating cond. Mp 249-250° (233-235°). $[\alpha]_D$ -11.5 (c, 2.6 in H_2O).

Hexa-Ac: [108865-42-5]

 $C_{24}H_{32}O_{16}$ 576.507Mp 172-173°. $[\alpha]_D$ +3.7 (c, 3.3 in $CHCl_3$).Wolf from, M.L. et al., *J.A.C.S.*, 1952, **74**, 5334 (synth)Defaye, J. et al., *Carbohydr. Res.*, 1986, **152**, 89 (synth, pmr, cmr) **α -L-Sorbopyranose- α -L-sorbo-pyranose 1,2':2,1'-dianhydride** S-59
Di- α -L-sorbopyranose-1,2':2,1'-dianhydride [99530-15-1] $C_{12}H_{20}O_{10}$ 324.284

Cryst. (MeOH/EtOH). Mp 239-241°.

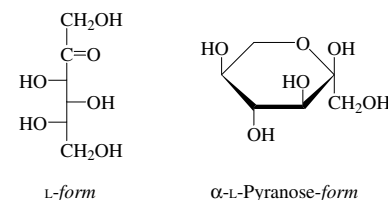
 $[\alpha]_D^{20}$ -210 (c, 0.9 in H_2O).

Hexa-Ac: [108865-45-8]

 $C_{24}H_{32}O_{16}$ 576.507Cryst. (EtOH). Mp 183-184°. $[\alpha]_D^{20}$ -119 (c, 1.6 in $CHCl_3$).Defaye, J. et al., *Carbohydr. Res.*, 1986, **152**, 89 (synth, pmr, cmr)**Sorbose, 9CI, 8CI**

xylo-Hexulose. Sorbinose

S-60

 $C_6H_{12}O_6$ 180.157A 4M aq. soln. at 31° contains 93% α -pyr, 2% β -pyr, 4% α -fur, 1% β -fur, and 0.3% ketone.**L-form** [87-79-6]Formed by *Acetobacter xylinum* oxidn. of Glucitol, G-247. Also occurs free in wood of *Symphoricarpos rivularis*. Inexpensive starting material for synthesis. Used in manuf. of Vitamin C (see Ascorbic acid, A-868).Mp 165°. $[\alpha]_D^{20}$ -43.2 (H_2O). Sweet taste.Phenylosazone: Mp 164°. $[\alpha]_D^{15}$ -13 (Py/EtOH).

Di-Me acetal:

 $C_8H_{18}O_7$ 226.226 $[\alpha]_D$ -42 (c, 0.9 in EtOH).

Penta-Ac: 1,3,4,5,6-Penta-O-acetyl-L-sorbose

[35304-04-2]

 $C_{16}H_{22}O_{11}$ 390.343

Mp 69-70°.

6-Me: 6-O-Methyl-L-sorbose

[58794-62-0]

 $C_7H_{14}O_6$ 194.184Mp 60-62°. $[\alpha]_D^{22}$ -46.7 (c, 2 in H_2O).

5,6-Di-Me: 5,6-Di-O-methyl-L-sorbose

 $C_8H_{16}O_6$ 208.211 $[\alpha]_D^{20}$ +13.5 (c, 1 in H_2O). **α -L-Pyranose-form**Penta-Ac: Penta-O-acetyl- α -L-sorbopyranose $C_{16}H_{22}O_{11}$ 390.343Cryst. ($Et_2O/CHCl_3$). Mp 97°. $[\alpha]_D^{20}$ -56.3 (c, 1.3 in $CHCl_3$).

1,3,4,5-Tetrabenzoyl: 1,3,4,5-Tetra-O-benzoyl- α -L-sorbopyranose
[17187-62-1]
 $C_{34}H_{28}O_{10}$ 596.589
Prisms (EtOH). Mp 133-135°. $[\alpha]_D^{22} +2$ (c, 1 in $CHCl_3$).

1,3,4,5-Tetrabenzoyl, 2-Ac: 2-O-Acetyl-1,3,4,5-tetra-O-benzoyl- α -L-sorbopyranose
 $C_{36}H_{30}O_{11}$ 638.626
Needles (EtOH). Mp 172-173°. $[\alpha]_D^{21} +8.3$ (c, 1 in $CHCl_3$).

1,2-Isopropylidene: 1,2-O-Isopropylidene- α -L-sorbopyranose
[18604-34-7]
 $C_9H_{16}O_6$ 220.222
Needles (EtOAc). Mp 142-143°. $[\alpha]_D^{20} -85.2$ (c, 1.5 in H_2O).

1,2-O-Isopropylidene, 3,4,5-trimesyl: 1,2-O-Isopropylidene-3,4,5-tri-O-mesyl- α -L-sorbopyranose
 $C_{12}H_{22}O_{12}S_3$ 454.497
Mp 125-127°. $[\alpha]_D^{24} -41$ (c, 0.9 in $CHCl_3$).

1,2-O-Isopropylidene, 5-tosyl: 1,2-O-Isopropylidene-5-O-tosyl- α -L-sorbopyranose
[53821-65-1]
 $C_{16}H_{22}O_8S$ 374.411
Cryst. (EtOH). Mp 130-131°. $[\alpha]_D^{25} -52.1$ (c, 1.1 in $CHCl_3$).

1,3,4,5-Tetrabenzoyl: 1,3,4,5-Tetra-O-benzoyl- α -L-sorbopyranose
 $C_{34}H_{26}O_6$ 540.655
Mp 48-51°. $[\alpha]_D -11.3$ (c, 1.5 in $CHCl_3$).

2-Chloro, 2-deoxy, 1,3,4,5-tetrabenzoyl: 1,3,4,5-Tetra-O-benzoyl- α -L-sorbopyranosyl chloride
 $C_{34}H_{27}ClO_9$ 615.035
Cryst. (Et_2O). Mp 132-135°. $[\alpha]_D^{22} +22.7$ (c, 1 in CH_2Cl_2).

2-Bromo, 2-deoxy, 1,3,4,5-tetrabenzoyl: 1,3,4,5-Tetra-O-benzoyl- α -L-sorbopyranosyl bromide
 $C_{34}H_{27}BrO_9$ 659.486
Mp 146-148° dec. $[\alpha]_D^{23} -8.2$ (c, 1 in CH_2Cl_2).

Me glycoside: See Methyl sorboside, M-210

β -L-Pyranose-form

Penta-Ac: Penta-O-acetyl- β -L-sorbopyranose
[25019-52-7]
 $C_{16}H_{22}O_{11}$ 390.343
Needles (Et_2O). Mp 114°. $[\alpha]_D^{20} +74.4$ ($CHCl_3$).

1,3,4,5-Tetrabenzoyl, 2-Ac: 2-O-Acetyl-1,3,4,5-tetra-O-benzoyl- β -L-sorbopyranose
 $C_{36}H_{30}O_{11}$ 638.626
 $[\alpha]_D^{22} +58.3$ (c, 1 in $CHCl_3$).

Me glycoside: See Methyl sorboside, M-210

α -L-Furanose-form

2,3-O-Isopropylidene: 2,3-O-Isopropylidene- α -L-sorbofuranose
[17682-71-2]
 $C_9H_{16}O_6$ 220.222
Mp 88-90°.

2,3-O-Isopropylidene, 1,4,6-tris(4-nitrobenzoyl):
Cryst. (MeCN). Mp 191-192°.

2,3,4,6-Di-O-isopropylidene: 2,3,4,6-Di-O-isopropylidene- α -L-sorbofuranose
[17682-70-1]
 $C_{12}H_{20}O_6$ 260.286
Mp 96-99°. $[\alpha]_D^{25} -16.6$ (butanone). $[\alpha]_D -10.2$ (c, 0.4 in EtOH).

Me glycoside: See Methyl sorboside, M-210

β -L-Furanose-form

Me glycoside: See Methyl sorboside, M-210

D-form [3615-56-3]

Obtainable from L-glucitol by conversion with *Pseudomonas* sp. Mp 165°. $[\alpha]_D^{20} +42.9$ (H_2O). Sweet taste.

Phenylosazone: Mp 160°. $[\alpha]_D +12$ (EtOH/Py).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 193C (ir)

Aldrich Library of ^{13}C and 1H FT NMR Spectra, 1992, **1**, 297C; 298A (nmr)

Schlubach, H.H. *et al.*, *Annalen*, 1937, **532**, 211 (α -L-pyr penta-Ac, β -L-pyr penta-Ac)

Ohle, H. *et al.*, *Ber.*, 1938, **71**, 562 (1,2-isopropylidene)

Karabinos, J.V. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 99 (rev)

Olin, S.M. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 148 (D-form, L-form)

Lockwood, L.B. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 151 (D-form, L-form)

Cocker, W. *et al.*, *Perfum. Essent. Oil Res.*, 1963, **54**, 171 (isol)

Paulsen, H. *et al.*, *Chem. Ber.*, 1967, **100**, 2669 (α -L-pyr tetrabenzoyl derivs, β -L-pyr tetrabenzoyl Ac)

Maeda, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1969, **42**, 2021 (β -L-pyr penta-Ac)

Brady, R.F. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1971, **26**, 197 (rev, acetals)

Glass, R.S. *et al.*, *Carbohydr. Res.*, 1973, **26**, 181 (α -L-fur isopropylidene trisnitrobenzoyl)

Bethell, G.S. *et al.*, *Carbohydr. Res.*, 1973, **31**, 69 (L-di-Me acetal)

Whistler, R.L. *et al.*, *J.O.C.*, 1973, **38**, 2900 (α -L-pyr penta-Ac)

Chmielewski, M. *et al.*, *J.O.C.*, 1975, **40**, 639 (α -L-pyr isopropylidene, 1,2-isopropylidene-5-tosyl)

Nordenson, S. *et al.*, *Acta Cryst. B*, 1979, **35**, 1005 (cryst struct)

Helleur, R. *et al.*, *Carbohydr. Res.*, 1981, **89**, 83 (tetrabenzoyl)

Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1983, **41**, 27 (cmr)

Angyal, S.J. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **44**, 15 (equilib)

Dhawale, M.R. *et al.*, *Carbohydr. Res.*, 1986, **155**, 262 (synth, D-form)

Bock, K. *et al.*, *Carbohydr. Res.*, 1991, **216**, 141 (synth, D-form)

Huwig, A. *et al.*, *Carbohydr. Res.*, 1996, **281**, 183 (synth, bibl, D-form)

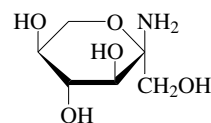
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2628-2629

Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1998, **313**, 69-89 (rev, use)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SKV400

Sorbosylamine

S-61

 α -L-Pyranose-form $C_6H_{13}NO_5$ 179.172

L-form

Cryst. (MeOH). Mp 119.5° dec.

N-Benzyl:

$C_{13}H_{19}NO_5$ 269.297

Cryst. (EtOAc). Mp 117°.

N-Cyclohexyl:

$C_{12}H_{23}NO_5$ 261.317

Mp 103-104° dec.

N-Ph:

$C_{12}H_{17}NO_5$ 255.27

Cryst. (EtOH). Mp 164-165° dec. $[\alpha]_D^{21} -196.2$ (c, 2.7 in Py).

N-4-Methylphenyl: Mp 160-161° dec. $[\alpha]_D^{21} -201 \rightarrow -199.5$ (c, 1.7 in Py).

L-Furanose-form

4,6-O-Isopropylidene, N-tosyl: [63767-74-8]

Needles ($EtOH/Et_2O$). Mp 124° dec.

$[\alpha]_D^{20} +20$ (c, 2.1 in DMSO).

Ellis, G.P. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 95 (rev)

Heyns, K. *et al.*, *Chem. Ber.*, 1955, **88**, 1551

(N-benzyl, N-cyclohexyl)

Kuhn, R. *et al.*, *Annalen*, 1957, **612**, 55

(N-Ph, N-tolyl)

Heyns, K. *et al.*, *Chem. Ber.*, 1957, **90**, 2039

(L-form, synth, N-tolyl)

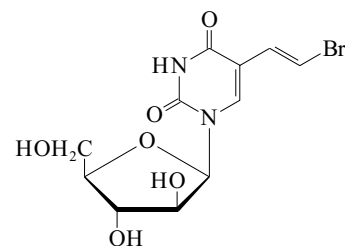
Lofthouse, R. *et al.*, *J.C.S. Perkin 1*, 1977, 997

(isopropylidene deriv)

Sorivudine, BAN, INN, USAN

S-62

1- β -D-Arabinofuranosyl-5-(2-bromoethenyl)-2,4-(1H,3H)-pyrimidinedione, 9CI.
1- β -D-Arabinofuranosyl-5-(2-bromovinyl)-uracil. Brovavir. BV-araU. Usevir. YN 72.
SQ 32 756
[77181-69-2]

 $C_{11}H_{13}BrN_2O_6$ 349.137

Antiviral agent. Launched 1993 (Japan)-Log P -1.66 (uncertain value) (calc).

► LD₅₀ (rat, ipr) > 2000 mg/kg. Exp. reprod., fetotoxic and teratogenic effects. Fatalities reported when used in combination anticancer chemotherapies. UV9009810

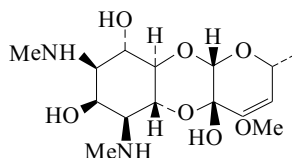
[80434-16-8, 134528-32-8]

Machida, H. *et al.*, *Antimicrob. Agents Chemother.*, 1981, **20**, 47; 420 (activity)

Busson, R. *et al.*, *Nucleic Acids Symp. Ser.*, 1981, **9**, 49 (synth, activity)
 Reefsclaeger, J. *et al.*, *Antiviral Res.*, 1983, **3**, 175 (synth, pharmacol)
 Lin, J.C. *et al.*, *Antimicrob. Agents Chemother.*, 1988, **32**, 1068 (pharmacol)
 Suzutani, T. *et al.*, *Antimicrob. Agents Chemother.*, 1988, **32**, 1547 (activity)
 Yokota, T. *et al.*, *Mol. Pharmacol.*, 1989, **36**, 312 (pharmacol)
 Robins, M.J. *et al.*, *Tet. Lett.*, 1990, **31**, 5633 (synth, pmr, bibl)
 Whigan, D.B. *et al.*, *J. Chromatogr.*, 1991, **568**, 385 (hplc)
 Rabasseda, X. *et al.*, *Drugs of Today (Barcelona)*, 1993, **29**, 555 (rev)
 Suzutani, T. *et al.*, *Microbiol. Immunol.*, 1993, **37**, 511 (pharmacol)
Nature (London), 1994, **369**, 697 (tox, man)

Spenolimycin S-63

5a,6,7,8,9,9a-Hexahydro-4-methoxy-2-methyl-6,8-bis(methylamino)-2H-pyran[2,3-b][1,4]benzodioxin-4a,7,9(10aH)-triole, 9CI. Acminycin
 [95041-97-7]



$C_{15}H_{26}N_2O_7$ 346.38

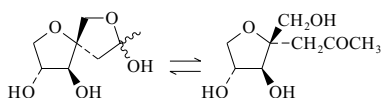
Aminoglycoside-type antibiotic. Isol. from *Streptomyces gilvospiralis* and *Streptomyces* sp. AC 4559. Active against a wide variety of anaerobic gram-positive and -negative bacteria. Hemihydrate. Mp 123° dec. $[\alpha]_D^{24} +44.2$ (c, 1 in H_2O). Related to Spectinomycin, Acminycin has not been definitely proven identical with Spenolimycin but has the same plane formula. (Incorrectly given as $C_{14}H_{24}N_2O_6$ in CA). Phys. props. given refer to Acminycin.

Sulfate: $[\alpha]_D^{22} +24$ (c, 0.9 in MeOH aq.). [90755-71-8]

Fr. Pat., 1984, 2 532 950; CA, **101**, 37205 (isol, struct, uv, ir, pmr, Acminycin)
 Karwowski, J.P. *et al.*, *J. Antibiot.*, 1984, **37**, 1513 (isol)
 McAlpine, J.B. *et al.*, *J. Antibiot.*, 1984, **37**, 1519 (isol, struct)
 Vojtko, C.M. *et al.*, *J. Antibiot.*, 1984, **37**, 1525 (props)

Sphydrofuran, 8CI S-64

3,4,5'-Trihydroxy-5'-methyl-2,3'-spirobi-(tetrahydrofuran)
 [11072-19-8]



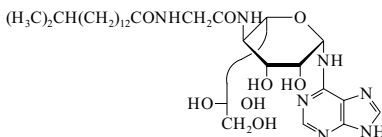
$C_8H_{14}O_5$ 190.196

Prod. by unidentified *Streptomyces* sp. Unstable cryst. (Me_2CO). Sol. H_2O , EtOH, MeOH, Me_2CO , DMSO, Py; poorly sol. EtOAc, hexane. Mp 99.5-101°. $[\alpha]_D^{25} +18$ (c, 1 in H_2O).

Umezawa, S. *et al.*, *J. Antibiot.*, 1971, **24**, 85 (isol)
 Usui, T. *et al.*, *J. Antibiot.*, 1971, **24**, 93 (struct)
 Bindseil, K.U. *et al.*, *Helv. Chim. Acta*, 1991, **74**, 1281 (abs config)
 Maliakel, B.P. *et al.*, *J. Carbohydr. Chem.*, 1993, **12**, 415-424 (synth)
 Yu, P. *et al.*, *J.O.C.*, 1997, **62**, 6359-6366 (synth)
 Di Florio, R. *et al.*, *J.O.C.*, 1998, **63**, 8595-8598 (synth)

Spicamycin S-65

[87099-85-2]



$C_{30}H_{51}N_7O_7$ 621.776

Nucleoside antibiotic. Diastereoisomer of Septacidin, S-29. Prod. by *Streptomyces alanosinicus*. Shows antitumour props. Potent inducer of differentiation of human promyelocytic leukemia cells. Powder. Sol. MeOH, DMSO, bases, Py, butanol; fairly sol. EtOAc; poorly sol. Me_2CO , C_6H_6 , acids, H_2O , hexane. Mp 215-220° dec. λ_{max} 264 nm (MeOH). May contain minor components of varying fatty acid chains. λ_{max} 273 (€ 16000) (MeOH/HCl) (Derep). λ_{max} 272 (€ 14000) (MeOH/NaOH) (Derep). λ_{max} 264 (€ 16000) (MeOH) (Derep).

► LD₅₀ (mus, ipr) 40 mg/kg. MJ9857000
 Hayakawa, Y. *et al.*, *J. Antibiot.*, 1983, **36**, 934 (isol, props)
 Hayakawa, Y. *et al.*, *Agric. Biol. Chem.*, 1985, **49**, 2685 (isol, struct, props)
 Isono, K. *et al.*, *J. Antibiot.*, 1988, **41**, 1711 (rev)
 Sakai, T. *et al.*, *J. Antibiot.*, 1995, **48**, 899; 1467 (abs config, activity)
 Suzuki, T. *et al.*, *J.O.C.*, 2002, **67**, 2874-2880 (synth)

Spirulan S-66

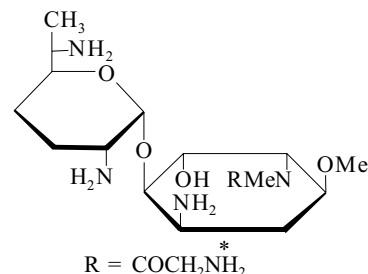
[172929-12-3]

Sulfated polysaccharide antibiotic of unknown struct. Composed of two types of repeating disaccharide units; *O*-rhamnosylacofriose and *O*-hexuronosylrhamnose (aldobiuronic acid). Characterised as the Ca deriv. Calcium spirulan, to which CAS no. refers. Isol. from the blue-green alga *Spirulina platensis*. Antiviral agent. Amorph. powder. (as Ca deriv.). $[\alpha]_D +14.7$ (c, 0.6 in H_2O) (Ca deriv.).

Hayashi, T. *et al.*, *J. Nat. Prod.*, 1996, **59**, 83-87; 1998, **61**, 1101-1104 (isol, purifn, hplc, activity, ms)
 Lee, J.-B. *et al.*, *J. Nat. Prod.*, 2000, **63**, 136-138 (ms, struct)

Sporaricin A S-67

KA 6606-I. Antibiotic KA 6606-I
 [68743-79-3]



$C_{17}H_{35}N_5O_5$ 389.494

Aminoglycoside antibiotic. From *Saccharopolyspora hirsuta* ssp. *kobensis*. Antibacterial agent. Basic solid. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. EtOAc, hexane. Mp 115-125°. $[\alpha]_D^{25} +104$ (c, 1 in H_2O).
 ► LD₅₀ (mus, ipr) 200-400 mg/kg; LD₅₀ (mus, ivn) 73 mg/kg; LD₅₀ (mus, scu) 310 mg/kg. WH1332550

N-Formimidoyl: 2''-Formimidoylsporaricin A

$C_{18}H_{36}N_6O_5$ 416.52

From *Saccharopolyspora hirsuta* ssp. *kobensis*. Active against gram-positive and -negative bacteria. Powder + 4 H_2O (as sulfate salt). $[\alpha]_D^{27} +65.8$ (c, 0.5 in H_2O) (sulfate).

Deushi, T. *et al.*, *J. Antibiot.*, 1979, **32**, 173; 187 (isol, struct)
 Torii, T. *et al.*, *Carbohydr. Res.*, 1983, **116**, 289 (analogues)
 Umezawa, H. *et al.*, *J. Antibiot.*, 1987, **40**, 91 (derivs)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SLF500

Sporaricin B S-68

KA 6606II. Antibiotic KA 6606II
 [68743-78-2]

As Sporaricin A, S-67 with R = H

$C_{15}H_{32}N_4O_4$ 332.442

Aminoglycoside antibiotic. Obt. from *Saccharopolyspora hirsuta* ssp. *kobensis*. Antibacterial agent. Basic solid. Sol. H_2O ; fairly sol. MeOH, EtOH; poorly sol. EtOAc, hexane. Mp 88-93° dec. $[\alpha]_D^{25} +139.5$ (c, 1 in H_2O).

► NM7522560

O-De-Me: Antibiotic KA 6606XI. KA 6606XI. Sporaricin XI
 [75106-35-3]
 $C_{14}H_{30}N_4O_4$ 318.415

From *Saccharopolyspora hirsuta*. Weakly active against gram-positive and -negative bacteria. Sol. H_2O , MeOH; poorly sol. EtOAc, hexane, $CHCl_3$. $[\alpha]_D^{25} +140$ (c, 2 in H_2O) (as carbonate salt).

Deushi, T. *et al.*, *J. Antibiot.*, 1979, **32**, 173; 187 (isol, struct)
 Eur. Pat., 1982, 44 477; CA, **96**, 216048 (isol)

Sporaricin C**S-69**

4-N-Carbamoylglycylsporarin B. KA 6606III. Antibiotic KA 6606III [68743-80-6]

As Sporaricin A, S-67 with
R = -COCH₂NHCONH₂

C₁₈H₃₆N₆O₆ 432.519

Aminoglycoside antibiotic. Isol. from *Saccharopolyspora hirsuta* ssp. *kobensis* ATCC20501. Active against gram-negative and -positive bacteria incl. aminoglycoside resistant strains. Basic solid. Sol. H₂O; fairly sol. MeOH, EtOH; poorly sol. EtOAc, hexane. Mp 145-152° dec. [α]_D²³ +103 (c, 1 in H₂O).

► LD₅₀ (mus, ivn) 300 mg/kg. NM7521511

Carbonate:

Monohydrate. [α]_D²³ +126 (c, 1 in H₂O).

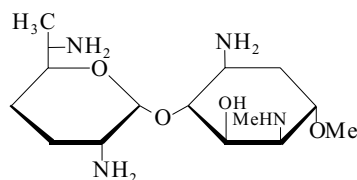
1,2',6'-Tri-N-Ac:

Solid. [α]_D²³ +106 (c, 0.5 in H₂O).

Ger. Pat., 1978, 2 813 021; CA, 90, 53128 (isol)
Deushi, T. et al., J. Antibiot., 1981, 34, 811 (isol)

Sporaricin E**S-70**

2-Deoxyfortimicin B. KA 6606VI. Antibiotic KA 6606VI [71657-28-8]



C₁₅H₃₂N₄O₄ 332.442

Aminoglycoside antibiotic. Isol. from *Saccharopolyspora hirsuta*. Shows broad antimicrobial activity. Solid. Sol. H₂O. [α]_D²³ +54 (c, 1 in H₂O).

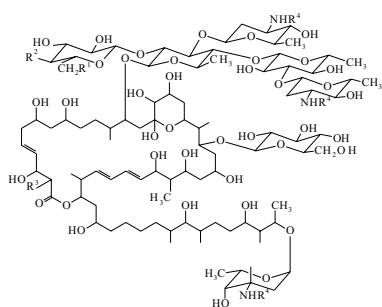
Tetra-N-Ac: [α]_D²⁴ +112 (c, 1 in H₂O).

Martin, J.R. et al., J. Antibiot., 1980, 33, 810 (synth)

Iwasaki, A. et al., J. Antibiot., 1982, 35, 517 (isol)

Sporaviridin, 9CI**S-71**

SVD
[72497-34-8]



SVD-A ₁	R ¹ =H	R ² =OH	R ³ =C ₂ H ₅	R ⁴ =H
SVD-A ₂	R ¹ =H	R ² =OH	R ³ =CH ₃	R ⁴ =H
SVD-B ₁	R ¹ =H	R ² =NH ₂	R ³ =C ₂ H ₅	R ⁴ =H
SVD-B ₂	R ¹ =H	R ² =NH ₂	R ³ =CH ₃	R ⁴ =H
SVD-C ₁	R ¹ =OH	R ² =OH	R ³ =C ₂ H ₅	R ⁴ =H
SVD-C ₂	R ¹ =OH	R ² =OH	R ³ =CH ₃	R ⁴ =H

Aminoglycoside antibiotic complex. Isol. from *Streptosporangium viridigriseum*. Active against gram-positive bacteria, trichophyton and acid-fast bacteria. Basic, amorph. powder. Sol. H₂O; fairly sol. MeOH; poorly sol. Me₂CO, hexane. [α]_D²⁹ -12 (c, 1 in MeOH). λ_{max} 233 (E1%/1cm 178) (MeOH) (Berdy). λ_{max} 233 (E1%/1cm 178) (H₂O) (Berdy). λ_{max} 227 (E1%/1cm 174); 233 (E1%/1cm 178); 242 (E1%/1cm 174) (NaOH) (Berdy).

► LD₅₀ (mus, ivn) .46 mg/kg, LD₅₀ (mus, ipr) .92 mg/kg, LD₅₀ (mus, scu) 2.2 mg/kg, LD₅₀ (mus, orl) 27 mg/kg. WH1484500

Sporaviridin A₁, 9CI [107021-77-2]

C₁₀₀H₁₇₉N₃O₄₁ 2079.51

Powder. Sol. H₂O. Mp 190-192°. [α]_D²⁵ -8.8 (c, 0.41 in MeOH). λ_{max} 232 (ε 8710) (EtOH) (Derep). λ_{max} 232 (ε 8750) (MeOH) (Berdy).

Sporaviridin A₂ [107021-78-3]

C₉₉H₁₇₇N₃O₄₁ 2065.483

Powder. Sol. H₂O. Mp 190-193°. [α]_D²⁵ -9.6 (c, 0.57 in MeOH). λ_{max} 232 (ε 8710) (EtOH) (Derep). λ_{max} 232 (ε 46000) (MeOH) (Berdy).

Sporaviridin B₁ [107021-79-4]

C₁₀₀H₁₈₀N₄O₄₀ 2078.525

Powder. Sol. H₂O. Mp 196-199°. [α]_D²⁵ -13.6 (c, 0.56 in MeOH). λ_{max} 232 (ε 8710) (EtOH) (Derep). λ_{max} 232 (ε 30800) (MeOH) (Berdy).

Sporaviridin B₂ [107021-83-0]

C₉₉H₁₇₈N₄O₄₀ 2064.498

Powder. Sol. H₂O. Mp 191-193°. [α]_D²⁵ -10 (c, 0.66 in MeOH). λ_{max} 232 (ε 8710) (EtOH) (Derep). λ_{max} 232 (ε 25200) (MeOH) (Berdy).

Sporaviridin C₁ [107021-82-9]

C₁₀₀H₁₇₉N₃O₄₂ 2095.509

Sol. H₂O. Mp 194-196°. [α]_D²⁵ -13.5 (c, 0.97 in MeOH). λ_{max} 232 (ε 8710) (EtOH) (Derep). λ_{max} 232 (ε 16000) (MeOH) (Berdy).

Sporaviridin C₂ [107021-81-8]

C₉₉H₁₇₇N₃O₄₂ 2081.482

Sol. H₂O. Mp 196-198°. [α]_D²⁵ -8 (c, 0.48 in MeOH). λ_{max} 232 (ε 8710) (EtOH) (Derep). λ_{max} 232 (ε 31500) (MeOH) (Berdy).

Okuda, T. et al., J. Antibiot., Ser. A, 1966, 19, 85 (isol, props)

Penco, S. et al., Heterocycles, (Spec. Issue), 1979, 13, 281 (struct)

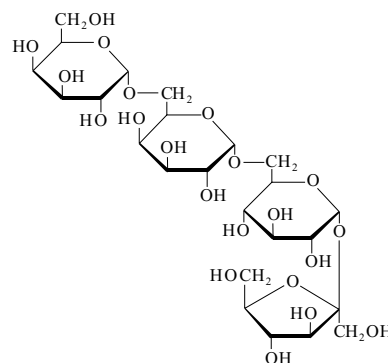
Harada, K. et al., Chem. Pharm. Bull., 1982, 30, 4288 (struct)

Kimura, I. et al., Tet. Lett., 1987, 28, 1917; 1921 (struct)

Harada, K. et al., J. Antibiot., 1989, 42, 1056 (isol, ms, struct)

Stachyose**S-72**

β-D-Fructofuranosyl O-α-D-galactopyranosyl-(1→6)-O-α-D-galactopyranosyl-(1→6)-α-D-glucopyranoside, 9CI, 8CI. Manneotetrose. β-Galactan. Cicerose. Lupeose [470-55-3]



C₂₄H₄₂O₂₁ 666.583

Isol. from many plants, e.g. twigs of white jasmine, seeds of yellow lupin (*Lupinus luteus*), lentils and ash manna (*Fraxinus ornus*). Cryst. + 4 or 5H₂O.

Mp 101-105° (sealed tube) Mp 167-170° (anhyd.). [α]_D²³ +131.3 (c, 4.5 in H₂O).

Tetradeca-Ac: Mp 95-96°. [α]_D²⁰ +120 (c, 3.8 in EtOH).

Tetradecakis-4-nitrobenzoyl: Mp 166°.

Tetradeca-Me:

Syrup. [α]_D^{24.5} +139.2 (CHCl₃).

[10094-58-3]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 197C (ir)

Aldrich Library of NMR Spectra, 2nd edn., 1983, 2, 913D (nmr)

Wolfson, M.L. et al., J.A.C.S., 1952, 74, 6299 (synth)

Wolfson, M.L. et al., Methods Carbohydr. Chem., 1962, 1, 368 (isol)

Pazur, J.H. et al., The Carbohydrates, Academic Press, 2nd Ed., 1970, 69 (rev)

Allerhand, A. et al., J.A.C.S., 1971, 93, 2777 (cmr)

Kamerling, J.P. et al., Tetrahedron, 1972, 28, 3037 (pmr)

Karrer, W. et al., Konstitution und Vorkommen der Organischen Pflanzenstoffe, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 672 (occur, bibl)

Gilardi, R.D. et al., J.A.C.S., 1975, 97, 6264 (cryst struct)

Gilardi, G. et al., Acta Cryst. C, 1987, 43, 806 (cryst struct)

McIntyre, D.D. et al., J. Nat. Prod., 1989, 52, 1008 (pmr)

Jeffrey, G.A. et al., Carbohydr. Res., 1991, 210, 89 (cryst struct)

Staphylocidin**S-73**

[88507-21-5]

Peptidoglycan; struct. unknown. Prod. by *Rothia dentocariosa*. Shows antimicrobial activity.

Eur. Pat., 1983, 91 745; CA, 100, 50045x (isol)

Staphylococcal acid glycoprotein S-74**SAGP**

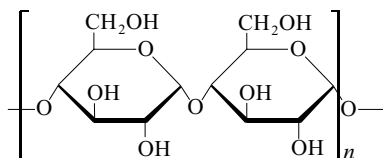
Glycoprotein consisting of subunits each of MW approx. 5000. Isol. from *Streptococcus haemolyticus*. Shows antitumour activity. Sol. H₂O.

Yoshida, J. *et al.*, *Gann*, 1985, **76**, 213-223; *CA*, **103**, 50949g (isol)

Yoshida, J. *et al.*, *J. Antibiot.*, 1989, **42**, 448-453 (isol)

Starch, 9CI, 8CI S-75**Amylum. Polyamylose**

[9005-25-8]



Starch is composed of Amylose and Amylopectin. Amylose is preponderantly a linear polymer of several thousand D-glucose units mainly α -(1 \rightarrow 4) linked. Amylopectin is a branched polymer composed largely of α -D-(1 \rightarrow 4)-linked glucose units. The branch is α -(1 \rightarrow 6) and occurs at the 6 position every 20-25 glucose units. Pullulanase, R-enzyme and Isoamylase hydrol. the α -D-(1 \rightarrow 6) linkages. Polymeric. Minimum formula given. Graft polymers with acrylates are used as water-absorbent resins.

- Starch dust is a respiratory tract irritant OES (8-hr TWA) total inhalable dust 10 mg m⁻³, respirable dust 5 mg m⁻³. Mod. explosive when exposed to flame.
- Phosphate:** [11120-02-8] [39373-98-3] Industrial material with various uses depending on level of phosphorylation. Used in food processing. Many different structs. are present at different phosphorylation levels.

Carboxymethyl ether: [9057-06-1] Modified starch used as thickening agent in food industry and pharmaceuticals. Powder.

2-Hydroxyethyl ether: Pentastarch [9005-27-0] Modified starch used as sizing agent in textile industry. Used in artificial blood.

2-Hydroxypropyl ether: [9049-76-7] Modified starch used as sizing agent and adhesive.

Oxiranylmethyl ether: Amilomer, INN. Starch-epichlorohydrin ether. 2,3-Epoxypropyl starch. Spherex [42615-49-6] Chemoembolisation agent. No phys. props. reported. Spherical particles prep. by crosslinking partially hydrolysed potato starch using epichlorohydrin as a cross-linking agent.

Unbranched-form**Amylose**

[9005-82-7]

Stored in all parts of plants as insol. granules. Coml. starches come mainly

from corn (maize), sorghum grains, tapioca root and potato tuber. Most starch samples contain $20 \pm 5\%$ Amylose which can be pptd. from aq. starch soln. with, e.g., Thymol. Used in particulate form as a dusting powder, as a gelling agent in processed foods, as a flocculant and pigment retainer in paper manuf. and in dried film form for sizing paper and textiles. Used in photometric detn. of I₂; as an indicator in iodometry. Pharmaceutical aid and excipient (binder, diluent and disintegrant). $[\alpha]_D^{+200}$ (H₂O). $[\alpha]_D^{+162}$ (1M NaOH). $[\alpha]_D^{+175}$ (DMSO). Hydrol. by acid, α -Amylase and β -Amylase. Forms inclusion complexes, gives a deep-blue colour with I₂. Four polymorphs (A,B,C and V amyloses) have been studied structurally and differ in helical conformation and packing.

Per-Ac:

[9045-28-7] Many uses in food processing. $[\alpha]_D^{+175}$ (CHCl₃).

Percarbanilate: $[\alpha]_D^{+82.5}$ (Py).

Branched-form Amylopectin

[9037-22-3]

$[\alpha]_D^{+200}$ (H₂O). $[\alpha]_D^{+163}$ (1M NaOH).

Per-Ac:

[9045-28-7] $[\alpha]_D^{+170}$ (CHCl₃).

Percarbanilate: $[\alpha]_D^{+62}$ (Py).

Sulfated form: Amylopectin sulfate

Sulfated form, Na salt: Sodium amylosulfate, USAN. Depepsen [9010-01-9] Enzyme inhibitor.

[9063-38-1, 11116-64-6, 56780-58-6]

Welcher, F.J. *et al.*, *Organic Analytical Reagents*, Van Nostrand, NY, 1948, **4**, 283 (use)
Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1964, **4**, 3

Paschall, E.F. *et al.*, *Methods Carbohydr. Chem.*, 1964, **4**, 294-296 (rev, phosphate)

Whistler, R.L. *et al.*, *Arch. Biochem. Biophys.*, 1969, **135**, 396-401 (synth, phosphate)

Greenwood, C.T. *et al.*, *The Carbohydrates*, Academic Press, 1970, **2B**, 471

U.K. Pat., 1973, 1 309 473; *CA*, **79**, 116473s (synth, props, phosphate)

U.S. Pat., 1974, 3 842 071; *CA*, **82**, 74775w (synth, props, phosphate)

U.S. Pat., 1974, 3 795 671, (USDA); *CA*, **81**, 27522f (amilomer, manuf)

Banks, W. *et al.*, *Starch and its Components*, Edinburgh University Press, 1975, (book)

St. Jacques, M. *et al.*, *J.A.C.S.*, 1976, **98**, 4386 (pmr)

Kirk-Othmer *Encycl. Chem. Technol.*, 3rd edn., Wiley, 1978, **21**, 492 (rev)

Rappenecker, G. *et al.*, *Carbohydr. Res.*, 1981, **89**, 11 (cryst struct, V-amylose)

Dais, P. *et al.*, *Carbohydr. Res.*, 1982, **100**, 103 (cmr, Amylopectin)

Whistler, R.L. *et al.*, *Starch: Chem. Technol.*, 2nd Ed., Academic Press, 1984,

Takeda, Y. *et al.*, *Carbohydr. Res.*, 1986, **148**, 299 (purifn, amylose)

Marczenko, Z. *et al.*, *Separation and Spectrophotometric Determination of Elements*, Ellis Horwood, Chichester, 1986, 316

Modif. Starches: Prop. Uses. 1987, (ed. Wurzburg, O.B.), CRC Press, 1987, 79-96 (rev)

Starch: Properties and Potential, (Ed., Gulliard, T.), Wiley, 1987, (book)

Saito, H. *et al.*, *Bull. Chem. Soc. Jpn.*, 1991, **64**, 3528 (cmr, bibl, struct, amyloses)

Chinnaswamy, R. *et al.*, *Starch/Stärke*, 1991, **43**, 396 (rev, graft polymers)

Zhang, J. *et al.*, *J. Appl. Polym. Sci.*, 1992, **46**, 369-374 (carboxymethyl ether)

Takeda, Y. *et al.*, *Carbohydr. Res.*, 1993, **240**, 265 (bibl, struct)

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. *et al.*), American Pharmaceutical Association/Pharmaceutical Press, 1994, 483-488

Tomasik, P. *et al.*, *Adv. Carbohydr. Chem.*

Biochem., 1995, **51**, 243 (rev, modification)

Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1377

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2643-2675 (use, props, modification)

Hamdi, G. *et al.*, *J. Microencapsul.*, 2001, **18**, 373-383 (amilomer, formulation)

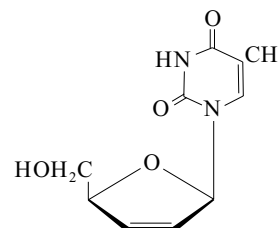
Mukerjee, R. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1015-1022 (biosynth)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SLJ500

Stavudine, BAN, INN, USAN S-76

2',3'-Didehydro-3'-deoxythymidine, 9CI.

1-(2,3-Dideoxy- β -D-glycero-pent-2-enofuranosyl)thymine, 8CI. 3'-Deoxy-2',3'-didehydrothymidine. Zerit. D4T. BMY 27857 [3056-17-5]



C₁₀H₁₂N₂O₄ 224.216

Anti-HIV agent. Marketed drug.

Launched 1994 (US)Mp 165-166°. $[\alpha]_D^{25}$ -42 (c, 0.69 in H₂O). Log P -0.48 (calc). λ_{\max} 266 (ε 9910) (H₂O).

► XP2075000

5'-Ac: [77421-68-2]

C₁₂H₁₄N₂O₅ 266.253

Solid. Mp 179-181°.

5'-O-Trityl: $[\alpha]_D^{25}$ -32 (c, 0.85 in EtOH).

Horwitz, J.P. *et al.*, *J.O.C.*, 1966, **31**, 205 (synth)

Ferrier, R.J. *et al.*, *Adv. Carbohydr. Chem.*

Biochem., 1969, **24**, 199 (rev)

Verheyden, J. *et al.*, *J.O.C.*, 1974, **39**, 3573

Zemlicka, J. *et al.*, *J.A.C.S.*, 1975, **97**, 4089 (pmr)

Lin, T.S. *et al.*, *Biochem. Pharmacol.*, 1987, **36**, 2713 (rev)

Mansuri, M.M. *et al.*, *J. Med. Chem.*, 1989, **32**, 461 (synth, pharmacol)

Chu, C.K. *et al.*, *J.O.C.*, 1989, **54**, 2217; 1990, **55**, 1418 (synth, pharmacol, bibl)

Mansuri, M.M. *et al.*, *J.O.C.*, 1989, **54**, 4780 (synth, pmr, cmr, Ac)

Vial, J.-M. *et al.*, *Nucleosides Nucleotides*, 1990, **9**, 245 (synth)

Hitchcock, M.J.M. *et al.*, *Antiviral Chem. Chemother.*, 1991, **2**, 125 (rev)

Harte, W.E. *et al.*, *Biochem. Biophys. Res.*

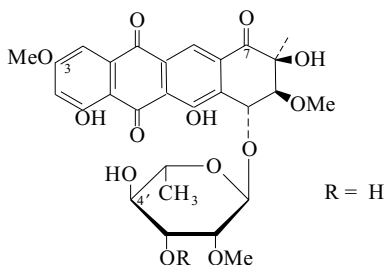
Commun., 1991, **175**, 298 (cryst struct)

Cosford, N.D.P. *et al.*, *J.O.C.*, 1991, **56**, 2161 (synth, bibl)

Van Roey, P. *et al.*, *J.A.C.S.*, 1993, **115**, 5365 (cryst struct, bibl)

- Tortolani, D.R. *et al.*, *J. Pharm. Sci.*, 1994, **83**, 339 (*derivs*)
 Lea, A.P. *et al.*, *Drugs*, 1996, **51**, 846 (*rev, pharmacokinetic*)
 Hurst, M. *et al.*, *Drugs*, 1999, **58**, 919-949 (*rev*)
 Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 625
 Cheer, S.M. *et al.*, *Drugs*, 2002, **62**, 2667-2674 (*rev*)
 Ewing, D.F. *et al.*, *Tetrahedron*, 2003, **59**, 941-945 (*synth*)

Steffimycin, INN, USAN **S-77**
Steffisburgensimycin. U 20661. Antibiotic U 20661
 [11033-34-4]

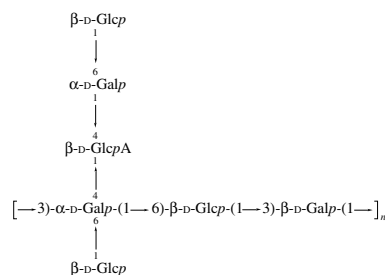


- $C_{28}H_{30}O_{13}$ 574.537
 Anthracycline antibiotic. Isol. from *Streptomyces steffisburgensis*, *Streptomyces elgreteus* and *Actinoplanes utahensis*. Antibacterial and antineoplastic agent. Orange-yellow cryst. Sol. MeOH, C_6H_6 ; poorly sol. H_2O , Et_2O , hexane.
 Mp 257-265°. $[\alpha]_D^{25} +85$ (c, 0.05 in MeOH). Log P -0.64 (uncertain value) (calc). Shows opposite stereochem. to most anthracyclines. λ_{max} 227 (€ 29500); 263 (€ 24500); 353 (€ 4170); 528 (€ 11200) (MeOH/NaOH) (Derep). λ_{max} 214 (€ 25900); 236 (€ 29300); 257 (sh) (€ 22400); 279 (€ 20100); 298 (sh) (€ 13500); 439 (€ 14900) (MeOH) (Derep). λ_{max} 214 (€ 25700); 236 (€ 29500); 278 (€ 19950); 439 (€ 14800) (MeOH) (Berdy). λ_{max} 214 (€ 25120); 236 (€ 29500); 278 (€ 19950); 439 (€ 12900) (MeOH-HCl) (Berdy).
 ▶ LD₅₀ (mus, ipr) 562 mg/kg. Q19456000
 4'-Me ether: **Steffimycin B**. U 40615. Antibiotic U 40615
 [54526-94-2]
 $C_{29}H_{32}O_{13}$ 588.564
 Isol. from *Streptomyces elgreteus*. Antibacterial and antineoplastic agent. Orange cryst. Sol. MeOH, $CHCl_3$; fairly sol. C_6H_6 ; poorly sol. hexane, H_2O .
 Mp 240-246°. $[\alpha]_D^{25} +94$ (c, 1 in $CHCl_3$). λ_{max} 227 (€ 29500); 263 (€ 24500); 353 (€ 4170); 528 (€ 11200) (MeOH/NaOH) (Derep). λ_{max} 214 (€ 25900); 236 (€ 29300); 257 (sh) (€ 22400); 279 (€ 20100); 298 (sh) (€ 13500); 439 (€ 14900) (MeOH) (Derep). λ_{max} 234 (E1%/1cm 473); 274 (E1%/1cm 333); 439 (EtOH) (Berdy). λ_{max} 223 (E1%/1cm 587); 259 (E1%/1cm 457); 353; 528 (EtOH-NaOH) (Berdy). λ_{max} 234 (E1%/1cm 467); 254 (E1%/1cm 366); 274 (E1%/1cm 330); 440 (EtOH-HCl) (Berdy).
 ▶ LD₅₀ (mus, scu) 600 mg/kg. Q19450000

- 7-Alcohol: 10-Dihydrosteffimycin
 [75086-96-3]
 $C_{28}H_{32}O_{13}$ 576.553
 Semisynthetic. Cryst. (Me₂CO). Mp 253-255°.
 7-Alcohol, 4'-Me ether: 10-Dihydrosteffimycin B
 [75086-97-4]
 $C_{29}H_{34}O_{13}$ 590.58
 Semisynthetic. Cryst. (Me₂CO). Mp 245-248°. λ_{max} 227 (€ 29750); 267 (€ 18700); 285 (€ 15930); 430 (€ 12500) (EtOH) (Berdy).
 7-Deoxo: **Steffimycin D**
 [132354-06-4]
 $C_{28}H_{32}O_{12}$ 560.554
 From *Streptomyces* sp. Collagenase inhibitor.
 7-Deoxo, 4'-Me ether: **Steffimycin C**
 [98813-22-0]
 $C_{29}H_{34}O_{12}$ 574.58
 From *Streptomyces elgreteus*. Only active against *Streptococcus pneumoniae*. Orange cryst. Sol. MeOH, $CHCl_3$, EtOAc; poorly sol. H_2O , hexane. λ_{max} 225 (€ 36300); 266 (€ 20000); 287 (€ 17800); 434 (€ 11200) (MeOH) (Derep).
 7-Deoxo, O³-de-Me: **Demethylsteffimycin**
 [132354-18-8]
 $C_{27}H_{30}O_{12}$ 546.527
 From *Streptomyces* sp. Orange powder.
 9-De-methoxy: **9-Demethoxysteffimycin**. 8-Demethoxysteffimycin
 [193472-10-5]
 $C_{27}H_{28}O_{12}$ 544.511
 Prod. by *Streptomyces steffisburgensis*. Orange powder. λ_{max} 280; 440 (MeOH). λ_{max} 440 (MeOH) (Berdy).
 9-De-methoxy, 7-deoxo: **9-Demethoxysteffimycin D**. 8-Demethoxysteffimycin D
 [193472-08-1]
 $C_{27}H_{30}O_{11}$ 530.527
 Prod. by *Streptomyces steffisburgensis*. Orange powder. λ_{max} 280; 440 (MeOH). λ_{max} 440 (MeOH) (Berdy).
 9-De-methoxy, 7-deoxo, 2'-O-de-Me: **8-De-methoxy-2'-de-O-methylsteffimycin D**
 [193472-12-7]
 $C_{26}H_{28}O_{11}$ 516.501
 Prod. by *Streptomyces steffisburgensis*. Orange powder. λ_{max} 280; 440 (MeOH). λ_{max} 440 (MeOH) (Berdy).
 3,9-Bisdemethoxy, 7-deoxo, 2'-O-de-Me: **2,8-Didemethoxy-2'-de-O-methylsteffimycin D**
 [193472-14-9]
 $C_{25}H_{26}O_{10}$ 486.474
 Prod. by *Streptomyces steffisburgensis*. Orange powder. Incorrect struct. and MF assigned in CA. λ_{max} 270; 430 (MeOH).
 Aglycone: **Steffimycinone**. 2-De-methoxyaranciamycinone
 [57847-74-2]
 $C_{21}H_{18}O_9$ 414.368
 Active against mycobacteria.
 [91310-99-5, 91382-92-2]
 Bergy, M.E. *et al.*, *Experientia*, 1967, **23**, 254 (*isol*)
 Brodasky, T.F. *et al.*, *J. Antibiot.*, 1974, **27**, 809; 1985, **38**, 849 (*isol, uv, ir, pmr, cmr, ms, struct*)
 Vaněk, Z. *et al.*, *Folia Microbiol. (Prague)*, 1977, **22**, 139 (*biosynth, struct, pmr, cmr, ms*)

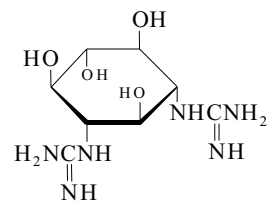
- Wiley, P.F. *et al.*, *J.O.C.*, 1977, **42**, 3591; 1978, **43**, 3457 (*Steffimycin B*)
 Wiley, P.F. *et al.*, *J. Antibiot.*, 1980, **33**, 819 (*isol, uv, ir, pmr, cmr*)
 Krohn, K. *et al.*, *J.O.C.*, 1984, **49**, 3766 (*config*)
 Suzukake-Tsuchiya, K. *et al.*, *J. Antibiot.*, 1990, **43**, 1489 (*Steffimycin D*)
 Brodasky, T.F. *et al.*, *J. Antibiot.*, 1990, **43**, 1489 (*Steffimycin C*)
 Kunnari, T. *et al.*, *J. Antibiot.*, 1997, **50**, 496-501 (*Demethoxysteffimycins*)

Stewartan **S-78**



- Capsular polysaccharide from the corn pathogenic organism *Erwinia stewartii*.
 Nimtz, M. *et al.*, *Carbohydr. Res.*, 1996, **288**, 189-201 (*isol, pmr, ms, struct*)

Streptidine **S-79**
 N,N'-Bis(aminoiminomethyl)streptamine, 9CI. N,N'-Diamidinostreptamine
 [85-17-6]



- $C_8H_{18}N_6O_4$ 262.268
 Degradn. prod. of Streptomycin, S-83. Shows no Mp behaviour. Opt. inactive (*meso*-).

Hydrochloride (1:2): [6160-28-7]
 Mp 170-210° dec.

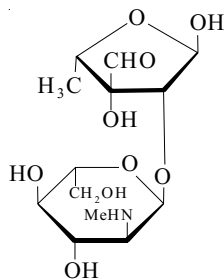
- ▶ WK2200000
 Dipicrate: Mp 285°.

Octa-Ac:
 $C_{24}H_{34}N_6O_{12}$ 598.566
 Cryst. (EtOH aq.). Mp 259-261°.

- Peck, R.L. *et al.*, *J.A.C.S.*, 1946, **68**, 776 (*struct*)
 Wolfrom, M.L. *et al.*, *J.A.C.S.*, 1950, **72**, 1727 (*synth, octa-Ac*)
 Dyer, J.R. *et al.*, *J.A.C.S.*, 1963, **85**, 3896 (*config*)
 Munro, M.H. *et al.*, *J.A.C.S.*, 1975, **97**, 4782 (*biosynth*)

Streptobiosamine, 8CI S-80

5-Deoxy-2-O-[2-deoxy-2-(methylamino)- α -L-glucopyranosyl]-3-C-formyl-L-lyxofuranose, 9CI
[126-05-6]



$C_{13}H_{23}NO_9$ 337.326

Degradn. prod. of Streptomycin, S-83.

Tetra-Ac:

$C_{21}H_{31}NO_{13}$ 505.475

Mp 188-189°. $[\alpha]_D^{25}$ -78.4 (c, 1.0 in $CHCl_3$).

Hepta-Ac:

$C_{27}H_{39}NO_{16}$ 633.602

Hydrate. Mp 151-152°. $[\alpha]_D^{25}$ -106 (c, 0.70 in $CHCl_3$).

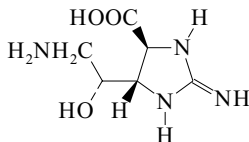
Lemieux, R.U. *et al.*, *Adv. Carbohydr. Chem.*, 1948, **3**, 337 (rev)

Kuehl, F.A. *et al.*, *J.A.C.S.*, 1949, **71**, 1445 (config, hepta-Ac)

Lodhi, S. *et al.*, *Biochim. Biophys. Acta*, 1976, **426**, 781 (pharmacol)

Streptolidine S-81

2-Amino-5-(2-amino-1-hydroxyethyl)-4,5-dihydro-1H-imidazole-4-carboxylic acid, 9CI. Geamine. Roseonine
[29307-61-7]



$C_6H_{12}N_4O_3$ 188.186

Hydrol. prod. of many *Streptomyces* antibiotics, e.g. Geomycin. pK_{a1} 2.5; pK_{a2} 8.72; pK_{a3} 11.3 (H_2O). pK_{a1} 3.95; pK_{a2} 9.1; pK_{a3} 12.65 (66% DMF).

Hydrochloride (1:2): Mp 175-180° dec
Mp 208-215° dec Mp 220° Mp 239° dec.
 $[\alpha]_D^{25}$ +56.

Dipicrate:

Deep yellow prisms (H_2O). Mp 237° dec.

Bis[4-(4-hydroxyphenylazo)benzenesulfonate]:

Cryst. + $2H_2O$ (H_2O). Mp 254-258°.
 $[\alpha]_D^{21}$ +22.1 (c, 0.29 in MeOH).

Carter, H.E. *et al.*, *J.A.C.S.*, 1961, **83**, 4296

(isol, struct)

Borders, D.B. *et al.*, *Tet. Lett.*, 1967, 4187 (pmr, ir, struct, derivs)

Bycroft, B.W. *et al.*, *Chem. Comm.*, 1972, 652 (cryst struct)

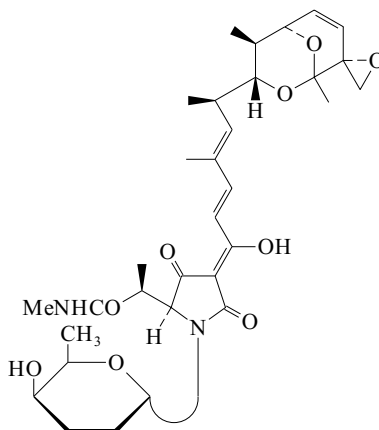
Goto, T. *et al.*, *Tet. Lett.*, 1974, 1413 (synth, ir, ms, nmr)

Kusumoto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1976, **49**, 3611 (pmr, synth)

Kinoshita, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1977, **50**, 2375 (synth)

Streptolydigin, 9CI

Portamycin. *Afragilimycin A*
[7229-50-7]



$C_{32}H_{44}N_2O_9$ 600.708

Nucleoside antibiotic. Prod. by *Streptomyces lydicus* and *Streptomyces neohydroscopicus afragilimyceticus*. Active against gram-positive bacteria. RNA-polymerase inhibitor. Cryst. + H_2O (Me_2CO).

Mp 147-148° Mp 190-195°. $[\alpha]_D^{25}$ -93 (c, 1.6 in $CHCl_3$). $[\alpha]_D^{25}$ -65.7 (c, 2.28 in 0.005M NaOH). λ_{max} 240 (ϵ 8000); 357 (ϵ 35500); 370 (ϵ 33700) (EtOH/HCl) (Derep). λ_{max} 262 (ϵ 13600); 291 (ϵ 16400); 335 (ϵ 20000) (EtOH/NaOH) (Derep).

►WK4250000

Na salt: Mp 225°. $[\alpha]_D^{25}$ +153 (c, 1.35 in $CHCl_3$). λ_{max} 240 (ϵ 7280); 360 (ϵ 29400); 373 (ϵ 29500) (50% MeOH/HCl) (Derep). λ_{max} 257 (ϵ 10800); 296 (sh) (ϵ 13100); 310 (sh) (ϵ 13600); 336 (ϵ 17900) (50% MeOH) (Derep). λ_{max} 259 (ϵ 11200); 296 (sh) (ϵ 13700); 336 (ϵ 18500) (MeOH aq./NaOH) (Derep).

[76559-69-8]

Rinehart, K.L. *et al.*, *J.A.C.S.*, 1963, **85**, 4035; 4037; 4038 (struct, uv, ir, ms, pmr)

Stevens, C.L. *et al.*, *J.A.C.S.*, 1964, **86**, 3592 (isol)

Duchamp, D.J. *et al.*, *J.A.C.S.*, 1973, **95**, 4077 (cryst struct, stereochem)

Von Meyenburg, K. *et al.*, *Antimicrob. Agents Chemother.*, 1978, **13**, 324

Lee, V.J. *et al.*, *J. Antibiot.*, 1980, **33**, 408 (cmr)

McClure, W.R. *et al.*, *J. Biol. Chem.*, 1980, **255**, 1610 (props)

Japan. Pat., 1980, 80 127 398; *CA*, **94**, 101308 (*Afragilimycin A*)

Pearce, C.J. *et al.*, *J. Antibiot.*, 1983, **36**, 1536 (biosynth)

Perez, J.P. *et al.*, *Diss. Abstr. Int.*, **B**, 1984, **45**, 1781 (synth)

Ireland, R.E. *et al.*, *J.A.C.S.*, 1988, **110**, 854 (synth)

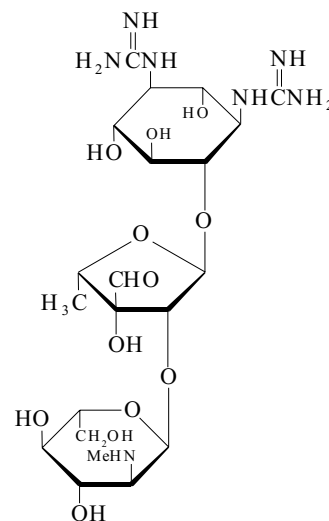
Bols, M. *et al.*, *J. Antibiot.*, 1991, **44**, 678 (*Afragilimycin A*)

Chen, H. *et al.*, *Org. Lett.*, 2004, **6**, 4033-4036 (biosynth)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SLW475

Streptomycin, BAN, INN S-83

N-Methyl-L-glucosaminidostreptosidostreptidine. Estreptomicina. Streptomisin. Agrept. Agrimycin. Merstep. NSC 14083. Many other names
[57-92-1]



$C_{21}H_{39}N_7O_{12}$ 581.579

Aminoglycoside antibiotic. Isol. from *Streptomyces griseus*. Clinically used broad spectrum antibacterial (tuberculostatic) agent. Neuromuscular blocking agent. Phospholipase D inhibitor. Sol. H_2O ; fairly sol. MeOH; poorly sol. butanol, hexane. Log P -7.17 (uncertain value) (calc). Indefinite Mp.

►Hypersensitivity reactions reported when used therapeutically or occupationally. Adverse side-effects also include vestibular ototoxicity and neurotoxicity. LD_{50} (rat, orl) 9000 mg/kg; LD_{50} (mus, ivn) 200 mg/kg. Human and exp. reprod. and teratogenic effects. WK4375000

Hydrochloride (1:3): [6160-32-3]

$[\alpha]_D^{25}$ -86.7 (c, 1 in H_2O).

►WK5045000

Sulfate (2:3): **Streptomycin sulfate, JAN, USAN.** Ambistryn S
[3810-74-0]

Powder. Dec. at $>ca.$ 230°.

► LD_{50} (ham, orl) 400 mg/kg. Exp. reprod. and teratogenic effects. WK4990000

Dihydro:

$C_{21}H_{41}N_7O_{12}$ 583.595

Mp 190-195° dec. (as trihydrochloride).

Helianthate: Mp 220-226° dec.

Reineckate: Mp 162-164° dec.

N-De-Me: N-Demethylstreptomycin.

L-Glucosaminidostreptosidostreptidine
[19022-67-4]

$C_{20}H_{37}N_7O_{12}$ 567.552

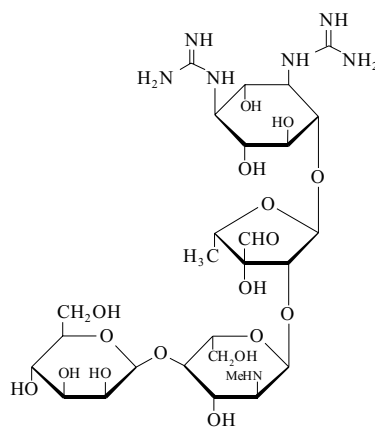
Isol. from *Streptomyces griseus*. Shows low antimicrobial activity. Sol. H_2O ; poorly sol. MeOH.

2-Deoxy: 2-Deoxystreptomycin. Deoxy-streptomycin A
[60029-13-2]
 $C_{21}H_{39}N_7O_{11}$ 565.579
Semisynthetic. Sol. H_2O . Discontinued
Isonicotinoyl hydrazone: Streptonicozid,
BAN, USAN. **Streptoniazid**, INN.
Streptohydrazid. Hidramicin. Nicostrep-
til. Striazide
[4480-58-4]
 $C_{27}H_{44}N_{10}O_{12}$ 700.704
Tuberculostatic agent. Cryst. Dec. at
ca. 230°.

► NS1765000

Kuehl, F.A. *et al.*, *J.A.C.S.*, 1947, **69**, 1234
(*struct*)
Emery, W.B. *et al.*, *Chem. Ind. (London)*, 1952,
254 (rev)
Pennington, F.C. *et al.*, *J.A.C.S.*, 1953, **75**, 2261
(*synth*)
Heding, H. *et al.*, *Acta Chem. Scand.*, 1968, **22**,
1649; 1969, **23**, 1275 (Demethylstreptomycin)
Neidle, S. *et al.*, *Tet. Lett.*, 1968, 4725
(*cryst struct*)
Bock, K. *et al.*, *J. Antibiot.*, 1974, **27**, 139 (*cmr*)
Umezawa, S. *et al.*, *J. Antibiot.*, 1974, **27**, 997
(*synth*)
Munro, M.H.G. *et al.*, *J.A.C.S.*, 1975, **97**, 4782
(*biosynth*)
U.S. Pat., 1976, 3 956 295, (MIT); *CA*, **85**,
107460g (Deoxystreptomycin)
U.S. Pat., 1976, 3 993 554, (MIT); *CA*, **86**,
104447t (Deoxystreptomycin)
Wallace, B.J. *et al.*, *Antibiotics (N.Y.)*, 1979, **5**,
272 (rev, *props*)
Umezawa, S. *et al.*, *J. Antibiot.*, 1979, **32**, S60
(rev, *synth*)
Munro, M.H.G. *et al.*, *J. Antibiot.*, 1982, **35**,
1331 (*cmr*)
Aminoglycosides, (Ed. Whelton, A. *et al.*), M.
Dekker, 1982, (book)
Mossa, J.S. *et al.*, *Anal. Profiles Drug Subst.*,
1987, **16**, 507 (rev, *synth, anal*)
Pesticide Manual, 9th edn., 1991, No. 10970
Textbook of Adverse Drug Reactions, 4th edn.,
(ed. Davies, D.M.), Oxford University Press,
1991,
Agrochemicals Handbook, 3rd edn., Royal
Society of Chemistry, 1992, A481
Martindale, *The Extra Pharmacopoeia*, 30th
edn., Pharmaceutical Press, 1993, 203
Negwer, M. *et al.*, *Organic-Chemical Drugs and
their Synonyms*, 7th edn., Akademie-Verlag,
1994, 8762 (synonyms)
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of
Industrial Materials*, 8th edn., Van Nostrand
Reinhold, 1992, SLW500; SLY500

Streptomycin B, 8CI
Mannosidostreptomycin
[128-45-0]



$C_{27}H_{49}N_7O_{17}$ 743.721

Aminoglycoside antibiotic. Occurs
together with Streptomycin in certain
cultures of *Streptomyces griseus*. Shows
antibacterial activity similar to Strepto-
mycin.

► WK4725000

Hydrochloride (1:3):

Monohydrate. Sol. H_2O ; poorly sol.
butanol, hexane. Mp 190-200° dec.
[α]_D²⁵ -47 (c, 1.35 in H_2O).

Reineckate:

Cryst. + 2 H_2O (H_2O). Mp 178° dec.

Peck, R.L. *et al.*, *J.A.C.S.*, 1948, **70**, 3968

(*struct*)

Fried, J. *et al.*, *J.A.C.S.*, 1949, **71**, 135; 1952, **74**,
5461 (*struct*)

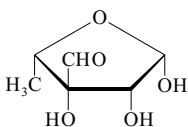
Wallace, B.J. *et al.*, *Antibiotics (N.Y.)*, 1979, **5**,
272 (rev)

Whall, T.J. *et al.*, *J. Chromatogr.*, 1981, **219**, 89
(*hplc*)

Sax, N.I. *et al.*, *Dangerous Properties of
Industrial Materials*, 7th edn., Van Nostrand
Reinhold, 1989, 2467

Streptose

5-Deoxy-3-C-formyllyxose, 9CI, 8CI



$C_6H_{10}O_5$ 162.142

L-form [13008-73-6]

Carbohydrate component of Streptomy-
cin, S-83 and Bluensomycin, B-44.
Strongly hygroscopic glass. [α]_D²⁰ -18
(c, 0.65 in H_2O).

β -L-Furanose-form

1,2-O-Isopropylidene: 5-Deoxy-3-C-
formyl-1,2-O-isopropylidene- β -L-
lyxofuranose
[35522-71-5]

$C_9H_{14}O_5$ 202.207

Cryst. (Me₂CO). Mp 80-82°. [α]_D²⁰ +43
(c, 1.0 in dioxan).

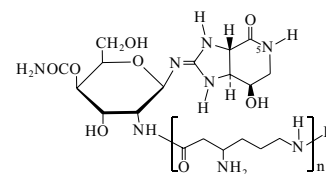
S-84

Candy, D.J. *et al.*, *Biochem. J.*, 1965, **96**, 526
(*biosynth*)
Dyer, J.R. *et al.*, *J.A.C.S.*, 1965, **87**, 654 (*L-form*,
synth)
McGilveray, I.J. *et al.*, *J.A.C.S.*, 1965, **87**, 4003
(*config*)
Kuehl, F.A. *et al.*, *Methods Carbohydr. Chem.*,
1966, **1**, 268 (*synth*)
Paulsen, H. *et al.*, *Chem. Ber.*, 1972, **105**, 1978
(*L-form, synth, β -L-fur isopropylidene*)
Binkley, R.W. *et al.*, *J. Carbohydr. Chem.*, 1982,
1, 213-227 (*synth*)

Streptothricin

[54003-27-9]

S-86



n = 1,2,3,4,5,6,7
for Streptothricins F,E,D,C,B,A and X respectively

Nucleoside-type antibiotic complex.

Should not be confused with the anti-
biotic from *S. fradiae* and now called
Neomycin A (see Neomycin A, N-22).
Struct. revised in 1982. Isol. from
Streptomyces sp. Shows broad spectrum
of activity, but acutely toxic.

► LD₅₀ (mus, ivn) 8 mg/kg. WK5750000

Streptothricin A

Aerosporin. Polymycin A

[3484-67-1]

$C_{49}H_{94}N_{18}O_{13}$ 1143.394

Sol. H_2O ; fairly sol. MeOH; poorly sol.
butanol, hexane. [α]_D -9.2 (MeOH).

► NJ5830500

Streptothricin B

*Polymycin B. NT 1009. Antibiotic NT
1009. Racemomycin E. A 53930C.*

Antibiotic A 53930C

[3484-68-2]

$C_{43}H_{82}N_{16}O_{12}$ 1015.221

Sol. H_2O ; fairly sol. MeOH; poorly sol.
butanol, hexane. Mp 61-65°. [α]_D -12.8
(c, 0.5 in H_2O).

► LD₅₀ (mus, ivn) 7.5 mg/kg. NJ5830700

Streptothricin C

Racemomycin D. OP 2D. Antibiotic OP 2D
[3776-36-1]

$C_{37}H_{70}N_{14}O_{11}$ 887.047

Prod. by *Streptomyces lavendulae*. Shows
activity against insects, bacteria, viruses and
fungi. Sol. H_2O ; fairly sol. MeOH; poorly
sol. butanol, hexane. [α]_D -17 (H_2O).

► LD₅₀ (mus, scu) 0.07 mg/kg. LD₅₀
(mus, ivn) approx. 9 mg/kg. NJ5830800
Sulfate: [α]_D -17 (H_2O).

**Streptothricin D Boseimycin III. Phytobac-
teriomycin D. Racemomycin B. Streptolin
A**

[3776-37-2]

$C_{31}H_{58}N_{12}O_{10}$ 758.874

[α]_D -58.6 (H_2O). Streptolin was the
name applied to Streptothricins D
and E.

► LD₅₀ (mus, scu) 0.215 mg/kg. LD₅₀ (mus, ivn) 52 mg/kg. NJ5830850

N^β-Ac: **Antibiotic AN 201II. AN 201II**
[89020-28-0]
C₃₃H₆₀N₁₂O₁₁ 800.911

From *Streptomycesnojiriensis*. Active against gram-positive bacteria, certain tumour cells, viruses and weakly against gram-negative bacteria. Powder. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.

N⁵-Me: **N⁵-Methylstreptothricin D**
C₃₂H₆₀N₁₂O₁₀ 772.9

From a *Streptomyces* sp. Amorph. powder. Sol. H₂O, MeOH; fairly sol. butanol; poorly sol. EtOH, hexane, CHCl₃.
Mp 200° dec. [α]_D²⁵ -34 (c, 0.1 in H₂O).

Streptothricin E Boseimycin II. Racemomycin C. Yazumycin C. E 977C. S 15-1B.
Antibiotic E 977C. Antibiotic S 15-1B
[3776-38-3]

C₂₅H₄₆N₁₀O₉ 630.7
[α]_D -41 (H₂O).

► LD₅₀ (mus, ivn) 170 mg/kg. NJ5830870

N^β-Ac: **Antibiotic AN 201I. AN 201I**
[89020-29-1]
C₂₇H₄₈N₁₀O₁₀ 672.737

From *Streptomycesnojiriensis*. Active against gram-positive bacteria, certain tumour cells and viruses. Weakly active against gram-negative bacteria. Powder. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.

Streptothricin F Akimycin. Boseimycin I. Grisemin. Pleocidin I. Racemomycin A. Streptolin B. Yazumycin A. AY 24546. E 977A. S 151A. Antibiotic 861A.
Antibiotic AY 24546. Antibiotic E 977A. Antibiotic S 15-1A
[3808-42-2]

C₁₉H₃₄N₈O₈ 502.526

From *Streptomyces* sp. and *Streptomyces roseolutaceus pallidus*. Antibiotic. [α]_D -53 (H₂O).

► LD₅₀ (mus, ipr) 250 mg/kg. NJ5830900
Hydrochloride (1:3): Mp 210° (dec.). [α]_D¹³ -49 (c, 0.14 in H₂O).

N^β-Ac: **Antibiotic AN 201III. AN 201III**
C₂₁H₃₆N₈O₉ 544.564

From *Streptomycesnojiriensis*. Active against gram-positive and -negative bacteria and tumours. Powder. Sol. H₂O, MeOH, EtOH; poorly sol. Me₂CO, butanol, CHCl₃.

N⁵-Me: **N⁵-Methylstreptothricin F. A**
37812. **Antibiotic A 37812**
[99237-10-2]

C₂₀H₃₆N₈O₈ 516.553

From *Bacillus subtilis*. Similar antimicrobial activity to Streptothricin F. Sol. H₂O; fairly sol. MeOH; poorly sol. Me₂CO, hexane.

Streptothricin X [24543-64-4]

C₅₅H₁₀₆N₂₀O₁₄ 1271.568

From *Streptomyces* sp. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.

Peck, R.L. *et al.*, *J.A.C.S.*, 1946, **68**, 772

Larson, L.M. *et al.*, *J.A.C.S.*, 1953, **75**, 2036 (isol)

v. Tamelen, E.E. *et al.*, *J.A.C.S.*, 1956, **78**, 4817; 1961, **83**, 4295 (struct)

Taniyama, H. *et al.*, *J. Antibiot.*, 1971, **24**, 390

Khoklov, A.S. *et al.*, *J. Antibiot.*, 1972, **25**, 501 (struct, synth)

Sawada, T. *et al.*, *Chem. Pharm. Bull.*, 1977, **25**, 1302; **26**, 885 (synth)

Kokhlov, A.S. *et al.*, *J. Chromatogr. Libr.*, 1978, **15**, 617 (rev)

Takemoto, T. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 2884 (props)

Kusumoto, S. *et al.*, *Chem. Lett.*, 1981, 1317

Kusumoto, S. *et al.*, *J. Antibiot.*, 1982, **35**, 925 (struct)

Kusumoto, S. *et al.*, *Tet. Lett.*, 1982, **23**, 2961 (synth)

Jonak, J. *et al.*, *Antibiotics (N.Y.)*, 1983, **6**, 238 (rev, pharmacol, tox)

Martinkus, K.J. *et al.*, *Diss. Abstr. Int.*, **B**, 1983, **43**, 3600

Thrum, H. *et al.*, *Drugs Pharm. Sci.*, 1984, **22**, 367 (rev)

Keeratipibul, S. *et al.*, *J. Ferment. Technol.*, 1984, **62**, 19 (isol)

Hunt, A.H. *et al.*, *J. Antibiot.*, 1985, **38**, 987 (deriv)

Ando, T. *et al.*, *J. Antibiot.*, 1987, **40**, 1140 (derivs)

Jin, T. *et al.*, *CA*, 1989, **111**, 228633 (Streptothricin F, deriv)

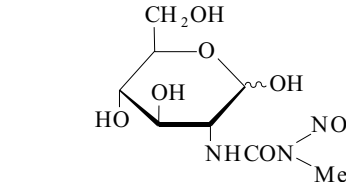
Inamori, Y. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 2296 (Streptothricin D, props)

Kim, B.T. *et al.*, *J. Antibiot.*, 1994, **47**, 1333 (N-Methylstreptothricin D)

Hisamoto, M. *et al.*, *J. Antibiot.*, 1998, **51**, 607-617 (A 53930C)

Jackson, M.D. *et al.*, *J.O.C.*, 2002, **67**, 2934-2941 (Streptothricin F, biosynth)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RAG300



C₈H₁₅N₃O₇ 265.222

Aminoglycoside antibiotic. Prod. by *Streptomyces achromogenes*. Antineoplastic agent. Pointed platelets or prisms (EtOH).

Mp 115° dec. [α]_D²⁵ +39 (equilibrium in H₂O). Log P -2.7 (calc). With alkali → CH₂N₂. λ_{max} 223 (ε) (MeOH/NaOH) (Derep). λ_{max} 228 (ε 6360); 380 (ε 136) (MeOH) (Derep).

► Possible human carcinogen. Nephrotoxic, hepatotoxic and gastrointestinal adverse effects reported when used therapeutically. LD₅₀ (mus, orl) 264 mg/kg. Exp. carcinogenic, reprod. and teratogenic effects. LZ5775000

Tetra-Ac: Mp 111-114° dec. [α]_D²⁵ +41 (c, 0.78 in 95% EtOH).

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1313B (nmr)

Herr, R.R. *et al.*, *Antibiot. Annu.*, 1959, **60**, 236 (isol)

Herr, R.R. *et al.*, *J.A.C.S.*, 1967, **89**, 4808 (struct, synth)

Hardegger, E. *et al.*, *Helv. Chim. Acta*, 1969, **52**, 2555 (synth)

Hessler, E.-J. *et al.*, *J.O.C.*, 1970, **35**, 245 (synth)

IARC Monog., 1978, **17**, 337; *Suppl.* 7, 72 (rev, tox)

Wiley, P.F. *et al.*, *J.O.C.*, 1979, **44**, 9 (struct)

Kurahashi, K. *et al.*, *Antibiotics (N.Y.)*, 1981, **4**, 325 (rev)

Agarwal, M.K. *et al.*, *Streptozotocin: Fundam. Ther.*, Elsevier, 1981, (book)

Weiss, R.B. *et al.*, *Cancer Treat. Rep.*, 1982, **66**, 427 (rev, pharmacol, tox)

Srivastava, L.M. *et al.*, *Trends Pharmacol. Sci.*, 1982, **3**, 376 (rev, props)

Mo, C. *et al.*, *CA*, 1991, **115**, 227913 (isol)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 500

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SMD000

Strongylostatin

S-88

Isol. from the sea urchin *Strongylocentrotus droebachiensis*. Shows antitumour activity.

Strongylostatin 1

[71950-63-5]

Glycoprotein.

► LD₅₀ (mus, ipr) 10 mg/kg.

Strongylostatin 2

[80893-49-8]

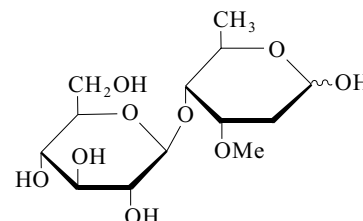
Glycoprotein. Fairly sol. H₂O; poorly sol. MeOH, hexane.

Pettit, G.R. *et al.*, *J. Nat. Prod.*, 1979, **42**, 407-409; 1981, **44**, 701-704 (isol)

Strophanthobiose

S-89

2,6-Dideoxy-4-O-β-D-glucopyranosyl-3-O-methyl-D-ribo-hexose, 9CI. β-D-Glucopyranosyl-(1→4)-2,6-dideoxy-3-O-methyl-D-ribo-hexose. Periplobiose
[7724-04-1]



C₁₃H₂₄O₉ 324.327

Pyranose-form

Obt. by acid hydrol. of *K*-Strophanthin-β; isol. from seeds of *Strophanthus kombe*. Sugar from the glycosides *K*-Strophanthoside and Echujin.

Needles (MeOH). Mp 144-146°. [α]_D²⁰ +33.8 (c, 2.1 in H₂O). A higher-melting point of 208° initially reported (1937), could not be reproduced.

Penta-Ac: Pentaacetylstrophanthobiose

C₂₃H₃₄O₁₄ 534.513

Mp 174-175°. [α]_D²⁰ +11.9 (c, 1.05 in CHCl₃).

6'- β -D-Glucopyranosyl: β -D-Glucopyranosyl(1 \rightarrow 6)- β -D-glucopyranosyl(1 \rightarrow 4)-2,6-dideoxy-3-O-methyl-D-ribo-hexose. *Strophanthotriose* C₁₉H₃₄O₁₄ 486.469
Isol. from the mild acid hydrolysis of glycosides Echujin and K-Strophanthoside.
Mp 222°. [α]_D +7.7 (H₂O).

6'- β -D-Glucopyranosyl, octa-Ac: *Octaacetylstrophanthotriose* C₃₅H₅₀O₂₂ 822.767
Mp 190°. [α]_D -5.8 (CHCl₃).

3-De-Me, 6'- β -D-glucopyranosyl: β -D-Glucopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-D-ribo-hexose. *Odorotriose* C₁₈H₃₂O₁₄ 472.442
Isol. from the partial acid hydrolysate of the glycoside Odoroside K (see Uzarigenin).
[α]_D -1.4 (H₂O).

Stoll, A. et al., *Helv. Chim. Acta*, 1937, **20**, 1484-1510 (*Strophanthobiose*, isol)

Hess, J.C. et al., *Helv. Chim. Acta*, 1952, **35**, 2202-2226 (*Strophanthotriose*, isol, octa-Ac)

Rittel, W. et al., *Helv. Chim. Acta*, 1954, **37**, 1361-1373 (*Odorotriose*)

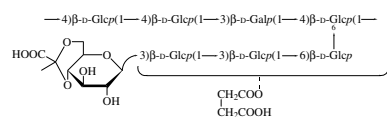
Lichti, H. et al., *Helv. Chim. Acta*, 1961, **44**, 238-249 (*Strophanthobiose*, isol, penta-Ac)

Nakagawa, T. et al., *Tet. Lett.*, 1982, **23**, 5431-5434 (*Me glycoside*, cmr)

Succinoglycan

EPS I

[73667-50-2]



Exopolysaccharide prod. by *Pseudomonas* and *Rhizobium* spp. Props. somewhat similar to those of Xanthan, X-1.

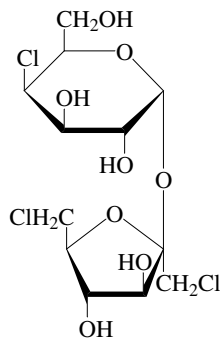
Gravanis, G. et al., *Cah. Phys.*, 1987, **160**, 259 (props)

Zevenhuizen, L.P.T.M. et al., *Carbohydr. Polym.*, 1997, **33**, 139-144 (rev)

Sucralose, BAN

1,6-Dichloro-1,6-dideoxy- β -D-fructofuranosyl 4-chloro-4-deoxy- α -D-galactopyranoside, 9CI, 4,1',6'-Trichloro-4,1',6'-trideoxy-galactosucrose. *Trichlorogalactosucrose*. *Splenda*

[56038-13-2]



C₁₂H₁₉Cl₃O₈ 397.635

Noncalorific sweetener with good taste props. Mp 130° (114.5°). [α]_D +85.6 (c, 1.0 in H₂O). Sweetness approx. 650 \times sucrose. Use currently (1999) permitted in Canada, Australia, Russia, Romania, Mexico and USA.

Penta-Ac: [55832-20-7]

Mp 92-94°. [α]_D +66.8 (CHCl₃).

Fairclough, P.H. et al., *Carbohydr. Res.*, 1975, **40**, 285-298 (synth)

Eur. Pat., 1981, 31 651, (Tate and Lyle); CA, **95**, 169700a (synth)

Kanters, J.A. et al., *Carbohydr. Res.*, 1988, **180**, 175-182 (cryst struct)

Jenner, M.R. et al., *J. Food Sci.*, 1989, **54**, 1646-1649 (props)

Jenner, M.R. et al., *ACS Symp. Ser.*, 1991, **450**, 68-87 (rev)

Miller, G.A. et al., *Food Sci. Technol.*, 1991, **48**, 173-195 (rev, props, synth, anal, use, tox)

Knight, I. et al., *Can. J. Physiol. Pharmacol.*, 1994, **72**, 435-439 (rev)

Suami, T. et al., *J. Carbohydr. Chem.*, 1994, **13**, 1079-1082 (pharmacol)

Hutchinson, S.A. et al., *Food Res. Int.*, 1995, **15**, 249-261 (rev, degradn)

Bouchemal-Chibani, N. et al., *Int. J. Biol. Macromol.*, 1995, **17**, 177-182 (conformn)

Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1378

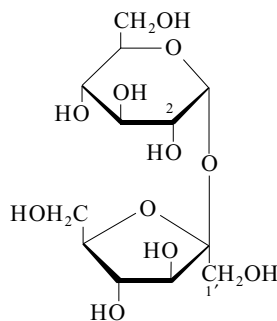
U.S. Pat., 1996, 5 498 709, (McNeil-PPC); CA, **124**, 343978 (synth)

Auger, D.J. et al., *Angew. Chem., Int. Ed.*, 1998, **37**, 1803-1817 (rev, synth)

Sucrose

β -D-Fructofuranosyl α -D-glucopyranoside, 9CI, 8CI. *Saccharose*. *Cane sugar*. *Beet sugar*

[57-50-1]



C₁₂H₂₂O₁₁ 342.299

Widespread in seeds, leaves, fruits, flowers and roots of plants, where it functions as an energy store for metabolism and as a carbon source for biosynth. Annual world production is in excess of 90 \times 10⁶ tons mainly from the juice of sugar cane and sugar beet which contain respectively ca. 20% and ca. 17% of the sugar. Sweetening agent and food source assimilated by most organisms. Also used in food products as a preservative, antioxidant, moisture control agent, stabiliser and thickening agent. Reference material used in elemental microanalysis. Cryst. (H₂O or EtOH). Mp 185-187°. [α]_D +66.5 (H₂O). Log P -5.72 (uncertain value) (calc). Does not reduce Fehling's soln., form an osazone or mutarotate. Hydrol. with invertase or acid gives D-glucose and D-fructose.

► OES long-term 10 mg m⁻³, short-term 20 mg m⁻³. LD₅₀ (rat, orl) 29700 mg/kg. Exp. teratogen (very large doses). WN6500000 *Biosynthetic intermed. to sucrose*

6'-Phosphate: [4549-10-4]

[22372-29-8, 36064-19-4]

C₁₂H₂₃O₁₄P 422.279

Microcryst. powder (as di-K salt). [α]_D²⁰ +34 (c, 1 in H₂O). Ba salt also prepared.

Octakis-O-sulfate: See Sucrosofate, S-94

1',2,3,3',4',6'-Hexa-Ac: [56038-06-3]

C₂₄H₃₄O₁₇ 594.522

[α]_D²⁰ +36.9 (c, 1 in CHCl₃).

Octa-Ac: FEMA 3038

[126-14-7]

C₂₈H₃₈O₁₉ 678.597

Flavouring ingredient, alcohol denaturant. Cryst. with intensely bitter flavour. Mp 84° (69°). [α]_D +59.6 (CHCl₃).

► WN6620000

6-O-[3-(4-Hydroxy-3-methoxyphenyl)propanoyl]: 6-Dihydroferuloylsucrose.

Segetoside A

[211567-44-1]

C₂₂H₃₂O₁₄ 520.486

Constit. of the seeds of *Vaccaria segetalis*. Oil. [α]_D²⁴ +38.2 (c, 0.6 in MeOH).

6-O-(3-Methylbutanoyl): [70284-38-7]

C₁₇H₃₀O₁₂ 426.417

Constit. of green coffee beans (*Coffea arabica*).

2,3',6'-Tris(3-methylbutanoyl), 1'-(2S-methylbutanoyl): *Attractysucrose IIIb*

C₃₂H₅₄O₁₅ 678.77

Constit. of the rhizomes of *Atractylodes lancea*.

2,3',6'-Tris(3-methylbutanoyl), 1'-(2S-methylbutanoyl), 4'-(2-methylpropanoyl): *Attractysucrose IIId*

C₃₆H₆₀O₁₆ 748.86

Constit. of the rhizomes of *Atractylodes lancea*.

2,3',6'-Tris(3-methylbutanoyl), 1'-(2S-methylbutanoyl), 4'-(2-methylpropanoyl): *Attractysucrose IIb*

C₃₆H₆₀O₁₆ 748.86

Constit. of the rhizomes of *Atractylodes lancea*.

1',2,3',6'-Tetrakis(3-methylbutanoyl):

Attractysucrose IIIa

C₃₂H₅₄O₁₅ 678.77

Constit. of the rhizomes of *Atractylodes lancea*.

1',2,3',6'-Tetrakis(3-methylbutanoyl), 4'-(2-methylpropanoyl): *Attractysucrose IIc*

C₃₆H₆₀O₁₆ 748.86

Constit. of the rhizomes of *Atractylodes lancea*.

1',2,3',6'-Tetrakis(3-methylbutanoyl), 4'-(2S-methylbutanoyl): *Attractysucrose Ic*

C₃₇H₆₂O₁₆ 762.887

Constit. of the rhizomes of *Atractylodes lancea*.

2,3',4,4'-Tetrakis(3-methylbutanoyl):

[150302-81-1]

C₃₂H₅₄O₁₅ 678.77

Constit. of the rhizomes of *Atractylodes japonica*.

- 2,3',4',6-Tetrakis(3-methylbutanoyl):
[150302-82-2]
C₃₂H₅₄O₁₅ 678.77
Constit. of the rhizomes of *Atractylodes japonica*.
- 2,3',4',6'-Tetrakis(3-methylbutanoyl), 1'-(2-methylpropanoyl): **Atractysucrose IIa**
C₃₆H₆₀O₁₆ 748.86
Constit. of the rhizomes of *Atractylodes lancea*.
- 2,3',4',6'-Tetrakis(3-methylbutanoyl), 1'-(2S-methylbutanoyl): **Atractysucrose Ib**
C₃₇H₆₂O₁₆ 762.887
Constit. of the rhizomes of *Atractylodes lancea*.
- 1',2,3',4',6'-Pentakis(3-methylbutanoyl): **Atractysucrose Ia**
C₃₇H₆₂O₁₆ 762.887
Constit. of the rhizomes of *Atractylodes lancea* and the stem bark of *Vernonia guineensis*.
[α]_D²⁰ +2.7 (c, 0.7 in CH₂Cl₂).
- 1',2,3',6,6'-Pentakis(3-methylbutanoyl):
C₃₇H₆₂O₁₆ 762.887
Constit. of the stem bark of *Vernonia guineensis*. Oil. [α]_D²⁰ +15 (c, 0.45 in CH₂Cl₂).
- 2,3',4,4',6'-Pentakis(3-methylbutanoyl):
[150302-84-4]
C₃₇H₆₂O₁₆ 762.887
Constit. of the rhizomes of *Atractylodes japonica*.
- 2,3',4',6,6'-Pentakis(3-methylbutanoyl):
[150302-83-3]
C₃₇H₆₂O₁₆ 762.887
Constit. of *Atractylodes japonica* and *Euphorbia lathyris*.
- 2,3,4-Tris(3S-methylpentanoyl), 6-Ac:
[106033-38-9]
C₃₂H₅₄O₁₅ 678.77
Present in tobacco.
[α]_D +70 (c, 0.4 in EtOH).
- 2,3,4-Tris(5-methylhexanoyl): **2,3,4-Tris(5-methylhexanoyl)sucrose**
C₃₃H₅₈O₁₄ 678.813
Constit. of the epigeal parts of *Petunia nyctaginiflora*.
- 2,3,4-Tris(6-methylheptanoyl): **2,3,4-Tris(6-methylheptanoyl)sucrose**
C₃₆H₆₄O₁₄ 720.893
Constit. of the epigeal parts of *Petunia nyctaginiflora*.
- Monohexadecanoyl: β-D-Fructofuranosyl α-D-glucopyranoside monohexadecanoate, 9CI. *Sucrose monopalmitate*, 8CI. *Sucrapan P. Sucrodet. Ryoto Sugar Ester P-170*
[26446-38-8]
C₂₈H₅₂O₁₂ 580.712
Enzymically synthesised by a transesterification reaction of sucrose with methyl palmitate. Inhibits deterioration of starch in wheat flour, and growth of microorganisms in soft drinks. Emulsifier, smooth texture agent, antifreeze and dispersing agent for foods. Component of protective coatings for fruit. Mp 60-62°. [α]_D²⁰ +36 (c, 1 in EtOH).
- Monooctadecanoyl: β-D-Fructofuranosyl α-D-glucopyranoside monooctadecanoate, 9CI. *Sucrose monostearate*, 8CI. *Sucrapan S. Ryoto sugar Ester S-1170*
[25168-73-4]
C₃₀H₅₆O₁₂ 608.765
Enzymically synthesised by a transesterification reaction of sucrose with methyl stearate. Used for similar purposes to Sucrapan P above. Mp 56-60°. [α]_D²⁰ +36.2 (c, 1 in EtOH).
- Octakis(alkanoyl): *Olestra*
[121854-29-3] Nondigestible fat substitute for low-calorie food. *Olestra* stated to contain C-6, C-7 and C-8 alkanoyl residues.
- 1'-O-Benzoyl: **1'-O-Benzoylsucrose**
C₁₉H₂₆O₁₂ 446.407
Constit. of *Paeonia obovata*. Tan power + 1/4 H₂O. [α]_D +43.2 (c, 0.48 in MeOH).
- 4,6-Di-O-benzoyl, 3'-O-[α-L-rhamnopyranosyl-(→4)-4-hydroxy-3-methoxycinnamoyl]: **Reiniose D**
[162478-54-8]
C₄₂H₄₈O₂₀ 872.829
Constit. of the roots of *Polygala reinii*. Amorph. powder + 3H₂O. [α]_D²⁰ -51.1 (c, 0.94 in MeOH). Struct. revised in 1997.
- 4,6-Di-O-benzoyl, 3'-O-[β-D-glucopyranosyl-(1→4)-α-L-rhamnopyranosyl-(→4)-(4-hydroxy-3-methoxycinnamoyl)]: **Fallaxose A**
[193814-40-3]
C₄₈H₅₈O₂₅ 1034.971
Constit. of *Polygala fallax*. Amorph. powder. [α]_D²⁵ -6.2 (c, 0.5 in MeOH). λ_{max} 229 (log ε 4.5); 293 (log ε 4.11); 320 (log ε 4.11) (MeOH).
- 4,6-Di-O-benzoyl, 3'-O-[β-D-glucopyranosyl-(1→3)-2-O-acetyl-α-L-rhamnopyranosyl-(→4)-4-hydroxy-3-methoxycinnamoyl]: **Fallaxose B**
[193814-77-6]
C₅₀H₆₀O₂₆ 1077.008
Constit. of *Polygala fallax*. Amorph. powder. [α]_D²⁸ -27.4 (c, 0.3 in MeOH). λ_{max} 230 (log ε 4.5); 292 (log ε 4.15); 319 (log ε 4.13) (MeOH).
- 1',2,3,3',4,4',8-Hepta-O-benzoyl: [303779-97-7]
C₆₁H₅₀O₁₈ 1071.055
[α]_D²⁰ +65.4 (c, 1 in CHCl₃).
- Octabenzoyl:
C₆₈H₅₄O₁₉ 1175.163
Mp 60-63°. [α]_D +32.6 (CHCl₃).
- 6-(4-Hydroxybenzoyl): 6-(4-Hydroxybenzoyl)sucrose. **Sibiricose A₃**
[139726-39-9]
C₁₉H₂₆O₁₃ 462.407
Constit. of *Crescentia cujete*, *Polygala tenuifolia* and from the roots of *Polygala sibirica*. Amorph. powder. [α]_D +22 (c, 0.5 in MeOH). [α]_D²³ +29 (c, 1.3 in MeOH). λ_{max} 258 (log ε 4.03) (MeOH).
- 1'-O-(3,4,5-Trihydroxybenzoyl): **1'-O-Galloylsucrose**
[115713-45-6]
C₁₉H₂₆O₁₅ 494.405
A tannin isol. from commercial Chinese rhubarb (*Rheum* spp.). Amorph. powder + 1H₂O. [α]_D²⁷ +47 (c, 0.84 in MeOH).
- 2-O-(3,4,5-Trihydroxybenzoyl): **2-O-Galloylsucrose**
[115713-46-7]
C₁₉H₂₆O₁₅ 494.405
Isol. from the commercial Chinese rhubarb (*Rheum* spp.). Amorph. powder + 2H₂O. [α]_D²⁷ +67.1 (c, 0.79 in MeOH).
- 4'-O-(3,4,5-Trihydroxybenzoyl): **4'-O-Galloylsucrose**
[115713-44-5]
C₁₉H₂₆O₁₅ 494.405
Tannin constit. of commercial Chinese rhubarb (*Rheum* spp.). Amorph. powder + 1H₂O. [α]_D²⁷ +14.9 (c, 0.72 in MeOH).
- 6-O-(3,4,5-Trihydroxybenzoyl): **6-O-Galloylsucrose**
[115731-15-2]
C₁₉H₂₆O₁₅ 494.405
Isol. from commercial Chinese rhubarb (*Rheum* spp.). Amorph. powder + 1H₂O. [α]_D²⁷ +48 (c, 0.65 in MeOH).
- 6'-O-(3,4,5-Trihydroxybenzoyl): **6'-O-Galloylsucrose**
[115713-43-4]
C₁₉H₂₆O₁₅ 494.405
Isol. from commercial Chinese rhubarb (*Rheum* spp.). Needles + 2H₂O (H₂O). Mp 149-151°. [α]_D²⁸ +88.6 (c, 0.74 in MeOH).
- 6-O-(4-Hydroxy-3-methoxybenzoyl): **6-O-Vanilloylsucrose**
C₂₀H₂₈O₁₄ 492.433
Constit. of cane sugar. λ_{max} 208; 220; 263; 291 (MeOH).
- 6-O-(4-Hydroxy-3,5-dimethoxybenzoyl): **6-O-Syringoylsucrose**
C₂₁H₃₀O₁₅ 522.459
Constit. of cane sugar. λ_{max} 217; 276 (MeOH).
- 6-O-Cinnamoyl(E-): 6-O-Cinnamoylsucrose. **Sibirioside A**
[173046-19-0]
C₂₁H₂₈O₁₂ 472.445
Constit. of *Veronicastrum sibiricum*. Prisms. Mp 110-112°. [α]_D -29.6 (c, 0.2 in MeOH).
- 3',6'-Di-O-cinnamoyl(E,E-), 1',2,4,6-tetra-Ac: **Niruriside**
[173268-90-1]
C₃₈H₄₂O₁₇ 770.74
Constit. of *Phyllanthus niruri* (Euphorbiaceae). Inhibitor of REV protein/RRE RNA. Amorph. powder. λ_{max} 204 (log ε 3.47); 217 (log ε 3.44); 221 (sh) (log ε 4.38); 280 (log ε 4.53) (MeOH).
- 6'-O-(4-Hydroxy-E-cinnamoyl): **6'-O-p-Coumaroylsucrose**
C₂₁H₂₈O₁₃ 488.444
Constit. of *Bidens parviflora*. Powder. Mp 129-130°. [α]_D²⁵ +56 (c, 0.48 in MeOH). λ_{max} 229 (log ε 4.34); 312 (log ε 4.64) (MeOH).
- 6'-O-(4-Hydroxy-E-cinnamoyl), 1',3,4,6-tetra-Ac: **Prunose II**
C₂₉H₃₆O₁₇ 656.593
Constit. of the flowers of *Prunus mume* (Japanese apricot). Powder. [α]_D²⁸ +18.7 (c, 1 in MeOH). λ_{max} 228 (log ε 3.84); 315 (log ε 4.12) (MeOH).
- 6'-O-(4-Hydroxy-E-cinnamoyl), 3,4,4',6-tetra-Ac: **Prunose III**
C₂₉H₃₆O₁₇ 656.593

- Constit. of the flowers of *Prunus mume* (Japanese apricot). Powder. $[\alpha]_D^{25}$ +27.8 (c, 0.9 in MeOH). λ_{\max} 228 (log ϵ 3.96); 314 (log ϵ 4.24) (MeOH).
- 6'-O-(4-Hydroxy-E-cinnamoyl), 1',3,4,4',6-penta-Ac: **Prunose I**
C₃₁H₃₈O₁₈ 698.63
Constit. of the flowers of *Prunus mume* (Japanese apricot). Powder. $[\alpha]_D^{25}$ +26.9 (c, 1 in MeOH). λ_{\max} 229 (log ϵ 4.1); 316 (log ϵ 4.41) (MeOH).
- 3',4-Bis-O-(4-hydroxycinnamoyl): **3',4-Di-p-coumaroylsucrose**
[138771-96-7]
C₃₀H₃₄O₁₅ 634.59
Constit. of *Lilium mackliniae*. Amorph. powder. $[\alpha]_D^{28}$ -88 (c, 0.1 in MeOH). λ_{\max} 229 (log ϵ 4.52); 305 (sh) (log ϵ 4.76); 313 (log ϵ 4.79) (MeOH).
- 3',4-Bis-O-(4-hydroxycinnamoyl), 2-Ac: **2-Acetyl-3',4-di-p-coumaroylsucrose**
[138797-41-8]
C₃₂H₃₆O₁₆ 676.627
Constit. of *Lilium mackliniae*. Amorph. powder. $[\alpha]_D^{26}$ -59.3 (c, 0.3 in MeOH). λ_{\max} 229 (log ϵ 4.4); 304 (sh) (log ϵ 4.62); 313 (log ϵ 4.67) (MeOH).
- 3',4-Bis-O-(4-hydroxycinnamoyl), 3-Ac: **3-Acetyl-3',4-di-p-coumaroylsucrose**
[138771-98-9]
C₃₂H₃₆O₁₆ 676.627
Constit. of *Lilium mackliniae*. Amorph. powder. $[\alpha]_D^{26}$ -5 (c, 0.2 in MeOH). λ_{\max} 229 (log ϵ 4.35); 304 (sh) (log ϵ 4.59); 313 (log ϵ 4.64) (MeOH).
- 3',6-Bis-O-(4-hydroxycinnamoyl): **3',6-Di-p-coumaroylsucrose**
[138771-97-8]
C₃₀H₃₄O₁₅ 634.59
Constit. of *Lilium mackliniae*. Amorph. powder. $[\alpha]_D^{28}$ -72 (c, 0.3 in MeOH). λ_{\max} 229 (log ϵ 4.28); 305 (sh) (log ϵ 4.51); 313 (log ϵ 4.57) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-E-cinnamoyl): **Lapathoside D**
C₃₀H₃₄O₁₅ 634.59
Constit. of *Polygonum lapathifolium*. Amorph. powder. $[\alpha]_D$ +10.3 (c, 0.15 in MeOH). λ_{\max} 230 (log ϵ 4.15); 316 (log ϵ 4.46) (MeOH).
- 6,6'-Bis-O-(4-hydroxy-E-cinnamoyl): **6,6'-Di-p-coumaroylsucrose**
C₃₀H₃₄O₁₅ 634.59
Constit. of *Bidens parviflora*. Powder. Mp 138-140°. $[\alpha]_D^{25}$ +61.4 (c, 0.64 in MeOH). λ_{\max} 229 (log ϵ 3.1); 312 (log ϵ 3.29) (MeOH).
- 1',3',6'-Tris-(4-hydroxycinnamoyl): **1',3',6'-Tricoumaroylsucrose. Hydropiperoside**
[87611-93-6]
[87592-83-4]
C₃₉H₄₀O₁₇ 780.735
Isol. from the root of *Polygonum hydropiper* and of *Polygonum lepathifolium*. Constit. of folk medicinal plant with anticancer allelopathic effects. Amorph. powder; prisms (as octa-Ac). Mp 84-84.5° (octa-Ac). $[\alpha]_D$ +61.9 (c, 0.31 in MeOH). λ_{\max} 228 (log ϵ 15000); 315 (log ϵ 26000) (MeOH) (Derep).
- 1',3',6'-Tris-O-(4-hydroxy-E-cinnamoyl), 2-Ac: **Vanicoside C**
[208707-83-9]
C₄₁H₄₂O₁₈ 822.772
Constit. of *Polygonum pensylvanicum*. Amorph. solid. Mp 65.3°.
- 1',3',6,6'-Tetrakis-O-(4-hydroxy-E-cinnamoyl): **Vanicoside D**
[208707-85-1]
C₄₈H₄₆O₁₉ 926.88
Constit. of *Polygonum pensylvanicum*. Amorph. solid. Mp 147.6-154.2°.
- 3'-O-(3,4-Dihydroxycinnamoyl), 2,3,4,6-tetra-Ac: [162110-89-6]
C₂₉H₃₆O₁₈ 672.593
Constit. of the bark of *Prunus ssiori*. Amorph. powder. $[\alpha]_D^{20}$ +41.5 (c, 1.1 in MeOH).
- 6-O-(3,4-Dihydroxycinnamoyl) (E-): **6-Caffeoylsucrose**
C₂₁H₂₈O₁₄ 504.444
Constit. of *Salvia officinalis* (sage). Cryst. (MeOH). Mp 210-212°. $[\alpha]_D^{23}$ +27.2 (c, 0.13 in MeOH).
- 6-O-(4-Methoxycinnamoyl) (E-): **Sibirioside B**
[173046-20-3]
C₂₂H₃₀O₁₃ 502.471
Constit. of *Veronicastrum sibiricum*. Prisms. Mp 108-110°. $[\alpha]_D$ -20.2 (c, 0.34 in MeOH).
- 3'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl): **3'-Feruloylsucrose. Arillanin C. Sibiricoside A₁**
[107912-97-0]
C₂₂H₃₀O₁₄ 518.471
Constit. of *Polygala arillata* and *Polygala sibirica*. Amorph. powder. $[\alpha]_D^{23}$ -6 (c, 2.3 in MeOH). λ_{\max} 217 (sh) (log ϵ 3.89); 232 (sh) (log ϵ 3.79); 297 (sh) (log ϵ 3.75); 326 (log ϵ 3.91) (MeOH).
- 3'-O-(4-Hydroxy-3-methoxycinnamoyl), 1'-Ac: **1'-Acetyl-3'-feruloylsucrose**
[98941-78-7]
C₂₄H₃₂O₁₅ 560.508
Constit. of *Polygala chamaebuxus*. Amorph. powder + 1H₂O. Mp 97-103°. λ_{\max} 219 (log ϵ 14200); 236 (log ϵ 13000); 327 (log ϵ 22300) (MeOH).
- 3'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 4-O-benzoyl: **Reinioside B**
[162478-52-6]
C₂₉H₃₄O₁₅ 622.579
Constit. of the roots of *Polygala reineii*. Amorph. powder + 2H₂O. $[\alpha]_D^{20}$ -4.8 (c, 0.52 in MeOH).
- 3'-O-(4-Hydroxy-3-methoxycinnamoyl), 6-O-benzoyl: **Reinioside C**
[162478-53-7]
C₂₉H₃₄O₁₅ 622.579
Constit. of the roots of *Polygala reinii*. Amorph. powder + 2H₂O. $[\alpha]_D^{20}$ -29.3 (c, 0.87 in MeOH).
- 6-O-(4-Hydroxy-3-methoxy-E-cinnamoyl): **6-O-Feruloylsucrose. Arillatose B**
C₂₂H₃₀O₁₄ 518.471
Constit. of the roots of *Polygala arillata*. Amorph. powder. $[\alpha]_D^{27}$ +15.8 (c, 0.13 in MeOH). λ_{\max} 235 (log ϵ 3.73); 295 (log ϵ 3.66); 326 (log ϵ 3.76) (MeOH).
- 6'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1',2,4,6-tetra-Ac: C₃₀H₃₈O₁₈ 686.619
Constit. of *Sparganium stoloniferum*. Amorph. solid. Mp 96-102°. $[\alpha]_D^{25}$ +45.1 (c, 0.1 in CHCl₃). λ_{\max} 216 (log ϵ 4.21); 233 (log ϵ 4.12); 296 (log ϵ 4.08); 326 (log ϵ 4.22) (MeOH).
- 6-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 3',6'-bis-O-(4-hydroxy-E-cinnamoyl): **Lapathoside C**
C₄₀H₄₂O₁₈ 810.761
Constit. of *Polygonum lapathifolium*. Amorph. powder. $[\alpha]_D$ -14.7 (c, 0.23 in MeOH). λ_{\max} 230 (log ϵ 4.19); 316 (log ϵ 4.45) (MeOH).
- 6-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1',3',6'-tris-O-(4-hydroxy-E-cinnamoyl): **Vanicoside B**
[155179-21-8]
C₄₉H₄₈O₂₀ 956.906
Constit. of *Polygonum pensylvanicum*. Protein kinase inhibitor. Amorph. solid. Mp 156-159°.
- 6-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1',3',6'-tris-O-(4-hydroxy-E-cinnamoyl), 2-Ac: **Vanicoside A**
[155179-22-9]
C₅₁H₅₀O₂₁ 998.943
Constit. of *Polygonum pensylvanicum*. Protein kinase inhibitor. Amorph. solid. Mp 161-163°.
- 6-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1',3',6'-tris-O-(4-hydroxy-E-cinnamoyl), 3-Ac: **Vanicoside F**
[208707-92-0]
C₅₁H₅₀O₂₁ 998.943
Constit. of *Polygonum pensylvanicum*. Pale yellow oil.
- 6-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1',3',6'-tris-O-(4-hydroxy-E-cinnamoyl), 2,4-di-Ac: **Vanicoside E**
[208707-91-9]
C₅₃H₅₂O₂₂ 1040.981
Constit. of *Polygonum pensylvanicum*. Amorph. solid. Mp 143.1-147.4°.
- 6'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 6-Ac: **6-Acetyl-6'-feruloylsucrose**
C₂₄H₃₂O₁₅ 560.508
Constit. of the rhizomes of *Smilax bracteata*. Amorph. powder. $[\alpha]_D$ +85 (c, 0.1 in MeOH). λ_{\max} 237 (sh) (log ϵ 4.33); 291 (sh) (log ϵ 4.23); 324 (log ϵ 4.33) (MeOH).
- 6'-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 1'-O-(4-hydroxy-E-cinnamoyl): **1'-p-Coumaroyl-6'-feruloylsucrose**
C₃₁H₃₆O₁₆ 664.616
Constit. of the rhizomes of *Smilax bracteata*. Amorph. powder. $[\alpha]_D$ -30 (c, 0.2 in MeOH). λ_{\max} 231 (sh) (log ϵ 4.58); 292 (sh) (log ϵ 4.52); 318 (log ϵ 4.62) (MeOH).
- 1',6-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 3',6'-bis-O-(4-hydroxy-E-cinnamoyl): **Lapathoside A**
C₅₀H₅₀O₂₁ 986.932
Constit. of *Polygonum lapathifolium*.

- Amorph. powder. $[\alpha]_D^{25} +22.7$ (c, 0.26 in MeOH). λ_{\max} 235 (log ϵ 4.35); 319 (log ϵ 4.6) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl): **3',6-Diferuloylsucrose** [107172-40-7]
C₃₂H₃₈O₁₇ 694.642
Constit. of *Lilium speciosum*. Amorph. $[\alpha]_D^{25} -80.2$ (c, 1 in EtOH). Various acetates also isol. from *Lilium speciosum*.
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 4,4'-di-Ac: **4,4'-Diacyl-3',6-diferuloylsucrose** [138771-95-6]
C₃₆H₄₂O₁₉ 778.716
Constit. of *Lilium mackliniae*. Amorph. powder. $[\alpha]_D^{25} -75.2$ (c, 0.5 in EtOH). λ_{\max} 235 (log ϵ 4.33); 300 (sh) (log ϵ 4.43); 328 (log ϵ 4.58) (EtOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl): 3',6'-Diferuloylsucrose. **Helonioside A** [107647-20-1]
C₃₂H₃₈O₁₇ 694.642
Constit. of *Heloniopsis orientalis*. Amorph. powder. $[\alpha]_D^{25} +15.7$ (c, 0.95 in MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 6-Ac: 6-Acetyl-3',6'-diferuloylsucrose. **Helonioside B** [107647-21-2]
C₃₄H₄₀O₁₈ 736.679
Constit. of *Heloniopsis orientalis*. Amorph. powder. $[\alpha]_D^{25} +16.9$ (c, 1.02 in MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 2,6-di-Ac: C₃₆H₄₂O₁₉ 778.716
Constit. of *Polygonum perfoliatum*.
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 1',2,6-tri-Ac: C₃₈H₄₄O₂₀ 820.754
Constit. of *Polygonum perfoliatum* and *Sparganium stoloniferum*. Yellowish glass or amorph. solid.
Mp 94-101°. $[\alpha]_D^{25} +73.4$ (c, 0.06 in CHCl₃). λ_{\max} 218 (log ϵ 4.39); 237 (log ϵ 4.34); 302 (log ϵ 4.38); 329 (log ϵ 4.55) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 2,4,6-tri-Ac: **Smiglaside C** C₃₈H₄₄O₂₀ 820.754
Constit. of *Smilax glabra* and *Polygonum perfoliatum*. Yellowish glass. $[\alpha]_D +32.9$ (c, 0.6 in MeOH). λ_{\max} 217 (log ϵ 4.27); 328 (log ϵ 4.42) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxycinnamoyl) (E,E-), 1',2,3,6-tetra-Ac: [173614-60-3]
C₄₀H₄₆O₂₁ 862.791
Constit. of *Sparganium stoloniferum*. Amorph. solid.
Mp 91-97°. $[\alpha]_D^{25} +53.7$ (c, 0.1 in CHCl₃). λ_{\max} 204 (log ϵ 4.55); 217 (log ϵ 4.5); 235 (log ϵ 4.52); 300 (log ϵ 4.59); 328 (log ϵ 4.74) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxycinnamoyl) (E,E-), 1',2,4,6-tetra-Ac: [173614-59-0]
C₄₀H₄₆O₂₁ 862.791
Constit. of *Sparganium stoloniferum*. Amorph. solid.
Mp 94-100°. $[\alpha]_D^{25} +36.3$ (c, 0.2 in CHCl₃). λ_{\max} 204 (log ϵ 4.51); 216 (log ϵ 4.48); 235 (log ϵ 4.42); 300 (log ϵ 4.46); 328 (log ϵ 4.63) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxycinnamoyl) (E,E-), 1',3,4,6-tetra-Ac: [173614-58-9]
C₄₀H₄₆O₂₁ 862.791
Constit. of *Sparganium stoloniferum*. Amorph. solid.
Mp 86-92°. $[\alpha]_D^{25} +46.2$ (c, 0.2 in CHCl₃). λ_{\max} 203 (log ϵ 4.61); 215 (log ϵ 4.5); 234 (log ϵ 4.43); 298 (log ϵ 4.43); 328 (log ϵ 4.6) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 2,3,4,6-tetra-Ac: 2,3,4,6-Tetraacetyl-3',6'-diferuloylsucrose [165132-57-0]
C₄₀H₄₆O₂₁ 862.791
Constit. of the wood of *Bhesa paniculata*. Amorph. solid. $[\alpha]_D^{25} +62.1$ (c, 0.5 in MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 1'-O-(4-hydroxy-E-cinnamoyl): **1'-p-Coumaroyl-3',6'-diferuloylsucrose** C₄₁H₄₄O₁₉ 840.787
Constit. of the rhizomes of *Smilax bracteata*. Amorph. powder. $[\alpha]_D +36$ (c, 0.2 in MeOH). λ_{\max} 233 (sh) (log ϵ 4.68); 296 (sh) (log ϵ 4.68); 320 (log ϵ 4.77) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 1'-O-(4-hydroxy-E-cinnamoyl), 2,6-di-Ac: **Smiglaside E** C₄₅H₄₈O₂₁ 924.862
Constit. of the rhizomes of *Smilax glabra*. Amorph. powder. $[\alpha]_D +123.8$ (c, 0.4 in MeOH). λ_{\max} 217 (log ϵ 4.46); 323 (log ϵ 4.62) (MeOH).
- 3',6'-Bis-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 1'-O-(4-hydroxy-E-cinnamoyl), 2,4,6-tri-Ac: **Smiglaside D** C₄₇H₅₀O₂₂ 966.899
Constit. of the rhizomes of *Smilax glabra*. Amorph. powder. $[\alpha]_D +67.1$ (c, 0.5 in MeOH). λ_{\max} 217 (log ϵ 4.45); 324 (log ϵ 4.64) (MeOH).
- 1',3',6'-Tris-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 2,6-di-Ac: **Smiglaside B** C₄₆H₅₀O₂₂ 954.888
Constit. of the rhizomes of *Smilax glabra*. Pale yellow amorph. powder. $[\alpha]_D +36.6$ (c, 0.7 in MeOH). λ_{\max} 218 (log ϵ 4.2); 328 (log ϵ 4.35) (MeOH).
- 1',3',6'-Tris-O-(4-hydroxy-3-methoxycinnamoyl) (E,E-E-), 2,4,6-tri-Ac: **Smiglaside A** C₄₈H₅₂O₂₃ 996.925
Constit. of the rhizomes of *Smilax glabra*. Amorph. powder. $[\alpha]_D +79.5$ (c, 0.4 in MeOH). λ_{\max} 216 (log ϵ 4.52); 328 (log ϵ 4.68) (MeOH).
- 1',6,6'-Tris-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 3'-O-(4-hydroxy-E-cinnamoyl): **Lapathoside B** C₅₁H₅₂O₂₂ 1016.959
Constit. of *Polygonum lapathifolium*. Amorph. powder. $[\alpha]_D +18.6$ (c, 0.2 in MeOH). λ_{\max} 218 (log ϵ 4.29); 235 (log ϵ 4.24); 319 (log ϵ 4.5) (MeOH).
- 3'-O-(3,4-Dimethoxycinnamoyl) (E-), 6-O-(4-hydroxybenzoyl): [154287-50-0]
C₃₀H₃₆O₁₆ 652.605
Constit. of *Polygala tenuifolia*.
- 1'-O-(4-Hydroxy-3,5-dimethoxycinnamoyl), 3'-O-(4-hydroxy-3-methoxycinnamoyl): **3'-Feruloyl-1'-sinapoylsucrose** [98942-06-4]
C₃₃H₄₀O₁₈ 724.668
Constit. of *Polygala chamaebuxus*. Amorph. powder + 1½ H₂O.
Mp 131-136°. λ_{\max} 220 (log ϵ 24100); 238 (log ϵ 25800); 329 (log ϵ 34800) (MeOH).
- 3'-O-(4-Hydroxy-3,5-dimethoxy-E-cinnamoyl): 3'-Sinapoylsucrose. **Sibiricose A** [241125-75-7]
C₂₃H₃₂O₁₅ 548.497
Constit. of the roots of *Polygala sibirica*. Amorph. powder. $[\alpha]_D^{25} -2$ (c, 0.72 in MeOH). λ_{\max} 239 (log ϵ 4.03); 330 (log ϵ 4.04) (MeOH).
- 3'-O-(4-Hydroxy-3,5-dimethoxycinnamoyl) (E-), 6-O-benzoyl: [154287-46-4]
C₃₀H₃₆O₁₆ 652.605
Constit. of *Polygala tenuifolia* and *Polygala sibirica*.
- 3'-O-(4-Hydroxy-3,5-dimethoxycinnamoyl), 6-O-(4-hydroxybenzoyl): **Tenuifoliside B** [139726-36-6]
C₃₀H₃₆O₁₇ 668.604
Constit. of the roots of *Polygala tenuifolia*. Amorph. yellow powder. $[\alpha]_D^{24} -20.8$ (c, 1.01 in MeOH).
- 3'-O-(4-Hydroxy-3,5-dimethoxycinnamoyl) (E-), 6-O-(4-hydroxycinnamoyl) (E-): **Glomeratose B** [202471-85-0]
C₃₂H₃₈O₁₇ 694.642
Constit. of *Polygala glomerata*. Amorph. powder. $[\alpha]_D^{25} -51.6$ (c, 0.4 in MeOH). λ_{\max} 207 (log ϵ 4.34); 227 (log ϵ 4.32); 315 (log ϵ 4.42) (MeOH).
- 3'-O-(4-Hydroxy-3,5-dimethoxy-E-cinnamoyl), 6-O-(4-hydroxy-3-methoxy-E-cinnamoyl): **6-Feruloyl-3'-sinapoylsucrose** C₃₃H₄₀O₁₈ 724.668
Constit. of *Ruta graveolens* (rue). Yellow powder. $[\alpha]_D^{25} -69.1$ (c, 0.34 in MeOH). λ_{\max} 202 (log ϵ 4.53); 238 (log ϵ 4.32); 328 (log ϵ 4.43) (MeOH).
- 3'-O-(4-Hydroxy-3,5-dimethoxycinnamoyl), 6-O-(4-hydroxy-3-methoxycinnamoyl), 3-O-β-D-glucopyranoside: **Reinioside E** [162478-55-9]
C₃₉H₅₀O₂₃ 886.81
Constit. of the roots of *Polygala reinii*. Amorph. powder + ¼ H₂O. $[\alpha]_D^{20} -52.2$ (c, 0.91 in MeOH).
- 6-O-(4-Hydroxy-3,5-dimethoxycinnamoyl): 6-Sinapoylsucrose. **Neohancoside D**. *Sibiricose A*. *Arillanin C* [139726-40-2]
C₂₃H₃₂O₁₅ 548.497
Constit. of *Cynanchum hancockianum*, *Polygala arillata* and *Polygala sibirica*. Needles (CHCl₃) (as per-Ac).
Mp 138-140° (per-Ac). $[\alpha]_D^{25} +18$ (c, 4.4 in MeOH).

6-O-(4-Hydroxy-3,5-dimethoxy-E-cinnamoyl), 3'-O-(4-hydroxy-3-methoxy-E-cinnamoyl): 3'-O-Feruloyl-6-O-sinapoyl-sucrose. **Arillanin A** [154287-47-5]
C₃₃H₄₀O₁₈ 724.668

Constit. of *Polygala arillata*, *Polygala reinii* and *Polygala tenuifolia*.

6'-O-(4-Hydroxy-3,5-dimethoxycinnamoyl) (E-), 3'-O-(4-hydroxy-3-methoxycinnamoyl) (E-), 6-Ac: [154287-49-7]
C₃₅H₄₂O₁₉ 766.705

Constit. of *Polygala tenuifolia*.

6'-O-(4-Hydroxy-3,5-dimethoxycinnamoyl) (E-), 3'-O-(4-hydroxy-3-methoxycinnamoyl) (E-), 4,6-di-Ac: [154287-48-6]
C₃₇H₄₄O₂₀ 808.743

Constit. of *Polygala tenuifolia*.

6'-O-(4-Hydroxy-3,5-dimethoxy-E-cinnamoyl), 3'-O-(4-hydroxy-3-methoxy-E-cinnamoyl), 1',2,4,6-tetra-Ac: **Tenuifolioside E** [162901-87-3]
C₄₁H₄₈O₂₂ 892.817

Constit. of the roots of *Polygala tenuifolia*. Amorph. powder. [α]_D²⁴ -45.5 (c, 1.12 in MeOH).

1',3'-Bis-O-(4-hydroxy-3,5-dimethoxycinnamoyl): **1',3'-Disinapoylsucrose** [98941-77-6]
C₃₄H₄₂O₁₉ 754.694

Constit. of *Polygala chamaebuxus*.

Amorph. powder + 1½H₂O. Mp 136-141°. λ_{max} 229 (ε 27000); 240 (ε 30500); 330 (ε 36500) (MeOH).

3',4-Bis-O-(4-hydroxy-3,5-dimethoxy-E-cinnamoyl): **Sibiricose A₄**, 3',4-Disinapoylsucrose [241125-73-5]
C₃₄H₄₂O₁₉ 754.694

Constit. of the roots of *Polygala sibirica* and *Polygala tenuifolia*. Amorph. powder. [α]_D²³ -23 (c, 1.13 in MeOH). λ_{max} 234 (log ε 4.48); 316 (log ε 4.47) (MeOH).

3',6-Bis-O-(4-hydroxy-3,5-dimethoxycinnamoyl): **3',6-Disinapoylsucrose** [139891-98-8]
C₃₄H₄₂O₁₉ 754.694

Constit. of *Polygala virgata*, *Polygala reinii*, *Polygala tenuifolia*, *Raphanus sativus* and *Securidaca longipedunculata*. Yellow powder.

Mp 138-141°. [α]_D -94 (c, 0.2 in MeOH). 3',6-Bis-O-(4-hydroxy-3,5-dimethoxycinnamoyl), 4-Ac: [148171-50-0]
C₃₆H₄₄O₂₀ 796.732

Constit. of *Polygala virgata*. Yellow powder.

Mp 124-127°. [α]_D -70 (c, 0.2 in MeOH).

3',6-Bis-O-(4-hydroxy-3,5-dimethoxycinnamoyl), 3-O-β-D-glucopyranoside: **Reinioside F** [162478-56-0]
C₄₀H₅₂O₂₄ 916.836

Constit. of the roots of *Polygala reinii*. Amorph. powder + 1H₂O. [α]_D²⁰ -59 (c, 0.94 in MeOH).

3',4',6-Tris-O-(4-hydroxy-3,5-dimethoxycinnamoyl): **3',4',6-Trisinapoylsucrose** [145631-61-4]
C₄₅H₅₂O₂₃ 960.892

Constit. of the bark of *Securidaca longipedunculata*.

[α]_D²⁵ -45.9 (c, 1 in MeOH).

3'-O-(3,4,5-Trimethoxycinnamoyl) (E-): **Glomeratose A** [202471-84-9]
C₂₄H₃₄O₁₅ 562.524

Constit. of *Polygala glomerata*. Amorph. powder. [α]_D²⁵ +5.7 (c, 1.4 in MeOH). λ_{max} 207 (log ε 4.12); 230 (log ε 4.21); 307 (log ε 4.15) (MeOH).

3'-O-(3,4,5-Trimethoxycinnamoyl), 4-O-benzoyl: [154287-43-1]
C₃₁H₃₈O₁₆ 666.632

Constit. of the roots of *Polygala reinii* and *Polygala tenuifolia*.

3'-O-(3,4,5-Trimethoxycinnamoyl), 6-O-benzoyl: [154287-41-9]
C₃₁H₃₈O₁₆ 666.632

Constit. of the roots of *Polygala reinii* and *Polygala tenuifolia*.

3'-O-(3,4,5-Trimethoxycinnamoyl), 6-O-(4-hydroxybenzoyl): **Tenuifolioside A** [139726-35-5]
C₂₈H₃₂O₁₇ 640.551

Constit. of the roots of *Polygala tenuifolia*. Amorph. yellow powder. [α]_D²⁴ -20.5 (c, 1.52 in MeOH). CAS name defective.

3'-O-(3,4,5-Trimethoxy-E-cinnamoyl), 6-O-(4-hydroxy-E-cinnamoyl): **Glomeratose C** [202471-87-2]
C₃₃H₄₀O₁₇ 708.669

Constit. of *Polygala glomerata*. Amorph. powder. [α]_D²⁸ -71.2 (c, 0.6 in MeOH). λ_{max} 207 (log ε 4.2); 230 (log ε 4.35); 310 (log ε 4.37) (MeOH).

3'-O-(3,4,5-Trimethoxycinnamoyl), 6-O-(4-hydroxy-3-methoxycinnamoyl): **Reinioside A** [162478-51-5]
C₃₄H₄₂O₁₈ 738.695

Constit. of the roots of *Polygala reinii*. Amorph. powder + 1H₂O. [α]_D²⁰ -51.8 (c, 1.37 in MeOH).

3'-O-(3,4,5-Trimethoxycinnamoyl), 6-O-(4-hydroxy-3,5-dimethoxycinnamoyl): **Tenuifolioside C** [139726-37-7]
C₃₅H₄₄O₁₉ 768.721

Constit. of the roots of *Polygala tenuifolia*. Amorph. yellow powder. [α]_D²⁴ -53.6 (c, 1.51 in MeOH).

6-O-(3,4,5-Trimethoxy-E-cinnamoyl): **Sibiricose A₂** [241125-72-4]
C₂₄H₃₄O₁₅ 562.524

Constit. of the roots of *Polygala sibirica*. Amorph. powder. [α]_D²³ +19 (c, 0.56 in MeOH). λ_{max} 230 (log ε 4.22); 308 (log ε 4.14) (MeOH).

3',6-Bis-O-(3,4,5-trimethoxycinnamoyl) (E,E-): **Glomeratose D** [202471-88-3]
C₃₆H₄₆O₁₉ 782.748

Constit. of *Polygala glomerata*. Amorph. powder. [α]_D²⁸ -55.8 (c, 0.5 in MeOH). λ_{max} 210 (log ε 4.63); 230 (log ε 4.76); 310 (log ε 4.69) (MeOH).

6-O-[4-(β-D-Glucopyranosyloxy)-3-methoxycinnamoyl] (E-), 3'-O-(4-hydroxy-3-methoxycinnamoyl) (E-): [117591-89-6]
C₃₈H₄₈O₂₂ 856.784

Constit. of *Lilium henryi*. Amorph. powder. [α]_D²⁰ -68 (c, 1.6 in MeOH). λ_{max} 234 (log ε 4.35); 300 (sh) (log ε 4.49); 322 (log ε 4.56) (MeOH).

6'-O-(4-β-D-Glucopyranosyloxy-3-methoxycinnamoyl), 3'-O-(4-hydroxy-3-methoxycinnamoyl): **Helonioside C** [107647-22-3]
C₃₈H₄₈O₂₂ 856.784

Constit. of *Heloniopsis orientalis*. Amorph. powder. [α]_D²³ -17 (c, 1 in MeOH).

6'-O-(4-β-D-Glucopyranosyloxy-3-methoxycinnamoyl), 3'-O-(4-hydroxy-3-methoxycinnamoyl), 6-Ac: **Helonioside D** [107668-85-9]
C₄₀H₅₀O₂₃ 898.821

Constit. of *Heloniopsis orientalis*. Amorph. powder. [α]_D²³ -6.2 (c, 0.97 in MeOH).

2-Tosyl:

C₁₉H₂₈O₁₃S 496.488
Obt. in good yield by tosylation of sucrose in the presence of molecular sieve. Needles. Mp 156-157°.

1',2,3,3',4',6,6'-Heptapivaloyl: [69075-32-7]
C₄₇H₇₈O₁₈ 931.122

Cryst. (petrol). Mp 100-102°. [α]_D +50 (c, 1.0 in MeOH).

1',2,3,3',4',6,6'-Heptapivaloyl, 4-mesyl: [90653-38-6]
C₄₈H₈₀O₂₀S 1009.214
Cryst. (petrol). Mp 76-77°. [α]_D +53 (c, 1 in MeOH).

4,6-O-Isopropylidene, hexa-Ac: C₂₇H₃₈O₁₇ 634.587
[α]_D +46 (CHCl₃).

4,6-O-Benzylidene, hexa-Ac: C₃₁H₃₈O₁₇ 682.631
Mp 155-157°. [α]_D +44.3 (CHCl₃).

4-Me: [59001-36-4]
C₁₃H₂₄O₁₁ 356.326
[α]_D +49.6 (H₂O).

1',6'-Di-Me: [59001-40-0]
C₁₄H₂₆O₁₁ 370.353
[α]_D +70 (H₂O).

1',6',4-Tri-Me: [59183-59-4]
C₁₅H₂₈O₁₁ 384.38
[α]_D +67.1 (H₂O).

1',6',6-Tri-Me: [35674-01-2]
C₁₅H₂₈O₁₁ 384.38
[α]_D +69 (H₂O).

1'-Trityl: C₃₁H₃₆O₁₁ 584.619
Mp 193-196°. [α]_D +70.4 (MeOH).

6-Trityl: C₃₁H₃₆O₁₁ 584.619
Mp 99-101°. [α]_D +51.7 (DMF).

6'-Trityl: C₃₁H₃₆O₁₁ 584.619
Mp 221-223°. [α]_D +40.1 (CHCl₃).

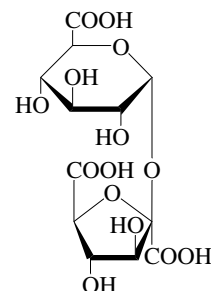
1',6'-Ditrityl: [38431-01-5]
C₅₀H₅₀O₁₁ 826.938
Mp 129°.

1',6'-Ditrityl, 2,3,3',4',6-penta-Ac: [56038-14-3]
 $C_{60}H_{60}O_{16}$ 1037.124
 Mp 105-107°. $[\alpha]_D +46.9$ (CHCl₃).
1',6'-Ditrityl, 2,3,3',4',6-hexa-Ac: [36474-61-0]
 $C_{62}H_{62}O_{17}$ 1079.162
 Mp 95-97°. $[\alpha]_D +65.3$ (CHCl₃).
1',6',6'-Tritrityl: [35674-14-7]
 $C_{69}H_{64}O_{11}$ 1069.258
 Mp 128-130°. $[\alpha]_D +62.2$ (CHCl₃).
Octakis-(2-cyanoethyl): [18304-13-7]
 $C_{36}H_{46}N_8O_{11}$ 766.806
 $[\alpha]_D^{18.8} +36.4$ (c, 0.08 in CHCl₃).
1'-Deoxy, 1'-fluoro: 1'-Deoxy-1'-fluorosucrose
 [77453-90-8]
 $C_{12}H_{21}FO_{10}$ 344.29
 Cryst. (MeOH). Mp 192-193°. $[\alpha]_D +56.3$ (c, 1. in H₂O).
 [12738-64-6, 31835-06-0, 35867-41-5, 73264-44-5]
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Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 305C; 1060A (nmr)
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 Lemieux, R.U. et al., *J.A.C.S.*, 1953, 75, 4118 (synth)
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Eur. Pat., 1980, 20 122; *CA*, 95, 7697c (Sucrapans)
 Block, K. et al., *Carbohydr. Res.*, 1982, 100, 63 (conform)
 Opdyke, D.L.J. et al., *Food Chem. Toxicol.*, 1982, 20, 827 (rev, tox, octa-Ac)
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 Fukuyama, Y. et al., *Phytochemistry*, 1983, 22, 549-552 (Hydropiperoside)
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 Hamburger, M. et al., *Phytochemistry*, 1985, 24, 1793-1797 (Polygala chamaebuxus derivs)
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Machida, H. et al., *CA*, 1988, 109, 229005x (Sucrapans)
 Garegg, P.J. et al., *Carbohydr. Res.*, 1988, 181, 89 (2,3,4-tris-3-methylpentanoyl)
 Shimomura, H. et al., *Chem. Pharm. Bull.*, 1988, 36, 2430-2446 (3'-feruloyl, 6-4-glucosylferuloyl)
Eur. Pat., 1988, 275 939; *CA*, 1989, 110, 173692v (Sucrapans)
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 Colquhoun, I.J. et al., *Carbohydr. Res.*, 1990, 205, 53 (pmr, cmr, octabenzoyl)
 Rathbone, E.B. et al., *Carbohydr. Res.*, 1990, 205, 402 (synth, bibl, acetates)
 Sashida, Y. et al., *Chem. Pharm. Bull.*, 1991, 39, 2362 (cinnamates)
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 Brown, L.L. et al., *J. Nat. Prod.*, 1998, 61, 762-766 (Vanicosides C-F)
 Zhang, D. et al., *Phytochemistry*, 1998, 47, 45-52 (Glomeratoses)
 Sang, S. et al., *Phytochemistry*, 1998, 48, 569-571 (Segetoside A)
 Wang, M. et al., *J. Nat. Prod.*, 1999, 62, 454-456 (6-Caffeoylsucrose)
 Miyase, T. et al., *J. Nat. Prod.*, 1999, 62, 993-996 (Sibiricoses A₁-A₆)
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Kobayashi, W. et al., *J. Nat. Prod.*, 2000, 63, 1066-1069 (Arillatose B-F)
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 Takasaki, M. et al., *J. Nat. Prod.*, 2001, 64, 1305-1308 (Lapathosides)
 Takara, K. et al., *Biosci., Biotechnol., Biochem.*, 2002, 66, 29-35 (6-Syringoylsucrose, 6-Vanilloylsucrose)
 Teranishi, K. et al., *Carbohydr. Res.*, 2002, 337, 613-619 (monotosyl derivs, bibl)
 Li, S.Y. et al., *J. Nat. Prod.*, 2002, 65, 262-266 (Smilax bracteata glycosides)
 Yoshikawa, M. et al., *J. Nat. Prod.*, 2002, 65, 1151-1155 (Prunoses I,II)
 Weckerle, B. et al., *Phytochemistry*, 2002, 60, 409-414 (3-methylbutanoyl ester)
 Matsuda, H. et al., *Chem. Pharm. Bull.*, 2003, 51, 440-443 (Prunose III)
 Wang, N. et al., *Phytochemistry*, 2003, 62, 741-746 (6'-Coumaroylsucrose, 6,6'-Dicoumaroylsucrose)
 Singh, A.P. et al., *Phytochemistry*, 2003, 63, 485-489 (Petunia nictaginiflora constits)
 Tchinda, A.T. et al., *Phytochemistry*, 2003, 63, 841-846 (pentakis-3-methylbutanoyl)
 Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SNH000

Sucrosetricarboxylic acid S-93
 α -D-Glucopyranuronosyl- β -D-arabino-2-hexulofuranosidic acid, 9CI
 [109263-83-4]



$C_{12}H_{16}O_{14}$ 384.25
 Characterised spectroscopically as salts.

Tri-Me ester: [289711-92-8]
 $C_{15}H_{22}O_{14}$ 426.33
 Oil.

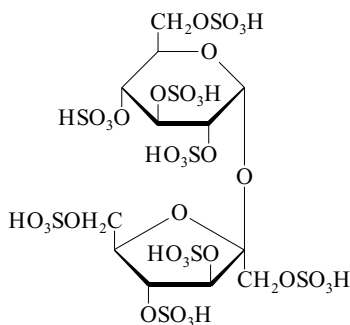
Penta-Ac, tri-Me ester: [258330-80-2]
 $C_{25}H_{32}O_{19}$ 636.516
 Solid. $[\alpha]_D^{21} +38$ (c, 1 in CH₂Cl₂).

[226932-61-2, 289711-94-0]

Ger. Pat., 1987, 3 535 720; *CA*, 107, 59408 (synth)
 Lemoine, S. et al., *Carbohydr. Res.*, 2000, 326, 176-184 (synth, pmr, cmr)

Sucrosfate, INN

1,3,4,6-Tetra-*O*-sulfo-β-D-fructofuranosyl α-D-glucopyranoside tetrakis(hydrogen sulfite). Sucrose octasulfate [57680-56-5]



C₁₂H₂₂O₃₅S₈ 982.813

Wound healing and antiulcer agent.
Log P -6 (uncertain value) (calc).

Octa-K salt, heptahydrate: Sucrosfate potassium, USAN. Agent M-01 [76578-81-9] Wound healing and antiulcer agent. Needles or prisms. Mp 169° (needles) Mp 230° (prisms).

Compd. with Al(OH)₃: Sucralfate, BAN, INN, JAN, USAN. Carafate. Many other names [54182-58-0] Antieptic and antiulcer activity. Delays gastric emptying.

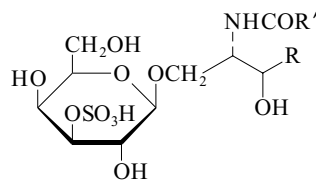
► BD0900000

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Nagashima, R. *et al.*, *Arzneim.-Forsch.*, 1980, **30**, 78; 80; 84 (*pharmacol*)
Ochi, K. *et al.*, *Chem. Pharm. Bull.*, 1980, **28**, 638 (*salts*)
Nawata, Y. *et al.*, *Acta Cryst. B*, 1981, **37**, 246 (*cryst struct*)
Marano, A.R. *et al.*, *Clin. Pharmacol. Ther.* (St. Louis), 1985, **37**, 629 (*sucralfate, bibl*)
Eur. Pat., 1987, 230 023; *CA*, **108**, 11249n (*synth*)
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Silvey, G.L. *et al.*, *J. Pharm. Sci.*, 1992, **81**, 471 (*pmr*)
Volkin, D.B. *et al.*, *Biochim. Biophys. Acta*, 1993, **1203**, 18 (*pharmacol*)
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 905
Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 3208 (*synonyms*)
Desai, U.R. *et al.*, *Carbohydr. Res.*, 1995, **275**, 391-401 (*pmr, cmr, conformn*)

S-94

Sulfatide

3-Sulfolactosylceramide



R, R' = Alkyl

Isol. from mammalian brain and spinal cord. Accumulates abnormally in patients with metachromatic leukodystrophy. Major acidic glycosphingolipid responsible for negative charge on nerve cell membranes.

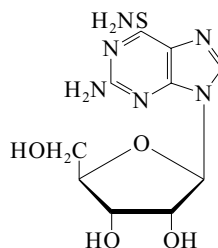
Ohashi, Y. *et al.*, *Carbohydr. Res.*, 1991, **221**, 235 (*ms, struct, bibl*)

Tanahashi, E. *et al.*, *J. Carbohydr. Chem.*, 1997, **16**, 831-858 (*synth, bibl*)

Sulfenosine

2-Amino-9-β-D-ribofuranosyl-9H-purine-6-sulfenamide [123002-38-0]

S-96



C₁₀H₁₄N₆O₄S 314.324

Shows antineoplastic activity. Mp 196-198° dec.

S-Oxide: Sulfinosine. 2-Amino-9-β-D-ribofuranosyl-9H-purine-6-sulfenamide [124508-99-2]

C₁₀H₁₄N₆O₅S 330.324

Shows antineoplastic activity. Cryst. + 1.5 H₂O. Mp 100° dec. Sinters and darkens before 100°.

S,S-Dioxide: Sulfonosine. 2-Amino-9-β-D-ribofuranosyl-9H-purine-6-sulfonamide [123002-39-1]

C₁₀H₁₄N₆O₆S 346.323

Shows antineoplastic activity. Sol. H₂O. Mp 210° dec.

[123002-46-0, 123002-47-1]

Pat. Coop. Treaty (WIPO), 1989, 89 05 817, (Nucleic Acid Res Instit); *CA*, **112**, 77867b (*synth, pharmacol*)

Larson, S.B. *et al.*, *Acta Cryst. C*, 1990, **46**, 512 (*cryst struct, sulfenosine*)

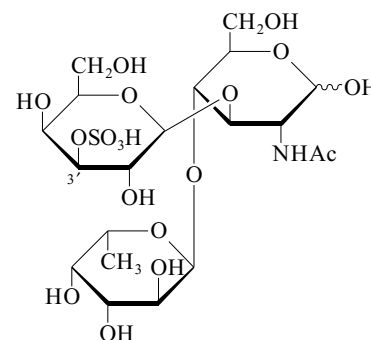
Revankar, G.R. *et al.*, *J. Med. Chem.*, 1990, **33**, 121; 1220; 1991, **34**, 526; 1994, **37**, 177 (*synth, ir, uv, pmr, pharmacol*)

S-95

3-*O*-Sulfo-β-D-

galactopyranosyl(1 → 3)-[(α-L-fucopyranosyl(1 → 4))-2-acetamido-2-deoxy-D-glucopyranose]

S-97



C₂₀H₃₅NO₁₈S 609.558

Component of Le^a-type blood group substance.

Na salt: [153153-93-6]

[α]_D²⁵ -38 (c, 0.42 in MeOH).

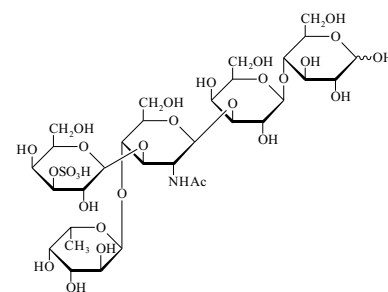
Nicolaou, K.C. *et al.*, *J.A.C.S.*, 1993, **115**, 8843 (*synth, pmr*)

Lubineau, A. *et al.*, *Bioorg. Med. Chem.*, 1994, **2**, 1143 (*synth, pmr, cmr*)

3-*O*-Sulfo-β-D-

galactopyranosyl(1 → 3)-[(α-L-fucopyranosyl(1 → 4))-2-acetamido-2-deoxy-β-D-glucopyranosyl(1 → 3)-β-D-galactopyranosyl(1 → 4)-D-glucose]

S-98



C₃₂H₅₅NO₂₈S 933.842

Component of Le^a-type blood group substance. Potent E-selectin ligand. [α]_D³⁰ -19 (c, 1.42 in H₂O) (as Na salt).

β-Pyranose-form

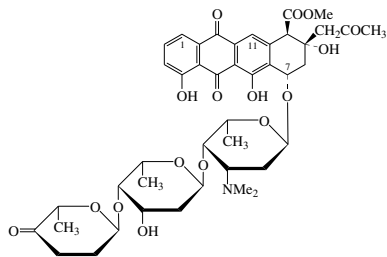
Benzyl glycoside, dodecabenzyl, 4'-Ac:

[α]_D²⁸ -244 (c, 0.86 in CH₂Cl₂).

Lubineau, *et al.*, *Bioorg. Med. Chem.*, 1994, **2**, 111 (*synth, pmr, cmr*)

Sulfurmycin A

[78173-90-7]

C₄₃H₅₃NO₁₆ 839.889

Anthracycline antibiotic. Numbering systems vary. Isol. from *Streptomyces galilaeus* (OB111; ATCC31533; P4780). Active against gram-positive bacteria, mycobacteria and tumours. Yellow powder. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane. Mp 140°. [α]_D²⁰ -23.2 (c, 0.1 in CHCl₃). Strain also produces Sulfurmycin B, S-100, Auramycin A, A-875 and Auramycin B, A-876.

► LD₅₀ (mus, ipr) 100 mg/kg. QI9290600Aglycone: **Sulfurmycinone**

[78173-88-3]

C₂₃H₂₀O₉ 440.406

From *Streptomyces galilaeus*. Yellow powder.

Mp 159°. [α]_D²⁰ +232.2 (c, 0.1 in CHCl₃).

Aglycone, 7-deoxy: **7-Deoxysulfurmycinone**. 4-Deoxysulfurmycinone, 9CI [78173-94-1]

C₂₃H₂₀O₈ 424.406Prod. by *Streptomyces galilaeus*.Mp 219.5°. [α]_D²⁰ +73.9 (CHCl₃).1-Hydroxy: **1-Hydroxysulfurmycin A**.

10-Hydroxysulfurmycin A

[79234-80-3]

C₄₃H₅₃NO₁₇ 855.888

Prod. by *Streptomyces galilaeus* (AC628) and *Streptomyces melanogenes* (AC180). Active against gram-positive bacteria and tumours. Sol. CHCl₃, MeOH; poorly sol. H₂O, hexane.

Mp 126°. [α]_D²⁰ +57.88 (c, 0.1 in CHCl₃). λ_{max} 234 (E1%/1cm 570); 256 (E1%/1cm 345); 292 (E1%/1cm 115); 493 (E1%/1cm 175); 511 (E1%/1cm 165); 526 (ε 160); 570 (E1%/1cm 75) (MeOH) (Berdy). λ_{max} 241 (E1%/1cm 530); 292 (E1%/1cm 170); 565 (E1%/1cm 230); 602 (E1%/1cm 180) (MeOH/NaOH) (Berdy).

Aglycone, 1-hydroxy: **1-Hydroxysulfurmycinone**. 10-Hydroxysulfurmycinone [79206-71-6]

C₂₃H₂₀O₁₀ 456.405

Mp 169.5°.

Aglycone, 11-hydroxy: **11-Hydroxysulfurmycinone**

[95663-90-4]

C₂₃H₂₀O₁₀ 456.405

Prod. by *Streptomyces* sp. (MST-77755). Red solid. [α]_D²⁰ +54.5 (c, 0.008 in CHCl₃). λ_{max} 234 (ε 37000); 253 (ε 22000); 291 (ε 7600); 492 (ε 11400); 526 (ε 7700); 579 (ε 1000) (MeOH).

Fujiwara, A. *et al.*, *J. Antibiot.*, 1981, **34**, 912-915; 1982, **35**, 164-175 (isol, ir, pmr, cmr)

S-99

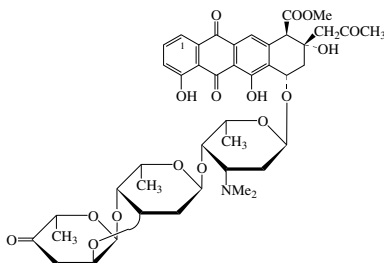
Hoshino, T. *et al.*, *J. Antibiot.*, 1984, **37**, 1469-1472 (derivs)

Clark, B. *et al.*, *J. Nat. Prod.*, 2004, **67**, 1729-1731 (11-Hydroxysulfurmycin)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SON520

Sulfurmycin B

[78193-30-3]

C₄₃H₅₁NO₁₆ 837.873

Anthracycline antibiotic. Numbering systems vary. Isol. from *Streptomyces galilaeus* (OB111; ATCC31533; P4780). Active against gram-positive bacteria, mycobacteria and tumours. Yellow powder. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane.

Mp 149°. [α]_D²⁰ -21.5 (c, 0.1 in CHCl₃).► LD₅₀ (mus, ipr) 100 mg/kg. QI9278000

Aglycone: See Sulfurmycin A, S-99

1-Hydroxy: **1-Hydroxysulfurmycin B**.

10-Hydroxysulfurmycin B

[79217-18-8]

C₄₃H₅₁NO₁₇ 853.872

Prod. by *Streptomyces galilaeus* (AC628) and *Streptomyces melanogenes* (AC180). Active against gram-positive bacteria and tumours. Sol. MeOH, CHCl₃; poorly sol. H₂O, hexane.

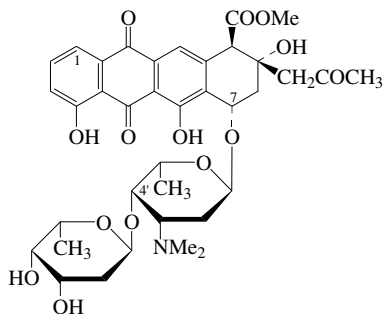
Mp 158.5°. [α]_D²⁰ +60.33 (c, 0.1 in CHCl₃). λ_{max} 234 (E1%/1cm 545); 256 (E1%/1cm 340); 290 (E1%/1cm 110); 493 (E1%/1cm 175); 511 (E1%/1cm 160); 526 (E1%/1cm 160); 570 (E1%/1cm 85) (MeOH) (Berdy). λ_{max} 241 (E1%/1cm 540); 293 (E1%/1cm 165); 565 (E1%/1cm 190); 602 (E1%/1cm 190) (MeOH/NaOH) (Berdy).

Fujiwara, A. *et al.*, *J. Antibiot.*, 1981, **34**, 912-915; 1982, **35**, 164-175 (isol, ir, pmr, cmr)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SON525

Sulfurmycin C

[83753-75-7]



S-101

C₃₇H₄₅NO₁₄ 727.761

Anthracycline antibiotic. Prod. by *Streptomyces galilaeus* ATCC31534. Active against gram-positive bacteria and P388 tumour cells. Yellow powder. Sol.

MeOH, C₆H₆, DMSO, CHCl₃, acids; poorly sol. H₂O, hexane.

Mp 146°. [α]_D²⁰ +55.8 (c, 0.1 in CHCl₃). λ_{max} 228 (E1%/1cm 575); 257 (E1%/1cm 370); 288 (E1%/1cm 140); 433 (ε 175) (MeOH) (Berdy). λ_{max} 237 (E1%/1cm 460); 525 (E1%/1cm 185) (MeOH-NaOH) (Berdy).

► LD₅₀ (mus, ipr) 90 mg/kg. QI92889904'-O-Deglycosyl: **Sulfurmycin D**

[83753-74-6]

C₃₁H₃₅NO₁₁ 597.618Prod. by *Streptomyces galilaeus*

ATCC31534. Active against gram-positive bacteria and P388 leukaemic cells. Sol.

MeOH, acids, C₆H₆, CHCl₃, DMSO; poorly sol. H₂O, hexane.

Mp 128°. [α]_D²⁰ +167.6 (c, 0.1 in CHCl₃). λ_{max} 228 (E1%/1cm 680); 257 (E1%/1cm 425); 288 (E1%/1cm 160); 433 (E1%/1cm 210) (MeOH) (Berdy). λ_{max} 237 (E1%/1cm 505); 525 (E1%/1cm 215) (MeOH-NaOH) (Berdy).

► QI9288994

3''-Deoxy: **Sulfurmycin H**. 3''-Deoxysulfurmycin C

[83759-50-6]

Prod. by *Streptomyces galilaeus*

ATCC31534 and by hydrol. of Sulfurmycin G.

Yellow powder. Sol. MeOH, acids, CHCl₃, C₆H₆, DMSO; poorly sol. H₂O, hexane. Mp 98.5°. λ_{max} 228; 258; 288; 433 (MeOH) (Berdy).

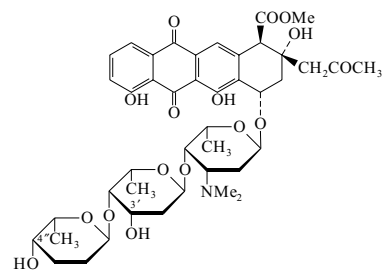
Fr. Pat., 1982, 2 492 386; CA, **98**, 3537 (isol)

Hoshino, T. *et al.*, *J. Antibiot.*, 1982, **35**, 1271-1279 (isol, uv, ir, pmr, cmr, struct)

Sulfurmycin F

[83829-33-8]

S-102

C₄₃H₅₅NO₁₆ 841.905Anthracycline. Prod. by *Streptomyces*

galilaeus ATCC31534. Active against gram-positive bacteria and P388 leukemia cells. Yellow powder. Sol. MeOH, CHCl₃, C₆H₆, acids, DMSO; poorly sol. H₂O, hexane.

Mp 151.5°. [α]_D²⁰ +7.9 (c, 0.1 in CHCl₃). λ_{max} 228 (E1%/1cm 475); 258 (E1%/1cm 300); 288 (E1%/1cm 115); 433 (E1%/1cm 120) (MeOH) (Berdy). λ_{max} 238 (E1%/1cm 515); 268 (E1%/1cm 180); 525 (E1%/1cm 165) (MeOH/NaOH) (Berdy).

4''-Epimer: Sulfurmycin E

[83753-76-8]

C₄₃H₅₅NO₁₆ 841.905Prod. by *Streptomyces galilaeus*ATCC31534. Active against gram-positive bacteria and leukaemia cells. Yellow powder. Sol. MeOH, acids, DMSO, C₆H₆, CHCl₃; poorly sol. H₂O, hexane.Mp 151°. [α]_D²⁰ +19.6 (c, 0.1 in CHCl₃). λ_{\max} 228 (E1%/1cm 530); 257 (E1%/1cm 340); 288 (E1%/1cm 126); 433 (E1%/1cm 155) (MeOH) (Berdy). λ_{\max} 237 (E1%/1cm 405); 525 (E1%/1cm 165) (MeOH/NaOH) (Berdy).► LD₅₀ (mus, ipr) 20 - 40 mg/kg. QI9288992*3'-Deoxy: Sulfurmycin G*

[83753-81-5]

C₄₃H₅₅NO₁₅ 825.905Prod. by *Streptomyces galilaeus*. Active against gram-positive bacteria and P388 leukaemia cells. Yellow powder. Sol. MeOH, CHCl₃, C₆H₆, acids, DMSO; poorly sol. H₂O, hexane.Mp 139°. [α]_D²⁰ +25.6 (c, 0.1 in CHCl₃). λ_{\max} 228 (E1%/1cm 560); 257 (E1%/1cm 360); 288 (E1%/1cm 135); 433 (E1%/1cm 170) (MeOH) (Berdy). λ_{\max} 237 (E1%/1cm 530); 525 (E1%/1cm 175) (MeOH-NaOH) (Berdy).► LD₅₀ (mus, ipr) 40 - 80 mg/kg. QI9288996

Fr. Pat., 1982, 2 492 386; CA, 98, 3537 (isol)

Hoshino, T. et al., J. Antibiot., 1982, 35, 1271 (isol, struct)

Sulglycotide, INN**S-103****Sulglycotide, BAN. GLPS**

[54182-59-1]

Sulfated product of a glycopeptide isol. from porcine duodenum. Antiulcer, antipepsin and antigastric secretory activity.

Prino, G. et al., *Arzneim.-Forsch.*, 1971, 21, 918 (isol, pharmacol)Niada, R. et al., *Br. J. Pharmacol.*, 1973, 48, 550 (pharmacol, bibl)Niada, R. et al., *Pharmacol. Res. Commun.*, 1981, 13, 695 (pharmacol)Chirletti, P. et al., *Drugs Exp. Clin. Res.*, 1987, 13, 711 (pharmacol)Cavallini, G. et al., *Acta Ther.*, 1991, 17, 173-178; CA, 115, 150095s (pharmacol)Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 906Piotrowski, J. et al., *Gen. Pharmacol.*, 1994, 25, 833; 969 (activity)

TA 2590

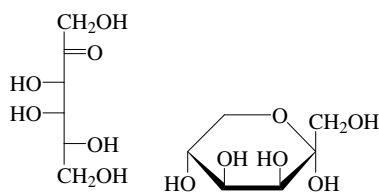
Glycoprotein. Prod. by *Streptomyces pluricolorescens*. Shows antitumour activity. Sol. H₂O, bases, MeOH aq., acids; poorly sol. AcOH, MeOH, hexane, Py. $[\alpha]_D^{17}$ -34.4. λ_{\max} 278 (E1%/1cm 19.2) (HCl) (Berdy). λ_{\max} 278 (E1%/1cm 19.2); 292 (E1%/1cm 13.9) (H₂O) (Berdy). λ_{\max} 283 (E1%/1cm 18); 290 (E1%/1cm 16); 540 (E1%/1cm 2.2) (NaOH) (Berdy).

LD₅₀ (mus, ipr) 25-75 mg/kg.

Japan. Pat., 1970, 70 17 594; CA, 73, 75658m

Tagatose, 9CI, 8CI

lyxo-2-Hexulose
[17598-81-1]



D-form α-D-Pyranose-form

C₆H₁₂O₆ 180.157

An aq. soln. at 27° contains 79% α-pyr, 16% β-pyr, 1% α-fur, 4% β-fur and 0.6% ketone.

D-form [87-81-0]

Obt. as a hydrol. prod. from a gum exudate of the tropical tree *Sterculia setigera* and from the lichen *Rocella linearis*. Prep'd. by alkaline isomerisation of D-Galactose or by oxidn. of D-Talitol with *Acetobacter suboxydans*. Used in the food industry.

Mp 134-135°. $[\alpha]_D^{20}$ -2.3 (c, 2.2 in H₂O). $[\alpha]_D^{25}$ -5 (c, 1.0 in H₂O). Sweetness ca. 0.75 - 0.92 x sucrose.

Phenylosazone: Mp 196-197°.

4-Bromophenylosazone: Mp 180-182°.

6-Phosphate:

[53798-20-2]

C₆H₁₃O₉P 260.137

$[\alpha]_D^{25}$ +5.6 (c, 1.1 in H₂O) (as Ba salt).

α-D-Pyranose-form

Me glycoside: Methyl α-D-tagatopyranoside, 9CI

[60504-80-5]

C₇H₁₄O₆ 194.184

Mp 128°. $[\alpha]_D$ +56.8 (MeOH).

Me glycoside, tetra-Ac: Methyl 1,3,4,5-tetra-O-acetyl-α-D-tagatopyranoside

[86049-58-3]

C₁₅H₂₂O₁₀ 362.333

Mp 125°. $[\alpha]_D$ +23.8 (CHCl₃).

Me glycoside, tetra-Me: Methyl 1,3,4,5-tetra-O-methyl-α-D-tagatopyranoside

C₁₁H₂₂O₆ 250.291

Syrup. $[\alpha]_D$ +21.4 (MeOH).

T-1

β-D-Pyranose-form

Me glycoside, 3,4-O-isopropylidene: Methyl 3,4-O-isopropylidene-β-D-tagatopyranoside

[172291-64-4]

C₁₀H₁₈O₆ 234.249

Syrup. $[\alpha]_D$ -57 (c, 1.1 in CHCl₃).

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-β-D-tagatopyranose

C₉H₁₆O₆ 220.222

$[\alpha]_D^{20}$ -83 (c, 2.3 in MeOH).

1,2-O-Isopropylidene, 3,4,5-tri-Ac: 3,4,5-Tri-O-acetyl-1,2-O-isopropylidene-β-D-tagatopyranose

C₁₅H₂₂O₉ 346.333

$[\alpha]_D^{20}$ -105.2 (c, 1.5 in CH₂Cl₂).

1,2-O-Isopropylidene, 3,4-anhydro: 3,4-Anhydro-1,2-O-isopropylidene-β-D-tagatopyranose

[56297-75-7]

C₉H₁₄O₅ 202.207

Mp 81-82°. $[\alpha]_D$ -80.7 (CHCl₃).

2,3-O-Isopropylidene, 1,4,5-tri-Ac: 1,4,5-Tri-O-acetyl-2,3-O-isopropylidene-β-D-tagatopyranose

[58238-49-6]

C₁₅H₂₂O₉ 346.333

Syrup. $[\alpha]_D^{20}$ -46.7 (c, 0.8 in CHCl₃).

α-D-Furanose-form [36441-92-6]

1,2:3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-α-D-tagatofuranose

[59686-31-6]

C₁₂H₂₀O₆ 260.286

Mp 65-66°. $[\alpha]_D$ +81.5 (Me₂CO).

1,2:3,4-Di-O-isopropylidene, 6-phosphate: [76649-79-1]

C₁₂H₂₁O₉P 340.266

Mp 113-114° dec. $[\alpha]_D$ +47 (c, 2.0 in MeOH).

1,2:3,4-Di-O-isopropylidene, 6-diphenylphosphate: [59671-20-4]

C₂₄H₂₉O₉P 492.462

Mp 94-95°. $[\alpha]_D^{25}$ +32 (c, 2.0 in CHCl₃).

β-D-Furanose-form [512-20-9]

2,3-O-Isopropylidene: 2,3-O-Isopropylidene-β-D-tagatofuranose

[32087-62-0]

C₉H₁₆O₆ 220.222

Syrup. $[\alpha]_D^{25}$ +15.4 (c, 2.0 in CHCl₃).

2,3-O-Isopropylidene, 1,4,6-tri-Ac: 1,4,6-Tri-O-acetyl-2,3-O-isopropylidene-β-D-tagatofuranose

[32077-83-1]

C₁₅H₂₂O₉ 346.333

Syrup. $[\alpha]_D$ -3.9 (CHCl₃).

2,3-O-Isopropylidene, 1,6-dibenzoyl: 1,6-Di-O-benzoyl-2,3-O-isopropylidene-β-D-tagatofuranose

[38088-19-6]

C₂₃H₂₄O₈ 428.438

Mp 96°. $[\alpha]_D^{24}$ +12.4 (c, 2.6 in CHCl₃).

2,3-O-Isopropylidene, 1,6-ditosyl: 2,3-O-Isopropylidene-1,6-di-O-tosyl-β-D-tagatofuranose

[32253-41-1]

C₂₃H₂₈O₁₀S₂ 528.6

Syrup. $[\alpha]_D^{20}$ +7.8 (c, 1.0 in EtOH).

L-form [17598-82-2]

Mp 133-135°. $[\alpha]_D$ +6.7 (c, 8.4 in H₂O) (after 16h).

Phenylosazone: Mp 184-185°.

α-L-Pyranose-form

Me glycoside: Methyl α-L-tagatopyranoside [143731-44-6]

C₇H₁₄O₆ 194.184

Cryst. (Me₂CO). Mp 126-128°. $[\alpha]_D$ -43 (MeOH).

[20197-42-6, 40461-86-7, 41846-98-4, 41846-99-5, 41847-58-9, 41847-59-0]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 1142D (ir)

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, 1, 302A (nmr)

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Totton, E.L. et al., Methods Carbohydr. Chem., 1962, 1, 155 (synth, D-form)

Jochims, J.C. et al., Tet. Lett., 1967, 4363 (pmr)

Takagi, S. et al., Carbohydr. Res., 1969, 11, 156 (cryst struct)

Brady, R.F. et al., Adv. Carbohydr. Chem.

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Al-Jobore, A.A.H. et al., Carbohydr. Res., 1971, 16, 474 (synth, D-form)

Heyns, K. et al., Chem. Ber., 1975, 108, 3619 (β-D-pyr isopropylidene tri-Ac)

Angyal, S.J. et al., Aust. J. Chem., 1976, 29, 1249 (cmr, conformn)

Koerner, T.A. et al., J. Biol. Chem., 1976, 251, 2983 (6-phosphate derivs)

Mukuyama, T. et al., Chem. Lett., 1982, 1169 (synth, L-form)

Bock, K. et al., Adv. Carbohydr. Chem.

Biochem., 1983, 41, 27 (cmr)

Angyal, S.J. et al., Adv. Carbohydr. Chem.

Biochem., 1984, 42, 15 (equilib)

Barili, P.L. et al., Carbohydr. Res., 1991, 212, C5 (synth, L-form, Me α-L-gly)

Fessner, W.-D. et al., Angew. Chem., Int. Ed., 1992, 31, 56 (synth)

Barili, P. et al., Carbohydr. Res., 1995, 274, 197-208 (synth, D-form)

Freimund, S. et al., J. Carbohydr. Chem., 1996, 15, 115-120 (D-form, synth)

Huwig, A. et al., Carbohydr. Res., 1998, 305, 337-339 (synth, L-form)

Frank, M. et al., Carbohydr. Res., 1999, 318, 167-170 (L-form, derivs, synth)

Food Chem. News, 2001, 43(40), 8-9 (use, status)

Eder, B. et al., J. Carbohydr. Chem., 2001, 20, 647-657 (β-D-pyr 1,2-isopropylidene, β-D-pyr 1,2-isopropylidene tri-Ac)

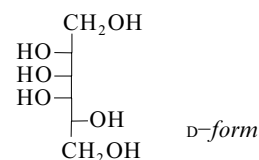
Ekeberg, D. et al., Carbohydr. Res., 2002, 337, 779-786 (synth)

Talitol, 9CI, 8CI

T-3

Altritol, 9CI, 8CI. talo-Hexitol. altro-Hexitol

[5552-13-6]



C₆H₁₄O₆ 182.173

D-form [643-03-8]

Isol. from various brown algae incl. *Himanthalia elongata* and *Notheia anomala*.

Cryst. (MeOH).

Mp 88°. $[\alpha]_D^{25} +3.2$ (c, 1.8 in H₂O).

Hexa-Ac: 1,2,3,4,5,6-*Hexa-O-acetyl-D-talitol*

C₁₈H₂₆O₁₂ 434.396

Mp 81-83°. $[\alpha]_D^{25} -0.6$ (c, 16 in CHCl₃).

2,4-*O*-Methylene, 2,4-*O*-Methylene-*D*-talitol

C₇H₁₄O₆ 194.184

Mp 144-145°. $[\alpha]_D^{20} -4.2$ (c, 1.2 in H₂O).

2,4-*O*-Methylene, tetra-*Ac*: 1,3,5,6-Tetra-*O*-acetyl-2,4-*O*-methylene-*D*-talitol

C₁₅H₂₂O₁₀ 362.333

Mp 67-68°. $[\alpha]_D^{20} +37.8$ (c, 0.94 in CHCl₃).

1,3:4,6-*Di-O*-methylene, 1,3:4,6-*Di-O*-methylene-*D*-talitol

C₈H₁₄O₆ 206.195

Prisms (EtOH). Mp 182-183°. $[\alpha]_D^{20} -41.2$ (c, 0.81 in H₂O).

2,3:4,5-*Di-O*-methylene, 2,3:4,5-*Di-O*-methylene-*D*-talitol

C₈H₁₄O₆ 206.195

Plates (H₂O). Mp 261-262°. $[\alpha]_D^{60} -1$ (c, 0.41 in H₂O).

1,3:2,4:5,6-*Tri-O*-methylene, 1,3:2,4:5,6-*Tri-O*-methylene-*D*-talitol

C₉H₁₄O₆ 218.206

Mp 118-119°. $[\alpha]_D^{20} -32.1$ (c, 0.42 in H₂O).

1,2:5,6-*Di-O*-isopropylidene, 1,2:5,6-*Di-O*-isopropylidene-*D*-talitol

C₁₂H₂₂O₆ 262.302

Cryst. (petrol). Mp 64.5-65.5°. $[\alpha]_D^{22} +5.2$ (c, 2.4 in CHCl₃).

L-form

Needles (EtOH). Mp 87-88°. $[\alpha]_D -2.9$ (c, 5 in H₂O).

DL-form

Prisms (EtOH). Mp 96°.

Hexa-Ac: Hexa-*O*-acetyl-*DL*-talitol

C₁₈H₂₆O₁₂ 434.396

Mp 85-86°.

[45007-61-2]

Humoller, F.L. *et al.*, *J.A.C.S.*, 1945, **67**, 1226 (*L*-form, *DL*-form)

Hann, R.M. *et al.*, *J.A.C.S.*, 1947, **69**, 624 (*D*-form, *synth*, *D*-methylene derivs)

Barker, S.A. *et al.*, *Adv. Carbohydr. Chem.*, 1952, **7**, 137 (*acetals*, *rev*)

Sugihara, J.M. *et al.*, *J.A.C.S.*, 1957, **79**, 5780 (*D*-form, *synth*, *D*-diisopropylidene)

Wright, L. *et al.*, *J.O.C.*, 1961, **26**, 1588 (*D*-hexa-*Ac*, *DL*-hexa-*Ac*)

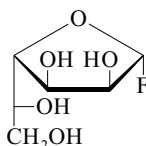
Chudek, J.A. *et al.*, *Phytochemistry*, 1984, **23**, 1081-1082 (*isol*)

Kopf, J. *et al.*, *Carbohydr. Res.*, 1991, **217**, 1 (*cryst struct*, *D*-form)

Kopf, J. *et al.*, *Carbohydr. Res.*, 1992, **229**, 17 (*cryst struct*, *hexa-Ac*)

Evans, P.A. *et al.*, *J.O.C.*, 1998, **63**, 6768-6769 (*synth*)

Raven, J.A. *et al.*, *Phytochemistry*, 2001, **58**, 389-394 (*occur*)

Talofuranosyl fluoride

C₆H₁₁FO₅ 182.148

α-D-form

Tetrabenzoyl: 2,3,5,6-Tetra-*O*-benzoyl-*α*-*D*-talofuranosyl fluoride

[51785-57-0]

C₃₄H₂₇FO₉ 598.58

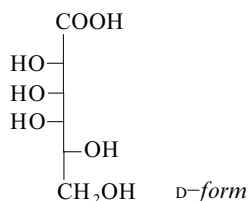
Syrup. $[\alpha]_D^{24} -90.3$ (c, 3.9 in CHCl₃).

Bock, K. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 3586 (*tetrabenzoyl*, *pmr*)

Talonic acid, 9CI, 8CI

talo-Hexonic acid

[20246-52-0]



C₆H₁₂O₇ 196.157

For stereoisomers see Allonic acid, A-78, Altronic acid, A-102, Galactonic acid, G-23, Gluconic acid, G-250, Gulonic acid, G-584, Idonic acid, I-4 and Mannonic acid, M-36.

D-form [20246-35-9]

Mp 138-139°. $[\alpha]_D +19$ (H₂O).

K salt: Mp 171-172°. $[\alpha]_D^{20} +3$ (H₂O).

NH₄ salt: Mp 148°. $[\alpha]_D^{25} +2.9$ (H₂O).

Penta-Ac: 2,3,4,5,6-Penta-*O*-acetyl-*D*-talonic acid

C₁₆H₂₂O₁₂ 406.343

Mp 142-144°. $[\alpha]_D +1.8$ (CHCl₃).

1,4-Lactone: *D*-Talono-1,4-lactone

[23666-11-7]

C₆H₁₀O₆ 178.141

Mp 135-137°. $[\alpha]_D^{25} -34.6 \rightarrow -28.4$ (H₂O).

L-form

K salt: Mp 170-171° (165-166°). $[\alpha]_D -2.4$ (c, 2.0 in H₂O).

1,4-Lactone: *L*-Talono-1,4-lactone

C₆H₁₀O₆ 178.141

Mp 133-134.5°. $[\alpha]_D^{17} +34.4 \rightarrow +29.3$ (H₂O).

Hedenburg, O.T. *et al.*, *J.A.C.S.*, 1927, **49**, 478 (*D*-form, *synth*)

Bonnett, H.T. *et al.*, *J.A.C.S.*, 1933, **55**, 1245 (*D*-lactone)

Fukunaga, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1938, **13**, 272

Glatthaar, C. *et al.*, *Helv. Chim. Acta*, 1938, **21**, 3 (*L*-lactone)

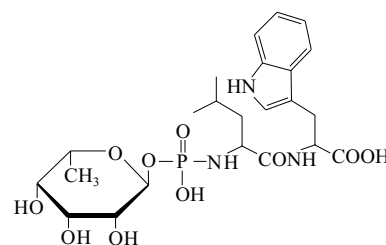
Petersson, G. *et al.*, *Carbohydr. Res.*, 1974, **33**, 47 (*glc*)

Lundt, I. *et al.*, *Synthesis*, 1993, 720 (*L*-form)

T-4**Talopeptin**

MKI

[84235-60-9]



C₂₃H₃₄N₃O₁₀P 543.509

Nucleotide antibiotic. Isol. from *Streptomyces mozuensis* MK23. Metalloproteinase inhibitor. Powder. Sol. butanol, AcOH; poorly sol. CHCl₃, hexane. Mp 146-147° dec. Related to Phosphoramidon. λ_{\max} 220 (ε 20000); 281 (ε 6000); 288 (ε 5000) (H₂O) (Derep).

► YN6690000

Di-*Na* salt:

Cryst. (MeOH/propanol). Mp 243-244° dec.

Di-*K* salt:

Cryst. (MeOH/propanol). Mp 238° dec.

[73804-40-7, 79733-80-5]

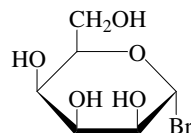
Murao, S. *et al.*, *Agric. Biol. Chem.*, 1980, **44**, 701 (*isol*)

Japan. Pat., 1981, 81 77 296; *CA*, **96**, 4952 (*isol*)

Fukuhara, K. *et al.*, *Agric. Biol. Chem.*, 1982, **46**, 1707 (*props*)

Fukuhara, K. *et al.*, *Tet. Lett.*, 1982, **23**, 2319 (*struct*)

Kitagashi, K. *et al.*, *J. Biochem. (Tokyo)*, 1983, **93**, 47; 55 (*props*)

Talopyranosyl bromide**T-7**

α-*D*-form

C₆H₁₁BrO₅ 243.054

α-D-form

Tetra-Ac: 2,3,4,6-Tetra-*O*-acetyl-*α*-*D*-talopyranosyl bromide

[14227-54-4]

C₁₄H₁₉BrO₉ 411.203

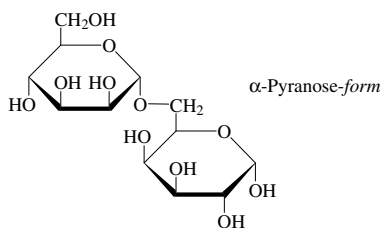
Yellow oil.

[114718-45-5]

Lowery, T.L. *et al.*, *Can. J. Chem.*, 2002, **80**, 1112-1130 (*synth*, *pmr*)

6-O- α -D-Talopyranosyl-D-galactose, 9CI

[40592-71-0]



$C_{12}H_{22}O_{11}$ 342.299
Amorph. powder. $[\alpha]_D^{22} +101$ (c, 0.64 in H_2O).

 α -Pyranose-form*1,2:3,4-Di-O-isopropylidene:*

$C_{18}H_{30}O_{11}$ 422.428
Oil. $[\alpha]_D^{23} +10$ (c, 0.5 in DMF).

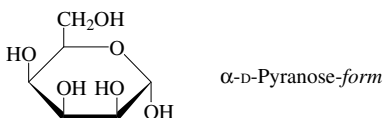
1,2:3,4-Di-O-isopropylidene, tetra-Ac:

$C_{26}H_{38}O_{15}$ 590.577
Oil. $[\alpha]_D^{23} +13$ (c, 1.3 in $CHCl_3$).

Lemieux, R.U. et al., *Can. J. Chem.*, 1973, **51**, 42

Talose, 9CI

[30077-17-9]



$C_6H_{12}O_6$ 180.157

An aq. soln. at 22° contains 42% α -pyr, 29% β -pyr, 16% α -fur, 13% β -fur, and 0.03% aldehyde.

D-form [2595-98-4]

o-Nitrophenylhydrazone: Mp 148-149°. $[\alpha]_D +88$ (MeOH).

Pentabenzyl: 2,3,4,5,6-Penta-O-benzyl-D-talose [158420-43-0]

$C_{41}H_{42}O_6$ 630.779
Oil. $[\alpha]_D -9.3$ (c, 0.77 in $CHCl_3$).

Phenylosazone: See Hexose phenylosazones, H-90

 α -D-Pyranose-form [7282-81-7]

Mp 133-134°. $[\alpha]_D +68 \rightarrow +20.8$ (H_2O).

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl- α -D-talopyranose [19186-39-1]

$C_{16}H_{22}O_{11}$ 390.343
Mp 104-105°. $[\alpha]_D^{20} +68$ (c, 6.0 in $CHCl_3$).

Me glycoside: Methyl α -D-talopyranoside [51224-40-9]

$C_7H_{14}O_6$ 194.184
Syrup. $[\alpha]_D^{24} +98$ (c, 1.3 in H_2O).

Me glycoside, 4,6-di-Ac, 2,3-isopropylidene: Methyl 4,6-di-O-acetyl-2,3-O-isopropylidene- α -D-talopyranoside [63167-73-7]

$C_{14}H_{22}O_8$ 318.323
Cryst. (petrol). Mp 115-116°. $[\alpha]_D +39.1$ (c, 1.0 in $CHCl_3$).

T-8

Me glycoside, 2,3,4-tri-Ac, 6-trityl: Methyl 2,3,4-tri-O-acetyl-6-O-trityl- α -D-talopyranoside [63167-74-8]

$C_{32}H_{34}O_9$ 562.615

Mp 176-178°.

Me glycoside, tetra-Ac: [73136-69-3]

$C_{15}H_{22}O_{10}$ 362.333

Oil. $[\alpha]_D +64.7$ (c, 0.9 in $CHCl_3$).

 β -D-Pyranose-form [7283-11-6]

Mp 120-121°. $[\alpha]_D +13.12 \rightarrow +21$ (H_2O).

Me glycoside: Methyl β -D-talopyranoside [51224-41-0]

$C_7H_{14}O_6$ 194.184

Syrup. $[\alpha]_D^{24} -28.5$ (c, 1.5 in H_2O).

1,2-O-Isopropylidene: See 1,2-O-Isopropylidene-talose, I-75

 α -D-Furanose-form [51076-04-1]

Pentabenzoyl: 1,2,3,5,6-Penta-O-benzoyl- α -D-talofuranoside [51785-58-1]

$C_{41}H_{32}O_{11}$ 700.697

Syrup. $[\alpha]_D^{24} -30.3$ (c, 1.5 in $CHCl_3$).

Tetrabenzoyl, 1-(4-nitrobenzoyl): [51819-87-5]

Cryst. (CH_2Cl_2 /MeOH). Mp 189-190°. $[\alpha]_D^{20} -27$ (c, 2.8 in $CHCl_3$).

Me glycoside: Methyl α -D-talofuranoside [56654-34-3]

$C_7H_{14}O_6$ 194.184

Syrup. $[\alpha]_D^{23} +37$ (c, 1.6 in H_2O).

 β -D-Furanose-form [41847-63-6]

Me glycoside: Methyl β -D-talofuranoside [56654-35-4]

$C_7H_{14}O_6$ 194.184

Cryst. (EtOAc/MeOH). Mp 128-130°. $[\alpha]_D^{23} -113$ (c, 0.9 in H_2O).

L-form [23567-25-1]

$[\alpha]_D -16.9$ (H_2O).

o-Nitrophenylhydrazone: Mp 144-146°. $[\alpha]_D -77$ (MeOH).

N-Methyl-N-phenylhydrazone: Mp 155-156°. $[\alpha]_D^{24} +8.4$ (c, 1.00 in MeOH).

L-Furanose-form

5-Me, 2,3-isopropylidene: 2,3-O-Isopropylidene-5-O-methyl-L-talofuranose

[140934-13-0, 140934-14-1]

$C_{10}H_{18}O_6$ 234.249

Syrup. $[\alpha]_D^{25} +31$ (c, 0.8 in $CHCl_3$). Mixt. of anomers α : β 9:1.

 α -L-Furanose-form

Me glycoside, 2,3-isopropylidene: Methyl 2,3-O-isopropylidene- α -L-talofuranoside [157752-60-8]

$C_{10}H_{18}O_6$ 234.249

$[\alpha]_D^{25} -44.2$ (c, 2.34 in MeOH).

Me glycoside, 2,3-isopropylidene, dibenzoyl: Methyl 5,6-di-O-benzoyl-2,3-O-isopropylidene- α -L-talofuranoside

$C_{24}H_{26}O_8$ 442.465

Syrup. $[\alpha]_D^{23} -51$ (c, 1.46 in $CHCl_3$).

5-Me, tetra-Ac: 1,2,3,6-Tetra-O-acetyl-5-O-methyl- α -L-talofuranose

[140934-17-4]

$C_{15}H_{22}O_{10}$ 362.333

Syrup. $[\alpha]_D^{24} -19$ (c, 2.5 in $CHCl_3$).

[12773-32-9, 36978-43-5, 40461-83-4, 54808-89-8]

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 301C (nmr)

Pigman, W.W. et al., *J. Res. Natl. Bur. Stand. (U.S.)*, 1937, **19**, 189 (α -D-pyr, α -D-pyr-penta-Ac, β -D-pyr)

Tipson, R.S. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 157 (α -D-pyr, β -D-pyr, synth)

Staněk, J. et al., *The Monosaccharides*,

Academic Press, 1963, 99 (rev)

Tronchet, J.M.J. et al., *Carbohydr. Res.*, 1972, **24**, 283 (α -D-Me pyr Me, α -D-Me pyr Me derivs)

Paulsen, H. et al., *Methods Carbohydr. Chem.*, 1972, **6**, 147 (α -D-pyr penta-Ac)

Bock, K. et al., *Acta Chem. Scand.*, 1973, **27**,

3586 (α -D-fur-tetrazobenzoyl nitrobenzoyl)

Angyal, S.J. et al., *Aust. J. Chem.*, 1975, **28**,

1541 (α -D-Me pyr, α -D-Me pyr tri-Ac trityl,

β -D-Me pyr, α -D-Me fur, β -D-Me fur)

Hansen, L.K. et al., *Acta Chem. Scand., Ser. A*, 1977, **31**, 187 (cryst struct)

Evans, M.E. et al., *Carbohydr. Res.*, 1977, **54**, 105-114 (*D*-form, α -D-Me pyr, α -D-Me pyr di-Ac 2,3-isopropylidene, α -D-Me pyr tri-Ac, trityl)

Bock, K. et al., *Adv. Carbohydr. Chem.*

Biochem., 1983, **41**, 27 (cmr)

Ko, S.Y. et al., *Science (Washington, D.C.)*,

1983, **220**, 749 (total synth)

Angyal, S.J. et al., *Adv. Carbohydr. Chem.*

Biochem., 1984, **42**, 15 (equilib)

Chida, N. et al., *J. Carbohydr. Chem.*, 1992, **11**,

137-148 (*L*-fur 5-Me 2,3-isopropylidene,

α -L-fur 5-Me tetra-Ac)

Krülle, T. et al., *Carbohydr. Res.*, 1994, **254**, 141

(pentabenzoyl)

Lerner, L.M. et al., *Carbohydr. Res.*, 1994, **259**,

191 (*L*-form, *L*-2,3-isopropylidene)

Hodosi, G. et al., *J. Carbohydr. Chem.*, 1998,

17, 557-565 (*D*-form, synth)

Lowery, T.L. et al., *Can. J. Chem.*, 2002, **80**,

1112-1130 (α -D-pyr penta Ac, α -D-Me pyr

tetra-Ac)

Tamarindose

T-10

$C_{34}H_{58}O_{29}$ 930.815

Struct. uncertain. A hexasaccharide pos-

sibly contg. Gal + 3Glc + 2Xyl. Isol.

from seeds of *Tamarindus indica*

(tamarind) after autolysis.

Mp 228-230°. $[\alpha]_D^{30} +43.6$ (MeOH).

Rao, P.S. et al., *CA*, 1953, **47**, 6875

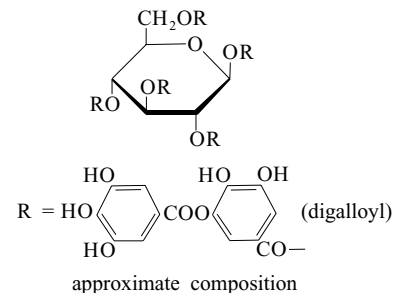
Tannin, 9CI, 8CI

T-11

Tannic acid. Gallotannic acid. Gallotannin.

Chinese tannin. Glycerite. FEMA 3042

[1401-55-4]



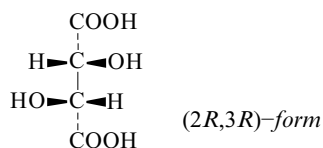
Chinese gallotannin is a mixt. of isomers and closely related compounds whose average composition corresponds to that of Penta-*O*-(*m*-digalloyl)- β -D-glucose. There are also some trigalloyl units. See also individual entries for separately characterised tannin components. A major constit. of galls of many spp. of oak (e.g. *Quercus lusitanica*), the leaves of Stagshorn (*Rhus typhina*) and pods of tara (*Caesalpinia spinosa*). Used as a mordant in dyeing, ink manuf., tanning, clarifying beer and wine and photography and as a coagulant in rubber manuf. Can be used as an astringent. Used as 3% aq. soln. for gravimetric detn. of Nb, Ta, Ti, U, W; separation of Ta and Nb. Astringent. Yellowish powder. Sol. H₂O, EtOH, Me₂CO; sl. sol. Et₂O. Mp 210-215° dec. $[\alpha]_D^{20} +12 \rightarrow +18.4$ (c, 2 in Me₂CO) (from Chinese galls, Sicilian sumach or Stagshorn sumach). $[\alpha]_D^{20} +21.7 \rightarrow +23.2$ (c, 2 in Me₂CO) (from Turkish galls). Forms precipitates with metal salts, alkaloids, albumen and gelatin.

- Fl. p. 199° (oc), autoignition temp. 527°. FM3015000
Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 544C (ir)
Schoeller, W.R. et al., *Analyst* (London), 1931, 56, 795; 1932, 57, 284; 1935, 60, 284 (use)
Welcher, F.J. et al., *Organic Analytical Reagents*, Van Nostrand, New York, 1947, 2, 142 (use)
Schmidt, O.T. et al., *Prog. Chem. Org. Nat. Prod.*, 1956, 13, 70
Armitage, R. et al., *J.C.S.*, 1961, 1842
Britton, G. et al., *J.C.S.(C)*, 1966, 783
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2726
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, CDM250; QBJ000; MQV250; SOY500; TAD750

Tartaric acid

T-12

2,3-Dihydroxybutanedioic acid, 9CI

C₄H₆O₆ 150.088

DL-Nomenclature, although frequently used, is ambiguous when applied to Tartaric acid. The coml. product is normally the natural (2*R*,3*R*)-isomer. Some metal salts have separate entries. Log P -3.27 (calc).

(2*R*,3*R*)-form

L-form. *L*-Threarcic acid. FEMA 3044. E334 [87-69-4] [526-83-0] Occurs in many plants and fruit. Coml. available from the KH salt deposited in fermenting grape juice. Acidulant for beverages, foods and pharmaceuticals, firming agent, flavour enhancer, humectant, other uses in food. Used to clean metals for plating, as a mordant for dyeing and in calico printing.

Resolving agent for bases. Monomer used in biodegradable polyesters and polyurethanes useful as controlled release agents. Used as a masking agent for metals; gravimetric detn. of K; KH-tartrate is used as primary alkalimetric standard. The acid and many of its derivs. are inexpensive resolving agents for chiral bases. Monomer for optically active polyamides. Pharmaceutical aid (buffering agent). Mp 169-170°. $[\alpha]_D^{20} +12$ (c, 20.0 in H₂O). p*K*_{a1} 2.98; p*K*_{a2} 4.34 (25°). Log P -3.27 (calc).

- Strong solns. mildly irritant ADI 30 mg/kg b.w. (1974, 1978). WW7875000

Mono-Na salt: [526-94-3]

[6131-98-2]

C₄H₅NaO₆ 172.07 $[\alpha]_D^{20} +21.8$ (H₂O).

- WW8225000

Mono-K salt: Potassium bitartrate. Potassium acid tartrate. Cream of tartar. E336 [868-14-4]

C₄H₅KO₆ 188.178

Obt. from sediment in wine manuf.

Cryst. Sol. H₂O.

Di-Na salt: Sodium tartrate. E335

[868-18-8]

C₄H₄Na₂O₆ 194.052Cryst. + 2H₂O. Loses H₂O at 120°.

K-Na salt: Sodium potassium tartrate.

Rochelle salt. E337

[304-59-6]

C₄H₄KNaO₆ 210.16

Used in electroplating. Mild saline

cathartic. Cryst. + 4H₂O. Mp 70-80°.Loses 3H₂O at 100° and becomes anhyd.

at 130-140°; dec. >220°.

Di-NH₄ salt: [3164-29-2]

[14307-43-8] $[\alpha]_D^{15} +34.6$ (H₂O).

- WW8050000

(*Na,K*)*Sb salt*: See Bis[μ-[tartrato(4-)]]
diantimonate(2-) in *The Combined Chemical Dictionary*.

Mono-Me ester: Monomethyl tartrate

[3333-46-8]

C₅H₈O₆ 164.115Prisms (H₂O). Mp 76°. $[\alpha]_D^{18} +18.7$ (H₂O).

Di-Me ester: Dimethyl tartrate

[608-68-4]

C₆H₁₀O₆ 178.141

Used in synth. of optically active 2-bromo

ketones. Mp 48° Mp 62° (dimorph.).

Mono-Et ester: Monoethyl tartrate

[608-89-9]

C₆H₁₀O₆ 178.141Prisms (EtOH). Mp 90° approx. $[\alpha]_D$ +21.8 (c, 2.2 in H₂O).

Di-Et ester: Diethyl tartrate. FEMA 2378

[87-91-2]

C₈H₁₄O₆ 206.195Flavouring ingredient. d₄²⁰ 1.2. Mp 17°.Bp₁₅ 155-156°. $[\alpha]_D^{20} +7.5$ (CHCl₃). n_D²⁰

1.4476.

- Fl. p. 93°.

Diisopropyl ester: Diisopropyl tartrate

[2217-15-4]

C₁₀H₁₈O₆ 234.249

Reagent for kinetic resolution of allylic

alcohols. Hygroscopic. Mp 117-119°. Bp₁₂ 152°. $[\alpha]_D^{20} +17$ (neat).

- WW8100000

Dibutyl ester: Dibutyl tartrate

[87-92-3]

[15763-01-6]

C₁₂H₂₂O₆ 262.302Mp 21-22°. Bp₅ 175°. $[\alpha]_D^{20} +11.5$ (neat).

Mono-tert-butyl ester: Mono-tert-butyl

tartrate

[210056-53-4]

C₈H₁₄O₆ 206.195Cryst. (CHCl₃/C₆H₆) Mp 85°. $[\alpha]_D^{22} +9.88$ (c, 1.0 in Me₂CO). CAS no. refers to

Na salt.

Di-tert-butyl ester: Di-tert-butyl tartrate

[117384-45-9]

C₁₂H₂₂O₆ 262.302Mp 91°. $[\alpha]_D^{22} +12.2$ (c, 1.0 in Me₂CO).

Di-2-propenyl ester: Diallyl tartrate

[57833-54-2]

C₁₀H₁₄O₆ 230.217Liq. d₂₀ 1.2. Bp₄ 162°. n_D²⁰ 1.4738.

Undergoes radical homopolym. and

copolym.

Di-Ph ester: Diphenyl tartrate

[143262-88-8]

C₁₆H₁₄O₆ 302.283

Needles. Mp 101-102°.

Dibenzyl ester: [622-00-4]

C₁₈H₁₈O₆ 330.337Cryst. Mp 49-50°. $[\alpha]_D^{24} -10.2$ (c, 1.03in CHCl₃).

Amide, Me ester: [67812-37-7]

C₅H₉NO₅ 163.13Cryst. (MeOH/CHCl₃). Mp 136.5-140°.

Diamide: Tartramide

[634-63-9]

C₄H₈N₂O₄ 148.118Mp 195-196°. $[\alpha]_D +106.5$ (H₂O).

Methylamide: 2,3-Dihydroxy-4-(methyla-

mino)-4-oxobutanoic acid, 9CI

[190712-89-1]

C₅H₉NO₅ 163.13

Cryst. (EtOAc/hexane). Mp 154-156°.

 $[\alpha]_D^{20} +86.8$ (c, 1 in H₂O).

Methylamide, Me ester: [190712-93-7]

C₆H₁₁NO₅ 177.157Cryst. (MeOH/Et₂O). Mp 139-143°. $[\alpha]_D^{20} +130.5$ (c, 1 in H₂O).

Methylamide, amide: 2,3-Dihydroxy-N-

methylbutanediamide, 9CI

[190712-95-9]

C₅H₁₀N₂O₄ 162.145

Cryst. (MeOH aq.). Mp 202-204°.

 $[\alpha]_D^{20} +126$ (c, 1 in H₂O).

Bis(methylamide): 2,3-Dihydroxy-N,N'-

butanediamide, 9CI

[38115-91-2]

C₆H₁₂N₂O₄ 176.172Cryst. (MeOH). Mp 198-200°. $[\alpha]_D^{20}$

+138.1 (c, 1 in MeOH).

Dimethylamide: 4-(Dimethylamino)-2,3-

dihydroxy-4-oxobutanoic acid

[190712-90-4]

C₆H₁₁NO₅ 177.157Thick oil. $[\alpha]_D^{20} +3.6$ (c, 1 in CHCl₃).

Dimethylamide, amide: 2,3-Dihydroxy-

- N,N-dimethylbutanediamide, 9CI
[190712-97-1]
C₆H₁₂N₂O₄ 176.172
Needles (EtOAc). Mp 145-148°. [α]_D²⁰ +29 (c, 1 in MeOH).
- Dimethylamide, Me ester: [137618-60-1]
C₇H₁₃N₂O₅ 191.183
Cryst. (EtOAc/Et₂O). Mp 48-51°. [α]_D²¹ -20 (c, 1 in MeOH).
- Dimethylamide, methylamide: 2,3-Dihydroxy-N,N,N'-trimethylbutanediamide, 9CI
[190712-99-3]
C₇H₁₄N₂O₄ 190.199
Oil. [α]_D²⁰ +38.3 (c, 1 in MeOH).
- Bis(dimethylamide): [26549-65-5]
C₈H₁₆N₂O₄ 204.225
Cryst. (MeOH/EtOAc). Mp 189-190°. [α]_D²⁰ +45 (c, 3 in EtOH).
- Bis(2-propenylamide): N,N'-Diallyltartaramide
[58477-85-3]
[28843-34-7]
C₁₀H₁₆N₂O₄ 228.247
Cross-linking agent for polyacrylamide gels. Plates (EtOH/EtOAc). Mp 183°. [α]_D²⁰ +119.8 (c, 2.9 in MeOH).
- Bis(benzylamide): [88393-56-0]
C₁₈H₂₀N₂O₄ 328.367
Catalyst for the synth. of chiral epoxides. Mp 198-200°. [α]_D²⁰ +83 (c, 5.5 in Py).
- Dianilide: [5470-13-3]
C₁₆H₁₆N₂O₄ 300.313
Solid (EtOAc). Mp 258°. [α]_D²⁰ +196.8 (c, 1 in Py).
- Imide: See 3,4-Dihydroxy-2,5-pyrrolidinedione in *The Combined Chemical Dictionary*.
- Di-Ac: 2,3-Di-O-acetyltartaric acid. Diacetoxysuccinic acid
[51591-38-9]
C₈H₁₀O₈ 234.162
Cryst. + 3H₂O (Et₂O). Sol. H₂O. Mp 58°. [α]_D²² -23.04 (H₂O).
- Di-Ac, anhydride: 3,4-Diacetoxy-3,4-dihydro-2,5(2H,5H)-furanedione, 9CI
[6283-74-5]
C₈H₈O₇ 216.147
Mp 133-134°. [α]_D²⁰ +97.2 (c, 0.47 in CHCl₃).
- Bis(2,2-dimethylpropanoyl): Dipivaloyltartaric acid
[65259-81-6]
C₁₄H₂₂O₈ 318.323
Catalyst for asymmetric protonations. Mp 130-132°. [α]_D²⁵ -24 (c, 1.7 in dioxan).
- Monobenzoyl: Monobenzoyltartaric acid
[87172-82-5]
C₁₁H₁₀O₇ 254.196
Mp 203°. [α]_D²⁰ -6.4 (c, 1.16 in EtOH).
- Dibenzoyl: Dibenzoyltartaric acid
[2743-38-6]
C₁₈H₁₄O₈ 358.304
Resolving agent. Mp 152-155° Mp 84-87° (45.5°). Bp₇ 234°. [α]_D -125 (c, 1.13 in EtOH) (-116). Forms a monohydrate.
- Bis-4-methylbenzoyl: Di-p-toluyl tartrate
[32634-66-5]
C₂₀H₁₈O₈ 386.357
Resolving agent. Mp 169-171°. [α]_D -141 (EtOH).
- (EtOH).
- Mono(4-hydroxy-E-cinnamoyl): **trans-Coutaric acid**. trans-p-Coumaroyltartaric acid
[27174-07-8]
[69222-59-9]
C₁₃H₁₂O₈ 296.233
Constit. of grapes. Cryst. + 1H₂O (H₂O). Mp 194-195° dec.
- Mono(4-hydroxy-Z-cinnamoyl): **cis-Coutaric acid**. cis-p-Coumaroyltartaric acid
[67920-37-0]
C₁₃H₁₂O₈ 296.233
Constit. of grapes.
- Mono(3,4-dihydroxycinnamoyl): **Mono-caffeoyltartaric acid**. **Caftaric acid**. Caffeoyltartaric acid
[67879-58-7]
C₁₃H₁₂O₉ 312.232
Constit. of grapes. Also isol. from *Echinacea* spp. and *Orthosiphon aristatus*. Powder. Mp 125° dec. [α]_D -28.2.
- 2-(3,4-Dihydroxycinnamoyl), 3-(4-hydroxycinnamoyl): **Caffeoyl-p-coumaroyltartaric acid**
[116064-67-6]
C₂₂H₁₈O₁₁ 458.378
Isol. from *Echinacea purpurea*. Yellow powder. Mp 200° dec.
- Bis(3,4-dihydroxycinnamoyl): See Chicoric acid in *The Combined Chemical Dictionary*.
- Mono(4-hydroxy-3-methoxycinnamoyl): **Feruloyltartaric acid**. Monoferuloyltartaric acid
[1044-65-1]
C₁₄H₁₄O₉ 326.259
Isol. from *Ferula purpurea*. Beige powder. Mp 175° dec.
- 2,3-O-Isopropylidene, di-Me ester: See 2,2-Dimethyl-1,3-dioxolane-4,5-dicarboxylic acid in *The Combined Chemical Dictionary*.
- 2,3-O-Benzylidene, di-Me ester: Dimethyl-2-phenyl-1,3-dioxolane-4,5-dicarboxylate
[38270-72-3]
C₁₃H₁₄O₆ 266.25
Cryst. (CHCl₃/hexane). Mp 74-76°. [α]_D²⁰ -47.2 (c, 1 in MeOH).
- 2,3-O-Benzylidene, di-Et ester: [35572-31-7]
C₁₅H₁₈O₆ 294.304
Yellow cryst. Mp 45°. [α]_D²⁰ -30.7 (c, 2.20 in CHCl₃).
- Mono-Me ether: 2-Hydroxy-3-methoxybutanedioic acid
[87172-83-6]
C₅H₈O₆ 164.115
Prisms (Et₂O). Mp 179°. [α]_D +45.2 (c, 2 in H₂O).
- Di-Me ether: See 2,3-Dimethoxybutanedioic acid, D-722
- Di-Et ether: 2,3-Diethoxybutanedioic acid
[123529-99-7]
C₈H₁₄O₆ 206.195
Prisms (H₂O). Mp 126-128°. [α]_D²⁰ +66.3 (c, 10 in H₂O). pK_a 3.01.
- Mono-tert-butyl ether: 2-tert-Butoxy-3-hydroxybutanedioic acid
[119197-65-8]
C₈H₁₄O₆ 206.195
Mp 67°. [α]_D²² +46 (c, 1.0 in Me₂CO).
- Di-tert-butyl ether: 2,3-Di-tert-butoxybutanedioic acid
[119197-66-9]
C₁₂H₂₂O₆ 262.302
Mp 134°. [α]_{Hg}²² +54.7 (c, 1 in Me₂CO).
- (2S,3S)-form**
D-form. D-Threarcic acid
[147-71-7]
Found only in fruits and leaves of the West African tree *Bankinia reticulata* and combined as Chicoric acid (see below). Mp 169-170°. [α]_D²⁰ -20 (c, 20.0 in H₂O). Not used commercially.
- Mono-Me ester: [89395-25-5]
[α]_D²⁰ -2.6 (c, 3.3 in H₂O).
- Di-Me ester: [13171-64-7]
Mp 48°. Bp_{11.5} 158°.
- Di-Et ester: [13811-71-7] Bp₁₉ 162°.
- Diisopropyl ester: [62961-64-2] Catalyst for asymmetric epoxidations. [α]_D²³ -17 (neat).
- Bis(dimethylamide): [63126-52-3]
Mp 185°. [α]_D²⁰ -45 (EtOH).
- Bis(benzylamide): [108321-43-3] Catalyst for the synth. of chiral epoxides. Mp 198-200°. [α]_D²⁰ -83 (c, 5.5 in Py).
- Bis(2,2-dimethylpropanoyl): [76969-55-6]
Mp 127-130°. [α]_D²⁰ +24 (c, 1 in dioxan).
- Monobenzoyl: [65582-57-2]
Mp 205-206°. [α]_D²⁴ -5.1 (c, 1.3 in EtOH).
- Dibenzoyl: [17026-42-5]
[52223-88-8] Resolving agent. Mp 154-156°. Bp 93°. [α]_D²⁸ +116 (c, 9 in EtOH).
- Bis-4-methylbenzoyl: [32634-68-7] Resolving agent for amines. Cryst. (C₆H₆). Mp 173°. [α]_D²⁰ +140 (c, 1 in EtOH).
- Mono(3,4-dihydroxycinnamoyl): **Mono-caffeoyl(-)-tartaric acid**
C₁₃H₁₂O₉ 312.232
Isol. from chicory (*Cichorium intybus*). Mp 146-147°. [α]_D +37 (H₂O).
- Bis(3,4-dihydroxycinnamoyl): See Chicoric acid in *The Combined Chemical Dictionary*.
- 2,3-O-Isopropylidene, di-Me ester: See 2,2-Dimethyl-1,3-dioxolane-4,5-dicarboxylic acid in *The Combined Chemical Dictionary*.
- 2,3-O-Benzylidene, di-Me ester: [91326-83-9] Used to synthesise chiral tartrate-derived diols and epoxides. Cryst. (CHCl₃/hexane). Mp 74-76°. Bp_{0.15} 147-149°. [α]_D²³ +46.3 (c, 1.02 in MeOH).
- (2RS,3RS)-form**
(±)-form. Paratartaric acid
[133-37-9]
Formed by heating the (+)-acid. Mp 205-206°. The first racemate to be separated into its enantiomers. ▶ Fl. p. 210° (oc), autoignition temp. 425°.
- Di-Me ester: [608-69-5]
Mp 84° Mp 90° (dimorph.). Bp₁₂ 158°.
- Di-Et ester: [57968-71-5] Bp_{11.5} 157°.

Di-Ac, dinitrile:

C₈H₈N₂O₄ 196.162

Mp 97-98°.

Di-Me ether: See 2,3-Dimethoxybutane-dioic acid, D-722

(2*RS*,3*SR*)-form

meso-form. *Racemic acid. Mesotartaric acid. Erythraric acid*

[147-73-9]

Mp 159-160°. p*K*_{a1} 3.17; p*K*_{a2} 4.91 (25°). Not found in nature.

Di-Me ester: [5057-96-5]

Mp 111°.

Di-Et ester: [21066-72-8]

Mp 55°.

Dinitrile: [76110-75-3]

C₄H₄N₂O₂ 112.088

Plates or prisms (Et₂O). Sol. H₂O. Mp 131° dec. Unstable.

Monobenzoyl: Benzoyl meso-tartaric acid

[65621-34-3]

C₁₁H₁₀O₇ 254.196

Constit. of alfalfa (*Medicago sativa*).

Cryst.

Mp 192-196° (190-193°).

Dibenzoyl, anhydride:

C₁₈H₁₂O₇ 340.289

Mp 207-208°.

Mono(4-hydroxy-E-cinnamoyl): Mono-trans-p-coumaroylmesotartaric acid

[27174-06-7]

[37551-71-6]

C₁₃H₁₂O₈ 296.233

Constit. of spinach leaves (*Spinacia oleracea*). Platelets + ½H₂O (H₂O).

Mp 198-200° dec.

2-O-(4-Hydroxy-E-cinnamoyl), 3-Ac: 2-O-Acetyl-trans-coutaric acid. 2-O-Acetyl-3-trans-O-p-coumaroyltartaric acid

[106928-35-2]

[35214-72-3]

C₁₅H₁₄O₉ 338.27

Constit. of spinach.

Mp 194-198° dec. λ_{max} 226; 312 (MeOH).

Mono(4-hydroxy-Z-cinnamoyl): Mono-cis-p-coumaroylmesotartaric acid

[35214-72-3]

C₁₃H₁₂O₈ 296.233

Constit. of spinach leaves (*Spinacea oleracea*).

2-O-(4-Hydroxy-Z-cinnamoyl), 3-Ac: 2-O-Acetyl-cis-coutaric acid. 2-O-Acetyl-3-O-cis-p-coumaroyltartaric acid

[35214-72-3]

C₁₅H₁₄O₉ 338.27

Constit. of spinach leaves (*Spinacea oleracea*).

Mono-Me ether: Bp_{0.04} 100-105°.

Di-Me ether: See 2,3-Dimethoxybutane-dioic acid, D-722

[133-48-2, 921-53-9, 1234-09-9, 3164-34-9, 3715-17-1, 6381-58-4, 6381-59-5, 14475-11-7, 18261-99-9, 38270-70-1, 40968-90-9, 84519-50-6, 117384-46-0, 174873-60-0]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 523A; 523C; 523D; 662D; 663A; 663C; 663D; 664A; 664C; 2, 1286C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 813A; 813B; 813C; 859A; 1041C; 1042A; 1042B; 1179C (nmr)

Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, 3, 717D; 718A; 718C; 718D; 719A; 719C (ir)

Pasteur, L. *et al.*, *Ann. Chim. Phys.*, 1850, **28**, 56-99 (resoln)

Frankland, P.F. *et al.*, *J.C.S.*, 1906, **89**, 1852-1869 (*Diallyltartramide*)

Stoll, A. *et al.*, *Helv. Chim. Acta*, 1943, **26**, 922-928 (*bis-4-methylbenzoyl*)

Welcher, F.J. *et al.*, *Organic Analytical Reagents*, Van Nostrand, New York, 1947, **2**, 176 (use)

Bijvoet, J.M. *et al.*, *Nature (London)*, 1951, **168**, 271-272 (cryst struct)

Van Bommel, A.J. *et al.*, *Acta Cryst.*, 1958, **11**, 61-70 (cryst struct)

Scarpati, M.L. *et al.*, *Ric. Sci.*, 1960, **30**, 1746 (*Monocaffeoyl(-)-tartaric acid*)

Org. Synth., Coll. Vol., 4, 1963, 242 (*anhydride*)

Fieser and Fieser's Reagents for Organic Synthesis, Wiley, 1967, **1**, 351; **13**, 124; 276; **11**, 298 (use)

Minoura, Y. *et al.*, *J. Polym. Sci., Part A-1*, 1967, **5**, 2441-2451 (*polyamides*)

Tadera, K. *et al.*, *Agric. Biol. Chem.*, 1970, **34**, 517-522; 1971, **35**, 1431-1435 (*isol, coumarates, Coutaric acid*)

Handb. Biochem. Mol. Biol., 3rd edn., 1975-1977, (Fasman, G.D., Ed.), 1975, 169

Yoshihara, T. *et al.*, *Agric. Biol. Chem.*, 1977, **41**, 2427-2429 (*benzoyltartaric acid*)

Stothers, J.B. *et al.*, *Can. J. Chem.*, 1977, **55**, 841-848 (cmr)

Musich, J.A. *et al.*, *J.A.C.S.*, 1978, **100**, 4865-4872 (*isopropylidene, di-Me ester, synth*)

Albertsson, J. *et al.*, *J. Appl. Crystallogr.*, 1979, **12**, 537-544 (cryst struct)

Ohata, T. *et al.*, *J. Polym. Sci., Polym. Chem. Ed.*, 1980, **18**, 467-475; 1011-1019 (*polym, diallyl ester*)

Ul Hasan, B. *et al.*, *Org. Magn. Reson.*, 1980, **14**, 309-311 (cmr)

Baronowski, J.D. *et al.*, *Am. J. Enol. Vitic.*, 1981, **32**, 5-13 (*Caftaric acid, isol*)

Rossiter, B.E. *et al.*, *J.A.C.S.*, 1981, **103**, 464-465 (*esters, use*)

Martin, V.S. *et al.*, *J.A.C.S.*, 1981, **103**, 6237-6240 (*diisopropyl ester, use*)

Hawthorne, F.C. *et al.*, *Acta Cryst. B*, 1982, **38**, 2461-2462 (cryst struct)

Duhamel, L. *et al.*, *Org. Prep. Proced. Int.*, 1982, **14**, 347-349 (*dipivaloyl*)

Seebach, D. *et al.*, *Org. Synth.*, 1983, **61**, 24 (*bisdimethylamide*)

Lu, L.D.L. *et al.*, *J.O.C.*, 1984, **49**, 728-731 (*bis(dibenzylamide)*)

Buding, H. *et al.*, *Angew. Chem., Int. Ed.*, 1985, **24**, 513 (*abs config, bibl*)

Ohno, M. *et al.*, *Chem. Pharm. Bull.*, 1985, **33**, 572-582 (*benzylidene di-Me ester, synth, ir, pmr*)

Becker, H. *et al.*, *Z. Naturforsch., C*, 1985, **40**, 585-587 (*Chicoric acid derivs*)

Castaldi, G. *et al.*, *Angew. Chem., Int. Ed.*, 1986, **25**, 259-260 (*use, di-Me ester*)

Strack, D. *et al.*, *Phytochemistry*, 1987, **26**, 107-111 (*Coutaric acids*)

DiBenedetto, L.J. *et al.*, *Polym. Mater. Sci. Eng.*, 1987, **57**, 404-407; 1988, **59**, 812-816 (*polymers*)

Soicke, H. *et al.*, *Planta Med.*, 1988, **54**, 175 (*Chicoric acid analogues*)

Uray, G. *et al.*, *Tetrahedron*, 1988, **44**, 4357-4362 (*tert-butyl esters, tert-butyl ethers*)

Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, TAF750

Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **13**, 1071 (rev)

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Martindale, The Extra Pharmacopoeia, 31st edn., Pharmaceutical Press, 1996, 1757

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 823-824; 2280-2281; 2597-2599; 2613-2615; 2732-2735

Gawronski, T. *et al.*, *Tetrahedron*, 1997, **53**, 6113-6144 ((2*R*,3*R*)-form, amide derivs, synth, nmr, cd, cryst struct, conformn)

Org. Synth., Coll. Vol., 9, 1998, 39-45 (*benzylidene Et ester*)

Org. Synth., Coll. Vol., 9, 1998, 722-727 (*dibenzyl ester*)

Goetz, G. *et al.*, *Phytochemistry*, 1999, **52**, 759-767 (*Coutaric acids*)

Bergman, M. *et al.*, *Phytochemistry*, 2001, **58**, 143-152 (*Spinacea coumaroyl esters*)

Massicot, F. *et al.*, *Synthesis*, 2001, 2441-2444 (*dianilide, bisbenzylamide*)

Luner, P. *et al.*, *Acta Cryst. C*, 2002, **58**, o333-o335 (cryst struct)

Bretherick, L. *et al.*, *Handbook of Reactive Chemical Hazards*, 2nd edn., Butterworths, 1979, 486

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DCH000; TAF750

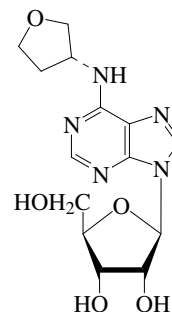
Tecadenoson, INN, USAN T-13

N-(*Tetrahydro-3-furanyl*)adenosine.

N-(3-*Tetrahydrofuran*yl)-6-aminopurine riboside. CVT 510

[204512-89-0]

[204512-90-3, 204512-92-5]



C₁₄H₁₉N₅O₅ 337.335

Adenosine A₁ receptor agonist.

Antirhythmic agent.

Pat. Coop. Treaty (WIPO), 1998, 98 08 855, (CV Therapeutics); CA, **128**, 230635b (*synth, isomers, pharmacol*)

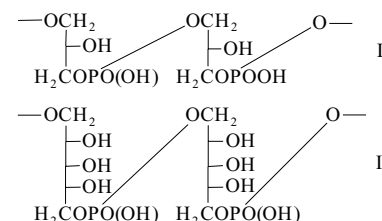
Snowdy, S. *et al.*, *Br. J. Pharmacol.*, 1999, **126**, 137-146 (*pharmacol*)

Sorbera, L.A. *et al.*, *Drugs of the Future*, 2002, **27**, 846-849 (rev)

Fraser, H. *et al.*, *J. Pharmacol. Exp. Ther.*, 2003, **305**, 225-231 (*pharmacol*)

Teichoic acid T-14

[9041-38-7]



Teichoic acids are polymers of glycerol or ribitol phosphate in which some of the free hydroxyl groups may be glycosylated or esterified with D-alanine. Prominent constituents (along with peptidoglycan and other heteropolysaccharides) of the cell walls or envelopes which surround the cytoplasmic membrane of gram-positive bacteria cells. There are two major classes; those which occur in the wall, covalently linked to the peptidoglycan, and those known as lipoteichoic acids, which are situated on the surface of the cytoplasmic membrane and are covalently linked to the glycolipid located within the membrane. The former class of polymers contain glycerol and ribitol phosphates (I and II) and they comprise a major part of the purified cell walls (30-50%). The lipoteichoic acids are formed exclusively from glycerol phosphate (I); see separate entry Lipoteichoic acids, L-45.

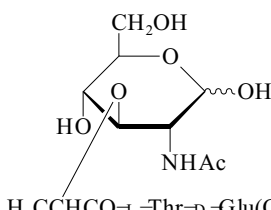
- Archibald, A.R. *et al.*, *Adv. Carbohydr. Chem.*, 1966, **21**, 323 (rev)
 Baddiley, J. *et al.*, *Essays Biochem.*, 1972, **8**, 35 (rev)
 Archibald, A.R. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 162 (isol)
 Sharon, N. *et al.*, *Complex Carbohydrates*, Addison-Wesley, 1975, 322
 Duckworth, M. *et al.*, *Surf. Carbohydr. Prokaryotic Cell*, Academic Press, 1977, 177 (rev)
 Tarelli, E. *et al.*, *Carbohydr. Res.*, 1979, **75**, 31-37 (cmr)
 Pooley, H.M. *et al.*, *New Compr. Biochem.*, 1994, **27**, 187 (rev)

Teichuronic acid T-15

[37251-79-9]
 α -D-Glcp-(1 \rightarrow 4)-[β -D-ManpNAcA-(1 \rightarrow 6)- α -D-Glcp]_n Cell wall component of some Gram positive bacteria incl. members of the genera *Bacillus* and *Micrococcus*. Struct. shown is that of the teichuronic acid from *M. luteus*. Those from other sources vary.

- Hase, S. *et al.*, *J. Biochem. (Tokyo)*, 1972, **72**, 1549 (struct)
 Ivatt, R.J. *et al.*, *J. Biol. Chem.*, 1979, **254**, 2759 (isol)
 Johnson, S.D. *et al.*, *Biochemistry*, 1981, **20**, 4781 (isol, cmr)
 Goustin, A. *et al.*, *Carbohydr. Res.*, 1983, **119**, 258 (isol, pmr)
 Shashkov, A.S. *et al.*, *Biochim. Biophys. Acta*, 1994, **1201**, 333 (occur)

Temurtide, BAN, INN, USAN T-16

N²-[N-(N-Acetylmuramoyl)-L-threonyl]-D- α -glutamine, 9CI. RS 37449
 [66112-59-2]


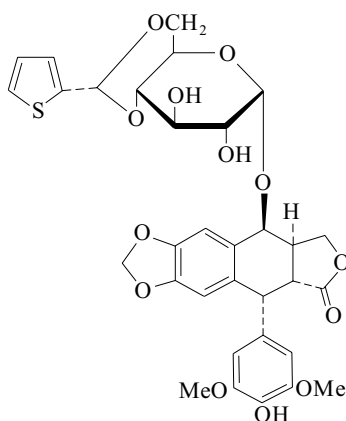
C₂₀H₃₄N₄O₁₂ 522.508

Immunostimulant, immunomodulator.
 $[\alpha]_D^{27} +51.3$ (c, 0.4 in EtOH).

- Kobayashi, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1980, **53**, 2570 (synth)
 Azuma, I. *et al.*, *Infect. Immun.*, 1980, **29**, 1193 (activity)
 Waters, R.V. *et al.*, *J. Reticuloendothel. Soc.*, 1980, **28**, 457 (activity)
 Waters, R.V. *et al.*, *Infect. Immun.*, 1986, **51**, 816 (pharmacol)
 Allison, A.C. *et al.*, *Mol. Immunol.*, 1991, **28**, 279 (props)

Teniposide, BAN, INN, T-17

USAN
 9-(4,6-O-2-Thienylidene- β -D-glucopyranoside)-4'-demethylepipodophyllotoxin, 8CI.
Vumon. EPT. NSC 122819. Vehem-Sanoloz. VM 26
 [29767-20-2]



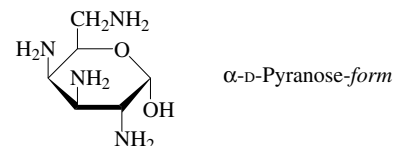
C₃₂H₃₂O₁₃S 656.663
 Closely related to Etoposide, E-31. DNA topoisomerase II inhibitor. Antineoplastic agent. Used in combination therapies. Cryst. (EtOH). Mp 242-246°. $[\alpha]_D^{20} -107$ (CHCl₃/MeOH). Log P -0.75 (uncertain value) (calc).

- Adverse haemopoietic and other effects when used therapeutically. LD₅₀ (mus, ipr) 29.6 mg/kg. Exp. reprod. and teratogenic effects. Probable human carcinogen (IARC 2A). KC0180000
 [89301-94-0]

- Stähelin, H. *et al.*, *Eur. J. Cancer*, 1970, **6**, 303 (pharmacol)
 U.S. Pat., 1970, 3 524 844, (Sandoz); CA, **70**, 78340a (synth)
 Allen, L. *et al.*, *Drug Metab. Rev.*, 1978, **8**, 119 (rev, metab)
 Issell, B.F. *et al.*, *Cancer Chemother. Pharmacol.*, 1982, **7**, 73; 87; 93; 133
 Kettenes-van den Bosch, J.J. *et al.*, *Anal. Profiles Drug Subst.*, 1990, **19**, 575 (rev)
 Stähelin, H.F. *et al.*, *Cancer Res.*, 1991, **51**, 5 (rev)
 Semin. Oncol., Suppl 6, 1992, **19**, 1-102 (rev)
 Cragg, G. *et al.*, *Anticancer Drugs: Antimetabolite Metabolism and Natural Anticancer Agents*, (ed. Powis, G.), Pergamon Press, 1994, 364 (rev)
 Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 602
 Andreassen, P.R. *et al.*, *J. Cell Biol.*, 1997, **136**, 29 (pharmacol)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, EQP000

2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose T-18



C₆H₁₆N₄O₂ 176.218

D-Pyranose-form

Cryst. (as tetrahydrochloride). Mp 270° dec. (tetrahydrochloride). $[\alpha]_D^{20} +6 \rightarrow 0$ (c, 0.5 in H₂O).

2N,3N,4N,6N-Tetra-Ac: [28079-69-8]
 C₁₄H₂₄N₄O₆ 344.367
 Cryst. Mp 205-207°. $[\alpha]_D^{20} +48 \rightarrow +31.5$ (c, 1.0 in H₂O).

alpha-D-Pyranose-form

Me glycoside, 2N,3N,4N,6N-tetra-Ac: [17117-70-3]

C₁₅H₂₆N₄O₆ 358.394
 Cryst. (2-propanol). Mp 285° dec. $[\alpha]_D^{21} +118$ (c, 0.35 in H₂O).

Benzyl glycoside: [33648-16-7]

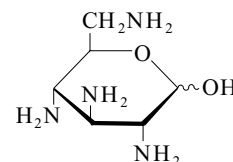
C₁₃H₂₂N₄O₂ 266.342
 Cryst. (EtOH aq.) (as tetrahydrochloride). Mp 181-183° (tetrahydrochloride). $[\alpha]_D^{20} +99$ (c, 1.0 in H₂O).

Benzyl glycoside, 2N,3N,4N,6N-tetra-Ac: [33648-17-8]
 C₂₁H₃₀N₄O₆ 434.491
 Cryst. (EtOH). Mp 276-277°. $[\alpha]_D^{20} +183.5$ (c, 1.0 in DMSO).

[33640-19-6]

Ali, Y. *et al.*, *J.C.S. (C)*, 1968, 1764 (α -D-Me pyr tetra-Ac)
 Meyer zu Reckendorf, W. *et al.*, *Chimia*, 1970, **24**, 16 (α -D-benzyl pyr derivs)

2,3,4,6-Tetraamino-2,3,4,6-tetradeoxyglucose T-19



C₆H₁₆N₄O₂ 176.218

D-form

Hydrochloride (1:4): [52887-78-2]
 Mp 166° dec. $[\alpha]_D +8 \rightarrow +10$ (c, 1.0 in H₂O).

alpha-D-Pyranose-form

Tetra-N-Ac: 2,3,4,6-Tetraacetamido-2,3,4,6-tetradeoxy- α -D-glucopyranose
 C₁₄H₂₄N₄O₆ 344.367
 Mp 273-274°. $[\alpha]_D +55 \rightarrow +33.5$ (c, 1.0 in H₂O).

N-Tetrabenzoyl: [52887-75-9]

C₃₄H₃₂N₄O₆ 592.65Cryst. (EtOH). Mp 275-285° dec. [α]_D²⁰ +68 (c, 0.5 in Py).

Benzyl glycoside: Benzyl 2,3,4,6-tetraamino-2,3,4,6-tetraoxy-α-D-glucopyranoside

C₁₃H₂₂N₄O₂ 266.342[α]_D²⁰ +88 (c, 0.5 in H₂O). Obt. as tetrahydrochloride.

Benzyl glycoside, hydrochloride (1:4):

[52887-72-6]

Hygroscopic powder. [α]_D²⁰ +88 (c, 0.5 in H₂O).

Benzyl glycoside, tetra-N-Ac: Benzyl

2,3,4,6-tetraacetamido-2,3,4,6-tetra-deoxy-α-D-glucopyranoside

C₂₁H₃₀N₄O₆ 434.491Mp 351-352°. [α]_D +135 (c, 0.5 in DMSO).

Benzyl glycoside, tetra-N-benzoyl: Benzyl

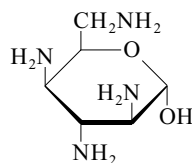
2,3,4,6-tetrabenzamido-2,3,4,6-tetra-deoxy-α-D-glucopyranoside

C₄₁H₃₈N₄O₆ 682.774Mp 325-327°. [α]_D²⁰ +158 (c, 0.5 in 3:1 CHCl₃/DMSO).

Meyer zu Reckendorf, W. et al., Chem. Ber., 1974, 107, 1188 (synth)

2,3,4,6-Tetraamino-2,3,4,6-tetraoxyidose

T-20

C₆H₁₆N₄O₂ 176.218**α-D-Pyranose-form**

Me glycoside, 2N,3N,4N,6N-tetra-Ac:

Methyl 2,3,4,6-tetraacetamido-2,3,4,6-tetraoxy-α-D-idopyranoside

[17014-18-5]

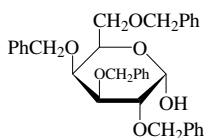
C₁₅H₂₆N₄O₆ 358.394Cryst. (EtOH aq.). [α]_D²¹ +42 (c, 0.5 in H₂O). Dec. >260° without melting.

Ali, Y. et al., Chem. Comm., 1967, 554 (tetra-Ac)

Ali, Y. et al., J.C.S. (C), 1968, 1764 (tetra-Ac, pmr)

2,3,4,6-Tetra-O-benzylgalactose, 9CI

T-21



α-D-Pyranose-form

C₃₄H₃₆O₆ 540.655**α-D-Pyranose-form**Cryst. (Et₂O/petrol). Mp 72°. [α]_D²⁰ +80.6 (c, 1 in C₆H₆).

Ac: 1-O-Acetyl-2,3,4,6-tetra-O-benzyl-α-D-galactopyranose

C₃₆H₃₈O₇ 582.692Cryst. (Et₂O/petrol). Mp 67-69°. [α]_D +95 (c, 2 in C₆H₆).

Tetramethylphosphoramidate: 2,3,4,6-Tetra-O-benzyl-α-D-galactopyranosyl tetramethylphosphoramidate

C₃₈H₄₇N₂O₇P 674.772

No phys. props. reported.

β-D-Pyranose-form

Ac: 1-O-Acetyl-2,3,4,6-tetra-O-benzyl-β-D-galactopyranose

C₃₆H₃₈O₇ 582.692Mp 99-101°. [α]_D +24 (c, 2.9 in C₆H₆).

4-Nitrobenzoyl: [53081-29-1]

Mp 105.5-106°. [α]_D -43 (c, 1 in CHCl₃).

Me glycoside: Methyl 2,3,4,6-tetra-O-benzyl-β-D-galactopyranoside

[3879-79-6]

C₃₅H₃₈O₆ 554.682Mp 84-85°. [α]_D²⁵ +17 (c, 3.6 in dioxan).

Austin, P.W. et al., J.C.S., 1965, 1419

(α-D-pyr, α-D-pyr Ac, β-D-pyr Ac)

Lemieux, R.U. et al., J.A.C.S., 1975, 97, 4056 (β-D-nitrobenzoyl)

Brodde, O.-E. et al., Carbohydr. Res., 1976, 48, 299 (α-D-pyr)

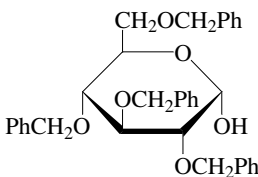
Bieg, T. et al., Carbohydr. Res., 1990, 205, C10 (synth)

Hashimoto, S. et al., Tet. Lett., 1992, 33, 3523 (phosphoramidate)

Xie, J. et al., J. Carbohydr. Chem., 1999, 18, 481-498 (synth)

2,3,4,6-Tetra-O-benzylglucose

T-22



α-D-form

C₃₄H₃₆O₆ 540.655**α-D-Pyranose-form** [6564-72-3]

[38768-81-9]

Needles (MeOH). Mp 151-152°. [α]_D²⁰ +21.7 (c, 2.2 in CHCl₃).

1-(4-Nitrobenzoyl):

Needles (diisopropyl ether). Mp 127-129°. [α]_D²¹ +73 (c, 2.1 in CHCl₃).

Me glycoside: Methyl 2,3,4,6-tetra-O-benzyl-α-D-glucopyranoside

[17791-37-6]

C₃₅H₃₈O₆ 554.682Syrup. [α]_D²⁰ +23.8 (CHCl₃).**β-D-Pyranose-form**

[38768-81-9]

1-(4-Nitrobenzoyl): Mp 96-98°. [α]_D -26 (c, 6.0 in dioxan).

Me glycoside: Methyl 2,3,4,6-tetra-O-benzyl-β-D-glucopyranoside

[19488-61-0]

C₃₅H₃₈O₆ 554.682Mp 68-69°. [α]_D²³ +11 (c, 5.0 in dioxan).

1-Hexadecanoyl: 2,3,4,6-Tetra-O-benzyl-1-O-hexadecanoyl-β-D-glucopyranose

[59473-44-8]

C₅₀H₆₆O₇ 779.067Cryst. (EtOH). Mp 52-53°. [α]_D²⁵ -9.1(c, 1.0 in CH₂Cl₂).

Tate, M.E. et al., Can. J. Chem., 1963, 41, 1801 (α-D-pyr, synth, α-D-pyr nitrobenzoyl, α-D-Me pyr)

Perrine, T.D. et al., J.O.C., 1967, 32, 664 (α-D-pyr, synth)

Glaudemans, C.P.J. et al., Methods Carbohydr. Chem., 1972, 6, 373 (synth, α-D-pyr, α-D-pyr nitrobenzoyl, β-D-pyr nitrobenzoyl)

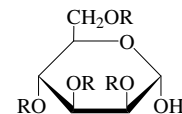
Lemieux, R.U. et al., J.A.C.S., 1975, 97, 4056 (β-D-Me pyr)

Pfeffer, P.E. et al., J.O.C., 1976, 41, 2925 (β-D-pyr 1-hexadecanoyl)

Bieg, T. et al., Carbohydr. Res., 1990, 205, C10 (synth)

2,3,4,6-Tetra-O-benzylmannose

T-23



α-D-Pyranose-form

R = CH₂PhC₃₄H₃₆O₆ 540.655**D-Pyranose-form** [78609-16-2]Syrup. [α]_D²⁰ +11 (c, 0.9 in CHCl₃).

Anomeric mixt.

α-D-Pyranose-form[α]_D +12.8 (c, 1.5 in CHCl₃).

Ac: 1-O-Acetyl-2,3,4,6-tetra-O-benzyl-α-D-mannopyranose

[83462-68-4]

C₃₆H₃₈O₇ 582.692Syrup. [α]_D²⁷ +29.3 (c, 1.3 in CHCl₃).

4-Nitrobenzoyl: [61375-73-3]

Cryst. (diisopropyl ether). Mp 106.5-107°. [α]_D²⁰ +59 (c, 0.8 in CHCl₃).

Me glycoside: Methyl 2,3,4,6-tetra-O-benzyl-α-D-mannopyranoside

[61330-62-9]

C₃₅H₃₈O₆ 554.682Syrup. Bp_{0.01} 240-245°. [α]_D²⁵ +31.57(c, 1.38 in CHCl₃).**β-D-Pyranose-form** [78609-17-3]

4-Nitrobenzoyl: [61375-74-4]

Syrup. [α]_D²⁰ -11 (c, 0.5 in CHCl₃).

Methyl glycoside: Methyl 2,3,4,6-tetra-O-benzyl-β-D-mannopyranoside

[71526-33-5]

C₃₅H₃₈O₆ 554.682

Solid (petrol or MeOH). Mp 71-72°.

[α]_D²⁴ -55.1 (c, 0.44 in CH₂Cl₂).

[61330-61-8, 103368-00-9]

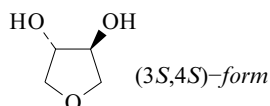
Koto, S. et al., Bull. Chem. Soc. Jpn., 1976, 49, 2639-2640 (synth, α-D-Me pyr)

Wulff, G. et al., Chem. Ber., 1979, 112, 2847-2853 (β-D-Me pyr)

Tamura, J. et al., Carbohydr. Res., 1990, 207, 153-165 (α-D-pyr Ac)

Liao, W. et al., J. Carbohydr. Chem., 1997, 16, 877-890 (synth)

Zhang, G. et al., Synth. Commun., 1997, 27, 1907-1917 (α-D-Me pyr)

Tetrahydro-3,4-furandiol, 9CI**T-24**3,4-Dihydroxytetrahydrofuran
[27725-58-2]C₄H₈O₃ 104.105**(3*S*,4*S*)-form**(-)-trans-form. 1,4-Anhydro-L-threitol.
L-Threitol

[22554-74-1]

Hygroscopic liq. cryst. on standing.
Mp 63-64°. [α]_D²⁰ -4 (c, 7.2 in H₂O).**(3*RS*,4*RS*)-form**

(±)-trans-form. DL-Threitol

[59727-71-8] Co-monomer in poly(alkylene phosphates). Mp 40°. Bp₃₀ 59-60°.**(3*RS*,4*SR*)-form**cis-form. 1,4-Anhydroerythritol. Erythritan
[4358-64-9] Synthetic intermed. Mono-
mer used in epoxy resins.Hygroscopic liq. or cryst. which quickly
liquefy on standing. Bp_{0.1} 86-88°. n_D^{22}
1.4812.Bis-4-nitrobenzoyl: Mp 176-177° (173-
174°).

Bis(4-methylbenzenesulfonyl):

Cryst. (MeOH). Mp 91.5-92.5°.

[473-85-8, 84709-85-3]

Aldrich Library of 13C and 1H FT NMR
Spectra, 1992, 1, 387A (nmr)Klosterman, H. et al., J.A.C.S., 1952, 74, 5336
(synth)Brimacombe, J.S. et al., Tetrahedron, 1958, 4,
351 (synth)Haines, A.H. et al., Carbohydr. Res., 1973, 27,
261 (synth)Ritchie, R.G.S. et al., Can. J. Chem., 1975, 53,
1424 (cmr)Goodwin, J.C. et al., Carbohydr. Res., 1975, 44,
106Wachenfeld, E. et al., Polymer, 1987, 28, 817
(epoxy resins)Lapienis, G. et al., J. Polym. Sci., Part A: Polym.
Chem., 1990, 28, 1743 (polymers)Terfort, A. et al., Synthesis, 1992, 951 (synth,
ms, ir, pmr, cmr)**Tetrahydro-2-furanmethanol, 9CI****T-25**Tetrahydrofurfuryl alcohol, 8CI. Oxolan-
2-methanol. 2-Hydroxymethyltetrahydro-
furan. FEMA 3056
[97-99-4]C₅H₁₀O₂ 102.133► Eye, skin and respiratory tract irritant.
LD₅₀ (rat, orl) 2500 mg/kg. Fl. p. 70/71°,
autoignition temp. 280/282°. LU2450000**(R)-form** [22415-59-4] Bp₁₈ 85°. [α]_D²² -17.1
(c, 5.4 in CHCl₃). [α]_D²⁰ -2.18 (neat).

Hydrogen phthalate:

Rhombs (Et₂O/petrol). Mp 82-83°.

Ac: [52689-54-0]

C₇H₁₂O₃ 144.17[α]_D²⁰ -17.3.**(S)-form** [57203-01-7] Bp₁₄ 74.5°. [α]_D²⁴
+15.5.3,5-Dinitrobenzoyl: Mp 77.5-78.5°. [α]_D²⁴
+20.5.**(±)-form** [72074-94-3]Used as solvent for fats, waxes, resins,
etc. Bp₇₅₀ 177-178° Bp₂₀ 80-82°. α -Naphthylurethane:

Needles (petrol). Mp 88-90°.

Ac: FEMA 3055

[637-64-9] Flavouring ingredient. d_4^{20} 1.06. Bp₇₄₀ 192-194° Bp₁₈ 88-90°. n_D^{20} 1.4475.

► Fl. p. 88°.

Propanoyl: FEMA 3058

[637-65-0]

C₈H₁₄O₃ 158.197

Flavouring ingredient. d 1.04. Bp 204-207°

Bp₃ 85-87°. n_D^{23} 1.4370.

Butanoyl: Tetrahydrofurfuryl butyrate.

FEMA 3057

[92345-48-7]

[2217-33-6]

C₉H₁₆O₃ 172.224Flavouring agent with heavy sweet odour
resembling apricot/pineapple. Liq. Insol.H₂O. d 1.01. Bp 227°.

2-Propenoyl: Tetrahydrofurfuryl acrylate

[2399-48-6]

C₈H₁₂O₃ 156.181 d_4^{20} 1.06. Bp₉ 87°. n_D^{20} 1.4580.

2-Methyl-2-propenoyl: [2455-24-5]

C₉H₁₄O₃ 170.208 d_4^{20} 1.04. Bp_{0.4} 52°. n_D^{20} 1.4585.9*Z*-Octadecenoyl: [5420-17-7]C₂₃H₄₂O₃ 366.583 d^{25} 0.92. Bp₂ 222-227°. n_D^{25} 1.4655.

Benzoyl: [2217-32-5]

C₁₂H₁₄O₃ 206.241Bp_{0.1} 89°.

3,5-Dinitrobenzoyl:

Small needles (EtOH). Mp 83-84°.

Cinnamoyl: Tetrahydrofurfuryl cinnamate.

FEMA 3320

[65505-25-1]

C₁₄H₁₆O₃ 232.279

Flavouring agent with sweet vinous odour.

Sl. viscous liq. Insol. H₂O. d 1.11.

Bp >300°.

Me ether: Tetrahydro-2-(methoxymethyl)-

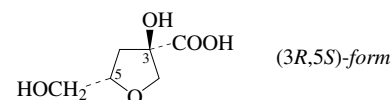
furan, 8CI

[19354-27-9]

C₆H₁₂O₂ 116.16Bp 141-144° (140°). n_D^{20} 1.4260.

Et ether: 2-(Ethoxymethyl)tetrahydrofuran

[62435-71-6]

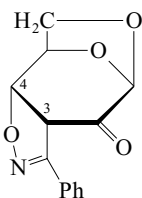
C₇H₁₄O₂ 130.186Bp₇₂₆ 152-154° Bp₁₁ 47-55°.**(E)-form**Found in fermented soya hydrolysate
(shoyu) and tobacco.Aldrich Library of FT-IR Spectra, 1st edn., 1985,
1, 240B (ir)Aldrich Library of 13C and 1H FT NMR
Spectra, 1992, 1, 384A; 1089B (nmr)Aldrich Library of FT-IR Spectra: Vapor Phase,
1989, 3, 317B (ir)Kirner, W.R. et al., J.A.C.S., 1930, 52, 3251-
3256 (synth)Burdick, H.E. et al., J.A.C.S., 1934, 56, 438-442
(synth)Fein, M.L. et al., J.A.C.S., 1944, 66, 1201-1203
(2-propenoyl)Rehberg, C.E. et al., J.O.C., 1949, 14, 1094-
1098 (2-methyl-2-propenoyl, acrylate,
methacrylate, synth)Moshkin, P.A. et al., CA, 1959, 53, 15051a
(octadecanoyl)Hartman, F.C. et al., J.O.C., 1964, 29, 873-877
(synth)Defaye, J. et al., J. Het. Chem., 1969, 6, 229-234
(synth)Butler, J.D. et al., J.C.S. (C), 1969, 173-176
(synth)Durette, P.L. et al., Chem. Ber., 1974, 107, 937-
950 (synth)Lloyd, R.A. et al., Tob. Sci., 1976, 20, 125-133
(isol)Kirk-Othmer Encycl. Chem. Technol., 3rd edn.,
Wiley, 1978, 11, 520 (rev)Descours, D. et al., Helv. Chim. Acta, 1991, 74,
1757-1763 (abs config)Fenaroli's Handbook of Flavor Ingredients, 3rd
edn., (ed. Burdock, G.A.), CRC Press, 1995,
1, 743-744 (esters)Alajarin, R. et al., J. Med. Chem., 1995, 38,
2830-2841 (synth, pmr)Encyclopedia of Food and Color Additives, (ed.
Burdock, G.A.), CRC Press, 1997, 2758-2762
(esters)Mravik, A. et al., Chem. Eur. J., 1998, 4, 1621-
1627 (resoln)Lewis, R.J. et al., Sax's Dangerous Properties of
Industrial Materials, 8th edn., Van Nostrand
Reinhold, 1992, TCT000**Tetrahydro-3-hydroxy-5-hydroxymethyl-3-furancarboxylic acid, 9CI****T-26**1,4-Anhydro-2-C-carboxy-3-deoxypentitol,
9CI. 2',4'-Anhydro-3-deoxy-2-C-(hydroxy-
methyl)pentonic acid, 9CI. 1,4-Anhydro-3-
deoxypentitol-2-carboxylic acid. Anhydroi-
sosaccharinic acid
[58534-87-5]C₆H₁₀O₅ 162.142The 3 different systematic names have
different numbering schemes; number-
ing shown is for the furan name; erythro
and threo stereodescriptors depend on
which nomenclature is used.

[100897-01-6, 100897-02-7]

Petersson, G. et al., Acta Chem. Scand., Ser. B,
1976, 30, 27-30 (synth, ms)Alen, R. et al., Carbohydr. Res., 1984, 144, 163-
168 (synth, chromatog)Niemela, K. et al., Carbohydr. Res., 1987, 162,
303-306 (bibl)Furneaux, R.H. et al., J.C.S. Perkin 1, 1988, 49-
51 (synth, cmr, lactone, Me esters)

3a,7,8,8a-Tetrahydro-3-phenyl-5,8-epoxyxepino[4,5-d]isoxazol-4(5H)-one

T-27



(3R,4S)-form

C₁₃H₁₁NO₄ 245.234

Carbohydrate numbering shown. Synthetically useful monosaccharide deriv.

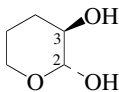
(3R,4S)-form*D*-ribo-form

[117248-87-0]

Prisms (Et₂O). Mp 177-178°. [α]_D³² +146 (c, 0.5 in CHCl₃).**(3S,4R)-form***D*-lyxo-formCryst. (hexane/Et₂O). Mp 134-135°.Blake, A.J. *et al.*, *Tetrahedron*, 1992, **48**, 8053 (synth, pmr, cryst struct)**Tetrahydro-2H-pyran-2,3-diol, 9CI**

T-28

2,3-Dihydroxytetrahydropyran. 3,4-Dideoxy-glycero-pentopyranose [86728-74-7]



(2R,3R)-form

C₅H₁₀O₃ 118.132**(2R,3R)-form***D*-trans-form

2-Me ether: Methyl 3,4-dideoxy-β-D-glycero-pentopyranoside. Tetrahydro-2-methoxy-2H-pyran-3-ol. 3-Hydroxy-2-methoxytetrahydropyran [109668-75-9]

C₆H₁₂O₃ 132.159Bp₂₀ 100°. [α]_D²⁰ -102 (c, 0.76, CHCl₃).**(2S,3R)-form***D*-cis-form

2-Me ether: Methyl 3,4-dideoxy-α-D-glycero-pentopyranoside [104011-38-3]

C₆H₁₂O₃ 132.159

Liq.

(2S,3S)-form*L*-trans-form

2-Me ether: Methyl 3,4-dideoxy-β-L-glycero-pentopyranoside [109668-74-8]

C₆H₁₂O₃ 132.159Bp₂₀ 100° Bp₈ 78.5-79.5°. [α]₃₆₅²⁰ +287 (c, 1 in CHCl₃).**(2RS,3RS)-form**

(±)-trans-form

[97102-63-1]

2-Me ether: [40984-76-7]

[6559-02-0]

Liq. Bp₂₀ 110-120°.

2-Me ether, 3-Ac: [40985-10-2]

C₈H₁₄O₄ 174.196Liq. Bp₂₀ 120°.**(2RS,3SR)-form**

(±)-cis-form

[97102-62-0]

2-Me ether: [40984-75-6]

[6559-11-1]

Liq. Bp₂₀ 110-120°.

2-Me ether, 3-Ac: [40985-09-9]

Liq. Bp₂₀ 120°.Sweet, F. *et al.*, *Can. J. Chem.*, 1967, **45**, 1007-1011 (synth)Chmielewski, M. *et al.*, *Rocz. Chem.*, 1972, **46**,

1767-1775 ((±)-form 2-Me ether derivs)

Frimer, A.A. *et al.*, *Synthesis*, 1977, 578-579

(2S,3S-form 2-Me ether)

Hoffmann, R.V. *et al.*, *J.O.C.*, 1983, **48**, 3308-

3314 (2-Me ethers)

Anker, G. *et al.*, *Carbohydr. Res.*, 1987, **159**,

159-164 (2-Me ethers)

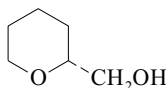
Hague, M. *et al.*, *Chem. Pharm. Bull.*, 1987, **35**,

1016-1029 (2S,3R-form 2-Me ether)

Tetrahydro-2H-pyran-2-methanol, 9CI

T-29

2-Hydroxymethyltetrahydropyran. Tetrahydro-2-(hydroxymethyl)pyran. 5-Hydroxymethyl-δ-valerolactone [100-72-1]



(R)-form

C₆H₁₂O₂ 116.16

► Severe skin and eye irritant. UQ0175000

(R)-form [70766-06-2]

Bp₁₅ 85-88°. [α]_D²⁰ -3.3 (c, 1.12 in H₂O).**(S)-form**Bp_{0.5} 130-140°. [α]_D²⁰ +42 (+35) (c, 1.0 in CHCl₃).Ac: [α]_D²⁰ +20 (c, 0.98 in CCl₄).**(±)-form**Liq. d₄²⁵ 1.04. Bp₁₄ 74°.

Ac: [5440-83-5]

C₈H₁₄O₃ 158.197Bp₂₀ 80-85°.Aldrich Library of FT-IR Spectra, 1st edn., 1985, **1**, 243C (ir)

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **1**, 390B (nmr)Aldrich Library of FT-IR Spectra: Vapor Phase, 1989, **3**, 322A (ir)Misono, A. *et al.*, *CA*, 1968, **68**, 104887q

(synth)

Colonge, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1969, 956

(synth)

Lafuma, F. *et al.*, *Can. J. Chem.*, 1978, **56**, 2076

(synth)

Jurczak, J. *et al.*, *J.O.C.*, 1979, **44**, 3347 (synth)Corey, E.J. *et al.*, *Tet. Lett.*, 1983, **24**, 4883

(S-form)

Pianetti, P. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**,

811-815 (S-form)

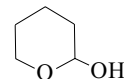
Lewis, R.J. *et al.*, *Sax's Dangerous Properties of**Industrial Materials*, 8th edn., Van Nostrand

Reinhold, 1992, MDS500

Tetrahydro-2H-pyran-2-ol, 9CI

T-30

2-Hydroxytetrahydropyran [694-54-2]

C₅H₁₀O₂ 102.133

Major tautomeric form of 5-Hydroxypentanal, H-189.

(±)-form [118992-14-6]

The tetrahydropyranloxy group is a useful acid-labile protecting group. Therefore many ethers known.

Oil. Bp₆ 66-67°.

Et ether: 2-Ethoxytetrahydropyran

[4819-83-4]

[132759-43-4]

C₇H₁₄O₂ 130.186Oil. Bp₁₃ 44°.

2-Propynyl ether: Tetrahydro-2-(2-propynyloxy)-2H-pyran, 9CI

[6089-04-9]

[69841-59-4]

C₈H₁₂O₂ 140.182Bp₉ 63-65°. n_D²⁰ 1.4580.

3-Butynyl ether: [40365-61-5]

C₉H₁₄O₂ 154.208Used for the synth. of γ-hydroxy-α,β-acetylenic acids, esters and ketones. Liq. d 0.98. Bp₁₈ 92-95°. n_D²⁰ 1.4570.

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **3**, 520A (nmr)

Aldrich Library of FT-IR Spectra: Vapor Phase,

1989, **3**, 1592C (ir)Schnipp, L.F. *et al.*, *J.A.C.S.*, 1946, **68**, 1646-

1648 (synth)

Org. Synth., Coll. Vol., **3**, 1955, 470-471 (synth)de Hoog, A.J. *et al.*, *Org. Magn. Reson.*, 1974,**6**, 233-235 (ethers, cmr)Birch, A.J. *et al.*, *J.C.S. Perkin 1*, 1990, 1423

(3-butynyl ether, synth, ir, pmr)

Griffiths, J. *et al.*, *Tetrahedron*, 1992, **48**, 5543-

5556 (3-butynyl ether)

Miller, M. *et al.*, *J.O.C.*, 1993, **58**, 6679

(3-butynyl ether)

Encyclopaedia of Reagents for Organic Synthesis,

(ed. Paquette, L.A.), Wiley, 1995, **7**, 4773-

4775 (2-propynyl ether, use)

Org. Synth., 1999, **76**, 178-188 (2-propynyl ether,

synth, ir, pmr, cmr)

1,2,4,5-Tetrahydroxy-2,5-bis(hydroxymethyl)-3-pentanone

T-31

2,4-Bis-C-(hydroxymethyl)-3-pentulose, 9CI

[74042-85-6]

(HOCH₂)₂C(OH)COC(OH)(CH₂OH)₂C₇H₁₄O₇ 210.183

Prod. from formaldehyde polym. under controlled conditions. Syrup.

Shigemasa, Y. *et al.*, *Carbohydr. Res.*, 1980, **80**, C1 (synth, pmr, cmr)Shigemasa, Y. *et al.*, *Bull. Chem. Soc. Jpn.*,1990, **63**, 389 (synth)

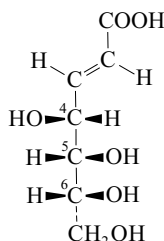
4,5,6,7-Tetrahydroxydecyl glucosinolate

T-32

 $\text{H}_3\text{CCH}_2\text{CH}_2\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})(\text{CH}_2)_3\text{C}(\text{SGlc})=\text{NOSO}_3\text{H}$
 $\text{C}_{17}\text{H}_{33}\text{NO}_{13}\text{S}_2$ 523.579Stereochem. not known. Isol. from *Capparis grandis*.Gaind, K.N. *et al.*, *Phytochemistry*, 1975, **14**, 1415 (isol)**4,5,6,7-Tetrahydroxy-2-heptenoic acid**

T-33

2,3-Dideoxyhept-2-enonic acid, 9CI, 8CI

 $\text{C}_7\text{H}_{12}\text{O}_6$ 192.168**(2E,4R,5S,6R)-form**

trans-D-arabino-form

[27304-31-0]

Cryst. (EtOH/Et₂O). Mp 175-177°. [α]_D²¹ +17.7 (c, 0.83 in H₂O).

4,5:6,7-Diisopropylidene: [65391-46-0]

 $\text{C}_{13}\text{H}_{20}\text{O}_6$ 272.297Cryst. (CH₂Cl₂/MeOH). Mp 131.5-132°. [α]_D²² -3.6 (c, 1.85 in CHCl₃).

4,5,6,7-Tetra-Ac: 4,5,6,7-Tetra-O-acetyl-2,3-dideoxy-D-arabino-hept-2-enonic acid

 $\text{C}_{15}\text{H}_{20}\text{O}_{10}$ 360.317Cryst. (toluene). Mp 132°. [α]_D²⁴ +39 (c, 2.0 in CHCl₃).

Me ester, 4,5:6,7-diisopropylidene: [65371-70-2]

 $\text{C}_{14}\text{H}_{22}\text{O}_6$ 286.324Syrup. [α]_D²⁵ +6.6 (c, 3.0 in EtOH).

Me ester, 4,5,6,7-tetra-Ac: [27304-27-4]

 $\text{C}_{16}\text{H}_{22}\text{O}_{10}$ 374.344Cryst. (2-propanol). Mp 116-117°. [α]_D²⁶ +35 (c, 1.0 in CHCl₃).

Et ester, 4,5:6,7-di-O-isopropylidene: [65391-47-1]

 $\text{C}_{15}\text{H}_{24}\text{O}_6$ 300.351Syrup. [α]_D²² -2.2 (c, 2.5 in EtOH).**(2E,4S,5R,6S)-form**

trans-L-arabino-form

Me ester, 4,5,6,7-tetra-Ac:

 $\text{C}_{16}\text{H}_{22}\text{O}_{10}$ 374.344

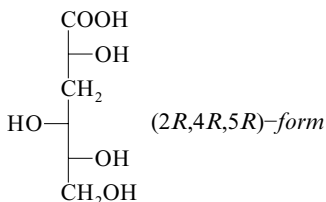
Mp 117-118°.

[77970-35-5]

Charon, D. *et al.*, *Carbohydr. Res.*, 1969, **11**, 447 (synth, pmr)Dijong, I. *et al.*, *Annalen*, 1970, **735**, 138 (synth)Dyong, I. *et al.*, *Chem. Ber.*, 1977, **110**, 3655Horton, D. *et al.*, *Chem. Comm.*, 1981, 88Horton, D. *et al.*, *Carbohydr. Res.*, 1983, **21**, 135**2,4,5,6-Tetrahydroxyhexanoic acid**

T-34

3-Deoxyhexonic acid. Metasaccharinic acid

 $\text{C}_6\text{H}_{12}\text{O}_6$ 180.157**(2R,4R,5R)-form**D-xylo-form. α -D-Galactometasaccharinic acid

[18521-63-6]

[α]_D +27.4 (H₂O) (as Ba salt).

Anilide:

 $\text{C}_{12}\text{H}_{17}\text{NO}_5$ 255.27Mp 108-109°. [α]_D +57.3 (H₂O).Phenylhydrazide: Mp 113-115° Mp 145°. [α]_D²⁰ +34.4 (H₂O).

1,4-Lactone: 3-Deoxy-D-xylo-hexono-1,4-lactone

[6936-66-9]

 $\text{C}_6\text{H}_{10}\text{O}_5$ 162.142Cryst. (MeOH). Mp 142-143°. [α]_D -48 (H₂O) (-45.6).

1,4-Lactone, tri-Ac: 2,5,6-Tri-O-acetyl-3-deoxy-D-xylo-hexono-1,4-lactone

[79595-91-8]

 $\text{C}_{12}\text{H}_{16}\text{O}_8$ 288.254

Syrup.

(2R,4R,5S)-formL-arabino-form. β -L-Glucometasaccharinic acid

1,4-Lactone: 3-Deoxy-L-arabino-hexono-1,4-lactone

[134524-29-1]

 $\text{C}_6\text{H}_{10}\text{O}_5$ 162.142Syrup. [α]_D +4 (c, 1.2 in H₂O).**(2R,4S,5R)-form**D-ribo-form. α -D-Glucometasaccharinic acid. Glucometasaccharin. Metasaccharin

[498-43-1]

[104760-52-3]

Alkaline degradation product of Laminarin, L-20. [α]_D²⁰ -5 (H₂O) (as Ca salt).Phenylhydrazide: Mp 108-109°. [α]_D²⁰ 0 (c, 0.94 in MeOH).

1,4-Lactone: 3-Deoxy-D-ribo-hexono-1,4-lactone

[499-87-6]

 $\text{C}_6\text{H}_{10}\text{O}_5$ 162.142Mp 108-109°. [α]_D +26.2 (c, 1.0 in H₂O).

1,4-Lactone, tri-Ac: 2,5,6-Tri-O-acetyl-3-deoxy-D-ribo-hexono-1,4-lactone

[72599-55-4]

 $\text{C}_{12}\text{H}_{16}\text{O}_8$ 288.254Oil. [α]_D²⁰ +14 (c, 1.0 in CHCl₃).

1,5-Lactone, tribenzoyl: 2,4,6-Tri-O-benzoyl-3-deoxy-D-ribo-hexono-1,5-lactone

[66107-89-9]

 $\text{C}_{27}\text{H}_{22}\text{O}_8$ 474.466Mp 115-117°. [α]_D²⁰ -10 (90% Me₂CO aq.).**(2R,4S,5S)-form**

L-lyxo-form. L-Parasaccharinic acid.

 β -L-Galactometasaccharinic acid

1,4-Lactone, tri-Ac: 2,5,6-Tri-O-acetyl-3-deoxy-L-lyxo-hexono-1,4-lactone

[104731-91-1]

 $\text{C}_{12}\text{H}_{16}\text{O}_8$ 288.254Cryst. (Et₂O/pentane). Mp 97.5-98.5°.[α]_D²⁰ +10.9 (c, 0.3 in CHCl₃).**(2S,4R,5R)-form**

D-lyxo-form. D-Parasaccharinic acid.

 β -D-Galactometasaccharinic acid

[30923-12-7]

[α]_D -1.3 (H₂O) (as Ba salt).Phenylhydrazide: Mp 85-90°. [α]_D -1.9 (H₂O).

1,4-Lactone: 3-Deoxy-D-lyxo-hexono-1,4-lactone

[55658-88-3]

 $\text{C}_6\text{H}_{10}\text{O}_5$ 162.142Mp 55-60°. [α]_D -63 (H₂O).**(2S,4R,5S)-form**D-ribo-form. α -L-Glucometasaccharinic acid

1,4-Lactone: 3-Deoxy-L-ribo-hexono-1,4-lactone

[104760-51-2]

Cryst. (EtOH). Mp 104-15°. [α]_D²⁰ -27(c, 1.4 in H₂O).

1,4-Lactone, tri-Ac: 2,5,6-Tri-O-acetyl-3-deoxy-L-ribo-hexono-1,4-lactone

[104731-86-4]

 $\text{C}_{12}\text{H}_{16}\text{O}_8$ 288.254[α]_D²⁰ -28.3 (c, 0.64 in CHCl₃).**(2S,4S,5R)-form**D-arabino-form. β -D-Glucometasaccharinic acid

[1518-59-8] Alkaline degradation product of Laminarin, L-20.

Cryst. (H₂O)(as Ca salt). Mp 161-162°.[α]_D²⁰ -24 (H₂O) (as Ca salt).

Phenylhydrazide:

Cryst. (MeOH/Et₂O). Mp 128-129°.[α]_D¹³ -46.7 (c, 1.2 in MeOH).

2,4,5,6-Tetra-Ac, Me ester: [72599-58-7]

 $\text{C}_{15}\text{H}_{22}\text{O}_{10}$ 362.333Oil. [α]_D²⁰ +86 (c, 1 in CHCl₃).

1,4-Lactone: 3-Deoxy-D-arabino-hexono-1,4-lactone

[50480-80-3]

 $\text{C}_6\text{H}_{10}\text{O}_5$ 162.142Cryst. (EtOH/pentane). Mp 92-93°. [α]_D +7 (c, 1 in H₂O).

1,4-Lactone, tri-Ac: 2,5,6-Tri-O-acetyl-3-deoxy-D-arabino-hexono-1,4-lactone

[72599-56-5]

 $\text{C}_{12}\text{H}_{16}\text{O}_8$ 288.254Oil. [α]_D²⁰ +37 (c, 1.0 in CHCl₃).

1,4-Lactone, 2-Me: 3-Deoxy-2-O-methyl-D-arabino-hexono-1,4-lactone

[197296-31-4]

 $\text{C}_7\text{H}_{12}\text{O}_5$ 176.169Syrup. [α]_D +5.6 (c, 0.8 in MeOH).

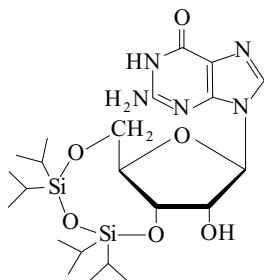
1,5-Lactone, tri-Ac: [72599-57-6]

 $\text{C}_{12}\text{H}_{16}\text{O}_8$ 288.254Oil. [α]_D²⁰ +16 (c, 1 in CHCl₃).

1,5-Lactone, tribenzoyl: 2,4,6-Tri-O-benzoyl-3-deoxy-D-arabino-hexono-1,5-lactone

Robins, M.J. *et al.*, *J.A.C.S.*, 1983, **105**, 4059
(4-N-Ac, synth, ms)

3',5'-O-(Tetraisopropylidisiloxane-1,3-diyl)guanosine T-39
3',5'-O-[1,1,3,3-Tetrakis(1-methylethyl)-1,3-disiloxanediyl]guanosine, 9CI
[69304-44-5]



$C_{22}H_{39}N_5O_6Si_2$ 525.751

3',5'-Protected nucleoside. Cryst. (EtOH).
Mp 250° dec.

2'-Phenylthionocarbonate:
Cryst. (EtOH). Mp 255-258°.

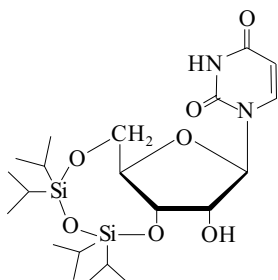
Markiewicz, W.T. *et al.*, *J. Chem. Res., Synop.*,
1979, 24; *J. Chem. Res., Miniprint*, 1979, 181
(synth)

Verdegaal, C.H.M. *et al.*, *Tet. Lett.*, 1980, 1571
(synth)

Verdegaal, C.H.M. *et al.*, *Rec. Trav. Chim.*
(*J. R. Neth. Chem. Soc.*), 1981, **100**, 200
(synth, pmr, cmr)

Robins, M.J. *et al.*, *J.A.C.S.*, 1983, **105**, 4059
(phenylthionocarbonate, uv, synth, ms)

3',5'-O-(Tetraisopropylidisiloxane-1,3-diyl)uridine T-40
3',5'-O-[1,1,3,3-Tetrakis(1-methylethyl)-1,3-disiloxanediyl]uridine, 9CI. 3',5'-O-(Tetraisopropylidisiloxanediyl)uridine
[69304-38-7]



$C_{21}H_{38}N_2O_7Si_2$ 486.711

Oil. λ_{max} 262 nm (ϵ 9 600) (MeOH).

2'-Phenyl thionocarbonate: [76700-78-2]
Oil. λ_{max} 262, 232 nm. λ_{min} 245 nm
(MeOH).

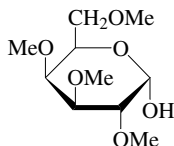
Markiewicz, W.T. *et al.*, *Nucleic Acids Res., Spec. Publ.*, 1978, **4**, S185

Markiewicz, W.T. *et al.*, *J. Chem. Res., Synop.*,
1979, 24

Verdegaal, C.H.M. *et al.*, *Tet. Lett.*, 1980, 1571

Robins, M.J. *et al.*, *J.A.C.S.*, 1983, **105**, 4059
(synth, ms)

2,3,4,6-Tetra-O-methylgalactose, 9CI, 8CI



$C_{10}H_{20}O_6$ 236.264

α -D-Pyranose-form [34361-56-3]
Mp 71-73°. $[\alpha]_D$ +150 \rightarrow +114 (H₂O).

β -D-Pyranose-form [34361-57-4]
Syrup. $[\alpha]_D$ +102.2 \rightarrow +109.5 (H₂O).

Me glycoside: See Methyl β -D-galactopyranoside, M-186

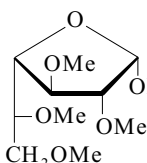
Maher, G.G. *et al.*, *Adv. Carbohydr. Chem.*,
1955, **10**, 273 (rev)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, **23**,
275 (pmr)

Abbas, S.A. *et al.*, *J.C.S. Perkin 1*, 1976, 1351
(cmr)

Vogt, D.C. *et al.*, *Carbohydr. Res.*, 1990, **206**,
333 (pmr, cmr)

2,3,5,6-Tetra-O-methylgalactose



$C_{10}H_{20}O_6$ 236.264

D-Furanose-form
Syrup. Bp_{0.05} 136°. $[\alpha]_D^{20}$ -32 (c, 2.12 in
H₂O).

α -D-Furanose-form

Me glycoside: Methyl 2,3,5,6-tetra-O-methyl- α -D-galactofuranoside
[10225-58-8]

$C_{11}H_{22}O_6$ 250.291

Syrup. Bp_{0.015} 112°. $[\alpha]_D$ -46.3 (c, 1.42 in
EtOH).

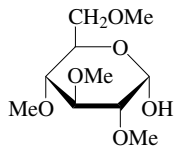
Haworth, W.N. *et al.*, *J.C.S.*, 1924, **125**, 2468
(D-fur-form, synth, α -D-Me fur)

Maher, G.G. *et al.*, *Adv. Carbohydr. Chem.*,
1955, **10**, 273 (rev)

Gelpi, M.E. *et al.*, *An. Asoc. Quim. Argent.*,
1973, **61**, 28; *C.A.*, **78**, 160008x (α -D-Me fur)

2,3,4,6-Tetra-O-methylglucose, 9CI, 8CI

[7506-68-5]



$C_{10}H_{20}O_6$ 236.264

T-41

α -D-Pyranose-form [6163-35-5]
Cryst. (petrol). Mp 94-97°. $[\alpha]_D^{30}$ +106
 \rightarrow +78.5 (c, 2.8 in H₂O).

Benzoyl: 1-O-Benzoyl-2,3,4,6-tetra-O-methyl- α -D-glucopyranose

[40632-16-4]

$C_{17}H_{24}O_7$ 340.372

Syrup. $[\alpha]_D^{20}$ +123.3 (c, 0.6 in CHCl₃).

Tosyl: 2,3,4,6-Tetra-O-methyl-1-O-tosyl- α -D-glucopyranose

$C_{17}H_{26}O_8S$ 390.454

Mp 79-80° dec. $[\alpha]_D^{22}$ +175.9 (C₆H₆).

Me glycoside: Methyl 2,3,4,6-tetra-O-methyl- α -D-glucopyranoside

[605-81-2]

$C_{11}H_{22}O_6$ 250.291

Syrup. $[\alpha]_D$ +1.51 (Me₂CO).

β -D-Pyranose-form [19146-17-9]

Mp 50°. $[\alpha]_D^{20}$ +73.1 \rightarrow +83.1 (H₂O).

Benzoyl: 1-O-Benzoyl-2,3,4,6-tetra-O-methyl- β -D-glucopyranose

[40632-17-5]

$C_{17}H_{24}O_7$ 340.372

Syrup. $[\alpha]_D^{20}$ -27.55 (c, 0.9 in CHCl₃).

Me glycoside: Methyl 2,3,4,6-tetra-O-methyl- β -D-glucopyranoside

[3149-65-3]

$C_{11}H_{22}O_6$ 250.291

Mp 40°. $[\alpha]_D$ -17.43 (EtOH).

[3615-47-2]

Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*,
1950, **5**, 145 (rev)

Org. Synth., Coll. Vol., 3, 1955, 800 (D-form,
synth)

Hultman, D.P. *et al.*, *J.C.S. Perkin 2*, 1972, 1525
(α -D-pyr, synth, β -D-Me pyr)

Brown, A. *et al.*, *J.A.C.S.*, 1973, **95**, 1593

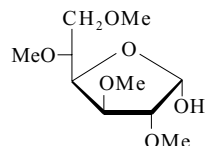
(α -D-pyr benzoyl, β -D-pyr benzoyl)

Streefkerk, D.G. *et al.*, *Carbohydr. Res.*, 1976,
49, 13 (pmr)

Abbas, S.A. *et al.*, *J.C.S. Perkin 1*, 1976, 1351
(cmr)

2,3,5,6-Tetra-O-methylglucose, 9CI T-44

[13554-83-1]



$C_{10}H_{20}O_6$ 236.264

D-Furanose-form

Syrup. Bp_{0.2} 117°. $[\alpha]_D^{25}$ -7.6 (c, 2.8 in
H₂O).

α -D-Furanose-form

Me glycoside: Methyl 2,3,5,6-tetra-O-methyl- α -D-glucufuranoside

[13266-47-2]

$C_{11}H_{22}O_6$ 250.291

Mp 11°. Bp_{0.04} 94°. $[\alpha]_D^{18}$ +102 (CHCl₃).

β -D-Furanose-form

Me glycoside: Methyl 2,3,5,6-tetra-O-methyl- β -D-glucufuranoside

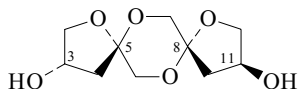
$C_{11}H_{22}O_6$ 250.291

Syrup. $[\alpha]_D$ -72.7 (MeOH).

Haworth, W.N. *et al.*, *J.C.S.*, 1932, 2254
(*D-fur-form, synth*)
Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*,
1950, **5**, 145 (rev)
Gelpi, M.E. *et al.*, *Carbohydr. Res.*, 1973, **28**,
147 (*D-fur-form, synth*)

1,6,9,13-Tetraoxadispiro- [4.2.4.2]tetradecane-3,11-diol

T-45



$C_{10}H_{16}O_6$ 232.233

(3*S*,5*R*,8*R*,11*S*)-form

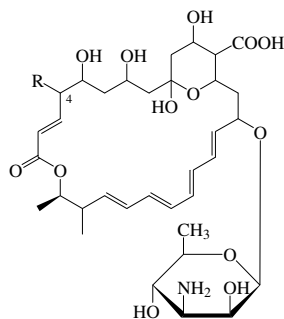
Di-(3-deoxy-*D*-glycero-pentulose)
1,2':2,1'-dianhydride
Isol. in small yield from alkaline aqueous
solns. of Lactose, L-13. Mp 148-149°. $[\alpha]_D^{20}$
+12 (c, 0.23 in H_2O).

French, A.D. *et al.*, *Carbohydr. Res.*, 1994, **260**,
1 (*synth, pmr, cmr, cryst struct*)

Tetrin A, 9CI, 8CI

[34280-28-9]

T-46



R = H

$C_{34}H_{51}NO_{13}$ 681.776

Macrolide antibiotic. Isol. from *Streptomyces* sp. Illinois 155-2. Antifungal agent. Fine needles (MeOH/butanol aq.). $[\alpha]_D^{25}$ +8.3 (c, 0.72 in Py). $[\alpha]_D^{28}$ +27.5 (c, 1.0 in Py). Dec. >350°. λ_{max} 214 (ε 13000); 278 (ε 35800); 290 (ε 55800); 303 (ε 78600); 318 (ε 75900) (80% MeOH) (Derep).

N-Ac: [62008-34-8]

Needles (MeOH/EtOAc). Mp 167-171°. $[\alpha]_D^{25}$ +97 (EtOH) ((+54)).

4-Hydroxy: Tetrin B

[34280-27-8]

$C_{34}H_{51}NO_{14}$ 697.775

Macrolide antibiotic. Isol. from *Streptomyces* sp. Illinois 155-2. Antifungal agent. Brown amorph. powder. Mp 360°. $[\alpha]_D^{24}$ +43.5 (c, 0.14 in MeOH). $[\alpha]_D^{28}$ +45 (c, 0.3 in Py). Darkens at 160-165°, blackens at 250-295°. λ_{max} 214 (ε 13000); 278 (ε 35800); 290 (ε 55800); 303 (ε 78600); 318 (ε 75900) (80% MeOH) (Derep).

5-Deoxy, 4,5-epoxide: Tetrin C

$C_{34}H_{49}NO_{13}$ 679.76

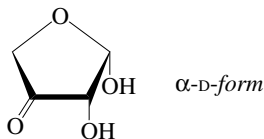
Isol. from *Streptomyces* sp. GK9244. Antifungal agent. Pale yellow solid. $[\alpha]_D^{23}$ +19.3 (c, 1.5 in MeOH). λ_{max} 280; 292; 304; 318 (MeOH).

Pandey, R.C. *et al.*, *J.A.C.S.*, 1971, **93**, 3738
(*struct, ir, nmr, ms*)
Rinehart, K.L. *et al.*, *J.A.C.S.*, 1971, **93**, 3747
(*isol, Tetrin B*)
Pandey, R.C. *et al.*, *J. Antibiot.*, 1976, **29**, 1035
(*cmr, uv*)
Dornberger, K. *et al.*, *Tetrahedron*, 1976, **32**,
3069 (*struct, cmr, Tetrin B*)
Ryu, G. *et al.*, *J. Nat. Prod.*, 1999, **62**, 917-919
(*Tetrin C*)

glycero-Tetros-3-ulose

glycero-Tetrofuranos-3-ulose

T-47



$C_4H_6O_4$ 118.089

α-D-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-α-D-glycero-tetrofuranos-3-ulose
[34693-28-2]

$C_7H_{10}O_4$ 158.154

Needles (hexane). Mp 61-62° (50-60°). $[\alpha]_D^{28}$ +140 (c, 1.6 in $CHCl_3$). $[\alpha]_D$ +151 (c, 1.9 in $CHCl_3$).

1,2-O-Isopropylidene, covalent hydrate: Tetrahydro-2,2-dimethylfuro[2,3-d]-1,3-dioxole-6,6-diol, 9CI

[25018-71-7]

$C_7H_{12}O_5$ 176.169

Needles. Mp 65-80°. $[\alpha]_D$ +79.5 (c, 1.0 in $CHCl_3$).

α-L-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-α-L-glycero-tetrofuranos-3-ulose, 8CI

[22528-94-5]

$C_7H_{10}O_4$ 158.154

Mp 56-58°. $[\alpha]_D^{18}$ -157 (c, 1.2 in $CHCl_3$).

1,2-O-Isopropylidene, covalent hydrate:

[22403-86-7]

Mp 60-75°. $[\alpha]_D^{18}$ -73.4 (c, 1.0 in $CHCl_3$).

1,2-O-Isopropylidene, oxime: [22893-96-5]

$C_7H_{11}NO_4$ 173.168

Cryst. (hexane). Mp 95-100.6°. $[\alpha]_D$ -117.5 (c, 0.6 in EtOH).

1,2-O-Isopropylidene, p-nitrophenylhydrazine: [29360-16-5]
Mp 127-128°.

Carey, F.A. *et al.*, *Carbohydr. Res.*, 1966, **3**, 205
(α-D-isopropylidene)

Tronchet, J.M.J. *et al.*, *Helv. Chim. Acta*, 1970, **53**, 1174 (α-L-isopropylidene, α-L-isopropylidene hydrate)

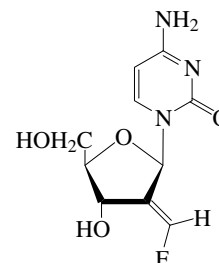
Ezekiel, A.D. *et al.*, *Carbohydr. Res.*, 1971, **20**, 251 (α-D-isopropylidene, α-D-isopropylidene hydrate)

Tronchet, J.M.J. *et al.*, *Carbohydr. Res.*, 1975, **41**, 1 (*pmr*)

Tezacitabine, INN, USAN

T-48

2'-Deoxy-2'-(fluoromethylene)cytidine,
9CI. FMDc. MDL 101731
[171233-40-2]



$C_{10}H_{12}FN_3O_4$ 257.221

Ribonucleotide-diphosphate reductase inhibitor. Antineoplastic agent. Designated an orphan drug by FDA (2003) for treatment of cancer of the oesophagus and stomach. USAN name refers to the monohydrate.

(2'E)-form [130306-02-4]

Cryst. (EtOAc). Mp 166-168°. Pharmacol. active isomer.

(2'Z)-form [130306-01-3]

Solid. Mp 166-168°.

[171176-43-5]

Eur. Pat., (Merrell Dow), 1990, 372 268; *CA*, **113**, 212579x (*synth, pharmacol*)

McCarthy, J.R. *et al.*, *Tetrahedron*, 1996, **52**, 45-58 (*synth, isomers*)

Sun, L.Q. *et al.*, *Cancer Res.*, 1997, **57**, 4023-4028; 1998, **58**, 5411-5417; 1999, **59**, 5219-5226 (*pharmacol*)

Masuda, N. *et al.*, *Invest. New Drugs*, 1998, **16**, 245-254 (*pharmacol*)

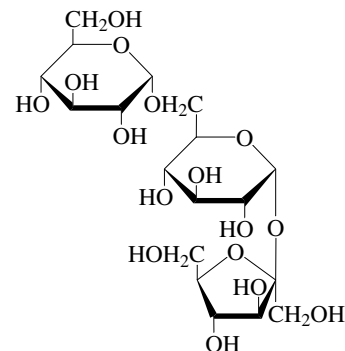
Woessner, R.D. *et al.*, *Drugs of the Future*, 1999, **24**, 502-510 (rev)

Flaherty, K.T. *et al.*, *Cancer (Philadelphia)*, 2003, **97**, 1985-1990 (*clin trial*)

Theanderose

T-49

β-D-Fructofuranosyl α-D-glucopyranosyl-
(1→6)-α-D-glucopyranoside, 9CI. α-Isomaltosyl-β-D-fructoside. 6^G-α-D-Glucosyl-
sucrose
[21291-36-1]



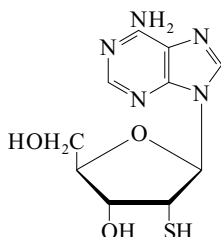
$C_{18}H_{32}O_{16}$ 504.441

Main component of the sweetener Theandioligo. Constit. of honey and tobacco. Prod. by *Aspergillus* spp. and *Mucor* spp. Anticariogenic agent. Cryst. (EtOH).

Mp 118-120°. [α]_D¹⁸ +102.5 (c, 2 in H₂O).
Barker, S.A. *et al.*, *J.C.S.*, 1957, 2064-2067
(*synth*)
Siddiqui, I.R. *et al.*, *Tob. Int.*, 1983, **185**, 27-31
(*occur*)
Morel de Boil, P.G. *et al.*, *Int. Sugar J.*, 1992,
94, 90-94 (*synth*)
Japan. Pat., 1995, 95 51 084; *CA*, **122**, 313069x
Japan. Pat., 1995, 95 75 588; *CA*, **122**, 289074x
(*synth*)

2'-Thioadenosine

T-50



C₁₀H₁₃N₅O₃S 283.31
Prisms. Mp 150° dec. [α]_D²⁰ -92 (c, 0.59 in DMSO).

2',3'-O-Isopropylidene:C₁₃H₁₇N₅O₃S 323.375

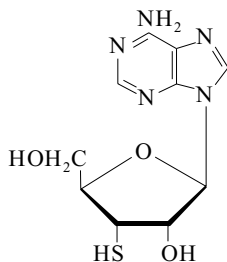
Cryst. (EtOH). Mp 213-214.5°.

Marriott, J.H. *et al.*, *Carbohydr. Res.*, 1991, **216**,
257 (*synth*, *pmr*, *cmr*)

3'-Thioadenosine, 8CI

T-51

[16136-70-2]



C₁₀H₁₃N₅O₃S 283.31
Mp 179-181°. [α]_D²⁵ -13 (H₂O). λ_{\max} 259
(ϵ 14 500) (H₂O), 257 (14 400) (pH 1), 259
nm (15 100) (pH 13).

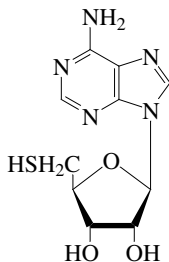
Acton, E.M. *et al.*, *J.A.C.S.*, 1967, **89**, 467
(*synth*)

Ryan, K.J. *et al.*, *J.O.C.*, 1968, **33**, 1783 (*synth*)
Shaw, S.J. *et al.*, *J.A.C.S.*, 1970, **92**, 2510 (*ms*)

5'-Thioadenosine, 9CI

T-52

6-Amino-9-(5-thioribofuranosyl)purine
[67805-97-4]

C₁₀H₁₃N₅O₃S 283.31Cryst. (H₂O). Mp 75-77°.

S-Me: 5'-S-Methyl-5'-thioadenosine, 9CI,
8CI. Adenine thiomethylpentoside
[2457-80-9]

C₁₁H₁₅N₅O₃S 297.337

Isol. from yeast. Involved in biological
transmethylation. Needles (MeOH aq.).
Mp 213-214°. [α]_D +12.2 (1% H₂SO₄ aq.).

▶AU7410000

S-Me, 2',3'-O-isopropylidene:C₁₄H₁₉N₅O₃S 337.402

Mp 143°.

S-Me, tritosyl: [80860-53-3]C₃₂H₃₃N₅O₉S₄ 759.905

Mp 158-160°.

S-Me, S-oxide(R-): 5'-Deoxy-5'-(methyl-
sulfinyl)adenosine, 9CI

[897-42-7]

[3387-65-3]

C₁₁H₁₅N₅O₄S 313.337Prod. by *Ganoderma lucidum* (reishi).

Platelet aggregation inhibitor. Cryst. Sol.
H₂O, MeOH.

Mp 185-187°. [α]_D²⁰ -23.5 (c, 1.4 in H₂O).
 λ_{\max} 270 (H₂O) (Berdy).

S-Me, S-oxide(S-): [737-74-6]C₁₁H₁₅N₅O₄S 313.337Prod. by *Ganoderma lucidum* (reishi).

Cryst.

Mp 210-211°. [α]_D -93.3 (c, 1 in H₂O).**S-(2-Methylpropyl):** [35899-54-8]C₁₄H₂₁N₅O₃S 339.418

Cryst. (EtOH). Mp 126-128°. [α]_D²⁴ 0
(c, 0.85 in MeOH).

3'-Epimer, S-Me: 9-(5-S-Methyl-5-thio- β -
D-xylofuranosyl)adenine

[53458-29-0]

C₁₁H₁₅N₅O₃S 297.337Isol. from the mollusc *Doris verrucosa*.

Glass.

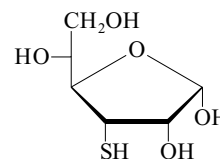
Mp 199-201° (as picrate).

*Aldrich Library of 13C and 1H FT NMR**Spectra*, 1992, **3**, 219C (*nmr*)Weygand, F. *et al.*, *Ber.*, 1951, **84**, 633 (*synth*)Baddiley, J. *et al.*, *J.C.S.*, 1951, 1348 (*synth*)Sato, K. *et al.*, *Nature (London)*, 1951, **167**,238 (*S-Me struct*, *S-Me tritosyl*, *S-Me**isopropylidene*)Trauth, O. *et al.*, *Nature (London)*, 1951, **167**,359 (*S-Me, synth*)Kuhn, R. *et al.*, *Chem. Ber.*, 1965, **98**, 1699-1704 (*synth*)Zappia, V. *et al.*, *J. Biol. Chem.*, 1969, **244**, 4499(*S-Me, biochem*)Hildesheim, J. *et al.*, *Biochimie*, 1971, **53**, 1067-1071 (*S-2-methylpropyl*)Montgomery, J.A. *et al.*, *J. Med. Chem.*, 1974,**17**, 1197-1207 (*synth*)Sugimoto, Y. *et al.*, *Arch. Microbiol.*, 1976, **108**,

175

Borkakoti, N. *et al.*, *Acta Cryst. B*, 1978, **34**,867 (*S-Me, cryst struct*)Porcelli, M. *et al.*, *Adv. Exp. Med. Biol.*, 1988,**250**, 219-228 (*3'-epimer-S-Me*)Porcelli, M. *et al.*, *Biochem. J.*, 1989, **263**, 635-640 (*3'-epimer-S-Me*)Marriott, J.H. *et al.*, *Tet. Lett.*, 1990, **31**, 7485(*synth, pmr*)Robins, M.J. *et al.*, *Can. J. Chem.*, 1991, **69**,1468 (*S-Me, uv, pmr, cmr, ms*)Kawagishi, H. *et al.*, *Phytochemistry*, 1993, **32**,239-241 (*S-Me-S-oxide*)Pignot, M. *et al.*, *Eur. J. Org. Chem.*, 2000, 549-555 (*synth, pmr, cmr*)**3-Thioallose**

T-53

C₆H₁₂O₄S 180.224 **α -D-Furanose-form**

1,2-Isopropylidene, S-Ac: 3-S-Acetyl-1,2-
O-isopropylidene-3-thio- α -D-allofuranose
C₁₁H₁₈O₆S 278.326

Needles (CHCl₃/hexane). Mp 105°. [α]_D²⁵
+117.4 (c, 1.02 in CHCl₃).

1,2-Isopropylidene, 5,6-S-tri-Ac: 5,6-Di-O-
acetyl-3-S-acetyl-1,2-O-isopropylidene-
3-thio- α -D-allofuranose

C₁₅H₂₂O₈S 362.4Mp 99°. [α]_D +102.2 (c, 1.02 in CHCl₃).

1,2:5,6-Diisopropylidene: 1,2:5,6-Di-O-
isopropylidene-3-thio- α -D-allofuranose
C₁₂H₂₀O₅S 276.353

Mp 35-36°. [α]_D²⁸ +70.9 (c, 1 in CHCl₃).

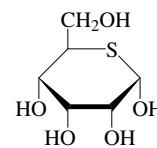
1,2:5,6-Diisopropylidene, S-Ac: 3-S-Acetyl-
1,2:5,6-di-O-isopropylidene-3-thio- α -D-
allofuranose

C₁₄H₂₂O₆S 318.39Cryst. (Et₂O/hexane). Mp 88°. [α]_D²⁵+107.2 (c, 1.014 in CHCl₃).

Nayak, U.G. *et al.*, *J.O.C.*, 1969, **34**, 3819
Risbood, P.A. *et al.*, *Carbohydr. Res.*, 1981, **94**,
101 (*α -D-fur diisopropylidene*)

5-Thioallose

T-54

5-Deoxy-5-thioallose (incorr.) α -D-Pyranose-formC₆H₁₂O₅S 196.224**D-Pyranose-form**

Mp 170-174°. [α]_D +75 \rightarrow +115 (equilib.)
(c, 1 in H₂O). Incorr. named 5-thio-D-
altrose in 11CI.

 α -D-Pyranose-form

Me glycoside: Methyl 5-thio- α -D-allopyra-
noside

[103130-68-3]

C₇H₁₄O₅S 210.251Syrup. [α]_D +289 (c, 0.5 in MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-
tetra-O-acetyl-5-thio- α -D-allopyranoside

[103090-85-3]

C₁₅H₂₂O₉S 378.399Syrup. [α]_D +183 (c, 1.2 in CHCl₃). **β -D-Pyranose-form**

Me glycoside: Methyl 5-thio- β -D-allopyra-
noside

[103130-69-4]

C₇H₁₄O₅S 210.251

Cryst. (EtOAc). [α]_D -98 (c, 0.6 in
MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio-β-D-allopyranoside [103090-86-4]
 $C_{15}H_{22}O_5S$ 378.399
 Cryst. (diisopropyl ether). Mp 118-120°. $[\alpha]_D$ -42 (c, 0.7 in $CHCl_3$).

α-D-Furanose-form

1,2:5,6-Diisopropylidene: 1,2-O:5,6-S,O-Diisopropylidene-5-thio-α-D-allofuranose [72045-04-6]
 $C_{12}H_{20}O_5S$ 276.353
 Cryst. (petrol). Mp 67-69°. $[\alpha]_D$ -37 (c, 0.6 in $CHCl_3$).

1,2:5,6-Diisopropylidene, Ac: 3-O-Acetyl-1,2-O:5,6-S,O-diisopropylidene-5-thio-α-D-allofuranose [103090-83-1]
 $C_{14}H_{22}O_6S$ 318.39
 Cryst. (petrol). Mp 64-65°. $[\alpha]_D$ +27 (c, 0.9 in CH_2Cl_2).

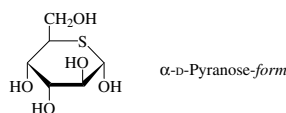
1,2:5,6-Diisopropylidene, benzoyl: 3-O-Benzoyl-1,2-O:5,6-S,O-diisopropylidene-5-thio-α-D-allofuranose [103090-84-2]
 $C_{19}H_{24}O_6S$ 380.461
 Cryst. (EtOH). Mp 101-102°. $[\alpha]_D$ +34 (c, 0.9 in $CHCl_3$).

L-form [157675-35-9]

Mp 146-148°. $[\alpha]_D^{25}$ -73 (c, 1.0 in H_2O).
 Al-Masoudi, N.A.L. *et al.*, *Carbohydr. Res.*, 1986, **148**, 25 (*D-forms, synth, pmr, cmr*)
 Emery, F. *et al.*, *J. Carbohydr. Chem.*, 1994, **13**, 555-563 (*L-form, synth*)

5-Thioaltrose

T-55


 $C_6H_{12}O_5S$ 196.224
D-form

Cryst. (EtOH). Mp 177-178°. $[\alpha]_D$ -68 → -48 (equilib.) (c, 0.9 in H_2O).

α-D-Pyranose-form

Me glycoside: Methyl 5-thio-α-D-altropyranoside
 $C_7H_{14}O_5S$ 210.251
 Syrup. $[\alpha]_D$ +151 (c, 1 in MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio-α-D-altropyranoside
 $C_{15}H_{22}O_9S$ 378.399
 Cryst. (diisopropyl ether). Mp 92-93°. $[\alpha]_D$ +122.

Me glycoside, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-5-thio-α-D-altropyranoside
 $C_{10}H_{18}O_5S$ 250.315
 Cryst. (Et_2O). Mp 63-65°. $[\alpha]_D$ +152 (c, 0.8 in $CHCl_3$).

β-D-Pyranose-form

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-thio-β-D-altropyranose
 $C_{16}H_{22}O_{10}S$ 406.41
 $[\alpha]_D$ -122 (c, 1 in $CHCl_3$).

Me glycoside: Methyl 5-thio-β-D-altropyranoside
 $C_7H_{14}O_5S$ 210.251
 Cryst. (EtOAc). Mp 143-145°. $[\alpha]_D$ -130 (c, 1 in MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio-β-D-altropyranoside
 $C_{15}H_{22}O_9S$ 378.399
 Cryst. (diisopropyl ether). Mp 125-127°. $[\alpha]_D$ -152 (c, 0.6 in $CHCl_3$).

L-form

Cryst. (EtOH). Mp 175-179°. $[\alpha]_D$ +63 → +58 (final) (c, 1.0 in H_2O).

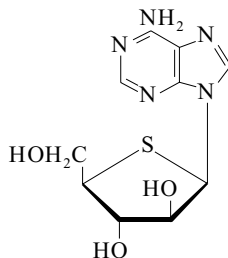
L-furanose-form

1,2,3,6-S-Penta-Ac: 1,2,3,6-Tetra-O-acetyl-5-S-acetyl-5-thio-L-altrofuranose
 $C_{16}H_{22}O_{10}S$ 406.41
 Syrup. Mixt. of anomers.

Al-Masoudi, N.A.J. *et al.*, *Carbohydr. Res.*, 1986, **148**, 39 (*synth, pmr, cmr*)
 Hughes, N.A. *et al.*, *Carbohydr. Res.*, 2000, **326**, 323-325 (*L-form, synth, cmr*)

9-(4-Thioarabinofuranosyl)adenine, 8CI

T-56

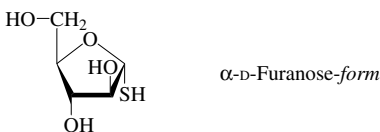

 $C_{10}H_{13}N_5O_3S$ 283.31
β-D-form [15023-77-5]

Mp 135-142° (monohydrate). $[\alpha]_D^{21}$ -8 (c, 0.5 in H_2O). λ_{max} 260 (ε 15 400) (H_2O), 259 (14 800) (pH 1), 260 nm (15 400) (pH 13).

Reist, E.J. *et al.*, *J.O.C.*, 1968, **33**, 189 (*synth*)

1-Thioarabinose

T-57


 $C_5H_{10}O_4S$ 166.198
α-D-Furanose-form

Et glycoside, 3-benzyl: Ethyl 3-O-benzyl-1-thio-α-D-arabinofuranoside [282107-56-6]
 $C_{14}H_{20}O_4S$ 284.376
 $[\alpha]_D^{25}$ +115 (c, 1.1 in $CHCl_3$).

Et glycoside, 3-benzyl, 2-benzoyl: Ethyl 2-O-benzoyl-3-O-benzyl-1-thio-α-D-arabinofuranoside [282107-51-1]
 $C_{21}H_{24}O_5S$ 388.484
 Oil. $[\alpha]_D^{25}$ +178 (c, 1.1 in $CHCl_3$).

L-form**Na salt:**

Hydrate. Mp 155° dec. $[\alpha]_D$ +69 → +93 (H_2O).

Tetra-Ac: 2,3,4-Tri-O-acetyl-1-S-acetyl-1-thio-L-arabinose
 $C_{13}H_{18}O_8S$ 334.346
 Mp 79°. $[\alpha]_D$ +42 ($CHCl_3$).

α-L-Pyranose-form

Et glycoside, tri-Ac: Ethyl 2,3,4-tri-O-acetyl-1-thio-α-L-arabinopyranoside
 $C_{13}H_{20}O_7S$ 320.363
 $[\alpha]_D^{22}$ -5 (c, 0.8 in $CHCl_3$).

Et glycoside, tribenzoyl: Ethyl 2,3,4-tri-O-benzoyl-1-thio-α-L-arabinopyranoside
 $C_{28}H_{26}O_7S$ 506.575
 $[\alpha]_D^{22}$ +214 (c, 1.8 in $CHCl_3$).

Benzyl glycoside, tri-Ac: Benzyl 2,3,4-tri-O-acetyl-1-thio-α-L-arabinopyranoside
 $C_{18}H_{22}O_7S$ 382.434
 Mp 148°. $[\alpha]_D$ -45 ($CHCl_3$).

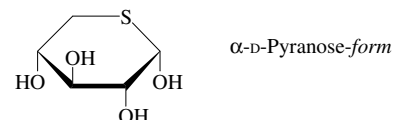
α-L-Furanose-form

Et glycoside, tribenzoyl: C₂₈H₂₆O₇S 506.575
 Needles (EtOH). Mp 70-72°. $[\alpha]_D$ -34.4 (c, 1 in $CHCl_3$).

Gehrke, M. *et al.*, *Ber.*, 1931, **64**, 2696-2702 (*L-tetra-Ac*)
 Pakulski, Z. *et al.*, *Tetrahedron*, 1994, **50**, 2975 (*synth, pmr, Et gly derivs*)
 Timmers, C.M. *et al.*, *Eur. J. Org. Chem.*, 1998, 91-97 (*α-L-Et fur, tribenzyl*)
 Sanchez, S. *et al.*, *Eur. J. Org. Chem.*, 2002, 3864-3873 (*α-D-Et fur 3-benzyl*)

5-Thioarabinose

T-58


 $C_5H_{10}O_4S$ 166.198
α-D-Pyranose-form

Me glycoside: Methyl 5-thio-α-D-arabinopyranoside
 $C_6H_{12}O_4S$ 180.224
 Cryst. (EtOAc). Mp 122-124°. $[\alpha]_D$ +149 (c, 0.9 in MeOH).

β-D-Pyranose-form

Cryst. (EtOH). Mp 172-175°. $[\alpha]_D$ -250 (c, 0.6 in H_2O).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-thio-β-L-arabinopyranose
 $C_{13}H_{18}O_8S$ 334.346
 Cryst. (EtOH). Mp 116-118°. $[\alpha]_D$ +295 (c, 1 in $CHCl_3$).

Me glycoside: Methyl 5-thio-β-D-arabinopyranoside
 $C_6H_{12}O_4S$ 180.224
 Cryst. (EtOH). Mp 185-186°. $[\alpha]_D$ -452 (c, 0.6 in MeOH).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-5-thio-β-D-arabinopyranoside
 $C_{12}H_{18}O_7S$ 306.336
 Cryst. (EtOAc/petrol). Mp 66-68°. $[\alpha]_D$ +85 (c, 1 in $CHCl_3$).

Me glycoside, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-5-thio-β-D-arabinopyranoside
 $C_9H_{16}O_4S$ 220.289
 Syrup. $[\alpha]_D$ -25 (c, 1.2 in $CHCl_3$).

β-L-Pyranose-form

Me glycoside: Methyl 5-thio-β-L-arabinopyranoside
 $C_6H_{12}O_4S$ 180.224
 Mp 170-180°. $[\alpha]_D$ +457 (c, 0.5 in H_2O).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-thio-β-L-arabinopyranose
 $C_{13}H_{18}O_8S$ 334.346
 Cryst. (EtOH). Mp 120-122°. $[\alpha]_D$ +299.

L-form

Cryst. (EtOH). Mp 172-174°. $[\alpha]_D$ +303 (5 min.) → +281 (24 h) (c, 0.5 in H_2O).
 β-Anomer in cryst. state.

2,3-Isopropylidene: 2,3-O-Isopropylidene-5-thio-L-arabinopyranose
 $C_8H_{14}O_4S$ 206.262
 Cryst. (hexane). Mp 123-125°. $[\alpha]_D$ +252 (5 min.) → +230 (24 h) (c, 1 in Py). Anomeric mixt. α:β 1:9 in cryst. state.

2,3-Isopropylidene, 4-benzoyl: 4-O-Benzoyl-2,3-O-isopropylidene-5-thio-L-arabinopyranose
 $C_{15}H_{18}O_5S$ 310.37
 Syrup. $[\alpha]_D$ +215. Mixt. of anomers α:β 15:85.

β-L-Furanose-form

1,2-Isopropylidene, 3,5(S)-di-Ac: 3-O-Acetyl-5-S-acetyl-1,2-O-isopropylidene-5-thio-β-L-arabinofuranoside. 3,5-S-Diacetyl-1,2-O-isopropylidene-5-thio-β-L-arabinofuranoside
 $C_{12}H_{18}O_6S$ 290.337
 Mp 85°. $[\alpha]_D$ -14 ($CHCl_3$).

1,2-O-Isopropylidene, 5(S)-benzyl: 5-S-Benzyl-1,2-O-isopropylidene-5-thio-β-L-arabinopyranoside
 $C_{15}H_{20}O_4S$ 296.387
 Mp 72°. $[\alpha]_D$ +30 ($CHCl_3$).

Me glycoside, disulfide:
 $C_{12}H_{22}O_8S_2$ 358.433
 Mp 184°. $[\alpha]_D$ +403 ($CHCl_3$).

Whistler, R.L. *et al.*, *J.O.C.*, 1964, **29**, 1259 (*L-Fur derivs*)

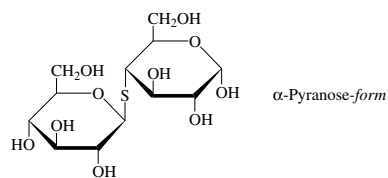
Hughes, N.A. *et al.*, *Carbohydr. Res.*, 1985, **136**, 397; 1994, **257**, 299 (*synth, pmr, cmr, Pyr derivs*)

Bozó, E. *et al.*, *Carbohydr. Res.*, 1998, **311**, 191-202 (*synth, derivs*)

Thiocollobiose

T-59

4-S-β-D-Glucopyranosyl-4-thio-D-glucose
 [80951-92-4]



$C_{12}H_{22}O_{10}S$ 358.366

Reducing disaccharide. Inducer of cellulose degrading enzymes. Hygroscopic solid ($MeOH/Et_2O$). Mp 175°. $[\alpha]_D^{20}$ -16 (c, 1 in H_2O).

2,3,6-Tribenzoyl, 1,2',3',4',6'-penta-Ac:

[92051-21-3, 92051-22-4]

$C_{43}H_{44}O_{18}S$ 880.876

Cryst. (EtOH). Props refer to a mixt. of α and β anomers at C-1 (OAc). Mp 228° dec. $[\alpha]_D^{20}$ +55 (c, 1 in $CHCl_3$).

α-Pyranose-form

Me glycoside, 2,3,6-tribenzoyl, tetra-Ac:

[92051-20-2]

$C_{42}H_{44}O_{17}S$ 852.865

Cryst. (EtOH). Mp 194-195°. $[\alpha]_D^{20}$ +60 (c, 1 in $CHCl_3$).

Octa-Ac: [140484-29-3]

$C_{28}H_{38}O_{18}S$ 694.663

Cryst. (Et_2O). Mp 175-177°. $[\alpha]_D$ +23 (c, 0.9 in $CHCl_3$). Incorrectly indexed in CAS as β-D-pyranose form.

Hrmova, M. *et al.*, *Arch. Microbiol.*, 1984, **138**, 371-376 (*props*)

Hamacher, K. *et al.*, *Carbohydr. Res.*, 1984, **128**, 291-295 (*synth, pmr*)

Orgeret, C. *et al.*, *Carbohydr. Res.*, 1992, **224**, 29-40 (*synth, octa-Ac*)

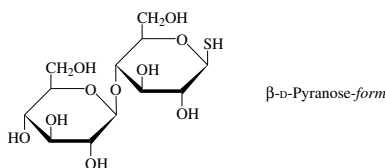
Moreau, V. *et al.*, *Carbohydr. Res.*, 1997, **30**, 271-277 (*synth*)

Ibatullin, F.M. *et al.*, *Synthesis*, 2001, 419-422 (*α-Me pyr tribenzoyl tetra-Ac*)

1-Thiocollobiose

T-60

4-O-β-Glucopyranosyl-1-thio-D-glucose, 9CI



$C_{12}H_{22}O_{10}S$ 358.366

β-D-Pyranose-form

Powder ($MeOH$). Mp 110° (dec.). $[\alpha]_D^{20}$ -33.3 (30 min.) → +14.8 (6d) (c, 1.25 in 50% $EtOH$ aq.).

Hepta-Ac: 2,2',3,3',4',6,6'-Hepta-O-acetyl-1-thio-β-D-cellobiose. 4-O-(2,3,4,6-Tetra-O-acetyl-β-D-glucopyranosyl)-2,3,6-tri-O-acetyl-1-thio-β-D-glucopyranose
 [68636-40-8]

$C_{26}H_{36}O_{17}S$ 652.626

Cryst. ($MeOH$). Mp 209-212°. $[\alpha]_D^{27}$ -10.3 (c, 1 in $CHCl_3$).

Octa-Ac: Octa-O-acetyl-1-thio-β-D-cellobiose

$C_{28}H_{38}O_{18}S$ 694.663

Mp 205°.

Me glycoside: Methyl 1-thio-β-D-cellobioside. Methyl 4-O-β-D-glucopyranosyl-1-thio-β-D-glucopyranoside
 [125739-49-3]

$C_{13}H_{24}O_{10}S$ 372.393

Cryst. ($EtOH/Et_2O$). Mp 220°. $[\alpha]_D^{20}$ -30.7 (c, 1.8 in H_2O).

Me glycoside, hepta-Ac:

$C_{27}H_{38}O_{17}S$ 666.653

Cryst. (EtOH). Mp 200°. $[\alpha]_D^{20}$ -20.4 (c, 1.6 in $CHCl_3$).

Et glycoside: Ethyl 1-thio-β-D-cellobioside. Ethyl 4-O-β-D-glucopyranosyl-1-thio-β-D-glucopyranoside

$C_{14}H_{26}O_{10}S$ 386.419

Cryst. (EtOH). Mp 219°. $[\alpha]_D^{20}$ -37.9 (c, 1.58 in H_2O).

Et glycoside, hepta-Ac:

$C_{28}H_{40}O_{17}S$ 680.68

Cryst. (EtOH). Mp 193°. $[\alpha]_D^{20}$ -26.9 (c, 2.7 in $CHCl_3$).

Benzyl glycoside: Benzyl 1-thio-β-D-cellobioside. Phenylmethyl 4-O-β-D-glucopyranosyl-1-thio-β-D-glucopyranoside, 9CI
 [68636-46-4]

$C_{19}H_{28}O_{10}S$ 448.49

Cryst. (2-propanol). Mp 185-186°. $[\alpha]_D^{27}$ -128 (c, 1 in $MeOH$).

Benzyl glycoside, hepta-Ac: [68636-45-3]

$C_{33}H_{42}O_{17}S$ 742.751

Cryst. (EtOH). Mp 191-193°. $[\alpha]_D^{27}$ -70.5 (c, 1 in $CHCl_3$).

4-Aminophenyl glycoside: p-Aminophenyl 1-thio-β-D-cellobioside. 4-Aminophenyl 4-O-β-D-glucopyranosyl-1-thio-β-D-glucopyranoside, 9CI
 [68636-51-1]

$C_{18}H_{27}NO_{10}S$ 449.478

Improved functional affinity ligand for cellulases. Cryst. ($EtOH$ aq.). Mp 258-260° (247-250°). $[\alpha]_D^{27}$ -50.9 (c, 0.5 in H_2O).

4-Aminobenzyl glycoside: p-Aminobenzyl 1-thio-β-D-cellobioside. (4-Aminophenyl)methyl 4-O-β-D-glucopyranosyl-1-thio-β-D-glucopyranoside, 9CI
 [68636-49-7]

$C_{19}H_{29}NO_{10}S$ 463.505

Functional affinity ligand for cellulases. Cryst. ($EtOH/MeOH$). Mp 206-208°. $[\alpha]_D^{27}$ -116 (c, 0.5 in H_2O).

Wrede, F. *et al.*, *Hoppe-Seyler's Z. Physiol. Chem.*, 1927, **172**, 167-178 (*synth, Me gly, Et gly*)

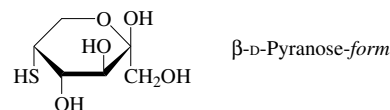
Durette, P.L. *et al.*, *Carbohydr. Res.*, 1978, **67**, 484-490 (*4-aminophenyl gly, 4-aminobenzyl gly*)

Tomme, P. *et al.*, *Methods Enzymol.*, 1988, **160**, 187-193 (*4-aminobenzyl gly, use*)

Piyachomkwan, K. *et al.*, *Carbohydr. Res.*, 1997, **303**, 255-259 (*4-aminophenyl gly, synth, use*)

5-Thiofructose

T-61



$C_6H_{12}O_5S$ 196.224

D-form

$[\alpha]_D^{20}$ -7 (c, 1.1 in $MeOH$) (-4).

Penta-Ac: 1,3,4,6-Tetra-O-acetyl-5-S-acetyl-5-thio-D-fructose. 1-O,3-O,4-O,5-S,6-O-Pentaacetyl-5-thio-D-fructose
 [53821-71-9]

$C_{16}H_{22}O_{10}S$ 406.41

Mp 91-92°. $[\alpha]_D^{25}$ +14.1 (c, 0.501 in $CHCl_3$).

β -D-Pyranose-form

3,4,5-Tri-Ac: 3,4-Di-O-acetyl-5-S-acetyl-5-thio- β -D-fructopyranose. 3-O,4-O,5-S-Triacetyl-5-thio- β -D-fructopyranose [53821-68-4]

$C_{12}H_{18}O_8S$ 322.335

Cryst. (EtOAc/Et₂O). Mp 118-120°.

$[\alpha]_D^{25}$ -68.9 (c, 0.75 in CHCl₃).

Penta-Ac: 1,2,3,4-Tetra-O-acetyl-5-S-acetyl-5-thio- β -D-fructopyranose. 1-O,2-O,3-O,4-O,5-S-Pentaacetyl-5-thio- β -D-fructopyranose [53821-64-0]

$C_{16}H_{22}O_{10}S$ 406.41

Cryst. (EtOAc/hexane). Mp 104-105°.

$[\alpha]_D^{25}$ -116.7 (c, 0.87 in CHCl₃).

Me glycoside, 4,5-di-Ac: Methyl 4-O-acetyl-5-S-acetyl-5-thio- β -D-fructopyranoside. Methyl 4-O,5-S-diacetyl-5-thio- β -D-fructopyranoside [53821-55-9]

$C_{11}H_{18}O_7S$ 294.325

Cryst. (EtOAc/hexane). Mp 127-128°.

$[\alpha]_D^{25}$ -190.7 (c, 1.02 in CHCl₃).

Me glycoside, tetra-Ac: Methyl 1,3,4-tri-O-acetyl-5-S-acetyl-5-thio- β -D-fructopyranoside. Methyl 1-O,3-O,4-O,5-S-tetra-O-acetyl-5-thio- β -D-fructopyranoside [53821-56-0]

$C_{15}H_{22}O_9S$ 378.399

Oil. $[\alpha]_D^{25}$ -108.9 (c, 1.12 in CHCl₃).

Me glycoside, 1,3-benzylidene, 4,5-di-Ac: Methyl 4-O-acetyl-5-S-acetyl-1,3-O-benzylidene-5-thio- β -D-fructopyranoside. Methyl 4-O,5-S-diacetyl-1,3-O-benzylidene- β -D-fructopyranoside [53821-54-8]

$C_{18}H_{22}O_7S$ 382.434

Mp 123-124°. $[\alpha]_D^{25}$ -117.8 (c, 1.35 in CHCl₃).

 α -D-Furanose-form

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-thio- α -D-fructofuranose [53821-69-5]

$C_{16}H_{22}O_{10}S$ 406.41

Mp 107-108°. $[\alpha]_D^{25}$ +153.8 (c, 0.67 in CHCl₃).

 β -D-Furanose-form

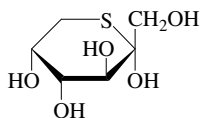
Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-thio- β -D-fructofuranose [53821-70-8]

$C_{16}H_{22}O_{10}S$ 406.41

Mp 70-73°. $[\alpha]_D^{25}$ -91.3 (c, 0.87 in CHCl₃).

Chmielewski, M. *et al.*, *J.O.C.*, 1975, **40**, 639 (synth, pmr)

Tatibouët, A. *et al.*, *Carbohydr. Res.*, 2001, **333**, 327-334 (synth)

6-Thiofructose**T-62** α -D-Pyranose-form

$C_6H_{12}O_5S$ 196.224

Exists as β -Pyranose form in cryst. state. In soln. rapidly equilibrates with 10-15% of α -Pyr (v. fast mutarotation).

D-form [70228-77-2]

Cryst. (EtOH/CHCl₃ at -20°). Mp 63-64°. $[\alpha]_D^{25}$ -210 \rightarrow -185 (t_{1/2} 4.6 sec) (H₂O). Sweeter than fructose. Nontoxic.

1,3,4,5,6S-Penta-Ac: 1,3,4,5-Tetra-O-acetyl-6-S-acetyl-6-thio-D-fructose [61403-00-7]

$C_{16}H_{22}O_{10}S$ 406.41

Cryst. (EtOH). Mp 90-91°. $[\alpha]_D$ +47

(c, 1 in CHCl₃). Deriv. of the open-chain form.

 β -D-Pyranose-form [56578-20-2]

Cryst. (EtOH/CHCl₃ at -20°). Mp 63-64°. $[\alpha]_D^{25}$ -194 (c, 1 in H₂O).

1,3,4,5-Tetra-Ac: 1,3,4,5-Tetra-O-acetyl-6-thio- β -D-fructopyranose $C_{14}H_{20}O_9S$ 364.373

Cryst. (EtOH). Mp 155-156°. $[\alpha]_D^{25}$ -150

(c, 1.6 in CHCl₃).

[69685-31-0]

Chmielewski, M. *et al.*, *Carbohydr. Res.*, 1976,

49, 479; 1979, **69**, 259 (β -D-form, synth, pmr)

Grimshaw, C.E. *et al.*, *Carbohydr. Res.*, 1980,

82, 353 (equilib)

Lambert, J.B. *et al.*, *Carbohydr. Res.*, 1983, **115**,

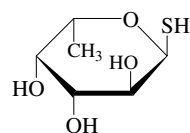
33 (pmr, cmr)

Woods, R.J. *et al.*, *Carbohydr. Res.*, 1989, **193**, 1

(cryst struct, β -D-form)

1-Thiofucose**T-63**

6-Deoxy-1-thiogalactose

 α -L-Pyranose-form

$C_6H_{12}O_4S$ 180.224

 β -D-Pyranose-form

Et glycoside, tri-Ac: Ethyl 2,3,4-tri-O-acetyl-1-thio- β -D-fucopyranoside [160533-93-7]

$C_{14}H_{22}O_7S$ 334.39

Foam. $[\alpha]_D^{20}$ -28 (c, 1 in CHCl₃).

Ph glycoside, tri-Ac: Phenyl 2,3,4-tri-O-acetyl-1-thio- β -D-fucopyranoside [141193-62-6]

$C_{18}H_{22}O_7S$ 382.434

Syrup. $[\alpha]_D^{20}$ +11.9 (c, 1.0 in CHCl₃).

 α -L-Pyranose-form

Ph glycoside, tribenzyl, S-oxide: Phenyl 2,3,4-tri-O-benzyl- α -L-fucopyranosyl sulfoxide [157135-66-5]

$C_{33}H_{34}O_5S$ 542.695

Glycosylating agent. No phys. props. reported.

 β -L-Pyranose-form

Me glycoside: Methyl 1-thio- β -L-fucopyranoside [114853-38-2]

$C_7H_{14}O_4S$ 194.251

Needles. Mp 103-105°. $[\alpha]_D$ +21 (c, 1.0 in CHCl₃).

Me glycoside, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-1-thio- β -L-fucopyranoside [130572-04-2]

$C_{10}H_{18}O_4S$ 234.316

Needles (Et₂O). Mp 69° (63-65°). $[\alpha]_D$ -47.5 (c, 1.0 in CHCl₃) (-44).

Me glycoside, 2,3-dibenzoyl: Methyl 2,3-di-O-benzoyl-1-thio- β -L-fucopyranoside $C_{21}H_{22}O_6S$ 402.467

Syrup. $[\alpha]_D$ -96.2 (c, 1.0 in CHCl₃).

Me glycoside, 2-Me: Methyl 2-O-methyl-1-thio- β -L-fucopyranoside [151669-17-9]

$C_8H_{16}O_4S$ 208.278

$[\alpha]_D$ +17 (c, 0.86 in CHCl₃).

Me glycoside, 2-Me, 3,4-isopropylidene: Methyl 3,4-O-isopropylidene-2-O-methyl-1-thio- β -L-fucopyranoside [151669-16-8]

$C_{11}H_{20}O_4S$ 248.343

Cryst. (cyclohexane). Mp 95°. $[\alpha]_D$ -1.5 (c, 1.5 in CHCl₃).

Me glycoside, 2-Me, 3,4-benzylidene(endo-): Methyl 3,4-O-benzylidene-2-O-methyl-1-thio- β -L-fucopyranoside [151669-18-0]

$C_{15}H_{20}O_4S$ 296.387

$[\alpha]_D$ +17 (c, 0.99 in CHCl₃).

Et glycoside: Ethyl 1-thio- β -L-fucopyranoside [132799-10-1]

$C_8H_{16}O_4S$ 208.278

Cryst. (Et₂O). Mp 83.5-84.5°. $[\alpha]_D^{25}$ +42.4 (c, 0.5 in CHCl₃).

Et glycoside, 2,4-di-Ac: Ethyl 2,4-di-O-acetyl-1-thio- β -L-fucopyranoside [162467-81-4]

$C_{12}H_{20}O_6S$ 292.352

Cryst. (2-propanol). Mp 120.5-121.5°. $[\alpha]_D^{25}$ +5.6 (c, 0.5 in CHCl₃).

Paulsen, H. *et al.*, *Annalen*, 1992, 747-758 (β -D-Ph gly tri-Ac)

Kerékgyártó, J. *et al.*, *Carbohydr. Res.*, 1993,

245, 65-80 (β -L-Me gly 2-Me, Me gly isopropylidene)

Ando, T. *et al.*, *Carbohydr. Res.*, 1993, **249**, 275-280 (synth, pmr; β -L-Me gly, Me gly dibenzoyl)

Dekany, G. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 227-236 (derivs)

Yan, L. *et al.*, *J.A.C.S.*, 1996, **118**, 9239-9248 (α -L-Ph gly tribenzyl S-oxide)

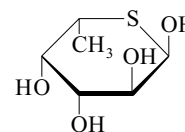
Joosten, J.A.F. *et al.*, *Eur. J. Org. Chem.*, 2003, 3569-3586 (β -D-Et gly tri-Ac)

Xia, J. *et al.*, *J.O.C.*, 2003, **68**, 2752-2759 (β -L-Me glycoside 3,4-isopropylidene, synth, pmr, cmr)

Ruttens, B. *et al.*, *Synthesis*, 2004, 2505-2508 (β -L-Et pyr)

5-Thiofucose**T-64**

6-Deoxy-5-thiomannose



$C_6H_{12}O_4S$ 180.224

L-form

Potent inhibitor of bovine α -fucosidase.

 α -L-Pyranose-form [131064-76-1]

Mp 159-160°. $[\alpha]_D^{22}$ -259.1 (c, 1.2 in H₂O).

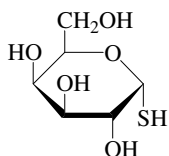
Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-thio- α -L-fucopyranose
[130792-92-6]
 $C_{14}H_{20}O_8S$ 348.373
Mp 132-133°. $[\alpha]_D^{23}$ -269.2 (c, 1.0 in $CHCl_3$).

1,2-Isopropylidene: 1,2-O-Isopropylidene-5-thio- α -L-fucopyranose
[130995-78-7]
 $C_9H_{16}O_4S$ 220.289
Mp 157-158°. $[\alpha]_D$ +41.7 (c, 1.0 in CH_2Cl_2).

Hashimoto, H. *et al.*, *J. Carbohydr. Chem.*, 1990, **9**, 683-694 (synth, pmr, cmr, biochem)
Takahashi, S. *et al.*, *J.C.S. Perkin 1*, 1997, 607-612 (synth, pmr, cmr)

1-Thiogalactose

T-65

 α -D-Pyranose-form $C_6H_{12}O_5S$ 196.224 α -D-Pyranose-form

Penta-Ac: [130796-15-5]
 $C_{16}H_{22}O_{10}S$ 406.41
Solid (Et_2O). Mp 119°. $[\alpha]_D$ +48 (c, 0.8 in $CHCl_3$).

Et glycoside: Ethyl 1-thio- α -D-galactopyranoside
[73494-52-7]
 $C_8H_{16}O_5S$ 224.277
Needles ($EtOH$). Mp 154°. $[\alpha]_D^{27}$ +320 (c, 0.55 in H_2O).

Et glycoside, tetra-Ac: Ethyl 2,3,4,6-tetra-O-acetyl-1-thio- α -D-galactopyranoside
[126187-25-5]
 $C_{16}H_{24}O_9S$ 392.426
Cryst. (Et_2O /hexane). Mp 108-109°. $[\alpha]_D$ +218 ($CHCl_3$).

Isopropyl glycoside: Isopropyl 1-thio- α -D-glucopyranoside
[26112-89-0]
 $C_9H_{18}O_5S$ 238.304
Cryst. (dioxan). Mp 110°.

Benzyl glycoside, tetrabenzyl: Benzyl 2,3,4,6-tetra-O-benzyl-1-thio- α -D-galactopyranoside
[437757-82-9]
 $C_{41}H_{42}O_5S$ 646.846
Oil. $[\alpha]_D^{20}$ +148.2 (c, 0.9 in $CHCl_3$).

 β -D-Pyranose-form [49858-49-3]

Me glycoside: Methyl 1-thio- β -D-galactopyranoside
[155-30-6]
 $C_7H_{14}O_5S$ 210.251
Cryst. ($EtOH$). Mp 174-175°. $[\alpha]_D^{20}$ +11 (H_2O).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-1-thio- β -D-galactopyranoside
[55722-48-0]
 $C_{15}H_{22}O_9S$ 378.399
Needles ($EtOH$). Mp 108°. $[\alpha]_D^{17}$ +3 ($CHCl_3$).

Et glycoside: Ethyl 1-thio- β -D-galactopyranoside
[56245-60-4]
 $C_8H_{16}O_5S$ 224.277
Cryst. ($EtOH$ / $EtOAc$). Mp 122°. $[\alpha]_D^{26}$ -24 (c, 0.9 in H_2O).

Et glycoside, tetra-Ac: Ethyl 2,3,4,6-tetra-O-acetyl-1-thio- β -D-galactopyranoside
[55722-49-1]
 $C_{16}H_{24}O_9S$ 392.426
Mp 74-75°. $[\alpha]_D^{26}$ -8 (c, 2.1 in $CHCl_3$).

Isopropyl glycoside: Isopropyl 1-thio- β -D-galactopyranoside. 1 PTG
[367-93-1]
 $C_9H_{18}O_5S$ 238.304
Inducer of β -galactosidase activity in bacteria, used to detect lac gene activity. Cryst. or cryst. + $1H_2O$. Mp 109-110.5°. Mp 126° (hydrate). $[\alpha]_D^{20}$ -31.5 (c, 1 in H_2O).

Benzyl glycoside, tetrabenzyl: Benzyl 2,3,4,6-tetra-O-benzyl-1-thio- β -D-galactopyranoside
[210358-01-3]
 $C_{41}H_{42}O_5S$ 646.846
Oil. $[\alpha]_D^{20}$ -34.9 (c, 3.1 in $CHCl_3$).

Ph glycoside: Phenyl 1-thio- β -D-galactopyranoside
[16758-34-2]
 $C_{12}H_{16}O_5S$ 272.321
Hemihydrate. Mp 123-124°. $[\alpha]_D$ -44.6 (c, 0.88 in $MeOH$).

Ph glycoside, tetra-Ac: Phenyl 2,3,4,6-tetra-O-acetyl-1-thio- β -D-galactopyranoside
[24404-53-3]
 $C_{20}H_{24}O_9S$ 440.47
Solid (also descr. as syrup). Mp 73-76°. $[\alpha]_D$ +3.7 (c, 1.00 in $CHCl_3$). $[\alpha]_D$ +7.83 (c, 1.06 in CH_2Cl_2).

Ph glycoside, 2,3,4-tribenzoyl: Phenyl 2,3,4-tri-O-benzoyl-1-thio- β -D-galactopyranoside
 $C_{33}H_{28}O_8S$ 584.645
 $[\alpha]_D$ +123 (c, 1.0 in $CHCl_3$).

Ph glycoside, tetrabenzoyl: Phenyl 2,3,4,6-tetra-O-benzoyl-1-thio- β -D-galactopyranoside
 $C_{40}H_{32}O_9S$ 688.753
 $[\alpha]_D$ +92.2 (c, 1.0 in $CHCl_3$).

Ph glycoside, 2,3,4,6-tetrapivaloyl, S-oxide: Phenyl 2,3,4,6-tetra-O-pivaloyl- β -D-galactopyranosyl sulphoxide
[157239-66-2]
[183875-03-8, 183875-04-9]
 $C_{32}H_{48}O_{10}S$ 624.791
Glycosylating agent.

Obt. as a 2.1:1 diastereomeric mixt. at S.

Ph glycoside, 3,4-O-isopropylidene: Phenyl 3,4-O-isopropylidene-1-thio- β -D-galactopyranoside
[120095-47-8]
 $C_{15}H_{20}O_5S$ 312.386
Prisms + $2H_2O$. Mp 42-43°. $[\alpha]_D$ -6.8 (c, 0.52 in $MeOH$).

Ph glycoside, 2,3,6-tribenzyl: Phenyl 2,3,6-tri-O-benzyl-1-thio- β -D-galactopyranoside
[144781-45-3]
 $C_{33}H_{34}O_5S$ 542.695
Syrup. $[\alpha]_D^{23}$ -10.5 (c, 1.06 in $CHCl_3$).

Ph glycoside, 3,4,6-tribenzyl, 2-pivaloyl, S-oxide: Phenyl 3,4,6-tri-O-benzyl-2-O-pivaloyl- β -D-galactopyranosyl sulfoxide
[183875-11-8, 183875-12-9]
 $C_{38}H_{42}O_7S$ 642.812
Glycosylating agent.
Obt. as a 2.1:1 diastereomeric mixture at S.

Ph glycoside, tetrabenzyl: Phenyl 2,3,4,6-tetra-O-benzyl-1-thio- β -D-galactopyranoside
[74801-29-9]
 $C_{40}H_{40}O_5S$ 632.819
Cryst. Mp 70°. $[\alpha]_D$ +16.5 (c, 1 in CH_2Cl_2).

 α -D-Furanose-form

Et glycoside: Ethyl 1-thio- α -D-galactofuranoside
[89825-83-2]
 $C_8H_{16}O_5S$ 224.277
Syrup. $[\alpha]_D$ +124 (c, 1.4 in H_2O).

Et glycoside, tetra-Ac: Ethyl 2,3,4,6-tetra-O-acetyl-1-thio- α -D-galactofuranoside
 $C_{16}H_{24}O_9S$ 392.426
Cryst. (Et_2O /petrol). Mp 51°. $[\alpha]_D$ +118 ($CHCl_3$).

Et glycoside, tetrabenzoyl: Ethyl 2,3,4,6-tetra-O-benzoyl-1-thio- α -D-galactofuranoside
[89755-46-4]
 $C_{36}H_{32}O_9S$ 640.709
Syrup. $[\alpha]_D$ +77 (c, 1.0 in $CHCl_3$).

Ph glycoside: Phenyl 1-thio- α -D-galactofuranoside
[89755-47-5]
 $C_{12}H_{16}O_5S$ 272.321
Cryst. ($CHCl_3$). Mp 123-125°. $[\alpha]_D$ +176 (c, 0.8 in Py).

Fried, J. *et al.*, *J.A.C.S.*, 1949, **71**, 140 (α -D-pyr Et gly, β -D-pyr Et gly, α -D-pyr Et gly tetra-Ac, β -D-pyr Et gly tetra-Ac)

Helferich, B. *et al.*, *Chem. Ber.*, 1953, **86**, 873 (β -D-pyr Me gly, β -D-pyr Me gly tetra-Ac)

Burckhardt, H. *et al.*, *Chem. Ber.*, 1956, **89**, 2215 (β -D-pyr isopropyl gly)

Wolfrom, M.L. *et al.*, *J.O.C.*, 1959, **24**, 1529;

1964, **29**, 454 (α -D-fur Et gly, α -D-fur Et gly tetra-Ac, α -D-fur Ph gly)

Horton, D. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 368 (β -D-pyr Me gly, β -D-pyr Me gly tetra-Ac)

Schmidt, R.R. *et al.*, *Annalen*, 1983, 1249 (β -D-pyr isopropyl gly, synth, pmr)

Berman, E. *et al.*, *Carbohydr. Res.*, 1983, **116**, 144 (β -D-pyr isopropyl gly, cmr)

Ferrier, R.J. *et al.*, *Carbohydr. Res.*, 1984, **127**, 157 (α -D-fur Et gly tetrabenzoyl, α -D-fur Ph gly)

Cho, S. *et al.*, *Biochem. Biophys. Res. Commun.*, 1985, **128**, 1268 (β -D-pyr isopropyl gly, use)

Matias, P.M. *et al.*, *Carbohydr. Res.*, 1986, **153**, 217 (β -D-pyr isopropyl gly, cryst struct)

Pozsgay, V. *et al.*, *Tet. Lett.*, 1987, **28**, 1375 (β -D-pyr Me gly tetra-Ac)

Blanc-Muesser, M. *et al.*, *Tet. Lett.*, 1990, **31**, 3869-3870 (α -D-pyr penta-Ac)

Carlsson, U. *et al.*, *Protein Eng.*, 1991, **4**, 1019 (β -D-pyr isopropyl gly, synth, pmr, use)

Pakulski, Z. *et al.*, *Tetrahedron*, 1994, **50**, 2975 (synth, derivs)

Nagao, Y. *et al.*, *Chem. Pharm. Bull.*, 1995, **43**, 1536 (β -D-pyr Ph gly)

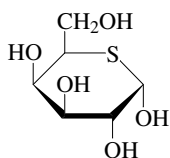
Das, S.K. *et al.*, *Carbohydr. Res.*, 1996, **296**, 275-277 (*Et gly tetra-Ac, synth*)

Yan, L. *et al.*, *J.A.C.S.*, 1996, **118**, 9239-9248 (*Ph gly S-oxides*)

Cao, S. *et al.*, *J. Carbohydr. Chem.*, 1998, **17**, 609-631 (β -D-Pyr 2,3,4-tribenzoyl, β -D-Pyr tetrabenzoyl)
 Xie, J. *et al.*, *J. Carbohydr. Chem.*, 1999, **18**, 481-498 (*Ph* β -D-pyr tetra-Ac, *Ph* β -D-pyr tetrabenzoyl)
 Kramer, S. *et al.*, *J. Carbohydr. Chem.*, 2000, **19**, 891-921 (*Et* glycoside derivs)
 Ibatullin, F.M. *et al.*, *Synthesis*, 2001, 419-422 (β -D-pyr *Et* gly tetra-Ac)
 Griffin, F.K. *et al.*, *Eur. J. Org. Chem.*, 2002, 1305-1322 (α -D-pyr benzyl gly tetrabenzyl, β -D-pyr benzyl gly tetrabenzyl)
 Faltin, F. *et al.*, *Synthesis*, 2002, 1851-1856 (β -D-pyr *Ph* gly tribenzyl)

5-Thiogalactose

T-66

 α -D-Pyranose-formC₆H₁₂O₅S 196.224Equilib. composition for free sugar α : β 83:17 after 3 d in D₂O. **α -D-Pyranose-form**

Me glycoside: Methyl 5-thio- α -D-galactopyranoside
 C₇H₁₄O₅S 210.251
 Cryst. (EtOAc). Mp 91-93°. [α]_D +347.7 (c, 0.72 in MeOH).

Me glycoside, 2,3,4,6-tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -D-galactopyranoside
 C₁₅H₂₂O₉S 378.399
 Cryst. (EtOAc/hexane or MeOH). Mp 96-98°. [α]_D +225.5 (c, 1.4 in CHCl₃).

 β -D-Pyranose-form

Me glycoside: Methyl 5-thio- β -D-galactopyranoside
 C₇H₁₄O₅S 210.251
 Cryst. Mp 142-145°. [α]_D -12.2 (c, 2.8 in H₂O).

Me glycoside, 2,3,4,6-tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio- β -D-galactopyranoside
 C₁₅H₂₂O₉S 378.399
 Cryst. (MeOH). Mp 102-103°. [α]_D +9.5 (c, 4.2 in CHCl₃).

 β -D-Furanose-form

1,2,3,5S,6-Penta-Ac: 1,2,3,6-Tetra-O-acetyl-5-S-acetyl-5-thio- β -D-galactofuranose. 1-O,2-O,3-O,5-S,6-O-Pentaacetyl-5-thio- β -D-galactofuranose
 C₁₆H₂₂O₁₀S 406.41
 Cryst. (EtOH). Mp 112°. [α]_D -67.4 (c, 1.7 in CHCl₃).

Et glycoside, 2,3,5S,6-tetra-Ac: Ethyl 2,3,6-tri-O-acetyl-5-S-acetyl-5-thio- β -D-galactofuranoside. Ethyl 2-O,3-O,5-S,6-O-tetraacetyl- β -D-galactofuranoside
 C₁₆H₂₄O₉S 392.426
 Cryst. (MeOH). Mp 61°. [α]_D -69.7 (c, 1.3 in CHCl₃).

L-form

Cryst. (EtOH). Mp 178-180°.

L-Pyranose-form

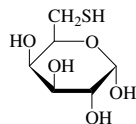
1,2,3,4,6-Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-thio-L-galactopyranose
 C₁₆H₂₂O₁₀S 406.41
 Amorph. solid. [α]_D¹⁹ -199 (c, 1.0 in CHCl₃).

Shin, J.E.N. *et al.*, *Carbohydr. Res.*, 1979, **76**, 165 (synth, pmr, cmr)

Hashimoto, H. *et al.*, *Carbohydr. Res.*, 1996, **282**, 207-221 (synth, pmr, cmr, L-form, L-pyr-penta-Ac)

6-Thiogalactose

T-67

 α -D-Pyranose-formC₆H₁₂O₅S 196.224 **α -D-Pyranose-form**

1,2,3,4,6-Penta-Ac: 1,2,3,4,6-Pentaacetyl-6-thio- α -D-galactopyranose. 1,2,3,4-Tetra-O-acetyl-6-S-acetyl-6-thio- α -D-galactopyranose
 C₁₆H₂₂O₁₀S 406.41
 Mp 113°. [α]_D²⁵ +130 (c, 1.03 in CHCl₃).

Ph glycoside, 2,3,4,6-tetra-Ac: Phenyl 2,3,4,6-tetraacetyl-6-thio- α -D-galactopyranoside. Phenyl 2,3,4-tri-O-acetyl-6-S-acetyl-6-thio- α -D-galactopyranose
 C₂₀H₂₄O₉S 440.47
 Cryst. (EtOH). Mp 84-85°. [α]_D +242 (c, 1.0 in CHCl₃).

4-Benzoyl, 1,2,3,6-tetra-Ac: 1,2,3,6-Tetraacetyl-4-benzoyl-6-thio- α -D-galactopyranose. 1,2,3-Tri-O-acetyl-6-S-acetyl-4-O-benzoyl-6-thio- α -D-galactopyranose
 C₂₁H₂₄O₁₀S 468.481
 Glass. [α]_D +141.4 (c, 1.0 in CHCl₃).

 β -D-Pyranose-form

Ph glycoside, 2,3,4,6-tetra-Ac: Phenyl 2,3,4,6-tetraacetyl-6-thio- β -D-galactopyranoside. Phenyl 2,3,4-tri-O-acetyl-6-S-acetyl-6-thio- β -D-galactopyranose
 C₂₀H₂₄O₉S 440.47
 Cryst. (EtOH). Mp 110°. [α]_D²⁵ +47 (c, 1.0 in CHCl₃).

 α -D-Thioheptanose-form

1,2,3,4,5-Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-6-thio- α -D-galactoseptanose
 C₁₆H₂₂O₁₀S 406.41
 Cryst. (Et₂O). Mp 155°. [α]_D²⁶ -3 (c, 1.52 in CHCl₃).

 β -D-Thioheptanose-form

1,2,3,4,5-Penta-Ac: 1,2,3,4,5-Penta-O-acetyl-6-thio- β -D-galactoseptanose
 C₁₆H₂₂O₁₀S 406.41
 Mp 148-149°. [α]_D²⁵ -233 (c, 1.54 in CHCl₃).

Me glycoside: Methyl 6-thio- β -D-galactoseptanoside

C₇H₁₄O₅S 210.251
 Cryst. (Me₂CO/Et₂O). Mp 90-91°. [α]_D²⁵ -235 (c, 1.09 in MeOH).

Me glycoside, 2,3,4,5-tetra-Ac: Methyl 2,3,4,5-tetra-O-acetyl-6-thio- β -D-galactoseptanoside

C₁₅H₂₂O₉S 378.399
 Cryst. (Et₂O/pentane). Mp 99-100°. [α]_D²⁵ -211 (c, 1.49 in CHCl₃).

Whistler, R.L. *et al.*, *Carbohydr. Res.*, 1966, **2**, 93 (α -D-pyr penta-Ac, α -D-pyr *Ph* gly tetra-Ac, β -D-pyr *Ph* gly tetra-Ac)

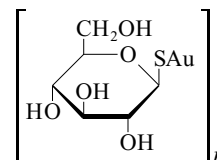
Whistler, R.L. *et al.*, *J.O.C.*, 1966, **31**, 816 (thioheptanose derivs)

Yeagley, D.A. *et al.*, *Carbohydr. Res.*, 1996, **289**, 189-191 (α -D-pyr 4-benzoyl tetra-Ac)

(1-Thioglucopyranosato)gold, 9CI

T-68

(1-Glucosylthio)gold. *Aurothioglucose*, *INN*; *USAN*. *Aureotan*. *Aurumine*. *Oronol*. *Romosol*. *Solganal*. *Solganol B*. Many other names

C₆H₁₁AuO₅S 392.182

Polymeric. Antiarthritic agent.

D-form [12192-57-3]

Antiarthritic agent.

Yellow cryst. (EtOH aq.). Sol. H₂O, insol. org. solvs.

► Range of adverse effects reported from parenteral administration of soluble gold compds. LD₅₀ (mus, ipr) 2000 mg/kg. Exp. carcinogen. Exp. reprod. and teratogenic effects. MD6475000

Tetra-Ac: (1-Thioglucopyranosato-2,3,4,6-tetraacetato)gold, 10CI
 [69849-37-2]

C₁₄H₁₉AuO₉S 560.331
 Antiarthritic agent. Pale yellow cryst. (2-propanol/Et₂O). Mp 146-148°. [α]_D²⁵ -56.9 (c, 1 in MeOH). Polymeric.

[74610-70-1, 82475-04-5]

Sadler, P.J. *et al.*, *Struct. Bonding (Berlin)*, 1976, **29**, 171 (rev)

IARC Monog., 1977, **13**, 39 (tox, rev)

Lorber, A. *et al.*, *Gold Bull.*, 1979, **12**, 149 (rev)

U.S. Pat., 1979, 4 133 952, (SmithKline); *CA*, **90**, 152549g (deriv)

Brown, D.H. *et al.*, *Chem. Soc. Rev.*, 1980, **9**, 217 (rev)

Shaw, C.F. *et al.*, *J. Inorg. Biochem.*, 1981, **14**, 267 (rev, cmr)

Brown, K. *et al.*, *J.A.C.S.*, 1981, **103**, 4943 (Mössbauer)

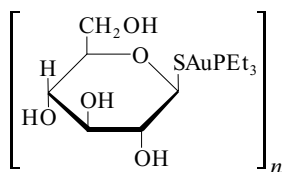
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 7

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 7th edn., Akademie-Verlag, 1994, 581 (synonyms)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, ART250

(1-Thioglucopyranosato-*S*)(triethylphosphine)gold, 9CI

T-69

C₁₂H₂₆AuO₅PS 510.341

Polymeric. Antiarthritic agent.

β-D-form [34031-29-3]

Antiarthritic agent.

Tetra-Ac: See Auranofin, A-879

Ger. Pat., 1971, 2 051 495, (SmithKline and French); CA, 75, 77223f

Sutton, B.M. et al., J. Med. Chem., 1972, 15, 1095 (use)

Sadler, P.J. et al., Struct. Bonding (Berlin), 1976, 29, 171 (rev)

Lorber, A. et al., Gold Bull., 1979, 12, 149 (rev)

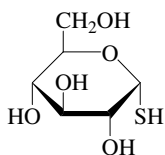
U.S. Pat., 1979, 4 124 759, (SmithKline); CA, 90, 104297b (use)

Brown, D.H. et al., Chem. Soc. Rev., 1980, 9, 217 (rev)

1-Thioglucose, 9CI, 8CI

Glucithiose

T-70



α-Pyranose-form

C₆H₁₂O₅S 196.224

Occurs widely in plants in a variety of complex glycosides from which it can usually be obtained by alkaline hydrol.

D-form [7211-44-1]Amorph. solid + 1H₂O. Forms crystalline salts. Gold deriv. produces obesity in mice and is used as an antiarthritic drug (see (1-Thioglucopyranosato)gold, T-68).

Na salt: [10593-29-0]

Cryst. + 2H₂O. Mp 173° dec. [α]_D +18 (H₂O) (+14.1).**α-D-Pyranose-form**

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1-thio-α-D-glucopyranose [92691-83-3]

C₁₄H₂₀O₉S 364.373Solid (EtOH). Mp 92-93°. [α]_D²⁰ +171 (c, 0.8 in CHCl₃) (+165).

Penta-Ac: 1,2,3,4,6-Pentaacetyl-1-thio-α-D-glucopyranose. 2,3,4,6-Tetra-O-acetyl-1-S-acetyl-1-thio-α-D-glucopyranose [62860-10-0]

C₁₆H₂₂O₁₀S 406.41Cryst. (Et₂O/pentane or EtOH).Mp 123-125°. [α]_D +143.5 (c, 1.95 in CHCl₃).

Me glycoside: Methyl 1-thio-α-D-glucopyranoside [84416-01-3]

C₇H₁₄O₅S 210.251Needles (EtOAc). Mp 137°. [α]_D³⁰ +124.5 (H₂O).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-1-thio-α-D-glucopyranoside

C₁₅H₂₂O₉S 378.399Mp 89°. [α]_D²³ +150 (CHCl₃).

Me glycoside, tetrabenzyl: Methyl 2,3,4,6-tetra-O-benzyl-1-thio-α-D-glucopyranoside

[139903-43-8]

C₃₅H₃₈O₅S 570.748Needles (MeOH). Mp 57-58°. [α]_D²⁰ +106.7 (c, 1.0 in CHCl₃).

Et glycoside: Ethyl 1-thio-α-D-glucopyranoside

[13533-58-9]

C₈H₁₆O₅S 224.277Mp 117°. [α]_D +269 (H₂O).

Et glycoside, tetra-Ac: Ethyl 2,3,4,6-tetra-O-acetyl-1-thio-α-D-glucopyranoside

[41670-79-5]

C₁₆H₂₄O₉S 392.426Mp 97.5°. [α]_D +207 (CHCl₃).

Et glycoside, 2,3,4-tribenzoyl: Ethyl 2,3,4-tri-O-benzoyl-1-thio-α-D-glucopyranoside

C₂₉H₂₈O₈S 536.601Solid. Mp 114-115°. [α]_D¹⁴ +87.5 (c, 1.0 in CHCl₃).

tert-Butyl glycoside, tetra-Ac: tert-Butyl 2,3,4,6-tetra-O-acetyl-1-thio-α-D-glucopyranoside

[64495-85-8]

C₁₈H₂₈O₉S 420.48Cryst. (hexane). Mp 62-64° (59°). [α]_D²⁰ +183 (c, 0.5 in CHCl₃).

Benzyl glycoside: Benzyl 1-thio-α-D-glucopyranoside

[105026-43-5]

C₁₃H₁₈O₅S 286.348Mp 112-114°. [α]_D +175.7 (H₂O).

Benzyl glycoside, tetra-Ac: Benzyl 2,3,4,6-tetra-O-acetyl-1-thio-α-D-glucopyranoside

[64495-82-5]

C₂₁H₂₆O₉S 454.497Mp 77°. [α]_D +200.8 (EtOH).

Benzyl glycoside, tetrabenzyl: Benzyl 2,3,4,6-tetra-O-benzyl-1-thio-α-D-glucopyranoside

[211759-49-8]

C₄₁H₄₂O₅S 646.846

Needles (MeOH). Mp 82.5-83.5°.

[α]_D²⁰ +161.6 (c, 1.0 in CHCl₃).

Ph glycoside: Phenyl 1-thio-α-D-glucopyranoside

[13992-15-9]

C₁₂H₁₆O₅S 272.321Needles (EtOH). Mp 156-157°. [α]_D²⁰ +258 (c, 0.6 in Py).

Ph glycoside, tetra-Ac: Phenyl 2,3,4,6-tetra-O-acetyl-1-thio-α-D-glucopyranoside

[13992-16-0]

C₂₀H₂₄O₉S 440.47Cryst. (Et₂O/hexane). Mp 90-91°. [α]_D²² +153.8 (c, 1.8 in CHCl₃). [α]_D²⁵ +8.5 (c, 0.5 in EtOH).**β-D-Pyranose-form** [7534-35-2]

2,3,4,6-Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1-thio-β-D-glucopyranoside

[19879-84-6]

C₁₄H₂₀O₉S 364.373Mp 113-114°. [α]_D²⁰ -2.1 (c, 2.8 in C₂H₂Cl₄). [α]_D²⁰ +3.6 (c, 1.07 in CH₂Cl₂).

Penta-Ac: Penta-O-acetyl-1-thio-β-D-glucopyranoside

[13639-50-4]

C₁₆H₂₂O₁₀S 406.41Mp 119-121°. [α]_D +11 (CHCl₃).

1-Benzoyl, 2,3,4,6-tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1-O-benzoyl-1-thio-β-D-glucopyranoside

[6767-60-8]

C₂₁H₂₄O₁₀S 468.481Mp 126°. [α]_D²⁰ -12.4 (c, 2.73 in C₂H₄Cl₂).

Me glycoside: Methyl 1-thio-β-D-glucopyranoside

C₇H₁₄O₅S 210.251Syrup. [α]_D²⁵ -18.1 (H₂O).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-1-thio-β-D-glucopyranoside

[13350-45-3]

C₁₅H₂₂O₉S 378.399Mp 94-95°. [α]_D²⁰ -18.6 (c, 2.6 in C₂H₂Cl₄).

Me glycoside, tetrabenzyl: Methyl 2,3,4,6-tetra-O-benzyl-1-thio-β-D-glucopyranoside

[104992-64-5]

C₃₅H₃₈O₅S 570.748Needles (MeOH). Mp 69-70.5°. [α]_D²⁰ +9.7 (c, 1.0 in CHCl₃).

Me glycoside, 4,6-O-benzylidene: Methyl 4,6-O-benzylidene-1-thio-β-D-glucopyranoside

C₁₄H₁₈O₅S 298.359Mp 184-185°. [α]_D -49 (c, 0.55 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, 2-benzoyl: Methyl 2-O-benzoyl-4,6-O-benzylidene-1-thio-β-D-glucopyranoside

[38992-99-3]

C₂₁H₂₂O₆S 402.467Mp 187-188°. [α]_D²⁰ -26 (c, 1.1 in CHCl₃).

Me glycoside, 4,6-O-benzylidene, 3-benzoyl: Methyl 3-O-benzoyl-4,6-O-benzylidene-1-thio-β-D-glucopyranoside

[38993-00-9]

C₂₁H₂₂O₆S 402.467Mp 158-159°. [α]_D -117 (c, 1.1 in CHCl₃).

Et glycoside: Ethyl 1-thio-β-D-glucopyranoside

[7473-36-1]

C₈H₁₆O₅S 224.277Mp 100°. [α]_D -57 (H₂O).

Et glycoside, 2,3,4,6-tetra-Ac: Ethyl 2,3,4,6-tetra-O-acetyl-1-thio-β-D-glucopyranoside

[52645-73-5]

C₁₆H₂₄O₉S 392.426Mp 83°. [α]_D -28 (CHCl₃).

Et glycoside, 4,6-O-benzylidene: Ethyl 4,6-O-benzylidene-1-thio-β-D-glucopyranoside

C₁₅H₂₀O₅S 312.386Mp 145°. [α]_D -65 (c, 1 in CHCl₃). [α]_D +47 (c, 1 in CHCl₃). No explanation offered for differing sign of rotation.

The +ve value is presumably incorrect.

tert-Butyl glycoside, tetra-Ac: *tert-Butyl 2,3,4,6-tetra-O-acetyl-1-thio-β-D-glucopyranoside* [13639-55-9]
C₁₈H₂₈O₉S 420.48
Cryst. (hexane). Mp 144-146°. [α]_D¹⁸ -6 (c, 0.9 in CHCl₃).

Benzyl glycoside, tetra-Ac: *Benzyl 2,3,4,6-tetra-O-acetyl-1-thio-β-D-glucopyranoside* [6612-63-1]
C₂₁H₂₆O₉S 454.497
Mp 98°. [α]_D -93.1 (CHCl₃).

Benzyl glycoside, tetrabenzyl: *Benzyl 2,3,4,6-tetra-O-benzyl-1-thio-β-D-glucopyranoside* [53269-95-7]
C₄₁H₄₂O₅S 646.846
Needles (MeOH). Mp 65-67°. [α]_D²⁰ -42.2 (c, 1.0 in CHCl₃).

Ph glycoside: *Phenyl 1-thio-β-D-glucopyranoside* [2936-70-1]
C₁₂H₁₆O₅S 272.321
Needles. Mp 105-107° (100°). [α]_D²³ -219.6 (c, 1.0 in EtOH).

Ph glycoside, tetra-Ac: *Phenyl 2,3,4,6-tetra-O-acetyl-1-thio-β-D-glucopyranoside* [23661-28-1]
C₂₀H₂₄O₉S 440.47
Needles (EtOH). Mp 117-118°. [α]_D -16 (CHCl₃).

Ph glycoside, tetra-Ac, S-oxide:
C₂₀H₂₄O₁₀S 456.47
Glycosylating agent. Mp 189.5°. [α]_D²⁴ -26.9 (c, 1.0 in CHCl₃).

Octyl glycoside: *Octyl 1-thio-β-D-glucopyranoside* [85618-21-9]
C₁₄H₂₈O₅S 308.438
Nonionic, dialysable detergent for solubilising membrane proteins. Resistant to β-glucosidases, stable over a relatively wide pH range. [α]_D²⁶ -52 (c, 1 in MeOH).

α-D-Furanose-form

Et glycoside: *Ethyl 1-thio-α-D-glucofuranoside* [4137-33-1]
C₈H₁₆O₅S 224.277
Mp 153°. [α]_D +120.8.

Et glycoside, tetra-Ac: *Ethyl 2,3,5,6-tetra-O-acetyl-1-thio-α-D-glucofuranoside* C₁₆H₂₄O₉S 392.426
Mp 62-64°.

Ph glycoside: *Phenyl 1-thio-α-D-glucofuranoside* [13992-19-3]
C₁₂H₁₆O₅S 272.321
Cryst. (EtOAc). Mp 119-121°. [α]_D²⁰ +216 (c, 0.9 in Py).

Ph glycoside, S-oxide: *α-D-Glucofuranosyl phenyl sulfoxide* C₁₂H₁₆O₆S 288.321
Glycosylating agent. Mp 150-155°. [α]_D²⁰ +4 (c, 1.1 in H₂O).

β-D-Furanose-form

Et glycoside: *Ethyl 1-thio-β-D-glucofuranoside* [66141-60-4]
C₈H₁₆O₅S 224.277

Mp 46-47° (monohydrate) Mp 153° (anhyd.). [α]_D +120.8.

Ph glycoside, tetrabenzyl: *Phenyl 2,3,5,6-tetra-O-benzyl-1-thio-β-D-glucofuranoside* C₄₀H₄₀O₅S 632.819
Oil. [α]_D -92.5 (c, 0.94 in CH₂Cl₂).

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 625C (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 1057C (nmr)

Schneider, W. *et al.*, *Ber.*, 1918, **51**, 220; 1931, **64**, 1321 (*α-D-pyr Me gly*, *α-D-pyr Me gly tetra-Ac*, *β-D-pyr Me gly*, *β-D-pyr Et gly*, *β-D-gly derivs*)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 295 (rev)

Bonner, W.A. *et al.*, *J.A.C.S.*, 1948, **70**, 2455 (*β-D-pyr Ph gly tetra-Ac S-oxide*)

Fried, J. *et al.*, *J.A.C.S.*, 1949, **71**, 140 (*α-D-pyr Et gly*, *α-D-pyr Et gly tetra-Ac*, *β-D-pyr Et gly*, *β-D-pyr Et gly tetra-Ac*)

Kocourek, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1964, **29**, 316 (synth)

Zissis, E. *et al.*, *Carbohydr. Res.*, 1966, **2**, 461 (*α-D-fur Ph S-oxide*, *α-D-pyr Ph gly*, *α-D-fur Ph gly*)

Parthasarathy, R. *et al.*, *Acta Cryst.*, 1967, **23**, 1049 (cryst struct)

Holland, C.V. *et al.*, *J.O.C.*, 1967, **32**, 3077 (pmr)

Bock, K. *et al.*, *J.C.S. Perkin 2*, 1974, 293 (cmr)

Jarrell, H.C. *et al.*, *Carbohydr. Res.*, 1979, **76**, 45-57 (cmr)

Ferrier, R.J. *et al.*, *Methods Carbohydr. Chem.*, 1980, **8**, 251 (*β-D-pyr Ph gly tetra-Ac*)

Berman, E. *et al.*, *Carbohydr. Res.*, 1983, **116**, 144 (cmr, derivs)

Ferrier, R.J. *et al.*, *Carbohydr. Res.*, 1984, **127**, 157 (*α-D-fur Ph gly*)

Lopez, F.J. *et al.*, *Carbohydr. Res.*, 1987, **163**, 29 (*α-D-pyr tert-butyl gly tetra-Ac*, *β-D-pyr tert-butyl gly tetra-Ac*)

Fugedi, P. *et al.*, *Carbohydr. Res.*, 1987, **164**, 297 (*β-D-pyr Me gly tetra-Ac*, *β-D-pyr Me gly benzylidene*, *β-D-pyr Me gly benzylidene benzoyl*)

Bhat, V.S. *et al.*, *Indian J. Chem., Sect. B*, 1987, **26**, 514 (*α-D-pyr Ph gly tetra-Ac*)

Dasgupta, F. *et al.*, *Acta Chem. Scand.*, 1989, **43**, 471 (*β-D-pyr Ph gly tetra-Ac*)

Gadelle, A. *et al.*, *Carbohydr. Res.*, 1990, **200**, 497 (*α-D-pyr penta-Ac*)

Van Steijn, A.M.P. *et al.*, *Carbohydr. Res.*, 1992, **225**, 229 (*β-D-pyr Et gly benzylidene*)

Defaye, J. *et al.*, *Carbohydr. Res.*, 1994, **253**, 185-194 (*α-D-pyr tetra-Ac*)

Pakulski, Z. *et al.*, *Tetrahedron*, 1994, **50**, 2975 (synth, derivs)

Griffin, C.C. *et al.*, *Carbohydr. Res.*, 1995, **276**, 183-197 (isol, props)

Das, S.K. *et al.*, *Carbohydr. Res.*, 1996, **296**, 275-277 (synth, *β-D-pyr Et gly tetra-Ac*)

Galema, S.A. *et al.*, *Carbohydr. Res.*, 1997, **303**, 423-434 (synth, alkyl glycosides)

Peerlings, H.W.I. *et al.*, *Eur. J. Org. Chem.*, 1998, 1879-1886 (*β-D-pyr tetra-Ac*)

Gelin, M. *et al.*, *Eur. J. Org. Chem.*, 2000, 1423-1431 (*β-D-fur Ph gly tetrabenzyl*)

Ibatullin, F.M. *et al.*, *Synthesis*, 2001, 419-422 (*β-D-pyr penta-Ac*)

Furneaux, R.H. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1999-2004 (*Ph β-D-gly*)

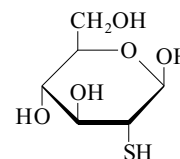
Griffin, F.K. *et al.*, *Eur. J. Org. Chem.*, 2002, 1305-1322 (*Me glycosides*, *benzyl glycosides*)

Hashihayata, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 2003, **76**, 1829-1848 (*α-D-Et pyr tribenzoyl*)

Fujihara, T. *et al.*, *J. Carbohydr. Chem.*, 2003, **22**, 73-78 (*α-tetra-Ac*, synth)

2-Thioglucose

T-71

C₆H₁₂O₅S 196.224

β-D-Pyranose-form

S-Et: *2-S-Ethyl-2-thio-D-glucopyranose* [15356-38-4]
C₈H₁₆O₅S 224.277
Cryst. (EtOH). Mp 158-160°. [α]_D²¹ +63 (c, 1.0 in H₂O) (equilib.). Crystallises as the β-anomer, rapidly equilibrates in DMSO to an equilib. mixt. containing 60% α-Pyr and 40% β-Pyr.

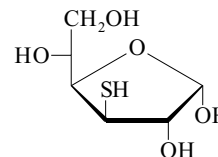
S-Et, tetra-Ac: *1,3,4,6-Tetra-O-acetyl-2-S-ethyl-2-thio-β-D-glucopyranose* C₁₆H₂₄O₉S 392.426
Mp 78-79°. [α]_D²¹ +43 (c, 1.0 in CHCl₃).

[15356-42-0]

El Ashmawy, A.E. *et al.*, *Carbohydr. Res.*, 1968, **6**, 299 (synth, pmr)

3-Thioglucose

T-72

C₆H₁₂O₅S 196.224

α-D-Furanose-form

1,2:5,6-Diisopropylidene: *1,2:5,6-Di-O-isopropylidene-3-thio-α-D-glucofuranose* C₁₂H₂₀O₅S 276.353
Syrup. Bp_{0.15} 112-114°.

1,2:5,6-Di-O-isopropylidene, S-Ac: *3-S-Acetyl-1,2:5,6-di-O-isopropylidene-3-thio-α-D-glucofuranose* C₁₄H₂₂O₆S 318.39
Bp_{0.4} 133-137°. [α]_D²² -43.6 (c, 1.3 in CHCl₃). *n*_D¹⁹ 1.4836.

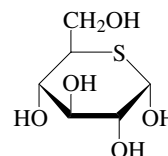
Heap, J.M. *et al.*, *J.C.S. (C)*, 1970, 707 (*diisopropylidene α-D-fur*)

Nayak, U.G. *et al.*, *J.O.C.*, 1971, **36**, 3714 (*diisopropylidene α-D-fur*)

Risbood, P.A. *et al.*, *Carbohydr. Res.*, 1981, **94**, 101 (*diisopropylidene α-D-fur*)

5-Thioglucose, 9CI, 8CI

T-73



α-Pyranose-form

C₆H₁₂O₅S 196.224

A soln. contains 85% α-pyr and 15% β-pyr.

D-form [16505-91-2]

Inhibitor of glucose transport across biol. membranes and of insulin release. Interferes with spermatogenesis; exhibits diabetogenic activity in rats; effective against malignant cultured cells. Needles (CHCl₃/MeOH). Mp 135-136°. [α]_D²⁰ +188 (c, 1.56 in H₂O).

 α -D-Pyranose-form [20408-97-3]

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-thio- α -D-glucopyranose
[10227-18-6]
C₁₆H₂₂O₁₀S 406.41
Mp 103°. [α]_D²³ +213 (c, 1.56 in CHCl₃).

Me glycoside: Methyl 5-thio- α -D-glucopyranoside
[28585-88-8]
C₇H₁₄O₅S 210.251

Cryst. (MeOH). Mp 126°. [α]_D²⁵ +326.3 (c, 1.61 in MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -D-glucopyranoside
[28585-86-6]
C₁₅H₂₂O₉S 378.399

Cryst. (Et₂O/hexane). Mp 98-99°. [α]_D²⁵ +224.8 (c, 1.8 in CHCl₃).

Me glycoside, 6-phosphate:

C₇H₁₅O₈PS 290.23
[α]_D²⁵ +123 (c, 1.29 in H₂O).

1-Bromo-1-deoxy, tetra-Ac: 2,3,4,6-Tetra-O-acetyl-5-thio- α -D-glucopyranosyl bromide

C₁₄H₁₉BrO₈S 427.269
Cryst. (hexane). Mp 59-61°. [α]_D²⁰ +227 (c, 1 in CHCl₃).

 β -D-Pyranose-form

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-thio- β -D-glucopyranose
[35827-66-8]
C₁₆H₂₂O₁₀S 406.41

Needles (EtOH). Mp 114°. [α]_D²³ -11.9 (c, 1.3 in CHCl₃).

Me glycoside: Methyl 5-thio- β -D-glucopyranoside

C₇H₁₄O₅S 210.251
[α]_D²⁵ -51.4 (c, 2.7 in MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio- β -D-glucopyranoside
[28585-87-7]
C₁₅H₂₂O₉S 378.399

Cryst. (Et₂O/hexane). Mp 92-93°. [α]_D²⁵ -26.9 (c, 1.85 in CHCl₃).

1-Bromo-1-deoxy, tetra-Ac: 2,3,4,6-Tetra-O-acetyl-5-thio- β -D-glucopyranosyl bromide

C₁₄H₁₉BrO₈S 427.269
Cryst. (Et₂O/petrol). Mp 102-104°. [α]_D²⁰ -6.5 (c, 1 in CHCl₃).

Nayak, U.G. *et al.*, *J.O.C.*, 1969, **34**, 97 (α -D-pyr penta-Ac)

Whistler, R.L. *et al.*, *Carbohydr. Res.*, 1970, **13**, 15 (α -D-pyr *Me gly tetra-Ac*, β -D-pyr *Me gly tetra-Ac*, α -D-pyr *Me gly*, α -D-pyr *Me gly phosphate*)

Whistler, R.L. *et al.*, *Biochem. J.*, 1972, **130**, 919 (*pharmacol*)

Suzuki, M. *et al.*, *Carbohydr. Res.*, 1972, **22**, 473 (*synth*, α -D-pyr penta-Ac, β -D-pyr penta-Ac, *pmr*)

Whistler, R.L. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 286 (*synth*, α -D-pyr penta-Ac)

U.S. Pat., 1976, 3 932 625; *CA*, **84**, 99624a (*use*)

Lambert, J.B. *et al.*, *J.O.C.*, 1981, **46**, 3193 (*conformn*, *pmr*, *cmr*)

Driguez, H. *et al.*, *Tet. Lett.*, 1981, **22**, 5061 (*synth*)

Korytynk, W. *et al.*, *Carbohydr. Res.*, 1982, **108**, 293 (α -D-pyr bromide tetra-Ac, β -D-pyr bromide tetra-Ac)

Berman, E. *et al.*, *Carbohydr. Res.*, 1983, **116**, 144 (*cmr*, *derivs*)

Hashimoto, H. *et al.*, *Carbohydr. Res.*, 1996, **282**, 207-221 (*synth*, *derivs*)

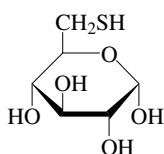
Das, S.K. *et al.*, *Carbohydr. Res.*, 1996, **296**, 275-277 (*synth*, β -Et gly tetra-Ac)

Tsuda, Y. *et al.*, *Chem. Pharm. Bull.*, 1996, **44**, 1465-1475 (*synth*)

Uenishi, J. *et al.*, *Tetrahedron*, 2003, **59**, 7011-7022 (*synth*, *pmr*, *cmr*)

6-Thioglucose

[13406-56-9]

C₆H₁₂O₅S 196.224 α -D-Pyranose-form **α -D-Pyranose-form**

Ph glycoside, 2,3,4,6-tetra-O(S)-Ac:

Phenyl 2,3,4,6-tetraacetyl-6-thio- α -D-glucopyranoside

C₂₀H₂₄O₉S 440.47

Cryst. (petrol/Me₂CO). Mp 128°. [α]_D²⁵ +161 (c, 0.09 in CHCl₃).

 β -D-Pyranose-form

1,2,3,4,6-Penta-O(S)-Ac:

C₁₆H₂₂O₁₀S 406.41

Cryst. (EtOH). Mp 127-128°. [α]_D²⁵ -15 (c, 3.4 in CHCl₃).

Ph glycoside, 2,3,4,6-tetra-O(S)-Ac:

Phenyl 2,3,4,6-tetraacetyl-6-thio- β -D-glucopyranoside

C₂₀H₂₄O₉S 440.47

Cryst. (petrol). Mp 97-98°. [α]_D²⁵ -10 (c, 1.0 in CHCl₃).

 α -D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-6-thio- α -D-glucofuranose

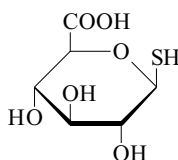
C₉H₁₆O₅S 236.288

Mp 96-97°. [α]_D -14 (CHCl₃).

Whistler, R.L. *et al.*, *Carbohydr. Res.*, 1966, **2**, 93 (*Ph-gly and Ac*)

1-Thioglucuronic acid

T-75

C₆H₁₀O₆S 210.207 **β -D-Pyranose-form**

Et glycoside, 2,3,4-tribenzyl, *Me ester*:

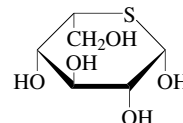
Methyl (ethyl 2,3,4-tri-O-benzyl-1-thio- β -D-glucopyranosid)uronate

C₃₀H₃₄O₆S 522.661Mp 128-130°. [α]_D -11 (c, 1.1 in CHCl₃).

Garegg, P.J. *et al.*, *J.O.C.*, 1995, **60**, 2200

5-Thioidose

T-76

C₆H₁₂O₅S 196.224 α -L-Pyranose-form**L-Pyranose-form**

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-deoxy-5-thio-L-idopyranose

C₁₆H₂₂O₁₀S 406.41

Mp 90-92°. [α]_D²³ +41 (c, 2.0 in CHCl₃).

 α -L-Pyranose-form

Me glycoside: Methyl 5-thio- α -L-idopyranoside

C₇H₁₄O₅S 210.251

Syrup. [α]_D +130 (c, 1.0 in MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -L-idopyranoside

C₁₅H₂₂O₉S 378.399

Cryst. (EtOH). Mp 91-92°. [α]_D +74 (c, 1.0 in CHCl₃).

Me glycoside, 2,3:4,6-diisopropylidene:

Methyl 2,3:4,6-di-O-isopropylidene-5-thio- α -L-idopyranoside

C₁₃H₂₂O₅S 290.38

Cryst. (petrol). Mp 96-97°. [α]_D -171 (c, 0.8 in CHCl₃).

 β -L-Pyranose-form

Me glycoside: Methyl 5-thio- β -L-idopyranoside

C₇H₁₄O₅S 210.251

Syrup. [α]_D -124 (c, 1.0 in MeOH).

Me glycoside, tetra-Ac: Methyl 2,3,4,6-tetra-O-acetyl-5-thio- β -L-idopyranoside

C₁₅H₂₂O₉S 378.399

Syrup. [α]_D -90 (c, 1.0 in CHCl₃).

Me glycoside, 2,3:4,6-diisopropylidene:

Methyl 2,3:4,6-di-O-isopropylidene-5-thio- β -L-idopyranoside

C₁₃H₂₂O₅S 290.38

Cryst. (petrol). Mp 112-114°. [α]_D +73 (c, 0.8 in CHCl₃).

 β -L-Furanose-form

1,2:5,6-Diisopropylidene: 1,2-O:5-S,6-O-

Diisopropylidene-5-thio- β -L-idofuranose

C₁₂H₂₀O₅S 276.353

Cryst. (Et₂O/petrol). Mp 102-104°.

[α]_D +40 (c, 1.2 in CHCl₃).

1,2:5,6-Diisopropylidene, 3-mesyl:

1,2O:5S,6O-Diisopropylidene-3-O-mesyl-5-thio- β -L-idofuranose

C₁₃H₂₂O₇S₂ 354.445

Syrup. [α]_D +18.5 (c, 0.6 in CHCl₃).

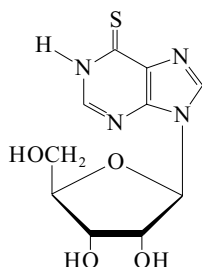
Adley, T.J. *et al.*, *J.C.S. (C)*, 1966, 1287 (*synth*)

Hughes, N.A. *et al.*, *Carbohydr. Res.*, 1991, **216**, 119 (*synth*, *pmr*, *cmr*, *L-pyr derivs*)

Hashimoto, H. *et al.*, *Carbohydr. Res.*, 1996, **282**, 207-231 (*synth, derivs*)
 Calvo-Flores, F.G. *et al.*, *J.O.C.*, 1997, **62**, 3944-3961 (*synth, ir, pmr, cmr, ms*)

6-Thioinosine, 9CI**T-77**

9- β -D-Ribofuranosyl-9H-purine-6-thiol, 8CI. 6-Mercapto-9- β -D-ribofuranosyl-9H-purine. Thioinosine. Tioinosine. NSC 4911 [574-25-4]



C₁₀H₁₂N₄O₄S 284.295
 Antileukaemic agent. Pale yellow cryst. or needles (AcOH aq.). Mp 210-211° dec. [α]_D²⁵ -73 (c, 1 in 0.1M NaOH). Log P -4.17 (calc).

► LD₅₀ (rat, orl) 900 mg/kg. Exp. reprod. and teratogenic effects. UP0710000

2',3',5'-Tri-Ac: [3021-21-4]

C₁₆H₁₈N₄O₇S 410.407

Cryst. (Me₂CO aq.). Mp 255-256°.

2',3',5'-Tribenzoyl: [6741-90-8]

C₃₁H₂₄N₄O₇S 596.619

Mp 228-230° (sealed tube).

S-Me: 6-S-Methyl-6-thioinosine, 12CI.

6-(Methylthio)-9- β -D-ribofuranosyl-9H-purine, 9CI. 6-(Methylthio)inosine. NSC 40774

[342-69-8]

C₁₁H₁₄N₄O₄S 298.322

Antileukaemic agent. Cryst (EtOH).

Mp 165-167°.

► LD₅₀ (rat, ipr) 137 mg/kg. Exp. teratogenic effects. UO8985000

S-(4-Nitrobenzyl): [38048-32-7]

C₁₇H₁₇N₅O₆S 419.417

Potent inhibitor of adenosine uptake.

Cryst. (EtOAc). Mp 198°.

S-(2-Hydroxy-5-nitrobenzyl): [56964-73-9]

C₁₇H₁₇N₅O₇S 435.417

Cryst. (EtOAc). Mp 157-161°.

5'-Phosphate: 6-Thio-5'-inosinic acid, 9CI

[53-83-8]

[2133-82-6, 52416-88-3, 90269-33-3]

C₁₀H₁₃N₄O₇PS 364.275

No phys. props. reported. λ_{max} 311

(ε 22200 pH13) (aq. alkali). λ_{max} 321

(ε 22600) (H₂O). λ_{max} 325 (ε 21500)

(aq. acid).

2',3'-Isopropylidene, 5'-phosphate:

C₁₃H₁₇N₄O₇PS 404.34

Powder. Mp 275° dec.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 717D (*ir*)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 216C; 220A (*nmr*)

Fox, J.J. *et al.*, *J.A.C.S.*, 1958, **80**, 1669-1675

Montgomery, J.A. *et al.*, *J.O.C.*, 1961, **26**, 1926-1929 (*synth, uv, phosphate*)

Biochem. Prep., 1963, **10**, 148-152 (*synth, bibl*)

Cass, C.E. *et al.*, *Cancer Res.*, 1975, **35**, 1187-1193 (*S-4-nitrobenzyl, pharmacol*)

Paterson, A.R.P. *et al.*, *Handb. Exp. Pharmacol.*, 1975, **38**, 384-403 (*pharmacol*)

Paul, B. *et al.*, *J. Med. Chem.*, 1975, **18**, 968-973 (*S-4-nitrobenzyl*)

Chenon, M.T. *et al.*, *J.A.C.S.*, 1975, **97**, 4627-4636 (*cmr*)

Roemming, C. *et al.*, *Acta Chem. Scand., Ser. B*, 1976, **30**, 716-720 (*cryst struct, deriv*)

Lynch, T.P. *et al.*, *Biochem. Pharmacol.*, 1978, **27**, 1303-1304 (*synth, phosphate*)

Saneyoshi, M. *et al.*, *Chem. Pharm. Bull.*, 1979, **27**, 2518-2521 (*deriv*)

Keyser, G.E. *et al.*, *Tet. Lett.*, 1979, 3263-3264 (*synth, deriv*)

Engels, J. *et al.*, *Synthesis*, 1981, 485-486 (*synth, phosphate*)

Lavi, L.E. *et al.*, *Anal. Biochem.*, 1985, **144**, 514-521 (*hplc, phosphate*)

Lin, T.-S. *et al.*, *J. Med. Chem.*, 1985, **28**, 1481-1485 (*synth, props*)

Nair, V. *et al.*, *Synthesis*, 1986, 450-453

Fleming, S.A. *et al.*, *J.O.C.*, 1992, **57**, 5968-5976 (*S-4-nitrobenzyl*)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 503

Camins, A. *et al.*, *Life Sci.*, 1996, **58**, 753-759 (*S-4-nitrobenzyl, pharmacol*)

Gangjee, A. *et al.*, *J. Med. Chem.*, 1997, **40**, 479-485 (*Me ether*)

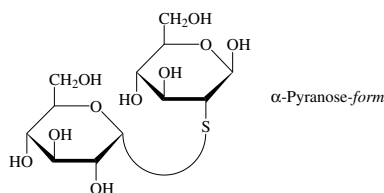
Worner, K. *et al.*, *Helv. Chim. Acta*, 1999, **82**, 2094-2104 (*synth, pmr, cmr*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, MPU000; TFFJ825

2-Thiokojibiose**T-78**

2-S- α -D-Glucopyranosyl-2-thio-D-glucose

[158213-24-2]



C₁₂H₂₂O₁₀S 358.366

Powder. [α]_D²⁰ +113 (c, 0.8 in H₂O).

β-Pyranose-form [158213-25-3]

Octa-Ac: 1,3,4,6-Tetra-O-acetyl-2-S-(2,3,4,6-tetra-O-acetyl- α -D-glucopyranosyl)-2-thio- β -D-glucopyranose

[158213-20-8]

C₂₈H₃₈O₁₈S 694.663

Shows anti-HIV activity. Cryst.

(CH₂Cl₂/EtOH). Mp 220° (207-208°).

[α]_D²⁰ +140 (c, 1 in CHCl₃).

Me glycoside, hepta-Ac: Methyl 3,4,6-tri-O-acetyl-2-S-(2,3,4,6-tetra-O-acetyl- α -D-glucopyranosyl)-2-thio- β -D-glucopyranose

[289653-89-0]

C₂₇H₃₈O₁₇S 666.653

Cryst. (EtOH). Mp 167-168°. [α]_D +130 (c, 0.5 in CHCl₃).

Benzyl glycoside: Benzyl 2-S- α -D-glucopyranosyl-2-thio- β -D-glucopyranoside

[159495-69-9]

C₁₉H₂₈O₁₀S 448.49

Powder. Mp 165° dec.

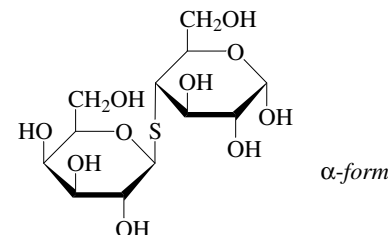
Defaye, J. *et al.*, *Carbohydr. Res.*, 1994, **253**, 185-194 (*synth, β-pyr-octa-Ac*)

Comber, R.N. *et al.*, *Carbohydr. Res.*, 1994, **262**, 245-255 (*β-pyr-octa-Ac, β-benzyl pyr*)

Johnston, B.D. *et al.*, *J.O.C.*, 2000, **65**, 4607-4617 (*β-Me-pyr tetra-Ac*)

Thiolactose**T-79**

4-S- β -D-Galactopyranosyl-4-thio-D-glucopyranose



C₁₂H₂₂O₁₀S 358.366

Hygroscopic solid (MeOH aq.). [α]_D³³ +5 → -8 (c, 1.0 in H₂O). Anomeric mixt.

Octa-Ac:

C₂₈H₃₈O₁₈S 694.663

Amorph. powder. Mixt. of anomers.

α-form [79580-81-7]

Me glycoside: [79580-75-9]

C₁₃H₂₄O₁₀S 372.393

Glass. [α]_D²⁸ +27.1 (c, 1.0 in H₂O).

Me glycoside, hepta-Ac: [79580-76-0]

C₂₇H₃₈O₁₇S 666.653

Cryst. (MeOH aq.). Mp 125°. [α]_D²⁸

+42.2 (c, 1.0 in CHCl₃).

Me glycoside, 2,3,6-tribenzoyl, tetra-Ac:

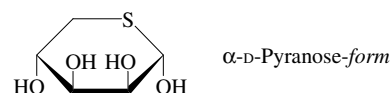
C₄₂H₄₄O₁₇S 852.865

Solid (EtOH). Mp 128-129°. [α]_D²⁰ +64.7 (c, 1.0 in CHCl₃).

[79580-82-8, 107376-42-1]

Reed, L.A. *et al.*, *Carbohydr. Res.*, 1981, **94**, 91-99 (*synth, cmr, octa-Ac, α-Me pyr*)

Ibatullin, F.M. *et al.*, *Synthesis*, 2001, 419-422 (*α-Me pyr tribenzoyl tetra-Ac*)

5-Thiolyxose**T-80**

C₆H₁₀O₄S 178.209

α-D-Pyranose-form

Cryst. (EtOH). Mp 170-174°. [α]_D +24 (c, 0.65 in H₂O).

Me glycoside: Methyl 5-thio- α -D-lyxopyranoside

C₆H₁₂O₄S 180.224

Cryst. (2-propanol). Mp 154-155°. [α]_D +213 (c, 0.5 in MeOH).

β-D-Pyranose-form

Me glycoside: Methyl 5-thio- β -D-lyxopyranoside

C₆H₁₂O₄S 180.224

Cryst. (EtOAc). Mp 152-154°. [α]_D -295 (c, 0.5 in MeOH).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-5-thio-β-D-lyxopyranoside
 $C_{12}H_{18}O_7S$ 306.336
 Cryst. (Et₂O/petrol). Mp 107-109°. [α]_D -225 (c, 1.1 in CHCl₃).

α-D-Furanose-form

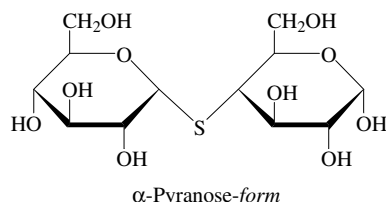
Me glycoside, 2,3-isopropylidene, 5-S-Ac: Methyl 5-S-acetyl-2,3-O-isopropylidene-5-thio-α-D-lyxofuranoside
 $C_{11}H_{18}O_5S$ 262.326
 Cryst. (MeOH aq.). [α]_D +65 (c, 1.2 in CHCl₃).

Me glycoside, 2,3-isopropylidene, 5-S-benzoyl: Methyl 5-S-benzoyl-2,3-O-isopropylidene-5-thio-α-D-lyxofuranoside
 $C_{16}H_{20}O_5S$ 324.397
 Cryst. (MeOH aq.). Mp 46-48°. [α]_D +46 (c, 1.1 in CHCl₃).

Hughes, N.A. *et al.*, *Carbohydr. Res.*, 1985, **136**, 397 (synth, pmr, cmr)

Thiomaltose**T-81**

4-S-α-D-Glucopyranosyl-4-thio-D-glucose
 [82097-84-5]



$C_{12}H_{22}O_{10}S$ 358.366
 Foam. [α]_D +162 (c, 0.16 in H₂O). Mixture of α- and β-pyranose forms.

α-Pyranose-form [141870-82-8]

Me glycoside: Methyl 4-S-α-D-glucopyranosyl-4-thio-α-D-glucopyranoside
 [68667-09-4]
 $C_{13}H_{24}O_{10}S$ 372.393
 Mp 201-205°. [α]_D²⁰ +305 (c, 1 in H₂O).

Me glycoside, hepta-Ac: [68667-05-0]
 $C_{27}H_{38}O_{17}S$ 666.653
 [α]_D²⁰ +192 (c, 2 in CHCl₃).

β-Pyranose-form

Octa-Ac: [81905-43-3]
 $C_{28}H_{38}O_{18}S$ 694.663
 Solid (EtOH). Mp 179-181°. [α]_D²⁰ +127 (c, 0.44 in CHCl₃).

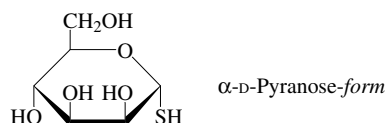
Me glycoside: Methyl 4-S-α-D-glucopyranosyl-4-thio-β-D-glucopyranoside
 [156660-46-7]
 $C_{13}H_{24}O_{10}S$ 372.393
 Hygroscopic foam. [α]_D²⁰ +140 (c, 0.12 in H₂O).

Me glycoside, hepta-Ac: [156660-48-9]
 Mp 159-161.5°. [α]_D +29.3.

Blanc-Muesser, M. *et al.*, *J.C.S. Perkin 1*, 1982, 15-18 (synth, β-pyr-octa-Ac, α-Me pyr)

Pérez, S. *et al.*, *Acta Cryst. B*, 1984, **40**, 294-299 (α-Me pyr, cryst struct)

Bock, K. *et al.*, *Carbohydr. Res.*, 1994, **253**, 51-67 (β-Me pyr)

1-Thiomannose**T-82**

$C_6H_{12}O_5S$ 196.224

α-D-Pyranose-form [154920-32-8]

Tetra-Ac: 2,3,4,6-Tetra-O-acetyl-1-thio-α-D-mannopyranoside
 [56981-51-2]
 $C_{14}H_{20}O_9S$ 364.373

Syrup. Not fully purified. Stored under N₂.

Et glycoside, tetra-Ac: Ethyl 2,3,4,6-tetra-O-acetyl-1-thio-α-D-mannopyranoside
 [79389-52-9]
 $C_{16}H_{24}O_9S$ 392.426
 Cryst. (Et₂O/hexane). Mp 107-108°. [α]_D²⁵ +104 (c, 0.88 in CHCl₃).

Et glycoside, 6-tosyl: Ethyl 1-thio-6-O-tosyl-α-D-mannopyranoside
 [145124-95-4]
 $C_{15}H_{22}O_7S_2$ 378.467
 [α]_D +115 (c, 0.34 in MeOH).

Et glycoside, 2,3-O-isopropylidene, 6-tosyl: Ethyl 2,3-O-isopropylidene-1-thio-6-O-tosyl-α-D-mannopyranoside
 [145124-96-5]
 $C_{18}H_{26}O_7S_2$ 418.531
 [α]_D +86 (c, 0.20 in CHCl₃).

Benzyl glycoside: Benzyl 1-thio-α-D-mannopyranoside
 [74590-47-9]
 $C_{13}H_{18}O_5S$ 286.348
 Cryst. Mp 102-106.5°. [α]_D²⁷ +342 (c, 0.55 in MeOH).

Benzyl glycoside, tetra-Ac: Benzyl 2,3,4,6-tetra-O-acetyl-1-thio-α-D-mannopyranoside
 [74590-46-8]
 $C_{21}H_{26}O_9S$ 454.497
 Cryst. (EtOH). Mp 137-138.5°. [α]_D²⁷ +154 (c, 1 in CHCl₃).

Benzyl glycoside, tetrabenzyl: Benzyl 2,3,4,6-tetra-O-benzyl-1-thio-α-D-mannopyranoside
 [437757-83-0]
 $C_{41}H_{42}O_5S$ 646.846
 Oil. [α]_D²⁰ +106.4 (c, 2.2 in CHCl₃).

Ph glycoside, 6-tosyl: Phenyl 1-thio-6-O-tosyl-α-D-mannopyranoside
 [151669-24-8]
 $C_{19}H_{22}O_7S_2$ 426.511
 [α]_D +147 (c, 0.40 in CHCl₃).

Ph glycoside, 2,3-O-isopropylidene: Phenyl 2,3-O-isopropylidene-1-thio-α-D-mannopyranoside
 [126092-08-8]
 $C_{15}H_{20}O_5S$ 312.386
 Cryst. Mp 132-134°. [α]_D²⁰ +194.5 (c, 1.12 in CHCl₃).

Ph glycoside, 2,3-O-isopropylidene, 6-tosyl: Phenyl 2,3-O-isopropylidene-1-thio-6-O-tosyl-α-D-mannopyranoside
 [151669-25-9]
 $C_{22}H_{26}O_7S_2$ 466.575
 [α]_D +99 (c, 0.9 in CHCl₃).

Ph glycoside, 4,6-O-isopropylidene: Phenyl 4,6-O-isopropylidene-1-thio-β-D-mannopyranoside
 [128848-59-9]
 $C_{15}H_{20}O_5S$ 312.386
 Cryst. (EtOAc). Mp 164-165°. [α]_D -99 (c, 1 in MeOH).

Ph glycoside, S-oxide, tribenzyl: Phenyl 3,4,6-tri-O-benzyl-α-D-mannopyranosyl sulfoxide
 [173910-78-6]
 $C_{33}H_{34}O_6S$ 558.694

Glycosylating agent for β-mannopyranoside synthesis.
 Characterised spectroscopically.

β-D-Pyranose-form [135891-42-8] Sol. H₂O.
 λ_{max} 268 (ε 7260) (EtOH) (Berdy). λ_{max} 270 (ε 8150) (EtOH-HCl) (Berdy). λ_{max} 273 (ε 8300) (EtOH-NaOH) (Berdy).
Na salt: [66965-73-9]
 Mp 189° dec. [α]_D¹⁵ -15 (c, 2.5 in H₂O).

1-S,2,3,4,6-Penta-Ac: 2,3,4,6-Tetra-O-acetyl-1-S-acetyl-1-thio-β-D-mannopyranoside. 1-S,2,3,4,6-Pentaacetyl-1-thio-β-D-mannopyranoside
 [92217-68-0]
 $C_{16}H_{22}O_{10}S$ 406.41
 Needles. Mp 130-131°. [α]_D -29 (c, 1.75 in CHCl₃).

Et glycoside: Ethyl 1-thio-β-D-mannopyranoside
 [73804-33-8]
 $C_8H_{16}O_5S$ 224.277
 Needles (EtOH). Mp 118-119°. [α]_D²⁵ -83 (c, 0.6 in H₂O).

Et glycoside, tetra-Ac: Ethyl 2,3,4,6-tetra-O-acetyl-1-thio-β-D-mannopyranoside
 [125354-48-5]
 $C_{16}H_{24}O_9S$ 392.426
 Cryst. (EtOH). Mp 161-162°. [α]_D²⁴ -67 (c, 0.67 in CHCl₃).

Benzyl glycoside: Benzyl 1-thio-β-D-mannopyranoside
 [74590-57-1]
 $C_{13}H_{18}O_5S$ 286.348
 Cryst. (MeOH/Et₂O). Mp 131.5-132.5°. [α]_D²⁷ -229 (c, 1 in MeOH).

Ph glycoside: Phenyl 1-thio-β-D-mannopyranoside
 [77481-63-1]
 $C_{12}H_{16}O_5S$ 272.321
 Mp 180° (sinters). [α]_D -76 (c, 1.1 in MeOH).

Ph glycoside, 4,6-di-Ac: Phenyl 4,6-di-O-acetyl-1-thio-β-D-mannopyranoside
 [246875-61-6]
 $C_{16}H_{20}O_7S$ 356.396
 Mp 149-150°. [α]_D -125 (c, 1.4 in CHCl₃).

Ph glycoside, di-O-isopropylidene: Phenyl 2,3:4,6-di-O-isopropylidene-1-thio-β-D-mannopyranoside
 [151662-55-4]
 $C_{18}H_{24}O_5S$ 352.451
 Cryst. Mp 140-142°. [α]_D -145 (c, 0.7 in CHCl₃).

α -L-Pyranose-form

Benzyl glycoside, Benzyl 1-thio- α -L-mannopyranoside
[74590-59-3]
 $C_{13}H_{18}O_5S$ 286.348
Cryst. Mp 104-107.5°. $[\alpha]_D^{27}$ -347 (c, 0.5 in MeOH).

Benzyl glycoside, tetra-Ac: Benzyl 2,3,4,6-tetra-O-acetyl-1-thio- α -L-mannopyranoside
[74590-58-2]
 $C_{21}H_{26}O_9S$ 454.497
Cryst. (EtOH). Mp 136-137.5°. $[\alpha]_D^{27}$ -159 (c, 1 in $CHCl_3$).

 α -D-Furanose-form

Ph glycoside, tetrabenzyl: Phenyl 2,3,5,6-tetra-O-benzyl-1-thio- α -D-mannofuranoside
[147103-42-2]
 $C_{40}H_{40}O_5S$ 632.819
Solid (petrol/Et₂O). Mp 84-86°. $[\alpha]_D$ +64 (c, 1.0 in CH_2Cl_2).

Fried, J. et al., *J.A.C.S.*, 1949, **71**, 140 (β -D-pyr Et gly, α -D-pyr Et gly tetra-Ac, β -D-pyr Et gly tetra-Ac)

Lemieux, R.U. et al., *Can. J. Chem.*, 1955, **33**, 109 (α -D-pyr Et gly tetra-Ac, β -D-pyr Et gly tetra-Ac)

Tejima, S. et al., *Chem. Pharm. Bull.*, 1964, **12**, 528 (β -D-pyr, β -D-pyr penta-Ac)

Durette, P.L. et al., *Carbohydr. Res.*, 1980, **81**, 261 (α -D-tetra-Ac, benzyl gly derivs)

Chernyak, A.Ya. et al., *Sov. J. Bioorg. Chem. (Engl. Transl.)*, 1989, **15**, 616-628 (α -D-Ph pyr isopropylidene)

Li, Z.-J. et al., *Synth. Commun.*, 1990, **20**, 2169 (α -D-Et gly tetrabenzyl)

Pedretti, V. et al., *Tetrahedron*, 1990, **46**, 77-88 (β -D-Ph pyr, β -D-Ph pyr isopropylidene)

Kerékgyártó, J. et al., *Carbohydr. Res.*, 1993, **245**, 65 (Et gly derivs, Ph gly derivs)

Das, S.K. et al., *Carbohydr. Res.*, 1996, **296**, 275-277 (*synth*, α -D-S-Et tetra Ac)

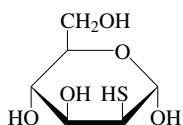
Stork, G. et al., *J.A.C.S.*, 1996, **118**, 247 (*synth*, *pmr*, *cmr*, S-Ph S-oxide tribenzyl)

Pozsgay, V. et al., *J.O.C.*, 1999, **64**, 7277-7280 (β -D-Ph pyr di-Ac)

Gelin, M. et al., *Eur. J. Org. Chem.*, 2000, 1423-1431 (α -D-fur Ph gly tetrabenzyl)

Pozsgay, V. et al., *J. Carbohydr. Chem.*, 2001, **20**, 659-665 (β -D-pyr Ph glycoside, di-Ac, diisopropylidene)

Griffin, F.K. et al., *Eur. J. Org. Chem.*, 2002, 1305-1322 (α -D-pyr benzyl gly tetrabenzyl)

2-Thiomannose**T-83** α -D-Pyranose-form $C_6H_{12}O_5S$ 196.224**D-Pyranose-form**

S-Et: 2-S-Ethyl-2-thio-D-mannopyranose
[15356-42-0]
 $C_8H_{16}O_5S$ 224.277
Syrup.

S-Et, tetra-O-Ac: 1,3,4,6-Tetra-O-acetyl-2-S-ethyl-2-thio- α -D-mannopyranose
[30085-93-9]
 $C_{16}H_{24}O_9S$ 392.426
Cryst. (CH_2Cl_2 /Et₂O). Mp 115-116°.

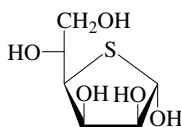
$[\alpha]_D^{23}$ +40 (c, 1 in $CHCl_3$).

Berrang, B. et al., *Chem. Comm.*, 1970, 1038

(*synth*)

Defaye, J. et al., *Carbohydr. Res.*, 1971, **16**, 133

(*synth*, *pmr*)

4-Thiomannose**T-84** α -D-Furanose-form $C_6H_{12}O_5S$ 196.224**D-form**

$[\alpha]_D^{22}$ +40 (c, 0.15 in H₂O).

D-Furanose-form

2,3-Isopropylidene: 2,3-O-Isopropylidene-

4-thio-D-mannofuranose

$C_9H_{16}O_5S$ 236.288

$[\alpha]_D^{22}$ +46 (c, 0.4 in MeOH).

2,3:5,6-Diisopropylidene: 2,3:5,6-Di-O-

isopropylidene-4-thio-D-mannofuranose

$C_{12}H_{20}O_5S$ 276.353

Cryst. (toluene). Mp 121-123°. $[\alpha]_D^{22}$ +56 (c, 1 in $CHCl_3$).

 α -D-Furanose-form

Penta-Ac: 1,2,3,5,6-Penta-O-acetyl-4-thio- α -D-mannofuranose

$C_{16}H_{22}O_{10}S$ 406.41

$[\alpha]_D$ +148 (c, 0.14 in $CHCl_3$).

 β -D-Furanose-form

Penta-Ac: 1,2,3,5,6-Penta-O-acetyl-5-thio- β -D-mannofuranose

$C_{16}H_{22}O_{10}S$ 406.41

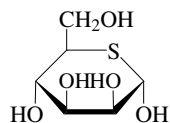
$[\alpha]_D$ -103 (c, 0.15 in $CHCl_3$).

Shah, R.H. et al., *Carbohydr. Res.*, 1979, **77**, 107 (*synth*, *pmr*)

Classon, B. et al., *Carbohydr. Res.*, 1988, **174**, 369 (*synth*, *pmr*)

5-Thiomannose**T-85**

[127854-51-7]

 α -D-Pyranose-form $C_6H_{12}O_5S$ 196.224**D-Pyranose-form** [110786-41-9]

Isol. from the sponge *Clathria pyramida*.

 α -D-Pyranose-form

Syrup. $[\alpha]_D$ +49.7 (c, 0.78 in H₂O).

Penta-Ac: 1,2,3,4,6-Penta-O-acetyl-5-thio- α -D-mannopyranose

$C_{16}H_{22}O_{10}S$ 406.41

Amorph. Mp 85-87°. $[\alpha]_D^{21}$ +83.1 (c, 1.22 in $CHCl_3$).

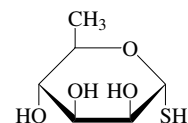
[127854-50-6]

Capon, R.J. et al., *Chem. Comm.*, 1987, 1200-1201 (*isol*, *pmr*)

Yuasa, H. et al., *J. Carbohydr. Chem.*, 1989, **8**, 753-763 (*synth*)

1-Thiorhamnose**T-86**

6-Deoxy-1-thiomannose

 α -D-Pyranose-form $C_6H_{12}O_4S$ 180.224 **α -D-Pyranose-form**

Et glycoside, 2,3-isopropylidene: Ethyl 2,3-O-isopropylidene-1-thio- α -D-rhamnopyranoside

[145124-97-6]

$C_{11}H_{20}O_4S$ 248.343

$[\alpha]_D$ +178 (c, 1.2 in $CHCl_3$).

Et glycoside, 4-benzyl: Ethyl 4-O-benzyl-1-thio- α -D-rhamnopyranoside

$C_{15}H_{22}O_4S$ 298.402

Cryst. (hexane/EtOAc). Mp 94-95°.

$[\alpha]_D$ +185 (c, 0.60 in $CHCl_3$). No CAS no. available.

Et glycoside, 4-benzyl, 2-Me: Ethyl 4-O-benzyl-2-O-methyl-1-thio- α -D-rhamnopyranoside

$C_{16}H_{24}O_4S$ 312.429

$[\alpha]_D$ +126 (c, 0.40 in $CHCl_3$). No CAS no. available.

Ph glycoside, 2,3-isopropylidene: Phenyl 2,3-O-isopropylidene-1-thio- α -D-rhamnopyranoside

$C_{15}H_{20}O_4S$ 296.387

Cryst. (EtOAc/hexane). Mp 82°. $[\alpha]_D$ +206 (c, 1.0 in $CHCl_3$). No CAS no. available.

Ph glycoside, 4-benzyl: Phenyl 4-O-benzyl-1-thio- α -D-rhamnopyranoside

$C_{19}H_{22}O_4S$ 346.446

Cryst. (EtOAc/hexane). Mp 117°.

$[\alpha]_D$ +232 (c, 0.90 in $CHCl_3$). No CAS no. available.

Ph glycoside, 4-benzyl, 2,3-isopropylidene: Phenyl 4-O-benzyl-2,3-O-isopropylidene-1-thio- α -D-rhamnopyranoside

$C_{22}H_{26}O_4S$ 386.511

Cryst. (EtOH). Mp 90°. $[\alpha]_D$ +220

(c, 0.66 in $CHCl_3$). No CAS no. available.

 α -L-Pyranose-form

Me glycoside: Methyl 1-thio- α -L-rhamnopyranoside

[115678-08-5]

$C_7H_{14}O_4S$ 194.251

Cryst. (EtOAc). Mp 104-105°. $[\alpha]_D$ -185 (c, 1.0 in H₂O).

Me glycoside, 4-benzoyl: Methyl 4-O-benzoyl-1-thio- α -L-rhamnopyranoside

[194347-74-5]

$C_{14}H_{18}O_5S$ 298.359

Foam. $[\alpha]_D^{20}$ -206.5 (c, 1.0 in $CHCl_3$).

Me glycoside, 2,3-dibenzoyl: Methyl 2,3-di-O-benzoyl-1-thio- α -L-rhamnopyranoside

[172325-25-6]

$C_{21}H_{22}O_6S$ 402.467

Amorph. mass. $[\alpha]_D$ -5.9 (c, 1.0 in $CHCl_3$).

Me glycoside, 2,3-isopropylidene: Methyl 2,3-O-isopropylidene-1-thio- α -L-rhamnopyranoside
[115678-10-9]
 $C_{10}H_{18}O_4S$ 234.316
Cryst. (Et₂O/hexane). Mp 76-77°. [α]_D -142 (c, 0.8 in CHCl₃).

Et glycoside: Ethyl 1-thio- α -L-rhamnopyranoside
[127753-94-0]
 $C_8H_{16}O_4S$ 208.278
Syrup. [α]_D²⁰ -223.4 (c, 0.75 in MeOH).

Et glycoside, 2-Ac: Ethyl 2-O-acetyl-1-thio- α -L-rhamnopyranoside
[135303-35-4]
 $C_{10}H_{18}O_5S$ 250.315
[α]_D²⁵ -135 (c, 1.6 in CHCl₃).

Et glycoside, tri-Ac: Ethyl 2,3,4-tri-O-acetyl-1-thio- α -L-rhamnopyranoside
[125520-01-6]
 $C_{14}H_{22}O_7S$ 334.39
Mp 69-70°. [α]_D²⁰ -117 (c, 1.5 in CHCl₃) (-113.5). Das *et al.* report [α]_D+86.7 (CHCl₃) without comment.

Et glycoside, 2-benzoyl: Ethyl 2-O-benzoyl-1-thio- α -L-rhamnopyranoside
[135303-36-5]
 $C_{15}H_{20}O_5S$ 312.386
[α]_D²⁵ -100 (c, 0.85 in CHCl₃).

Et glycoside, 4-benzoyl: Ethyl 4-O-benzoyl-1-thio- α -L-rhamnopyranoside
[145836-03-9]
 $C_{15}H_{20}O_5S$ 312.386
Syrup. [α]_D²² -194 (c, 1.18 in CHCl₃).

Et glycoside, 2,4-dibenzoyl: Ethyl 2,4-di-O-benzoyl-1-thio- α -L-rhamnopyranoside
[135303-37-6]
 $C_{22}H_{24}O_6S$ 416.494
Syrup. [α]_D²⁵ -28 (c, 1.3 in CHCl₃).

Et glycoside, 2,3-isopropylidene, 4-benzoyl: Ethyl 4-O-benzoyl-2,3-O-isopropylidene-1-thio- α -L-rhamnopyranoside
[145836-02-8]
 $C_{18}H_{24}O_5S$ 352.451
Cryst. Mp 120-121°. [α]_D²² -129 (c, 1.28 in CHCl₃).

Ph glycoside: Phenyl 1-thio- α -L-rhamnopyranoside
[131724-82-8]
 $C_{12}H_{16}O_4S$ 256.322
Cryst. (diisopropyl ether). Mp 89-91°. [α]_D²² -247 (c, 0.75 in MeOH).

Ph glycoside, 2,3-isopropylidene: Phenyl 2,3-O-isopropylidene-1-thio- α -L-rhamnopyranoside
[131087-35-9]
 $C_{15}H_{20}O_4S$ 296.387
Cryst. Mp 79-80°. [α]_D²² -211 (c, 1.45 in CHCl₃).

Ph glycoside, 4-benzoyl: Phenyl 4-O-benzoyl-1-thio- α -L-rhamnopyranoside
[145836-09-5]
 $C_{19}H_{20}O_5S$ 360.43
Cryst. Mp 115-117°. [α]_D²² -290 (c, 1.08 in CHCl₃).

Ph glycoside, 2,3-isopropylidene, 4-benzoyl: Phenyl 4-O-benzoyl-2,3-O-isopropylidene-1-thio- α -L-rhamnopyranoside
[145836-08-4]
 $C_{22}H_{24}O_5S$ 400.495
Cryst. Mp 76-77°. [α]_D²² -206 (c, 1.06 in CHCl₃).

β -L-Pyranose-form

Me glycoside: Methyl 1-thio- β -L-rhamnopyranoside
[115678-09-6]
Cryst. (EtOAc). [α]_D +114 (c, 0.6 in H₂O).

Me glycoside, 2,3-isopropylidene: Methyl 2,3-O-isopropylidene-1-thio- β -L-rhamnopyranoside
[120255-39-2]
Cryst. (Et₂O/petrol). Mp 73-74°. [α]_D +99 (c, 0.9 in CHCl₃).

Et glycoside: Ethyl 1-thio- β -L-rhamnopyranoside
[69558-01-6]
 $C_8H_{16}O_4S$ 208.278
Cryst. (EtOH). Mp 145-146°. [α]_D²⁰ +123.5 (c, 0.8 in MeOH).

Et glycoside, 2-Ac: Ethyl 2-O-acetyl-1-thio- β -L-rhamnopyranoside
[135303-34-3]
 $C_{10}H_{18}O_5S$ 250.315
Cryst. Mp 111-113°. [α]_D²⁵ +90.5 (c, 0.8 in CHCl₃).

Et glycoside, tri-Ac: Ethyl 2,3,4-tri-O-acetyl-1-thio- β -L-rhamnopyranoside
[69558-02-7]
 $C_{14}H_{22}O_7S$ 334.39
Cryst. (EtOH). Mp 166-167° (163-164°). [α]_D²⁰ +70.5 (c, 0.71 in CHCl₃).

Lipták, A. *et al.*, *J. Carbohydr. Chem.*, 1988, **7**, 687-689 (*Me gly derivs*)

Auzanneau, F.I. *et al.*, *Carbohydr. Res.*, 1991, **212**, 13 (*Et α -L-gly, Et β -L-gly derivs*)

Pozsgay, V. *et al.*, *Carbohydr. Res.*, 1992, **235**, 295 (*α -L-Ph gly, α -L-Ph gly derivs, α -L-Et gly derivs*)

Keglević, D. *et al.*, *Carbohydr. Res.*, 1993, **241**, 131 (*Et α -L-gly, Et β -L-gly*)

Kerékgyártó, J. *et al.*, *Carbohydr. Res.*, 1993, **245**, 65 (*Et α -D-gly, Ph α -D-gly derivs*)

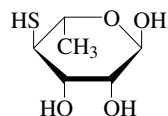
Ando, T. *et al.*, *Carbohydr. Res.*, 1993, **249**, 275 (*α -L-Me gly 2,3-dibenzoyl*)

Das, S.K. *et al.*, *Carbohydr. Res.*, 1996, **296**, 275-277 (*α -L-Et gly tri-Ac*)

Lichtenthaler, F.W. *et al.*, *Eur. J. Org. Chem.*, 2003, 3081-3093 (*α -L-Me pyr 4-benzoyl*)

4-Thiorhamnose

6-Deoxy-4-thiomannose



α -L-Pyranose-form

$C_6H_{12}O_4S$ 180.224

L-form

[α]_D -62 → +63.7 (10 min.) (c, 0.8 in H₂O).

α -L-Pyranose-form

S,1,2,3-Tetra-Ac: 1,2,3-Tri-O-acetyl-4-S-acetylthio- α -L-rhamnopyranose
 $C_{14}H_{20}O_8S$ 348.373
[α]_D -38.2 (c, 1.2 in CHCl₃).

Me glycoside, 2,3-Di-Ac: Methyl 2,3-di-O-acetyl-4-thio- α -L-rhamnopyranoside
 $C_{11}H_{18}O_6S$ 278.326
[α]_D -44.2 (c, 0.7 in CHCl₃).

α -L-Furanose-form

Tetra-Ac: 1,2,3,5-Tetra-O-acetyl-4-thio- α -L-rhamnofuranose
 $C_{14}H_{20}O_8S$ 348.373
Mp 74-76°. [α]_D -256 (c, 0.8 in CHCl₃).

β -L-Furanose-form

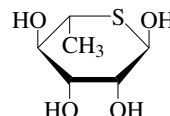
Tetra-Ac: 1,2,3,5-Tetra-O-acetyl-4-thio- β -L-rhamnofuranose
 $C_{14}H_{20}O_8S$ 348.373
[α]_D +82.5 (c, 0.9 in CHCl₃).

Zunsain, P.A. *et al.*, *Carbohydr. Res.*, 1991, **222**, 131

5-Thiorhamnose

T-88

6-Deoxy-5-thiomannose



α -L-Pyranose-form

$C_6H_{12}O_4S$ 180.224

L-Pyranose-form

Syrup. [α]_D²⁵ -55.6 (c, 1 in MeOH).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-thio- α -L-rhamnopyranose
 $C_{14}H_{20}O_8S$ 348.373
Syrup. [α]_D²⁵ -134 (c, 1 in CHCl₃). Mixt. of anomers.

β -L-Pyranose-form

Tetrakis(4-nitrobenzoyl): 1,2,3,4-Tetrakis-O-(p-nitrobenzoyl)-5-thio- β -L-rhamnopyranose
Mp 202°. [α]_D²⁵ +62.9 (c, 2 in CHCl₃).

α -L-Furanose-form

Me glycoside, 2,3-isopropylidene, S-Ac: Methyl 5-S-acetyl-2,3-O-isopropylidene-5-thio- α -L-rhamnofuranoside
 $C_{12}H_{20}O_5S$ 276.353
Cryst. (hexane). Mp 48°. [α]_D²⁵ -69.9 (c, 1 in CHCl₃).

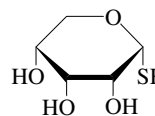
β -L-Furanose-form

Tetra-Ac: 1,2,3-Tri-O-acetyl-5-S-acetyl-5-thio- β -L-rhamnofuranoside. 1-O,2-O,3-O,5-S-Tetraacetyl-5-thio- β -L-rhamnofuranoside
 $C_{14}H_{20}O_8S$ 348.373
Cryst. (Et₂O/hexane). Mp 98°. [α]_D²⁵ -128 (c, 0.8 in CHCl₃).

Anisuzzaman, A.K.M. *et al.*, *Carbohydr. Res.*, 1977, **55**, 205

1-Thioribose

T-89



α -D-Pyranose-form

$C_5H_{10}O_4S$ 166.198

D-form

Mp 165° dec. (as Na salt). $[\alpha]_D^{20}$ -79 → 0 (Na salt).

Tetra-Ac:

$C_{13}H_{18}O_8S$ 334.346

Cryst. (EtOH). Mp 85-87°. $[\alpha]_D^{17}$ +11 (c, 1.97 in $CHCl_3$).

 α -D-Furanose-form

Et glycoside: Ethyl 1-thio- α -D-ribofuranoside

$C_7H_{14}O_4S$ 194.251

Mp 71-72° (75° hemihydrate). $[\alpha]_D^{20}$ +175 (c, 4 in H_2O).

Et glycoside, tri-Ac: Ethyl 2,3,5-tri-O-acetyl-1-thio- α -D-ribofuranoside

$C_{13}H_{20}O_7S$ 320.363

Mp 62°. $[\alpha]_D^{20}$ +206 (c, 2.0 in $CHCl_3$).

Et glycoside, tribenzyl: Ethyl 2,3,5-tri-O-benzyl-1-thio- α -D-ribofuranoside [160497-06-3]

$C_{28}H_{32}O_4S$ 464.624

Pale yellow oil. $[\alpha]_D^{20}$ +90.7 (c, 1.3 in $CHCl_3$).

Ph glycoside, S-oxide, tribenzoyl: 2,3,5-Tri-O-benzoyl- β -D-ribofuranosyl phenyl sulfoxide

$C_{32}H_{26}O_8S$ 570.619

Glycosylating agent for ribofuranosyl synthesis.

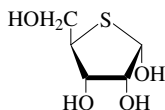
Characterised spectroscopically.

Horton, D. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 368 (α -D fur Et gly, α -D-fur Et gly tri-Ac)

Tejima, S. *et al.*, *Chem. Pharm. Bull.*, 1964, **12**, 528 (*synth, tetra-Ac*)

Chanteloup, L. *et al.*, *Tet. Lett.*, 1992, **33**, 5347 (*synth, pmr, cmr, Ph gly S-oxide tribenzoyl*)

Griffin, F.K. *et al.*, *Eur. J. Org. Chem.*, 2002, 1305-1322 (α -D fur Et gly tribenzyl)

4-Thioribose**T-90**

α -D-Furanose-form

$C_5H_{10}O_4S$ 166.198

D-Furanose-form

D-Ribothiafuranose

[36793-11-0]

Syrup.

 α -D-Furanose-form

Tetra-Ac:

$C_{13}H_{18}O_8S$ 334.346

Syrup. $[\alpha]_D^{25}$ +123 (c, 2 in $CHCl_3$).

 β -D-Furanose-form

Tetra-Ac: Mp 64-66°. $[\alpha]_D^{25}$ -102 (c, 2 in $CHCl_3$).

L-Furanose-form L-Ribothiafuranose

Syrup.

Tetra-Ac: $[\alpha]_D^{25}$ +56 (c, 1.3 in $CHCl_3$).

Tetakis-p-nitrobenzoyl: Mp 216-217°. $[\alpha]_D^{25}$ +30 (c, 1.3 in $CHCl_3$).

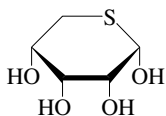
Reist, E.J. *et al.*, *J.A.C.S.*, 1963, **85**, 3715 (*synth, L-form*)

Bobek, M. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 292 (*synth, D-form derivs*)

5-Thioribose, 9CI

Ribothiapyranose

[41355-64-0]



α -D-Pyranose-form

$C_5H_{10}O_4S$ 166.198

D-form

S-Me: 5-Thiomethylribose

$C_6H_{12}O_4S$ 180.224

Component of Adeninethiomethylpentoside (see 5'-Thioadenosine, T-52).

Syrup.

 α -D-Pyranose-form [15354-46-8]

Mp 160°. $[\alpha]_D^{23}$ +127 (2 min) → +25 (c, 0.6 in H_2O).

1,2,3,4-Di-O-isopropylidene: 1,2:3,4-Di-O-isopropylidene-5-thio- α -D-ribofuranose [56265-50-0]

$C_{11}H_{18}O_4S$ 246.327

Cryst. (petrol). Mp 66-67°. $[\alpha]_D$ -90 (c, 0.25 in $CHCl_3$).

Me glycoside: Methyl 5-thio- α -D-ribofuranoside

$C_6H_{12}O_4S$ 180.224

Cryst. (C_6H_6). Mp 73°. $[\alpha]_D^{26}$ +301 (c, 0.9 in MeOH).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-5-thio- α -D-ribofuranoside

$C_{12}H_{18}O_7S$ 306.336

Plates (MeOH aq.). Mp 65-66°. $[\alpha]_D^{21}$ +227 (c, 0.8 in MeOH).

 β -D-Pyranose-form [15354-47-9]

Mp 142-144°. $[\alpha]_D^{24}$ -37 (3 min) → +28 (c, 1.1 in H_2O).

Tetra-Ac:

$C_{13}H_{18}O_8S$ 334.346

Mp 122-123°. $[\alpha]_D^{20}$ -61 (c, 1 in MeOH).

Me glycoside: Methyl 5-thio- β -D-ribofuranoside

$C_6H_{12}O_4S$ 180.224

Mp 124°. $[\alpha]_D^{25}$ -246 (c, 1.1 in MeOH).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-5-thio- β -D-ribofuranoside

$C_{12}H_{18}O_7S$ 306.336

Syrup. $[\alpha]_D^{25}$ -78 (c, 1.0 in MeOH).

Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene-5-thio- β -D-ribofuranoside

$C_9H_{16}O_4S$ 220.289

Cryst. (petrol). Mp 75-76°. $[\alpha]_D$ -12 (c, 0.52 in $CHCl_3$).

Me glycoside, 3,4-O-isopropylidene: Methyl 3,4-O-isopropylidene-5-thio- β -D-ribofuranoside

$C_9H_{16}O_4S$ 220.289

Cryst. (petrol). Mp 83-84°. $[\alpha]_D$ -22 (c, 0.3 in $CHCl_3$).

2,3-Isopropylidene: 2,3-O-Isopropylidene-5-thio- β -D-ribofuranose

$C_8H_{14}O_4S$ 206.262

Mp 136-138°. $[\alpha]_D$ -37 → -30 (final) (c, 1.4 in MeOH).

T-91

2,3-Isopropylidene, 1,4-di-Ac: 1,4-Di-O-acetyl-2,3-isopropylidene-5-thio- β -D-ribofuranose

$C_{12}H_{18}O_6S$ 290.337

Mp 95-97°. $[\alpha]_D$ -64.5 (c, 0.8 in CH_2Cl_2).

 β -D-Furanose-form

Me glycoside, 2,3-isopropylidene: Methyl 2,3-O-isopropylidene-5-thio- β -D-ribofuranoside

$C_9H_{16}O_4S$ 220.289

$[\alpha]_D^{20}$ -86 (c, 0.6 in $CHCl_3$).

Me glycoside, S-Me, 2,3-isopropylidene: Methyl 2,3-O-isopropylidene-5-S-methyl-5-thio- β -D-ribofuranoside

$C_{10}H_{18}O_4S$ 234.316

$[\alpha]_D^{20}$ -102 (c, 1.6 in $CHCl_3$).

Weygand, F. *et al.*, *Chem. Ber.*, 1950, **83**, 563 (*S-Me*)

Clayton, C.J. *et al.*, *Chem. Ind. (London)*, 1962, 1795 (*synth, α -D-Me pyr tri-Ac, β -D-Me pyr, β -D-pyr tetra-Ac*)

Clayton, C.J. *et al.*, *Carbohydr. Res.*, 1967, **4**, 32 (*α -D-pyr, α -D-Me pyr, α -D-Me pyr tri-Ac, β -D-pyr, β -D-Me pyr derivs, β -D-pyr tetra-Ac*)

Hughes, N.A. *et al.*, *Carbohydr. Res.*, 1976, **49**, 225 (*isopropylidene derivs*)

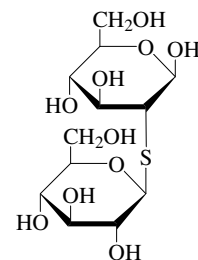
Pakulski, Z. *et al.*, *Tetrahedron*, 1994, **50**, 2975 (*β -D-fur derivs*)

Fleetwood, A. *et al.*, *Carbohydr. Res.*, 1999, **317**, 204-209 (*β -D-2,3-isopropylidene*)

Lalot, J. *et al.*, *Carbohydr. Res.*, 2002, **337**, 1411-1416 (*synth*)

2-Thiosophorose**T-92**

2-S- β -D-Glucopyranosyl-2-thio-D-glucose [92051-25-7]



β -Pyranose-form

$C_{12}H_{22}O_{10}S$ 358.366

Reducing disaccharide. Potential enzyme inducer. Hygroscopic solid (MeOH/ Et_2O), or cryst. (MeOH). Mp 102° (as hygroscopic solid) Mp 178-180° (as cryst.). $[\alpha]_D^{20}$ -23 (c, 1 in H_2O). $[\alpha]_D$ -8 (3 min.) → -13.1 (equilib.) (c, 0.3 in H_2O). Readily equilibrates with the 2-epimer.

2-Epimer: 2-S- β -D-Glucopyranosyl-2-thio-D-mannose. 2-Thioepisophorose [148228-88-0]

$C_{12}H_{22}O_{10}S$ 358.366

Syrup. $[\alpha]_D$ -30.2 (c, 0.6 in H_2O).

 β -Pyranose-form [158213-28-6]

Octa-Ac: [92051-24-6]

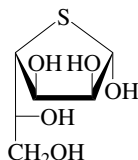
$C_{28}H_{38}O_{18}S$ 694.663

Cryst. (Et_2O). Mp 160-161°. $[\alpha]_D^{20}$ +4 (c, 1 in $CHCl_3$).

[158213-27-5, 176842-72-1, 176842-73-2]

Hamacher, K. *et al.*, *Carbohydr. Res.*, 1984, **128**, 291-295 (*synth, pmr, octa-Ac*)

Defaye, J. *et al.*, *Carbohydr. Res.*, 1994, **253**, 185-194 (synth, pmr, cmr)
 Petrusova, M. *et al.*, *Carbohydr. Res.*, 1996, **283**, 73-80 (synth, pmr, cmr, epimer)

4-Thiotalose**T-93**C₆H₁₂O₅S 196.224**α-D-Furanose-form**

Me glycoside: Methyl 4-thio-α-D-talofuranoside

C₇H₁₄O₅S 210.251
 [α]_D +55 (c, 1 in H₂O).

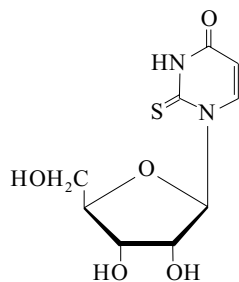
Me glycoside, tetra-Ac: Methyl 2,3,5,6-tetra-O-acetyl-4-thio-α-D-talofuranoside
 C₁₅H₂₂O₆S 378.399
 [α]_D +122 (c, 0.13 in CHCl₃).

Me glycoside, tetrabenzyl: Methyl 2,3,5,6-tetra-O-benzyl-4-thio-α-D-talofuranoside
 C₃₅H₃₈O₅S 570.748
 [α]_D -16 (c, 1 in EtOH).

Classon, B. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 593-597 (α-D-fur, Me gly, Me gly tetra-Ac, Me gly-tetrabenzyl)

2-Thiouridine, 9CI, 8CI**T-94**

[20235-78-3]

C₉H₁₂N₂O₅S 260.27

Modified nucleoside found in tRNAs.
 Mp 208-209° (213°). [α]_D²² +38 (c, 1.0 in H₂O). λ_{max} 244 (ε 4 800) (H₂O); 239 (22 600), 271 nm (14 200) (0.1N NaOH).

2',3',5'-Tri-Ac: [28542-31-6]

C₁₅H₁₈N₂O₈S 386.382
 λ_{max} 222, 282 nm (EtOH); 244, 276 nm (NaOH).

2',3',5'-Tribenzoyl: [21052-18-6]

C₃₀H₂₄N₂O₈S 572.594
 [α]_D²² -33 (c, 2.5 in CHCl₃).

2',3'-O-Isopropylidene:

C₁₂H₁₆N₂O₅S 300.335
 Mp 192°.

2'-Me:

C₁₀H₁₄N₂O₅S 274.297
 Solid.

Brown, D.M. *et al.*, *J.C.S.*, 1958, 3028 (synth)

Rogers, G.T. *et al.*, *J.C.S.(C)*, 1971, 2995 (synth)

Pal, B.C. *et al.*, *J.O.C.*, 1971, **36**, 3026 (synth)

Paszyc, S. *et al.*, *Bull. Acad. Pol. Sci., Ser. Sci. Chim.*, 1975, **23**, 477; *CA*, **83**, 193624b (conformn, pmr)

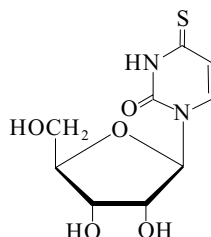
Nawrot, B. *et al.*, *Nucleosides Nucleotides*, 1989, **8**, 1499 (synth)

Smith, W.S. *et al.*, *J.A.C.S.*, 1992, **114**, 7989 (conformn, pmr)

Okamoto, I. *et al.*, *J.O.C.*, 2003, **68**, 9971-9982 (2'-Me)

4-Thiouridine, 9CI, 8CI**T-95**

[13957-31-8]

C₉H₁₂N₂O₅S 260.27

Constit. of t-RNA from *E. coli*. Also prod. by *Streptomyces libani*. Possesses antibacterial and cytotoxic props. Used as an intrinsic photoaffinity probe of nucleic acid structure and interactions. Yellow needles (EtOH/cyclohexane).

Mp 139-140°. [α]_D²⁰ +49.7 (c, 0.67 in H₂O). λ_{max} 330 (ε 20 600), 243 nm (3 400) (pH 7). λ_{max} 243 (ε 3400); 330 (ε 20600) (H₂O pH 7) (Derep). λ_{max} 260 (H₂O) (Berdy).

2',3'-Di-Ac: [23661-08-7]

C₁₃H₁₆N₂O₇S 344.345
 Syrup. λ_{max} 330, 245 nm.

2',3',5'-Tri-Ac: [55003-25-3]

C₁₅H₁₈N₂O₈S 386.382
 [α]_D²⁰ +18.4 (c, 0.67 in EtOH). λ_{max} 328 (ε 15 850), 245 nm (3 890) (EtOH).

5'-Benzoyl: [23661-06-5]

C₁₆H₁₆N₂O₆S 364.378
 Yellow rods (EtOAc/hexane). Mp 198-199°.

2',3'-O-Isopropylidene:

C₁₂H₁₆N₂O₅S 300.335
 Yellow needles (EtOH/cyclohexane). Mp 171-173°. λ_{max} 329, 245 nm (EtOH).

2',3'-O-Isopropylidene, 5'-Ac:

C₁₄H₁₈N₂O₆S 342.372
 Mp 143-144°. λ_{max} 329 (ε 19 600), 247 nm (4 450) (MeOH).

2',5'-Di-O-trityl: [56889-12-4]

C₄₇H₄₀N₂O₅S 744.909
 Yellow needles (C₆H₆/cyclohexane). Mp 223-225°.

5'-Diphosphate:

C₉H₁₄N₂O₁₁P₂S 420.23
 λ_{max} 330, 243 nm (H₂O, pH 7).

5'-Triphosphate:

C₉H₁₅N₂O₁₄P₃S 500.21
 λ_{max} 330, 245 nm (H₂O, pH 7).

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **3**, 373B (nmr)
 Lipsett, M.N. *et al.*, *J. Biol. Chem.*, 1967, **242**, 4072

Scheit, K.H. *et al.*, *Chem. Ber.*, 1969, **101**, 1141 (synth, isopropylidene Ac, diphosphate, triphosphate)

Saneyoshi, M. *et al.*, *Chem. Pharm. Bull.*, 1969, **17**, 181 (synth, isopropylidene, di-Ac)

Saenger, W. *et al.*, *Eur. J. Biochem.*, 1973, **32**, 473 (cryst struct)

Schweizer, M.P. *et al.*, *J.A.C.S.*, 1973, **95**, 3770 (pmr, cmr)

Saneyoshi, M. *et al.*, *Chem. Pharm. Bull.*, 1975, **23**, 1146 (ditrityl)

Shiue, C.-Y. *et al.*, *J.O.C.*, 1975, **40**, 2971 (pmr)

Igarashi-Yamamoto, N. *et al.*, *Biochim. Biophys. Acta*, 1981, **656**, 1 (cd, mcd, uv)

Lesyng, B. *et al.*, *Z. Naturforsch., C*, 1981, **36**, 956 (cryst struct)

Sung, W.L. *et al.*, *Chem. Comm.*, 1982, 522 (synth)

Smith, D.L. *et al.*, *Biomed. Mass Spectrom.*, 1983, **10**, 269 (ms)

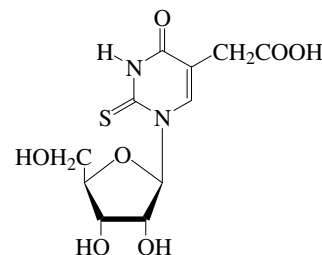
Favre, A. *et al.*, *Bioorg. Photochem.*, 1990, **1**, 379 (rev, use)

Dubreuil, Y.L. *et al.*, *Nucleic Acids Res.*, 1991, **19**, 3653

Nishikiori, T. *et al.*, *J. Antibiot.*, 1992, **45**, 1376 (isol, props)

2-Thiouridine-5-acetic acid**T-96**

5-Carboxymethyl-2-thiouridine
 [58479-77-9]

C₁₁H₁₄N₂O₇S 318.307

Me ester: 5-(Methoxycarbonylmethyl)-2-thiouridine

[20299-15-4]

C₁₂H₁₆N₂O₇S 332.334

Modified nucleoside found in tRNA's.

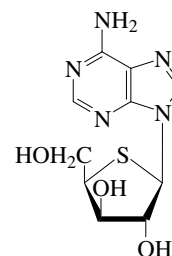
Cryst. (MeOH aq.).

Mp 196-197°. [α]_D +19.8 (c, 0.5 in H₂O). λ_{max} 220 (log ε 4.2); 278 (log ε 4.2) (H₂O).

Vorbruggen, H. *et al.*, *Chem. Ber.*, 1973, **106**, 3039-3061 (synth)

Hillen, W. *et al.*, *Biochemistry*, 1978, **17**, 5314-5320 (cryst struct)

Laten, H.M. *et al.*, *Biochim. Biophys. Acta*, 1983, **741**, 1-6 (isol)

9-(4-Thioxylfuranosyl)adenine**T-97**

β-form

C₁₀H₁₃N₅O₃S 283.31

α -D-form [15023-72-0]

Mp 248-251°. $[\alpha]_D^{25} +15$ (c, 0.45 in 2-methoxyethanol). λ_{\max} 260 (ε 15480) (H₂O). λ_{\max} 258 (ε 15030) (pH 1). λ_{\max} 261 (ε 15620) (pH 13).

3',5'-O-Isopropylidene:

C₁₃H₁₇N₅O₃S 323.375
Mp 267-270°. $[\alpha]_D^{25} +19$ (c, 0.91 in 2-methoxyethanol).

 β -D-form [15023-73-1]

Mp 217-220°. $[\alpha]_D^{24} -29$ (c, 0.5 in 2-methoxyethanol). λ_{\max} 260 (ε 14900) (H₂O). λ_{\max} 258 (ε 14400) (pH 1). λ_{\max} 260 (ε 14900) (pH 13).

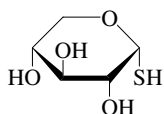
2'-Mesyl: [15023-76-4]

Mp 168-172°. $[\alpha]_D^{21} -17$ (c, 0.98 in MeOH).

2'-Mesyl, 3',5'-O-isopropylidene: Mp

204-206°. $[\alpha]_D^{22} -20$ (c, 0.88 in CHCl₃).

Reist, E.J. *et al.*, *J.O.C.*, 1968, **33**, 189 (*synth*, *pmr*)

1-Thioxylose**T-98** α -D-Pyranose-formC₅H₁₀O₄S 166.198**D-form**

$[\alpha]_D -20 \rightarrow +2$ (H₂O).

K salt: Mp 160° dec. $[\alpha]_D -17$ (H₂O).

Tetra-Ac:

C₁₃H₁₈O₈S 334.346
Mp 99°. $[\alpha]_D^{24} -7$ (CHCl₃).

 α -D-Pyranose-form

tert-Butyl glycoside, tri-Ac: *tert-Butyl 2,3,4-tri-O-acetyl-1-thio- α -D-xylopyranoside*
C₁₅H₂₄O₇S 348.416
Cryst. (hexane). Mp 127-129°. $[\alpha]_D^{18} +155$ (c, 1.3 in CHCl₃).

 β -D-Pyranose-form**Tri-Ac:**

C₁₁H₁₆O₇S 292.309
Cryst. (MeOH). Mp 123-129°. $[\alpha]_D -17$ (c, 0.542 in CHCl₃).

Me glycoside: Methyl 1-thio- β -D-xylopyranoside
C₆H₁₂O₄S 180.224
Mp 173-174° (167-168.5°). $[\alpha]_D -73$ (CHCl₃).

Me glycoside, tri-Ac: Methyl 2,3,4-tri-O-acetyl-1-thio- β -D-xylopyranoside
C₁₂H₁₈O₇S 306.336
Mp 90-91°. $[\alpha]_D^{21} -75$ (c, 1.25 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene: Methyl 2,3-O-isopropylidene-1-thio- β -D-xylopyranoside
C₉H₁₆O₄S 220.289
Cryst. (Et₂O). Mp 94-96°. $[\alpha]_D^{20} -61$ (c, 1.1 in CHCl₃).

Me glycoside, 2,3-O-isopropylidene, 4-Ac: Methyl 4-O-acetyl-2,3-O-isopropylidene-1-thio- β -D-xylopyranoside
C₁₁H₁₈O₅S 262.326
Syrup. $[\alpha]_D^{20} -90$ (c, 1.0 in CHCl₃).

tert-Butyl glycoside, tri-Ac: tert-Butyl 2,3,4-tri-O-acetyl-1-thio- β -D-xylopyranoside

C₁₅H₂₄O₇S 348.416
Cryst. (hexane/Et₂O). Mp 84-86°. $[\alpha]_D^{16} -42$ (c, 1 in CHCl₃).

S-Ph, S-Oxide, tri-Ac: 2,3,4-Tri-O-acetyl- α -D-xylopyranosyl phenyl sulfoxide
C₁₇H₂₀O₈S 384.406

Glycosylating agent for introduction of xyl residues. Mp 154°. $[\alpha]_D^{24} -86.8$ (c, 1.1 in CHCl₃).

Gehrke, M. *et al.*, *Ber.*, 1931, **64**, 2696 (*tetra-Ac*)
Bonner, W.A. *et al.*, *J.A.C.S.*, 1948, **70**, 2435 (*S-Ph, S-oxide tri-Ac*)

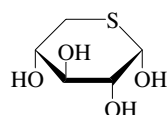
Staněk, J. *et al.*, *Coll. Czech. Chem. Comm.*, 1965, **30**, 297 (*tri-Ac*)

Lopez Aparicio, F.J. *et al.*, *Carbohydr. Res.*, 1987, **163**, 29 (*tert-butyl gly tri-Ac*)

Takeo, K. *et al.*, *Carbohydr. Res.*, 1990, **201**, 261 (*Me gly, Me gly derivs*)

5-Thioxylose, 9CI

Xylothiapyranose
[56265-48-6]

T-99 α -D-Pyranose-formC₅H₁₀O₄S 166.198

Mp 122-123°. $[\alpha]_D^{20} +202 \rightarrow +178$ (c, 2 in H₂O).

 α -D-Pyranose-form

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-thio- α -D-xylopyranose
C₁₃H₁₈O₈S 334.346
Mp 99-100°. $[\alpha]_D^{20} +219$ (c, 2.2 in CHCl₃).

 β -D-Pyranose-form

1,2,3,4-Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-5-thio- β -D-xylopyranose
C₁₃H₁₈O₈S 334.346
Mp 157-158.5°. $[\alpha]_D^{21} -49$ (c, 2.3 in CHCl₃).

Me glycoside, S,S-dioxide: [19460-65-2]

C₆H₁₂O₆S 212.223
Mp 197°. $[\alpha]_D^{20} -65.5$ (c, 1.7 in H₂O).

 α -D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-5-thio- α -D-xylofuranose
C₈H₁₄O₄S 206.262
Mp 85-87°. $[\alpha]_D^{20} -52$ (c, 1.99 in CHCl₃).

1,2-O-Isopropylidene, 5-S-Me: [18685-26-2]
C₉H₁₆O₄S 220.289
Mp 90-91°. $[\alpha]_D^{27} -61.8$ (c, 0.94 in CHCl₃).

1,2-O-Isopropylidene, 5-S-benzyl, 3-Me: [20789-56-4]
C₁₆H₂₂O₄S 310.413
Mp 68°. $[\alpha]_D^{25} +25.6$ (c, 5 in CHCl₃).

Schwarz, J.C.P. *et al.*, *Proc. Chem. Soc., London*, 1961, 417 (*synth, isopropylidene, tetra-Ac*)

Rowell, R.M. *et al.*, *Carbohydr. Res.*, 1967, **5**, 337 (*Me gly dioxide*)

Inokawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1968, **41**, 1472 (*isopropylidene 5-S-benzyl 3-Me*)

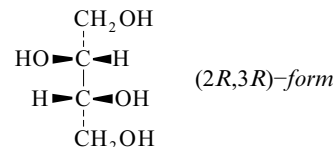
Nestadt, B. *et al.*, *Tetrahedron*, 1968, **24**, 1973 (*isopropylidene 5-S-Me*)

Lambert, J. *et al.*, *Carbohydr. Res.*, 1983, **115**, 33 (*pmr, cmr*)

Rahman, A.U. *et al.*, *J. Chem. Soc. Pak.*, 1986, **8**, 397 (*synth*)

Threitol**T-100**

(*R,R*)-1,2,3,4-Butanetetrol, 9CI
[7493-90-5]

(2*R*,3*R*)-formC₄H₁₀O₄ 122.121

For (*R,S*)-*meso*-form see Erythritol, E-14.
Log P -3.02 (calc).

(2*R*,3*R*)-form

D-form
[2418-52-2]

Found in the edible fungus *Armillaria mellea*. Constit. of bark, stem and leaf of jute (*Corchorus capsularis* and *Corchorus olitorius* (Jew's mallow)), bark, stem and leaf of the pigeon pea plant (*Cajanus cajan*); also traces found in the lichen *Parmotrema cetratum*.

Needles (EtOH). V. sol. hot EtOH.

Mp 72-74° Mp 88.5-89°. $[\alpha]_D^{20} +6$ (c, 2 in Me₂CO). $[\alpha]_D^{20} +4.6$ (c, 6 in H₂O). $[\alpha]_D^{20} -11.5$ (c, 5 in EtOH).

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl-D-threitol

[114926-25-9]

C₃₂H₂₆O₈ 538.553
Mp 97°.

2,3-O-Isopropylidene: 2,2-Dimethyl-1,3-dioxolane-4,5-dimethanol, 9CI. 2,3-O-Isopropylidene-D-threitol

[73346-74-4]

C₇H₁₄O₄ 162.185

Cryst. (diisopropyl ether). Mp 48-51°. Bp_{0.01} 91-93°. $[\alpha]_D^{26} -4.8$ (c, 10.3 in CHCl₃). $[\alpha]_D^{26} +3.1$ (c, 10 in EtOH).

2,3-O-Isopropylidene, 1,4-ditosyl: 2,3-O-Isopropylidene-1,4-di-O-tosyl-D-threitol
[51064-65-4]

C₂₁H₂₆O₈S₂ 470.564

Precursor to chiral diphosphine metal complexes used as catalysts. Mp 89-91°. $[\alpha]_D^{30} +12.1$ (c, 8.8 in CHCl₃).

2,3-O-Benzylidene: 2,3-O-Benzylidene-D-threitol. 2-Phenyl-1,3-dioxolane-4,5-dimethanol, 9CI

[58383-35-0]

C₁₁H₁₄O₄ 210.229

Cyclosporin A intermed. Mp 72-74°. $[\alpha]_D^{18} +11$ (c, 2 in MeOH).

1,2:3,4-Dibenzylidene: 1,2:3,4-Di-O-benzylidene-D-threitol

C₁₈H₁₈O₄ 298.338

Mp 231-234°. $[\alpha]_D^{25} -79.3$ (c, 0.64 in CHCl₃).

2-Benzyl: [124909-02-0]

Cryst. (CH₂Cl₂). Mp 75-76°. $[\alpha]_D^{25} +17.5$ (c, 1.14 in EtOH).

1-Benzyl, 2,3-O-isopropylidene: 2,2-Dimethyl-5-[(phenylmethoxy)methyl]-1,3-dioxolane-4-methanol, 9CI. 1-O-Benzyl-2,3-O-isopropylidene-D-threitol
[78469-77-9]
C₁₄H₂₀O₄ 252.31
Syrup. [α]_D²⁰ -8.2 (c, 1.13 in CHCl₃).
1,4-Dibenzyl: 1,4-Di-O-benzyl-D-threitol
[91604-41-0]
C₁₈H₂₂O₄ 302.369
Chiral synthon. Cryst. (Et₂O/petrol). Mp 55-57°. [α]_D²⁰ +6 (c, 5 in CHCl₃).
2,3-Dibenzyl: 3,4-Bis(phenylmethoxy)-1,2-butanediol, 9CI. 2,3-Di-O-benzyl-D-threitol
[113350-84-8]
C₁₈H₂₂O₄ 302.369
Cryst. (hexane/EtOAc). Mp 45-46°. [α]_D^{21.5} -22.5 (c, 0.50 in EtOH).
1,4-Bis(4-chlorobenzyl): [85362-86-3]
C₁₈H₂₀Cl₂O₄ 371.259
Mp 76-78°. [α]_D²⁰ +6 (c, 3 in CHCl₃).

(2S,3S)-form
L-form

[2319-57-5]
Needles (EtOH). V. sol. H₂O, hot EtOH. Mp 88°. [α]_D²⁰ -4 (c, 7 in H₂O). [α]_D²⁵ +13 (c, 2 in EtOH).
Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-L-threitol
[49560-29-4]
C₁₂H₁₈O₈ 290.269
Bp_{0.05} 145°. [α]_D²⁵ -32 (c, 2 in EtOH).
1,4-Dimesyl: Treosulfan, BAN, INN. Amebisian. Dihydroxybusulfan. Ovastat. Threosulphan. Treoforon. Leo 40067. NSC 39069
[299-75-2]
C₆H₁₄O₈S₂ 278.304
Antineoplastic agent. Log P -2.2 (calc).
► Human carcinogen (IARC group 1), mutagen. XO8500000

1,4-Ditosyl: 1,4-Di-O-tosyl-L-threitol
[57495-46-2]
C₁₈H₂₂O₈S₂ 430.499
Cryst. (CHCl₃). Mp 76-77°. [α]_D²⁰ -4.6 (c, 2.1 in Me₂CO).
2,3-O-Isopropylidene: 2,3-O-Isopropylidene-L-threitol
[50622-09-8]
C₇H₁₄O₄ 162.185
Cryst. (diisopropyl ether). Mp 48-51°. Bp_{0.01} 91-93°. [α]_D²⁰ +5.1 (c, 5 in CHCl₃).
2,3-O-Isopropylidene, 1,4-ditosyl: 2,3-O-Isopropylidene-1,4-di-O-tosyl-L-threitol
[37002-45-2]
C₂₁H₂₆O₈S₂ 470.564
Mp 92-93°. [α]_D²³ -12.3 (c, 8.8 in CHCl₃).
1,3-O-Benzylidene: 1,3-O-Benzylidene-L-threitol. 5-Hydroxy-2-phenyl-1,3-dioxane-4-methanol
[81577-58-4]
C₁₁H₁₄O₄ 210.229
Cryst. (EtOAc/petrol). Mp 139-141° (133-134°). [α]_D²⁰ +8 (c, 1.2 in Py).
2,3-O-Benzylidene: 2,3-O-Benzylidene-L-threitol
[35572-34-0]
C₁₁H₁₄O₄ 210.229
Cyclosporin A intermed. Mp 72-74°. [α]_D²⁰ -10.5 (c, 2 in MeOH).

1,2:3,4-Di-O-benzylidene: 1,2:3,4-Di-O-benzylidene-L-threitol
C₁₈H₁₈O₄ 298.338
Mp 231-233°. [α]_D²⁵ +79.
1,2-Dibenzyl: 1,2-Di-O-benzyl-L-threitol
[107938-30-7]
C₁₈H₂₂O₄ 302.369
Oil. [α]_D²⁰ +28.7 (c, 5.4 in CHCl₃).
1,4-Dibenzyl: 1,4-Di-O-benzyl-L-threitol
[17401-06-8]
C₁₈H₂₂O₄ 302.369
Chiral synthon. Cryst. (Et₂O/petrol). Mp 55-57°. [α]_D²⁰ -6 (c, 5 in CHCl₃).
1-Benzyl, 2,3-O-isopropylidene: 1-O-Benzyl-2,3-O-isopropylidene-L-threitol
[78513-03-8]
C₁₄H₂₀O₄ 252.31
Syrup. [α]_D²⁰ +8.7 (c, 1.2 in CHCl₃).
2,3-Di-Me ether: 2,3-Dimethoxy-1,4-butanediol
[24679-72-9]
C₆H₁₄O₄ 150.174
Hygroscopic cryst. (CHCl₃/Et₂O). Mp 37-38°. Bp_{0.005} 92-94°. [α]_D²¹ +5.1 (c, 5 in EtOH).

(±)-form [6968-16-7]

Cryst. (EtOH). V. sol. H₂O. Mp 72°.
Tetra-Ac: 1,2,3,4-Tetra-O-acetyl-DL-threitol
[65167-69-3]
C₁₂H₁₈O₈ 290.269
Mp 54-55°.

1,2:3,4-Di-O-benzylidene: 1,2:3,4-Di-O-benzylidene-DL-threitol
C₁₈H₁₈O₄ 298.338
Mp 221-223°.

[20638-61-3, 50623-73-9, 71641-34-4, 102779-61-3, 114924-93-5]

Aldrich Library of FT-IR Spectra, 1st edn., 1985,

1, 184D; 247D; 248A (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 287B; 287C; 400B; 400C (nmr)

Aldrich Library of FT-IR Spectra: Vapor Phase,

1989, 3, 327C; 327D (ir)

Maquenne, L. et al., C. R. Hebd. Seances Acad. Sci., 1900, 130, 1402 (synth)

Ness, R.K. et al., J.A.C.S., 1951, 73, 4759

(synth)

Foster, A.B. et al., J.C.S., 1961, 5005

(1,3-benzylidene)

Feit, P.W. et al., J. Med. Chem., 1964, 7, 14;

1970, 13, 1173 (isopropylidene derivs)

Institutoris, L. et al., Arzneim.-Forsch., 1967, 17,

145 (pharmacol)

Hilden, J. et al., J. Antibiot., 1976, 29, 58 (use)

Bourson, J. et al., Bull. Soc. Chim. Fr., 1977,

1241 (L-form, synth)

Curtis, W.D. et al., J.C.S. Perkin 1, 1977, 1756

(dibenzyl ethers)

Holý, A. et al., Coll. Czech. Chem. Comm.,

1979, 44, 593 (1,3-benzylidene)

Angyal, S.J. et al., Carbohydr. Res., 1980, 84,

201 (cmr)

IARC Monog., 1981, 26, 341; Suppl. 7, 363;

Suppl. 6, 528 (rev. tox. Treosulfan)

Double, J.A. et al., Br. J. Cancer, 1983, 48, 739

(use)

Wenger, R.M. et al., Helv. Chim. Acta, 1983, 66,

2308-2321 (2,3-benzylidene)

Hawkes, G.E. et al., J.C.S. Perkin 2, 1984, 2073

(pmr, conformn)

Kocienski, P. et al., Synth. Commun., 1984, 14,

1087-1092 (2,3-benzylidene)

Bogatsky, A.V. et al., Synthesis, 1984, 139 (L-

form, isopropylidene)

Andrews, M.A. et al., J.O.C., 1989, 54, 5257

(synth)

Köpf-Maier, P. et al., Cancer Chemother.

Pharmacol., 1992, 31, 103 (Treosulfan, clin

trial)

Jeffrey, G.A. et al., Carbohydr. Res., 1992, 223,

11 (cryst struct, D-threitol)

Kopf, J. et al., Carbohydr. Res., 1993, 247, 119

(cryst struct)

Martindale, The Extra Pharmacopoeia, 30th

edn., Pharmaceutical Press, 1993, 503

Corradi da Silva, M. de L.

et al., Phytochemistry, 1993, 34, 715 (isol)

Kakinuma, H. et al., Carbohydr. Res., 1994,

264, 237 (1-benzyl 2,3-isopropylidene)

Batsanov, A.S. et al., J.C.S. Perkin 1, 1995, 1281

(D-form isopropylidene, synth, ir, pmr, cmr)

Mukai, C. et al., J.C.S. Perkin 1, 1995, 2849

(dibenzyl ether, synth, ir, pmr, cmr)

Marco, J.A. et al., Annalen, 1996, 1801

(1,2-dibenzyl ether)

Org. Synth., Coll. Vol., 9, 1998, 31-45 (2-benzyl,

synth, pmr)

Rozenberg, M. et al., Carbohydr. Res., 1999,

315, 89-97 (ir, Raman)

Kitajima, J. et al., Chem. Pharm. Bull., 1999,

47, 988-992 (isol, pmr, cmr)

Bachir-Lesage, S. et al., J. Carbohydr. Chem.,

2002, 22, 35-46 (alkyl derivs)

Lewis, R.J. et al., Sax's Dangerous Properties of

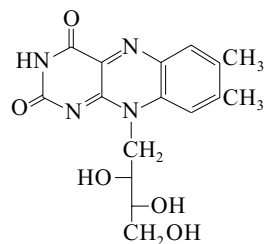
Industrial Materials, 8th edn., Van Nostrand

Reinhold, 1992, TFC500

Threoflavin

T-101

6,7-Dimethyl-9-(1-D-threityl)isoxaloxazine



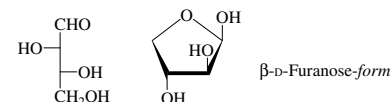
C₁₆H₁₈N₄O₅ 346.342
Brick-red needles (6M HCl). Mp 282° dec.
[α]_D²⁵ +30.

Uehara, K. et al., J. Biochem. (Tokyo), 1963, 54, 267

Threose, 9CI, 8CI

T-102

(R,S)-2,3,4-Trihydroxybutanal
[29884-64-8]



C₄H₈O₄ 120.105

D-form [95-43-2]

Mp 126-132°. [α]_D²⁰ -13 (c, 1.0 in H₂O).
Phenylosazone: Mp 164-165°.

2,4-O-Benzylidene: 2,4-O-Benzylidene-D-threose. 5-Hydroxy-2-phenyl-1,3-dioxane-4-carboxaldehyde, 9CI
[99274-32-5]
[6195-62-6]

C₁₁H₁₂O₄ 208.213
Cryst. (EtOH). Mp 165.5° (160-161°). [α]_D²² +77.6 (c, 2 in Py).

4-Me: 4-O-Methyl-D-threose
[24707-32-2]
C₅H₁₀O₄ 134.132
Syrup. [α]_D²¹ +5 (c, 1.3 in H₂O).

D-Furanose-form

Tri-Ac: Tri-O-acetyl-D-threofuranose
[17019-49-7]
C₁₀H₁₄O₇ 246.216
Cryst. (EtOH). Mp 117-118°. [α]_D²⁸
+35.3 (c, 4.1 in CHCl₃).

α-D-Furanose-form

Me glycoside: Methyl α-D-threofuranoside
[64609-20-7]
C₅H₁₀O₄ 134.132
Syrup. [α]_D²⁰ +101 (c, 0.9 in H₂O).

β-D-Furanose-form

1,2-O-Isopropylidene: 1,2-O-Isopropylidene-β-D-threofuranose
[37669-00-4]
C₇H₁₂O₄ 160.169
Needles (Et₂O/pentane). Mp 84°. [α]_D²² -15.27 (c, 2.3 in Me₂CO).

1,2-O-Isopropylidene, 3-Ac: 3-O-Acetyl-1,2-O-isopropylidene-β-D-threofuranose
[29412-22-4]
C₉H₁₄O₅ 202.207
Syrup. [α]_D¹⁸ -46.5 (c, 3.47 in CHCl₃).

Me glycoside: Methyl β-D-threofuranoside
[25158-75-2]
C₅H₁₀O₄ 134.132
Syrup. [α]_D²⁰ -191 (c, 0.6 in H₂O).

L-form [95-44-3]

Syrup. [α]_D +12 (c, 1 in H₂O).
2,4-O-Benzylidene: 2,4-O-Benzylidene-L-threose
C₁₁H₁₂O₄ 208.213
Hemihydrate. Mp 119-120°.

2,3-O-Isopropylidene, di-Me dithioacetal:
[14917-29-4]
C₉H₁₈O₃S₂ 238.371
Syrup. [α]_D²³ -56.4 (c, 1.41 in CHCl₃).

2,3-Di-Me: 2,3-Di-O-methyl-L-threose
[24679-70-7]
C₆H₁₂O₄ 148.158
Syrup. [α]_D²¹ +12 (c, 1.6 in MeOH).

L-Furanose-form

Tri-Ac: Tri-O-acetyl-L-threofuranose
[17019-52-2]
C₁₀H₁₄O₇ 246.216
Cryst. (EtOH). Mp 117-118°. [α]_D²⁸ -35.5 (c, 4.2 in CHCl₃).

β-L-Furanose-form

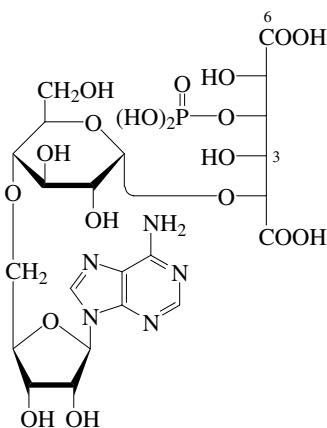
1,2-O-Isopropylidene: 1,2-O-Isopropylidene-β-L-threofuranose
[34693-27-1]
C₇H₁₂O₄ 160.169
Cryst. (Et₂O/petrol). Mp 84-85°. [α]_D
+13 (c, 1 in Me₂CO).

Hockett, R.C. et al., *J.A.C.S.*, 1935, **57**, 2260-2264; 1938, **60**, 278-280 (D-form, L-form)
Steiger, M. et al., *Helv. Chim. Acta*, 1936, **19**, 1016-1019 (β-D-fur isopropylidene)
Perlman, A.S. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 68-70 (D-form, L-form, synth)
de Belder, A.N. et al., *Adv. Carbohydr. Chem.*, 1965, **20**, 219-302 (cyclic acetals, rev)
Zinner, H. et al., *Carbohydr. Res.*, 1967, **3**, 389-402 (L-di-Me-dithioacetal isopropylidene)

Murray, D.H. et al., *J. Pharm. Sci.*, 1967, **56**, 865-870 (D-tri-Ac, L-tri-Ac)
Dutton, G.G.S. et al., *Can. J. Chem.*, 1969, **47**, 2494-2498 (D-Me, L-di-Me)
Tronchet, J.M.J. et al., *Helv. Chim. Acta*, 1970, **53**, 1174-1180 (β-D-fur isopropylidene Ac)
Morgenlie, S. et al., *Acta Chem. Scand.*, 1972, **26**, 2146-2147 (L-form, synth, β-L-fur isopropylidene)
Sonogashira, K. et al., *Bull. Chem. Soc. Jpn.*, 1972, **45**, 2616-2620 (DL-form, synth)
Linek, K. et al., *Carbohydr. Res.*, 1972, **21**, 326-330 (D-form)
Jary, J. et al., *Coll. Czech. Chem. Comm.*, 1980, **45**, 3571 (α-D-Me fur, β-D-Me fur)
Blackburn, G.M. et al., *Chem. Comm.*, 1988, 317-319 (1,2-isopropylidene-β-L-fur)
Francisco, C.G. et al., *J.O.C.*, 2001, **66**, 6967-6976 (β-L-fur 1,2-isopropylidene, synth, pmr, cmr, ms)

Thuringiensin

Bacillus thuringiensis Exotoxin. β-Exotoxin. *Thurintox*
[23526-02-5]



C₂₂H₃₂N₅O₁₉P 701.491

Nucleotide toxin. Isol. from *Bacillus thuringiensis* var. *gelechia*. Specific inhibitor of DNA-dependent RNA polymerase. Insecticide. Cytotoxic. [α]_D²⁵ +30.9 (c, 0.5 in H₂O). Thermostable. λ_{max} 260 (ε 13700) (H₂O) (Derep). λ_{max} 260 (ε 10500) (H₂O) (Berdy).

► Mutagen. BA0270000

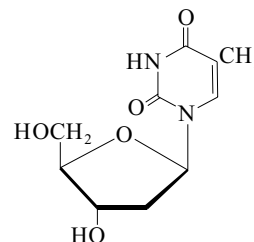
6 → 3-Lactone: *Anhydrothuringiensin*
[62512-16-7]
C₂₂H₃₀N₅O₁₈P 683.476

Prod. by *Bacillus thuringiensis* var. *gelechia*. Cytotoxic agent.

Sebesta, K. et al., *Coll. Czech. Chem. Comm.*, 1969, **34**, 891
Farkas, J. et al., *Coll. Czech. Chem. Comm.*, 1977, **42**, 909 (uv, ir, pmr, cmr, ms, struct, bibl)
Japan. Pat., 1980, 31 043; CA, **93**, 236924a (Anhydrothuringiensin)
Isono, K. et al., *J. Antibiot.*, 1988, **41**, 1711 (rev)
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, BAC125

Thymidine, 8CI**T-104**

1-(2-Deoxy-β-D-erythro-pentofuranosyl)-5-methyl-2,4(1H,3H)-pyrimidinedione, 9CI. 1-(2-Deoxy-β-D-ribofuranosyl)-5-methyluracil. Thymine 2-desoxyriboside. Thymosine. NSC 21548
[50-89-5]



C₁₀H₁₄N₂O₅ 242.231

Isol. from plant sources, e.g. seedlings of *Phaseolus vulgaris* (kidney bean). A principal const. of DNA. Mp 186-187°. [α]_D +18.5 (H₂O). [α]_D²⁵ +30.6 (c, 1.0 in H₂O). pK_{a1} 9.8; pK_{a2} 12.9 (25°). λ_{max} 207 (ε 9800); 267 (ε 9700) (no solvent reported) (pH 7.2).

► Exp. reprod. and teratogenic effects (large dose), human adverse systemic effects (large dose), exp. antineoplastic agent (and in co-administration with methotrexate, see Methotrexate). LD₅₀ (mus, ipr) 2512 mg/kg. XP2071000

3'-Phosphate: See Thymidine 3'-phosphate, T-107

5'-Phosphate: See Thymidine 5'-phosphate, T-108

5'-Diphosphate: See Thymidine diphosphate, T-105

3'-Ac: [21090-30-2]
C₁₂H₁₆N₂O₆ 284.268
Mp 176°. [α]_D +0.7 (95% EtOH).

5'-Ac: [35898-31-8]
C₁₂H₁₆N₂O₆ 284.268
Mp 146°.

3',5'-Di-Ac: [6979-97-1]
C₁₄H₁₈N₂O₇ 326.305
Mp 126-128°.

3-Benzoyl: [94189-75-0]
C₁₇H₁₈N₂O₆ 346.339

Key intermediate for oligodeoxyribonucleotide synth. Hygroscopic foamy solid.

3'-Benzoyl: [17331-53-2]
C₁₇H₁₈N₂O₆ 346.339

Intermed. for oligodeoxyribonucleotide synth. Cryst. (EtOH or EtOAc). Mp 215-217°.

3',5'-Dibenzoyl: [35898-30-7]
C₂₄H₂₂N₂O₇ 450.447
Mp 196°. [α]_D -53.4 (Py).

3'-Mesityl: [34308-10-6]
C₁₁H₁₆N₂O₇S 320.323
Mp 116°.

3',5'-Dimesityl: [56822-33-4]
C₁₂H₁₈N₂O₉S₂ 398.414
Mp 168-169° dec.

5'-Tosyl: [7253-19-2]
C₁₇H₂₀N₂O₇S 396.42
Mp 172° dec.

► XP2085000

5'-Trityl: [7791-71-1]

C₂₉H₂₈N₂O₅ 484.551Mp 125°. [α]_D +11.4 (Me₂CO).

5'-Trityl, 3-Ac: [23583-46-2]

C₃₁H₃₀N₂O₆ 526.588Subl. 105. [α]_D +18.6 (95% EtOH).

5'-(4-Methoxytrityl): [42926-80-7]

C₃₀H₃₀N₂O₆ 514.577

Protected deriv. for oligodeoxyribonucleotide synth. Cryst. (toluene). Mp 103-105°.

5'-(4,4'-Dimethoxytrityl): [40615-39-2]

C₃₁H₃₂N₂O₇ 544.603Protected deriv. for oligodeoxyribonucleotide synth. Research tool for antiviral and anticancer studies. Cryst. (cyclohexane/C₆H₆ or EtOAc/petrol). Mp 119-122° (114-116°) Mp 123-124°.

3-Me: [958-74-7]

C₁₁H₁₆N₂O₅ 256.258

Mp 131-132°.

4-Ph: [92447-15-9]

C₁₆H₁₈N₂O₅ 318.329

Cryst. (EtOAc). Mp 160-162°.

3'-tert-Butyldimethylsilyl: [40733-27-5]

C₁₆H₂₈N₂O₅Si 356.493Protected deriv. Needles + ½H₂O (EtOH aq.). Mp 118-120° Mp 83-84°.

1-Epimer: α-Thymidine

[4449-43-8]

C₁₀H₁₄N₂O₅ 242.231

Solid. Mp 187°.

β-L-form L-Thymidine. Telbivudine, INN, USAN. Epavudine. NV 02B

[3424-98-4]

Antiviral agent.

Cryst. (EtOH). Mp 179-181°. [α]_D²⁰ -19.9 (c, 1.15 in H₂O).

[50-88-4]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 2, 815A; 818A (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 3, 370B; 376B (nmr)

Levene, P.A. et al., J. Biol. Chem., 1929, 83, 793 (isol)

Michelson, A.M. et al., J.C.S., 1955, 816 (config)

Fox, J.J. et al., Adv. Carbohydr. Chem., 1959, 14, 283 (rev)

Shaw, G. et al., J.C.S., 1959, 50 (synth)

Lemieux, R.U. et al., Can. J. Chem., 1961, 39, 110; 116 (conformn)

Schaller, H. et al., J.A.C.S., 1963, 85, 3821-3827 (5'-methoxytrityl, 5'-dimethoxytrityl)

Ulbricht, T.L.V. et al., Tet. Lett., 1964, 695 (ord)

Young, D.W. et al., Acta Cryst. B, 1969, 25, 1423 (cryst struct)

Gupta, V.S. et al., Can. J. Chem., 1971, 49, 719 (synth)

Holy, A. et al., Coll. Czech. Chem. Comm., 1972, 37, 4072-4087 (telbivudine, synth)

Ogilvie, K.K. et al., Can. J. Chem., 1973, 51, 3799-3807 (3'-tert-butyldimethylsilyl)

Krug, T.R. et al., J.A.C.S., 1973, 95, 4761 (cmr)

Davies, D.B. et al., J.C.S. Perkin 2, 1975, 1703 (pmr)

de Rooij, J.F.M. et al., Rec. Trav. Chim. (J. R. Neth. Chem. Soc.), 1979, 98, 537-548 (3'-benzoyl)

Denny, W.A. et al., Helv. Chim. Acta, 1982, 65, 2372-2391 (3'-benzoyl)

Mathlouthi, M. et al., Carbohydr. Res., 1984, 134, 23 (ir, Raman)

Reese, C.B. et al., J.C.S. Perkin 1, 1984, 1263 (deriv, synth, uv, pmr)

Sekine, M. et al., Synthesis, 1987, 1119 (3'-benzoyl)

Breiner, R.G. et al., J. Med. Chem., 1990, 33, 2596-2602 (3'-tert-butyldimethylsilyl)

Bleasdale, C. et al., J.C.S. Perkin 1, 1990, 803-805 (5'-dimethoxytrityl, synth, pmr)

Quadflieg, P.J.L.M. et al., J.O.C., 1990, 55, 122-127 (5'-methoxytrityl)

Schouten, A. et al., Acta Cryst. C, 1991, 47, 1320 (cryst struct, 3'-Ac)

Spadari, S. et al., J. Med. Chem., 1992, 35, 4214-4220, telbivudine, synth, pharmacol)

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 1420

Tsuboi, M. et al., Bull. Chem. Soc. Jpn., 1994, 67, 1483 (Raman)

Larsen, E. et al., J. Het. Chem., 1995, 32, 1645 (α-Thymidine)

Hatleid, J. et al., Acta Chem. Scand., 1998, 52, 1270-1274 (3',5'-di-Ac)

Org. Synth., 2000, 77, 162-175 (3',5'-dibenzoyl, synth, pmr)

Moyroud, E. et al., Tetrahedron, 2000, 56, 1475-1484 (synth, pmr, cmr)

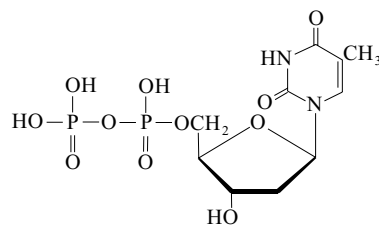
Hernandez-Santiago, B. et al., Antimicrob. Agents Chemother., 2002, 46, 1728-1733 (telbivudine, pharmacol)

Lewis, R.J. et al., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, TFX790

Thymidine diphosphate

T-105

Thymidine 5'-(trihydrogen diphosphate), 9CI. Thymidine 5'-pyrophosphate. TDP [491-97-4]

C₁₀H₁₆N₂O₁₁P₂ 402.191

Griffin, B.E. et al., J.C.S., 1958, 1389 (synth)

Michelson, A.M. et al., J.C.S., 1958, 1957 (synth)

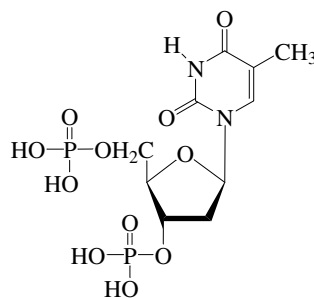
Furusawa, K. et al., J.C.S. Perkin 1, 1976, 1711

Labotka, R.J. et al., J.A.C.S., 1976, 98, 3699 (pmr)

Thymidine 3',5'-diphosphate

T-106

3'-Thymidylic acid 5'-(dihydrogen phosphate), 11CI. 5'-O-Phosphono-3'-thymidylic acid, 9CI. Thymidine 3',5'-bis(phosphate) [2863-04-9]

C₁₀H₁₆N₂O₁₁P₂ 402.191λ_{max} 266 (no solvent reported).

Tetrabrucine salt:

Small needles (EtOH aq.). Mp 182-184°.

Dekker, C.A. et al., J.C.S., 1953, 947-951 (synth)

Cantor, C.R. et al., Biopolymers, 1970, 9, 1059-1077 (cd)

Nikolenko, L.N. et al., Zh. Obshch. Khim., 1970, 40, 2136-2137; CA, 74, 64364g (synth)

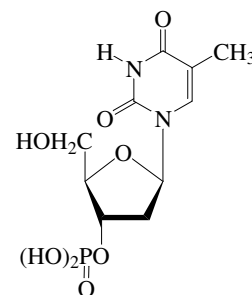
Niemczura, W.P. et al., Can. J. Chem., 1980, 58, 472-478 (cmr)

Niemczura, W.P. et al., Biopolymers, 1981, 20, 1671-1690 (pmr)

Thymidine 3'-phosphate

T-107

Thymidine 3'-(dihydrogen phosphate), 9CI. 3'-Thymidylic acid [2642-43-5]

C₁₀H₁₅N₂O₈P 322.211

Ba salt: [73603-30-2]

Needles (H₂O). [α]_D²⁰ +7.3 (c, 1.5 in H₂O).Mono(4-nitrophenyl) ester: [16562-50-8] [95648-79-6] λ_{max} 271 (as NH₄ salt).

Michelson, A.M. et al., J.C.S., 1953, 951-956 (synth)

Turner, A.F. et al., J.A.C.S., 1959, 81, 4651-4656 (synth)

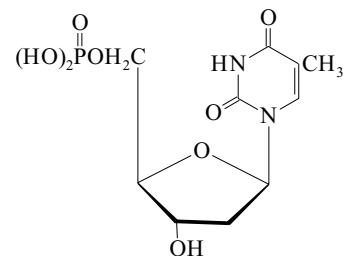
Tenner, G.M. et al., J.A.C.S., 1961, 83, 159-168 (synth)

Wood, D.J. et al., Can. J. Chem., 1974, 52, 3353-3366 (pmr)

Thymidine 5'-phosphate

T-108

Thymidine 5'-(dihydrogen phosphate), 10CI. 5'-Thymidylic acid, 9CI [365-07-1]

C₁₀H₁₅N₂O₈P 322.211Occurs in tRNA, human lymphocytes, brain and liver. pK_{a1} 6.36; pK_{a2} 9.9 (25°).

► XP2090000

Di-Na salt: [33430-62-5]

Dihydrate. Mp 300°.

Ba salt: [α]_D¹⁷ -3 (c, 2 in H₂O).

Dibrucine salt:

Needles (EtOH aq.). Mp 175°.

Dibenzyl ester:

C₂₄H₂₇N₂O₈P 502.46

Foam (CHCl₃/cyclohexane).

3'-Ac: [4304-30-7]

C₁₂H₁₇N₂O₉P 364.248

Powder. Free acid very hygroscopic, usually stored as the pyridine salt or as a solution in anhydrous pyridine.

[83918-61-0]

Gilham, P.T. *et al.*, *J.A.C.S.*, 1958, **80**, 6212-

6222 (3'-Ac)

Gregor, I. *et al.*, *Helv. Chim. Acta*, 1975, **58**,

712-738 (3'-Ac)

Sprecher, C.A. *et al.*, *Biopolymers*, 1977, **16**,

2243 (cd)

Sagi, J.T. *et al.*, *Nucleic Acids Res.*, 1977, **4**,

2767 (synth)

George, A.L. *et al.*, *Can. J. Chem.*, 1978, **56**,

1170 (pmr, conformn)

Niemezura, W.P. *et al.*, *Can. J. Chem.*, 1980, **58**,

472 (cmr, conformn)

Samanta, S.T. *et al.*, *Appl. Spectrosc.*, 1982, **36**,

306 (Raman)

Stawinski, J. *et al.*, *Bull. Pol. Acad. Sci., Chem.*,

1983, **31**, 17 (synth)

Cadet, J. *et al.*, *J. Chromatogr.*, 1983, **259**, 111

(tlc)

Sekine, M. *et al.*, *Tet. Lett.*, 1983, **24**, 5741

(deriv)

Sato, T. *et al.*, *Acta Cryst. C*, 1984, **40**, 736

(cryst struct)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**,

424 (ms)

Horn, T. *et al.*, *Tet. Lett.*, 1986, **27**, 4705 (synth,

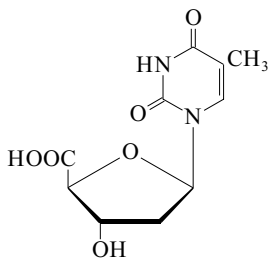
hplc, nmr, tlc)

Massoud, S.S. *et al.*, *Inorg. Chem.*, 1988, **27**,

1447 (props)

Thymidine-5'-carboxylic acid T-109

1,2-Dideoxy-1-[3,4-dihydro-5-methyl-2,4-dioxo-1(2H)-pyrimidinyl]-β-D-erythro-pentofuranuronic acid, 9CI
[3544-99-8]



C₁₀H₁₂N₂O₆ 256.215

Constit. of the ascidian *Aplidium fuscum*.

Inhibitor of thymidine and thymidylate

kinase. Cryst. (H₂O).

Mp 263-265° dec. (250-251°).

Me ester: [50700-64-6]

C₁₁H₁₄N₂O₆ 270.241

Mp 247° dec. (237-238°).

Amide: Thymidine-5'-carboxamide

[52995-48-9]

C₁₀H₁₃N₃O₅ 255.23

Mp 251-252° dec. (240°).

Nitrile: [52995-49-0]

C₁₀H₁₁N₃O₄ 237.215

Cryst. Mp 235°.

[37781-47-8]

Moss, G.P. *et al.*, *J.C.S.*, 1963, 1149 (synth)

Suck, D. *et al.*, *Biochim. Biophys. Acta*, 1974, **361**, 1 (cryst struct)

Baker, J.J. *et al.*, *J. Med. Chem.*, 1974, **17**, 764 (synth)

Schinazi, R.F. *et al.*, *J. Med. Chem.*, 1978, **21**, 1141 (synth)

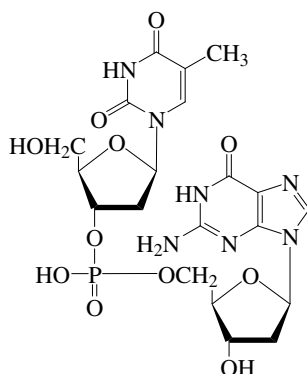
Montgomery, J.A. *et al.*, *Nucleic Acids Symp. Ser.*, 1981, **9**, 95 (synth)

Dematte, N. *et al.*, *Comp. Biochem. Physiol., B: Comp. Biochem.*, 1986, **84**, 11 (isol)

Thymidylyl-(3' → 5')-2'-deoxy-guanosine, 9CI T-110

d(TpG)

[4251-20-1]



C₂₀H₂₆N₇O₁₁P 571.44

Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3821-3827 (synth)

Hayatsu, H. *et al.*, *J.A.C.S.*, 1967, **89**, 3880-3887 (synth, uv)

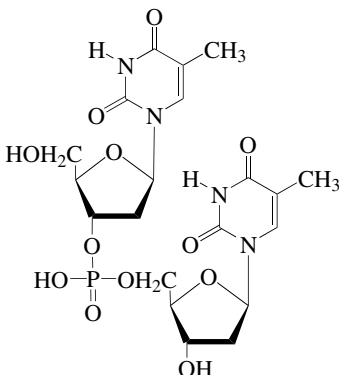
Melby, L.R. *et al.*, *J.O.C.*, 1969, **34**, 427-431 (synth, uv)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (ms)

Thymidylyl-(3' → 5')-thymidine, 9CI T-111

TpT

[1969-54-6]



C₂₀H₂₇N₄O₁₂P 546.427

Weimann, G. *et al.*, *J.A.C.S.*, 1962, **84**, 4329-4341 (synth)

Schaller, H. *et al.*, *J.A.C.S.*, 1963, **85**, 3828-3835 (synth)

Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**, 29-38 (ord)

Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997-1029 (pmr)

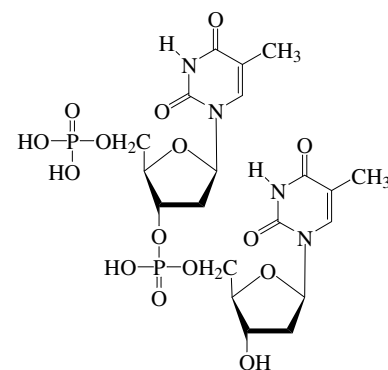
Cantor, C.R. *et al.*, *Biopolymers*, 1970, **9**, 1059-1077 (cd)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (ms)

Ravikumar, V.T. *et al.*, *Tetrahedron*, 1994, **50**, 9255-9266 (synth, P-31 nmr)

Thymidylyl-(5' → 3')-5'-thymidylic acid, 9CI T-112

5'-O-Phosphorylthymidylyl-(3' → 5')-thymidine, 8CI
[2642-45-7]



C₂₀H₂₈N₄O₁₅P₂ 626.407

No phys. props. reported.

[19887-54-8]

Eckstein, F. *et al.*, *Angew. Chem., Int. Ed.*, 1966, **5**, 671-672 (synth)

Blackburn, G.M. *et al.*, *J.C.S.(C)*, 1967, 2438-2442 (synth)

Kathawala, F. *et al.*, *Annalen*, 1968, **712**, 195-200 (synth, uv)

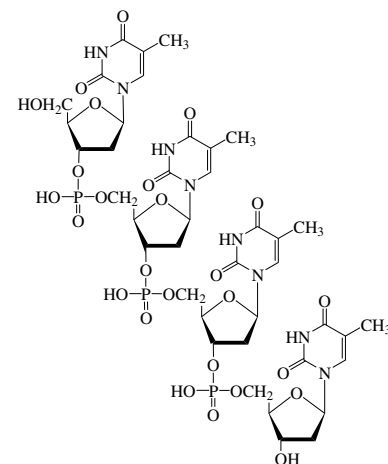
Cantor, C.R. *et al.*, *Biochemistry*, 1969, **8**, 3610-3617 (cd, uv)

Freist, W. *et al.*, *Chem. Ber.*, 1970, **103**, 3122-3127 (synth)

Thymidylyl-(3' → 5')-thymidylyl-(3' → 5')-thymidine, 9CI T-113

TpTpTpT

[2476-57-5]



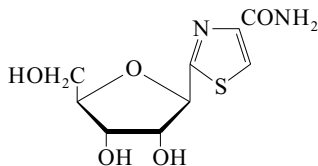
C₄₀H₅₃N₈O₂₆P₃ 1154.818

Letsinger, R.L. *et al.*, *J.A.C.S.*, 1969, **91**, 3350-3355; 3360-3365 (synth)

Garcia-Echeverria, C. *et al.*, *Tetrahedron*, 1996, **52**, 3933-3938 (*synth*)
 Dumontet, V. *et al.*, *Tetrahedron*, 1996, **52**, 6913-6930 (*synth*)

Tiazofurine, INN**T-114**

2- β -D-Ribofuranosyl-4-thiazolecarboxamide, 9CI. **Tiazofurin**, **USAN**. Riboxamide. CI 909. ICN 4221. NSC 286193 [60084-10-8]

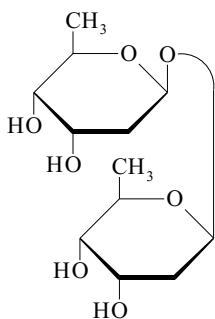


C₉H₁₂N₂O₅S 260.27
 Inosine monophosphate dehydrogenase inhibitor. Antineoplastic agent showing broad-spectrum antiviral activity. Light yellow needles (EtOH/EtOAc). Mp 145-146°. [α]_D²⁵ -9 (c, 0.5 in EtOH). Log P -2.73 (calc).

- LD₅₀ (mus, ipr) 1684 mg/kg. XJ3600000
 Fuertes, M. *et al.*, *J.O.C.*, 1976, **41**, 4074 (*synth*)
 Srivastava, P. *et al.*, *J. Med. Chem.*, 1977, **20**, 256 (*synth*, *pmr*)
 Goldstein, B.M. *et al.*, *J.A.C.S.*, 1983, **105**, 7416 (*cryst struct*, *abs config*)
 Meltzer, N.M. *et al.*, *J. Chromatogr.*, 1984, **307**, 216; 361 (*hplc*)
 Hennen, W.J. *et al.*, *J.O.C.*, 1985, **50**, 1741 (*synth*)
 Riley, C.M. *et al.*, *J. Chromatogr.*, 1990, **531**, 295 (*anal*, *rev*)
 Li, H. *et al.*, *Biochemistry*, 1994, **33**, 23 (*bibl*, *sar*, *enzyme complex*, *cryst struct*)
 Mitrovic, D.M. *et al.*, *J. Chemother.*, 1995, **7**, 543 (*bibl*, *pharmacol*)
 Olah, E. *et al.*, *Anticancer Res.*, 1996, **16**, 2469; 3313 (*rev*, *pharmacol*)
 Timar, J. *et al.*, *Eur. J. Cancer*, Part A, 1996, **32**, 152 (*pharmacol*)
 Vitale, M. *et al.*, *Cytometry*, 1997, **30**, 61 (*pharmacol*)
 Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, RJF500

Tigmobiose**T-115**

2,6-Dideoxy- β -D-ribo-hexopyranosyl 2,6-dideoxy- β -D-ribo-hexopyranoside. β -D-Digitoxopyranosyl β -D-digitoxopyranoside [73491-08-4]



C₁₂H₂₂O₇ 278.302
 Isol. from twigs of *Sarcostemma brevis-tigma*. Rhombs (Me₂CO/Et₂O). Mp 90-93°. [α]_D²⁶ +19 (c, 0.14 in MeOH).

Tetra-Ac:

C₂₀H₃₀O₁₁ 446.45
 Rhombs (MeOH). Mp 82-83°. [α]_D²⁶ +42 (c, 0.33 in MeOH).

Khare, D.P. *et al.*, *Carbohydr. Res.*, 1980, **79**, 287 (*isol*, *pmr*, *ms*)

Tinzaparin sodium, BAN, INN, USAN**T-116**

Longiparin. Innohep. LHN-1

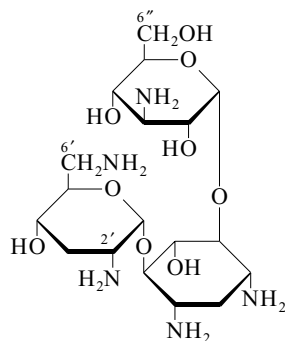
Low MW heparin (see Heparin, H-5). Prep'd. by enzymatic degradation of heparin obt. from the intestinal mucosa of pigs. Anticoagulant used for prophylaxis of venous thromboembolism during surgery. Launched 1991

[9041-08-1]

- Matzsch, T. *et al.*, *Thromb. Haemostasis*, 1987, **57**, 97 (*synth*, *activity*)
 Padilla, A. *et al.*, *Br. J. Haematol.*, 1992, **82**, 406 (*pharmacol*)
 Kher, A. *et al.*, *Low Mol. Weight Heparins Clin. Pract.*, 1992, 209 (*rev*)
 Simoneau, G. *et al.*, *Thromb. Res.*, 1992, **66**, 603 (*pharmacol*)
 Carrie, D. *et al.*, *Br. J. Haematol.*, 1993, **83**, 622 (*pharmacol*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 232
 Brindley, C.J. *et al.*, *Xenobiotica*, 1993, **23**, 575 (*pharmacol*)
 Friedel, H.A. *et al.*, *Drugs*, 1994, **48**, 638 (*rev*)
 Pinhal, M.A.S. *et al.*, *Thromb. Res.*, 1994, **74**, 143 (*pharmacol*)
 Mousa, S.A. *et al.*, *Cardiovasc. Drug Rev.*, 2002, **20**, 199-216 (*rev*)
 Cheer, S.M. *et al.*, *Drugs*, 2004, **64**, 1479-1502 (*rev*)

Tobramycin, BAN, INN, JAN, USAN**T-117**

Nebramycin VI. Nebramycin factor 6. Tobramycetin. Tobi. Many other names [32986-56-4]



C₁₈H₃₇N₅O₉ 467.518

Aminoglycoside antibiotic. Isol. from *Streptomyces* spp. Antibacterial, antibiotic. Used to treat pulmonary infections. Approved for clinical use in the UK (1999). Cryst. Sol. H₂O, MeOH; fairly sol. EtOH; poorly sol. butanol, hexane. [α]_D²⁵ +131 (c, 1 in H₂O). pK_{a1} 5.8; pK_{a2} 6.8; pK_{a3} 7.1; pK_{a4} 7.9; pK_{a5} 9.3. Log P -7.32 (uncertain value) (calc).

- Ototoxic, nephrotoxic and other adverse effects reported when used therapeutically. LD₅₀ (mus, ipr) 445 mg/kg; LD₅₀ (mus, ivn) 120 mg/kg. Exp. teratogen. WK2100000

Sulfate: Nebcin. Obracine. Tobracin [49842-07-1]

- Adverse CNS effects reported when used therapeutically. LD₅₀ (mus, ipr) 262 mg/kg. WK2110000

6''-N-Carbamoyl: **Nebramycin factor 13.**

Nebramycin XIII

[64332-35-0]

C₁₉H₃₈N₆O₁₀ 510.543

Prod. by *Streptomyces tenebrarius*. Cryst. (MeOH/EtOH). Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane.

6''-O-Carbamoyl: **Nebramycin factor 5'.**

Nebramycin V'

[51736-77-7]

C₁₉H₃₈N₆O₁₀ 510.543

Prod. by *Streptomyces* spp. Sol. H₂O, DMF, DMSO, Py, EtOH; poorly sol. Me₂CO, hexane. [α]_D²⁵ +120 (c, 1 in H₂O). LD₅₀ (mus, ivn) 99 mg/kg. WK1935000

2'-N-Carbamoyl: **Nebramycin factor 11.**

Nebramycin XI

[64332-33-8]

C₁₉H₃₈N₆O₁₀ 510.543

Prod. by *Streptomyces tenebrarius*. Solid. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. [α]_D²⁵ +123.5 (H₂O).

Stark, W.M. *et al.*, *Antimicrob. Agents*

Chemother., 1967, 314; 324; 332; 341

Stark, W.M. *et al.*, *Folia Microbiol. (Prague)*, 1971, **16**, 205

Koch, K.F. *et al.*, *J. Antibiot.*, 1973, **26**, 745

Dorman, D.E. *et al.*, *J.A.C.S.*, 1976, **98**, 6885

Miyake, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1977, **50**, 2362 (*synth*, *cmr*)

Okutani, T. *et al.*, *J.A.C.S.*, 1977, **99**, 1278 (*synth*)

Koch, K.F. *et al.*, *J.O.C.*, 1978, **43**, 1430 (*isol*, *cmr*, *nmr*, *ms*)

Lightbown, J.W. *et al.*, *J. Biol. Stand.*, 1982, **10**, 157 (*synth*)

Szilagyi, L. *et al.*, *Carbohydr. Res.*, 1987, **170**, 1 (*pmr*, *cmr*)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 5084

Kirk-Othmer *Encycl. Chem. Technol.*, 4th edn., Wiley, 1991, **2**, 904 (*rev*)

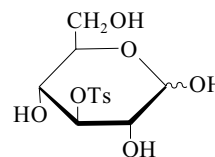
Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 218

Cheer, S.M. *et al.*, *Drugs*, 2003, **63**, 2501-2520 (*rev*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, TGI250; TGI500

3-*O*-Tosylglucose**T-118**

3-*O*-p-Toluenesulfonylglucose. 3-*O*-(4-Methylbenzenesulfonyl)glucose



C₁₃H₁₈O₈S 334.346

D-form

Mp 124-125°. $[\alpha]_D^{22} +31$ (c, 1 in EtOH).
 1,2:5,6-Di-O-Isopropylidene: See 1,2:5,6-Di-O-isopropylidene-glucopyranose, D-717

Yamada, M. *et al.*, *Carbohydr. Res.*, 1981, **96**, 121

TP 1**T-119**

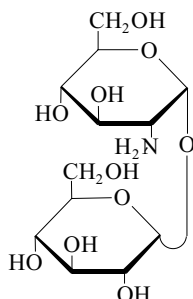
Glycoprotein. Isol. from the inflorescence of *Trachycarpus fortunei*. Shows antifungal activity.

Du, L. *et al.*, *CA*, 1993, **119**, 245599f (*isol*)

2-Trehalosamine**T-120**

α -D-Glucopyranosyl 2-amino-2-deoxy- α -D-glucopyranoside. 2-Amino-2-deoxy- α,α -trehalose. Trehalosamine. Antibiotic I 4200.

[27208-79-3]



$C_{12}H_{23}NO_{10}$ 341.314

Aminoglycoside. Isol. from *Streptomyces*. Weakly active against gram-positive bacteria. Sol. H_2O ; poorly sol. MeOH, hexane. λ_{max} 272 (MeOH) (Berdy). λ_{max} 281 (H_2SO_4) (Berdy).

► LD₅₀ (mus, ivn) 5422 mg/kg.

Hydrochloride: [20204-85-7]

Cryst. (MeOH aq.). Mp 145° dec. $[\alpha]_D +183$ (c, 0.9 in H_2O).

► XX1946300

Arcamone, F. *et al.*, *Gazz. Chim. Ital.*, 1957, **87**, 896 (*isol*)

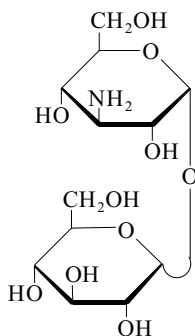
Umezawa, S. *et al.*, *J. Antibiot., Ser. A*, 1967, **20**, 388 (*synth*)

Paulsen, H. *et al.*, *Chem. Ber.*, 1979, **112**, 3203 (*synth*)

Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1981, **54**, 2728 (*synth*, *conformn*, *cmr*)

3-Trehalosamine**T-121**

α -D-Glucopyranosyl 3-amino-3-deoxy- α -D-glucopyranoside, 9CI. 3-Amino-3-deoxy- α,α -trehalose [75060-25-2]



$C_{12}H_{23}NO_{10}$ 341.314

Aminoglycoside antibiotic. Isol. from *Nocardiosis trehalosei*. Weakly active against gram-positive bacteria.

Hydrochloride:

Cryst. Sol. H_2O , acids, bases; poorly sol. MeOH, hexane. Mp 200° dec. $[\alpha]_D +161$ (c, 13.7 in H_2O).

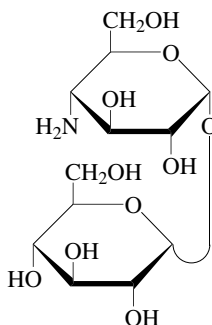
► LD₅₀ (mus, ipr) 800-1600 mg/kg.

Baer, H.H. *et al.*, *Carbohydr. Res.*, 1979, **75**, 175 (*synth*)

Dolak, L.A. *et al.*, *J. Antibiot.*, 1980, **33**, 690 (*isol*)

4-Trehalosamine**T-122**

α -D-Glucopyranosyl 4-amino-4-deoxy- α -D-glucopyranoside, 9CI. 4-Amino-4-deoxy- α,α -trehalose [51855-99-3]



$C_{12}H_{23}NO_{10}$ 341.314

Aminoglycoside antibiotic. Metab. of a *Streptomyces* spp. MD303-SF1. Shows weak antibacterial activity against gram-positive bacteria. Sol. H_2O ; poorly sol. butanol, hexane. Mp 140°. $[\alpha]_D +179$ (c, 0.5 in H_2O). Also descr. as a syrup.

► LD₅₀ (mus, ivn) 1000 mg/kg. XX1946000

$N_2O_8O_8O_8O_8O_8O_8$ -Octa-Ac: [129785-37-1]

$C_{28}H_{39}NO_{18}$ 677.612

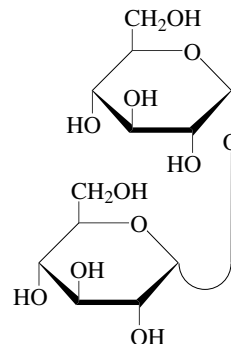
Mp 134-137°. $[\alpha]_D +132$.

Naganawa, H. *et al.*, *J. Antibiot.*, 1974, **27**, 145

Bassily, R.W. *et al.*, *Carbohydr. Res.*, 1993, **239**, 197 (*synth*)

 α,α -Trehalose**T-123**

α -D-Glucopyranosyl- α -D-glucopyranoside, 9CI, 8CI. Mycose. Mushroom sugar. Trehalose [99-20-7]



$C_{12}H_{22}O_{11}$ 342.299

By-product in industrial fermentations. Occurs in fungi, moulds, ergot, algae, yeast and many insects. *Selaginella lepidophylla* contains the free disaccharide. Found in high concs. in anhydrobiotic organisms, those resistant to dehydration. Probable energy reserve in many organisms and important cellular protectant in drought resistant organisms. Associated with maintenance of the integrity of biol. membranes in organisms subject to severe thermal stresses. Exists in various anhydrous forms and a dihydrate. Mp 97° (hydrate) Mp 214-216° (anhyd.). $[\alpha]_D^{20} +178.3$ (H_2O) (hydrate). $[\alpha]_D^{20} +199$ (H_2O) (anhyd.). Sweet taste. Sweetness = 0.36 \times sucrose. Fermented by yeast.

2-Sulfate: [141923-45-7]

$C_{12}H_{22}O_{14}S$ 422.363

Core carbohydrate of the sulfatides of *Mycobacterium tuberculosis*. V. hygroscopic solid (as NH_4 salt).

Mp 150° (browns) (NH_4 salt). $[\alpha]_D^{22} +151$ (c, 0.6 in MeOH).

6-Phosphate: [4484-88-2]

Prod. by *Streptomyces hygroscopicus*, *Mycobacterium smegmatis* and yeasts. $[\alpha]_D +185$ (H_2O).

2,2',3,3',4,4'-Hexa-Ac:

$C_{24}H_{34}O_{17}$ 594.522

Cryst. (EtOH/petrol). Mp 93-96°. $[\alpha]_D^{19} +158$ ($CHCl_3$).

2,2',3,3',4,4',6-Hepta-Ac: [113842-79-8]

$C_{26}H_{36}O_{18}$ 636.56

Mp 124-126° (EtOH). $[\alpha]_D +167.5$ (c, 0.7 in $CHCl_3$).

Octa-Ac: [25018-27-3]

$C_{28}H_{38}O_{19}$ 678.597

Mp 100-102°. $[\alpha]_D +163$ ($CHCl_3$).

6,6'-Dihexadecanoyl: α,α -Trehalose-6,6'-dipalmitate [3317-99-5]

$C_{44}H_{82}O_{13}$ 819.124

Chord factor analogue.

Mp 158.5-160°. $[\alpha]_D +78$ (c, 1 in $CHCl_3$).

6,6'-Dimesyl, hexa-Ac: [23089-73-8]

$C_{26}H_{38}O_{21}S_2$ 750.706

Cryst. (EtOH). Mp 168-169.5°. $[\alpha]_D +143$ (c, 1.6 in $CHCl_3$).

6,6'-Ditosyl: [23235-67-8]
 $C_{26}H_{34}O_{15}S_2$ 650.678
 Cryst. (MeOH aq.). Mp 106-110°. $[\alpha]_D$
 +90 (c, 0.2 in MeOH/CHCl₃).
 6,6'-Ditosyl, hexa-Ac: [23089-74-9]
 $C_{38}H_{46}O_{21}S_2$ 902.901
 Cryst. (MeOH). Mp 170-172°. $[\alpha]_D$
 +132 (c, 0.5 in CHCl₃).
 4,6:4',6'-Di-O-ethylidene:
 $C_{16}H_{26}O_{11}$ 394.375
 Mp 285° dec. $[\alpha]_D^{23}$ +143 (c, 0.4 in H₂O).
 Octa-Me: [25018-29-5]
 $C_{20}H_{38}O_{11}$ 454.514
 Syrup. Bp_{0.03} 170°. $[\alpha]_D^{20}$ +199.8 (C₆H₆).
 6-Trityl, hepta-Ac: [113842-78-7]
 $C_{45}H_{50}O_{18}$ 878.879
 Mp 203-205° (EtOH). $[\alpha]_D$ +134 (c, 0.7
 in CHCl₃).
 6,6'-Ditrityl, hexa-Ac: [75869-80-6]
 $C_{62}H_{62}O_{17}$ 1079.162
 Mp 246-248°. $[\alpha]_D$ +112 (c, 1 in CHCl₃).

[6138-23-4]

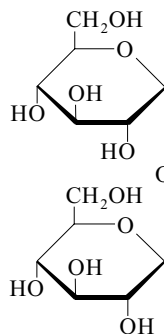
Aldrich Library of NMR Spectra, 2nd edn., 1983,
 2, 912C (nmr)
 Aldrich Library of FT-IR Spectra, 1st edn., 1985,
 1, 196A (ir)
 Robison, R. et al., Biochem. J., 1928, **22**, 1277
 (synth, phosphate)
 Bredereck, H. et al., Ber., 1930, **63**, 959
 (hexa-Ac)
 Richtmyer, N.K. et al., Methods Carbohydr.
 Chem., 1962, **1**, 370 (isol)
 Birch, G. et al., Adv. Carbohydr. Chem., 1963,
18, 201 (rev)
 MacDonald, D.L. et al., Biochim. Biophys.
 Acta, 1964, **86**, 390 (synth, phosphate)
 Birch, G. et al., J.C.S. (C), 1966, 1072 (synth)
 Birch, G. et al., Carbohydr. Res., 1968, **8**, 411
 (6,6'-dimesyl hexa-Ac, 6,6'-ditosyl hexa-Ac,
 6,6'-ditosyl)
 Pazur, J.H. et al., The Carbohydrates, (Eds.,
 Pigman, W., et al.), 2nd edn., Academic Press,
 1970, **2A**, 106 (rev)
 Lapp, D. et al., J. Biol. Chem., 1971, **246**, 4567
 (synth, phosphate)
 Taga, T. et al., Acta Cryst. B, 1972, **28**, 3258
 (cryst struct)
 Karrer, W. et al., Konstitution und Vorkommen
 der Organischen Pflanzenstoffe, 2nd edn.,
 Birkhäuser Verlag, Basel, 1972, no. 644
 (occur)
 Usui, T. et al., J.C.S. Perkin I, 1973, 2425
 (conformn, cmr)
 Elbein, A.D. et al., Adv. Carbohydr. Chem.
 Biochem., 1974, **30**, 227 (rev)
 Usui, T. et al., Carbohydr. Res., 1974, **33**, 105
 (pmr, config)
 Hough, L. et al., Pure Appl. Chem., 1977, **49**,
 1069 (rev)
 Pfeffer, P.E. et al., J.A.C.S., 1979, **101**, 1265
 (cmr)
 Lee, G.K. et al., Dev. Food Carbohydr., Applied
 Science Pub., 1980, **2**, 1 (rev)
 Liav, A. et al., Carbohydr. Res., 1984, **127**, 211
 (2-sulfate)
 Bottle, S. et al., Chem. Comm., 1984, 385
 (dipalmitate)
 Jeffrey, G.A. et al., Carbohydr. Res., 1985, **137**,
 21 (cryst struct)
 Szurmai, Z. et al., Carbohydr. Res., 1987, **164**,
 313 (hepta-Ac, pmr)
 Abbate, S. et al., Carbohydr. Res., 1991, **210**, 1
 (ir, Raman)
 Ronnow, T.E.C.L. et al., Carbohydr. Res., 1994,
260, 323 (synth, 6-phosphate, 6,6'-diphosphate)
 Tarelli, E. et al., Carbohydr. Res., 1994, **261**, 25
 (synth, phosphates)

Hull, S.R. et al., Carbohydr. Res., 1995, **266**,
 147-157 (isol)
 Gilbertson, S.R. et al., J.O.C., 1995, **60**, 6226
 (hexa-Me, hexabenzyl)
 Mueller, J. et al., Plant Sci. (Limerick, Ire.),
 1995, **112**, 1 (rev, occur)
 Gil, A.M. et al., Spectrochim. Acta A, 1996, **52**,
 1649-1659 (ir, Raman, pmr, cmr)
 Sussich, F. et al., Carbohydr. Res., 1999, **322**,
 113-119 (bibl)
 Food Chem. News, 2000, **42(42)**, 6; 2001, **43(20)**,
 15 (use)
 Sussich, F. et al., Carbohydr. Res., 2001, **334**,
 165-176 (solution props)
 Akao, K. et al., Carbohydr. Res., 2001, **334**,
 233-241 (ir, props)
 Nagase, H. et al., Carbohydr. Res., 2002, **337**,
 167-173 (polymorphism)
 Wingler, A. et al., Phytochemistry, 2002, **60**,
 437-440 (rev, biosynth)
 Haines, A.H. et al., Carbohydr. Res., 2003, **338**,
 813-818 (L-enantiomer)
 Pratt, M.R. et al., Org. Lett., 2003, **5**, 3185-3188
 (synth)

 α,β -Trehalose

T-124

β -D-Glucopyranosyl α -D-glucopyranoside,
 9CI, 8CI. α -D-Glucopyranosyl β -D-gluco-
 pyranoside. Neotrehalose
 [585-91-1]



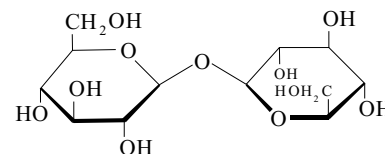
$C_{12}H_{22}O_{11}$ 342.299
 Constit. of honey.
 Mp 149°. $[\alpha]_D^{22}$ +83.5 (c, 2 in H₂O).
 Considerable variations in props. reported
 in the lit., probably owing to variations in
 purity.

Octa-Ac: [22554-66-1]
 $C_{28}H_{38}O_{19}$ 678.597
 Mp 140-141°. $[\alpha]_D^{18}$ +79.6 (c, 0.7 in
 CHCl₃).
 Burckhardt, H. et al., Chem. Ber., 1956, **89**, 314
 (synth)
 Birch, G. et al., Adv. Carbohydr. Chem., 1963,
18, 201 (rev)
 Usui, T. et al., J.C.S. Perkin I, 1973, 2425
 (conformn, cmr)
 Usui, T. et al., Carbohydr. Res., 1974, **33**, 105
 (config, pmr)
 Pfeffer, P.E. et al., J.A.C.S., 1979, **101**, 1265
 (cmr)
 Parrish, F.W. et al., Carbohydr. Res., 1987, **168**,
 129 (purifn, props, cmr, bibl)
 Ronnow, T.E.C.L. et al., J. Carbohydr. Chem.,
 1995, **14**, 197-211 (synth, pmr, cmr)
 Taga, T. et al., Acta Cryst. C, 1997, **53**, 234-236
 (cryst struct)

 β,β -Trehalose

T-125

β -D-Glucopyranosyl β -D-glucopyranoside,
 9CI, 8CI. Isotrehalose
 [499-23-0]



$C_{12}H_{22}O_{11}$ 342.299
 Plates (Me₂CO aq.). Mp 135-140°. $[\alpha]_D^{17}$
 -40.2 (H₂O).

Octa-Ac:

$C_{28}H_{38}O_{19}$ 678.597
 Mp 181.5-182.5°. $[\alpha]_D^{25}$ -18 (c, 3.0 in
 CHCl₃).

Octa-Me:

$C_{20}H_{38}O_{11}$ 454.514
 Bp_{0.015} 160°. $[\alpha]_D^{24}$ -39.2 (C₆H₆).

Octabenzyl: [25018-28-4]

$C_{68}H_{70}O_{11}$ 1063.294
 Mp 115-116°. $[\alpha]_D$ +8 (c, 0.9 in CHCl₃).

Burckhardt, H. et al., Chem. Ber., 1956, **89**, 314
 (synth)
 Allen, P.Z. et al., Methods Carbohydr. Chem.,
 1962, **1**, 372 (synth)
 Birch, G. et al., Adv. Carbohydr. Chem., 1963,
18, 201 (rev)
 Usui, T. et al., Carbohydr. Res., 1974, **33**, 105
 (config, pmr)
 Cook, S.J. et al., J. Carbohydr. Chem., 1984, **3**,
 343-348 (synth)
 Lee, C. et al., Acta Cryst. C, 1993, **49**, 621 (cryst
 struct)
 Ronnow, T.E.C.L. et al., J. Carbohydr. Chem.,
 1995, **14**, 197-211 (synth, pmr, cmr)
 Hirooka, M. et al., Bull. Chem. Soc. Jpn., 1998,
71, 2893-2902 (octabenzyl)

 α,α -Trehalose 6,6'-dimycolate

T-126

Cord Factor

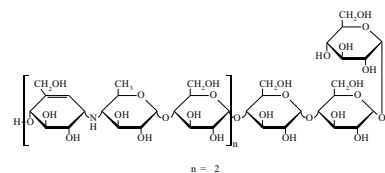
The 6,6'-dimycolates of Trehalose are
 present as mixtures in *Mycobacterium*
tuberculosis and other microorganisms.
 Sol. CHCl₃, hexane.

Noll, H. et al., Biochim. Biophys. Acta, 1956,
20, 299
 Brochère-Ferréol, G. et al., Bull. Soc. Chim. Fr.,
 1958, 714 (synth)
 Prome, J.-C. et al., Eur. J. Biochem., 1976, **63**,
 543
 Rodd's Chem. Carbon Compd. (2nd edn.), 1976,
1E, 432

Trestatin A

T-127

Antibiotic Ro 09-0183. Ro 09-0183
 [71884-70-3]



$C_{56}H_{94}N_2O_{40}$ 1435.348

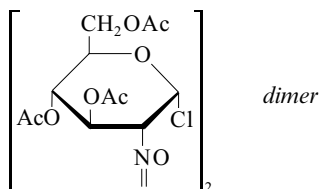
Polysaccharide antibiotic. Isol. from
Streptomyces dimorphogenes. Potent
 α -amylase inhibitor. Shows antiprolif-
 erative activity, which is strongly

enhanced by sulfation. Powder. Sol. H₂O, DMSO; poorly sol. MeOH, hexane.
Mp 221-232° dec. $[\alpha]_D^{24} +177$ (c, 1 in H₂O).

► LZ5855400

Yokose, K. *et al.*, *J. Antibiot.*, 1983, **36**, 1157; 1166 (*isol. struct. props*)
Yokose, K. *et al.*, *J. Antibiot.*, 1984, **37**, 182 (*isol. derivs*)
Wessel, H.D. *et al.*, *Carbohydr. Res.*, 1990, **204**, 131 (*activity*)

3,4,6-Tri-*O*-acetyl-2-deoxy-2-nitrosoglucopyranosyl chloride, 9CI T-128



C₁₂H₁₆ClNO₈ 337.713

Exists as dimer.

α-D-form [40626-68-4]

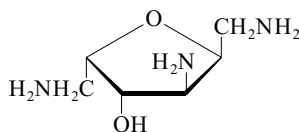
Mp 129-130°. $[\alpha]_D^{24} +149$ (c, 2.0 in CHCl₃).

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1968, **46**, 413

Lemieux, R.U. *et al.*, *Methods Carbohydr. Chem.*, 1972, **6**, 492 (*synth*)

Lemieux, R.U. *et al.*, *Can. J. Chem.*, 1973, **51**, 1 (*pmr*)

1,3,6-Triamino-2,5-anhydro-1,3,6-trideoxyiditol T-129



C₆H₁₅N₃O₂ 161.203

L-form [78136-10-4]

Foam (as trihydrochloride) (not pure). CAS no. refers to trihydrochloride.

1*N*,3*N*,4,6*N*-Tetra-*Ac*: 1,3,6-Triacetamido-4-*O*-acetyl-2,5-anhydro-1,3,6-trideoxy-*L*-iditol

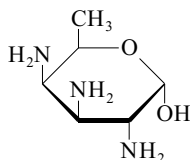
[78136-12-6]

C₁₄H₂₃N₃O₆ 329.352

Foam (impure).

Kuszmarn, J. *et al.*, *Carbohydr. Res.*, 1981, **89**, 103 (*synth, L-form, tetra-Ac*)

2,3,4-Triamino-2,3,4,6-tetra-deoxygalactose T-130



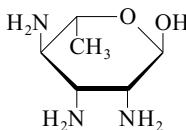
C₆H₁₅N₃O₂ 161.203

α-D-Pyranose-form

Benzyl glycoside, 2,3,4-tri-N-Ac: Benzyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy-α-*D*-galactopyranoside
C₁₉H₂₇N₃O₅ 377.439
Cryst. Mp 233°. $[\alpha]_D^{20} +158$ (c, 0.54 in EtOH).

Sarfati, S.R. *et al.*, *Carbohydr. Res.*, 1983, **117**, 309 (*synth, pmr, cmr, deriv*)

2,3,4-Triamino-2,3,4,6-tetra-deoxymannose T-131



C₆H₁₅N₃O₂ 161.203

α-L-Pyranose-form

*Me glycoside, 2*N*,3*N*,4*N*-tri-*Ac**: Methyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy-α-*L*-mannopyranoside
[29788-90-7]

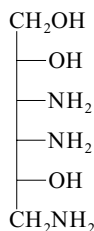
C₁₃H₂₃N₃O₅ 301.342

Cryst. Mp 248-250°. $[\alpha]_D -98$ (c, 0.5 in MeOH).

Lichtenthaler, F.W. *et al.*, *Chem. Comm.*, 1970, 1081 (*Me gly deriv, pmr*)

3,4,6-Triamino-3,4,6-trideoxy-yallitol T-132

1,3,4-Triamino-1,3,4-trideoxyallitol



C₆H₁₇N₃O₃ 179.219

For the enantiomer illustrated the name 3,4,6-triamino-3,4,6-trideoxy-*D*-allitol takes precedence over 1,3,4-triamino-1,3,4-trideoxy-*L*-allitol, according to the IUPAC special rules for carbohydrates.

D-form

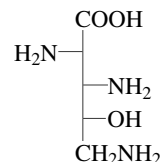
3*N*,4*N*,6*N*-Tribenzoyl: [81058-45-9]

C₂₇H₂₉N₃O₆ 491.543

Cryst. (EtOH). Mp 242-245° dec. $[\alpha]_D^{20} +24$ (c, 0.5 in DMSO).

Meyer zu Reckendorf, W. *et al.*, *Annalen*, 1982, 137 (*tribenzoyl, ir*)

2,3,5-Triamino-2,3,5-trideoxy-arabinonic acid T-133



C₅H₁₃N₃O₃ 163.176

D-form

Occurs as a constituent of streptolidine. Exists in solution as an equilibrium mixture with the 1,4-lactone.

1,4-Lactone: 2,3,5-Triamino-2,3,5-trideoxy-*D*-arabinono-1,4-lactone

[53332-17-5]

C₅H₁₁N₃O₂ 145.161

Mp 103° dec. (as trihydrobromide).

1,4-Lactone, tri-*N*-*Ac*: 2,3,5-Triacetamido-2,3,5-trideoxy-*D*-arabinono-1,4-lactone

[53332-25-5]

C₁₁H₁₇N₃O₅ 271.272

Hygroscopic powder. Mp 125-130°.

1,4-Lactone, tri-*N*-benzoyl: 2,3,5-Tribenzamido-2,3,5-trideoxy-*D*-arabinono-1,4-lactone

[53332-11-9]

C₂₆H₂₃N₃O₅ 457.485

Cryst. (dioxan aq.). Mp 217-218° (236-237°). $[\alpha]_D^{28} -102.4$ (c, 1.4 in DMF).

1,4-Lactone, tris-*N*-benzyloxycarbonyl: [53332-16-4]

C₂₉H₂₉N₃O₈ 547.563

Cryst. (C₆H₆). Mp 89-91°. $[\alpha]_D^{18} -26$ (c, 0.9 in CHCl₃).

1,5-Lactam, 2,3-bis-*N*-benzyloxycarbonyl: 5-Amino-2,3-bis(benzyloxycarbonylamino)-2,3,5-trideoxy-*D*-arabinono-1,5-lactam

C₂₁H₂₃N₃O₆ 413.429

Needles (MeOH). Mp 208-209°. $[\alpha]_D^{25} -122$ (c, 0.84 in DMF).

2*N*,3*N*-Carboimido: See Streptolidine, S-81

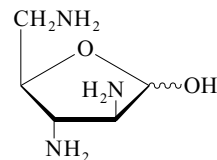
Kusumoto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1974, **47**, 2690 (*lactone, lactone tribenzoyl*)

Goto, T. *et al.*, *Tet. Lett.*, 1974, 1413 (*lactone, lactone tri-Ac*)

Kusumoto, S. *et al.*, *Tet. Lett.*, 1974, 1417 (*lactone*)

Kinoshita, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1977, **50**, 2375; 1978, **51**, 3261 (*lactam di-Boc, lactone tris-Boc*)

2,3,5-Triamino-2,3,5-trideoxy-arabinose T-134



D-Furanose-form

C₅H₁₃N₃O₂ 147.177

D-Furanose-form

2N,3N,5N-Tri-Ac: 2,3,5-Triacetamido-2,3,5-trideoxy-D-arabinofuranose [53332-24-4]
 $C_{11}H_{19}N_3O_5$ 273.288
 Amorph. powder. Mp 226-230° dec.
 2N,3N,5N-Tribenzoyl: 2,3,5-Tribenzamido-2,3,5-trideoxy-D-arabinofuranose [55024-31-2]
 $C_{26}H_{25}N_3O_5$ 459.501
 Cryst. (CHCl₃).

β-D-Furanose-form

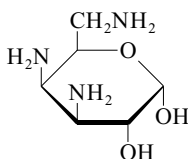
Me glycoside: Methyl 2,3,5-triamino-2,3,5-trideoxy-β-D-arabinofuranoside [53332-14-2]
 $C_6H_{15}N_3O_2$ 161.203
 Needles (MeOH/H₂O/Et₂O) (as trihydrochloride). Mp 240° dec. (trihydrochloride). $[\alpha]_D^{19}$ -57.1 (c, 1.81 in H₂O). CAS no. refers to trihydrochloride.

Me glycoside, 2N,3N,5N-tri-Ac: Methyl 2,3,5-triacetamido-2,3,5-trideoxy-β-D-arabinofuranoside [53332-21-1]
 $C_{12}H_{21}N_3O_5$ 287.315
 Mp 293-294.5°. $[\alpha]_D$ -0.84 (CHCl₃/MeOH 4:1).

Kusumoto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1974, **4**, 2690 (D-fur deriv, β-D-fur deriv, ir)
 Goto, T. *et al.*, *Tet. Lett.*, 1974, 1413; 1417 (D-fur deriv, β-D-fur deriv)

3,4,6-Triamino-3,4,6-trideoxygalactose

T-135


 $C_6H_{15}N_3O_3$ 177.203
α-D-Pyranose-form

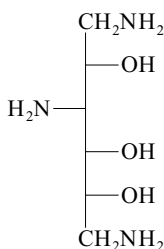
1,2-O-Isopropylidene, 3N,4N,6N-tri-Ac: [80564-61-0]
 $C_{15}H_{25}N_3O_6$ 343.379
 Cryst. (2-propanol). Mp 243-245° dec. $[\alpha]_D^{20}$ +125.5 (c, 0.95 in DMSO).

1,2-O-Isopropylidene, 3N,4N,6N-tribenzoyl: [80564-60-9]
 $C_{30}H_{31}N_3O_6$ 529.591
 Cryst. (EtOH). Mp 245-246° dec. $[\alpha]_D^{20}$ +50 (c, 1.2 in DMSO).

Meyer zu Reckendorf, W. *et al.*, *Annalen*, 1981, 1982 (isopropylidene, ir, pmr)

1,3,6-Triamino-1,3,6-trideoxyglycitol

T-136

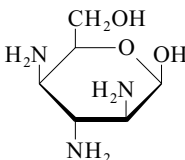

 $C_6H_{17}N_3O_3$ 179.219
DL-form [128823-76-7]

Syrup.

Kammerer, J. *et al.*, *Angew. Chem., Int. Ed.*, 1990, **29**, 1038 (synth)

2,3,4-Triamino-2,3,4-trideoxy-yidose

T-137


 $C_6H_{15}N_3O_3$ 177.203
β-D-Pyranose-form

1,6-Anhydro: 2,3,4-Triamino-1,6-anhydro-2,3,4-trideoxy-β-D-idopyranose [15910-82-4]
 $C_6H_{13}N_3O_2$ 159.188
 Cryst. + H₂O (dec.) (as trihydrochloride). Mp 189-190° (trihydrochloride). $[\alpha]_D^{20}$ -48.3 (c, 0.8 in H₂O). CAS no. refers to trihydrochloride.

1,6-Anhydro, 2N,3N,4N-tri-Ac: 2,3,4-Triacetamido-1,6-anhydro-2,3,4-trideoxy-β-D-idopyranose [15910-83-5]
 $C_{12}H_{19}N_3O_5$ 285.299
 Needles (EtOH). Mp 267-268° (257-258°). $[\alpha]_D^{20}$ -50 (c, 1 in CHCl₃).

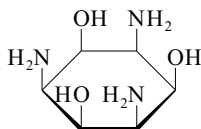
Lichtenthaler, F.W. *et al.*, *Angew. Chem., Int. Ed.*, 1967, **6**, 568 (tri-Ac, pmr)

Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1968, **101**, 1846 (anhydro, pmr)

1,3,5-Triamino-1,3,5-trideoxyinositol

T-138

2,4,6-Triamino-1,3,5-cyclohexanetriol


 $C_6H_{15}N_3O_3$ 177.203
(1α,2α,3α,4α,5α,6α)-form

cis-form

Complexing agent.

Cryst. mass + 1H₂O (EtOH). Mp 203-204° (browns).

Hydrochloride (1:3): Mp 280° dec.

Tri-N-Ac:

 $C_{12}H_{21}N_3O_6$ 303.314
 Mp 310-311°.

N,N',N'',O,O',O''-Hexa-Ac:

 $C_{18}H_{27}N_3O_9$ 429.426
 Mp 276-278° (browns).

N,N,N',N',N'',N''-Hexa-Me: 1,3,5-Tri-deoxy-1,3,5-tris(dimethylamino)inositol, 9Cl. 2,4,6-Tris(dimethylamino)-1,3,5-cyclohexanetriol [104973-98-0]
 $C_{12}H_{27}N_3O_3$ 261.364

Complexing agent. Cryst. (hexane). Mp 118-119°.

N,N,N',N',N'',N''-Hexa-Me; hydrochloride (1:3):

Solid + 2H₂O (MeOH).

Lichtenthaler, F.W. *et al.*, *Chem. Ber.*, 1966, **99**, 903 (synth)

Hegetschweiler, K. *et al.*, *Helv. Chim. Acta*, 1990, **73**, 97; 1992, **75**, 2233 (synth, cryst struct, pmr, cmr, derivs)

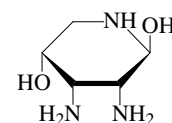
Hegetschweiler, K. *et al.*, *Chem. Eur. J.*, 1995, **1**, 74

Schmalte, H.W. *et al.*, *Acta Cryst. C*, 1996, **52**, 1288-1293 (N-hexa-Me, cryst struct)

Reib, G.J. *et al.*, *Acta Cryst. C*, 1999, **55**, 123-126 (cryst struct)

2,3,5-Triamino-2,3,5-trideoxyribose

T-139



β-D-Pyranose-form

 $C_5H_{13}N_3O_2$ 147.177
β-D-Pyranose-form

2N,3N,5N-Tri-Ac: 2,3,5-Triacetamido-2,3,5-trideoxy-β-D-ribofuranose [86204-40-2]
 $C_{11}H_{19}N_3O_5$ 273.288
 Needles (EtOH). Mp 251°. $[\alpha]_D^{20}$ +36.5 (c, 0.5 in MeOH).

1,2N,3N,4,5N-Penta-Ac: 2,3,5-Triacetamido-1,4-di-O-acetyl-2,3,5-trideoxy-β-D-ribofuranose [86204-42-4]
 $C_{15}H_{23}N_3O_7$ 357.363
 Amorph. solid.

β-D-Furanose-form

2N,3N,5N-Tri-Ac: 2,3,5-Triacetamido-2,3,5-trideoxy-β-D-ribofuranose [86204-35-5]
 $C_{11}H_{19}N_3O_5$ 273.288
 Prisms (EtOH/Et₂O). Mp 187-188°. $[\alpha]_D^{15}$ -10.5 (c, 0.3 in MeOH).

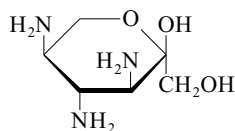
Benzyl glycoside, 2N,3N,5N-tri-Ac: Benzyl 2,3,5-triacetamido-2,3,5-trideoxy-β-D-ribofuranoside [74593-12-7]
 $C_{18}H_{25}N_3O_5$ 363.413
 Cryst. (EtOH/Et₂O). Mp 166°. $[\alpha]_D^{20}$ -74 (c, 0.3 in MeOH).

Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1980, **81**, 23 (β-fur deriv, ir, pmr)

Okumura, H. *et al.*, *Agric. Biol. Chem.*, 1983, **47**, 839 (β-fur deriv, β-pyr deriv, pmr)

3,4,5-Triamino-3,4,5-trideoxysorbose

T-140

C₆H₁₅N₃O₃ 177.203**α-L-Pyranose-form**

1,2-O-Isopropylidene, 3N,4N,5N-tri-Ac:

[113863-57-3]

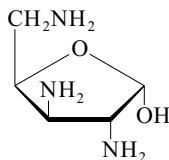
C₁₅H₂₅N₃O₆ 343.379Needles (EtOH). Mp 143-144°. [α]_D²¹ -57 (c, 0.3 in MeOH).

Benzyl glycoside, 3N,4N,5N-tri-Ac:

[113863-50-6]

C₁₉H₂₇N₃O₆ 393.439Cryst. (CHCl₃). Mp 121-123°. [α]_D²⁵ -81 (c, 1.0 in MeOH).Lichtenthaler, F.W. *et al.*, *Carbohydr. Res.*, 1987, **164**, 357 (tri-N-Ac derivs, pmr)**2,3,5-Triamino-2,3,5-trideoxyxylose**

T-141

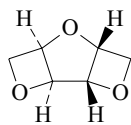
C₅H₁₃N₃O₂ 147.177**α-D-Furanose-form**

1,2N,3N,5N-Tetra-Ac: 2,3,5-Triacetamido-1-O-acetyl-2,3,5-trideoxy-α-D-xylofuranose

[74590-36-6]

C₁₃H₂₁N₃O₆ 315.325Needles (EtOH). Mp 229-231° dec. [α]_D²⁰ +132 (c, 0.3 in DMF).Hasegawa, A. *et al.*, *Carbohydr. Res.*, 1980, **81**, 23 (tetra-Ac, ir)**1,3:2,5:4,6-Triahydroiditol**

T-142

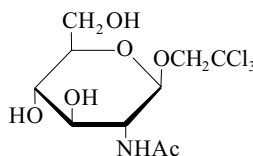


D-form

C₆H₈O₃ 128.127**D-form**Cryst. (Et₂O/hexane). Mp 51-52°. [α]_D²⁰ -49.3 (c, 0.9 in CHCl₃).**L-form**Cryst. Mp 62-64° Mp 163-164.5°. [α]_D²⁰ -14.1 (c, 1.5 in CHCl₃).Köll, P. *et al.*, *Tet. Lett.*, 1983, **24**, 2557 (synth, pmr)Köll, P. *et al.*, *Annalen*, 1987, 199; 205 (synth, pmr)**2,2,2-Trichloroethyl 2-acetamido-2-deoxyglucopyranoside**

2,2,2-Trichloroethyl 2-(acetamino)-2-deoxyglucopyranoside, 9CI

T-143

C₁₀H₁₆Cl₃NO₆ 352.598**β-D-form** [56569-97-2]Cryst. + ½ H₂O (C₆H₆/Me₂CO). Mp 170-171°. [α]_D²⁵ -33.9 (c, 1 in H₂O).

Tri-Ac: 2,2,2-Trichloroethyl 2-acetamido-3,4,6-tri-O-acetyl-2-deoxy-β-D-glucopyranoside

[56569-96-1]

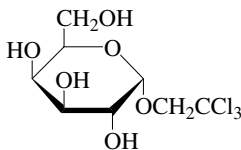
C₁₆H₂₂Cl₃NO₉ 478.709Cryst. (EtOAc). Mp 192-194° (188-189°). [α]_D²⁵ -26 (c, 1.0 in H₂O).

4,6-O-Benzylidene: 2,2,2-Trichloroethyl 2-acetamido-4,6-O-benzylidene-2-deoxy-β-D-glucopyranoside

[56569-98-3]

C₁₇H₂₀Cl₃NO₆ 440.706Cryst. (MeOH/2-propanol). Mp 234° dec. [α]_D²⁵ -73.8 (c, 1.0 in MeOH).Lemieux, R.U. *et al.*, *J.A.C.S.*, 1975, **97**, 4063 (synth, pmr, cmr)Lemieux, R.U. *et al.*, *ACS Symp. Ser.*, 1976, **39**, 90 (β-D-form, pmr, cmr)McLaren, J.M. *et al.*, *Aust. J. Chem.*, 1977, **30**, 2689 (β-D-tri-Ac)**2,2,2-Trichloroethyl galactopyranoside**

T-144



α-D-form

C₈H₁₃Cl₃O₆ 311.545**α-D-form** [77453-95-3]Syrup. [α]_D²⁰ +130 (c, 1.0 in CHCl₃).

Tetra-Ac: 2,2,2-Trichloroethyl 2,3,4,6-tetra-O-acetyl-α-D-galactopyranoside, 9CI

[77453-93-1]

C₁₆H₂₁Cl₃O₁₀ 479.694Cryst. (CH₂Cl₂/hexane). Mp 127°. [α]_D²⁰ +125.2 (c, 1.0 in CHCl₃).

2,3,6-Tribenzoyl: 2,2,2-Trichloroethyl 2,3,6-tri-O-benzoyl-α-D-galactopyranoside

[77453-98-6]

C₂₉H₂₅Cl₃O₉ 623.869Syrup. [α]_D²⁰ +133.8 (c, 1.0 in CHCl₃).

2,3,6-Tribenzoyl, 4-Ac: 2,2,2-Trichloroethyl 4-O-acetyl-2,3,6-tri-O-benzoyl-α-D-galactopyranoside

[77454-02-5]

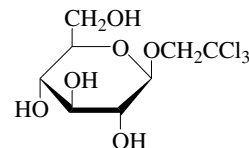
C₃₁H₂₇Cl₃O₁₀ 665.906Cryst. (CCl₄/hexane). Mp 133°. [α]_D²⁰ +121.6 (c, 1.0 in CHCl₃).**β-D-form**

Tetra-Ac: 2,2,2-Trichloroethyl 2,3,4,6-tetra-O-acetyl-β-D-galactopyranoside, 9CI

[77453-96-4]

C₁₆H₂₁Cl₃O₁₀ 479.694Cryst. (Et₂O/hexane). Mp 109°. [α]_D²⁰ -23.4 (c, 1.0 in CHCl₃).Magnusson, G. *et al.*, *Acta Chem. Scand., Ser. B*, 1981, **35**, 213 (synth, pmr, cmr)Risbood, P.A. *et al.*, *Carbohydr. Res.*, 1981, **88**, 245 (synth, pmr)**2,2,2-Trichloroethyl glucopyranoside**

T-145



β-D-form

C₈H₁₃Cl₃O₆ 311.545**α-D-form**

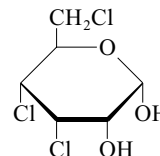
2,3,4,6-Tetra-Ac: 2,2,2-Trichloroethyl 2,3,4,6-tetra-O-acetyl-α-D-glucopyranoside

C₁₆H₂₁Cl₃O₁₀ 479.694Mp 99-100°. [α]_D²⁰ +134 (CHCl₃).**β-D-form**

2,3,4,6-Tetra-Ac: 2,2,2-Trichloroethyl 2,3,4,6-tetra-O-acetyl-β-D-glucopyranoside

C₁₆H₂₁Cl₃O₁₀ 479.694Mp 143-144°. [α]_D²⁸ -26.4 (CHCl₃).Magnusson, G. *et al.*, *Acta Chem. Scand., Ser. B*, 1981, **35**, 213**3,4,6-Trichloro-3,4,6-trideoxyallose**

T-146

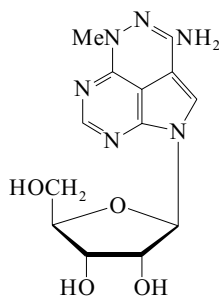
C₆H₉Cl₃O₃ 235.493**α-D-Pyranose-form**

Me glycoside: Methyl 3,4,6-trichloro-3,4,6-trideoxy-α-D-allopyranoside

C₇H₁₁Cl₃O₃ 249.52Needles (H₂O). Mp 116°. [α]_D²¹ +159 (c, 1.8 in MeOH).Jennings, H.J. *et al.*, *Can. J. Chem.*, 1965, **43**, 2372

Triciribine, INN**T-147**

1,5-Dihydro-5-methyl-1-β-D-ribofuranosyl-1,4,5,6,8-pentaazaacenaphthylen-3-amine, 9CI. 3-Amino-1,5-dihydro-5-methyl-1-β-D-ribofuranosyl-1,4,5,6,8-pentaazaacenaphthylene. NSC 154020. TCN [35943-35-2]



C₁₃H₁₆N₆O₄ 320.307

Antineoplastic, antileukaemic agent. Possesses anti-HIV activity. In Phase II clinical trials (1993). Found to be ineffective and had unacceptable toxic effects

► **RY8455000**

Phosphate salt: **Triciribine phosphate**, **USAN**. NSC 280594

[61966-08-3]

Solid (H₂O).

► **LD₅₀ (mus, ipr) 193 mg/kg. RY8450000**

Plagemann, P.G.W. *et al.*, *J. Biol. Chem.*, 1977, **252**, 2010 (*metab*)

Bennett, L.L. *et al.*, *Biochem. Pharmacol.*, 1978, **27**, 233 (*pharmacol*)

U.S. Pat., 1978, 4 123 524; *CA*, **89**, 44130j

(*synth, pharmacol, tox*)

Schweinsberg, P.D. *et al.*, *Diss. Abstr. Int.*, **B**, 1981, **42**, 1420 (*metab*)

Schilcher, R.B. *et al.*, *J. Chromatogr.*, 1985, **337**, 55 (*hplc*)

Wotring, L.L. *et al.*, *Cancer Res.*, 1990, **50**, 4891 (*pharmacol*)

Kucera, L.S. *et al.*, *AIDS Res. Hum.*

Retroviruses, 1993, **9**, 307 (*activity*)

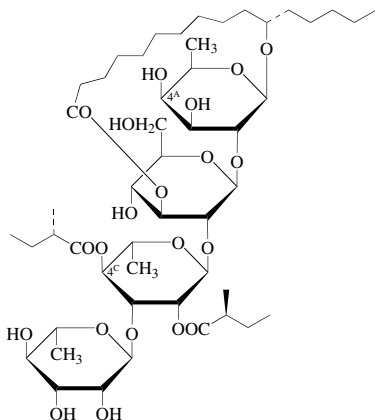
Hoffman, K. *et al.*, *Cancer Chemother.*

Pharmacol., 1996, **37**, 254-258 (*clin trial*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, TJE870

Tricolorin A**T-148**

[149155-65-7]



C₅₀H₈₆O₂₁ 1023.217

Constit. of *Ipomoea tricolor*. Plant growth inhibitor. Cytotoxic. Needles (MeOH).

Sol. MeOH, CHCl₃; poorly sol. H₂O.

Mp 118-120°. [α]_D -30.3 (c, 1.5 in MeOH).

4^A-Epimer: Tricolorin E

C₅₀H₈₆O₂₁ 1023.217

Constit. of *Ipomoea tricolor*.

Mp 115-116°. [α]_D -58 (c, 1 in MeOH).

4^CO-Deacyl, 4^C-O-(2-methylpropanoyl): Tricolorin B

C₄₉H₈₄O₂₁ 1009.19

Constit. of *Ipomoea tricolor*.

Mp 119-120°. [α]_D -38 (c, 1 in MeOH).

4^CO-Deacyl, 4^C-O-(3-hydroxy-2-methylbutanoyl) (2R,3R-): Tricolorin C

C₅₀H₈₆O₂₂ 1039.216

Constit. of *Ipomoea tricolor*.

Mp 125-126°. [α]_D -29 (c, 1 in MeOH).

Pereda-Miranda, R. *et al.*, *J. Nat. Prod.*, 1993, **56**, 571-582 (*isol*)

Bah, M. *et al.*, *Tetrahedron*, 1996, **52**, 13063-13080 (*isol, pmr, cmr, ms*)

Lu, S.-F. *et al.*, *J.O.C.*, 1997, **62**, 8400-8405

(*synth*)

Larson, D.P. *et al.*, *J.O.C.*, 1997, **62**, 8406-8418

(*synth*)

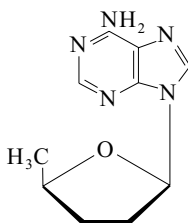
Fuerstner, A. *et al.*, *J.O.C.*, 1998, **63**, 424-425

(*synth*)

Rencurosi, A. *et al.*, *Angew. Chem., Int. Ed.*, 2004, **43**, 5918-5922 (*cryst struct*)

2',3',5'-Trideoxyadenosine, 9CI, 8CI**T-149**

[6612-70-0]



C₁₀H₁₃N₅O 219.246

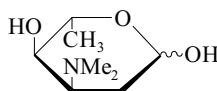
Inhibits 5'-phosphoribosyl 1-pyrophosphate synth. in lymphoblastomas.

Mp 159-160°. [α]_D^{25.5} -36.2 (c, 1.1 in MeOH). λ_{max} 259.5 nm (ε 15 400) (MeOH).

Robins, M.J. *et al.*, *Biochemistry*, 1966, **5**, 224 (*synth, pmr*)

Miles, D.W. *et al.*, *J. Phys. Chem.*, 1968, **72**, 1483 (*ord, cd*)

Weinryb, I. *et al.*, *Biochim. Biophys. Acta*, 1974, **334**, 218

2,3,6-Trideoxy-3-dimethylamino-ribo-hexose Megosamine**T-150**

C₈H₁₇NO₃ 175.227

L-form

Obt. from Megalomicin A elaborated by *Micromonospora megalomicea*.

α-L-Pyranose-form

Me glycoside: Methyl 2,3,6-trideoxy-3-dimethylamino-α-L-ribo-hexopyranoside C₉H₁₉NO₃ 189.254 [α]_D²⁶ -38.4 (c, 0.3 in MeOH).

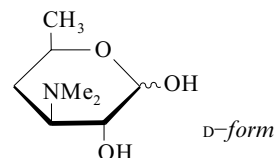
β-L-Pyranose-form

Me glycoside: Methyl 2,3,6-trideoxy-3-dimethylamino-β-L-ribo-hexopyranoside C₉H₁₉NO₃ 189.254 [α]_D²⁶ +116.3 (c, 0.3 in MeOH).

Bartner, P. *et al.*, *J.C.S. Perkin 1*, 1979, 1600 (*nmr L-Me gly*)

3,4,6-Trideoxy-3-dimethylamino-xylo-hexose**T-151**

Desosamine. Picrocinn. Pikrocinn.



C₈H₁₇NO₃ 175.227

D-form [5779-39-5]

Component of Erythromycin, E-18, Narbomycin, N-3, Picromycin, Methymycin, Neomethymycin, N-21, Oleandomycin, Griseomycin and Plicacetin, P-79.

Cryst. (Et₂O/petrol).

Mp 83-83.5°.

Hydrochloride:

Needles (EtOH/Et₂O). Mp 189-190° Mp 130° (hydrate). [α]_D²⁰ +51 (equilib., c, 2.0 in H₂O).

Di-Ac:

C₁₂H₂₁NO₅ 259.302

Cryst. (C₂H₄Cl₂/Et₂O). Mp 194-195° dec.

α-D-Pyranose-form

Me glycoside: Methyl 3,4,6-trideoxy-3-dimethylamino-α-D-xylo-hexopyranoside, 9CI

[2484-75-5]

C₉H₁₉NO₃ 189.254

[α]_D¹⁸ +138.6 (c, 0.81 in H₂O).

Et glycoside: Ethyl 3,4,6-trideoxy-3-

dimethylamino-α-D-xylo-hexopyranoside

C₁₀H₂₁NO₃ 203.281

[α]_D²⁵ +57 (c, 0.79 in CHCl₃).

β-D-Pyranose-form

Et glycoside: Ethyl 3,4,6-trideoxy-3-dimethylamino-β-D-xylo-hexopyranoside

C₁₀H₂₁NO₃ 203.281

[α]_D²⁵ -73 (c, 0.52 in CHCl₃).

L-form [51970-28-6]

[α]_D -42.4 (c, 0.85 in H₂O).

Hydrochloride:

Cryst. (EtOH/Et₂O). Mp 183-184° dec. [α]_D -64 → -52 (c, 0.75 in H₂O).

Flynn, E.H. *et al.*, *J.A.C.S.*, 1954, **76**, 3120

(*D-form, isol, D-di-Ac*)

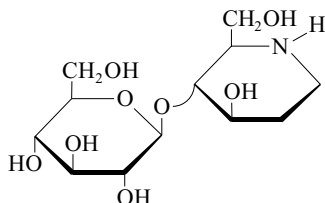
Bolton, C.H. *et al.*, *J.C.S.*, 1961, 4831

Bolton, C.H. *et al.*, *Chem. Ind. (London)*, 1962, 1945 (*D-form, isol, config*)

Wiley, P.F. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 257 (*isol*)

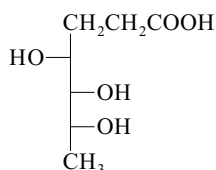
Newman, H. *et al.*, *Chem. Ind. (London)*, 1963, 372 (*DL-form, synth*)
 Weatherston, J. *et al.*, *Z. Naturforsch., B*, 1966, **21**, 331 (*biosynth*)
 Baer, H.H. *et al.*, *Can. J. Chem.*, 1974, **52**, 122 (*L-form, synth*)
 Nourse, J.G. *et al.*, *J.A.C.S.*, 1975, **97**, 4584 (*pmr*)
 Torssell, K. *et al.*, *Acta Chem. Scand., Ser. B*, 1977, **31**, 7 (*DL-form, synth*)
 Bauer, T. *et al.*, *Tetrahedron*, 1997, **53**, 4763-4768 (*α-D-Me glycoside, synth, nmr*)

1,2,5-Trideoxy-4-O-(β-D-glucopyranosyl)-1,5-imino-D-arabino-hexitol T-152
 4-O-(β-D-Glucopyranosyl)fagomine
 [96602-64-1]



C₁₂H₂₃NO₈ 309.316
 Isol. from seed of *Xanthocercis zambesiaca*.
 Mp 232-233°. [α]_D²⁰ -3.1 (c, 1.2 in H₂O).
 Appears to be wrongly named in CA.
 Evans, S.V. *et al.*, *Tet. Lett.*, 1985, 1465

2,3,7-Trideoxy-arabino-heptonic acid T-153



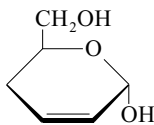
C₇H₁₄O₅ 178.185

D-form

1,4-Lactone: 2,3,7-Trideoxy-D-arabino-heptono-1,4-lactone
 [116386-16-4]
 Cryst. (EtOAc). Mp 103-105°. [α]_D²⁰ -66.5 (c, 1.1 in H₂O).

Bock, K. *et al.*, *Carbohydr. Res.*, 1988, **174**, 331 (*synth, pmr, cmr*)

2,3,4-Trideoxy-glycero-hex-2-enose T-154



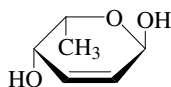
C₆H₁₀O₃ 130.143

DL-form

6-Ac: 6-O-Acetyl-2,3,4-trideoxy-DL-glycero-hex-2-enose
 C₈H₁₂O₄ 172.18
 Cryst. Mp 84°.

Krajewski, J.W. *et al.*, *Carbohydr. Res.*, 1984, **125**, 203 (*cryst struct, α-DL-6-Ac*)

2,3,6-Trideoxy-threo-hex-2-enose T-155



C₆H₁₀O₃ 130.143

α-L-Pyranose-form

Me glycoside: Methyl 2,3,6-trideoxy-α-L-threo-hex-2-enopyranoside
 [91463-72-8]

C₇H₁₂O₃ 144.17

Solid by subl. Mp 66-67°. [α]_D²³ +148.2 (c, 0.96 in CHCl₃).

Me glycoside, Ac: Methyl 4-O-acetyl-2,3,6-trideoxy-α-L-threo-hex-2-enopyranoside
 [63902-57-8]

C₉H₁₄O₄ 186.207

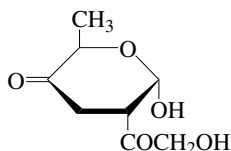
Oil. [α]_D +136 (c, 1 in MeOH).

Cardillo, G. *et al.*, *J.O.C.*, 1984, **49**, 3951-3953 (*α-L-Me pyr, α-L-Me pyr Ac*)

Pauls, H.W. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 1-14 (*α-L-pyr Me gly*)

Servi, S. *et al.*, *J.O.C.*, 1985, **50**, 5865-5867 (*α-L-Me pyr*)

2,3,6-Trideoxy-2-C-hydroxyacetyl-erythro-hexopyranos-4-ulose T-156
 Dihydro-6-hydroxy-5-(hydroxyacetyl)-2-methyl-2H-pyran-3(4H)-one, 9CI



α-D-form

C₆H₁₂O₅ 188.18

This struct. has been assigned erroneously to the sugar component of Pillaromycin A, P-72.

α-D-form

Et glycoside, 2'-benzoyl: [57800-47-2]

C₁₇H₂₀O₆ 320.341

Fibrous cryst. (Et₂O). Mp 85.5-87°. [α]_D²³ +77.2 (c, 0.93 in CHCl₃).

β-L-form

Me glycoside: Methyl 2,3,6-trideoxy-2-C-hydroxyacetyl-β-L-erythro-hexopyranos-4-uloside
 [61196-32-5]

C₉H₁₄O₅ 202.207

Syrup. [α]_D²⁰ +86.7 (c, 1.1 in CHCl₃).

Me glycoside, 1'-(ethylenedithioacetal):
 [63847-19-8]

C₁₁H₁₈O₄S₂ 278.393

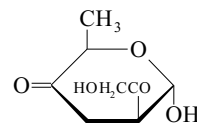
Syrup. [α]_D²⁰ -10.3 (c, 1.1 in CHCl₃).

Walker, D.L. *et al.*, *J.A.C.S.*, 1975, **97**, 6250; 6251 (*occur, struct*)

Paulsen, H. *et al.*, *Chem. Ber.*, 1977, **110**, 2127 (*β-L Me gly derivs, pmr*)

Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1980, **58**, 2694 (*α-D-Et gly deriv, pmr*)

2,3,6-Trideoxy-2-C-hydroxyacetyl-threo-hexopyranos-4-ulose T-157
 6-Hydroxy-5-(hydroxyacetyl)-2-methyl-2H-pyran-3(4H)-one, 9CI



C₈H₁₂O₅ 188.18

α-D-form

Et glycoside: Ethyl 2,3,6-trideoxy-2-C-hydroxyacetyl-α-D-threo-hexopyranos-4-uloside
 [76101-58-1]

C₁₀H₁₆O₅ 216.233

Oil. [α]_D²⁰ +135.7 (c, 1.03 in CHCl₃). [α]_D²³ +174 (c, 2.8 in CHCl₃).

Et glycoside, 2'-benzoyl: [57800-46-1]

C₁₇H₂₀O₆ 320.341

Flaky cryst. (Et₂O/hexane). Mp 85.5-86°. [α]_D²³ +219 (c, 1.34 in CHCl₃).

Et glycoside, 2'-trityl: [76101-57-0]

C₂₉H₃₀O₅ 458.553

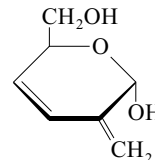
Needles (Et₂O). Mp 108-109°. [α]_D²³ +108 (c, 1.80 in CHCl₃).

Walker, D.L. *et al.*, *J.A.C.S.*, 1975, **97**, 6250;

6251 (*struct, pmr*)

Fraser-Reid, B. *et al.*, *Can. J. Chem.*, 1980, **58**, 2694 (*α-D-Et gly derivs, pmr*)

2,3,4-Trideoxy-2-methylene-hex-3-enopyranose T-158



C₇H₁₀O₃ 142.154

α-D-form

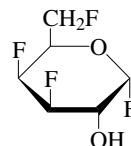
tert-Butyl glycoside, 6-Ac: tert-Butyl 6-O-acetyl-2,3,4-trideoxy-2-methylene-α-D-glycero-hex-3-enopyranoside
 [79698-72-9]

C₁₃H₂₀O₄ 240.299

[α]_D +108.8.

Hanessian, S. *et al.*, *J.A.C.S.*, 1981, **103**, 6243 (*synth*)

3,4,6-Trideoxy-3,4,6-trifluorogalactopyranosyl fluoride T-159
 2,4,5-Trifluoro-6-(fluoromethyl)tetrahydro-2H-pyran-2-ol, 9CI



α-D-form

C₆H₈F₄O₂ 188.122

α -D-form [83566-51-2]

Flaky cryst. Mp 120.5-122°. [α]_D²² +96.05 (c, 2.0 in MeOH).

Ac: [83566-50-1]

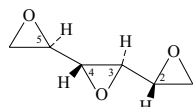
C₈H₁₀F₄O₃ 230.159

Cryst. Mp 59-60°. [α]_D²² +124.2 (c, 2.0 in CHCl₃).

Klemm, G.H. *et al.*, *Tet. Lett.*, 1982, 2927
(*synth*, α -D-form, Ac, pmr, F-19 nmr)

1,2,3,4,5,6-Triepoxyhexane T-160

Trianhydroxitol, 2,3-Dioxiranyloxirane



(2R,3R,4R,5R)-form

C₆H₈O₃ 128.127

(2R,3R,4R,5R)-form

D-Trianhydromannitol

[89196-13-4]

Mp 36-37°. [α]_D +22.7 (c, 1.1 in CHCl₃).

Racemate also prepd.

(2R,3S,4S,5R)-form

D-Trianhydroiditol

[89196-14-5]

Mp 51-52°. [α]_D -49.3 (c, 1.0 in CHCl₃).

Racemate also prepd.

(2RS,3SR,4SR,5SR)-form

(\pm)-*Trianhydroglucitol*

[89196-16-7]

Syrup.

(2RS,3RS,4SR,5SR)-form

Trianhydroallitol

[128899-62-7]

Mp 30° approx. *meso*-.

(2RS,3RS,4SR,5RS)-form

(\pm)-*Trianhydroaltritol*

[128899-63-8]

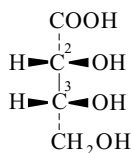
Oil.

Köll, P. *et al.*, *Annalen*, 1987, 199 (*synth*, pmr, cmr, ms, *cryst struct*)

Kammerer, J. *et al.*, *Angew. Chem., Int. Ed.*, 1990, 29, 1038 (*synth*, *cryst struct*)

2,3,4-Trihydroxybutanoic acid, 9CI**T-161**

[10191-35-2]



(2R,3R)-form

C₄H₈O₅ 136.104

Useful synthon of which all 4 stereoisomers are readily obt. from inexpensive starting materials.

(2R,3R)-form

D-Erythronic acid

[488-16-4]

Syrup. Sol. H₂O. Evapn. of aq. soln. → lactone.

Phenylhydrazide: Mp 129-130°. [α]_D +19 (c, 0.3 in H₂O).

Amide: *D-Erythronamide*

[73713-13-0]

C₄H₉NO₄ 135.119

Needles. Mp 95° (91-92°). [α]_D²⁵ +26.2 (c, 0.041 in H₂O).

Tribenzoyl: 2,3,4-*Tri-O-benzoyl-D-erythronic acid*

C₂₅H₂₀O₈ 448.428

Cryst. (C₆H₆). Mp 138-139°. [α]_D²¹ +27 (c, 0.5 in CHCl₃).

Tribenzoyl, amide: 2,3,4-*Tri-O-benzoyl-D-erythronamide*

C₂₅H₂₁NO₇ 447.443

Needles (EtOH aq. or Me₂CO aq.).

Mp 205-206° (201°). [α]_D²⁵ +9.6 (c, 0.089 in CHCl₃).

1,4-Lactone: 3,4-Dihydroxydihydro-

2(3H)-furanone, 9CI, 8CI. *D-Erythrono-1,4-lactone*

[15667-21-7]

C₄H₆O₄ 118.089

Found in tobacco. Oxidn. prod. of starch. Long needles (EtOAc).

Mp 104-105° (98°). [α]_D -71 (c, 0.8 in H₂O).

1,4-Lactone, 2,3-isopropylidene: *Dihydro-*

2,2-dimethylfuro[3,4-d]-1,3-dioxol-4(3aH)-one, 9CI

[25581-41-3]

C₇H₁₀O₄ 158.154

Cryst. (Et₂O/hexane at 0°). Mp 68-68.5°. [α]_D²³ -112.5 (c, 1 in H₂O).

1,4-Lactone, 3-(4-methylbenzenesulfonyl):

[136060-76-9]

C₁₁H₁₂O₆S 272.278

Cryst. (EtOAc). Mp 181-184°. [α]_D¹⁵

-13.2 (c, 1 in Py).

Lactone, dibenzoyl: 2,3-Di-O-benzoyl-D-erythrono-1,4-lactone

[53176-87-7]

C₁₈H₁₄O₆ 326.305

Needles (MeOH aq.). Mp 110-111°.

[α]_D²⁵ -176.9 (c, 0.035 in CHCl₃).

(2R,3S)-form

L-Threonic acid

[7306-96-9]

Syrup + 1H₂O (as Ca salt). [α]_D²⁵ +14.6 (c, 1.0 in H₂O) (Ca salt).

Phenylhydrazide:

Laminae (EtOH). Mp 160-161°. [α]_D²⁰ +29 (c, 0.3 in H₂O).

Amide: *L-Threonamide*

C₄H₉NO₄ 135.119

Cryst. (EtOAc). Mp 105.5-107°. [α]_D²⁵ +77.46 (c, 1.01 in MeOH).

4-O-(3,4-Dihydroxycinnamoyl):

4-O-Caffeoyl-L-threonic acid

[147199-44-8]

C₁₃H₁₄O₈ 298.249

Constit. of *Chelidonium majus* and *Cornus controversa*. Yellow powder.

Mp 195-198°. [α]_D²⁰ -23.7 (c, 1.27 in H₂O).

λ_{\max} 219 (log ϵ 4.02); 235 (sh) (log ϵ 3.89); 243 (log ϵ 3.9); 305 (sh) (log ϵ 4.04); 327 (log ϵ 4.09) (MeOH).

4-O-(3,4-Dihydroxy-E-cinnamoyl) 2-O-

(3,4,5-trihydroxybenzoyl): 4-Caffeoyl-2-galloyl-L-threonic acid

C₂₀H₁₈O₁₂ 450.355

Constit. of the leaves of *Cornus controversa*. Amorph. brown powder. Mp 128-130°. [α]_D²⁰ -27 (c, 0.09 in MeOH). λ_{\max} 255 (log ϵ 4.98); 294 (log ϵ 5.28); 330 (log ϵ 5.27) (MeOH).

4-O-(3,4-Dihydroxy-E-cinnamoyl),

2,3-bis-O-(3,4,5-trihydroxybenzoyl):

4-Caffeoyl-2,3-digalloyl-L-threonic acid

C₂₇H₂₂O₁₆ 602.461

Constit. of the leaves of *Cornus*

controversa. Amorph. brown powder.

Mp 215-217°. [α]_D²⁰ -38 (c, 0.05 in MeOH).

λ_{\max} 220 (log ϵ 2.79); 282 (log ϵ 2.45); 331 (log ϵ 2.22) (MeOH).

2,3-O-Isopropylidene, Me ester: Methyl

2,3-O-isopropylidene-L-threonate

C₈H₁₄O₅ 190.196

Syrup. [α]_D -8.1 (c, 0.5 in CHCl₃).

3,4-O-Isopropylidene, Me ester: Methyl

3,4-O-isopropylidene-L-threonate

[92973-40-5]

C₈H₁₄O₅ 190.196

Bp₁₂ 125°. [α]_D²⁰ +18.5 (c, 2 in Me₂CO).

n_D^{20} 1.4470.

1,4-Lactone: L-Threono-1,4-lactone

C₄H₆O₄ 118.089

Cryst. (EtOAc/Et₂O). Mp 75-77° (66°).

[α]_D²⁵ +48.4 (c, 0.98 in MeCN). [α]_D +30

(c, 0.9 in H₂O).

1,4-Lactone, 2-O-(3,4-dihydroxycinnamoyl):

2-O-Caffeoyl-L-threonolactone

C₁₃H₁₂O₇ 280.234

Constit. of *Chelidonium majus*.

(2S,3R)-form

D-Threonic acid

[20246-26-8]

Syrup.

Ca salt: [70753-61-6]

Cryst. [α]_D²⁰ +16 (c, 1 in H₂O). Mp >300°.

Phenylhydrazide: Mp 160°. [α]_D²⁰ -30 (c, 0.5 in H₂O).

2,3-Di-Ac, Me ester: [266688-35-1]

C₉H₁₄O₇ 234.205

Needles (Et₂O/petrol). Mp 75-76°.

3,4-Isopropylidene: 3,4-O-Isopropylidene-

D-threonic acid

[98733-24-5]

C₇H₁₂O₅ 176.169

Used in the synthesis of chiral antibiotics.

Cryst. (H₂O/Me₂CO/MeCN) (as Ca salt).

Mp 257-261° dec. [α]_D²⁵ +23.6 (c, 0.974 in H₂O).

2,3-Isopropylidene, Me ester: Methyl 2,3-

O-isopropylidene-D-threonate

C₈H₁₄O₅ 190.196

Syrup. [α]_D +7.5 (c, 0.96 in CHCl₃).

Tri-Me ether, Me ester: Methyl 3,4,5-tri-O-methyl-D-threonate

C₈H₁₆O₅ 192.211

Bp₁₃ 120°. [α]_D¹⁸ +49 (MeOH). [α]_D +31 (H₂O).

1,4-Lactone: D-Threono-1,4-lactone

C₄H₆O₄ 118.089

Mp 75-77°. [α]_D²¹ -29 (c, 0.8 in H₂O).

(2S,3S)-form L-Erythronic acid

Phenylhydrazide: Mp 130-131°. [α]_D -17

(c, 1 in H₂O).

Amide: *L-Erythronamide*

C₄H₉NO₄ 135.119

Needles. Mp 91-92°. $[\alpha]_D^{25}$ -26.2 (c, 0.049 in H₂O).

Tribenzoyl, Me ester: Methyl 2,3,4-tri-O-benzoyl-L-erythronate
C₂₆H₂₂O₈ 462.455
 $[\alpha]_D^{25}$ -18 (c, 2.0 in CHCl₃).

Tribenzoyl, Et ester: Ethyl 2,3,4-tri-O-benzoyl-L-erythronate
C₂₇H₂₄O₈ 476.482
 $[\alpha]_D^{25}$ -16.3 (c, 2.0 in CHCl₃).

Tribenzoyl, amide: 2,3,4-Tri-O-benzoyl-L-erythronamide
C₂₅H₂₁NO₇ 447.443
Needles (Me₂CO aq.). Mp 201°. $[\alpha]_D^{25}$ -9 (c, 0.019 in CHCl₃).

2,3-Isopropylidene, amide: 2,3-O-Isopropylidene-L-erythronamide
C₇H₁₃NO₄ 175.184
Cryst. (EtOH). Mp 116-117°.

1,4-Lactone: L-Erythrono-1,4-lactone
[23732-40-3]
C₄H₆O₄ 118.089
Needles (EtOAc). Mp 105° (100-101°). $[\alpha]_D$ +72 (c, 0.5 in H₂O).

Lactone, dibenzoyl: 2,3-Di-O-Benzoyl-L-erythrono-1,4-lactone
C₁₈H₁₄O₆ 326.305
Needles (MeOH aq.). V. sol. MeOH, EtOH, CHCl₃; sol. Et₂O; prac. insol. H₂O.

Lactone, 2-tosyl: 2-O-Tosyl-L-erythrono-1,4-lactone
[146864-79-1]
C₁₁H₁₂O₆S 272.278
Cryst. (EtOAc). Mp 177-179°. $[\alpha]_D^{20}$ +45 (c, 2.0 in Me₂CO).

Lactone, 2,3-O-isopropylidene: 2,3-O-Isopropylidene-L-erythrono-1,4-lactone
C₇H₁₀O₄ 158.154
 $[\alpha]_D$ +139 (c, 1.4 in CHCl₃).

(2R,3R)-form

DL-Erythronic acid
[13752-84-6] V. sol. H₂O, EtOH. V. readily lactonises.

Butyl ester: Butyl DL-erythronate
C₈H₁₆O₅ 192.211
Cryst. (Et₂O). V. sol. EtOH, Me₂CO, Et₂O. Mp 62-64°.

Lactone: DL-Erythrono-1,4-lactone
[17675-99-9]
C₄H₆O₄ 118.089
Cryst. (EtOAc). Mp 91-92°.

Lactone, di-Ac: 2,3-Di-O-acetyl-DL-erythrono-1,4-lactone
[65143-65-9]
C₈H₁₀O₆ 202.163
Cryst. (H₂O). Mp 52.5-53°.

(2R,3SR)-form

DL-Threonic acid
[3909-12-4]
Mp 98-99°. Readily lactonises.

Lactone: DL-Threonolactone
C₄H₆O₄ 118.089
Mp 48-50°.

[15770-22-6, 28617-15-4, 78138-87-1, 88759-55-1, 88759-57-3]

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 1135B (nmr)
Glattfeld, J.W.E. et al., *J.A.C.S.*, 1934, **56**, 1209; 1940, **62**, 974 (synth, resoln)

Reichstein, T. et al., *Helv. Chim. Acta*, 1935, **18**, 602 (synth)

Hardegger, E. et al., *Helv. Chim. Acta*, 1951, **34**, 2343 (synth, abs config)

Whistler, R.L. et al., *J.A.C.S.*, 1956, **78**, 4704 (synth)

MacDonald, D.L. et al., *J.A.C.S.*, 1958, **80**, 3379 (*D*-Erythronamide, tribenzoyl derivs)

Humphlett, W.J. et al., *Carbohydr. Res.*, 1967, **4**, 157 (synth, *L*-erythronolactone)

Petersson, G. et al., *Tetrahedron*, 1970, **26**, 3413 (ms)

Isbell, H.S. et al., *Carbohydr. Res.*, 1979, **72**, 301 (synth, *L*-threonic acid)

Wei, C.C. et al., *J.O.C.*, 1985, **50**, 3462 (synth, pmr, Ca salt, isopropylidene derivs)

Chung, C.W. et al., *J.O.C.*, 1985, **50**, 3465 (methyl 3,4-isopropylidene-*L*-threonate)

Org. Synth., 1985, **63**, 127 (*1,4*-lactone, 2,3-isopropylidene, synth, ir, pmr)

Dunigan, J. et al., *J.O.C.*, 1991, **56**, 6225 (*1,4*-lactone, tosylate, synth, ir, pmr, cmr)

Gais, H.-J. et al., *Synthesis*, 1992, 169 (synth, *D*-erythronolactone)

Lundt, I. et al., *Synthesis*, 1992, 1129 (lactone, 2-tosyl)

Hahn, R. et al., *Planta Med.*, 1993, **59**, 71 (caffeoyl esters)

Kakinuma, H. et al., *Carbohydr. Res.*, 1994, **264**, 237 (isopropylidene derivs)

Flasche, M. et al., *Acta Cryst. C*, 1996, **52**, 895 (cryst struct, lactone benzylidene)

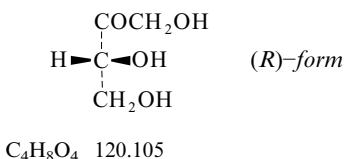
Gypser, A. et al., *J.C.S. Perkin I*, 1997, 1013-1016 (lactone, isopropylidene, synth, pmr)

Williams, S.J. et al., *J.A.C.S.*, 2000, **122**, 2223-2235 (2*S*,3*R*-form, 2,3-di-Ac Me ester)

Lee, D. et al., *Phytochemistry*, 2000, **53**, 405-407 (*Cornus caffeoyl* derivs)

1,3,4-Trihydroxy-2-butanone, 9CI T-162

Erythrulose. glycerol-tetrolase
[40031-31-0]



(R)-form

D-form
[496-55-9]
 $[\alpha]_D^{20}$ -11 (c, 1.0 in H₂O).

2-Nitrophenylhydrazone: Mp 151-153°.

3,4-Dibenzoyl: 3,4-Di-O-benzoyl-D-glycero-tetrolase
C₁₈H₁₆O₆ 328.321
 $[\alpha]_D$ -32.2 (CHCl₃).

Tribenzoyl: 1,3,4-Tri-O-benzoyl-D-glycero-tetrolase
C₂₅H₂₀O₇ 432.429
Mp 118-119°. $[\alpha]_D$ +14.2 (CHCl₃).

Di-Me ketal, 1-phosphate:
C₆H₁₅O₈P 246.153
Mp 160-165° (as dicyclohexylammonium salt monohydrate). $[\alpha]_D$ +13.3 (H₂O).

1,3-Dibenzyl: 1,3-Di-O-benzyl-D-glycero-tetrolase
C₁₈H₂₀O₄ 300.354
Oil. $[\alpha]_D^{20}$ +24 (c, 5.6 in C₆H₆).

(S)-form

L-form

[533-50-6] Produced by dehydrogenation of Erythritol, E-14 by *Acetobacter suboxydans*. $[\alpha]_D^{20}$ +13.3 (c, 2.25 in H₂O).

2-Nitrophenylhydrazone: [35816-30-9]
Mp 152-153°. $[\alpha]_D^{18}$ +45 (EtOH).

Phenylosazone: Mp 165-169°.

Di-Me ketal, 1-phosphate: Mp 165-167° (as dicyclohexylammonium salt monohydrate). $[\alpha]_D$ -13 (c, 2.0 in H₂O).

(±)-form

Prod. of base-cat. oligomerisation of formaldehyde (formose reac.).

Syrup.

Chu, N.J. et al., *J.A.C.S.*, 1961, **83**, 1711 (synth)

Linek, K. et al., *CA*, 1970, **72**, 101058s (synth)

Ando, T. et al., *Bull. Chem. Soc. Jpn.*, 1972, **45**, 2611 (synth)

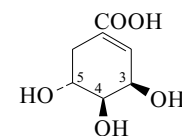
Haas, H.J. et al., *Annalen*, 1974, 342 (synth)

Wróblewski, A.E. et al., *Carbohydr. Res.*, 1984, **131**, 325 (*1,3*-dibenzyl)

Shigemasa, Y. et al., *J. Carbohydr. Chem.*, 1991, **10**, 593-605 (*±*-form, synth, pmr, cmr)

3,4,5-Trihydroxy-1-cyclohexene-1-carboxylic acid, 9CI T-163

[2306-23-2]



(3*R*,4*S*,5*R*)-form

C₇H₁₀O₅ 174.153

Care needed with numbering. Acc. to the system sometimes encountered in the literature, the ring is numbered in the opposite direction to that shown so that 3 becomes 5 and vice-versa.

(3R,4S,5R)-form

Shikimic acid

[138-59-0]

Constit. of many plants, particularly fruits of *Illicium religiosum*.

Key intermediate in biosynth. of phenylalanine, phenolic cinnamates and their metabolites, e.g. flavonoids, lignans, alkaloids

Cryst. (H₂O). Insol. EtOH, Et₂O, CHCl₃. Mp 178-180° Mp 190-191°. $[\alpha]_D^{22}$ -157 (c, 1 in H₂O).

► GW4600000

MeNH₂ salt: Mp 163-164°.

Me ester: [40983-58-2]

C₈H₁₂O₅ 188.18

Needles (AcOH/petrol). Mp 113-114°. $[\alpha]_D$ -130 (c, 1.88, EtOH).

Tri-Ac: [16613-47-1]

C₁₃H₁₆O₈ 300.265

Bp₁ 200-210°.

3-(3-Acetoxyhexadecanoyl), 4,5-di-Ac: [97857-21-1]

C₂₉H₄₆O₁₀ 554.676

Constit. of *Senecio erubescens*. Oil.

3-O-(3,4,5-Trihydroxybenzoyl): 5-O-Galloylshikimic acid

[110082-91-2]

C₁₄H₁₄O₉ 326.259

Isol. from the acorns of *Quercus mongolica*. Amorph. powder + H₂O. $[\alpha]_D^{24}$ -142 (c, 0.5 in Me₂CO).

4-O-(3,4,5-Trihydroxybenzoyl): **4-O-Galloylshikimic acid** [110082-90-1]

Isol. from the acorns of *Quercus mongolica*.

Amorph. powder + H₂O. $[\alpha]_D^{24}$ -138.9 (c, 0.4 in Me₂CO).

5-O-(3,4,5-Trihydroxybenzoyl): **3-O-Galloylshikimic acid**

[95719-51-0]

C₁₄H₁₄O₉ 326.259

Constit. of leaves of *Castanopsis cuspidata* var. *sieboldii*. Powder + 1½H₂O (H₂O). Mp 255°. $[\alpha]_D^{24}$ -111.7 (c, 0.97 in Me₂CO).

5-O-[3,4,5-Trihydroxybenzoyl-(→?)-3,4,5-trihydroxybenzoyl]: **3-O-Digalloylshikimic acid**

[95719-52-1]

C₂₁H₁₈O₁₃ 478.365

Gallotannin constit. of *Castanopsis cuspidata* var. *sieboldii*. Off-white amorph. powder + 2½H₂O. $[\alpha]_D^{23}$ -72.8 (c, 1.1 in Me₂CO). Exact struct. of digalloyl group in cryst. material not detd. Shows ready migration of galloyl residue between *m*- and *p*-OH groups.

5-O-[3,4,5-Trihydroxybenzoyl-(→?)-3,4,5-trihydroxybenzoyl-(→?)-3,4,5-trihydroxybenzoyl]: **3-O-Trigalloylshikimic acid**

[95783-31-6]

C₂₈H₂₂O₁₇ 630.472

Gallotannin isol. from the leaf of *Castanopsis cuspidata* var. *sieboldii*. Off-white amorph. powder + 3H₂O. $[\alpha]_D^{23}$ -47.7 (c, 1.1 in Me₂CO). Full struct. of trigalloyl group not detd. Shows ready migration of galloyl residues between *m*- and *p*-OH groups.

4,5-Bis-O-(3,4,5-trihydroxybenzoyl):

3,4-Di-O-galloylshikimic acid

[95753-51-8]

C₂₁H₁₈O₁₃ 478.365

Constit. of *Castanopsis cuspidata*. Pale brown granules + 3H₂O (H₂O). Mp 268-270°. $[\alpha]_D^{24}$ -183.1 (c, 1 in Me₂CO).

3,5-Bis-O-(3,4,5-trihydroxybenzoyl):

3,5-Di-O-galloylshikimic acid

[95753-52-9]

C₂₁H₁₈O₁₃ 478.365

Constit. of *Castanopsis cuspidata*. Shows anti-HIV activity. Pale brown granules + 2½H₂O (H₂O). Mp 237-238°. $[\alpha]_D^{24}$ -168.3 (c, 1 in Me₂CO). Log P 0.13 (calc).

3,4,5-Tris-(3,4,5-trihydroxybenzoyl):

3,4,5-Tri-O-galloylshikimic acid

[129159-07-5]

C₂₈H₂₂O₁₇ 630.472

Constit. of *Castanopsis hystrix*.

3-O-(4-Hydroxycinnamoyl) (E-): **3-O-p-Coumaroylshikimic acid**

C₁₆H₁₆O₇ 320.298

Constit. of *Phegopteris connectilis*. Amorph. powder. $[\alpha]_D^{20}$ -129.8 (c, 0.64 in MeOH). λ_{max} 310 (MeOH).

3-O-(3,4-Dihydroxycinnamoyl): See 3-O-Caffeoylshikimic acid in *The Combined Chemical Dictionary*.

4-O-(3,4-Dihydroxycinnamoyl): See 4-O-Caffeoylshikimic acid in *The Combined Chemical Dictionary*.

5-O-(3,4-Dihydroxycinnamoyl): See 5-O-Caffeoylshikimic acid in *The Combined Chemical Dictionary*.

(3R,4R,5R)-form

Epishikimic acid

[21967-35-1]

Hygroscopic solid. Mp 60-64°. $[\alpha]_D^{22}$ -93 (c, 0.9 in H₂O).

(3S,4S,5R)-form

(-)-3-*Epishikimic acid*

[171963-37-4]

Constit. of *Sequoiadendron giganteum*.

Cryst. (MeOH).

Mp 181-183° Mp 164-165°. $[\alpha]_D$ -31 (c, 1 in H₂O).

Me ester: [171963-38-5]

Needles. Mp 133°. $[\alpha]_D^{20}$ -14 (c, 2 in MeOH).

(3RS,4SR,5RS)-form

(±)-*Shikimic acid*

Mp 191-192° (190°).

Tri-Ac, Me ester:

C₁₄H₁₈O₈ 314.291

Oil. Bp_{0.01} 150°.

(3RS,4RS,5RS)-form

(±)-*Epishikimic acid*

[16661-31-7]

Mp 200-201°.

(3RS,4SR,5SR)-form

(±)-*cis,cis-form*.

(±)-5-*Epishikimic acid*

No phys. props. reported.

[10191-00-1]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 525B (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 815A (nmr)

Fischer, H.O.L. et al., *Helv. Chim. Acta*, 1937, 20, 705 (config)

Richardson, A. et al., *Nature (London)*, 1955, 175, 43 (isol)

McCrindle, R. et al., *J.C.S.*, 1960, 1560 (synth)

Hall, L.D. et al., *J.O.C.*, 1964, 29, 297 (pmr)

Bohm, B.A. et al., *Chem. Rev.*, 1965, 65, 435 (rev)

Grewe, R. et al., *Chem. Ber.*, 1967, 100, 2546 (synth)

Cleophax, J. et al., *Bull. Soc. Chim. Fr.*, 1973, 2992 (ester)

Snyder, C.D. et al., *J.A.C.S.*, 1973, 95, 7821 (synth, ms, uv)

Haslam, E. et al., *The Shikimate Pathway*, Butterworths, (London), 1974, (rev)

Fukuoka, M. et al., *Chem. Pharm. Bull.*, 1982, 30, 3219 (5-Caffeoylshikimic acid)

Coblens, K.E. et al., *J.O.C.*, 1982, 47, 5041 (synth)

Fleet, G.W.J. et al., *Chem. Comm.*, 1983, 849 (synth)

Rajapaksa, D. et al., *Can. J. Chem.*, 1984, 62, 826 (5-*Epishikimic acid*)

Mirza, S. et al., *Helv. Chim. Acta*, 1984, 67, 1562 (synth)

Campbell, M.M. et al., *Tetrahedron*, 1984, 40, 2461 (synth)

Nonaka, G. et al., *Chem. Pharm. Bull.*, 1985, 33, 96 (gallates)

Bohlmann, F. et al., *Phytochemistry*, 1985, 24, 1249-1261 (acetoxylhexadecanoyl di-Ac)

IARC Monog., 1986, 40, 51; *Suppl.* 7, 71 (rev, tox)

Ogawa, S. et al., *Carbohydr. Res.*, 1987, 164, 499 (synth)

Pawlak, J.L. et al., *J.O.C.*, 1987, 52, 1765 (synth)

Ishimaru, K. et al., *Phytochemistry*, 1987, 26, 1501 (gallates)

Abell, C. et al., *Acta Cryst. C*, 1988, 44, 1204 (cryst struct, bibl)

Birch, A.J. et al., *J.O.C.*, 1988, 53, 278 (synth, pmr)

Herbert, R.B. et al., *The Biosynthesis of Secondary Metabolites*, 2nd edn., Chapman and Hall, 1989, (book)

Nonaka, G. et al., *J. Nat. Prod.*, 1990, 53, 587 (gallate, activity)

Haslam, E. et al., *Shikimic Acid. Metabolism and Metabolites*, Wiley, 1993, (book)

Campbell, M.M. et al., *Synthesis*, 1993, 179 (rev, synth, biosynth)

Geiger, H. et al., *Phytochemistry*, 1995, 40, 1705-1707 (3-epimer, isol, nmr, Me ester)

Brettell, R. et al., *Tetrahedron*, 1996, 52, 10547-10556 (3-epimer, synth, nmr, Me ester)

Jiang, S. et al., *J.C.S. Perkin 1*, 1997, 1805-1814 (synth)

Jiang, S. et al., *Tetrahedron*, 1998, 54, 4697-4753 (Shikimic acid, rev, synth)

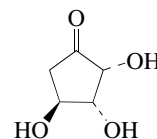
Adam, K.-P. et al., *Phytochemistry*, 1999, 52, 929-934 (3-Coumaroylshikimic acid)

Takeuchi, M. et al., *Synthesis*, 2000, 1372-1379 (Me ester)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, SCE000

2,3,4-Trihydroxycyclopentanone

T-164



C₅H₈O₄ 132.116

(2R,3R,4S)-form

2,3-Benzylidene: Tetrahydro-6-hydroxy-2-phenyl-4H-cyclopenta-1,3-dioxol-4-one, 9CI

[107914-59-0]

C₁₂H₁₂O₄ 220.224

Oil. $[\alpha]_D^{20}$ +86.8 (c, 0.4 in CHCl₃).

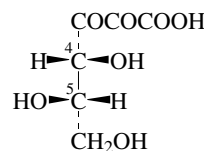
Klemer, A. et al., *Annalen*, 1987, 683-686 (3,4-benzylidene, synth, pmr, ms)

4,5,6-Trihydroxy-2,3-dioxohexanoic acid

T-165

2,3-Hexodiolosonic acid, 9CI. 2,3-Diketogulonic acid

[3409-57-2]



(4R,5S)-form

C₆H₈O₇ 192.125

(4R,5S)-form

L-threo-form

[3445-22-5] Formed by hydrol. of

Cryst. (MeOH). Mp 140°. $[\alpha]_D^{23}$ +32

(1h) → 0 (5d).

Ca salt: $[\alpha]_D^{21}$ -8.3 (c, 1 in 0.1M HCl).
Ba salt: $[\alpha]_D^{22}$ -6.8 (c, 1 in 0.1M HCl).
 2,3-Bis(2,4-dinitrophenylhydrazine):
 [33012-61-2]
 Mp 282° (dec.).

γ -Lactone: See Dehydroascorbic acid, D-21

(4S,5R)-form

D-threo-form

γ -Lactone: See Dehydroascorbic acid, D-21

(4S,5S)-form

L-erythro-form

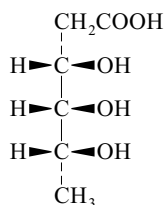
[15573-96-3]
 $[\alpha]_D^{25}$ -23.5 \rightarrow -32 (c, 1.9 in H₂O) (as Na salt).

Erlbach, H. *et al.*, *Ber.*, 1934, **67**, 555-563; 1750-1762 (*synth*)

Kenyon, J. *et al.*, *J.C.S.*, 1948, 158-161 (*synth, bibl*)

Fujimura, K. *et al.*, *CA*, 1957, **51**, 5145d (*synth*)
 Zuluaga, J. *et al.*, *Z. Naturforsch.*, A, 1978, **33**, 1184-1189 (*synth, uv*)

Otsuka, M. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 531-533 (*synth, uv, ir, pmr, ms*)

3,4,5-Trihydroxyhexanoic acid T-166
2,6-Dideoxyhexonic acid

C₆H₁₂O₅ 164.158

(3S,4R,5R)-form

D-ribo-form. *Digitoxonic acid*. *Digitoxic acid*

[24160-48-3]

1,4-Lactone: 2,6-Dideoxy-*D*-ribo-hexono-1,4-lactone

[24160-49-4]
 C₆H₁₀O₄ 146.143
 $[\alpha]_D^{25}$ +50 (EtOH).

1,4-Lactone, di-Ac:

C₁₀H₁₄O₆ 230.217
 Mp 112-113°. $[\alpha]_D^{20}$ -17.4 (c, 2 in CHCl₃).

1,4-Lactone, phenylhydrazide:

Needles (MeOH/Et₂O). Mp 123° (120-121°).

O³-Me: 2,6-Dideoxy-3-O-methyl-ribo-hexonic acid. *Ribonic acid*

C₇H₁₄O₅ 178.185
 Mp 152-154° (as hydrazide). $[\alpha]_D^{24}$ 0 (c, 0.3 in MeOH) (hydrazide).

O³-Me, 4-O-[6-deoxy-3-O-methyl- β -D-allopyranosyl-(1 \rightarrow 4)- β -D-oleandropyranosyl-(1 \rightarrow 4)- β -D-cymaropyranoside]:
 C₂₈H₅₀O₁₅ 626.694

Constit. of *Hoya carnosa*. Amorph. solid (as Na salt). $[\alpha]_D^{25}$ -1.2 (c, 1.4 in MeOH) (Na salt).

O³-Me, 1,4-lactone: 2,6-Dideoxy-3-O-methyl-*D*-ribo-hexono-1,4-lactone
 C₇H₁₂O₄ 160.169

Bp_{0.2} 110-111°. $[\alpha]_D^{25}$ -25 (H₂O).

O³-Me, 1,5-lactone: 2,6-Dideoxy-3-O-methyl-*D*-ribo-hexono-1,5-lactone
 C₇H₁₂O₄ 160.169

Bp_{0.2} 88-90°. $[\alpha]_D^{27}$ +30 (H₂O).

O³-Me, 1,5-lactone, 4-O-[6-deoxy-3-O-methyl- β -D-allopyranosyl-(1 \rightarrow 4)- β -D-cymaropyranosyl-(1 \rightarrow 4)- β -D-cymaropyranoside]: [257625-56-2]
 C₂₈H₄₈O₁₄ 608.679

Constit. of *Hoya carnosa*. Needles.

Mp 191-193°. $[\alpha]_D^{25}$ +15.8 (c, 0.4 in MeOH).

O³-Me, 1,5-lactone, 4-O-[6-deoxy-3-O-methyl- β -D-allopyranosyl-(1 \rightarrow 4)- β -D-oleandropyranosyl-(1 \rightarrow 4)- β -D-cymaropyranoside]: [257625-57-3]
 C₂₈H₄₈O₁₄ 608.679

Constit. of *Hoya carnosa*. Needles.

Mp 193-195°. $[\alpha]_D^{25}$ +2.3 (c, 0.6 in MeOH).

O³, O⁴-Di-Me, 1,5-lactone:

C₈H₁₄O₄ 174.196
 Syrup. $[\alpha]_D$ +48 (CHCl₃).

O³, O⁵-Di-Me, 1,4-lactone:

C₈H₁₄O₄ 174.196
 $[\alpha]_D$ -58 (CHCl₃).

[71698-58-3]

Ederfield, R.C. *et al.*, *J. Biol. Chem.*, 1935, **111**, 527

Allegeir, H. *et al.*, *Helv. Chim. Acta*, 1968, **51**, 668

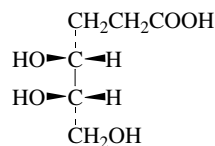
Domschke, W. *et al.*, *CA*, 1970, **72**, 41248s

Ollis, W.D. *et al.*, *Tetrahedron*, 1979, **35**, 105

Bock, K. *et al.*, *Acta Chem. Scand.*, Ser. B, 1986, **40**, 740 (*synth, cmr, pmr*)

Trivedi, R. *et al.*, *Phytochemistry*, 1989, **28**, 1211; 1990, **29**, 3967 (*synth*)

Yoshikawa, K. *et al.*, *J. Nat. Prod.*, 2000, **63**, 146-148 (*Hoya carnosa glycosides*)

4,5,6-Trihydroxyhexanoic acid T-167
2,3-Dideoxyhexonic acid, 9CI

(4R,5S)-form

C₆H₁₂O₅ 164.158

(4R,5S)-form

L-erythro-form

1,4-Lactone: 2,3-Dideoxy-*L*-erythro-1,4-hexonolactone
 [137625-43-5]

C₆H₁₀O₄ 146.143

Oil. $[\alpha]_D$ -5.36 (c, 5.19 in MeOH).

1,4-Lactone, 6-benzyl: 6-O-Benzyl-2,3-dideoxy-1,4-hexonolactone
 [184873-67-4]

C₁₃H₁₆O₄ 236.267

Oil. $[\alpha]_D$ -11.96 (c, 3.27 in CHCl₃).

(4S,5R)-form

D-erythro-form

5,6-Isopropylidene, *Me ester*: Methyl 2,3-dideoxy-5,6-O-isopropylidene-*D*-erythro-hexonate

C₁₀H₁₈O₅ 218.249

$[\alpha]_D$ +9.2 (+8.9) (CHCl₃).

5,6-Isopropylidene, 4-tosyl, *Me ester*:

Methyl 2,3-dideoxy-5,6-O-isopropylidene-4-O-tosyl-*D*-erythro-hexonate
 C₁₇H₂₄O₇S 372.438

Cryst. (2-propanol). Mp 62-64.5°. $[\alpha]_D$ -16.5.

5,6-Isopropylidene, 4-(4-nitrobenzoyl), *Me ester*: [127530-09-0]

Cryst. (MeOH aq.). Mp 76-77.5°. $[\alpha]_D^{20}$ -11.9 (c, 1 in CHCl₃).

(4S,5S)-form

L-threo-form

1,4-Lactone: 2,3-Dideoxy-*L*-threo-1,4-hexonolactone

[56405-80-2]

C₆H₁₀O₄ 146.143

Oil. $[\alpha]_D^{25}$ +61.8 (c, 2.0 in MeOH).

1,4-Lactone, 5,6-di-Ac: 5,6-Di-O-acetyl-2,3-dideoxy-*L*-threo-1,4-hexonolactone

[23791-01-7]

C₁₀H₁₄O₆ 230.217

Oil. $[\alpha]_D$ -2.83 (c, 2.30 in CHCl₃).

1,4-Lactone, 6-benzyl: [184873-70-9]

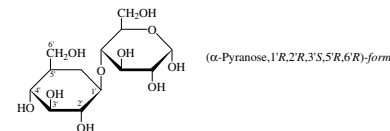
Solid. Mp 103°. $[\alpha]_D$ +45.96 (c, 1.88 in CHCl₃).

Knollman, R. *et al.*, *Chem. Ber.*, 1975, **108**, 2021 (*synth, ir, pmr, ms*)

Regeling, H. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1989, **108**, 330

Regeling, H. *et al.*, *Carbohydr. Res.*, 1991, **216**, 79 (*synth, cmr*)

Lee, Jeewoo *et al.*, *J. Med. Chem.*, 1996, **39**, 4912-4919 (*synth, ir, pmr, cmr*)

4-O-[2,3,4-Trihydroxy-5-(hydroxymethyl)cyclohexyl]glucose T-168
[105017-70-7]

C₁₃H₂₄O₁₀ 340.327

(α-D-Pyranose, 1'R,2'R,3'S,4'R,6'R)-form

5a-Carba- β -D-glucopyranosyl-(1 \rightarrow 4)-*D*-glucopyranose. 5a'-Carba- α -cellobiose
 [104976-67-2]

$[\alpha]_D^{20}$ +27.1 (c, 1.43 in H₂O). Mixture of α - and β -anomers.

Octa-Ac: [104976-68-3]

C₂₉H₄₀O₁₈ 676.624

Syrup. $[\alpha]_D^{19}$ +47 (c, 0.65 in CHCl₃).

Contains about 15% β -anomer.

(α-D-Pyranose, 1'R,2'S,3'S,4'R,6'R)-form

5a-Carba- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranose

Octa-Ac:

Syrup. $[\alpha]_D^{21}$ +46 (c, 0.060 in CHCl₃).

Contains about 15% β -anomer.

(α-D-Pyranose, 1'S,2'R,3'S,4'R,6'R)-form

5a-Carba- α -D-glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranose

Octa-Ac:

Solid. $[\alpha]_D^{19}$ +77 (c, 0.55 in CHCl₃).

Contains approx. 25% β -anomer.

*Me glycoside: Methyl 5a'-carba- α -malto-
side*
[152203-02-6]
 $C_{14}H_{26}O_{10}$ 354.353
Hygroscopic syrup. $[\alpha]_D^{23} +127$ (c, 0.2 in MeOH).

(β -D-Pyranose, 1'R,2'R,3'S,4'S,6'R)-form
5a-Carba- β -D-galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranose

Me glycoside: Methyl 5a'-carba- β -lactoside
[186824-51-1]
 $C_{14}H_{26}O_{10}$ 354.353
Syrup. $[\alpha]_D^{28} -38$ (c, 0.3 in H_2O).
Incorrectly indexed by CAS as α -D-glucopyranose form.

Paulsen, H. *et al.*, *Annalen*, 1987, 141-152
(5a'-carbacebellobiose)

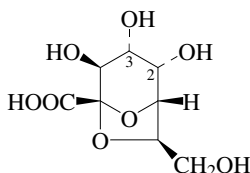
Tsunoda, H. *et al.*, *Annalen*, 1996, 159-165
(methyl 5a'-carba- α -maltoside)

Ogawa, S. *et al.*, *Eur. J. Org. Chem.*, 1998, 1099-1109 (methyl 5a'-carba- β -lactoside)

Ogawa, S. *et al.*, *Synthesis*, 2001, 312-316
(octa-Ac derivs)

2,3,4-Trihydroxy-7-hydroxy- T-169
methyl-6,8-dioxabicyclo[3.2.1]octane-5-carboxylic acid

2,7-Anhydro-2-octulopyranosuronic acid



$C_8H_{12}O_8$ 236.178

(1R,2S,3R,4S,5S,7R)-form

D-glycero- β -D-galacto-form

3-O-(3,4-Dihydroxy-E-cinnamoyl):

$C_{17}H_{18}O_{11}$ 398.323

Constit. of the roots of *Smilax*
sonchifolius (yacon). Amorph. solid.

2,3-Bis-O-(3,4-dihydroxy-E-cinnamoyl):

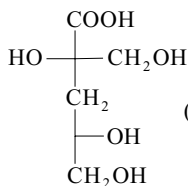
$C_{26}H_{24}O_{14}$ 560.467

Constit. of the roots of *Smilax*
sonchifolius (yacon). Amorph. solid.
 λ_{max} 219 (ϵ 23300); 248 (ϵ 16000); 332
(ϵ 32100) (EtOH).

Takenaka, M. *et al.*, *Tet. Lett.*, 2003, 44, 999-1002 (isol, cd, uv, pmr, cmr)

2,4,5-Trihydroxy-2-(hydroxy- T-170
methyl)pentanoic acid

3-Deoxy-2-C-hydroxymethylpentonic acid,
9CI



(2R,4S)-form

$C_6H_{12}O_6$ 180.157

(2R,4S)-form

D-threo-form. β -D-Glucosaccharinic acid

[1518-56-5]

Formed by alkaline rearr. of reducing
sugars.

Ca salt: $[\alpha]_D^{20} +3$ (c, 1.0 in H_2O).

Brucine salt:

Cryst. (EtOH). Mp 190-195° dec. $[\alpha]_D^{20}$
-20 (c, 1.0 in H_2O).

1,4-Lactone: 3-Deoxy-2-C-hydroxymethyl-

D-threo-pentono-1,4-lactone

$C_6H_{10}O_5$ 162.142

$[\alpha]_D^{20} +28$ (H_2O).

1,4-Lactone, tribenzoyl:

$C_{27}H_{22}O_8$ 474.466

Cryst. (MeOH). Mp 113.5-114.5°. $[\alpha]_D^{22}$
+42.5 (H_2O).

(2S,4R)-form

D-erythro-form. α -D-Glucosaccharinic
acid

[1518-54-3] Formed by alkaline rearr. of
reducing sugars. A principal alkaline
degradn. prod. of cellulose.

Ca salt: [16835-77-1]

$[\alpha]_D^{20} -2$ (c, 1.0 in H_2O).

Brucine salt: Mp 159-161°. $[\alpha]_D^{21} -25$ (c, 1.0
in H_2O).

2,2',4,5-Tetra-Ac: 2,2',4,5-Tetra-O-acetyl-
3-deoxy-2-C-hydroxymethyl-*D*-erythro-
pentonic acid

$C_{14}H_{20}O_{10}$ 348.306

Syrup. $[\alpha]_D^{25} -11.7$ (c, 2.5 in $CHCl_3$).

1,4-Lactone: 3-Deoxy-2-C-hydroxymethyl-
D-erythro-pentono-1,4-lactone. α -Isosac-
charino-1,4-lactone. α -Isosaccharin

[7397-89-9]

$C_6H_{10}O_5$ 162.142

Cryst. (EtOAc). Mp 94-95°. $[\alpha]_D^{22} +62.7$
(c, 0.9 in H_2O).

1,4-Lactone, tribenzoyl: Mp 121-122°. $[\alpha]_D$
+46.6 (c, 1.0 in $CHCl_3$).

1,4-Lactone, ditosyl: 3-Deoxy-2-C-hydro-
xymethyl-2',5-di-O-tosyl-*D*-erythro-
pentono-1,4-lactone

[32976-18-4]

$C_{20}H_{22}O_9S_2$ 470.52

Cryst. ($CHCl_3$ /petrol). Mp 109-110°.

$[\alpha]_D^{25} +36$ (c, 1.0 in $CHCl_3$).

1,4-Lactone, 2,1'-isopropylidene: 3-Deoxy-
2-C-hydroxymethyl-2,1'-O-isopropyl-
idene-*D*-erythro-pentanolactone

[78687-63-5]

$C_9H_{14}O_5$ 202.207

Cryst. (Et_2O /hexane). Mp 56°. $[\alpha]_D$ +43
(c, 1 in $CHCl_3$).

1,4-Lactone, 1',2-isopropylidene, 5-tosyl:
3-Deoxy-2-C-(hydroxymethyl)-2,2'-O-
isopropylidene-5-O-tosyl-*D*-erythro-1,4-
pentanolactone

$C_{16}H_{20}O_7S$ 356.396

Cryst. (Et_2O/CH_2Cl_2). Mp 110°. $[\alpha]_D$
+57 (c, 1 in $CHCl_3$).

Corbett, W.M. *et al.*, *J.C.S.*, 1954, 1789

(*D*-threo- and *D*-erythro-forms, isol)

Kenner, J. *et al.*, *J.C.S.*, 1955, 1810 (*D*-threo-
and *D*-erythro-forms, synth, *D*-erythro-lactone)

Whistler, R.L. *et al.*, *J.O.C.*, 1961, 26, 2886

(synth)

Whistler, R.L. *et al.*, *Methods Carbohydr.*

Chem., 1963, 2, 477 (lactone tribenzoyl)

Feast, A.A.J. *et al.*, *Acta Chem. Scand.*, 1965,
19, 1127 (*D*-threo-lactone tribenzoyl,

D-erythro-lactone tribenzoyl, *D*-threo- and
D-erythro-lactones)

v. Glehn, M. *et al.*, *Chem. Comm.*, 1967, 291

(*D*-erythro-form, cryst struct)

Strobach, D.R. *et al.*, *Carbohydr. Res.*, 1971, 17,
457 (*D*-erythro-ditosyl)

Glittenberg, D. *et al.*, *Chem. Ber.*, 1976, 109,
3115 (*D*-erythro-tetra-Ac)

Gakhokidz, R.A. *et al.*, *Russ. Chem. Rev. (Engl.*
Transl.), 1980, 49, 222 (rev)

Hanessian, S. *et al.*, *Tet. Lett.*, 1981, 22, 1005

(lactone isopropylidene)

Bennani, F. *et al.*, *Tetrahedron*, 1984, 40, 4669

(synth, pmr, cmr, ms)

Florent, J.C. *et al.*, *J.O.C.*, 1987, 52, 1051

(lactone isopropylidene tosyl)

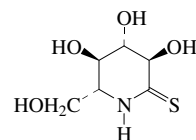
Alén, R. *et al.*, *Acta Chem. Scand.*, 1995, 49,

536 (cryst struct, lactone)

Kim, J. *et al.*, *Carbohydr. Res.*, 2003, 338, 705-
710 (1,4-lactone isopropylidene)

3,4,5-Trihydroxy-6-(hydroxy- T-171
methyl)-2-piperidinethione, 9CI

5-Amino-5-deoxyhexonothiono-1,5-lactam.
Hexonothiono-1,5-lactam



(3R,4S,5R,6R)-form

$C_6H_{11}NO_4S$ 193.223

(3R,4S,5R,6R)-form

D-Glucosithiono-1,5-lactam

[128732-72-9]

$[\alpha]_D +31$ (c, 0.72 in MeOH).

O-Tetrazobenzyl: 2,3,4,6-Tetra-O-benzyl-*D*-
glucosithiono-1,5-lactam

[153996-70-4]

$C_{34}H_{35}NO_4S$ 553.721

Mp 85°. $[\alpha]_D^{25} +136$ (c, 0.5 in $CHCl_3$).

(3R,4S,5S,6R)-form

D-Galactonothiono-1,5-lactam

[153433-97-7]

$[\alpha]_D +85$ (c, 1.33 in MeOH).

(3S,4S,5R,6R)-form

D-Mannonothiono-1,5-lactam

[149674-54-4]

$[\alpha]_D +53.3$ (c, 0.69 in MeOH).

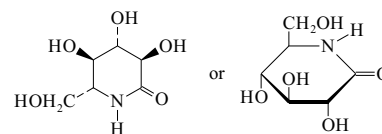
Papandreou, G. *et al.*, *J.A.C.S.*, 1993, 115,

11682-11690 (synth, ir, pmr, cmr, ms)

Granier, T. *et al.*, *Helv. Chim. Acta*, 1997, 80,
979-987 (synth, glucos)

3,4,5-Trihydroxy-6-(hydroxy- T-172
methyl)-2-piperidinone, 9CI

5-Amino-5-deoxyhexono-1,5-lactam.
Hexono-1,5-lactam



(3R,4S,5R,6R)-form

D-gluco-form

$C_6H_{11}NO_5$ 177.157

(3R,4S,5R,6R)-form

D-Glucono-1,5-lactam. *D*-Nojirilactam.
Nojirimycin δ -lactam
 [14904-83-7]
 Powder (EtOH). Mp 204-205° (195-198°). $[\alpha]_D^{25} +63.4$ (c, 0.51 in H₂O) (+57).
O-Tetra benzyl: 2,3,4,6-Tetra-*O*-benzyl-*D*-glucono-1,5-lactam
 [77174-08-4]
 C₃₄H₃₅NO₅ 537.654
 Needles (MeOH). Mp 102-103°. $[\alpha]_D^{25} +105.5$ (c, 0.51 in CHCl₃).

(3R,4S,5S,6R)-form

D-Galactono-1,5-lactam. *Galactostatin* lactam
 [108147-55-3]
 Needles (EtOH aq.). Mp 204-206° (192-195°). $[\alpha]_D^{25} +122$ (c, 1 in H₂O). $[\alpha]_D^{25} +160$ (c, 0.26 in H₂O).
O-Tetra benzyl: 2,3,4,6-Tetra-*O*-benzyl-*D*-galactono-1,5-lactam
 [158349-25-8]
 C₃₄H₃₅NO₅ 537.654
 Yellow syrup. $[\alpha]_D^{25} +68$ (c, 0.38 in CHCl₃).

(3S,4S,5R,6R)-form

D-Mannono-1,5-lactam
 [62362-63-4] Emulsin inhibitor.
 Cryst. (EtOH). Mp 169-170°. $[\alpha]_D^{25} +1.6$ (c, 0.38 in H₂O).
O-Tetra benzyl: 2,3,4,6-Tetra-*O*-benzyl-*D*-mannono-1,5-lactam
 [158349-24-7]
 C₃₄H₃₅NO₅ 537.654
 Yellow syrup. $[\alpha]_D^{25} -73.2$ (c, 0.40 in CHCl₃). Not obt. pure of its 5-epimer.

(3R,4R,5S,6S)-form

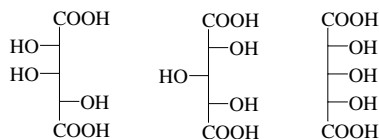
L-Mannono-1,5-lactam
 [117821-09-7]
 Mp 165-170°. $[\alpha]_D^{20} -2$ (c, 1.0 in H₂O).

(3S,4R,5S,6R)-form

(+)-5-epi-*Nojirimycin* δ -lactam. 5-Amino-5-deoxy-*L*-idionic- δ -lactam. *L*-Idono-1,5-lactam
 [223608-64-8]
 $[\alpha]_D^{27} +23$ (c, 0.86 in H₂O) (85% ee).
 Miyake, Y. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 661-666 (synth, galacto)
 Shing, T.K.M. *et al.*, *Chem. Comm.*, 1988, 1221 (synth, manno)
 Fleet, G.W.J. *et al.*, *Tetrahedron*, 1989, **45**, 319-326 (synth, pmr, manno)
 Fleet, G.W.J. *et al.*, *Tet. Lett.*, 1990, **31**, 409-412 (synth, gluco)
 Hoos, R. *et al.*, *Helv. Chim. Acta*, 1993, **76**, 1802-1807 (synth, ir, pmr, gluco)
 Overkleef, H.S. *et al.*, *Tetrahedron*, 1994, **50**, 4215-4224 (synth, pmr, cmr)
 Granier, T. *et al.*, *Helv. Chim. Acta*, 1997, **80**, 979-987 (synth, gluco)
 Kang, J. *et al.*, *Tetrahedron: Asymmetry*, 1999, **10**, 657-660 (synth, idono, pmr, cmr)
 Knight, J.G. *et al.*, *Tetrahedron*, 2003, **59**, 281-286 (manno, synth)

2,3,4-Trihydroxypentanedioic acid, 9CI

Trihydroxyglutaric acid
 [488-31-3]



D-Arabinaric acid

Xylaric acid

Ribaric acid

C₅H₈O₇ 180.114

One (\pm)-form and two *meso*-forms exist.

***D*-form**

D-Arabinaric acid, 9CI. *D*-Lyxaric acid
 [20869-04-9]
 Plates (H₂O); cryst. (Me₂CO). V. sol. H₂O; sol. EtOH. Mp 128°. $[\alpha]_D^{20} +22.2$ (c, 5.1 in H₂O).

Tri-Me ether, *di*-Me ester:

C₁₀H₁₈O₇ 250.248
 Bp₁₅ 143° approx. $[\alpha]_D^{20} -39$ (c, 0.4 in MeOH). $[\alpha]_D^{20} -42.5$.

Tri-Me ether, *diamide*:

C₈H₁₆N₂O₅ 220.225
 Mp 232-233° dec. $[\alpha]_D^{20} -49$ (H₂O).

***L*-form**

L-Arabinaric acid, 9CI. *L*-Lyxaric acid
 [608-54-8]
 Plates (EtOH). Mp 127°. $[\alpha]_D^{18} -23.3$ (H₂O). p*K*_a 2.88.

2,3,4-*Tri*-Me: 2,3,4-*Tri*-*O*-methyl-*L*-arabinaric acid
 [362513-01-7]
 C₈H₁₄O₇ 222.194
 Syrup, cryst. on standing. Mp 88-89°. $[\alpha]_D^{20} +32$ (c, 1 in CH₂Cl₂).

Tri-Me ether, *di*-Me ester: [60192-32-7]

Syrup. Sol. H₂O. Bp₁₈ 143° Bp_{0.005} 74-76°. $[\alpha]_D^{20} +45$ (H₂O).

Tri-Me ether, *diamide*: [362513-02-8]

Prisms (MeOH). Mp 232-233°. $[\alpha]_D^{20} +50$ (H₂O).

(\pm)-form

DL-Arabinaric acid, 9CI.

DL-Lyxaric acid

[6703-05-5]
 Cryst. (Me₂CO). V. sol. H₂O, EtOH.
 Mp 154.5° dec. p*K*_{a1} 3.08; p*K*_{a2} 4.21 (20°).

***meso* (xylo)-form**

Xylaric acid, 9CI. xylo-Saccharic acid.

Xylosaccharic acid

[10158-64-2]
 Cryst. (EtOAc or Et₂O). V. sol. H₂O, hot EtOH. Mp 152° dec. p*K*_a 3.18.
 Evap. of aq. soln. gives lactone.

Diamide: Xylaramide†

[5726-63-1]
 C₅H₁₀N₂O₅ 178.144
 Mp 188°.

Tri-Ac:

C₁₁H₁₄O₁₀ 306.226
 Cryst. (Et₂O/petrol). Mp 154°.

T-173

Tri-Ac, *diamide*: *Tri*-*O*-acetylxlaramide
 [85069-93-8]
 C₁₁H₁₆N₂O₈ 304.256
 Cryst. (EtOH aq.). Mp 206-207°.

Tri-Ac, *diamide*, *di*-N-Ac: N,N'-Diacetyltri-*O*-acetylxlaramide

[85069-94-9]
 C₁₅H₂₀N₂O₁₀ 388.33
 Cryst. (EtOAc/hexane). Mp 164-165°.

Tri-Ac, *anhydride*: [63181-58-8]

C₁₁H₁₂O₆ 288.21
 Cryst. (EtOAc). Mp 146-147°.

1,2-*Di*-Me ether, *di*-Me ester:

C₉H₁₆O₇ 236.221
 Oil. Bp₁₂ 132°.

2,3,4-*Tri*-Me: 2,3,4-*Tri*-*O*-methylxylaric acid

[362513-10-8]
 C₈H₁₄O₇ 222.194
 Syrup.

Tri-Me ether, *diamide*: 2,3,4-*Tri*-*O*-methylxlaramide

[362513-11-9]
 C₈H₁₆N₂O₅ 220.225
 Mp 195-198°.

Di-Et ester: [115175-38-7]

C₉H₁₆O₇ 236.221
 Cryst. Mp 69-70°.

***meso* (ribo)-form**

Ribaric acid, 9CI, 8CI
 [33012-62-3]
 Syrup.

Diamide: Ribaramide

[55726-62-0]
 Mp 155° dec. (149°).

Bis (2-phenylhydrazide): Mp 215-216°.

1,4-Lactone:

C₅H₆O₆ 162.099
 Mp 185°.

1,4-Lactone, *Me* ester: [85069-95-0]

C₆H₈O₆ 176.126
 Cryst. (EtOAc/hexane). Mp 112-113° dec.

Tri-Ac, *diamide*: *Tri*-*O*-acetylribaramide

[85069-96-1]
 C₁₁H₁₆N₂O₈ 304.256
 Cryst. (EtOH). Mp 191-192°.

Tri-Ac, *diamide*, N,N'-*di*-Ac: N,N'-Diacetyltri-*O*-acetylribaramide

[85069-97-2]
 C₁₅H₂₀N₂O₁₀ 388.33
 Cryst. (Me₂CO/hexane). Mp 184-185°.

[6703-05-5]

Fischer, E. *et al.*, *Ber.*, 1896, **29**, 1961 (synth, abs config)

Ruff, O. *et al.*, *Ber.*, 1899, **32**, 550 (synth)

Hirst, E.L. *et al.*, *J.C.S.*, 1925, 358; 1928, 3147 (synth)

Wolfson, M.L. *et al.*, *J.A.C.S.*, 1953, **75**, 4318 (synth)

Gall, R.E. *et al.*, *Aust. J. Chem.*, 1975, **28**, 687 (synth, pmr, ir)

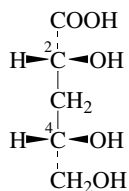
Kochetkov, N. *et al.*, *Izv. Akad. Nauk SSSR, Ser. Khim.*, 1976, 635; *Bull. Acad. Sci. USSR, Div. Chem. Sci. (Engl. Transl.)*, 1976, 619 (*L*-form *tri*-Me ether *di*-Me ester)

Kiely, D.E. *et al.*, *J. Carbohydr. Chem.*, 1982, **1**, 191-211 (xylaramide derivs, ribaramide derivs)

Hoagland, P.D. *et al.*, *J. Carbohydr. Chem.*, 1987, **6**, 495-499 (diethyl xylarate)

Garcia-Martin, M.G. *et al.*, *Carbohydr. Res.*, 2001, **333**, 95-103 (2,3,4-trimethyl-L-arabinaric acid, 2,3,4-trimethylxylaric acid)

2,4,5-Trihydroxypentanoic acid T-174
3-Deoxypentonic acid, 9CI
[1518-60-1]



C₅H₁₀O₅ 150.131

(2R,4S)-form

D-erythro-form
[21569-62-0]

4,5-Isopropylidene, *Me* ester: [134455-80-4]
C₉H₁₆O₅ 204.222
Bp_{0.05} 75° (bath).

1,4-Lactone: See 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone, D-673

(2S,4R)-form

L-erythro-form

Phenylhydrazide: Mp 149°. [α]_D¹⁸ +4.5 (c, 0.4 in EtOH).

1,4-Lactone: See 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone, D-673

(2S,4S)-form

D-threo-form

[21569-63-1]
[1518-60-1]

Phenylhydrazide:

Cryst. (EtOH). Mp 137-138°. [α]_D²¹ -35.5 (c, 0.31 in EtOH).

4,5-Isopropylidene, *Me* ester: [134455-79-1]
Bp_{0.1} 71-78°. [α]_D +3 (c, 1.0 in MeOH).

4,5-Isopropylidene, 2-*Ac*, *Me* ester: [134455-88-2]

C₁₁H₁₈O₆ 246.26

Bp_{0.1} 71-78°. [α]_D +3 (c, 1 in MeOH).

1,4-Lactone: See 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone, D-673

[29625-78-3, 97551-63-8, 102717-30-6, 132454-67-2, 132454-68-3]

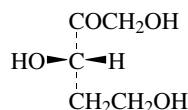
Mukherjee, S. *et al.*, *J.C.S.*, 1947, 969-973 (synth)

Corbett, W.M. *et al.*, *J.C.S.*, 1957, 11-13 (phenylhydrazide)

Okabe, M. *et al.*, *J.O.C.*, 1991, **56**, 4392-4397 (4,5-isopropylidene *Me* ester, synth, ir, pmr)

1,3,5-Trihydroxy-2-pentanone, 9CI T-175

4-Deoxy-2-pentulose



C₅H₁₀O₄ 134.132

(S)-form

L-glycero-form

[64307-91-1]

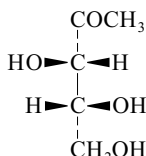
Prod. from D-glucitol using *Gluconobacter oxydans*.

Syrup. [α]_D²⁵ +10.9 → +12.8 (c, 1.0 in H₂O).

Phenylosazone: Mp 136-138°. [α]_D²⁵ +30 → +5 (c, 1.0 in MeOH).

Linek, K. *et al.*, *Carbohydr. Res.*, 1979, **76**, 290-294 (synth)

3,4,5-Trihydroxy-2-pentanone T-176
1-Deoxy-2-pentulose, 9CI



(3S,4R)-form

C₅H₁₀O₄ 134.132

Precursor of Pyridoxine and Thiamine in bacteria.

(3R,4R)-form

D-erythro-form

[66065-07-4]

Syrup. [α]_D¹⁸ -37 (c, 1.3 in H₂O) (equilib.).

2,4-Dinitrophenylhydrazide: [66065-08-5]
Cryst. (EtOAc). Mp 116-118°. [α]_D²¹ -53.7 (c, 0.3 in Me₂CO).

3,5-Benzylidene: 3,5-O-Benzylidene-1-deoxy-*D*-erythro-2-pentulose
[51970-09-3]

C₁₂H₁₄O₄ 222.24

Needles (EtOAc/petrol). Mp 82.5°.

[α]_D²³ +40.5 (c, 1 in CHCl₃).

3,5-Benzylidene, 4-benzoyl: 4-O-Benzoyl-3,5-O-benzylidene-1-deoxy-*D*-erythro-2-pentulose
[66182-30-7]

C₁₉H₁₈O₅ 326.348

Cryst. (Et₂O/petrol). Mp 95-96°. [α]_D²² -23.1 (c, 1 in CHCl₃).

3,5-Ethylidene, 4-benzyl: 4-O-Benzyl-1-deoxy-3,5-O-ethylidene-*D*-erythro-2-pentulose
[162932-19-6]

C₁₄H₁₈O₄ 250.294

Yellow liq. [α]_D²⁵ -6 (c, 0.97 in CHCl₃).

(3S,4R)-form

D-threo-form. 1-Deoxy-*D*-xylulose

[60299-43-6]

Metab. of *Streptomyces hygroscopicus*. Intermed. in biosynth. of thiamine in *E. coli*. *In vitro* inhibitor of *Mycobacterium avium*. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. Mp 61-63°. [α]_D +46 (c, 1.0 in H₂O).

5-Phosphate: [190079-18-6]

C₅H₁₁O₇P 214.112

Biosynthetic precursor of non-mevalonate terpenoids.

(3S,4S)-form

L-erythro-form. 1-Deoxy-*L*-ribulose

3,4-Isopropylidene, 5-benzyl: 5-O-Benzyl-1-deoxy-3,4-O-isopropylidene-*L*-erythro-2-pentulose

C₁₅H₂₀O₄ 264.321

[α]_D²² -50.6 (c, 1.84 in CHCl₃).

Slecht, L. *et al.*, *J. Antibiot.*, 1976, **29**, 685 (isol, *D*-threo)

Hoeksema, H. *et al.*, *J. Antibiot.*, 1976, **29**, 688 (struct, ms, pmr, *D*-threo)

Fischer, J.-C. *et al.*, *Can. J. Chem.*, 1977, **55**, 4078-4089 (*D*-erythro, synth, pmr, derivs)

David, S. *et al.*, *J.C.S. Perkin I*, 1982, 2131-2137 (*D*-erythro, synth)

Kennedy, I.A. *et al.*, *Can. J. Chem.*, 1995, **73**, 1329 (synth)

Backstrom, A.D. *et al.*, *J. Carbohydr. Chem.*, 1995, **14**, 171-175 (*D*-threo-form, synth)

Munier, P. *et al.*, *Tetrahedron*, 1995, **51**, 1229 (*D*-erythro 3,5-ethylidene 4-benzyl, *L*-erythro 3,4-isopropylidene 5-benzyl)

Kopper, S. *et al.*, *Chem. Eur. J.*, 1998, **4**, 2442-2455 (*D*-erythro, synth, pmr, cmr)

Lichtenhaler, H.K. *et al.*, *Annu. Rev. Plant Physiol.*, 1999, **50**, 47-65 (rev, phosphate)

Rohmer, M. *et al.*, *Pure Appl. Chem.*, 1999, **71**, 2279-2284 (rev, phosphate)

Shabat, D. *et al.*, *Tet. Lett.*, 1999, **40**, 1437-1440 (synth)

Fechter, M.H. *et al.*, *J. Carbohydr. Chem.*, 2001, **29**, 833-839 (synth)

Hecht, S. *et al.*, *J.O.C.*, 2001, **66**, 3948-3952 (synth, phosphate)

Hoeffler, J.-F. *et al.*, *Tet. Lett.*, 2001, **42**, 3065-3067 (synth)

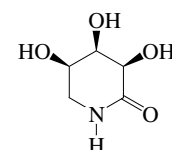
Eisenreich, W. *et al.*, *Trends Plant Sci.*, 2001, **6**, 70-84 (rev, phosphate)

Kopper, S. *et al.*, *Helv. Chim. Acta*, 2003, **86**, 827-843 (*D*-erythro, synth, pmr, cmr)

Meyer, O. *et al.*, *Tetrahedron*, 2004, **60**, 12153-12162 (synth)

3,4,5-Trihydroxy-2-piperidinone, 9CI T-177

5-Amino-5-deoxypentono-1,5-lactam. Pentono-1,5-lactam



(3R,4R,5R)-form

C₅H₉NO₄ 147.13

(3R,4R,5R)-form

D-ribo-form. 5-Amino-5-deoxy-*D*-ribono-

1,5-lactam. *D*-Ribono-1,5-lactam

[18908-35-5]

Cryst. (EtOH). Mp 250-251° (dec.).

[α]_D²³ +33 (c, 0.5 in H₂O).

(3R,4S,5R)-form

D-xylo-form. 5-Amino-5-deoxy-*D*-xylono-

1,5-lactam. *D*-Xylono-1,5-lactam

[172820-30-3]

Cryst. (EtOH). Mp 176-177°. [α]_D²⁰ +7 (c, 0.5 in H₂O).

3,4-Dibenzyl ether: [266688-31-7]

C₁₉H₂₁NO₄ 327.379

Mp 107-108°.

(3*S*,4*R*,5*R*)-form

D-arabino-form. 5-Amino-5-deoxy-*D*-arabino-1,5-lactam. *D*-Arabino-1,5-lactam
[187144-36-1]
Cryst. (EtOH). Mp 178°. [α]_D -172
(c, 1 in H₂O).

(3*S*,4*S*,5*R*)-form

D-lyxo-form. 5-Amino-5-deoxy-*D*-lyxono-1,5-lactam. *D*-Lyxono-1,5-lactam
[182822-23-7]
Cryst. (EtOH). Mp 188-189°. [α]_D -54.7
(c, 1 in H₂O).

[127593-93-5, 175722-44-3]

Godskesen, M. *et al.*, *Bioorg. Med. Chem.*, 1996, **4**, 1857-1865 (synth)

Kefurt, K. *et al.*, *Coll. Czech. Chem. Comm.*, 1996, **61**, 1027-1036; 1997, **62**, 1919-1930 (synth, ir, pmr, cmr, cd, conformn)

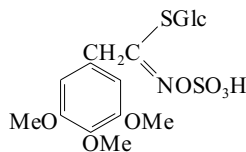
Defoin, A. *et al.*, *Helv. Chim. Acta*, 1998, **81**, 1417-1428 (synth, ir, pmr, cmr)

Williams, S.J. *et al.*, *J.A.C.S.*, 2000, **122**, 2223-2235 (3*R*,4*S*,5*R*-form, 3,4-dibenzyl ether)

3,4,5-Trimethoxybenzyl glucosinolate

T-178

[32214-77-0]



C₁₇H₂₅NO₁₂S₂ 499.516

Isol. from *Lepidium hyssopifolium* and *Lepidium sordidum*. Hygroscopic cryst. (as K salt).

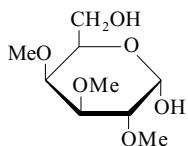
Tetra-Ac: [34410-85-0]

Cryst. + 1H₂O (MeOH) (as K salt). Mp 190-195° dec. (K salt). [α]_D²⁸ -11 (c, 0.6 in H₂O).

Kjaer, A. *et al.*, *Phytochemistry*, 1971, **10**, 455; 2195 (isol)

2,3,4-Tri-*O*-methylgalactose, 9CI, 8CI

T-179



α -D-Pyranose-form

C₉H₁₈O₆ 222.238

 α -D-Pyranose-form [35775-21-4]

Mp 86° Mp 73° (monohydrate). [α]_D +156 \rightarrow +119 (H₂O).

Me glycoside: Methyl 2,3,4-tri-*O*-methyl- α -D-galactopyranoside
[22323-68-8]

C₁₀H₂₀O₆ 236.264

Mp 30°. [α]_D +198.4 (+112) (H₂O).

 β -D-Pyranose-form [35775-22-5]

1,6-Anhydro: 1,6-Anhydro-2,3,4-tri-*O*-methyl- β -D-galactopyranose
C₉H₁₆O₅ 204.222

Mp 61°. [α]_D -62.2 (EtOH).

Smith, F. *et al.*, *J.C.S.*, 1939, 1724 (synth)

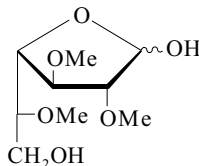
Maher, G.G. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 273 (rev)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, **23**, 275 (pmr)

Vogt, D.C. *et al.*, *Carbohydr. Res.*, 1990, **206**, 333 (pmr, cmr)

2,3,5-Tri-*O*-methylgalactose, 8CI

T-180



C₉H₁₈O₆ 222.238

D-Furanose-form

Syrup. [α]_D -8 (H₂O).

Me glycoside: Methyl 2,3,5-tri-*O*-methyl- α -D-galactofuranoside

C₁₀H₂₀O₆ 236.264

Syrup. [α]_D -55 (H₂O).

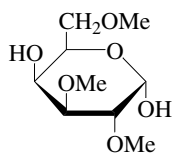
Alexander, B.H. *et al.*, *J.A.C.S.*, 1951, **73**, 4658 (synth)

Maher, G.G. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 273 (rev)

Bayer, E. *et al.*, *Anal. Chem.*, 1964, **36**, 1452 (glc)

2,3,6-Tri-*O*-methylgalactose, 9CI, 8CI

T-181



α -D-Pyranose-form

C₉H₁₈O₆ 222.238

D-Pyranose-form [4599-58-0]

[α]_D²⁵ +95 (c, 0.6 in H₂O).

 α -D-Pyranose-form

Me glycoside: Methyl 2,3,6-tri-*O*-methyl- α -D-galactopyranoside

C₁₀H₂₀O₆ 236.264

[α]_D²⁵ +158 (c, 0.8 in CHCl₃).

Me glycoside, tosyl: Mp 94°. [α]_D +126 (c, 0.3 in CHCl₃).

 β -D-Pyranose-form

Me glycoside: Methyl 2,3,6-tri-*O*-methyl- β -D-galactopyranoside

C₁₀H₂₀O₆ 236.264

[α]_D²⁰ -16 (c, 0.74 in CHCl₃).

Me glycoside, tosyl: Mp 131-132°. [α]_D²¹ +15 (c, 0.3 in CHCl₃).

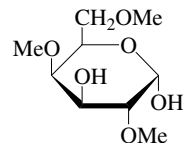
Maher, G.G. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 273 (rev)

Williams, N.R. *et al.*, *J.O.C.*, 1964, **29**, 3434 (synth)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, **23**, 275 (pmr)

2,4,6-Tri-*O*-methylgalactose, 9CI, 8CI

T-182



α -D-Pyranose-form

C₉H₁₈O₆ 222.238

 α -D-Pyranose-form [35775-25-8]

Mp 104-105° Mp 110-111°. [α]_D +124 \rightarrow +93 (H₂O).

Me glycoside: Methyl 2,4,6-tri-*O*-methyl- α -D-galactopyranoside

[14187-56-5]

C₁₀H₂₀O₆ 236.264

Mp 73-74° Mp 37° (monohydrate).

[α]_D +163.9 (H₂O).

Me glycoside, tosyl: Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- α -D-galactopyranoside
[35780-84-8]

C₁₇H₂₆O₈S 390.454

Mp 112°. [α]_D +150 (CHCl₃).

 β -D-Pyranose-form [35775-26-9]

Me glycoside: Methyl 2,4,6-tri-*O*-methyl- β -D-galactopyranoside

[2296-49-3]

C₁₀H₂₀O₆ 236.264

Mp 111-112° Mp 83-85° (hemihydrate).

[α]_D -40.9 (CHCl₃).

Me glycoside, tosyl: Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- β -D-galactopyranoside
[35780-88-2]

C₁₇H₂₆O₈S 390.454

Mp 130°. [α]_D +20.4 (CHCl₃).

Bell, D.J. *et al.*, *J.C.S.*, 1938, 1196 (synth)

Percival, E.G.V. *et al.*, *J.C.S.*, 1951, 1615 (isol, struct)

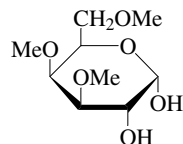
Maher, G.G. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 273 (rev)

Rathbone, E.B. *et al.*, *Carbohydr. Res.*, 1972, **23**, 275 (pmr)

Vogt, D.C. *et al.*, *Carbohydr. Res.*, 1990, **206**, 333 (pmr, cmr)

3,4,6-Tri-*O*-methylgalactose, 9CI, 8CI

T-183



α -D-Pyranose-form

C₉H₁₈O₆ 222.238

D-form [31655-52-4]

[α]_D²⁰ -4.3 (MeOH).

Phenylosazone: Mp 130-131°. [α]_D²³ +85 (Py).

 α -D-Pyranose-form [35775-27-0]

Mp 88-89°. [α]_D²⁴ +154 \rightarrow +110 (H₂O).

1,2-*O*-Isopropylidene: See 1,2-*O*-Isopropylidene-galactopyranose, I-65

β-D-Pyranose-form [35775-28-1]

Me glycoside, 2-mesyl: Methyl 2-O-mesyl-3,4,6-tri-O-methyl-β-D-galactopyranoside
 $C_{11}H_{22}O_8S$ 314.356
 Cryst. (Me_2CO /diisopropyl ether).
 Mp 138°. $[\alpha]_D^{27}$ -22 (c, 0.5 in $CHCl_3$).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1931, **92**, 257
 (*D-form*)

Maher, G.G. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 273 (rev)

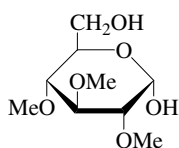
Kuhn, R. *et al.*, *Chem. Ber.*, 1955, **88**, 1537
 (*α-D-pyr*)

Gorin, P.A.J. *et al.*, *Biochemistry*, 1970, **9**, 5023
 (*D-form*)

Miljković, M. *et al.*, *J.O.C.*, 1975, **40**, 1054
 (*β-D-Me pyr mesyl*)

2,3,4-Tri-*O*-methylglucose, 9CI, 8CI

[4060-09-7]

*α-D-Pyranose-form* $C_9H_{18}O_6$ 222.238**D-Pyranose-form** [13704-10-4]Bp_{0.3} 162-166°. $[\alpha]_D$ +65 (+86) (H_2O).

6-Benzyl: 6-*O*-Benzyl-2,3,4-tri-*O*-methyl-*D*-glucose
 $C_{16}H_{24}O_6$ 312.362

Oil. Mixt. of anomers.

α-D-Pyranose-form

Me glycoside: Methyl 2,3,4-tri-O-methyl-α-D-glucopyranoside
 $C_{10}H_{20}O_6$ 236.264

Oil. $[\alpha]_D$ +162 (c, 1.4 in $CHCl_3$).

Me glycoside, 6-benzyl: Methyl 6-benzyl-2,3,4-tri-O-methyl-α-D-glucopyranoside
 $C_{17}H_{26}O_6$ 326.389

Oil. $[\alpha]_D$ +124 (c, 1.6 in $CHCl_3$).

1,6-Bis(4-nitrobenzoyl): Mp 151-152°. $[\alpha]_D^{29}$ +22.6 (c, 1.1 in $CHCl_3$).

β-D-Pyranose-form

1,6-Bis(4-nitrobenzoyl): Mp 135-136°. $[\alpha]_D^{29}$ -13.6 (c, 1.0 in $CHCl_3$).

Me glycoside: Methyl 2,3,4-tri-O-methyl-β-D-glucopyranoside
 [4267-13-4]

$C_{10}H_{20}O_6$ 236.264

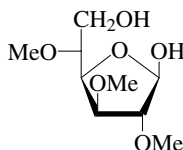
Mp 92-95°. Bp_{0.04} 125-130° (bath). $[\alpha]_D$ -25.1 ($MeOH$).

Smith, F. *et al.*, *J.C.S.*, 1944, 131 (*β-D-Me pyr*)
 Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1950, **5**, 145 (rev)

Jones, J.K.N. *et al.*, *Can. J. Chem.*, 1961, **39**, 192
 (*D-pyr*)

Kubberoed, G. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 2544 (*glc*)

Molina Pinilla, I. *et al.*, *Carbohydr. Res.*, 2003, **338**, 549-555 (6-benzyl, *Me α-D-pyr*, *Me 6-benzyl-α-D-pyr*)

2,3,5-Tri-*O*-methylglucose, 9CI*β-D-form* $C_9H_{18}O_6$ 222.238**D-form** [51885-67-7] $[\alpha]_D^{20}$ -13.4 (c, 2.14 in H_2O) (+17).**β-D-Furanose-form**

Me glycoside: Methyl 2,3,5-tri-O-methyl-β-D-glucofuranoside
 $C_{10}H_{20}O_6$ 236.264

Cryst. (petrol). Mp 74-75°. $[\alpha]_D^{20}$ -69.7 (c, 1.8 in H_2O).

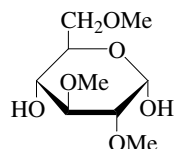
Smith, F. *et al.*, *J.C.S.*, 1944, 571 (*D-form*, *synth*)

Dimler, R.J. *et al.*, *J.A.C.S.*, 1946, **68**, 1377
 (*D-form*, *synth*)

Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1950, **5**, 145 (rev)

Coleman, G.H. *et al.*, *J.O.C.*, 1957, **22**, 1336
 (*D-form*, *synth*, *β-D-Me fur*)

Gelpi, M.E. *et al.*, *CA*, 1974, **80**, 96264q
 (*D-form*, *synth*)

2,3,6-Tri-*O*-methylglucose, 9CI, 8CI*α-D-Pyranose-form* $C_9H_{18}O_6$ 222.238**α-D-Pyranose-form** [19146-27-1]Mp 121-123°. $[\alpha]_D$ +118 → +70 (H_2O).

Me glycoside: Methyl 2,3,6-tri-O-methyl-α-D-glucopyranoside
 [23009-68-9]

$C_{10}H_{20}O_6$ 236.264

$[\alpha]_D$ +149 ($CHCl_3$).

Me glycoside, 4-(3,5-dinitrobenzoyl): Mp 147°. $[\alpha]_{625}$ +56.3 (Me_2CO).

β-D-Pyranose-form [19146-45-3]

Me glycoside: Methyl 2,3,6-tri-O-methyl-β-D-glucopyranoside
 [23262-64-8]

$C_{10}H_{20}O_6$ 236.264

Mp 58-60°. $[\alpha]_D$ -48 ($CHCl_3$).

Me glycoside, 4-benzenesulfonyl: Mp 83-84°. $[\alpha]_D$ -35.6 ($CHCl_3$).

Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1950, **5**, 145 (rev)

Kooiman, P. *et al.*, *Can. J. Chem.*, 1961, **39**, 889
 (*synth*)

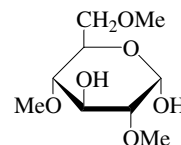
Casu, B. *et al.*, *Tetrahedron*, 1967, **24**, 803
 (*conformn*, *pmr*)

Petersson, G. *et al.*, *CA*, 1969, **70**, 78300n (*ms*)

T-185

2,4,6-Tri-*O*-methylglucose, 9CI, 8CI

T-187

*α-D-Pyranose-form* $C_9H_{18}O_6$ 222.238**α-D-Pyranose-form** [19146-15-7]Mp 123-126°. $[\alpha]_D$ +111 → +72 (H_2O).

Me glycoside, 3-tosyl: Methyl 2,4,6-tri-O-methyl-3-O-tosyl-α-D-glucopyranoside
 $C_{17}H_{26}O_8S$ 390.454

Mp 123-124°. $[\alpha]_D$ +53.6 ($CHCl_3$).

β-D-Pyranose-form [19146-16-8]

Me glycoside: Methyl 2,4,6-tri-O-methyl-β-D-glucopyranoside
 [23262-66-0]

$C_{10}H_{20}O_6$ 236.264

Mp 70-71°. $[\alpha]_D$ -27.4 ($CHCl_3$).

Me glycoside, 3-tosyl: Methyl 2,4,6-tri-O-methyl-3-O-tosyl-β-D-glucopyranoside
 $C_{17}H_{26}O_8S$ 390.454

Mp 104°. $[\alpha]_D$ -47 ($CHCl_3$).

Granitstädten, H. *et al.*, *J.C.S.*, 1943, 54, (*isol*, *synth*)

Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1950, **5**, 145 (rev)

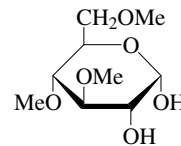
Barker, S.A. *et al.*, *J.C.S.*, 1953, 3084 (*α-D-form*)
 Casu, B. *et al.*, *Tetrahedron*, 1967, **24**, 803

(*conformn*, *pmr*)

Terui, T. *et al.*, *Chem. Pharm. Bull.*, 1974, **22**, 2476 (*pmr*)

3,4,6-Tri-*O*-methylglucose, 9CI, 8CI

T-188

*α-D-Pyranose-form* $C_9H_{18}O_6$ 222.238**α-D-Pyranose-form** [13554-85-3]

Needles (diisopropyl ether). Mp 80.5-81.5° (76-77°). $[\alpha]_D^{25}$ +120 → +77 (c, 1.6 in H_2O).

1-Ac: 1-*O*-Acetyl-3,4,6-tri-*O*-methyl-α-*D*-glucopyranose
 $C_{11}H_{20}O_7$ 264.275

Cryst. (diisopropyl ether). Mp 107.5-108.5°. $[\alpha]_D$ +146 ($CHCl_3$).

2-Ac: 2-*O*-Acetyl-3,4,6-tri-*O*-methyl-α-*D*-glucopyranose
 $C_{11}H_{20}O_7$ 264.275

Cryst. (diisopropyl ether). Mp 103.5-105°. $[\alpha]_D$ +116 ($CHCl_3$).

Di-Ac: 1,2-Di-*O*-acetyl-3,4,6-tri-*O*-methyl-α-*D*-glucopyranose
 $C_{13}H_{22}O_8$ 306.312

Prisms (diisopropyl ether). Mp 64-65°. $[\alpha]_D^{22}$ +122 (c, 1.9 in $CHCl_3$).

1,2-*O*-Isopropylidene: 1,2-*O*-Isopropylidene-3,4,6-tri-*O*-methyl- α -*D*-glucopyranose
 $C_{12}H_{22}O_6$ 262.302
 Syrup. Bp₁₂ 138-139°. [α]_D -29.5 (MeOH).

Me glycoside: Methyl 3,4,6-tri-*O*-methyl- α -*D*-glucopyranoside
 [13479-66-8]
 $C_{10}H_{20}O_6$ 236.264
 Syrup. Bp_{0.3} 180-190°.

β -*D*-Pyranose-form [38184-02-0]

Prisms (diisopropyl ether). Mp 102-103°. [α]_D +41 \rightarrow +77.6 (H₂O).

Me glycoside: Methyl 3,4,6-tri-*O*-methyl- β -*D*-glucopyranoside
 [58462-87-6]
 $C_{10}H_{20}O_6$ 236.264
 Cryst. (Et₂O/petrol). Mp 51.5-52.5°. [α]_D²⁵ -16.4 (c, 2.0 in CHCl₃).

Me glycoside, 2-benzoyl: Methyl 2-*O*-benzoyl-3,4,6-tri-*O*-methyl- β -*D*-glucopyranoside
 $C_{17}H_{24}O_7$ 340.372
 Cryst. (petrol). Mp 79.5-80°. [α]_D²⁰ +34.4 (c, 1.9 in CHCl₃).

Me glycoside, 2-tosyl: Methyl 3,4,6-tri-*O*-methyl-2-*O*-tosyl- β -*D*-glucopyranoside
 $C_{17}H_{26}O_8S$ 390.454
 Mp 67°. [α]_D -16 (CHCl₃).

Me glycoside, 2-benzyl: Methyl 2-*O*-benzyl-3,4,6-tri-*O*-methyl- β -*D*-glucopyranoside
 $C_{17}H_{26}O_6$ 326.389
 Mp 41.5-42°. [α]_D²⁵ +9.9 (c, 2.0 in CHCl₃).

Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1950, **5**, 145 (rev)

Greville, G.D. *et al.*, *J.C.S.*, 1952, 1957 (*D*-form, synth, β -*D*-Me pyr, β -*D*-Me pyr benzoyl)

Wood, H.B. *et al.*, *J.A.C.S.*, 1957, **79**, 1986

(α -*D*-pyr, β -*D*-pyr, synth)

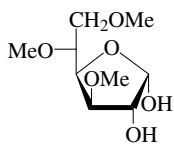
Schroeder, L.R. *et al.*, *J.C.S. Perkin 2*, 1972, 1063 (α -*D*-pyr, α -*D*-pyr Ac derivs, β -*D*-pyr)

Berry, J.F. *et al.*, *Can. J. Chem.*, 1974, **52**, 291 (β -*D*-form)

Liav, A. *et al.*, *Carbohydr. Res.*, 1984, **131**, C8 (synth)

3,5,6-Tri-*O*-methylglucose, 9CI

T-189

 α -*D*-Furanose-form $C_9H_{18}O_6$ 222.238

D-form

Bp_{0.04} 134° approx. [α]_D -44.1 (c, 1.5 in EtOH).

Phenylosazone:

Cryst. (EtOH aq.). Mp 70-72°.

α -*D*-Furanose-form [28436-51-3]

1,2-*O*-Isopropylidene: 1,2-*O*-Isopropylidene-3,5,6-tri-*O*-methyl- α -*D*-glucofuranose
 [38930-65-3]
 $C_{12}H_{22}O_6$ 262.302
 [α]_D -29.5 (c, 1.6 in MeOH).

Me glycoside: Methyl 3,5,6-tri-*O*-methyl- α -*D*-glucofuranoside
 $C_{10}H_{20}O_6$ 236.264
 Syrup. Bp_{0.4} 105-109°. [α]_D²⁰ +93 (MeOH).

β -*D*-Furanose-form

Me glycoside: Methyl 3,5,6-tri-*O*-methyl- β -*D*-glucofuranoside
 $C_{10}H_{20}O_6$ 236.264
 Syrup. Bp_{0.2} 145-150°. [α]_D²⁰ -87 (MeOH).

Levene, P.A. *et al.*, *J. Biol. Chem.*, 1927, **74**, 701 (α -*D*-Me fur, β -*D*-Me fur)

Anderson, C.G. *et al.*, *J.C.S.*, 1929, 1329

(*D*-form, *D*-phenylosazone, α -*D*-fur isopropylidene, synth)

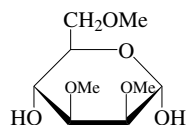
Bourne, E.J. *et al.*, *Adv. Carbohydr. Chem.*, 1950, **5**, 145 (rev)

Gakhokidze, R.A. *et al.*, *Zh. Obshch. Khim.*, 1976, **46**, 1620; *CA*, **85**, 192996d (synth)

2,3,6-Tri-*O*-methylmannose

T-190

[5856-21-3]

 α -*D*-Pyranose-form $C_9H_{18}O_6$ 222.238

D-form

[α]_D +6.9 \rightarrow +5.9 (MeOH). [α]_D²² -11 (c, 2.0 in H₂O).

4-*Ac*: 4-*O*-Acetyl-2,3,6-tri-*O*-methyl-*D*-mannose
 [29748-00-3]
 $C_{11}H_{20}O_7$ 264.275

Cryst. (Me₂CO/hexane). Mp 95°. [α]_D²⁵ +28.4 (CHCl₃).

α -*D*-Pyranose-form [16742-38-4]
 [α]_D +5 (c, 2.83 in MeOH).

1,4-Bis(4-nitrobenzoyl): [32934-17-1]
 Cryst. (MeOH). Mp 188°. [α]_D²² +34 (c, 1.0 in CHCl₃).

Me glycoside: Methyl 2,3,6-tri-*O*-methyl- α -*D*-mannopyranoside
 [27552-00-7]
 $C_{10}H_{20}O_6$ 236.264
 Gum. [α]_D²⁵ +32 (c, 2.8 in CHCl₃).

Me glycoside, 4-*Ac*: Methyl 4-*O*-acetyl-2,3,6-tri-*O*-methyl- α -*D*-mannopyranoside
 [53767-31-0]
 $C_{12}H_{22}O_7$ 278.302
 Syrup. [α]_D²⁵ +58.8 (c, 1.07 in CHCl₃).

Me glycoside, 4-tosyl: Methyl 2,3,6-tri-*O*-methyl-4-*O*-tosyl- α -*D*-mannopyranoside
 [32934-14-8]
 $C_{17}H_{26}O_8S$ 390.454
 Cryst. (petrol). Mp 91-92°. [α]_D²² +38 (c, 1.0 in CHCl₃).

Ganguly, A.K. *et al.*, *Chem. Comm.*, 1970, 911 (*D*-4-*Ac*)

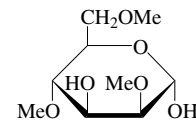
Choy, Y.M. *et al.*, *Carbohydr. Res.*, 1971, **17**, 439 (*D*-form, synth, α -*D*-Me pyr, α -*D*-Me pyr tosyl)

Baker, C.W. *et al.*, *Carbohydr. Res.*, 1974, **33**, 372 (α -*D*-pyr bisnitrobenzoyl, α -*D*-Me pyr *Ac*)

2,4,6-Tri-*O*-methylmannose

T-191

[58894-00-1]

 α -*D*-Pyranose-form $C_9H_{18}O_6$ 222.238

D-form

Mp 53-57°. [α]_D²² +15.1 (c, 0.8 in H₂O).

α -*D*-Pyranose-form

Mp 89-90° (hydrate). [α]_D¹⁸ +23 \rightarrow +16 (c, 1.0 in H₂O).

Me glycoside: Methyl 2,4,6-tri-*O*-methyl- α -*D*-mannopyranoside
 [27539-48-6]
 $C_{10}H_{20}O_6$ 236.264
 [α]_D²² +51 (c, 2.0 in CHCl₃).

Me glycoside, 3-tosyl: Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- α -*D*-mannopyranoside
 $C_{17}H_{26}O_8S$ 390.454
 Cryst. (Et₂O). Mp 118-120°. [α]_D²² +44 (c, 1.0 in CHCl₃).

β -*D*-Pyranose-form

Mp 104-107°. [α]_D²⁰ -5.7 \rightarrow +19 (c, 2.1 in H₂O).

Haworth, W.N. *et al.*, *J.C.S.*, 1941, 833 (α -*D*-pyr, β -*D*-pyr)

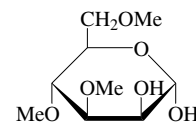
Choy, Y.M. *et al.*, *Carbohydr. Res.*, 1971, **17**, 439 (*D*-form, synth, α -*D*-Me pyr, α -*D*-Me pyr tosyl)

Lipták, A. *et al.*, *Acta Chim. Acad. Sci. Hung.*, 1977, **94**, 261 (*D*-form, synth)

3,4,6-Tri-*O*-methylmannose

T-192

[53022-50-7]

 α -*D*-Pyranose-form $C_9H_{18}O_6$ 222.238

α -*D*-Pyranose-form [52194-59-9]

Cryst. (Et₂O). Mp 104-106°. [α]_D²⁰ +20 \rightarrow +8 (1 hr.) (c, 0.9 in H₂O).

Me glycoside: Methyl 3,4,6-tri-*O*-methyl- α -*D*-mannopyranoside
 [6150-07-8]
 $C_{10}H_{20}O_6$ 236.264
 Amorph. [α]_D²⁵ +8 (c, 1.2 in CHCl₃).

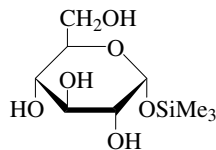
Me glycoside, 2-tosyl: Methyl 3,4,6-tri-*O*-methyl-2-*O*-tosyl- α -*D*-mannopyranoside
 [53008-58-5]
 $C_{17}H_{26}O_8S$ 390.454
 Amorph. [α]_D²⁵ +6 (c, 5.6 in CHCl₃).

Bott, H.G. *et al.*, *J.C.S.*, 1930, 1395 (α -*D*-pyr)
 Aspinall, G.O. *et al.*, *Adv. Carbohydr. Chem.*, 1953, **8**, 217 (rev)

Berry, J.M. *et al.*, *Can. J. Chem.*, 1974, **52**, 291 (α -*D*-pyr)

Trimethylsilyl glucopyranoside

T-193

 α -D-form $C_9H_{20}O_6Si$ 252.339 **α -D-form**

2,3,4,6-Tetra-benzyl: Trimethylsilyl 2,3,4,6-tetra-O-benzyl- α -D-glucopyranoside
 $C_{37}H_{44}O_6Si$ 612.836
 $[\alpha]_D^{25} +24.4$ (c, 1.3 in $CHCl_3$).

2,3,4,6-Tetra-Me: Trimethylsilyl 2,3,4,6-tetra-O-methyl- α -D-glucopyranoside
 $C_{13}H_{28}O_6Si$ 308.446
 $Bp_{0.5} 106^\circ$. $[\alpha]_D^{25} +118.5$ (c, 1 in $CHCl_3$).

 β -D-form

2,3,4,6-Tetra-Ac: Trimethylsilyl 2,3,4,6-tetra-O-acetyl- β -D-glucopyranoside
 [19126-95-5]
 $C_{17}H_{28}O_{10}Si$ 420.488
 $Mp 105^\circ$. $[\alpha]_D^{20} -6.8$ (c, 1 in $CHCl_3$).

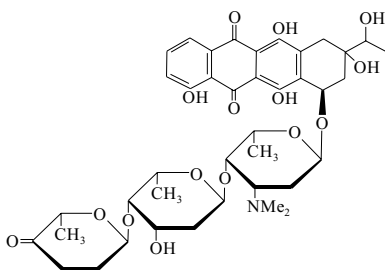
2,3,4,6-Tetra-Me: Trimethylsilyl 2,3,4,6-tetra-O-methyl- β -D-glucopyranoside
 $C_{13}H_{28}O_6Si$ 308.446
 $Bp_{0.5} 94^\circ$. $[\alpha]_D^{25} +5$ (c, 1 in $CHCl_3$).

Klemer, A. *et al.*, *Annalen*, 1970, **739**, 185
 (α -D-tetra-benzyl, α -D-tetra-Me, β -D-tetra-Me)
 Tietze, L.-F. *et al.*, *Angew. Chem., Int. Ed.*, 1981, **20**, 969 (β -D-tetra-Ac)

Trisarubinicol

[80470-08-2]

T-194

 $C_{40}H_{51}NO_{15}$ 785.841

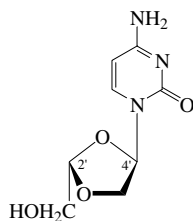
Anthracycline antibiotic. Isol. from *Streptomyces galilaeus*. Active against Murine leukemia, potent inhibitor of RNA synthesis. Dark-red cryst.
 $Mp 149-152^\circ$. $[\alpha]_D^{23} +1.84$ (c, 0.8 in $CHCl_3$). Prod. by glycosylation of carminomycinone compds. by *S. galilaeus*.

► QI9442000

Yoshimoto, A. *et al.*, *J. Antibiot.*, 1981, **34**, 1492**Troxacitabine, INN, USAN**

T-195

4-Amino-1-[2-(hydroxymethyl)-1,3-dioxolan-4-yl]-2(1H)-pyrimidinone, 9CI. β -L-Dioxolanecytidine. Troxatyl. BCH 4556



(2'S,4'S)-form

 $C_8H_{11}N_3O_4$ 213.193

Antineoplastic agent. Anti-HIV agent. Phase III clin. trials for acute myelogenous leukaemia (2002). The name troxacitabine refers to the (2S,4S)-form.

(2R',4R')-form [141196-84-1]

$Mp 181-183^\circ$. $[\alpha]_D^{25} +35.2$ (c, 1.0 in MeOH).

(2R',4S')-form

(-)-BCH 203

[141196-85-2]

$Mp 188-190^\circ$. $[\alpha]_D^{25} -68.5$ (c, 0.5 in MeOH).

(2S',4R')-form [145416-37-1]

Cryst. (CH_2Cl_2 /hexane). $Mp 192-193^\circ$.
 $[\alpha]_D^{25} +66.14$ (c, 0.5 in MeOH). $\lambda_{max} 278$
 (ϵ 13240) (pH2). $\lambda_{max} 270$ (ϵ 8780)
 (pH7). $\lambda_{max} 269$ (ϵ 9070) (pH11).

(2S',4S')-form

(-)-BCH 204

[145918-75-8]

Cryst. (CH_2Cl_2 /hexane). $Mp 176-177^\circ$.
 $[\alpha]_D^{24} -38.33$ (c, 0.43 in MeOH). $\lambda_{max} 278$
 (ϵ 11970) (pH2). $\lambda_{max} 270$ (ϵ 7770)
 (pH7). $\lambda_{max} 269$ (ϵ 8380) (pH11).

[126652-17-3, 145511-98-4, 151282-98-3]

Kim, H.O. *et al.*, *J. Med. Chem.*, 1992, **35**, 1987-1995; 1993, **36**, 519-528 (synth, isomers, pharmacol)

Pat. Coop. Treaty (WIPO), 1992, 92 18 517, (Yale Univ); CA, **119**, 86018x (synth, isomers, pharmacol)

Belleau, B.R. *et al.*, *Tet. Lett.*, 1992, **33**, 6949-6952 (synth, isomers, cmr)

Kadhim, S.A. *et al.*, *Cancer Res.*, 1997, **57**, 4803-4810 (pharmacol)

Grove, K.L. *et al.*, *Nucleosides Nucleotides*, 1997, **16**, 1229-1233 (pharmacol)

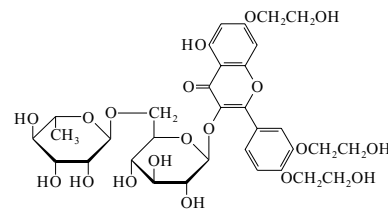
Ecker, G. *et al.*, *Curr. Opin. Invest. Drugs*, 2002, **3**, 1533-1538 (pharmacol)

Belanger, K. *et al.*, *J. Clin. Oncol.*, 2002, **20**, 2567-2574 (pharmacol)

Troxerutin, BAN, INN

T-196

2-[3,4-Bis(2-hydroxyethoxy)phenyl]-3-[[6-O-(6-deoxy- α -L-mannopyranosyl)- β -D-glucopyranosyl]oxy]-5-hydroxy-7-(2-hydroxyethoxy)-4H-1-benzopyran-4-one, 9CI. 3,5-Dihydroxy-3',4',7'-tris(2-hydroxyethoxy)flavone 3-[6-O-(6-deoxy- α -L-mannopyranosyl)- β -D-glucopyranoside], 8CI. Vitamin P₄. Posorutin. Ruven. Veinamitol. Many other names
 [7085-55-4]

 $C_{33}H_{42}O_{19}$ 742.683

Principal component of a mixt. which contains about 40% mono, di and tetrakis(hydroxyethyl)rutins. Used for venous disorders (haemorrhoids). Yellow powder. Insol. EtOH. $Mp 181^\circ$.
 ► LK8331500

Mixture: **Oxerutins**. Factor P-Zyma. Parovan. Relvene. Venoruten. Verutil Yellow powder. $Mp 156^\circ$.

U.K. Pat., 1960, 833 174; CA, **54**, 21135i
 Courbat, P. *et al.*, *Helv. Chim. Acta*, 1966, **49**, 1203; 1420 (isol, struct)

Mucharska, A. *et al.*, *Farm. Pol.*, 1971, **27**, 149; CA, **75**, 80315t (chromatog)

Tomas, F. *et al.*, *An. Quim.*, 1973, **69**, 357; CA, **79**, 57730y (uv)

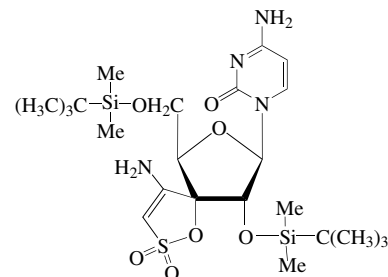
Ger. Pat., 1973, 2 320 858; CA, **80**, 30699d
 Hackett, A.M. *et al.*, *Arzneim.-Forsch.*, 1976, **26**, 925 (metab)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 7996 (synonyms)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1342

TSAO-C

T-197

[1-[2',5'-Bis-O-(tert-butyl dimethylsilyl)- β -D-ribofuranosyl]cytosine]-3'-spiro-5'-(4'-amino-1'',2''-oxathiole 2'',2''-dioxide). 4-Amino-1-[4-amino-9-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]-6-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]methyl]-2,2-dioxido-1,7-dioxo-2-thiaspiro[4.4]non-3-en-8-yl]-2(1H)-pyrimidinone, 9CI
 [142102-78-1]

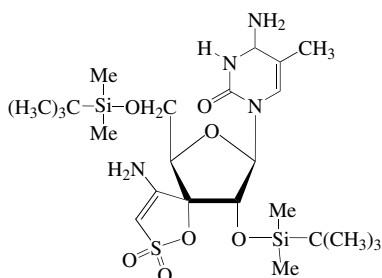
 $C_{23}H_{42}N_4O_7SSi_2$ 574.844

Anti-HIV agent. Amorph. solid. Less antivirally effective than TSAO-T, T-198 but markedly less cytotoxic.

Balzarini, J. *et al.*, *Antimicrob. Agents Chemother.*, 1992, **36**, 1073-1080 (pharmacol)
Perez-Perez, M.J. *et al.*, *J. Med. Chem.*, 1992, **35**, 2988-2995; 1994, **37**, 453-460 (synth, pmr, ir, pharmacol)
Eur. Pat., 1993, 530 407, (Stichting REGA); *CA*, **119**, 226346e

TSAO-T

[1-[2',5'-Bis-O-(tert-butyl dimethylsilyl)-β-D-ribofuranosyl]thymine]-3'-spiro-5''-(4''-amino-1'',2''-oxathiole-2'',2''-dioxide). 1-[4-Amino-9-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]-6-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]methyl]-2,2-dioxido-1,7-dioxo-2-thiaspiro[4.4]non-3-en-8-yl]-5-methyl-2,4-(1H,3H)-pyrimidine-dione, 9CI
[141781-17-1]



C₂₄H₄₃N₃O₈Si₂ 589.856

Antiviral agent showing specificity for HIV-1. Amorph. solid.

N³-Me: TSAO-m³T

[142102-79-2]

[150337-97-6]

C₂₅H₄₅N₃O₈Si₂ 603.883

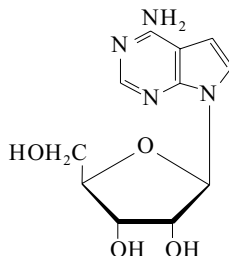
Anti-HIV agent. Foam.

[141684-45-9, 169106-47-2, 169106-48-3, 169106-49-4]

Balzarini, J. *et al.*, *Antimicrob. Agents Chemother.*, 1992, **36**, 1073-1080 (pharmacol)
Camarasa, M.-J. *et al.*, *J. Med. Chem.*, 1992, **35**, 2721-2727; 2988-2995 (synth, ir, pmr, cmr, pharmacol, N-Me)
Balzarini, J. *et al.*, *Biochem. Pharmacol.*, 1993, **46**, 69-77 (metab, N-Me)
Eur. Pat., 1993, 530 407, (Stichting REGA); *CA*, **119**, 226346e (synth, pharmacol)
Ingate, S. *et al.*, *Nucleosides Nucleotides*, 1995, **14**, 299-301; 585-594 (synth, isomers, pharmacol)

Tubercidin

7β-D-Ribofuranosyl-7H-pyrrolo[2,3-d]pyrimidin-4-amine, 9CI. 4-Amino-7-β-D-ribofuranosyl-7H-pyrrolo[2,3-d]pyrimidine, 8CI. 7-Deazaadenosine. Sparsomycin A. B 79D. NSC 56408. U 10071. XK 101-1. Antibiotic B 79D. Antibiotic XK 101-1 [69-33-0]



C₁₁H₁₄N₄O₄ 266.256

Nucleoside antibiotic. Isol. from *Streptomyces tubercidus*. Major cytotoxin of *Tolypothrix byssoides*. Also prod. by *Micromonospora chalicea tubercidica*. Constit. of the sponge *Caulospongia biflabellata*. Antitumour, antifungal and antiviral agent. Nucleoside transporter substrate. Cryst.

Mp 247° dec. [α]_D²⁵ -67 (50% AcOH).

pK_a 5.3. λ_{max} 227 (ε 25000); 272

(ε 12200) (dil HCl) (Derep). λ_{max} 270

(ε 12100) (dil. NaOH) (Derep). λ_{max} 270

(ε 12100) (H₂O) (Derep).

► LD₅₀ (rat, orl) 16 mg/kg. UY8870000

5'-O-Sulfamoyl: Antibiotic SF 2494. SF 2494

[114746-65-5]

C₁₁H₁₅N₅O₆S 345.335

From *Streptomyces mirabilis*. Herbicide.

5'-O-α-D-Glucopyranosyl: Tubercidin 5'-α-D-glucopyranose

[117456-78-7]

C₁₇H₂₄N₄O₉ 428.398

Found in *Plectonema radiosum* and *Tolypothrix distorta*. Cytotoxic. Antifungal.

Sol. H₂O. [α]_D²⁵ +10 (c, 0.01 in H₂O). λ_{max} 268 (ε 9300) (H₂O) (Derep).

5'-Deoxy: 7-(5-Deoxy-β-D-ribofuranosyl)-7H-pyrrolo[2,3-d]pyrimidin-4-amine, 9CI. 5'-Deoxytubercidin

[41107-17-9]

C₁₁H₁₄N₄O₃ 250.257

Isol. from *Didemnum voeltzkowi*. Cryst. (EtOH/C₆H₆).

Mp 203-207°. [α]_D²³ -70.3 (c, 0.48 in DMSO). λ_{max} 270 (ε 12700) (MeOH).

5'-Deoxy, 5-bromo: 5-Bromo-7-(5-deoxy-β-D-ribofuranosyl)-7H-pyrrolo[2,3-d]pyrimidin-4-amine. 5-Bromo-5'-deoxy-tubercidin, 9CI

Isol. from *Didemnum voeltzkowi*.

Anzai, K. *et al.*, *J. Antibiot., Ser. A*, 1957, **10**, 201 (isol)

Mizuno, Y. *et al.*, *J.O.C.*, 1963, **28**, 3329 (struct, uv, config)

Smulson, M.E. *et al.*, *J. Biol. Chem.*, 1967, **242**, 2872 (cryst struct)

Tolman, R.L. *et al.*, *J.A.C.S.*, 1969, **91**, 2102 (synth, uv, ir, nmr)

Abola, J. *et al.*, *Acta Cryst. B*, 1973, **29**, 697 (cryst struct)

T-199

Chenon, M.-T. *et al.*, *J.A.C.S.*, 1975, **97**, 4627 (pmr, cmr)

Ektova, L.V. *et al.*, *Bioorg. Khim.*, 1978, **4**, 1250 (synth)

Fukushima, K. *et al.*, *J. Antibiot.*, 1978, **31**, 377 (ms)

Japan. Pat., 1978, 78 124 685; *CA*, **90**, 136241v (isol)

Uzawa, J. *et al.*, *Org. Magn. Reson.*, 1979, **12**, 612 (cmr)

Barchi, J.J. *et al.*, *Phytochemistry*, 1983, **22**, 2851 (isol)

Seela, F. *et al.*, *Annalen*, 1984, 1972 (synth, cmr)

Yoo, J.C. *et al.*, *J. Liq. Chromatogr.*, 1984, **7**, 151 (hplc)

Bergstrom, D.E. *et al.*, *J. Med. Chem.*, 1984, **27**, 285 (props)

Ramasamy, K. *et al.*, *Tet. Lett.*, 1987, **28**, 5107 (synth)

Iwata, M. *et al.*, *CA*, 1988, **109**, 3509 (deriv)

Stewart, J.B. *et al.*, *J. Antibiot.*, 1988, **41**, 1048 (deriv)

Isono, K. *et al.*, *J. Antibiot.*, 1988, **42**, 1711 (rev)

Reddy, A.M. *et al.*, *J. Het. Chem.*, 1990, **27**, 1297 (ms)

Plagemann, P.G. *et al.*, *Biochem. Pharmacol.*, 1991, **42**, 247-252 (pharmacol)

Mitchell, S.S. *et al.*, *J. Nat. Prod.*, 1996, **59**, 1000-1001 (5'-Deoxytubercidin, 5-Bromo-5'-deoxytubercidin)

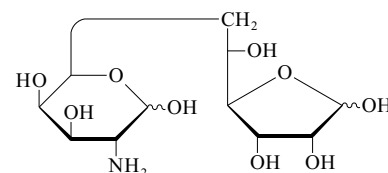
Biabani, M.F. *et al.*, *Pharm. Biol.*, 2002, **40**, 302-303 (isol)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, TNY500

Tunicamine**T-200**

2-Amino-2,6-dideoxy-L-allo-D-galactoundecodialdose, 9CI

[66054-53-3]



C₁₁H₂₁NO₉ 311.288

Characteristic sugar of antibiotics of the tunicamycin, streptoviridin and corynetoxin families (see N-Deacyltunicamycin, D-7).

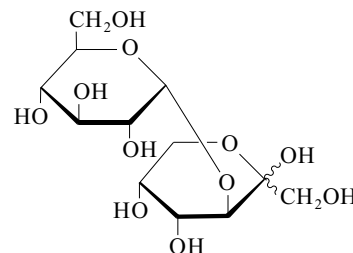
Sasai, H. *et al.*, *J. Carbohydr. Chem.*, 1985, **4**, 99-112 (synth)

Danishefsky, S. *et al.*, *J.A.C.S.*, 1985, **107**, 7761 (synth, deriv)

Ramza, J.B. *et al.*, *Carbohydr. Res.*, 1992, **228**, 205 (synth, deriv)

Turanose, 9CI, 8CI**T-201**

3-O-α-D-Glucopyranosyl-D-fructose [547-25-1]



C₁₂H₂₂O₁₁ 342.299

An aq. soln. at 36° contains Obt. by hydrol. of Melezitose, M-129. Isol. from some plant pollens and from honey. Mp 157° (168°). [α]_D²² +22 → +75.3 (c, 3.9 in H₂O).

Phenylsazone:

Needles (EtOH). Mp 200-205°. [α]_D²⁰ +24.5 → +33 (c, 0.82 in 2:3 Py/EtOH).

Phenylosotriazole: Mp 193-194°. [α]_D²⁰ +74.5 (c, 0.9 in H₂O).

α-Pyranose-form

Octa-Ac: Octa-O-acetyl-α-turanopyranose

C₂₈H₃₈O₁₉ 678.597
Mp 194-195°. [α]_D²⁰ +103.2 (CHCl₃).

1-Chloro, hepta-Ac: Acetochloroturanose

C₂₆H₃₅ClO₁₇ 655.005
Mp 165°. [α]_D²⁰ -0.4 (CHCl₃).

1-Bromo, hepta-Ac: Acetobromoturanose

C₂₆H₃₅BrO₁₇ 699.456
Mp 133-134°. [α]_D²⁰ -30.5 (CHCl₃).

β-Pyranose-form

1,4,5,2',3',4',6'-Hepta-Ac: Hepta-O-acetyl-β-turanopyranose

C₂₆H₃₆O₁₈ 636.56
Mp 140-141°. [α]_D²⁰ +38.7 → +41.7 (CHCl₃).

Octa-Ac: Octa-O-acetyl-β-turanopyranose

C₂₈H₃₈O₁₉ 678.597
Mp 216-217°. [α]_D²⁰ +20.5 (CHCl₃).

Me glycoside: Methyl β-turanopyranoside

C₁₃H₂₄O₁₁ 356.326
Mp 173-174°. [α]_D²⁰ +3.6 (H₂O).

Me glycoside, hepta-Ac: Methyl hepta-O-acetyl-β-turanopyranoside

C₂₇H₃₈O₁₈ 650.586
Mp 188-189°. [α]_D²⁰ +27.5 (CHCl₃).

α-Furanose-form

Octa-Ac: Octa-O-acetyl-α-D-turanofuranose

C₂₈H₃₈O₁₉ 678.597
Mp 158°. [α]_D²⁰ +107 (CHCl₃).

β-Furanose-form

Octa-Ac: Octa-O-acetyl-β-D-turanofuranose

C₂₈H₃₈O₁₉ 678.597
Syrup. [α]_D²⁰ +67.4 (CHCl₃).

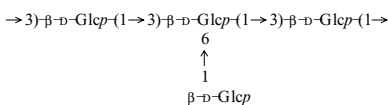
Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **1**, 308C (nmr)

Hudson, C.S. et al., *Adv. Carbohydr. Chem.*, 1946, **2**, 1; 2 (rev)

Pacsu, E. et al., *Methods Carbohydr. Chem.*, 1962, **1**, 353 (synth)
de Bruyn, A. et al., *Bull. Soc. Chim. Belg.*, 1975, **84**, 799 (pmr)
Neuman, A. et al., *Acta Cryst. B*, 1978, **34**, 242 (cryst struct)
Bradbury, J.H. et al., *Carbohydr. Res.*, 1979, **71**, 15 (pmr)
Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 15 (equilib)
Lichtenthaler, F.W. et al., *J.C.S. Perkin 2*, 1990, 1489 (equilib)

Tylophilan

[113834-61-0]



Branched tetrameric β-D-glucan. Glucan from carpophores of fungus *Tylophilus felleus*. Cytotoxic agent. Powder. Sol. H₂O. [α]_D²⁰ +4.5 (c, 0.2 in H₂O).

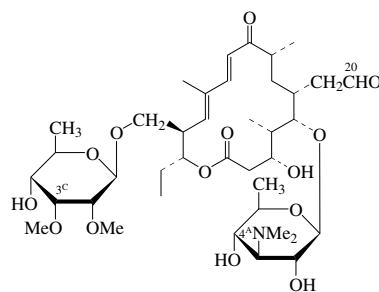
Defaye, J. et al., *Carbohydr. Res.*, 1988, **173**, 316-323 (isol, struct)

Grzybek, J. et al., *Planta Med.*, 1990, **56**, 670-671; 675 (activity)

Tylosin B

Desmycosin, 8CI. Demycarosyltylosin

[11032-98-7]



C₃₉H₆₅NO₁₄ 771.941

Hydrolysis prod. of Tylosin and isol. from *Streptomyces fradiae*. Cryst. (CHCl₃). Sol. H₂O, Et₂O, MeOH; poorly sol. hexane. Mp 114-116°. [α]_D²⁵ -14.8 (c, 2 in MeOH). pK_a 8. λ_{max} 282 (E1%/1cm 285) (MeOH) (Berdy). λ_{max} 288 (E1%/1cm 275) (H₂O) (Berdy).

► LD₅₀ (mus, orl) 5000 mg/kg.

T-202

2^A,4^A-Di-Ac:

Rhombic cryst. (Me₂CO/petrol). Mp 199-200°. [α]_D²⁰ -28.4 (c, 0.275 in CHCl₃).

2^A,3,4^A,4^C-Tetra-Ac: [56858-51-6]
[α]_D²⁰ +4.9 (c, 1.53 in CHCl₃).

3^C-O-De-Me: 3^C-O-Demethyltylosin B.

Lactenocin

[11049-05-1]

C₃₈H₆₃NO₁₄ 757.914

From *Streptomyces fradiae*. Mainly active against gram-positive bacteria.

2^C,3^C-Di-O-de-Me: 2^C,3^C-Di-O-demethyltylosin B. 2^C-De-O-methylactenocin
[81557-35-9]

C₃₇H₆₁NO₁₄ 743.887

Prod. by *Streptomyces fradiae*. Powder.

Sol. MeOH, C₆H₆; poorly sol. hexane.

[α]_D²⁰ -21.2 (MeOH). λ_{max} 283 (ε 22300)

(EtOH). λ_{max} 283 (ε 22300) (EtOH) (Berdy).

20-Alcohol: 20-Dihydrotylosin B. 20-Dihydrodesmycosin

[66799-85-7]

C₃₉H₆₇NO₁₄ 773.957

Prod. by *Streptomyces fradiae*. Powder.

Sol. MeOH, C₆H₆; poorly sol. hexane.

20-Alcohol, 3^C-O-de-Me: 20-Dihydroactenocin

[85179-33-5]

C₃₈H₆₅NO₁₄ 759.93

Prod. by *Streptomyces fradiae*. Powder.

Sol. MeOH, C₆H₆; poorly sol. hexane.

20-Alcohol, 2^C,3^C-di-O-de-Me: 20-Dihydro-2^C-de-O-methylactenocin

[85563-47-9]

C₃₇H₆₃NO₁₄ 745.903

Prod. by *Streptomyces fradiae*. Powder.

Sol. MeOH, C₆H₆; poorly sol. hexane.

Hamill, R.L. et al., *Antibiot. Chemother.*

(Washington, D.C.), 1961, **11**, 328 (isol, props)

Morin, R.B. et al., *Tet. Lett.*, 1964, 2339 (isol, pmr)

Achenbach, H. et al., *Chem. Ber.*, 1975, **108**, 2481 (synth, deriv, pmr)

Corcoran, J.W. et al., *J. Antibiot.*, 1977, **30**, 1012 (props)

Matsubara, H. et al., *Chem. Pharm. Bull.*, 1982, **30**, 97 (synth, derivs)

Kirst, H.A. et al., *J. Antibiot.*, 1982, **35**, 1675 (props)

Baltz, R.H. et al., *J. Antibiot.*, 1983, **36**, 131-141 (Lactenocin derivs)

Ukonans

Neutral polysaccharides. Consts. of the rhizomes of *Curcuma longa* (turmeric). Show activity towards the reticuloendothelial system. Immunostimulant and phagocytosis-activating agents.

Ukonan A [128606-57-5]

Powder. $[\alpha]_D^{25}$ -16.7 (c, 0.1 in H₂O).

Ukonan B [128606-58-6]

Powder. $[\alpha]_D^{25}$ -40 (c, 0.1 in H₂O).

Ukonan C [128606-59-7]

Powder. $[\alpha]_D^{25}$ +37.3 (c, 0.1 in H₂O).

Ukonan D [141490-48-4]

Powder. $[\alpha]_D^{23}$ +81.7 (c, 0.1 in H₂O). Also contains a small amount of a peptide moiety.

Gonda, R. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 482-486; 1991, **39**, 441-444; 1992, **40**, 185-188; 990-993 (*isol. struct. props*)

Ulvan

Polysaccharide composed of partially sulfated Rha, Xyl and glucuronic acid. Isol. from cell walls of marine green algae *Ulva* spp., *cf. rigida* and *Ulva lactuca*. Shows cytotoxic props.

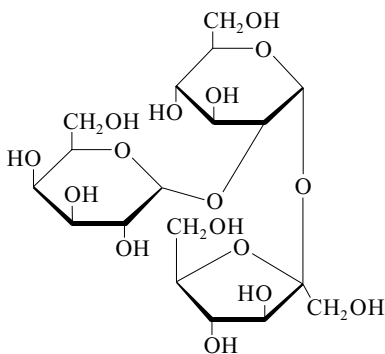
Ray, B. *et al.*, *Carbohydr. Res.*, 1995, **274**, 313-318

Lahaye, M. *et al.*, *Carbohydr. Res.*, 1996, **283**, 161-173

Kaeffer, B. *et al.*, *Planta Med.*, 1999, **65**, 527-531 (*isol. activity*)

Umbelliferose

β -D-Fructofuranosyl O- α -D-galactopyranosyl-(1 \rightarrow 2)- α -D-glucopyranoside, 9CI [546-60-1]



C₁₈H₃₂O₁₆ 504.441

Isol. from roots of *Angelica archangelica* (angelica) and other spp. in the Umbelliferae. Powder. $[\alpha]_D$ +125.3 (H₂O).

Wickstrom, A. *et al.*, *Acta Chem. Scand.*, 1956, **10**, 1199; 1957, **11**, 1473 (*isol*)

Svendsen, A.B. *et al.*, *Acta Chem. Scand.*, 1956, **10**, 1500

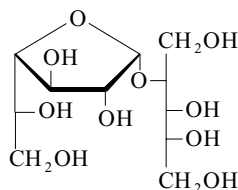
Hiller, K. *et al.*, *Planta Med.*, 1969, **17**, 79; *CA*, **70**, 112394h (*isol*)

Hopf, H. *et al.*, *Plant Physiol.*, 1974, **54**, 13; *CA*, **81**, 166424p (*biosynth*)

Hopf, W. *et al.*, *Biochem. Physiol. Pflanz.*, 1976, **169**, 5; *CA*, **84**, 118600h

Umbilicin

2-O- β -D-Galactofuranosyl-D-arabinitol, 9CI, 8CI [536-35-6]



C₁₁H₂₂O₁₀ 314.289

Constit. of the lichen *Umbilicaria pustulata*.

Mp 138-139°. $[\alpha]_D^{20}$ -81 (c, 2.0 in H₂O).

Octa-Ac:

C₂₇H₃₈O₁₈ 650.586

Mp 84-85°. $[\alpha]_D^{20}$ -20 (c, 2.0 in CHCl₃).

Lindberg, B. *et al.*, *Acta Chem. Scand.*, 1952, **6**, 1052 (*isol*)

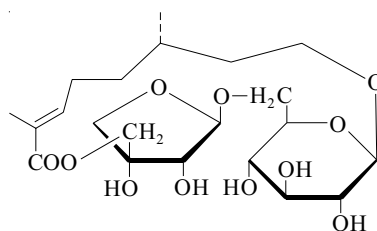
Bering, H.F.G. *et al.*, *Acta Chem. Scand.*, 1968, **22**, 193 (*synth*)

Boren, H. *et al.*, *CA*, 1972, **77**, 102045a (*rev. synth*)

Nishikawa, Y. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 1014 (*glc*)

Urceolide

[87442-02-2]



C₂₁H₃₄O₁₁ 462.493

Bitter constit. of *Viburnum urceolatum*.

Cryst. (Me₂CO).

Mp 155-156°. $[\alpha]_D^{26}$ -45.4 (c, 0.4 in MeOH).

λ_{\max} 218 (ε 14000) (MeOH).

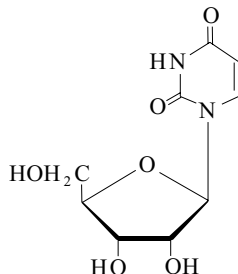
Iwagawa, T. *et al.*, *Phytochemistry*, 1983, **22**, 255 (*isol. uv, pmr, ms*)

Uridine

1- β -D-Ribofuranosyl-2,4(1H,3H)-pyrimidinedione, 9CI. 1- β -D-Ribofuranosyluracil, 8CI. NSC 20256

[58-96-8]

[26287-69-4]

**U-4**

C₉H₁₂N₂O₆ 244.204

Prepd. by hydrol. of yeast nucleic acid.

Widely distributed in nature.

Mp 165°. $[\alpha]_D^{20}$ +4 (c, 2 in H₂O). λ_{\max} 205 (ε 9800); 261 (ε 10100) (pH 7.3).

► LD₅₀ (mus, ipr) 4335 mg/kg. YR1450000

3'-Ac: [4873-68-1]

C₁₁H₁₄N₂O₇ 286.241

Mp 172-174°.

5'-Ac: [6773-44-0]

C₁₁H₁₄N₂O₇ 286.241

Mp 163-165°.

2',3'-Di-Ac: [29108-90-5]

C₁₃H₁₆N₂O₈ 328.278

Mp 142-143°.

3',5'-Di-Ac: [6773-48-4]

C₁₃H₁₆N₂O₈ 328.278

Mp 152-155°.

2',3',5'-Tri-Ac: PN 401

[4105-38-8]

C₁₅H₁₈N₂O₉ 370.315

Orphan drug designated (2003) for the treatment of mitochondrial disease.

Mp 128-130°.

3'-Benzoyl: [16667-60-0]

C₁₆H₁₆N₂O₇ 348.312

Mp 212-214°. λ_{\max} 231 (ε 15490); 260 (ε 11220) (95% EtOH).

2',3',5'-Tribenzoyl: [1748-04-5]

C₃₀H₂₄N₂O₉ 556.528

Mp 142-143°.

5'-Tosyl: [24380-35-6]

C₁₆H₁₈N₂O₈S 398.393

Mp 162-163°.

2',3'-O-Isopropylidene: 2',3'-O-Isopropylideneuridine

[362-43-6]

C₁₂H₁₆N₂O₆ 284.268

Cryst. (H₂O). Mp 159-160°

Mp 165-166°. $[\alpha]_D$ -15.8 (MeOH).

2',3'-O-Isopropylidene, 5'-Ac: [15922-23-3]

C₁₄H₁₈N₂O₇ 326.305

Mp 146-147°.

2',3'-O-Benzylidene: [3257-71-4]

C₁₆H₁₆N₂O₆ 332.312

Mp 189-190°.

5'-Phosphate: See 5'-Uridylic acid, U-14

5'-Diphosphate: Uridine 5'-(trihydrogen diphosphate), 9CI. Uridine 5'-(trihydrogen pyrophosphate), 8CI. Uridine diphosphate. UDP

[58-98-0]

Isol. from calf's liver, thymus and yeast.

Mp 195° dec. (as tri-Na salt).

5'-Triphosphate: See Uridine 5'-triphosphate, U-10

5'-Trityl: [6554-10-5]

C₂₈H₂₆N₂O₆ 486.523

Mp 200°. $[\alpha]_D$ +9.5 (Me₂CO).

N-Me: 3-Methyluridine, 9CI, 8CI

[2140-69-4]

C₁₀H₁₄N₂O₆ 258.23

Present in the hydrolysates of yeast t-RNA.

Mp 119-120°. $[\alpha]_D^{26}$ +20.1 (H₂O). λ_{\max} 263 (ε 9110) (no solvent reported).

N-Me, 2',3'-O-isopropylidene: [32471-59-3]

C₁₃H₁₈N₂O₆ 298.295

Mp 116-118°.

N-Me, 3'-mesyl: [24514-40-7]

C₁₁H₁₆N₂O₈S 336.322

Cryst. (EtOH). Mp 173-175°. $[\alpha]_D^{25}$ -12 (c, 0.25 in H₂O). λ_{\max} 260 (ε 8500) (H₂O).

N-Me, 2',5'-ditrityl:

C₄₈H₄₂N₂O₆ 742.87

Mp 245-248° Mp 212-214°.

2'-Me: 2'-O-Methyluridine

[2140-76-3]

C₁₀H₁₄N₂O₆ 258.23

Occurs in ribosomal RNA of higher organisms. Found in the primary sequence of tRNA^{ser} from yeast and rat liver, located in the d₁-region.

Mp 158-160°. $[\alpha]_D^{25}$ +41.8 (c, 0.18 in H₂O).

λ_{\max} 262 (ε 10700) (H₂O). λ_{\max} 262

(ε 10700) (aq. acid, pH 1). λ_{\max} 261

(ε 8100) (aq. alkali, pH 12).

5'-Me: 5'-O-Methyluridine

[39848-60-7]

C₁₀H₁₄N₂O₆ 258.23

Cryst. (EtOH/Et₂O). Mp 135°.

5'-Me, 2',3'-O-isopropylidene: [67443-68-9]

C₁₃H₁₈N₂O₆ 298.295

Mp 115°. $[\alpha]_D^{25}$ +20 (c, 0.1 in MeOH).

5',N-Di-Me: 3-Methyl-5'-O-methyluridine, 9CI

[120046-93-7]

C₁₁H₁₆N₂O₆ 272.257

No phys. props. reported.

5',N-Di-Me, 2',3'-O-isopropylidene:

[34311-40-5]

C₁₄H₂₀N₂O₆ 312.322

No phys. props. reported.

2',3'-Di-Me: 2',3'-Di-O-Methyluridine

C₁₁H₁₆N₂O₆ 272.257

Needles (EtOAc). Mp 175-176°. λ_{\max} 262 (ε 10200) (aq. acid, pH 2). λ_{\max} 262 (ε 7900) (aq. alkali, pH 12).

2',3',5'-Tri-Me: 2',3',5'-Tri-O-Methyluridine

C₁₂H₁₈N₂O₆ 286.284

Needles (EtOH). Mp 113.5-114.5°.

4-OH-form

Et ether: 4-O-Ethyluridine, 9CI

[59495-20-4]

C₁₁H₁₆N₂O₆ 272.257

Sl. hygroscopic cryst. (EtOH).

Mp 136-137.5°.

[19817-91-5]

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 815B (ir)

Aldrich Library of 13C and 1H FT NMR

Spectra, 1992, **3**, 371B (nmr)

Ross, B.S. et al., *J. Het. Chem.*, 1944, **31**, 765

(synth, 2-Me)

Hall, R.H. et al., *J.A.C.S.*, 1954, **76**, 5056

(phosphate)

Miles, H.T. et al., *Biochim. Biophys. Acta*, 1956, **22**, 247 (N-Me)

Fox, J.J. et al., *Adv. Carbohydr. Chem.*, 1959, **14**, 283 (rev)

Chambers, R.W. et al., *J.A.C.S.*, 1959, **81**, 3032

(phosphate)

Biemann, K. et al., *J.A.C.S.*, 1962, **84**, 2005

(ms)

Hall, R.H. et al., *Biochim. Biophys. Acta*, 1963, **68**, 278 (isol, 2-Me)

Ulbricht, T.L.V. et al., *Tet. Lett.*, 1964, 695 (ord)

Hall, R.H. et al., *Biochemistry*, 1965, **4**, 661

(isol, N-Me)

Fromageot, H.P.M. et al., *Tetrahedron*, 1967, **23**, 2315 (5'-Ac, isopropylidene)

Martin, D.M.G. et al., *Biochemistry*, 1968, **7**, 1406 (synth, 2-Me)

Staehelin, M. et al., *Nature (London)*, 1968, **219**, 1363 (occur, 2-Me)

Kikugawa, K. et al., *Chem. Pharm. Bull.*, 1969, **17**, 785 (N-Me-3'-mesyl)

Blank, H.U. et al., *Annalen*, 1970, **742**, 1 (synth, N-Me)

Green, E.A. et al., *Chem. Comm.*, 1971, 53

(cryst struct)

Mittleman, A. et al., *CA*, 1972, **77**, 162801d

(occur, 2-Me)

Kusmierek, J.T. et al., *Biochemistry*, 1973, **12**, 194-200 (synth, 2-Me, 5-Me)

Kimura, J. et al., *Bull. Chem. Soc. Jpn.*, 1973, **12**, 194-200 (5'-Me isopropylidene)

Hruska, F.E. et al., *Can. J. Chem.*, 1973, **51**, 1099 (pmr, 2-Me)

Krugh, T.R. et al., *J.A.C.S.*, 1973, **95**, 4761

(cmr)

Belikova, A.M. et al., *Tetrahedron*, 1973, **29**, 2277 (conformn, pmr)

Haines, A.H. et al., *Tetrahedron*, 1973, **29**, 2807

(synth, 2-Me)

Basic Princ. Nucleic Acid Chem., (Ts'O, P.O.P., Ed.), Academic Press, 1974, **1**, (rev)

Kikugawa, K. et al., *Chem. Pharm. Bull.*, 1975, **23**, 35 (synth)

Wilson, M.S. et al., *J.A.C.S.*, 1975, **97**, 3436

(ms, 2-Me)

Davies, D.B. et al., *J.C.S. Perkin 2*, 1975, 1703

(pmr, N-Me)

Viswamitra, M.A. et al., *Acta Cryst. B*, 1979, **35**, 1089 (diphosphate, cryst struct)

Plochocka, D. et al., *J.C.S. Perkin 2*, 1981, 82-89 (3,5'-di-Me isopropylidene)

Holy, A. et al., *Coll. Czech. Chem. Comm.*, 1985, **50**, 393-417 (synth, uv, pmr, 5'-Me)

Yamamoto, I. et al., *J. Med. Chem.*, 1987, **30**, 2227 (deriv, synth, pmr)

Matsuda, A. et al., *Chem. Pharm. Bull.*, 1988, **36**, 945-953 (4-Et ether, synth, pmr)

Bessodes, M. et al., *Synthesis*, 1988, 560-562, (5'-Me isopropylidene)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1425

Ross, B.S. et al., *J. Het. Chem.*, 1994, **31**, 765

(synth, 2-Me)

Parmentier, G. et al., *Tetrahedron*, 1994, **50**, 5361 (synth, uv, ir, pmr, cmr, 2-Me)

Partridge, B.L. et al., *Acta Cryst. C*, 1995, **51**, 1929 (cryst struct, N-Me)

Hovinen, J. et al., *Helv. Chim. Acta*, 1997, **80**, 851-855 (synth, uv, pmr, cmr, 5'-Me, 3,5'-di-Me)

Kelsen, D.P. et al., *J. Clin. Oncol.*, 1997, **15**, 1511-1517; 2000, **18**, 167-177 (PN 401, pharmacol)

Ichikawa, S. et al., *J.O.C.*, 1997, **62**, 1368-1375 (4-Et ether)

Moyroud, E. et al., *Tetrahedron*, 1999, **55**, 1277-1284 (L-form, synth, pmr, cmr)

Saydoff, J.A. et al., *Brain Res.*, 2003, **994**, 44-54 (PN 401, pharmacol)

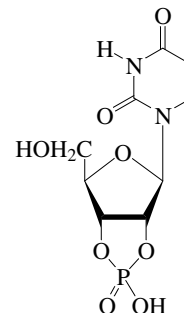
Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, UVJ000

Uridine cyclic 2',3'-(hydrogen phosphate), 9CI

2',3'-UMP

[606-02-0]

U-7



C₉H₁₁N₂O₈P 306.168

λ_{\max} 260 (ε 9600) (H₂O, pH 7).

Stockx, J. et al., *Bull. Soc. Chim. Belg.*, 1961, **70**, 595-596; 1962, **71**, 634-636 (synth)

Jardetzky, C.D. et al., *J.A.C.S.*, 1962, **84**, 62-66

(pmr)

Eckstein, F. et al., *Chem. Ber.*, 1968, **101**, 1670-1673 (synth)

Van Boom, J.H. et al., *J.C.S. Perkin 1*, 1973, 2513-2517 (synth, uv)

Wang, Y. et al., *Nucleic Acids Res.*, 1987, **15**, 929-305 (synth, pmr)

Uridine diphosphate glucose

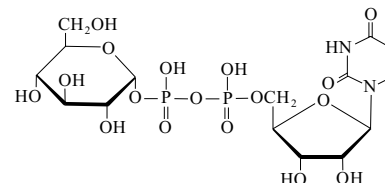
U-8

Uridine 5'-(trihydrogen diphosphate)

mono- α -D-glucopyranosyl ester, 9CI.

UDPG. UDP Glucose

[133-89-1]



C₁₅H₂₄N₂O₁₇P₂ 566.305

Biosynthetic prod. from the uridyl transferase catalysed reaction of UTP and glucose 1-phosphate. Coenzyme of the galactose phosphate → glucose phosphate transformation *in vivo*.

λ_{\max} 262 nm (ε 10 000) (pH 7).

Di-Li salt: [27518-86-1]

Hexahydrate. $[\alpha]_D^{25}$ +43.6 (c, 0.34 in H₂O).

Di-Na salt: [28053-08-9]

Powder + 2H₂O. λ_{\max} 262 nm (pH 2).

6''-Carboxylic acid: Uridine 5'-diphosphate glucuronic acid. UDP-glucuronic acid.

UDP-GlcUA

[2616-64-0]

[63700-19-6]

C₁₅H₂₂N₂O₁₈P₂ 580.289

Intermed. in glucuronide synth. in biol. systems. Pale yellow powder.

Caputto, R. et al., *J. Biol. Chem.*, 1950, **184**, 333

(isol)

Storey, I.D.E. et al., *Biochem. J.*, 1955, **59**, 279-288 (UDP-glucuronic acid)

Moffatt, J.G. et al., *J.A.C.S.*, 1958, **80**, 3756

(synth)

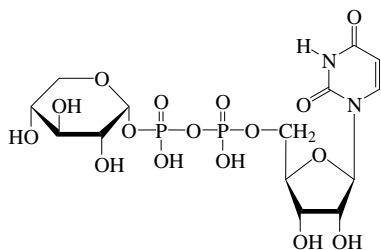
- Michelson, A.M. *et al.*, *Biochemistry*, 1962, **1**, 1171-1174 (UDP-glucuronic acid)
 Honjo, M. *et al.*, *Chem. Pharm. Bull.*, 1962, **10**, 225-231 (UDP-glucuronic acid)
 Michelson, A.M. *et al.*, *The Chemistry of Nucleosides and Nucleotides*, Academic Press, N.Y., 1963, 153 (rev)
 Ger. Pat., 1975, 2 452 467; *CA*, **83**, 59225u (cryst struct)
 Lee, C.-H. *et al.*, *Biochemistry*, 1976, **15**, 697-704 (pmr, conformn)
 Evans, P.E. *et al.*, *FEBS Lett.*, 1979, **105**, 11-14 (UDP-glucuronic acid, P-31 nmr)
 Sugawara, Y. *et al.*, *Acta Cryst. C*, 1984, **40**, 389 (cryst struct)
 Simon, E.S. *et al.*, *Methods Enzymol.*, 1989, **179**, 275-287 (UDP-glucuronic acid)
 Simon, E.S. *et al.*, *J.O.C.*, 1990, **55**, 1834-1841; 1991, **56**, 5603-5606 (UDP-glucuronic acid)
 Toone, E.J. *et al.*, *J.O.C.*, 1991, **56**, 5603-5606 (UDP-glucuronic acid, enzymic synth, pmr, cmr)
 Monteiro, C. *et al.*, *Carbohydr. Res.*, 2000, **329**, 141-155 (cmr, pmr, P-31 nmr, Mg-25 nmr)
 Ma, X. *et al.*, *Carbohydr. Res.*, 2001, **333**, 159-163 (synth)

Uridine diphosphate xylose

U-9

Uridine 5'-(trihydrogen diphosphate) mono- α -D-xylopyranosyl ester, 9CI.
 Uridine 5'-diphosphoxylose. Uridine pyrophosphate xylose ester
 [3616-06-6]

[108320-89-4]

C₁₄H₂₂N₂O₁₆P₂ 536.279

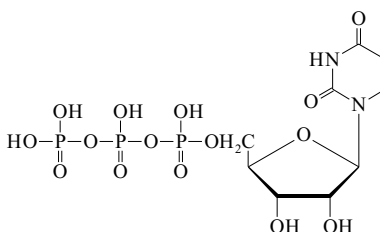
Metabolic intermed. in plants. No phys. props. reported. Commercially available as Na salt.

- Guisberg, V. *et al.*, *J. Biol. Chem.*, 1956, **223**, 977 (synth)
 Neufeld, E.F. *et al.*, *J.A.C.S.*, 1958, **80**, 4430 (synth)
 Feingold, D.S. *et al.*, *J. Biol. Chem.*, 1960, **235**, 910 (synth)
 Ankel, H. *et al.*, *Biochemistry*, 1965, **4**, 1965 (biosynth)
 Aspinall, G.O. *et al.*, *Can. J. Biochem.*, 1972, **50**, 574 (synth)
 Li, T. *et al.*, *Org. Mass Spectrom.*, 1993, **28**, 127 (ms)
 Rush, J.S. *et al.*, *J. Am. Soc. Mass Spectrom.*, 1996, **7**, 541 (ms)

Uridine 5'-triphosphate

U-10

Uridine 5'-(tetrahydrogen triphosphate), 9CI. Uridine 5'-triphosphoric acid. UTP. Uridic triphosphate
 [63-39-8]

C₆H₁₅N₂O₁₅P₃ 484.143

Isol. from yeast and other biol. sources. Pyrimidine analogue of ATP. Enzymatic prepn. from UDP and from ribonucleic acid. Purine P_{2y} receptor agonist.

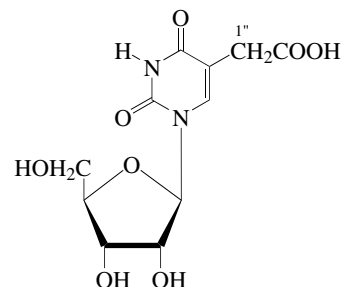
► YU8083000

- Tri-Na salt: [19817-92-6]
 Dihydrate. Mp 140° dec.
 [5095-93-2, 5497-23-4, 18609-47-7, 20701-19-3, 27908-31-2, 36792-23-1, 50694-75-2]
 Lipton, S.H. *et al.*, *J.A.C.S.*, 1953, **75**, 5449 (isol, uv)
 Kenner, G.W. *et al.*, *J.C.S.*, 1954, 2288 (synth)
 Tanaka, K. *et al.*, *Chem. Pharm. Bull.*, 1960, **8**, 749; 1962, **10**, 220 (synth)
 Tarr, H.L.A. *et al.*, *Can. J. Biochem.*, 1966, **44**, 197 (biosynth)
 Adam, A. *et al.*, *Biochemistry*, 1968, **7**, 875 (synth)
 Filip, J. *et al.*, *J. Labelled Compd.*, 1974, **10**, 489 (biosynth)
 Tsujiaki, H. *et al.*, *Chem. Comm.*, 1975, 196 (synth, uv, chromatog)
 Labotka, R.J. *et al.*, *J.A.C.S.*, 1976, **98**, 3699, (P-31 nmr)
 Furusawa, K. *et al.*, *J.C.S. Perkin I*, 1976, 1711 (synth)
 Takaku, H. *et al.*, *Chem. Lett.*, 1977, 655 (synth, uv, chromatog)
 Williams, J.C. *et al.*, *Anal. Biochem.*, 1978, **91**, 46 (tlc)
 Edelson, E.H. *et al.*, *J. Chromatogr.*, 1979, **174**, 409 (hplc)
 Wong, C.-H. *et al.*, *J.A.C.S.*, 1983, **105**, 115 (isol)
 Schilsky, R.L. *et al.*, *J. Chromatogr.*, 1985, **337**, 63 (hplc)
 Bennett, W.D. *et al.*, *Am. J. Resp. Crit. Care Med.*, 1996, **153**, 1796-1801 (pharmacol)
 King, B.F. *et al.*, *Trends Pharmacol. Sci.*, 1998, **19**, 506-514 (pharmacol)

Uridine-5-acetic acid

U-11

1,2,3,4-Tetrahydro-2,4-dioxo-1- β -D-ribofuranosyl-5-pyrimidineacetic acid, 9CI
 [20964-06-1]

C₁₁H₁₄N₂O₈ 302.24

Cryst. (EtOH aq.). Mp 238-240° (230.5°). λ_{\max} 265 (ε 9600) (H₂O).

Me ester: 5-(Methoxycarbonylmethyl)uridine. Methyl uridine-5-acetate
 [29428-50-0]
 C₁₂H₁₆N₂O₈ 316.267

Modified nucleoside present in tRNA's. Cryst. (MeOH/Et₂O).

Mp 165-166°. λ_{\max} 232 (ε 2200) (H₂O).

Amide: 5-(2-Amino-2-oxoethyl)uridine, 9CI. 5-(Carbamoylmethyl)uridine
 [29569-30-0]
 C₁₁H₁₅N₃O₇ 301.255

Modified nucleoside present in tRNA's. Cryst. (MeOH aq.).

Mp 228-230°. λ_{\max} 267 (ε 5800) (H₂O).

I''S-Hydroxy: 5-(Carboxyhydroxymethyl)uridine
 [89708-80-5]
 C₁₁H₁₄N₂O₉ 318.24

Modified nucleoside found in tRNA's.

I''S-Hydroxy, Me ester: 5-(Methoxycarbonylhydroxymethyl)uridine
 [89665-83-8]
 C₁₂H₁₆N₂O₉ 332.266

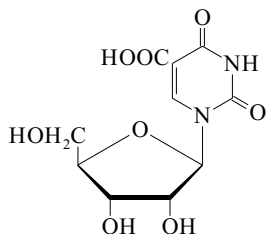
Modified nucleoside found in tRNA's.

[89665-84-9, 127911-55-1]

- Kondo, T. *et al.*, *Nucleic Acids Symp. Ser.*, 1983, **12**, 127 (synth, abs config, deriv)
 Hayakawa, H. *et al.*, *Tetrahedron*, 1985, **41**, 1675 (synth, uv, pmr)
 Inoue, H. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 4585 (synth, uv, pmr)
 Ogawa, K. *et al.*, *J. Biochem. (Tokyo)*, 1986, **99**, 527 (isol, struct, amide)
 Sierzputowska-Gracz, H. *et al.*, *J.A.C.S.*, 1987, **109**, 7171 (occur, uv, pmr, cmr)
 Kawakami, M. *et al.*, *J. Biochem. (Tokyo)*, 1988, **104**, 108 (isol, deriv, uv, pmr, ms)
 Nawrot, B. *et al.*, *Nucleosides Nucleotides*, 1989, **8**, 1499 (synth, deriv)

5-Uridinecarboxylic acid U-12

1,2,3,4-Tetrahydro-2,4-dioxo-1-β-D-ribofuranosyl-5-pyrimidinecarboxylic acid, 9CI
[3180-22-1]



C₁₀H₁₂N₂O₈ 288.213
Needles (EtOH aq.). Mp 118°. pK_a 9.5.

Amide: [110914-06-2]

C₁₀H₁₃N₃O₇ 287.229

Needles (EtOH). Mp 198-200° dec.

Nitrile: 5-Cyanouridine, 9CI

[4425-57-4]

C₁₀H₁₁N₃O₆ 269.213

Needles (EtOH). Mp 185°. [α]_D²⁵ -4.7.

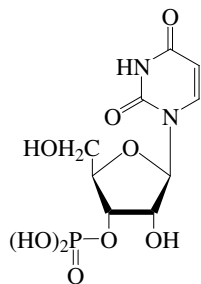
Imai, K. *et al.*, *Chem. Pharm. Bull.*, 1965, **13**, 7 (synth, uv)

Cusack, N.J. *et al.*, *J.C.S. Perkin 1*, 1973, 1720 (nitrile)

Agathocleous, D.C. *et al.*, *J.C.S. Perkin 1*, 1991, 2317 (amide, pmr)

3'-Uridylic acid, 9CI U-13

Uridine 3'-(dihydrogen phosphate). Uridine 3'-monophosphate. Uridine 3'-phosphate. Uridine 3'-phosphoric acid. 3'-UMP
[84-53-7]



C₉H₁₃N₂O₉P 324.184
Obt. by alkaline hydrol. of RNA.

Di-Na salt: [35170-03-7]

Needles + 3H₂O (EtOH aq.).

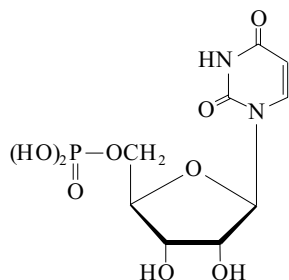
Hall, R.D. *et al.*, *J.O.C.*, 1963, **28**, 1506-1509 (synth)

Komiyama, M. *et al.*, *Makromol. Chem. Rapid Commun.*, 1988, **9**, 453-455 (synth)

5'-Uridylic acid, 9CI, 8CI U-14

Uridine 5'-monophosphate. UMP. Uridine-5'-phosphoric acid. Uridine 5-phosphate
[58-97-9]

[27416-86-0]



C₉H₁₃N₂O₉P 324.183

Nucleotide widely distributed in nature.

pK_{a1} 1; pK_{a2} 6.5; pK_{a3} 9.9; pK_{a4} 13.8. λ_{max} 262 nm (ε 10 000) (pH 7).

Di-Na salt: [3387-36-8]

Dihydrate. Mp 208-210° dec.

► YU7975000

[25618-56-8]

Biochem. Prep., 1961, **8**, 130 (synth)

Shefter, E. *et al.*, *Acta Cryst.*, 1965, **18**, 1067 (cryst struct)

Mitsunobu, O. *et al.*, *J.A.C.S.*, 1969, **91**, 6510 (synth)

Stothers, J.B. *et al.*, *Carbon-13 NMR Spectroscopy*, Academic Press, N.Y., 1972, (cmr)

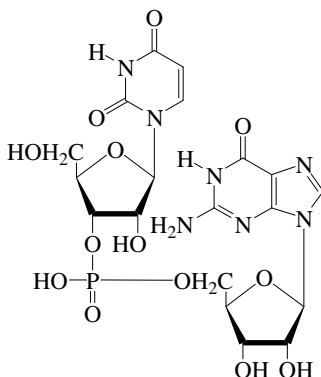
Takaku, O. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 2373 (pmr)

Seshadri, T.P. *et al.*, *Acta Cryst. B*, 1980, **36**, 925 (cryst struct)

Uridyl-(3' → 5')-guanosine, 9CI U-15

UpG

[3474-04-2]



C₁₉H₂₄N₇O₁₃P 589.412

Chladek, S. *et al.*, *Coll. Czech. Chem. Comm.*, 1964, **29**, 214-233; 1966, **31**, 3198-3212 (synth)

Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**, 29-38 (ord)

Brimacombe, R. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2074-2086 (synth, uv)

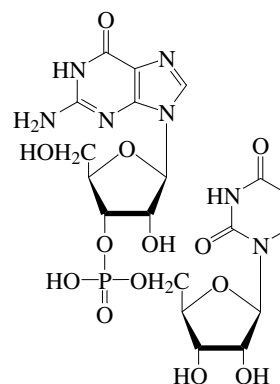
Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997-1029 (pmr)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (ms)

Rastogi, H. *et al.*, *Nucleic Acids Res.*, 1995, **23**, 4872-4877 (synth)

Uridyl-(5' → 3')-guanosine, 9CI U-16

Guanyl-(3' → 5')-uridine. GpU
[4785-07-3]



C₁₉H₂₄N₇O₁₃P 589.412

Lohrmann, R. *et al.*, *J.A.C.S.*, 1964, **86**,

4188-4194; 1966, **88**, 829-833 (synth, uv)

Walshaw, M.M. *et al.*, *J. Mol. Biol.*, 1966, **20**, 29-38 (ord)

Brimacombe, R. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2074-2086 (synth, uv)

Fromageot, H.P.M. *et al.*, *Tetrahedron*, 1968, **24**, 3533-3540 (synth, uv)

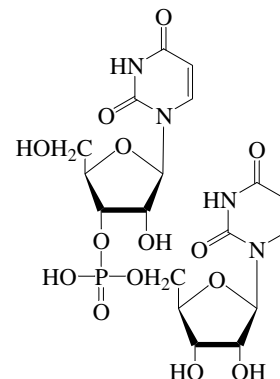
Ts'o, P.O.P. *et al.*, *Biochemistry*, 1969, **8**, 997-1029 (pmr)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (ms)

Uridyl-(3' → 5')-uridine, 9CI U-17

UpU

[2415-43-2]



C₁₈H₂₃N₄O₁₄P 550.372

Rammner, D.H. *et al.*, *J.A.C.S.*, 1962, **84**, 3112-3122 (synth)

Hall, R.H. *et al.*, *J.O.C.*, 1963, **28**, 1506-1509 (synth, uv)

Griffin, B.E. *et al.*, *Tetrahedron*, 1967, **24**, 639-662 (synth)

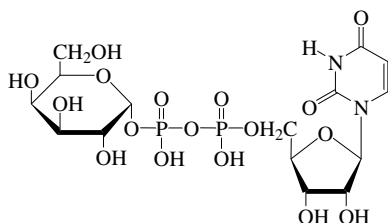
Brimacombe, R. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2074-2086 (synth, uv)

Cerny, R.L. *et al.*, *Anal. Biochem.*, 1986, **156**, 424-435 (ms)

Smith, W.S. *et al.*, *J.A.C.S.*, 1992, **114**, 7989-7997 (synth, pmr, cmr, conformn)

Urochloralic acid**U-18**

2,2,2-Trichloroethyl β -D-glucopyranosiduronic acid, 9CI, 8CI
[97-25-6]



$C_8H_{11}Cl_3O_7$ 325.529

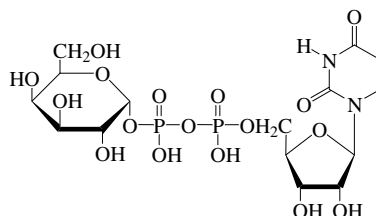
Synth. from trichloroethanol by rat liver microsomal fraction in the presence of UDP-glucuronic acid. Chloral hydrate and trichloroethanol metab.

Me ester, tri-Ac:Mp 160-161° (157-158°).
[α]_D²⁰ -38 (c, 1 in CHCl₃). [α]_D²⁰ -53
(c, 0.15 in CHCl₃).

Honma, K. *et al.*, *Chem. Pharm. Bull.*, 1976, **24**, 394 (ester, cmr, pmr)
Magnusson, G. *et al.*, *Acta Chem. Scand., Ser. B*, 1981, **35**, 213 (synth)
Ikeda, M. *et al.*, *J. Chromatogr.*, 1984, **307**, 111 (glc)
Knadle, S.A. *et al.*, *CA*, 1991, **114**, 137792b (metab)

UTP-galactose**U-19**

Uridine 5'-(trihydrogen diphosphate) mono- α -D-galactopyranosyl ester, 9CI
[2956-16-3]

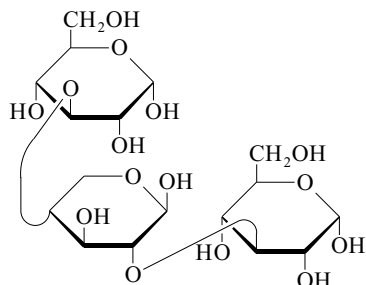


$C_{15}H_{24}N_2O_{17}P_2$ 566.305

O'Connor, J.V. *et al.*, *Biochemistry*, 1979, **18**, 500-507 (pmr, cmr, conformn)
Tyagi, A.K. *et al.*, *J. Biochem. Biophys. Methods*, 1979, **1**, 221-226 (hplc)
Robataille, P.M.L. *et al.*, *J. Magn. Reson.*, 1991, **92**, 73-84 (P-31 nmr)
Wong, C.H. *et al.*, *J.O.C.*, 1992, **57**, 4343-4344 (synth)
Wittmann, V. *et al.*, *J.O.C.*, 1997, **62**, 2144-2147 (synth)

Vaccariose

3-Deoxy- α -D-glucopyranosyl-(3 \rightarrow 2)-4-deoxy- β -D-xylopyranosyl-(4 \rightarrow 3)- α -D-glucopyranose
[133360-43-7]



C₁₇H₃₀O₁₅ 474.415
Isol. from *Saponaria vaccaria*.
Mp 190-192°. [α]_D²⁰ +271.4 (c, 1.1 in H₂O).

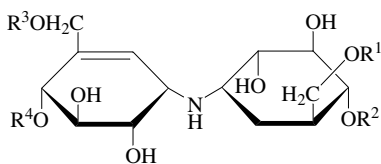
Deca-Ac:

C₃₇H₅₀O₂₅ 894.787
Mp 116-118°. [α]_D²⁰ +54.08 (c, 0.94 in CHCl₃).

Kazmi, S.N. *et al.*, *Fitoterapia*, 1990, **61**, 223
(isol, pmr, cmr)

Validamycin C

[12650-70-3]



R¹ = R⁴ = H, R² = β -Glc, R³ = α -Glc

C₂₆H₄₅NO₁₈ 659.637

Aminoglycoside antibiotic. Isol. from *Streptomyces hygroscopicus*. Weakly active against *Pellicularia sasakii*. Sol. H₂O, DMF, DMSO; poorly sol. EtOH, hexane.
Mp 142-160° dec. [α]_D +132.9 (c, 1 in H₂O).

► LD₅₀ (mus, ivn) 2000-4000 mg/kg.
YV9350300

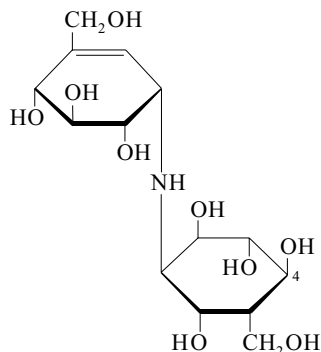
Horii, S. *et al.*, *J. Antibiot.*, 1972, **25**, 48 (isol)
Kameda, Y. *et al.*, *J. Antibiot.*, 1988, **41**, 1488
(cmr, struct)

Miyamoto, Y. *et al.*, *J.C.S. Perkin 1*, 1991, 2121
(synth)

V-1

Validoxylamine B

[39318-73-5]



C₁₄H₂₅NO₉ 351.353

Isol. from *Streptomyces hygroscopicus*.
Thin needles (MeOH) (as nona-Ac). Sol. H₂O, MeOH, DMSO; poorly sol. EtOH, EtOAc, CHCl₃.
Mp 175-176° (nona-Ac).

4-O- β -D-Glucopyranoside: **Validamycin B**
[102583-47-1]

C₂₀H₃₅NO₁₄ 513.495

Isol. from *Streptomyces hygroscopicus*.
Active against rice sheath blight disease and *Pellicularia sasakii*. Sol. H₂O, MeOH, Py; fairly sol. Me₂CO, EtOH; poorly sol. EtOAc, hexane.

Mp 132-142° dec. [α]_D²⁴ +102 (c, 1 in H₂O).
► LD₅₀ (mus, ivn) 2000 - 4000 mg/kg.
YV9350200

6-Deoxy: **Validoxylamine A**

[38665-10-0]

C₁₄H₂₅NO₈ 335.353

Obt. from *Streptomyces hygroscopicus*.
Shows antifungal props. Sol. H₂O. [α]_D +170 (c, 1 in H₂O).

► LD₅₀ (mus, ivn) 2000-4000 mg/kg.

6-Deoxy, 4-O- β -D-glucopyranoside: **Validamycin A**. T 7545A. *Antibiotic T 7545A*. *Validamycin*, *JMAF. Validacin. Mycin. Rhizocin. Solacil*
[37248-47-8]

C₂₀H₃₅NO₁₃ 497.495

Isol. from *Streptomyces hygroscopicus* and *Streptomyces griseus* as major component of Validamycin complex. Also obt. on chemical or enzymic hydrol. of Validamycin C, V-2, Validamycin E and Validamycin F. Used in control of fungal infection in rice, potatoes, strawberries and other crops. V. active against *Pellicularia sasakii*. Amorph. powder. Sol. H₂O, MeOH, DMSO, DMF; fairly sol. EtOH, Me₂CO; poorly sol. EtOAc, hexane, Et₂O. Mp 95° dec Mp 130-135° dec. [α]_D²⁴ +112 (c, 1 in H₂O). pK_a 6.

► LD₅₀ (mus, ivn) 2000-4000 mg/kg.
NM7540000

6-Deoxy, 4-O- $[\beta$ -D-glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranoside]: **Validamycin E**
[12650-71-4]

C₂₆H₄₅NO₁₈ 659.637

Isol. from *Streptomyces hygroscopicus*.
Active against *Pellicularia sasakii*. Sol. H₂O, DMSO, DMF; poorly sol. butanol, hexane.

V-3

Mp 265-268° dec. [α]_D +148.2 (c, 1 in H₂O).

► LD₅₀ (mus, ivn) 2000 - 4000 mg/kg.
NM7524800

6-Deoxy, 4-O- $[\beta$ -D-glucopyranosyl-(1 \rightarrow 6)- β -D-glucopyranoside]: **Validamycin H**
[130812-69-0]

C₂₆H₄₅NO₁₈ 659.637

From *Streptomyces hygroscopicus*.

Amorph. [α]_D²⁵ +74.9 (c, 1 in H₂O).

Horii, S. *et al.*, *Chem. Comm.*, 1972, 746

Horii, S. *et al.*, *J. Antibiot.*, 1972, **25**, 48 (isol)

Ogawa, S. *et al.*, *Chem. Lett.*, 1982, 279 (deriv)

Toyokumi, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1983, **56**, 2999 (synth)

Asano, N. *et al.*, *J. Antibiot.*, 1984, **37**, 859

Kameda, Y. *et al.*, *J. Antibiot.*, 1986, **39**, 1491
(deriv)

Ogawa, S. *et al.*, *J.C.S. Perkin 1*, 1988, 2675
(synth, bibl)

Asano, N. *et al.*, *J. Antibiot.*, 1990, **43**, 1039
(Validamycin H)

Miyamoto, Y. *et al.*, *Carbohydr. Res.*, 1992, **223**, 299 (Validamycin H, synth)

Fukase, H. *et al.*, *J.O.C.*, 1992, **57**, 3651 (synth)

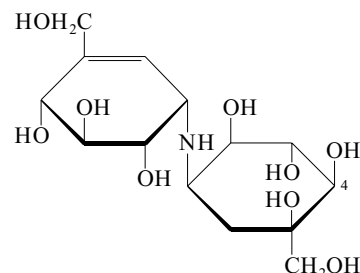
Pesticide Manual, 11th edn., 1997, No. 747 (use)
Pesticide Manual, 12th edn., 2000, No. 800

(Validamycin)

Mahmud, T. *et al.*, *Chem. Rev.*, 2001, 300-301
(rev, biosynth)

Validoxylamine G

[106054-18-6]



C₁₄H₂₅NO₉ 351.353

Isol. from *Streptomyces hygroscopicus* var. *limoneus*. Amorph. solid + H₂O. Sol. H₂O, MeOH, DMSO; poorly sol. EtOH, Me₂CO, hexane. [α]_D +118.6 (c, 1 in H₂O).

4-O- β -D-Glucopyranoside: **Validamycin G**
[106054-17-5]

C₂₀H₃₅NO₁₄ 513.495

Prod. by *Streptomyces hygroscopicus* var. *limoneus*. Shows weak activity against rice blast disease. Amorph. + H₂O. Sol. H₂O, DMSO, MeOH; poorly sol. EtOH, hexane, Me₂CO. [α]_D²⁵ +52.8 (c, 0.5 in H₂O).

Iwasa, T. *et al.*, *J. Antibiot.*, 1971, **24**, 107; 114; 119 (isol)

Horii, S. *et al.*, *J. Antibiot.*, 1972, **25**, 48 (derivs)

Kameda, Y. *et al.*, *J. Antibiot.*, 1980, **33**, 764; 1986, **39**, 1491; 1988, **41**, 1488 (derivs, cmr)

Ogawa, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1983, **56**, 499 (synth, struct)

Ogawa, S. *et al.*, *Chem. Lett.*, 1983, 921 (synth, struct)

Jin, W.-Z. *et al.*, *J. Antibiot.*, 1987, **40**, 329 (pmr, cmr)

Ogawa, S. *et al.*, *J.C.S. Perkin 1*, 1988, 2675
(synth, bibl)

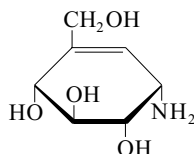
Miyamoto, Y. *et al.*, *J.C.S. Perkin 1*, 1989, 1013
(synth)

Fukase, H. *et al.*, *J.O.C.*, 1992, **57**, 3651 (synth)

V-4

Valienamine**V-5**

6-Amino-4-(hydroxymethyl)-4-cyclohexene-1,2,3-triol
[38231-86-6]



C₇H₁₃NO₄ 175.184

Aminocyclitol antibiotic. Prod. by *Streptomyces hygroscopicus* ssp. *limoneus*. Also formed by degradn. of Validamycins by soil bacteria. α -Glucosidase inhibitor; useful for treating hypoglycemia. Active against some *Bacillus* sp. Powder. Sol. H₂O. Mp 69-71°. [α]_D²³ +90 (c, 0.43, H₂O).

Hydrochloride: [α]_D²³ +68.6 (1M HCl).

Penta-Ac: Mp 95°. [α]_D²³ +30.2 (CHCl₃).

Kameda, Y. et al., *Chem. Comm.*, 1972, 746 (struct)

Kameda, Y. et al., *J. Antibiot.*, 1980, **33**, 1575; 1984, **37**, 1301 (isol)

Eur. Pat., 1982, 63 456; *CA*, **98**, 177495 (isol, props)

Japan. Pat., 1982, 82 59 813; *CA*, **97**, 61008 (props)

Yoshikaura, M. et al., *Chem. Pharm. Bull.*, 1988, **36**, 4236 (synth)

McAuliffe, J.C. et al., *Aust. J. Chem.*, 1997, **50**, 193 (synth)

Trost, B.M. et al., *J.A.C.S.*, 1998, **120**, 1732-1740 (synth)

Kapferer, P. et al., *Helv. Chim. Acta*, 1999, **82**, 645-656 (synth)

Tatsuta, K. et al., *J. Antibiot.*, 2000, **53**, 430-435 (synth, pmr)

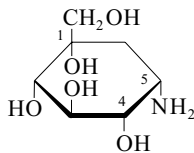
Kok, S.H.-L. et al., *J.O.C.*, 2001, **66**, 7184-7190 (synth, bibl)

Chen, X. et al., *Chem. Rev.*, 2003, **103**, 1955-1977 (rev)

Chang, Y.-K. et al., *J.O.C.*, 2005, **70**, 3299-3302 (synth)

Valiolamine**V-6**

5-Amino-1-hydroxymethyl-1,2,3,4-cyclohexanetetrol. 4-Amino-3,4-dideoxy-2-C-(hydroxymethyl)-D-epi-inositol
[83465-22-9]



C₇H₁₅NO₅ 193.199

Numbering and stereochemical description of stereoisomers is complex depending on whether named as a cyclohexane or as a cyclitol. The numbering shown is based on the cyclohexanetetrol system. Prod. by *Streptomyces hygroscopicus* ssp. *limoneus*. α -Glucosidase inhibitor. Powder + H₂O. [α]_D²⁰ +18.8 (c, 1.0 in H₂O). p*K*_a 8.6.

► NM7522300

O¹, O², O³, O⁴, N-Penta-Ac: [118014-37-2]
C₁₇H₂₅NO₁₀ 403.385
Cryst. (EtOAc); prisms (CH₂Cl₂/diisopropyl ether). Mp 137-138°. [α]_D²⁵ -14.8 (c, 1 in CHCl₃).

N-Benzoyloxycarbonyl: [94789-66-9]
Needles (H₂O). Mp 181-184°.

1-Epimer: 1-Amino-1,6-dideoxy-5-C-(hydroxymethyl)-D-chiro-inositol, 9CI.

Epivaliolamine

[90865-96-6]

C₇H₁₅NO₅ 193.199

Prod. by *Streptomyces hygroscopicus* ssp. *limoneus*. Weak α -glucosidase inhibitor. Powder. Sol. H₂O, DMSO, MeOH; poorly sol. EtOH, hexane. [α]_D²⁵ +18.2 (c, 1.0 in H₂O).

4-Epimer: 3-Amino-3,4-dideoxy-5-C-(hydroxymethyl)-D-allo-inositol
[171339-40-5]

C₇H₁₅NO₅ 193.199

Amorph. solid. [α]_D²² -11.1 (c, 0.4 in H₂O).

5-Epimer: 2-Amino-1,2-dideoxy-6-C-(hydroxymethyl)-L-chiro-inositol
[141042-85-5]

C₇H₁₅NO₅ 193.199

Amorph. solid. [α]_D²⁰ -27.9 (c, 0.5 in H₂O).

4,5-Diepimer: 4-Amino-3,4-dideoxy-2-C-(hydroxymethyl)-D-allo-inositol
[171339-39-2]

C₇H₁₅NO₅ 193.199

Amorph. solid. [α]_D¹⁹ -13.7 (c, 0.5 in H₂O).

Eur. Pat., 1982, 63 950; *CA*, **98**, 161113 (synth)

Kameda, Y. et al., *J. Antibiot.*, 1984, **37**, 1301; 1985, **38**, 1816 (isol, struct, nmr, props)

Horii, S. et al., *Carbohydr. Res.*, 1985, **140**, 185-200 (Valiolamine, Epivaliolamine, synth)

Hayashida, M. et al., *J. Carbohydr. Chem.*, 1988, **7**, 83-94 (penta-Ac, synth)

Shing, T.K.M. et al., *J.O.C.*, 1996, **61**, 8468-8479 (synth, ir, pmr, cmr, epimers)

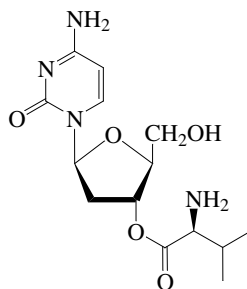
Sellier, O. et al., *Tet. Lett.*, 1999, **40**, 853-856 (synth)

Chen, X. et al., *Chem. Rev.*, 2003, **103**, 1955-1977 (rev)

Ogawa, S. et al., *Org. Biomol. Chem.*, 2004, **2**, 884-889 (synth)

Valtorcitabine, INN**V-7**

L-Valine, 3'-ester with 4-amino-1-(2-deoxy- β -L-erythro-pentofuranosyl)-2-(1H)-pyrimidinone, 9CI
[380886-95-3]



C₁₄H₂₂N₄O₅ 326.352

Antiviral agent for the treatment of hepatitis B.

Hydrochloride (1:2): **Valtorcitabine dihydrochloride, USAN. NM 147**
[359689-54-6]

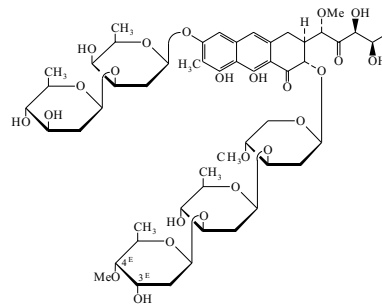
Pat. Coop. Treaty (WIPO), 2001, 01 96 353, (Novirio Pharmaceuticals); *CA*, **136**, 42882w (synth, pharmacol)

Variamycin, 9CI**V-8**

3^E-Demethyl-4^E-O-methylmithramycin.

Variamycin A

[12677-11-1]



C₅₂H₇₆O₂₄ 1085.158

Chromomycin-type antibiotic. Isol. from *Actinomyces olivovariabilis*. Shows antitumour activity. Sol. MeOH, Et₂O, CHCl₃; poorly sol. H₂O, hexane.

Mp 162-165° dec. [α]_D²⁰ -49 (c, 0.5 in EtOH). Similar to Mithramycin. λ_{max} 230 (E1%/1cm 174); 280 (E1%/1cm 380); 317 (E1%/1cm 60); 330 (E1%/1cm 50); 412 (E1%/1cm 80) (MeOH) (Berdy).

► LD₅₀ (mus, ivn) 1.62 mg/kg, LD₅₀ (mus, orl) 75 mg/kg. PZ2950000

Rudaya, S.M. et al., *Antibiotiki (Moscow)*, 1971, **16**, 969 (isol)

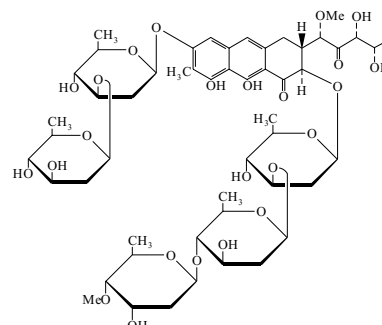
Lokshin, G.B. et al., *Bioorg. Khim.*, 1975, **1**, 479 (ir, uv, nmr, struct)

Thiem, J. et al., *Angew. Chem., Int. Ed.*, 1983, **22**, 58 (struct, stereochem)

Shashkov, A.S. et al., *Bioorg. Khim.*, 1991, **17**, 410 (pmr, cmr, struct)

Variamycin B**V-9**

[81600-25-1]



C₅₂H₇₆O₂₄ 1085.158

Chromomycin-type antibiotic. Prod. by *Streptomyces olivovariabilis*. Shows antitumour props. Yellow powder. Sol. MeOH, DMSO, Et₂O, EtOH; fairly sol. H₂O; poorly sol. hexane.

Mp 163-165° dec. [α]_D²⁰ -30 (c, 0.5 in EtOH). A struct. alteration to

Variamycin A (1991) may also apply to Variamycin B. λ_{\max} 230 (ϵ 18620); 279 (ϵ 39800); 317 (ϵ 3390); 330 (ϵ 5740); 415 (ϵ 8900) (MeOH) (Berdy).

► YW7365500

Zhdanovich, Yu.V. *et al.*, *Antibiotiki (Moscow)*, 1982, **27**, 83; *CA*, **96**, 179353 (*isol. struct*)

Varianose

V-10

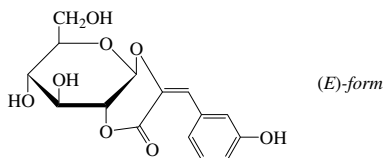
Heteropolysaccharide. Contains β -L-Araf-(1 \rightarrow 2)- β -D-Galf-(1 \rightarrow 3)-D-threitol units on a branched galactofuranosyl skeleton containing both α - and β -D-Galf residues. Extracellular polysaccharide elaborated by *Penicillium varians*.

Jansson, P. *et al.*, *Carbohydr. Res.*, 1980, **82**, 97

Venusol

V-11

1,2-O-[1-[(4-Hydroxyphenyl)methylene]-2-oxo-1,2-ethanediyl]- β -D-glucopyranose, 9CI



$C_{15}H_{16}O_8$ 324.287

(E)-form

Constit. of *Umbilicus pendulinus*. λ_{\max} 326 (no solvent reported).

(Z)-form [80645-63-2]

Constit. of *Gunnera perperna*, *Umbilicus pendulinus* and *Umbilicus ruperstris*. Needles.

Mp 259-260°. $[\alpha]_D^{20}$ +84.5 (c, 0.24 in MeOH). λ_{\max} 323 (no solvent reported).

Proliac, A. *et al.*, *Tet. Lett.*, 1981, 3583-3584 (*struct. uv, nmr, ir, ms*)

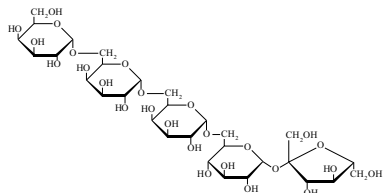
Viornery, L. *et al.*, *Chem. Pharm. Bull.*, 2000, **48**, 1768-1770 (*isol. pmr, cmr*)

Khan, F. *et al.*, *Phytochemistry*, 2004, **65**, 1117-1121 (*isol. pmr, cmr, ms, cryst struct*)

Verbascose, 8CI

V-12

β -D-Fructofuranosyl O- α -D-galactopyranosyl-(1 \rightarrow 6) [O- α -D-galactopyranosyl-(1 \rightarrow 6)]2- α -D-glucopyranoside, 9CI [546-62-3]



$C_{30}H_{52}O_{26}$ 828.725

Present in storage organs, tubers, rhizomes and seeds of some plants; accumulates in the seeds during maturation and disappears during germination. Commonest source is mullein (*Verbascum thapsus*) root.

Mp 220° (188-189°). $[\alpha]_D$ +169 (+148) (H_2O).

Heptadeca-Ac: Mp 132°. $[\alpha]_D$ +130.

Bourquelot, E. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1910, **151**, 760 (*synth*)

Herissey, H. *et al.*, *C. R. Hebd. Seances Acad. Sci.*, 1954, **239**, 824

Karrer, W. *et al.*, *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 674 (*occur*)

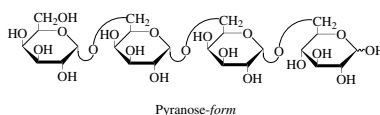
Koike, K. *et al.*, *CA*, 1976, **85**, 119615z (*isol*)

Price, K.R. *et al.*, *Chem. Ind. (London)*, 1986, 180 (*isol. purifn*)

Verbascotetraose

V-13

α -D-Galactopyranosyl-(1 \rightarrow 6)- α -D-galactopyranosyl-(1 \rightarrow 6)- α -D-galactopyranosyl-(1 \rightarrow 6)-D-glucose



$C_{24}H_{42}O_{21}$ 666.583

Found in birch sap. Normal constit. of acid-resistant plant tissues.

Mp 240°. $[\alpha]_D$ +191.

Courtois, J.E. *et al.*, *Bull. Soc. Chim. Biol.*, 1955, **37**, 1009

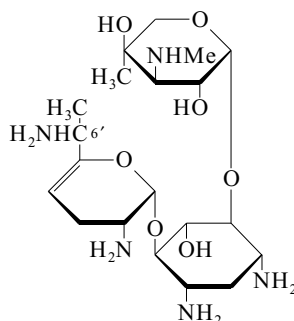
Haq, S. *et al.*, *Can. J. Biochem.*, 1962, **40**, 989

Verdamycin

Verdamycin I

[49863-48-1]

V-14



$C_{20}H_{39}N_5O_7$ 461.557

Aminoglycoside antibiotic. *Isol. from Micromonospora grisea*. Active against gram-positive and -negative bacteria. Sol. H_2O ; fairly sol. MeOH, $CHCl_3$; poorly sol. Me_2CO , hexane. $[\alpha]_D$ +167 (c, 0.3 in H_2O).

► LD₅₀ (mus, ivn) 75 mg/kg. WK2284000

6'-N-Me: 6'-N-Methylverdamycin. K 26-2a. VF3-1. Antibiotic K 26-2a. Antibiotic VF3-1 [75804-31-8]

$C_{21}H_{41}N_5O_7$ 475.584

Semisynthetic. Sol. H_2O ; poorly sol.

Me_2CO , hexane.

Ger. Pat., 1973, 2 239 964; *CA*, **79**, 51820t (*isol*)

Weinstein, M.J. *et al.*, *Antimicrob. Agents*

Chemother., 1975, **7**, 246 (*props*)

U.K. Pat., 1975, 1 405 283; *CA*, **84**, 57381p

Daniels, P.J. *et al.*, *J.C.S. Perkin 1*, 1976, 1078 (*ms*)

Phillips, I. *et al.*, *J. Antimicrob. Chemother.*, 1977, **3**, 403 (*props*)

Japan. Pat., 1979, 79 62 393; *CA*, **91**, 122151z (*isol*)

Kase, H. *et al.*, *Agric. Biol. Chem.*, 1982, **46**, 515 (6'-N-Methylverdamycin)

Vesiculogen

V-15

[72994-03-7]

Glycoprotein. *Isol. from fruiting bodies of the fungus Peziza vesiculosa*. Shows antitumour activity. Sol. H_2O ; poorly sol. hexane.

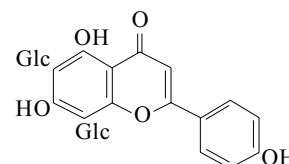
Yadomae, T. *et al.*, *Microbiol. Immunol.*, 1979, **23**, 997-1008 (*isol*)

Suzuki, I. *et al.*, *Chem. Pharm. Bull.*, 1982, **30**, 1066-1068 (*activity*)

Vicenin 2

V-16

6,8-Di- β -D-glucopyranosyl-5,7-dihydroxy-2-(4-hydroxyphenyl)-4H-1-benzopyran-4-one, 9CI. 6,8-Di-C-glucosyl-4',5,7-trihydroxyflavone. 6,8-Di-C-glucopyranosylapigenin. 6,8-Di-C-glucosylapigenin [23666-13-9]



$C_{27}H_{30}O_{15}$ 594.525

Constit. of the wood of *Vitex lucens* and of lemons *Citrus limon* and of many other plant spp. Cryst. (H_2O).

Mp 233-236° (214-216° dec.). $[\alpha]_D$ +25 (c, 0.21 in Py). $[\alpha]_D$ +71 (c, 0.36 in H_2O).

7-O- β -D-Apiofuranoside:

$C_{32}H_{38}O_{19}$ 726.641

Constit. of the aerial parts of *Lupinus hartwegii*. Yellow powder. λ_{\max} 274 ; 328 (MeOH).

Mono-Ac: [50875-08-6]

$C_{29}H_{32}O_{16}$ 636.562

Constit. of the seeds of *Trigonella corniculata*.

6'''-O-(4-Hydroxy-3-methoxy-E-cinnamoyl), 7-O- β -D-apiofuranoside:

$C_{42}H_{46}O_{22}$ 902.812

Constit. of the aerial parts of *Lupinus hartwegii*. Yellow powder. λ_{\max} 272 ; 291 (sh) ; 325 (MeOH).

7-Me ether: 6,8-Di-C-glucopyranosyl-4',5-dihydroxy-7-methoxyflavone. 6,8-Di-C-glucosylgenkwanin

[128397-01-3]

$C_{28}H_{32}O_{15}$ 608.552

Isol. from Galipea trifoliata. λ_{\max} 274 ; 332 (MeOH).

2'''-O-Xylosyl, 7-Me ether: 6,8-Di-C-glucosyl-2'''-xylosylgenkwanin

[128197-78-4]

$C_{33}H_{40}O_{19}$ 740.668

Isol. from Galipea trifoliata. λ_{\max} 274 ; 330 (MeOH).

6''-O- β -D-Glucopyranosyl: 6-Gentiobiosyl-8-glucopyranosyl-4',5,7-trihydroxyflavone

[94530-40-2]

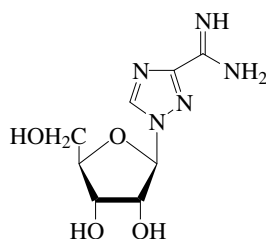
$C_{33}H_{40}O_{20}$ 756.667

Isol. from Stellaria holostea.

- Biol, M.C. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1972, **275**, 1523 (struct, synth)
 Wagner, H. *et al.*, *Z. Naturforsch.*, **B**, 1972, **27**, 954 (synth)
 Gaffield, W. *et al.*, *Tetrahedron*, 1978, **34**, 3089 (cd)
 Wallace, J.W. *et al.*, *Phytochemistry*, 1979, **18**, 1077 (isol)
 Carnat, A.-P. *et al.*, *J. Nat. Prod.*, 1998, **61**, 272-274 (isol, uv, pmr, cmr, ms)

Viramidine**V-23**

1-β-D-Ribofuranosyl-1H-1,2,4-triazole-3-carboximidamide, 9CI, ICN 3142 [119567-79-2]



C₈H₁₃N₅O₄ 243.222
 Antiviral agent. Prodrug of Ribavirin, R-92.

Hydrochloride: [40372-00-7]

Cryst. (MeCN/EtOH). Mp 177-179°.

Ger. Pat., 1972, 2 220 246, (Int. Chemical Nuclear Corp.); *CA*, **78**, 84766q (synth, pharmacol)

Witkowski, J.T. *et al.*, *J. Med. Chem.*, 1973, **16**, 935-937 (synth)

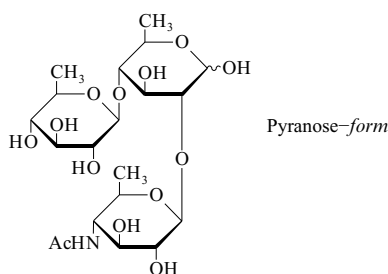
Gabrielson, B. *et al.*, *J. Med. Chem.*, 1992, **35**, 3231-3238 (synth)

Barnard, D. *et al.*, *Curr. Opin. Invest. Drugs*, 2002, **3**, 1585-1589 (rev)

Lin, C.C. *et al.*, *Antimicrob. Agents Chemother.*, 2003, **47**, 2458-2463 (pharmacol, metab)

Viridotriose B**V-24**

4-(Acetyl-amino)-4,6-dideoxy-β-D-glucopyranosyl-(1→2)[6-deoxy-β-D-glucopyranosyl-(1→4)]-6-deoxy-D-glucose, 9CI [73793-36-9]

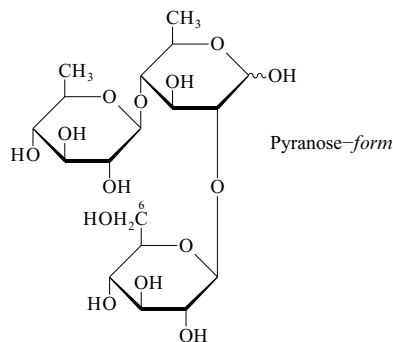


C₂₀H₃₅NO₁₃ 497.495
 Component of Sporaviridin, S-71. Powder + H₂O.
 Mp 216-219° dec. [α]_D²³ +4.7 (c, 0.3 in MeOH).

Harada, K. *et al.*, *Tet. Lett.*, 1982, **23**, 2481 (ms)
 Harada, K. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 3829; 3844 (struct, cmr)

Viridotriose C**V-25**

6-Deoxy-β-D-glucopyranosyl-(1→4)-[β-D-glucopyranosyl-(1→2)]-6-deoxy-D-glucose, 9CI [73942-74-2]



C₁₈H₃₂O₁₄ 472.442
 Component of Sporaviridin, S-71. Powder + H₂O.
 Mp 168-169° (dec.). [α]_D²³ +12.3 (c, 0.3 in MeOH).

6-Deoxy-6-Deoxy-β-D-glucopyranosyl-(1→2)-[6-deoxy-β-D-glucopyranosyl-(1→4)]-6-deoxy-D-glucose. **Viridotriose A** [73938-83-7]

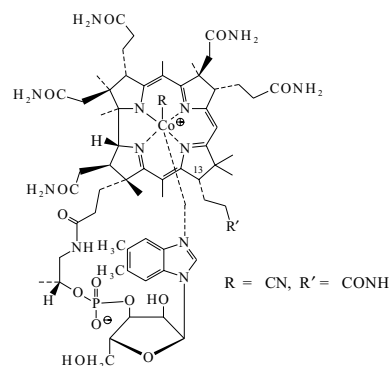
C₁₈H₃₂O₁₃ 456.443
 Component of Sporaviridin, S-71. Powder + H₂O.

Mp 235-238° dec. [α]_D²³ +11.3 (c, 0.3 in MeOH).

Harada, K. *et al.*, *Tet. Lett.*, 1982, **23**, 2481 (ms)
 Harada, K. *et al.*, *Chem. Pharm. Bull.*, 1983, **31**, 3829; 3844 (struct, cmr)

Vitamin B₁₂**V-26**

Cyanocobalamin, BAN, INN, USAN.
 α-(5,6-Dimethylbenzimidazolyl)cobamide cyanide. Cobamin. Cykobemin. Factor II [68-19-9]



C₆₃H₈₈CoN₁₄O₁₄P 1355.38
 Antipernicious anaemia factor isol. from liver extracts; now obt. comly. from fermentation liquors of *Streptomyces griseus* and other microorganisms, e.g. *Propionibacterium shermanii*, *Pseudomonas denitrificans*. Haematopoietic vitamin. Red needles. Sol. H₂O, alcohols, AcOH. Mp 210-220° darkens Mp 300°. Isotopic variants contg. ⁵⁷Co (*t*_{1/2} 270d), ⁵⁸Co (*t*_{1/2} 71.3d) and ⁶⁰Co (*t*_{1/2} 5.26y) are prep'd. by

fermentation in the presence of radio-cobalt and are used for diagnostic purposes. Cyanocobalamin (57Co), INN, Cyanocobalamin (58 Co), INN and Cyanocobalamin (60 Co), INN. λ_{max} 279 ; 306 ; 322 ; 361 ; 520 ; 550 (no solvent reported).

► Exp. reprod. and teratogenic effects. GG3750000

13-Epimer: Cyanoneocobalamin. Neovitamin B₁₂

[32627-64-8] Formed by acid-catalysed epimerisation.

Red cryst. (Me₂CO aq.). CD; λ 330 nm, Δε + 8.4 (0.1M KCN). Dec. at ca. 200° without melting.

Decyano: Cobalamin

[13408-78-1]

C₆₂H₈₈CoN₁₃O₁₄P[⊕] 1329.363

Decyano, Co(II) complex: Vitamin B_{12r}, Cob(II)-alamin

[14463-33-3]
 C₆₂H₈₈CoN₁₃O₁₄P 1329.363

Homolysis fragment of coenzyme Coenzyme B₁₂ and Methylcobalamin.

[13115-03-2, 13422-53-2, 18195-32-9]

Bonnett, R. *et al.*, *Chem. Rev.*, 1963, **63**, 573 (rev)

Nockolds, C.K. *et al.*, *Nature (London)*, 1967, **214**, 129 (cryst struct)

Pratt, J.M. *et al.*, *Inorg. Chem. of Vit. B12*, Academic Press, 1972, (rev)

Stöckli-Evans, H. *et al.*, *J.C.S. Perkin 2*, 1972, 605 (cryst struct)

Woodward, R.B. *et al.*, *Pure Appl. Chem.*, 1973, **33**, 145 (synth)

Bonnett, R. *et al.*, *Philos. Trans. R. Soc. London*, 1976, **273**, 295 (epimer)

Schrauzer, G.N. *et al.*, *Angew. Chem.*, 1977, **89**, 239

Rajoria, D.S. *et al.*, *J. Inorg. Nucl. Chem.*, 1977, **39**, 1291 (ir)

Kirk-Othmer Encycl. Chem. Technol., 3rd edn., Wiley, 1978, **24**, 158 (rev)

Florent, J. *et al.*, *Microb. Technol.*, 2nd edn., (eds. Peppier, H.J. *et al.*), Academic Press, 1979, **1**, 497 (rev, manu)

Zagalak, B. *et al.*, *Vitamin B12*, Walter de Gruyter, New York, 1979,

Kirschbaum, J. *et al.*, *Anal. Profiles Drug Subst.*, 1981, **10**, 183 (rev)

B12 [Twelve], (ed. Dolphin, D.), Wiley, New York, 1982, **1**, **2**;

Anton, D.L. *et al.*, *Biochemistry*, 1982, **21**, 2372 (cmr)

Ellenbogen, L. *et al.*, *Food Sci. Technol.*, 1984, **13**, 497 (rev)

Brown, K.L. *et al.*, *J.A.C.S.*, 1984, **106**, 7894 (P-31 nmr)

Leeper, F.J. *et al.*, *Nat. Prod. Rep.*, 1985, **2**, 19; 561; 1987, **4**, 441; 1989, **6**, 171 (revs, biosynth)

Battersby, A.R. *et al.*, *Acc. Chem. Res.*, 1986, **19**, 147 (rev, biosynth)

Negwer, M. *et al.*, *Organic-Chemical Drugs and their Synonyms*, 6th edn., Akademie-Verlag, 1987, 8358

Eschenmoser, A. *et al.*, *Angew. Chem., Int. Ed.*, 1988, **27**, 6 (rev)

Halpern, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1988, 187 (rev, chem)

Lewis, R.J. *et al.*, *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, VSZ000

Brioso, V. *et al.*, *J. Chim. Phys. Phys.-Chim. Biol.*, 1989, **86**, 1623 (x-ray absorption)

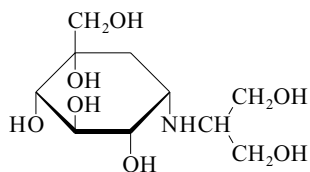
Kraeutler, B. *et al.*, *J.A.C.S.*, 1989, **111**, 8936 (Vitamin B_{12r})

Kurumaya, K. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 1058 (*biosynth*, *N-15 nmr*)
 Sagi, I. *et al.*, *J.A.C.S.*, 1990, **112**, 8639 (*Vitamin B₁₂ exafs*)
 Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1055
 Scott, A.I. *et al.*, *Tetrahedron*, 1994, **50**, 13315 (*rev, biosynth*)
 Blanche, F. *et al.*, *Angew. Chem., Int. Ed.*, 1995, **34**, 383 (*rev, biosynth*)
 Nicolaou, K.C. *et al.*, *Classics in Total Synthesis, Targets, Strategies, Methods*, VCH, 1996, 99 (*bibl, synth*)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2926-2929 (*props*)
 Kräutler, B. *et al.*, *Vitamin B12 and B12-proteins*, Wiley-VCH, 1997,
 Scott, A.I. *et al.*, *J.O.C.*, 2003, **68**, 2529-2539 (*rev, biosynth*)

Lewis, R.J. *et al.*, *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, VSZ000

Voglibose, INN, USAN**V-27**

3,4-Dideoxy-4-[[2-hydroxy-1-(hydroxymethyl)ethyl]amino]-2-C-(hydroxymethyl)-D-epi-inositol, 9CI. Basen. AO-128
 [83480-29-9]

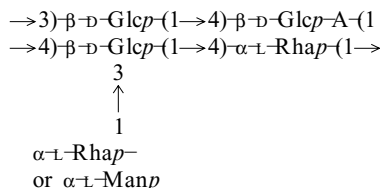


C₁₀H₂₁NO₇ 267.278

Claims that Voglibose is a natural product could not be verified. Reported as produced by *Streptomyces hygroscopicus-limoneus*. Potent α -glucosidase inhibitor. Potential oral antidiabetic agent. Launched 1994 (Japan). Cryst. Mp 162-163°. $[\alpha]_D^{25} +26.2$ (c, 1 in H₂O).
Eur. Pat., 1982, 56 194, (*Takeda*); *CA*, **97**, 198515r (*synth, pharmacol*)
 Horii, S. *et al.*, *J. Med. Chem.*, 1986, **29**, 1038 (*synth*)
 Odaka, H. *et al.*, *J. Nutr. Sci. Vitaminol.*, 1992, **38**, 27 (*pharmacol*)
 Fukase, H. *et al.*, *J.O.C.*, 1992, **57**, 3651 (*synth, pmr*)

Welan

S 130. Biozan



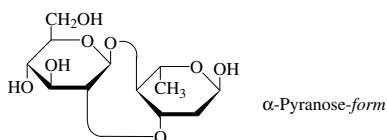
Microbial polysaccharide prod. by *Alcaligenes* ATCC 31555 by aerobic fermentation. Solns. v. viscous and pseudoplastic; used as an additive in oil and natural gas recovery. Also in specialised cement and concrete applications.

Jansson, P.-E. *et al.*, *Carbohydr. Res.*, 1985, **139**, 217; 1994, **256**, 327 (*struct*)
O'Neill, M.A. *et al.*, *Carbohydr. Res.*, 1986, **147**, 295 (*struct*)
Kuo, M.-S. *et al.*, *Carbohydr. Res.*, 1986, **156**, 173 (*manuf*)
Talashek, T.A. *et al.*, *Carbohydr. Res.*, 1987, **160**, 303 (*props*)
Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **12**, 859; **16**, 590
Stankowski, J.D. *et al.*, *Carbohydr. Res.*, 1992, **224**, 337 (*struct*)
Campana, S. *et al.*, *Carbohydr. Res.*, 1992, **231**, 31 (*conformn*)
Hember, M.W.N. *et al.*, *Carbohydr. Res.*, 1994, **252**, 209 (*struct*)

W-1

Wilforibiose

*β -D-Glucopyranose L-olivopyranose
1',4:2',3-anhydride*



C₁₂H₂₀O₈ 292.285
Isol. from hydrolysates of glucosides of
Cynanchum wilfordi. Needles (MeOH).
Mp 189-191°. [α]_D^{15.5} -23.5 (c, 0.98 in
MeOH).

α -Pyranose-*form*

Tetra-Ac:
 $C_{20}H_{28}O_{12}$ 460.434
 Needles (MeOH/CHCl₃). Mp 206-210°.
 $[\alpha]_D^{19.5}$ -48.4 (c, 0.98 in CHCl₃).

Me glycoside: Methyl α -wilforibioside
 $C_{13}H_{22}O_8$ 306.312
 Needles (MeOH). Mp 200-203°.
 $[\alpha]_D^{15}$ -70 (c, 0.96 in MeOH).

β -Pyranose-*form*

Me glycoside: Methyl β -wilforibioside
 $C_{13}H_{22}O_8$ 306.312
 Needles + $1H_2O$ (MeOH).

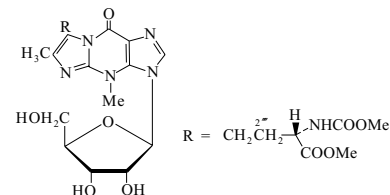
W-2

mp 186-187°. $[\alpha]_D^{15} +36.3$ (c, 0.98 in MeOH).

Tsukamoto, S. *et al.*, *Chem. Pharm. Bull.*, 1986, **34**, 1067 (*isol. cryst struct. pmr. cmr*)

Wybutosine

Y-Wyo. Nucleoside Y
[55196-46-8]



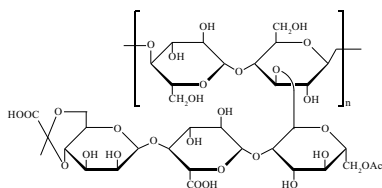
$C_{21}H_{28}N_6O_9$ 508.487
Nucleoside present in yeast t-RNA.
Fluorescent.

Thiebe, R. *et al.*, *Eur. J. Biochem.*, 1968, **5**, 546
 Funamizu, M. *et al.*, *J.A.C.S.*, 1971, **93**, 6706
(synth, abs config)
 Blobstein, S.H. *et al.*, *Arch. Biochem. Biophys.*,
 1975, **167**, 668
 Kasai, H. *et al.*, *Biochemistry*, 1976, **15**, 898
(bibl)
 Itaya, T. *et al.*, *Chem. Pharm. Bull.*, 2002, **50**,
 489-492 *(synth)*

W-3

Xanthan

Xanthan gum. Biozan R. E415
[11138-66-2]

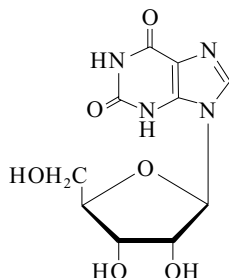


High molecular weight in range 10^6 - 10^7 with rodlike ordered struct. Extracellular bacterial polysaccharide from the plant pathogen *Xanthomonas campestris*. An emulsion stabilising and gelling agent.

Dea, I.C.M. *et al.*, *Carbohydr. Res.*, 1977, **57**, 249
Southwick, J.G. *et al.*, *Carbohydr. Res.*, 1980, **84**, 287
Norton, I.T. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, 545
Horton, D. *et al.*, *Carbohydr. Res.*, 1985, **141**, 340 (cmr)
Gravanis, G. *et al.*, *Carbohydr. Res.*, 1987, **160**, 259 (props)
Gamini, A. *et al.*, *Carbohydr. Res.*, 1991, **220**, 33 (cmr, O-17 nmr, struct)
Bezemer, L. *et al.*, *Carbohydr. Res.*, 1994, **263**, 197 (conformn)
Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2961-2965 (props, use)

Xanthosine, 8CI

3,9-Dihydro-9-β-D-ribofuranosyl-1H-purine-2,6-dione, 9CI. 9-β-D-Ribofuranosylxanthine
[146-80-5]



$C_{10}H_{12}N_4O_6$ 284.228

Prod. by guanine-free mutants of bacteria e.g. *Bacillus subtilis*, *Aerobacter aerogenes*. Also reported from seeds of *Trifolium alexandrinum*. Prismatic cryst. (H_2O). Spar. sol. cold H_2O ; v. sol. hot H_2O . $[\alpha]_D^{30}$ -51.2 (c, 8.0 in 0.3M NaOH). pK_{a1} 5.67; pK_{a3} 12.85 (25°). λ_{max} 253 nm (ϵ 8 790) (H_2O). Dec. on heating with no distinct melting range.

3'-Phosphate: 3'-Xanthylic acid, 9CI, 8CI [21089-32-7]
 $C_{10}H_{13}N_4O_9P$ 364.208
Mp 200° (as brucine salt). $[\alpha]_D^{20}$ -61.66 (c, 5.0 in NaOH).

5'-Phosphate: Xanthosine 5'-(dihydrogen phosphate), 9CI. 5'-Xanthylic acid, 8CI.

X-1

Xanthosine monophosphate. Xanthosine 5'-phosphate. XMP

[523-98-8]

[25899-70-1]

$C_{10}H_{13}N_4O_9P$ 364.208

Inhibitor of isoforms I and II of human inosine 5'-monophosphate dehydrogenase. No phys. props. reported.

5'-Triphosphate: [6253-56-1]

[50801-64-4, 90011-94-2]

$C_{10}H_{15}N_4O_{15}P_3$ 524.168

No phys. props. reported.

2',3'-O-Isopropylidene: [4137-57-9]

$C_{13}H_{16}N_4O_6$ 324.293

Mp 240°.

3-Me: 3-Methylxanthosine

[3080-28-2]

$C_{11}H_{14}N_4O_6$ 298.255

Needles (H_2O). Mp 200° dec.

5''-O-Sulfate: Xanthosine 5'-sulfate

$C_{10}H_{12}N_4O_9S$ 364.292

Isol. from the venom of the spider *Tegenaria agrestis*.

[5968-90-1]

Magasanik, B. *et al.*, *J. Biol. Chem.*, 1954, **206**, 83 (isol)

Bolis, M.E. *et al.*, *J. Biol. Chem.*, 1956, **219**, 917 (biosynth)

Jardetzky, C.D. *et al.*, *J.A.C.S.*, 1960, **82**, 222 (pmr)

Krishnaswamy, N.P. *et al.*, *Curr. Sci.*, 1966, **35**, 11 (isol)

Yoshikawa, M. *et al.*, *Bull. Chem. Soc. Jpn.*, 1967, **40**, 2849-2853 (5'-phosphate, synth)

Yamazaki, A. *et al.*, *J.O.C.*, 1967, **32**, 3258 (synth)

Holy, A. *et al.*, *Coll. Czech. Chem. Comm.*, 1968, **33**, 2259 (3'-Xanthylic acid)

Jones, A.J. *et al.*, *Proc. Natl. Acad. Sci. U.S.A.*, 1970, **65**, 27 (cmr)

De Pamphilis, M.L. *et al.*, *Biochemistry*, 1973, **12**, 3714-3724 (synth, uv, 5'-triphosphate)

Sowa, T. *et al.*, *Bull. Chem. Soc. Jpn.*, 1975, **48**, 2084-2090 (phosphate)

Westhof, E. *et al.*, *Z. Naturforsch., C*, 1975, **30**, 131 (pmr)

Koyama, G. *et al.*, *Acta Cryst. B*, 1976, **32**, 969 (cryst struct)

Itaya, T. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 1235 (3-Methylxanthosine)

Ortiz, B. *et al.*, *Eur. J. Biochem.*, 1993, **212**, 263-270 (pmr, 5'-triphosphate)

Carr, S.F. *et al.*, *J. Biol. Chem.*, 1993, **268**, 27286-28290 (5'-phosphate, biol)

Taggi, A.E. *et al.*, *J.A.C.S.*, 2004, **126**, 10364-10369 (5'-sulfate)

Xylan, 9CI, 8CI

[9014-63-5]

$C_5H_8O_4$ 132.116

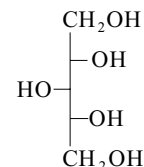
A typical hemicellulose pentosan formed by chains of (1→4) linked β-D-xylopyranosyl residues. True xylans, composed exclusively of D-xylose residues, are extremely rare. Esparto grass D-xylan is an example. Polymeric. Minimum formula given. Occurs in all land plants and is a major component of hardwoods. $[\alpha]_D^{20}$ -92 (c, 0.5 in 0.5N NaOH).

Poly(hydrogen sulfate): Pentosan polysulfate. Xylan hydrogen sulfate, 9CI. Xylan polysulfate. Cartrophen vet. Elmiron.

X-3**Xylitol, 9CI**

Xylite. Xyliton. E967. Klinit. Kylit [87-99-0]

[16277-71-7]



$C_5H_{12}O_5$ 152.147

Prod. industrially by redn. of Xylose, X-81 obt. from wood cellulose. Occurs in a variety of plants, in mushroom *Psalliota*

X-4

Fibrase. Fibrezym. Hemoclar. Thrombo-cid. CB 8061. PZ 68. SP 54

[37300-21-3] Anticoagulant, antiinflammatory agent. Used in the treatment of interstitial cystitis. Plasminogen activator-releasing agent. Shows antithrombotic and antineoplastic activity.

Inhibits accumulation of protease-resistant prion protein in a scrapie-infected cell line. $[\alpha]_D^{20}$ -57 (Na salt).

Used as sodium salt (Pentosan polysulfate sodium, BAN, INN, USAN).

Approved by FDA (1996) (as sodium salt)

[37319-17-8, 116001-96-8]

Whistler, R.L. *et al.*, *Adv. Carbohydr. Chem.*, 1950, **5**, 269 (rev)

Chanda, S.K. *et al.*, *J.C.S.*, 1950, 1289 (isol)

Swiss Pat., 1953, 293 566; CA, **49**, 1787h (synth, polysulfate)

Paramelle, B. *et al.*, *Therapie*, 1962, **17**, 719 (activity, polysulfate)

Adams, G.A. *et al.*, *Methods Carbohydr. Chem.*, 1965, **5**, 170 (synth)

Mizuno, T. *et al.*, CA, 1968, **68**, 3140k (synth)

Zeleny, Yu.V. *et al.*, CA, 1968, **68**, 44624g (pmr)

Frandoni, G. *et al.*, *Arzneim.-Forsch.*, 1972, **22**, 759 (use)

Marchessault, R.M. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1976, **33**, 397 (cryst struct)

Wilkie, K.C.B. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1979, **36**, 215

Kindness, G. *et al.*, *Biochem. Biophys. Res. Commun.*, 1979, **88**, 1062 (pharmacol, polysulfate)

Esquivel, C.O. *et al.*, *Thromb. Res.*, 1982, **28**, 389 (activity, polysulfate)

Doctor, V.M. *et al.*, *Thromb. Res.*, 1983, **30**, 573 (isol, props, polysulfate)

MacGregor, I.R. *et al.*, *Thromb. Haemostasis*, 1984, **51**, 321 (metab, polysulfate)

Willuweit, B. *et al.*, *Naunyn-Schmiedeberg's Arch. Pharmacol.*, 1988, **337**, 354 (activity)

Kiesel, J. *et al.*, *Thromb. Res.*, 1991, **64**, 301 (pharmacol)

Zugmaier, G. *et al.*, *J. Natl. Cancer Inst.*, 1992, **84**, 1716 (pharmacol)

Labrousse, S. *et al.*, *Thromb. Haemostasis*, 1992, **68**, 556 (pharmacol)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 233

Priola, S.A. *et al.*, *Infect. Agents Dis.*, 1994, **3**, 54 (activity)

Sadhukhan, P.C. *et al.*, *J. Urol. (Baltimore)*, 2002, **168**, 289-292 (polysulfate, pharmacol)

Dealler, S. *et al.*, *J. Drugs*, 2003, **6**, 470-478 (pentosan polysulfate, rev)

campestris and roots of *Primula officinalis*. Nutritive sweetener used in sugar free sweets and chewing gums and pharmaceuticals. Two forms: metastable, rhombic cryst. and stable, monoclinic cryst. Poorly sol. hexane.

Mp 61-61.5° (metastable) Mp 93-94.5° (stable). Opt. inactive (*meso*-).

► LD₅₀ (mus, orl) 22000 mg/kg; adverse gastrointestinal effects (large dose). ZF0800000

Penta-Ac: [13437-68-8]
C₁₅H₂₂O₁₀ 362.333
Mp 62.5-63°.

Pentabenzoyl: [36030-82-7]
C₄₀H₃₂O₁₀ 672.687
Mp 106-107°.

2,3,4-Tri-Me: 2,3,4-Tri-O-methylxylitol
C₈H₁₈O₅ 194.227
Syrup.

2,3,4-Tri-Me, 1,5-ditosyl: 2,3,4-Tri-O-methyl-1,5-ditosylxylitol
C₂₂H₃₀O₆S₂ 502.606
Cryst. (EtOAc/hexane). Mp 121-123°. 1,5-Dimesyl analogue also prepd.

1,2,3,4-Di-O-isopropylidene:
C₁₁H₂₀O₅ 232.276
Mp 36°.

1,2:4,5-Di-O-isopropylidene, 3-benzoyl:
C₁₈H₂₄O₆ 336.384
Mp 114-116°.

1,3:2,4-Di-O-benzylidene, 5-benzoyl:
C₂₆H₂₄O₆ 432.472
Mp 173-175°.

Aldrich Library of FT-IR Spectra, 1st edn., 1985, 1, 185B (ir)

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, 1, 289A (nmr)

Wolfson, M.L. et al., *J.A.C.S.*, 1942, **64**, 1739
Carson, J.F. et al., *J.A.C.S.*, 1943, **65**, 1777
Kratz, K. et al., *Naturwissenschaften*, 1963, **50**, 154 (occur)

Baggett, N. et al., *J.C.S.*, 1965, 3382
Begbie, R. et al., *Carbohydr. Res.*, 1966, **2**, 272 (occur)

Barton, D.H.R. et al., *J.C.S. Perkin I*, 1972, 542
Brimacombe, J.S. et al., *The Carbohydrates*, 1972, **1A**, 479

Chautemps, P. et al., *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1977, **284**, 807 (synth)

Xylitol, *Int. Symp.*, (Ed. Counsell, J.N.), Applied Science Publishers, London, 1978, (book)

Angyal, S.J. et al., *Carbohydr. Res.*, 1980, **84**, 201 (cmr)

Minami, N. et al., *J.A.C.S.*, 1982, **104**, 1109 (total synth)

Holland, D. et al., *J.C.S. Perkin I*, 1983, 1553 (synth)

Lewis, R.J. et al., *Food Additives Handbook*, Van Nostrand Reinhold International, New York, 1989, XPJ000

Kopf, J. et al., *Carbohydr. Res.*, 1992, **233**, 35 (cryst struct, penta-Ac)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 1063

Handbook of Pharmaceutical Excipients, 2nd edn., (eds. Wade, A. et al.), American Pharmaceutical Association/Pharmaceutical Press, 1994, 564-567

Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1395

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 2967-2970

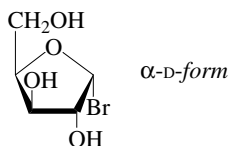
Rozenberg, M. et al., *Carbohydr. Res.*, 2000, **328**, 307-319 (ir)

Garcia-Martin, M.G. et al., *Carbohydr. Res.*, 2001, **333**, 95-103 (2,3,4-tri-Me, 2,3,4-tri-Me ditosyl)

Lewis, R.J. et al., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, XPJ000

Xylofuranosyl bromide

X-5



C₅H₉BrO₄ 213.028

α-D-form

Tri-Ac: 2,3,5-Tri-O-acetyl-α-D-xylofuranosyl bromide
[55057-30-2]
C₁₁H₁₅BrO₇ 339.139
Syrup.

Tribenzoyl: 2,3,5-Tri-O-benzoyl-α-D-xylofuranosyl bromide
[38837-18-2]
C₂₆H₂₁BrO₇ 525.352
Syrup.

β-D-form

Tri-Ac: 2,3,5-Tri-O-acetyl-β-D-xylofuranosyl bromide
[55057-31-3]
C₁₁H₁₅BrO₇ 339.139
Syrup.

Tribenzoyl: 2,3,5-Tri-O-benzoyl-β-D-xylofuranosyl bromide
[38837-19-3]
C₂₆H₂₁BrO₇ 525.352
Syrup.

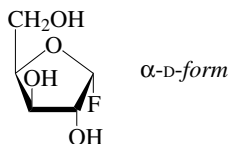
Wagner, G. et al., *Pharmazie*, 1972, **27**, 433, (α-tribenzoyl, β-tribenzoyl)

Bock, K. et al., *Acta Chem. Scand., Ser. B*, 1974, **28**, 1041; 1975, **29**, 185 (α-tri-Ac, β-tri-Ac, pmr)

Girodeau, J.M. et al., *J. Antibiot.*, 1984, **37**, 150 (deriv)

Xylofuranosyl fluoride

X-6



C₅H₉FO₄ 152.122

α-D-form

2-Me, 3,5-dibenzoyl: 3,5-Di-O-benzoyl-2-O-methyl-α-D-xylofuranosyl fluoride
[38791-48-9]
C₂₀H₁₉FO₆ 374.365
Syrup. [α]_D²⁵ -32.5 (c, 0.65 in CHCl₃).

β-D-form

Tri-Ac: 2,3,5-Tri-O-acetyl-β-D-xylofuranosyl fluoride
[28072-59-5]
C₁₁H₁₅FO₇ 278.234
Syrup.

2-Me, 3,5-dibenzoyl: 3,5-Di-O-benzoyl-2-O-methyl-β-D-xylofuranosyl fluoride
[38791-49-0]

C₂₀H₁₉FO₆ 374.365
Cryst. (Et₂O/pentane). Mp 82-83°. [α]_D²² -133 (c, 1.6 in CHCl₃).

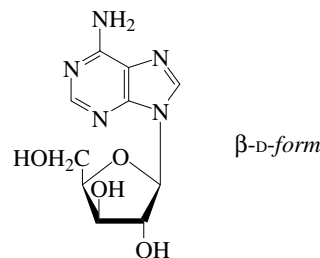
Hall, L.D. et al., *Can. J. Chem.*, 1970, **48**, 1155 (tri-Ac, pmr, F-19 nmr)

Jacobsen, S. et al., *Acta Chem. Scand.*, 1972, **26**, 1561 (deriv, pmr, F-19 nmr)

9-Xylofuranosyladenine, 8CI

X-7

9-Xylofuranosyl-9H-purin-6-amine, 9CI



C₁₀H₁₃N₅O₄ 267.244

α-D-form

Cryst. (MeOH). Mp 98-100°. [α]_D²⁰ +26.2 (c, 0.61 in DMSO).

β-D-form [524-69-6]

Mp 125-140°. [α]_D²³ -53 (H₂O).

Picrate: Mp 210-222° dec.

2',3',5'-Tri-Ac: [15830-77-0]

C₁₆H₁₉N₅O₇ 393.355
[α]_D²⁴ -14 (c, 0.56 in CHCl₃).

3',5'-O-Isopropylidene:

C₁₃H₁₇N₅O₄ 307.308
Mp 204-207°. [α]_D²⁷ -71.6 (c, 0.3 in DMF).

5'-Trityl:

C₂₉H₂₇N₅O₄ 509.563
Mp 198-199°. [α]_D²⁷ -24.9 (c, 0.3 in CHCl₃).

Baker, B.R. et al., *J.O.C.*, 1957, **22**, 966 (synth)

Reist, E.J. et al., *J.O.C.*, 1968, **33**, 1600 (synth)

Ikehara, M. et al., *Chem. Pharm. Bull.*, 1971, **19**, 538 (synth, pmr)

Breitmaier, E. et al., *Tetrahedron*, 1973, **29**, 227 (conform, cmr)

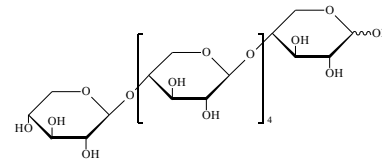
Lerner, L.M. et al., *J.O.C.*, 1975, **40**, 2400 (β-D-form)

Gosselin, G. et al., *J. Med. Chem.*, 1986, **29**, 203 (α-D-form, synth, uv, pmr, ms)

Xylohexaose

X-8

O-β-D-Xylopyranosyl-(1→4)-[O-β-D-xylopyranosyl]-(1→4)₄-D-xylose
[49694-21-5]



C₃₀H₅₀O₂₅ 810.71

Obt. by partial hydrol. of hardwood xylan.

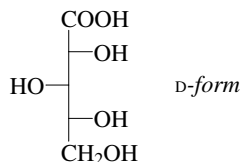
Mp 236-237° (dihydrate). [α]_D²⁵ -72.8 (H₂O).

Tetradeca-Ac: Mp 260-261°. [α]_D²⁵ -102 (c, 1.5 in CHCl₃).
 Whistler, R.L. *et al.*, *J.A.C.S.*, 1952, **74**, 3059; 4334 (*isol, synth*)
 Kusakabe, I. *et al.*, *CA*, 1976, **84**, 6713r (*isol*)

Xyloic acid, 9CI, 8CI

X-9

[17828-56-7]

C₅H₁₀O₆ 166.13**D-form** [526-91-0]

Prod. from xylose by various microorganisms, e.g. *Pullularia pullulans*.
 Syrup. [α]_D -2.9 → +20.1 (H₂O).

NH₄ salt: [5461-96-1]

Mp 118-122°. [α]_D²⁰ +19.1 (c, 2.0 in H₂O).

Ca salt: [α]_D²⁰ +10.5 (c, 2.0 in H₂O). [α]_D²⁰ +12.4 (c, 2.0 in H₂O) (dihydrate).

Pb salt:

Monohydrate. [α]_D²⁰ -7 (c, 2.0 in H₂O).

Me ester: Methyl *D*-xyloate

[20603-41-2]

C₆H₁₂O₆ 180.157Syrup. [α]_D +15.2 (c, 3.2 in H₂O).*Amide*: *D*-XylonamideC₅H₁₁NO₅ 165.146Mp 81-82°. [α]_D¹⁶ +44.5 → +23.8 (H₂O).

2,3,4,5-Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-*D*-xyloic acid

C₁₃H₁₈O₁₀ 334.279Mp 86-88°. [α]_D²⁰ +5 (c, 2.0 in EtOH).

2,4:3,5-Di-O-benzylidene: 2,4:3,5-Di-O-benzylidene-*D*-xyloic acid

C₁₉H₁₈O₆ 342.348Mp 198.5-200°. [α]_D -21.3 (c, 1.0 in DMF).

2,4:3,5-Di-O-benzylidene, Me ester: Methyl 2,4:3,5-di-O-benzylidene-*D*-xyloate

C₂₀H₂₀O₆ 356.374Mp 191.5-194.5°. [α]_D +8.8 (c, 1.7 in CHCl₃).*1,4-Lactone*: See 1,4-Xylonolactone, X-10*1,5-Lactone*: See 1,5-Xylonolactone, X-11**L-form** [4172-44-5]

Brucine salt: Mp 177-178°. [α]_D +24.3 (H₂O).

2,3,4,5-Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-*L*-xyloic acid

C₁₃H₁₈O₁₀ 334.279Mp 86-88°. [α]_D²⁰ -4.5 (EtOH).*1,4-Lactone*: See 1,4-Xylonolactone, X-10**DL-form** [20663-19-8]

2,3,4,5-Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-*DL*-xyloic acid

C₁₃H₁₈O₁₀ 334.279

Mp 134-135°.

Rehorst, K. *et al.*, *Annalen*, 1933, **503**, 143 (*synth*)

Menzinsky, G. *et al.*, *Ber.*, 1935, **68**, 822 (*synth*)Major, R.T. *et al.*, *J.A.C.S.*, 1936, **58**, 2474(*tetra-Ac*)

Kiessling, H. *et al.*, *Acta Chem. Scand.*, 1962, **16**, 1858 (*isol*)

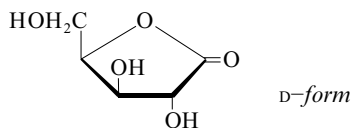
Isbell, H.S. *et al.*, *Methods Carbohydr. Chem.*, 1963, **2**, 13 (*D-form, synth*)

Zinner, H. *et al.*, *Carbohydr. Res.*, 1968, **7**, 38 (*dibenzylidene*)

1,4-Xylonolactone

X-10

Xylo-γ-lactone. xylo-1,4-Pentonolactone
 [18423-66-0]

C₅H₈O₅ 148.115**D-form** [15384-37-9]

Cryst. (dioxan). Mp 98-101°. [α]_D²⁰ +91.8 → +86.7 (c, 5 in H₂O).

2,3,5-Tri-Ac: 2,3,5-Tri-O-acetyl-*D*-1,4-xylonolactone

[79580-60-2]

C₁₁H₁₄O₈ 274.227

Light beige cryst. Mp 96-97°.

L-form [68035-75-6]

Cryst. (EtOH aq.). Mp 97°. [α]_D -82 (H₂O).

2,3-Di-Me: 2,3-Di-O-methyl-*L*-xylonolactone

C₇H₁₂O₅ 176.169Syrup. Bp_{0.02} 115°. [α]_D²³ +97 → +69 (H₂O).

3,5-Di-Me: 3,5-Di-O-methyl-*L*-xylonolactone

C₇H₁₂O₅ 176.169Syrup. Bp_{0.08} 105°. [α]_D^{21.5} +81.5 → +39 (H₂O).

2,3,5-Tri-Me: 2,3,5-Tri-O-methyl-*L*-xylonolactone

C₈H₁₄O₅ 190.196Bp_{0.04} 105°. [α]_D +74.1 → +6.4 (c, 1.0 in H₂O).*Aldrich Library of 13C and 1H FT NMR**Spectra*, 1992, **1**, 1136C (*nmr*)Haworth, W.N. *et al.*, *J.C.S.*, 1926, 880-887;1928, 611-618 (*L*-3,5-di-Me, *L*-tri-Me)Rehorst, K. *et al.*, *Annalen*, 1933, **503**, 143-166(*D-form, synth*)Isbell, H.S. *et al.*, *J. Res. Natl. Bur. Stand.*(*U.S.*), 1933, **11**, 649 (*D-form, synth*)Tollens, B. *et al.*, *Kurzes Handbuch der**Kohlenhydrate*, 4th edn., J.A. Barth, 1935, 74;

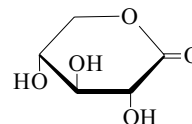
139

Heyns, K. *et al.*, *Annalen*, 1947, **558**, 194-201(*L-form, synth*)Skibiński, A. *et al.*, *Pol. J. Chem. (Rocz.**Chem.*), 1978, **52**, 1307-1309 (*L-form, synth*)

Serianni, A.S. *et al.*, *J.O.C.*, 1980, **45**, 3329-3341 (*D-form, cmr*)

Horton, D. *et al.*, *Carbohydr. Res.*, 1982, **105**,111-129 (*pmr, cmr, conform*)*Org. Synth.*, *Coll. Vol.*, 9, 1998, 717-721,(*D*-tri-Ac, *synth, ir, pmr*)**1,5-Xylonolactone**

X-11

Xylo-δ-lactoneC₅H₈O₅ 148.115**D-form**

2,3,4-Tri-Me: 2,3,4-Tri-O-methyl-*D*-xylonolactone

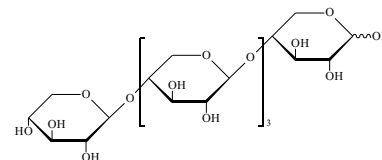
C₈H₁₄O₅ 190.196

Needles (petrol). Mp 56°. Bp_{0.06} 115-120°. [α]_D¹⁵ -3.8 → +20.8 (H₂O).

Haworth, W.N. *et al.*, *J.C.S.*, 1926, 880,(*D*-tri-Me)Drew, H.D.K. *et al.*, *J.C.S.*, 1927, 1237,(*D*-tri-Me)**Xylopentaose**

X-12

O-β-*D*-Xylopyranosyl-(1→4)-[*O*-β-*D*-xylopyranosyl-(1→4)]₃-*D*-xylose
 [49694-20-4]

C₂₅H₄₂O₂₁ 678.594

Obt. by acid hydrol. of xylan.

Mp 231-232° (hemihydrate). [α]_D²⁵ -66 (H₂O).**β-Pyranose-form**

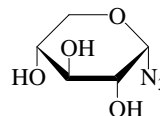
Dodeca-Ac: Mp 248-249°. [α]_D²⁵ -97.5 (c, 1.1 in CHCl₃).

Whistler, R.L. *et al.*, *J.A.C.S.*, 1952, **74**, 3609; 4334 (*isol, synth*)

Sakai, Y. *et al.*, *Agric. Biol. Chem.*, 1975, **39**, 545 (*chromatog*)

Xylopyranosyl azide, 9CI

X-13

α-*D*-Pyranose-formC₅H₉N₃O₄ 175.144**α-D-form** [100842-21-5]

Cryst. (EtOAc). Mp 148-150°. [α]_D²³ +270 (c, 1.28 in H₂O).

Tri-Ac: 2,3,4-Tri-O-acetyl-α-*D*-xylopyranosyl azide

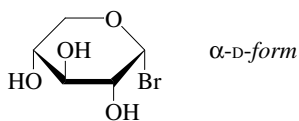
[100842-17-9]

C₁₁H₁₅N₃O₇ 301.255[α]_D²⁵ +138 (c, 1.03 in CHCl₃).**β-D-form** [51368-20-8]Mp 106°. [α]_D -56 (c, 1.2 in MeOH).

Tri-Ac: 2,3,4-Tri-O-acetyl-β-*D*-xylopyranosyl azide

[53784-33-1]

$C_{11}H_{15}N_3O_7$ 301.255
Mp 87°. $[\alpha]_D$ -86 (c, 1 in $CHCl_3$).
(*synth*)
Györgydeák, Z. *et al.*, *Annalen*, 1986, 1393
El Meslouti, A. *et al.*, *Tet. Lett.*, 1994, **35**, 3913
(*synth*)

Xylopyranosyl bromide X-14

$C_5H_9BrO_4$ 213.028

 α -D-form

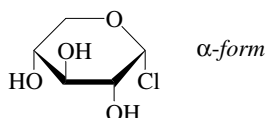
2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -D-xylopyranosyl bromide. *Acetobromoxylose* [3068-31-3]
 $C_{11}H_{15}BrO_7$ 339.139
Mp 101-102°. $[\alpha]_D^{20}$ +212 (c, 1.4 in $CHCl_3$).

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -D-xylopyranosyl bromide
 $C_{26}H_{21}BrO_7$ 525.352
Mp 134-135°. $[\alpha]_D^{20}$ +117 ($CHCl_3$).

 β -D-form

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-xylopyranosyl bromide
[50271-21-1]
 $C_{26}H_{21}BrO_7$ 525.352
Mp 146-147°. $[\alpha]_D^{20}$ -143 (c, 1.0 in $CHCl_3$).

Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 207 (*rev. derivs*)
Capon, B. *et al.*, *J.C.S.*, 1964, 3242 (α -D-tri-Ac)
Bock, K. *et al.*, *J.C.S. Perkin I*, 1973, 1456, (β -D-tribenzoyl)
Luger, P. *et al.*, *Chem. Ber.*, 1974, **107**, 2615, (β -D-tribenzoyl, *conformn*, *cryst struct*)

Xylopyranosyl chloride X-15

$C_5H_9ClO_4$ 168.576

 α -D-form

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -D-xylopyranosyl chloride. *Acetochloroxylose* [10343-54-1]
 $C_{11}H_{15}ClO_7$ 294.688
Mp 105°. $[\alpha]_D^{20}$ +171 ($CHCl_3$).

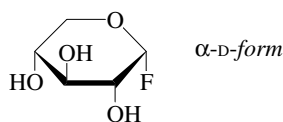
2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -D-xylopyranosyl chloride
[32445-43-5]
 $C_{26}H_{21}ClO_7$ 480.9
Cryst. (Et_2O /petrol). Mp 144-146°. $[\alpha]_D^{20}$ +88.1 (c, 1.2 in $CHCl_3$).

 β -D-form

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- β -D-xylopyranosyl chloride
[10300-18-2]
 $C_{11}H_{15}ClO_7$ 294.688
Mp 112-113°. $[\alpha]_D^{20}$ -131 (CCl_4).

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-xylopyranosyl chloride
[32445-44-6]
 $C_{26}H_{21}ClO_7$ 480.9
Cryst. (Et_2O /petrol). Mp 143-144°. $[\alpha]_D^{20}$ -108.3 (c, 1.1 in $CHCl_3$).

Haynes, L.J. *et al.*, *Adv. Carbohydr. Chem.*, 1955, **10**, 207 (*rev. derivs*)
Durette, P.L. *et al.*, *Carbohydr. Res.*, 1971, **18**, 57 (α -D-tri-Ac, α -D-tribenzoyl, β -D-tri-Ac, β -D-tribenzoyl, *pmr*, *conformn*)
Kothe, G. *et al.*, *Carbohydr. Res.*, 1974, **37**, 283 (β -D-tri-Ac, *cryst struct*)

Xylopyranosyl fluoride X-16

$C_5H_9FO_4$ 152.122

 α -D-form [4536-02-1]

Tri-Ac: 2,3,4-Tri-O-acetyl- α -D-xylopyranosyl fluoride
[440-05-1]
 $C_{11}H_{15}FO_7$ 278.234
Cryst. Mp 86-88°. $[\alpha]_D$ +67.2 (c, 1.0 in $CHCl_3$).

Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -D-xylopyranosyl fluoride
[4163-50-2]
 $C_{26}H_{21}FO_7$ 464.446
Needles ($EtOH$ or Et_2O /pentane). Mp 119-120°. $[\alpha]_D^{20}$ +39.2 (c, 0.93 in $CHCl_3$).

2-Me, 3,4-dibenzoyl: 3,4-Di-O-benzoyl-2-O-methyl- α -D-xylopyranosyl fluoride
[38791-46-7]
 $C_{20}H_{19}FO_6$ 374.365
Cryst. (Et_2O /pentane). Mp 120-121°. $[\alpha]_D^{23}$ -56.7 (c, 0.3 in $CHCl_3$).

Tribenzyl: 2,3,4-Tri-O-benzyl- α -D-xylopyranosyl fluoride
[95898-05-8]
 $C_{26}H_{27}FO_4$ 422.495
Syrup.

 β -D-form [108393-17-5]

Tri-Ac: 2,3,4-Tri-O-acetyl- β -D-xylopyranosyl fluoride
[10369-21-8]
 $C_{11}H_{15}FO_7$ 278.234
Mp 56-57° (52-55°). $[\alpha]_D^{23}$ -56.4 (c, 1.6 in $CHCl_3$).

Tribenzoyl: 2,3,4-Tri-O-benzoyl- β -D-xylopyranosyl fluoride
[3862-87-1]
 $C_{26}H_{21}FO_7$ 464.446
Prisms ($EtOH$). Mp 149-150°. $[\alpha]_D^{20}$ -39.4 (c, 1.04 in $CHCl_3$).

2-Me, 3,4-dibenzoyl: 3,4-Di-O-benzoyl-2-O-methyl- β -D-xylopyranosyl fluoride
[38791-47-8]
 $C_{20}H_{19}FO_6$ 374.365
Cryst. (Et_2O /pentane). Mp 82-83°. $[\alpha]_D^{22}$ -133 (c, 1.6 in $CHCl_3$).

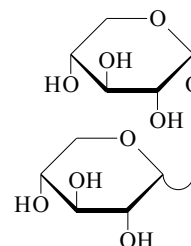
 α -L-form

Tri-Ac: 2,3,4-Tri-O-acetyl- α -L-xylopyranosyl fluoride
Plates (pentane/ Et_2O). Mp 83-85°. $[\alpha]_D^{23}$ -61 (c, 0.76 in $CHCl_3$).

Brauns, D.K. *et al.*, *J.A.C.S.*, 1923, **45**, 833, (α -tri-Ac)
Pedersen, C. *et al.*, *Acta Chem. Scand.*, 1963, **17**, 1269 (*tribenzoyl*)
Lundt, K. *et al.*, *Mikrochim. Acta*, 1966, 126, (β -tri-Ac)
Hall, L.D. *et al.*, *Carbohydr. Res.*, 1967, **4**, 512; 1969, **9**, 11 (*pmr*)
Hall, L.D. *et al.*, *Can. J. Chem.*, 1969, **47**, 19 (*tri-Ac*, *pmr*, *F-19 nmr*)
Jacobsen, S. *et al.*, *Acta Chem. Scand.*, 1972, **26**, 1561 (α -Me deriv, β -Me deriv, *pmr*)
Kasumi, T. *et al.*, *Biochemistry*, 1987, **26**, 3010 (*pmr*, *F-19 nmr*)
Yamada, H. *et al.*, *Tet. Lett.*, 1987, **28**, 4315 (*tribenzoyl*)
Takanashi, S. *et al.*, *Liebigs Ann./Recl.*, 1997, 825-838; 1081-1084 (α -L-tri-Ac)

 α -D-Xylopyranosyl α -D-xylopyranoside, 9CI X-17

[70214-78-7]



$C_{10}H_{18}O_9$ 282.247

Non-reducing disaccharide. Cryst. ($MeOH$). Mp 269-272°. $[\alpha]_D$ +215 (+120) (H_2O).

Hexa-Ac:

$C_{22}H_{30}O_{15}$ 534.47
Mp 249-251°. $[\alpha]_D$ +166.4 ($CHCl_3$).

Hexabenzyl: [77875-54-8]

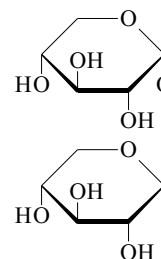
$C_{52}H_{54}O_9$ 822.993
 $[\alpha]_D^{22}$ +96.1 (c, 0.77 in $CHCl_3$).

Ball, D.H. *et al.*, *J.C.S.*, 1958, 33 (*synth*)
Burckhardt, H. *et al.*, *Ber.*, 1962, **95**, 2616 (*synth*)

Pavia, A.A. *et al.*, *Can. J. Chem.*, 1981, **59**, 482 (*hexabenzyl*, *synth*, *cmr*)
Pavia, A.A. *et al.*, *Nouv. J. Chim.*, 1981, **5**, 101 (*cmr*, *conformn*)

 β -D-Xylopyranosyl α -D-xylopyranoside, 9CI X-18

α -D-Xylopyranosyl β -D-xylopyranoside
[72151-41-8]



C₁₀H₁₈O₉ 282.247

Non-reducing disaccharide. Cryst. (MeOH). Mp 208.5-210.5°. [α]_D +84.5 (H₂O).

Hexa-Ac: [72127-37-8]

C₂₂H₃₀O₁₅ 534.47

Cryst. (MeOH). Mp 175-176.5°. [α]_D +39.7 (H₂O).

2,2'-Dibenzyl, 3,3',4,4'-tetra-Ac: 3,4-Di-O-acetyl-2-O-benzyl- β -D-xylopyranosyl 3,4-di-O-acetyl-2-O-benzyl- α -D-xylopyranoside

C₃₂H₃₈O₁₃ 630.644

Cryst. (EtOH). Mp 172.5-174.5°. [α]_D²² +76.7 (c, 1.0 in CHCl₃).

Hexa-Me: 2,3,4-Tri-O-methyl- β -D-xylopyranosyl 2,3,4-tri-O-methyl- α -D-xylopyranoside, 9CI

[77735-24-1]

C₁₆H₃₀O₉ 366.408

Cryst. (cyclohexane). Mp 62-64°. [α]_D²² +59 (c, 0.7 in CHCl₃).

Helferich, B. *et al.*, *Chem. Ber.*, 1958, **91**, 1794 (synth)

Jones, H.G. *et al.*, *Can. J. Chem.*, 1962, **40**, 1339 (glc)

Burckhardt, H. *et al.*, *Chem. Ber.*, 1962, **95**, 2616 (synth)

Schroeder, R.L. *et al.*, *Carbohydr. Res.*, 1974, **37**, 368 (hexa-Me)

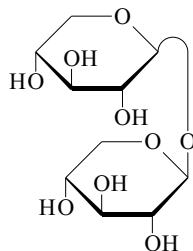
Kovac, P. *et al.*, *Carbohydr. Res.*, 1979, **75**, 109 (acetate)

Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 892 (synth)

β -D-Xylopyranosyl β -D-xylopyranoside, 9CI

X-19

[126108-70-1]



C₁₀H₁₈O₉ 282.247

Non-reducing disaccharide. Prod. from xylobiose by transxylosylation with *Aspergillus niger* β -xylosidase. Mp 211-213°. [α]_D -74.9 (H₂O).

Hexa-Ac:

C₂₂H₃₀O₁₅ 534.47

Mp 137.5-139°. [α]_D -107.4 (CHCl₃).

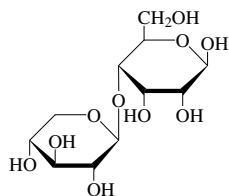
Burckhardt, H. *et al.*, *Chem. Ber.*, 1962, **95**, 2616 (synth)

Yasui, T. *et al.*, *Agric. Biol. Chem.*, 1989, **53**, 3381 (synth)

Kizawa, H. *et al.*, *Agric. Biol. Chem.*, 1991, **55**, 671 (synth)

4-O- β -D-Xylopyranosyl-D-allose

X-20



β -Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Isol. from opulus iridoids extracted from the leaves of the ornamental shrub *Viburnum opulus* (common snowball).

β -Pyranose-form

Hepta-Ac:

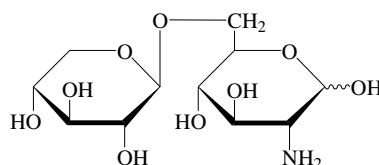
C₂₅H₃₄O₁₇ 606.533

Cryst. (Et₂O). Mp 147-148°. [α]_D²⁰ -31 (c, 0.3 in CHCl₃).

Bock, K. *et al.*, *Phytochemistry*, 1978, **17**, 753 (synth, cmr)

6-O- β -D-Xylopyranosyl-2-amino-2-deoxy-D-glucose Primeverosamine

X-21



C₁₁H₂₁NO₉ 311.288

N-Ac:

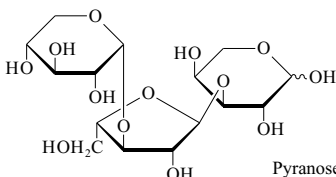
C₁₃H₂₃NO₁₀ 353.325

No phys. props. reported.

Vetere, A. *et al.*, *Carbohydr. Res.*, 1998, **311**, 79-83 (N-Ac, synth, pmr)

α -D-Xylopyranosyl-(1 \rightarrow 3)- α -L-arabinofuranosyl-(1 \rightarrow 3)-L-arabinose

X-22



Pyranose-form

C₁₅H₂₆O₁₃ 414.363

Isol. from the mucilage of *Lepidium sativum*.

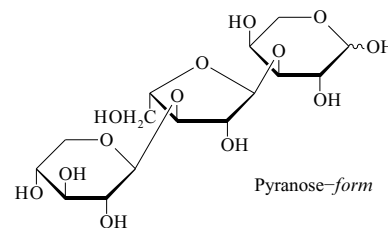
Mp 99-100°. [α]_D +98.2 \rightarrow +95.2 (c, 0.34 in H₂O).

Tyler, J.M. *et al.*, *J.C.S.*, 1965, 5288 (isol)

β -D-Xylopyranosyl-(1 \rightarrow 3)- α -L-arabinofuranosyl-(1 \rightarrow 3)-L-arabinose, 9CI

X-23

[79409-35-1]



Pyranose-form

C₁₅H₂₆O₁₃ 414.363

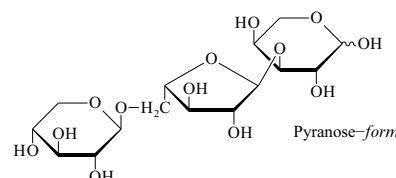
Isol. from the mucilage of *Opuntia ficus-indica* (Indian fig). [α]_D -21 (c, 0.57 in H₂O).

McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol)

β -D-Xylopyranosyl-(1 \rightarrow 5)- α -L-arabinofuranosyl-(1 \rightarrow 3)-L-arabinose, 9CI

X-24

[7268-42-0]



Pyranose-form

C₁₅H₂₆O₁₃ 414.363

Isol. from the mucilage of *Opuntia ficus-indica* (Indian fig) and from Cholla gum of *Opuntia fulgida*. Amorph. solid (Me₂CO/MeOH).

Mp 131-140°. [α]_D -32 (c, 0.47 in H₂O). [α]_D -74.2 (c, 1.1 in H₂O).

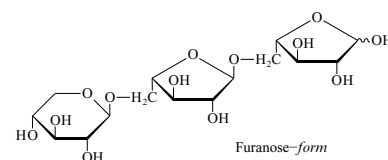
Parikh, V.M. *et al.*, *Can. J. Chem.*, 1966, **44**, 1531 (isol)

McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol)

β -D-Xylopyranosyl-(1 \rightarrow 5)- α -L-arabinofuranosyl-(1 \rightarrow 5)-L-arabinose, 9CI

X-25

[79403-08-0]



Furanose-form

C₁₅H₂₆O₁₃ 414.363

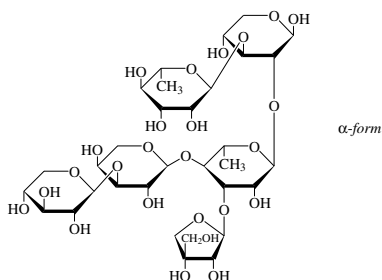
Isol. from the mucilage of *Opuntia ficus-indica* (Indian fig).

[α]_D -56.5 (c, 0.52 in H₂O).

McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (isol)

β-D-Xylopyranosyl-(1→3)-α-L-arabinopyranosyl-(1→4)-[β-D-apiofuranosyl-(1→3)]-α-L-rhamnopyranosyl-(1→2)-[α-L-rhamnopyranosyl-(1→3)]-D-xylopyranose

X-26



C₃₂H₅₄O₂₅ 838.764
Hexasaccharide constit. of Astersaponins C and D isol. from the root of *Aster tataricus* (Compositae).

α-form

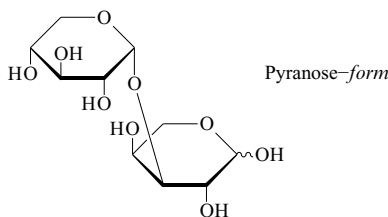
Me glycoside:
C₃₃H₅₆O₂₅ 852.79
[α]_D²⁴ -46.4 (c, 2.7 in MeOH).

β-form

Me glycoside: [125085-19-0]
Amorph. powder. [α]_D²⁴ -90.9 (c, 2.1 in MeOH).

Nagao, T. *et al.*, *Chem. Pharm. Bull.*, 1989, **37**, 1977 (*isol*, *pmr*, *cmr*, *ms*)

3-O-α-D-Xylopyranosyl-L-arabinose, 9CI X-27
[4119-17-9]



C₁₀H₁₈O₉ 282.247
Isol. from the hydrolysates of golden apple (*Spondias cytherea*) gum, *Lepidium sativum* mucilage and corn hemicelluloses. Cryst. + 1H₂O (EtOH aq.). Mp 117-119°. [α]_D²⁵ +175 → +183 (c, 1.0 in H₂O, 1h).

Phenylosazone: Mp 226°.

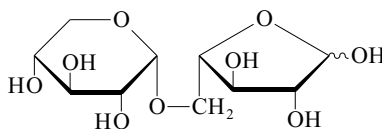
Hexa-Ac:

C₂₂H₃₀O₁₅ 534.47
Cryst. (MeOH). Mp 168-170°. [α]_D²⁸ +106 (c, 1.0 in CHCl₃).

Andrews, P. *et al.*, *J.C.S.*, 1954, 4134 (*isol*)
Whistler, R.L. *et al.*, *J.A.C.S.*, 1955, **77**, 6328 (*isol*)
Montgomery, R. *et al.*, *J.A.C.S.*, 1957, **79**, 698 (*isol*)
Tyler, J.M. *et al.*, *J.C.S.*, 1965, 5288

5-O-α-D-Xylopyranosyl-L-arabinose

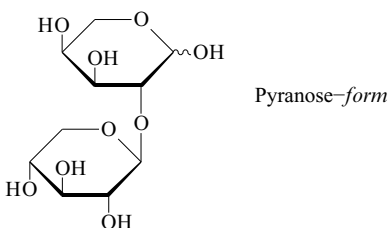
X-28



C₁₀H₁₈O₉ 282.247
Tentative struct. Isol. from the partial acid hydrolysate of linseed (*Linum usitatissimum*) mucilage. Syrup. [α]_D +74 (H₂O).
Erskine, A.J. *et al.*, *Can. J. Chem.*, 1957, **35**, 1174 (*isol*)

2-O-β-D-Xylopyranosyl-L-arabinose

X-29



C₁₀H₁₈O₉ 282.247
Isol. from partial acid hydrolysates of esparto (*Stipa temacissima*), barley husk and corn-cob hemicelluloses. Mp 167-168° (anhyd.) Mp 80-81° (monohydrate) Mp 98-99° (trihydrate). [α]_D +33 (H₂O).

α-L-Pyranose-form

Me glycoside: Methyl 2-O-β-D-xylopyranosyl-α-L-arabinopyranoside, 9CI
[89734-27-0]
C₁₁H₂₀O₉ 296.274
Needles (MeOH/EtOAc). Mp 187.5-189°. [α]_D²⁰ -48.5 (c, 0.92 in H₂O).

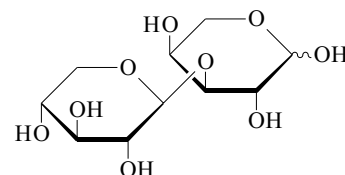
β-L-Pyranose-form

Me glycoside: Methyl 2-O-β-D-xylopyranosyl-β-L-arabinopyranoside, 9CI
[89734-31-6]
C₁₁H₂₀O₉ 296.274
Cryst. (EtOH/EtOAc). Mp 182-184°. [α]_D²⁶ +95.3 (c, 0.6 in H₂O).

L-Furanose-form

5-O-(4-Hydroxy-3-methoxycinnamoyl) (E-): 2-O-β-D-Xylopyranosyl-5-O-feruloyl-L-arabinofuranose
[169697-21-6]
C₂₀H₂₆O₁₂ 458.418
Widespread component of grass cell walls. Anomeric mixture.
Whistler, R.L. *et al.*, *J.A.C.S.*, 1955, **77**, 1884; 3822 (*isol*)
Aspinall, G.O. *et al.*, *J.C.S.*, 1957, 4188
Mizutani, K. *et al.*, *Carbohydr. Res.*, 1984, **126**, 177 (*synth*, *Me gly*, *cmr*)
Wende, G. *et al.*, *Phytochemistry*, 1997, **44**, 1011-1019 (*feruloyl deriv*)

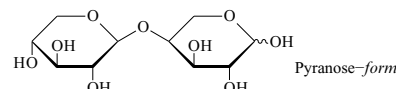
3-O-β-D-Xylopyranosyl-L-arabinose X-30
[78248-68-7]



C₁₀H₁₈O₉ 282.247
Hydrolysate product from the stem mucilage of *Opuntia ficus-indica* (Indian fig) and from the water hyacinth (*Eichhornia crassipes*) mucin. Acid hydrolytic product of Trillenoxide B. Syrup. [α]_D +15 (c, 0.76 in H₂O).

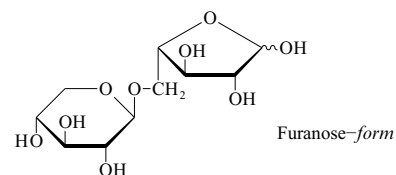
McGarvie, D.M. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (*isol*, *struct*)
Komori, T. *et al.*, *Annalen*, 1981, 683 (*ms*)
Anjaneyalu, Y.V. *et al.*, *Phytochemistry*, 1983, **22**, 1961 (*isol*, *glc*, *ms*)

4-O-β-D-Xylopyranosyl-L-arabinose X-31
[51755-05-6]



C₁₀H₁₈O₉ 282.247
Isol. from acid hydrolysate of peach gum. Rosik, J. *et al.*, *Chem. Zvesti*, 1973, **27**, 688; *CA*, **80**, 108782x (*isol*)
Czech. Pat., 1979, 180 902; *CA*, **92**, 215729e (*isol*)
Hrmova, M. *et al.*, *Arch. Microbiol.*, 1984, **138**, 371; *CA*, **101**, 187678w (*isol*)

5-O-β-D-Xylopyranosyl-L-arabinose, 9CI X-32
[7268-80-6]



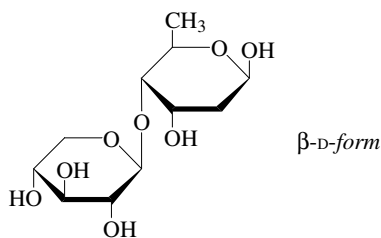
C₁₀H₁₈O₉ 282.247
Isol. from partial acid hydrolysates of peach, Cholla (*Opuntia fulgida*), *Opuntia ficus-indica* (Indian fig) and *Virgilia oroboides* gums. [α]_D -53 (c, 1.2 in H₂O). [α]_D²³ -38 (c, 1.4 in H₂O).

Phenylosazone:

Cryst. (EtOH/Et₂O). Mp 216° (214° dec.). [α]_D²³ +51 (c, 0.8 in Py/EtOH, 3:2).
Andrews, P. *et al.*, *J.C.S.*, 1953, 4090 (*isol*)
Ball, D.H. *et al.*, *J.C.S.*, 1957, 4871 (*synth*)
Smith, F. *et al.*, *J.C.S.*, 1961, 4892 (*isol*)
Parikh, V.M. *et al.*, *Can. J. Chem.*, 1966, **44**, 1531 (*isol*)

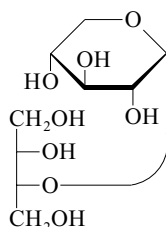
McGarvie, D. *et al.*, *Carbohydr. Res.*, 1981, **94**, 57 (*isol*)

4-O-β-D-Xylopyranosyl-D-di-gitoxose X-33
2,6-Dideoxy-4-O-β-D-xylopyranosyl-ribo-hexose, 9CI. *Erythrobiose*. *Gypsobiose* [41094-28-4]



C₁₁H₂₀O₈ 280.274
Isol. from erycordin and *Erysimum gypsaceum*. Cryst.
Mp 88-90°. [α]_D²⁰ +2.7 (c, 1.2 in Py).
Tursunova, R.N. *et al.*, *J. Gen. Chem. USSR* (*Engl. Transl.*), 1964, **34**, 2463
Makarevich, I.F. *et al.*, *Khim. Priro. Soedin.*, 1973, **9**, 50; *Chem. Nat. Compd. (Engl. Transl.)*, 1973, **9**, 43

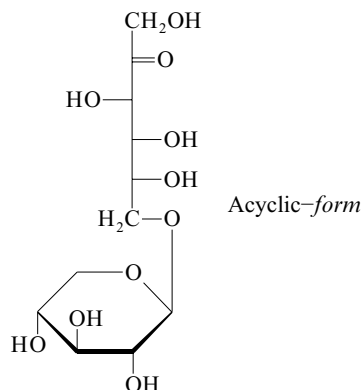
3-O-α-D-Xylopyranosyl-D-erythritol X-34
2-O-α-D-Xylopyranosyl-L-erythritol



C₉H₁₈O₈ 254.236
[α]_D +91 (H₂O).
Hexabenzoyl:
C₅₁H₄₂O₁₄ 878.884
Mp 64-67°. [α]_D +98 (CHCl₃).

Venkataraman, R. *et al.*, *Arch. Biochem. Biophys.*, 1958, **75**, 443 (*synth*)

6-O-β-D-Xylopyranosyl-D-fructose, 8CI
Primeverulose
[26531-84-0]

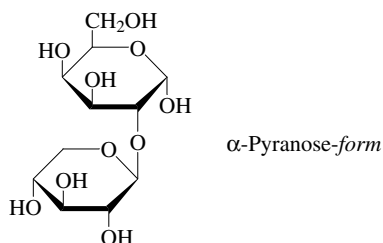


C₁₁H₂₀O₁₀ 312.273
Synth. by the partial rearrangement of 6-O-β-D-Xylopyranosyl-D-glucose, X-47.
Cryst. (CHCl₃/MeOH). Mp 213-215°. [α]_D²⁰ -27.5 (c, 2.6 in MeOH).

Phenylosazone: Mp 228°. [α]_D²⁰ -101.3 (6 min) → -54.2 (7d) (c, 1 in Py).
2,5-Dichlorophenylhydrazone: Mp 195° dec.
Phenylosotriazole:
Needles (EtOH). Mp 165-166°. [α]_D²⁰ -49 (c, 1 in H₂O).

Phenylosotriazole, hexa-Ac:
Needles (EtOH/H₂O). Mp 91-92°. [α]_D²⁰ -50.4 (c, 1.2 in CHCl₃).
Rutherford, D. *et al.*, *Carbohydr. Res.*, 1969, **11**, 341 (*synth*)

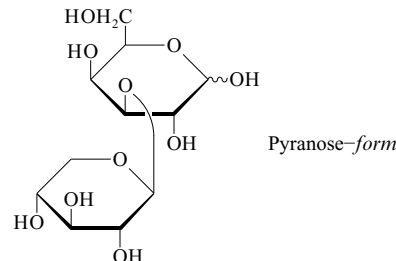
2-O-β-D-Xylopyranosyl-D-galactose X-36
Lathyrose



C₁₁H₂₀O₁₀ 312.273
Present in *Aralia* spp. as cyanidin 3-lathyroside. Plates + 1/2 H₂O (MeOH).
Mp 188-189°. [α]_D²⁰ +44.8 (c, 1 in H₂O).

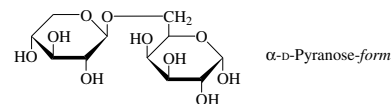
Kawano, K. *et al.*, *Agric. Biol. Chem.*, 1972, **36**, 27

X-35
3-O-β-D-Xylopyranosyl-D-galactose, 9CI
Sinuatose
[78774-25-1]



C₁₁H₂₀O₁₀ 312.273
Constit. of Sinuatose (see Aucubigenin).
Amorph. [α]_D²⁵ +31.7 (c, 1.6 in H₂O).
Bianco, A. *et al.*, *Phytochemistry*, 1981, **20**, 465 (*isol, pmr*)

6-O-β-D-Xylopyranosyl-D-galactose, 9CI X-38
[50721-03-4]

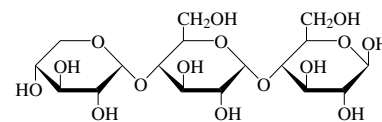


C₁₁H₂₀O₁₀ 312.273
Isol. from the partial acid hydrolysate of a polysaccharide from the red alga *Laingia pacifica*. Cryst. (MeOH).
Mp 193-196°. [α]_D -6.3 (c, 2.1 in H₂O).
[α]_D -3.6 (H₂O).

α-Pyranose-form
1,2:3,4-Di-O-isopropylidene, tri-Ac:
C₂₃H₃₄O₁₃ 518.514
Mp 123-125°. [α]_D -75 (c, 1.85 in CHCl₃).

Ball, D.H. *et al.*, *J.C.S.*, 1957, 4871 (*synth*)
Kochetkov, N.K. *et al.*, *Zh. Org. Khim.*, 1973, **43**, 1832; *J. Org. Chem. USSR (Engl. Transl.)*, 1973, **43**, 1816 (*isol*)

α-D-Xylopyranosyl-(1 →4)-α-D-glucopyranosyl-(1 →4)-D-glucose, 9CI X-39

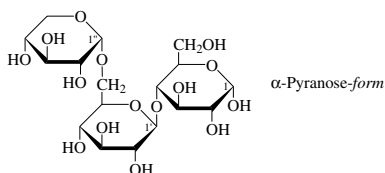


C₁₇H₃₀O₁₅ 474.415
Amorph. [α]_D²³ +152 (c, 1.05 in H₂O).

β-Pyranose-form
Benzyl glycoside, nonabenzyl:
[132628-10-5]
C₈₇H₉₀O₁₅ 1375.659
Syrup. [α]_D²⁵ +35 (c, 1.5 in CHCl₃).

Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167
(*synth*, β -benzyl pyr nonabenzyl, *pmr*, *cmr*)

α -D-Xylopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI X-40
[69637-98-5]



C₁₇H₃₀O₁₅ 474.415
Isol. from the enzymatic hydrolysates of tamarind polysaccharide, Jack pine (*Pinus banksiana*) glucomannan, leaves of *Nicotiana tabacum*, and other polysaccharide sources. Constituent in cell wall polysaccharide of immature barley plants. [α]_D +74 (c, 0.5 in H₂O) (+71).

Mori, M. *et al.*, *Agric. Biol. Chem.*, 1979, **43**, 145 (*isol*)

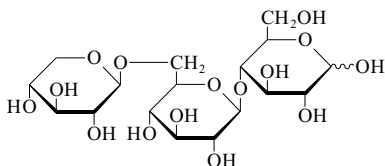
Kato, Y. *et al.*, *Agric. Biol. Chem.*, 1981, **45**, 2745 (*occur*)

Kato, Y. *et al.*, *Carbohydr. Res.*, 1982, **109**, 233
Watanabe, T. *et al.*, *Carbohydr. Res.*, 1984, **129**, 229

Zong, N. *et al.*, *Agric. Biol. Chem.*, 1989, **53**, 2129 (*isol*, *hplc*)

York, W.S. *et al.*, *Carbohydr. Res.*, 1990, **200**, 9
(*ms*, *cmr*, *pmr*)

β -D-Xylopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, 9CI X-41
[88123-45-9]

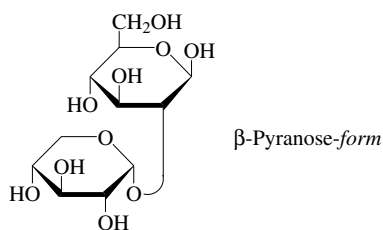


C₁₇H₃₀O₁₅ 474.415
Transglucosylation product, formed by yeast *Cryptococcus albidus*. Cryst. (MeOH).

Mp 225-226°. [α]_D²⁰ -3 (c, 1.0 in H₂O).

Biely, P. *et al.*, *Carbohydr. Res.*, 1983, **123**, 97
(*synth*, *pmr*)

2-O- α -D-Xylopyranosyl-D-glucose X-42
[53735-82-3]



C₁₁H₂₀O₁₀ 312.273

Reducing disaccharide. Cryst. (EtOH/H₂O). Mp 190-195°. [α]_D²⁵ +194 \rightarrow +165 (24h) (c, 1.1 in H₂O).

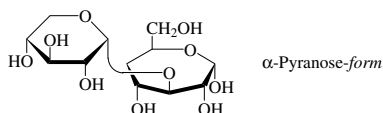
β -Pyranose-form

Hepta-Ac: [53735-81-2]

C₂₅H₃₄O₁₇ 606.533
Mp 174-175°. [α]_D²⁵ +118 (c, 1 in CHCl₃).

Dick, W.E. *et al.*, *Carbohydr. Res.*, 1974, **36**, 319
(*synth*, *pmr*)

3-O- α -D-Xylopyranosyl-D-glucose X-43
[39848-54-9]

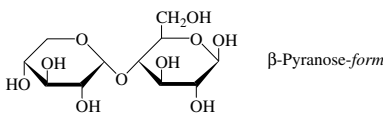


C₁₁H₂₀O₁₀ 312.273

Reducing disaccharide. Isol. from urine. [α]_D²⁰ +103 (c, 1.9 in H₂O).

Lundblad, A. *et al.*, *Biochemistry*, 1973, **12**, 307
(*isol*)

4-O- α -D-Xylopyranosyl-D-glucose, 9CI X-44
[132627-88-4]



C₁₁H₂₀O₁₀ 312.273

Reducing disaccharide. Amorph. [α]_D²⁵ +123 (c, 1.5 in H₂O).

β -Pyranose-form

Hepta-Ac: [132627-94-2]

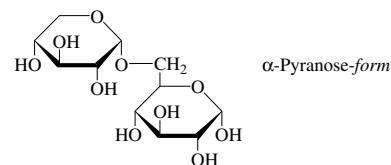
C₂₅H₃₄O₁₇ 606.533
Cryst. (EtOH). Mp 196-197°. [α]_D²⁵ +40 (c, 1.2 in CHCl₃).

Benzyl glycoside, hexabenzyl:

[132627-95-3]
C₆₀H₆₂O₁₀ 943.144
Syrup. [α]_D²⁵ +13 (c, 1.5 in CHCl₃).

Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167
(*synth*, *pmr*)

6-O- α -D-Xylopyranosyl-D-glucose, 9CI X-45
Isoprimeverose. Serotinoside
[534-98-5]



C₁₁H₂₀O₁₀ 312.273

Constit. of Nasturtium and tamarindus amyloids. Also from glucomannan of *Pinus banksiana* and *Tamarindus indica*. Mp 200-201°. [α]_D²⁰ +151.3 \rightarrow +121.3 (H₂O).

α -Pyranose-form

Me glycoside, hexa-Ac:

C₂₄H₃₄O₁₆ 578.523
Mp 123-124°. [α]_D²⁰ +66 (CHCl₃).

1-Bromo-1-deoxy-, hexa-Ac: Acetobromoisoprimeverose

C₂₃H₃₁BrO₁₅ 627.393
Mp 155.5-157.5°. [α]_D²⁰ +186.3 (CHCl₃).

β -Pyranose-form

Hepta-Ac:

C₂₅H₃₄O₁₇ 606.533
Mp 107-110°. [α]_D²⁰ +82.3 (CHCl₃).

4-Nitrophenyl glycoside: [108682-92-4]

C₁₇H₂₃NO₁₂ 433.368
Needles (H₂O). Mp 240-241°. [α]_D -49.3 (c, 1.4 in H₂O).

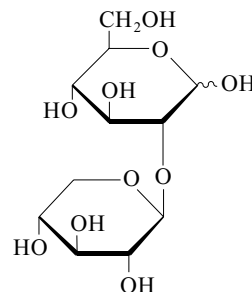
Zemplen, G. *et al.*, *Ber.*, 1939, **72**, 1160 (*synth*)

Perila, O. *et al.*, *Can. J. Chem.*, 1961, **39**, 815
(*isol*)

Le Dizet, P. *et al.*, *Carbohydr. Res.*, 1972, **24**, 505 (*isol*)

Sone, Y. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 671-682 (4-nitrophenyl glycoside)

2-O- β -D-Xylopyranosyl-D-glucose, 9CI, 8CI X-46
Sambubiose
[26388-68-1]



C₁₁H₂₀O₁₀ 312.273

Isol. from *Sambucus nigra* (elderberry). Mp 202-203°. [α]_D +32 \rightarrow +17 (c, 1 in H₂O).

Reichel, L. *et al.*, *Naturwissenschaften*, 1960, **47**, 40

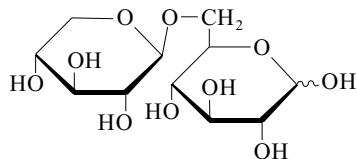
Erbing, B. *et al.*, *Acta Chem. Scand.*, 1969, **23**, 2213 (*synth*)

Erbing, B. *et al.*, *CA*, 1976, **84**, 122160g (*rev*)

6-O-β-D-Xylopyranosyl-D-glucose, 9CI, 8CI

X-47

O-β-D-Xylopyranosyl-[1→6]-D-glucopyranose, *Primeverose, 9CI, Primverose* [26531-85-1]



C₁₁H₂₀O₁₀ 312.273

Constit. of a number of naturally occurring phenolic glycosides such as Primeverin and Primulaverin from *Primula officinalis*.

Mp 194-197° Mp 210° dec. [α]_D²⁰ +23.8 → -3.4 (c, 2.5 in H₂O). Sweet taste.

Phenylosazone:

C₂₃H₃₀N₄O₈ 490.512

Mp 220°. [α]_D¹⁹ -109.7 (Py).

α-Pyranose-form

Hepta-Ac: Hepta-O-acetyl-α-primeveropyranose

C₂₅H₃₄O₁₇ 606.533

Mp 202-204°. [α]_D +33 (CHCl₃).

1-Chloro, hexa-Ac: Acetochloroprimeverose

C₂₃H₃₁ClO₁₅ 582.942

Mp 190-192°. [α]_D +70.8 (CHCl₃).

β-Pyranose-form [498-05-5]

Hepta-Ac: Hepta-O-acetyl-β-primeveroside

[18431-63-5]

C₂₅H₃₄O₁₇ 606.533

Mp 216°. [α]_D²⁰ -23.5 (CHCl₃).

Me glycoside, hexa-Ac:

C₂₄H₃₄O₁₆ 578.523

Cryst. (CHCl₃/EtOH). Mp 219-220°.

[α]_D²⁰ -37 (CHCl₃).

Benzyl glycoside: 1-O-Benzyl-β-D-primeveroside

C₁₈H₂₆O₁₀ 402.397

Isol. from green fruits of *Prunus laurocerasus*. Cryst. (EtOH).

Mp 188-189°. [α]_D²⁰ -71.2 (c, 1 in H₂O).

1-O-(E-4-Hydroxycinnamoyl): 1-O-Coumaroyl-β-D-primeveropyranoside

C₂₀H₂₆O₁₂ 458.418

Constit. of the roots of *Asiasarum sieboldii*.

1-O-(E-4-Hydroxy-3-methoxycinnamoyl): See 3-(4-Hydroxy-3-methoxyphenyl)-2-propenoic acid in *The Combined Chemical Dictionary*.

Helfferich, B. *et al.*, *Annalen*, 1927, **455**, 168 (*synth, constit*)

Tollens, B. *et al.*, *Kurzes Handbuch der Kohlenhydrate*, Edwards Bros. Inc., Ann Arbor, 4th Ed., 1935, 425

Begbie, R. *et al.*, *Carbohydr. Res.*, 1966, **2**, 272 (*isol, struct*)

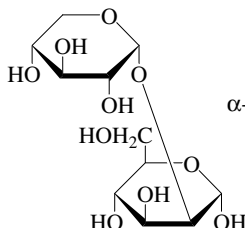
Haverkamp, J.P. *et al.*, *Tetrahedron*, 1971, **27**, 4275 (*ms*)

Sone, Y. *et al.*, *J. Carbohydr. Chem.*, 1986, **5**, 671-682 (*4-nitrophenyl glycoside, synth*)

Weinges, K. *et al.*, *Annalen*, 1991, 703 (*benzyl glycoside*)

2-O-α-D-Xylopyranosyl-D-mannose

X-48



α-Pyranose-form

C₁₁H₂₀O₁₀ 312.273

α-Pyranose-form

Me glycoside: Methyl 2-O-α-D-xylopyranosyl-α-D-mannopyranoside, 9CI

[68929-41-9]

C₁₂H₂₂O₁₀ 326.3

[α]_D²⁵ +102.4 (c, 3.34 in H₂O).

Benzyl glycoside: [68929-50-0]

C₁₈H₂₆O₁₀ 402.397

[α]_D²⁵ +118 (c, 1.81 in H₂O).

Benzyl glycoside, 4,6-O-benzylidene, 2',3,3',4'-tetra-Ac: [68929-49-7]

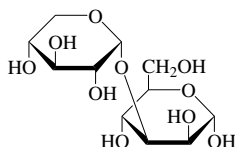
C₃₃H₃₈O₁₄ 658.655

Mp 82°.

Lee, R.T. *et al.*, *Carbohydr. Res.*, 1978, **67**, 389

3-O-α-D-Xylopyranosyl-D-mannose

X-49



α-Pyranose-form

C₁₁H₂₀O₁₀ 312.273

α-Pyranose-form

Me glycoside: Methyl 3-O-α-D-xylopyranosyl-α-D-mannopyranoside, 9CI

C₁₂H₂₂O₁₀ 326.3

Amorph. solid. [α]_D²⁵ +115.4 (c, 2.28 in H₂O).

Benzyl glycoside: [68929-44-2]

C₁₈H₂₆O₁₀ 402.397

[α]_D²⁵ +26.2 (c, 0.14 in H₂O).

Me glycoside, 4,6-O-benzylidene, 2',3',4'-tri-Ac: [68929-34-0]

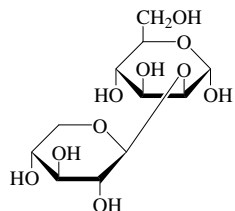
C₂₅H₃₂O₁₃ 540.52

Mp 198-199°.

Lee, R.T. *et al.*, *Carbohydr. Res.*, 1978, **67**, 389

2-O-β-D-Xylopyranosyl-D-mannose

X-50



α-Pyranose-form

C₁₁H₂₀O₁₀ 312.273

Constit. of the side chain of the serological type B capsular polysaccharide in *Cryptococcus bacillisporus*.

α-Pyranose-form [68922-34-9]

Me glycoside: Methyl 2-O-β-D-xylopyranosyl-α-D-mannopyranoside, 9CI

[68929-40-8]

C₁₂H₂₂O₁₀ 326.3

[α]_D²⁵ -14.3 (c, 5.19 in H₂O).

Me glycoside, 4,6-O-benzylidene, 2',3,3',4'-tetra-Ac: [68929-38-4]

C₂₇H₃₄O₁₄ 582.557

Cryst. (EtOH/C₆H₆/petrol). Mp 100-110°.

Benzyl glycoside: [68922-33-8]

C₁₈H₂₆O₁₀ 402.397

Cryst. (EtOH/Et₂O). Mp 94-95°. [α]_D²⁵ -13.2 (c, 3.1 in H₂O).

Benzyl glycoside, 4,6-O-benzylidene, 2',3,3',4'-tetra-Ac: [68929-48-6]

C₃₃H₃₈O₁₄ 658.655

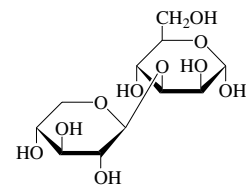
Mp 75-76°.

Lee, R.T. *et al.*, *Carbohydr. Res.*, 1978, **67**, 389 (*deriv*)

Bhattacharjee, A.K. *et al.*, *Carbohydr. Res.*, 1980, **82**, 103

3-O-β-D-Xylopyranosyl-D-mannose

X-51



α-Pyranose-form

C₁₁H₂₀O₁₀ 312.273

α-Pyranose-form

68929-47-5.

Cryst. (EtOH). Mp 194-196°.

Me glycoside: Methyl 3-O-β-D-xylopyranosyl-α-D-mannopyranoside, 9CI

[68929-36-2]

C₁₂H₂₂O₁₀ 326.3

Mp 218-219°. [α]_D²⁴ +60.2 (c, 1.14 in H₂O).

Benzyl glycoside: [68939-82-2]

C₁₈H₂₆O₁₀ 402.397

[α]_D²⁵ +20.2 (c, 4.47 in H₂O).

Benzyl glycoside, 4,6-O-benzylidene, 2',3',4'-tri-Ac: [68939-83-3]

C₃₁H₃₆O₁₃ 616.618

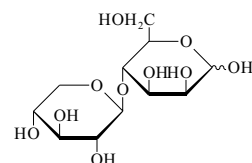
Cryst. (EtOH/Et₂O). Mp 100-101°.

Lee, R.T. *et al.*, *Carbohydr. Res.*, 1978, **67**, 389

4-O-β-D-Xylopyranosyl-D-mannose, 9CI

X-52

[134409-73-7]

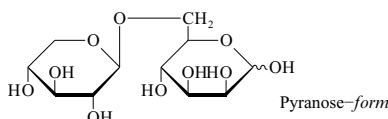


Pyranose-form

$C_{11}H_{20}O_{10}$ 312.273
Constituent in the major component of the type B polysaccharide of *Cryptococcus bacillisporus*.
[α]_D²⁰ -41.1 (c, 0.9 in H₂O).

Bhattacharjee, A.K. *et al.*, *Carbohydr. Res.*, 1980, **82**, 103
Kizawa, H. *et al.*, *Agric. Biol. Chem.*, 1991, **55**, 671 (synth)

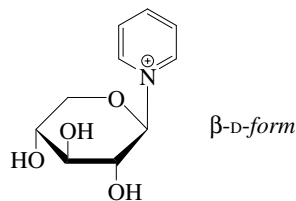
6-O-β-D-Xylopyranosyl-D-mannose, 9CI X-53
[134409-74-8]



$C_{11}H_{20}O_{10}$ 312.273
Constituent of leiocarpin A, a polysaccharide isolated from *Anogeissus leiocarpus* (Myrtales) gum.
[α]_D²⁰ -26.8 (c, 0.5 in H₂O).

Aspinall, G.O. *et al.*, *Can. J. Chem.*, 1975, **53**, 2189 (struct)
Kizawa, H. *et al.*, *Agric. Biol. Chem.*, 1991, **55**, 671 (synth)

1-(Xylopyranosyl)pyridinium(1+) X-54



$C_{10}H_{14}NO_4^+$ 212.225

α-D-form

Bromide:
 $C_{10}H_{14}BrNO_4$ 292.129
Mp 157-159°. [α]_D -58.5 (c, 1.4 in H₂O).

2',3',4'-Tri-Ac, bromide:
 $C_{16}H_{20}BrNO_7$ 418.24
Mp 169-170°. [α]_D -45.7 (c, 0.8 in CHCl₃).

4-Me ether, bromide:
 $C_{11}H_{16}BrNO_4$ 306.156
Mp 155-157°. [α]_D -52.6 (c, 0.9 in H₂O).

2',3',4'-Tri-Ac, 4-Me, bromide:
 $C_{17}H_{22}BrNO_7$ 432.267
Cryst. (Et₂O/Me₂CO). Mp 156-158°. [α]_D -38.9 (c, 1.0 in CHCl₃).

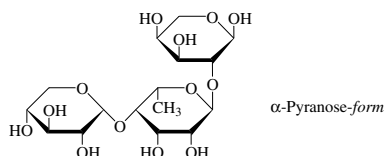
β-D-form

Bromide:
 $C_{10}H_{14}BrNO_4$ 292.129
Mp 149-150°. [α]_D -5.6 (c, 1.0 in H₂O).

2',3',4'-Tri-Ac, bromide:
Cryst. (Me₂CO). Mp 167-169°. [α]_D -21.9 (c, 1 in CHCl₃).

Hosie, L. *et al.*, *J.C.S. Perkin 2*, 1984, 1121

β-D-Xylopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-L-arabinose X-55
β-D-Xylopyranosyl-(1→4)-6-deoxy-α-L-mannopyranosyl-(1→2)-L-arabinose, 9CI



$C_{16}H_{28}O_{13}$ 428.389
Constit. of Acutosides from *Luffa acutangula* (Chinese okra) (Cucurbitaceae). Constit. of Foetidissimoside, isol. from *Aster tartaricus* (Compositae). Fruits of *Luffa* used in Ayurvedic medicine as an anthelmintic and antipyretic while the seeds are used as an emetic and expectorant.

α-Pyranose-form

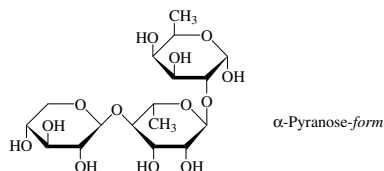
Me glycoside: [135545-80-1]
 $C_{17}H_{30}O_{13}$ 442.416
Amorph. powder. [α]_D²⁶ -50.5 (c, 1.0 in MeOH) (-45.3).

β-Pyranose-form

Me glycoside: [135545-81-2]
Amorph. powder. [α]_D²⁶ +39.3 (c, 0.90 in MeOH) (+29.3).

Tanaka, R. *et al.*, *Chem. Pharm. Bull.*, 1990, **38**, 1153 (α-Me pyr, β-Me pyr, pmr, cmr, ms)
Nagao, T. *et al.*, *Chem. Pharm. Bull.*, 1991, **39**, 599 (isol, α-Me pyr, β-Me pyr, pmr, cmr, ms)

β-D-Xylopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-D-fucose X-56
β-D-Xylopyranosyl-(1→4)-6-deoxy-α-L-mannopyranosyl-(1→2)-6-deoxy-D-galactose, 9CI



$C_{17}H_{30}O_{13}$ 442.416
Constit. of desacylsaponins from the bark of *Quillaja saponaria* (soap-bark tree). The bark (as saponin crude drug) is used as a detergent, dentifrice and expectorant. Saponin mixt. exhibits strong adjuvant activity and plasma cholesterol lowering effect.

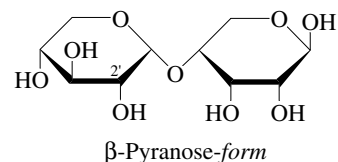
α-Pyranose-form

Me glycoside: [107091-14-5]
 $C_{18}H_{32}O_{13}$ 456.443
Hygroscopic powder. [α]_D +11.8 (c, 1.0 in MeOH).

Topping, D.L. *et al.*, *Proc. Nutr. Soc. Aust.*, 1980, **5**, 195 (use)

Higuchi, R. *et al.*, *Phytochemistry*, 1986, **26**, 229 (isol, ir, cmr, ms)

4-O-α-D-Xylopyranosyl-D-ribose X-57



$C_{10}H_{18}O_9$ 282.247

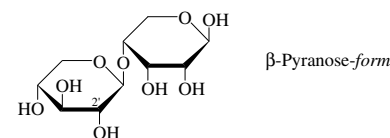
β-Pyranose-form

2,3-Anhydro, benzyl glycoside, 2',3',4'-tribenzyl: Benzyl 2,3-anhydro-4-O-(2,3,4-tri-O-benzyl-α-D-xylopyranosyl)-β-D-ribose, 9CI
[132627-96-4]

$C_{38}H_{40}O_8$ 624.729
Syrup. [α]_D²⁵ +41 (c, 0.9 in CHCl₃).

Kovac, P. *et al.*, *Chem. Zvesti*, 1978, **32**, 514
Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167 (synth, pmr)

4-O-β-D-Xylopyranosyl-D-ribose X-58



$C_{10}H_{18}O_9$ 282.247

β-Pyranose-form

2,3-Anhydro, Me glycoside, 3',4'-di-Ac: Methyl 2,3-anhydro-4-O-(3,4-di-O-acetyl-β-D-xylopyranosyl)-β-D-ribose, 9CI
[72521-40-5]
 $C_{15}H_{22}O_{10}$ 362.333
Mp 146-147°. [α]_D²² -46.5 (c, 1.0 in CHCl₃).

2,3-Anhydro, Me glycoside, 2'-benzyl: Methyl 2,3-anhydro-4-O-(2-O-benzyl-β-D-xylopyranosyl)-β-D-ribose, 9CI
[72127-31-2]
Cryst. (EtOAc). Mp 119.5-120.5°. [α]_D²² -41.6 (c, 1.0 in CHCl₃).

2,3-Anhydro, Me glycoside, 2'-benzyl, 3',4'-di-Ac: Methyl 2,3-anhydro-4-O-(3,4-di-O-acetyl-2-O-benzyl-β-D-xylopyranosyl)-β-D-ribose, 9CI
[68977-77-5]
 $C_{22}H_{28}O_{10}$ 452.457
Cryst. (EtOH). Mp 150.5-151.5°. [α]_D²² +3 (c, 1.0 in CHCl₃).

2,3-Anhydro, Me glycoside, 2',3',4'-tribenzyl: Methyl 2,3-anhydro-4-O-(2,3,4-tri-O-benzyl-β-D-xylopyranosyl)-β-D-ribose, 9CI
[63879-69-6]
 $C_{32}H_{36}O_8$ 548.632
Mp 118-119°. [α]_D²⁰ +9.6 (c, 1.25 in CHCl₃).

2,3-Anhydro, benzyl glycoside, 2',3',4'-tri-Ac: Benzyl 2,3-anhydro-4-O-(2,3,4-tri-O-acetyl- β -D-xylopyranosyl)- β -D-ribose, 9CI

[70751-52-9]

C₂₃H₂₈O₁₁ 480.468

Mp 134°. [α]_D -55 (CHCl₃) (-48).

2,3-Anhydro, benzyl glycoside, 2',3',4'-tribenzoyl: Benzyl 2,3-anhydro-4-O-(2,3,4-tri-O-benzoyl- β -D-xylopyranosyl)- β -D-ribose, 9CI

[70751-51-8]

C₃₈H₃₄O₁₁ 666.68

Syrup. [α]_D -40 (CHCl₃).

2,3-Anhydro, benzyl glycoside, 2',3',4'-tribenzyl: Benzyl 2,3-anhydro-4-O-(2,3,4-tri-O-benzyl- β -D-xylopyranosyl)- β -D-ribose, 9CI

[80971-48-8]

C₃₈H₄₀O₈ 624.729

Mp 110-111° (107-108°). [α]_D²⁵ +1 (c, 1.1 in CHCl₃). [α]_D²² -14.6 (c, 1.5 in Py).

Aspinall, G.O. *et al.*, *J.C.S.*, 1961, 3674

Kovac, P.J. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1977, **4**, 165 (*Me gly, tribenzyl*)

De Bruyn, A. *et al.*, *Bull. Soc. Chim. Belg.*, 1978, **87**, 783

Garegg, P.J. *et al.*, *Acta Chem. Scand., Ser. B*, 1979, **33**, 116 (*benzyl gly, triesters*)

Kovac, P. *et al.*, *Carbohydr. Res.*, 1979, **75**, 109 (*Me gly, 2-benzyl*)

Hirsch, J. *et al.*, *Carbohydr. Res.*, 1979, **77**, 241 (*di-Ac*)

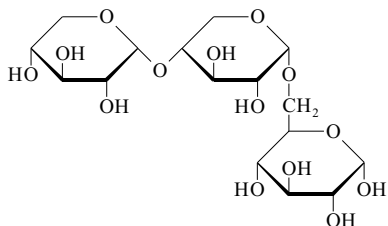
Petrakova, E. *et al.*, *Chem. Zvesti*, 1981, **35**, 699

Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167 (*benzyl gly, tribenzyl*)

α -D-Xylopyranosyl-(1 \rightarrow 4)- α -D-xylopyranosyl-(1 \rightarrow 6)-D-glucose, 9CI

α -D-Xylosylisoprimeverose

[125583-30-4]

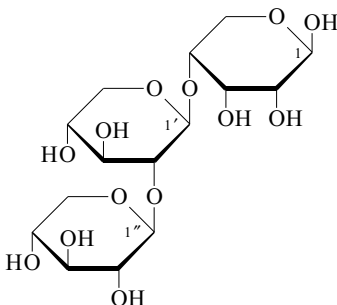


C₁₆H₂₈O₁₄ 444.389

Transxylosylation product, formed by the action of *Bacillus* α -D-xylosidase on 6-O- α -D-Xylopyranosyl-D-glucose, X-45. [α]_D +143.5 (c, 0.29 in H₂O).

Zong, N. *et al.*, *Agric. Biol. Chem.*, 1989, **53**, 3329 (*synth, pmr*)

β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose, 9CI



C₁₅H₂₆O₁₃ 414.363

β -Pyranose-form

Me glycoside, 2,3-anhydro: [72521-35-8]

C₁₆H₂₆O₁₂ 410.374

Cryst. (MeOH). Mp 223-224°. [α]_D²² -47 (c, 1.0 in H₂O).

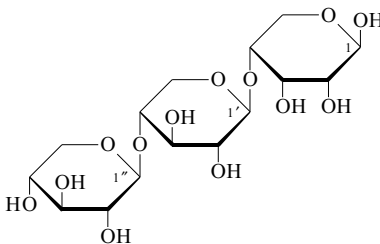
Me glycoside, 2,3-anhydro, 2'',3'',4'',4'''-penta-Ac: [72521-34-7]

C₂₆H₃₆O₁₇ 620.56

Cryst. Mp 157-158°. [α]_D²² -69 (c, 1.0 in CHCl₃).

Hirsch, J. *et al.*, *Carbohydr. Res.*, 1979, **77**, 241 (*β -Me pyr anhydro derivs*)

β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose



C₁₅H₂₆O₁₃ 414.363

β -Pyranose-form

Me glycoside, 2,3-anhydro: [74972-65-9]

C₁₆H₂₆O₁₂ 410.374

Cryst. + 0.5 H₂O (Me₂CO aq.). Mp 111-114°. [α]_D²² -59.9 (c, 1.0 in H₂O).

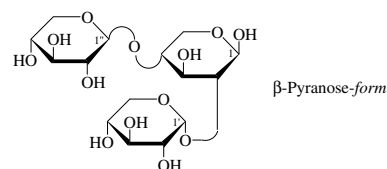
Me glycoside, 2,3-anhydro, 2'',2'',3'',3'',4'''-penta-Ac: [74972-66-0]

C₂₆H₃₆O₁₇ 620.56

Cryst. (EtOH). Mp 129-131°. [α]_D²² -78.8 (c, 0.83 in CHCl₃).

Kovac, P. *et al.*, *Chem. Zvesti*, 1980, **34**, 234, (*β -Me pyr anhydro derivs*)

α -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, 9CI



C₁₅H₂₆O₁₃ 414.363

Pyranose-form [81024-96-6]

Syrup. [α]_D²⁵ +69.4 (c, 0.96 in H₂O).

β -Pyranose-form

Benzyl glycoside, 2'',3,3'',4'''-tetrabenzyl:

[81024-95-5]

C₅₀H₅₆O₁₃ 864.985

Cryst. (Et₂O/MeOH). Mp 161-163°.

[α]_D²² +3.2 (c, 0.96 in CHCl₃).

Benzyl glycoside, 2'',3,3'',4'''-tetrabenzyl, tri-Ac: [81024-94-4]

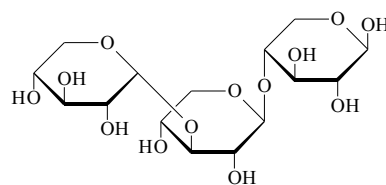
C₅₆H₆₂O₁₆ 991.096

Cryst. Mp 83-85°. [α]_D²² +3.2 (c, 0.95 in CHCl₃).

[81024-98-8]

Petrakova, E. *et al.*, *Chem. Zvesti*, 1981, **35**, 699 (*synth, β -benzyl pyr derivs, cmr*)

α -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, 9CI



C₁₅H₂₆O₁₃ 414.363

β -Pyranose-form

Me glycoside: [73654-67-8]

C₁₆H₂₈O₁₃ 428.389

Cryst. Mp 223-225° (dimorph.) Mp 231-232°. [α]_D²² +31.5 (c, 1.0 in H₂O).

Me glycoside, hepta-Ac: [73654-65-6]

C₃₀H₄₂O₂₀ 722.65

Needles (MeOH). Mp 120-127°. [α]_D²² -4 (c, 1.0 in CHCl₃).

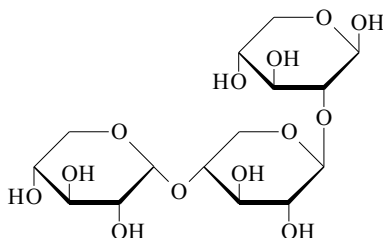
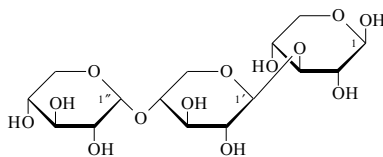
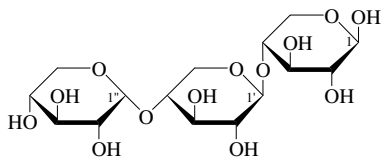
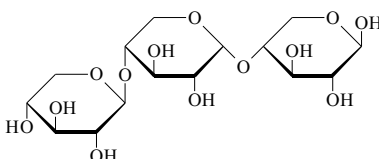
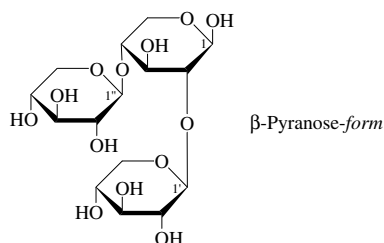
Me glycoside, hepta-Me: [73654-69-0]

C₂₃H₄₂O₁₃ 526.577

Cryst. (diisopropyl ether/hexane). Mp 64-65°. [α]_D²² +14.2 (c, 1.0 in CHCl₃).

Kovac, P. *et al.*, *Carbohydr. Res.*, 1980, **79**, 303 (*β -Me pyr derivs, pmr*)

Vrsanska, M. *et al.*, *Carbohydr. Res.*, 1990, **206**, 251 (*β -Me pyr, enzymic hydrol*)

α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 2)-D-xylose X-64C₁₅H₂₆O₁₃ 414.363 **β -Pyranose-form***Me glycoside*: [93070-17-8]C₁₆H₂₈O₁₃ 428.389Cryst. (MeOH). Mp 135-138°. [α]_D²² +13.9 (c, 1.0 in H₂O).*Me glycoside, hepta-Ac*: [93070-13-4]C₃₀H₄₂O₂₀ 722.65Cryst. (EtOH). Mp 160-162°. [α]_D²² +9.2 (c, 1.0 in CHCl₃).Hirsch, J. et al., *Chem. Zvesti*, 1984, **38**, 409, (β -Me pyr derivs, cmr) **α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose, 9CI** X-65C₁₅H₂₆O₁₃ 414.363 **β -Pyranose-form***Me glycoside*: [93070-15-6]C₁₆H₂₈O₁₃ 428.389Mp 211-212.5° (EtOH). [α]_D²² +18.3 (c, 1.0 in H₂O).*Me glycoside, hepta-Ac*: [93070-11-2]C₃₀H₄₂O₂₀ 722.65Cryst. (MeOH). Mp 189-190°. [α]_D²² -13.2 (c, 1.0 in CHCl₃).Hirsch, J. et al., *Chem. Zvesti*, 1984, **38**, 409, (β -Me pyr derivs, pmr, cmr) **α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, 9CI** X-66 β -Pyranose-formC₁₅H₂₆O₁₃ 414.363 **β -Pyranose-form***1,2,2',2'',3,3',3''-Hepta-Ac*: [82970-34-1]C₂₉H₄₀O₂₀ 708.623Foam. [α]_D²² -1.7 (c, 1.0 in CHCl₃).*Octa-Ac*: [83023-74-9]C₃₁H₄₂O₂₁ 750.66Cryst. (EtOH). Mp 113-119°. [α]_D²² -0.58 (c, 1.0 in CHCl₃).*4''-Benzyl, hepta-Ac*: [82970-28-3]C₃₆H₄₆O₂₀ 798.747Foam. [α]_D²² -4.4 (c, 1.0 in CHCl₃).*Me glycoside, 2,2',2'',3,3',3''-hexa-Ac*: [81685-58-7]C₂₈H₄₀O₁₉ 680.613Amorph. solid. [α]_D²² -17 (c, 1.0 in CHCl₃).*Me glycoside, hepta-Ac*: [81685-61-2]C₃₀H₄₂O₂₀ 722.65Amorph. solid. [α]_D²² -16 (c, 1.0 in CHCl₃).Kovac, P. et al., *Carbohydr. Res.*, 1982, **100**, 177(*hepta-Ac, β -Me pyr Ac derivs, cmr*)Hirsch, J. et al., *Carbohydr. Res.*, 1982, **106**, 203(*hepta-Ac derivs, octa-Ac*) **β -D-Xylopyranosyl-(1 \rightarrow 4)- α -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, 9CI** X-67C₁₅H₂₆O₁₃ 414.363 **β -Pyranose-form***Octa-Ac*: [81846-55-1]C₃₁H₄₂O₂₁ 750.66Syrup. [α]_D²¹ -13.5 (c, 1.0 in CHCl₃).Hirsch, J. et al., *Chem. Zvesti*, 1982, **36**, 125(*octa-Ac, cmr*) **β -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose, 9CI** X-68 β -Pyranose-formC₁₅H₂₆O₁₃ 414.363**Pyranose-form**Amorph. powder. [α]_D²² +26 (c, 1.0 in H₂O). **β -Pyranose-form** [80971-52-4]*Me glycoside*: [72521-31-4]C₁₆H₂₈O₁₃ 428.389Cryst. (MeOH). Mp 160-168° Mp 185-193° (dimorph.). [α]_D²² -79 (c, 1.0 in H₂O).*Me glycoside, 3-benzyl, hexa-Ac*: [72521-29-0]C₃₅H₄₆O₁₉ 770.737Cryst. (EtOH). Mp 92-95° (sinters at 89°). [α]_D -82 (c, 1.0 in CHCl₃).*Benzyl glycoside, 2'',3,3'',4''-tetrabenzyl*:

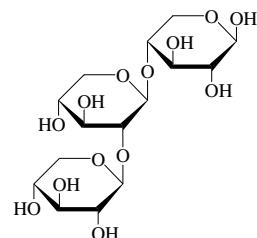
[80971-51-3]

C₅₀H₅₆O₁₃ 864.985

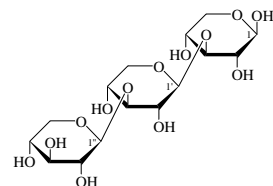
Cryst. (EtOH). Mp 169.5-171°.

[α]_D²² -40.2 (c, 1.0 in CHCl₃).

[81024-97-7]

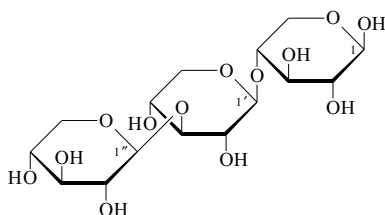
Hirsch, J. et al., *Carbohydr. Res.*, 1979, **77**, 241(*β -Me pyr*)Kovacik, V. et al., *Carbohydr. Res.*, 1981, **88**,189 (*β -Me pyr deriv*)Petrakova, E. et al., *Chem. Zvesti*, 1981, **35**, 699(*synth, β -benzyl pyr deriv, cmr*) **β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, 9CI** X-69 β -Pyranose-formC₁₅H₂₆O₁₃ 414.363Formed by a xylan degrading enzyme from the cells of *Cryptococcus albidus*. **β -Pyranose-form***Me glycoside*: [72521-36-9]C₁₆H₂₈O₁₃ 428.389Cryst. (EtOH). Mp 202-203°. [α]_D²² -80 (c, 1.0 in H₂O).*Me glycoside, hepta-Ac*: [72521-37-0]C₃₀H₄₂O₂₀ 722.65Cryst. (EtOAc/Et₂O). Mp 98-104°. [α]_D²² -94 (c, 1.0 in CHCl₃).*Me glycoside, hepta-Me*: [72521-38-1]C₂₃H₄₂O₁₃ 526.577

Cryst. (diisopropyl ether). Mp 105-106°.

Hirsch, J. et al., *Carbohydr. Res.*, 1979, **77**, 241(*β -Me pyr derivs, pmr*)Vrsanka, M. et al., *Carbohydr. Res.*, 1990, **206**, 251 (*enzymic synth*) **β -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose, 9CI** X-70 β -Pyranose-formC₁₅H₂₆O₁₃ 414.363Constit. of the cell walls of *Penicillium dumetosus*, *Rhodymenia palmata* and several other green algae. **β -Pyranose-form***1,2,2',2'',4,4',4''-Hepta-Ac*: [98264-08-5]C₂₉H₄₀O₂₀ 708.623Cryst. Mp 213°. [α]_D²⁰ -70 (c, 1.0 in CHCl₃).

Percival, E.G.V. *et al.*, *Nature (London)*, 1950, **166**, 787 (*isol*)
 Freietal, E. *et al.*, *Proc. R. Soc. London, B*, 1964, **160**, 293 (*occur*)
 Dupeyre, D. *et al.*, *Carbohydr. Res.*, 1984, **135**, C1 (*isol, hepta-Ac, pmr, cmr*)

β -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, 9CI X-71
 [32581-42-3]



$C_{15}H_{26}O_{13}$ 414.363
 Obt. by the action of endoxylanases from *Cryptococcus albidus* and *Streptomyces* on Rhodymenan a water sol. xylan *isol.* from the marine alga *Rhodymenia palmata*; also by action of β -xylosidase from *Penicillium wortmanni* IFO 7237 on β (1 \rightarrow 4) xylobiose. Cryst.
 Mp 224-225°. $[\alpha]_D^{20}$ -46 (c, 1.0 in H_2O) (-44.6°).

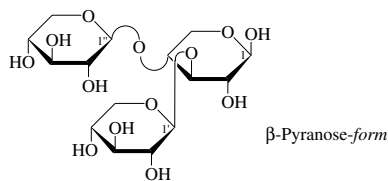
β -Pyranose-form

Me glycoside: [73654-66-7]
 $C_{16}H_{28}O_{13}$ 428.389
 Cryst. (MeOH). Mp 197-204°. $[\alpha]_D^{22}$ -82 (c, 1.0 in H_2O).

Me glycoside, hepta-Ac: [73654-64-5]
 $C_{30}H_{42}O_{20}$ 722.65
 Plates (MeOH). Mp 147-149°. $[\alpha]_D^{22}$ -99 (c, 1.0 in $CHCl_3$).

Me glycoside, hepta-Me: [73654-68-9]
 $C_{23}H_{42}O_{13}$ 526.577
 Cryst. (diisopropyl ether/hexane). Mp 106-107°. $[\alpha]_D^{22}$ -83.6 (c, 1.0 in $CHCl_3$).
 Howard, B. *et al.*, *Biochem. J.*, 1957, **67**, 643 (*enzymic synth*)
 Kovac, P. *et al.*, *Carbohydr. Res.*, 1980, **79**, 303 (*β -Me pyr derivs, pmr*)
 Biely, P. *et al.*, *Eur. J. Biochem.*, 1983, **129**, 645 (*cmr*)
 Biely, P. *et al.*, *J. Bacteriol.*, 1984, **160**, 408
 Chen, W.P. *et al.*, *Agric. Biol. Chem.*, 1986, **50**, 1183; 1195 (*enzymic synth*)
 Win, M. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 1151 (*enzymic synth, hplc*)

β -D-Xylopyranosyl-(1 \rightarrow 3)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose, 9CI X-72



$C_{15}H_{26}O_{13}$ 414.363

β -Pyranose-form

Me glycoside: [70337-65-4]
 $C_{16}H_{28}O_{13}$ 428.389
 Cryst. (MeOH). Mp 216.5-217.5°. $[\alpha]_D^{30}$ -78.2 (c, 1.0 in H_2O).

Me glycoside, 2',2'',3',3'',4',4''-hexa-Ac: [70337-67-6]
 $C_{28}H_{40}O_{19}$ 680.613
 Cryst. (Me₂CO/EtOH). Mp 180-181°. $[\alpha]_D^{30}$ -108.7 (c, 1.2 in $CHCl_3$).

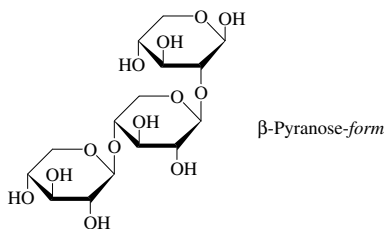
Me glycoside, 2-benzyl, hexa-Ac: [71072-44-1]
 $C_{35}H_{46}O_{19}$ 770.737
 Cryst. (EtOH). Mp 164.5-165.5°. $[\alpha]_D^{20}$ -73.8 (c, 1.0 in $CHCl_3$).

Me glycoside, hepta-Ac: [71110-95-7]
 $C_{30}H_{42}O_{20}$ 722.65
 Cryst. Mp 149.5-151.5°. $[\alpha]_D^{20}$ -106 (c, 1.0 in $CHCl_3$).

Me glycoside, hepta-Me: [71072-45-2]
 $C_{23}H_{42}O_{13}$ 526.577
 Cryst. (Et₂O). Mp 105-106°. $[\alpha]_D^{20}$ -104.8 (c, 1.05 in $CHCl_3$).

Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1979, **44**, 928

β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 2)-D-xylose, 9CI X-73
 [95050-87-6]



$C_{15}H_{26}O_{13}$ 414.363
 Formed by a xylan degrading enzyme from the cells of *Cryptococcus albidus*. Syrup. $[\alpha]_D^{22}$ -37.2 (c, 1.4 in H_2O).

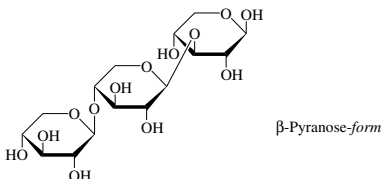
β -Pyranose-form

Me glycoside: [93070-18-9]
 $C_{16}H_{28}O_{13}$ 428.389
 Cryst. (MeOH). Mp 158-159.5°. $[\alpha]_D^{22}$ -73.2 (c, 1.0 in H_2O).

Me glycoside, hepta-Ac: [93070-14-5]
 $C_{30}H_{42}O_{20}$ 722.65
 Cryst. (Me₂CO/Et₂O 1:2). Mp 152-154°. $[\alpha]_D^{22}$ -80.2 (c, 1.0 in $CHCl_3$).

Hirsch, J. *et al.*, *Chem. Zvesti*, 1984, **38**, 409, (*β -Me pyr derivs, cmr*)
 Biely, P. *et al.*, *FEBS Lett.*, 1984, **178**, 323 (*enzymic synth*)

β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose, 9CI X-74



β -Pyranose-form

$C_{15}H_{26}O_{13}$ 414.363
 Obt. by the action of a β -xylosidase prod. by *Penicillium wortmanni* IFO 7237 on β (1 \rightarrow 4) xylobiose.

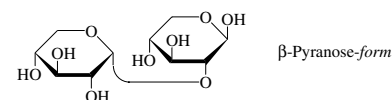
β -Pyranose-form

Me glycoside: [93070-16-7]
 $C_{16}H_{28}O_{13}$ 428.389
 Cryst. (MeOH). Mp 178-180° Mp 199-200° (dimorph.). $[\alpha]_D^{22}$ -77.4 (c, 1.0 in H_2O).

Me glycoside, hepta-Ac: [93070-12-3]
 $C_{30}H_{42}O_{20}$ 722.65
 Cryst. (Me₂CO/Et₂O). Mp 178-179°. $[\alpha]_D^{22}$ -101.2 (c, 1.0 in $CHCl_3$).

Hirsch, J. *et al.*, *Chem. Zvesti*, 1984, **38**, 409, (*β -Me pyr derivs, synth, pmr, cmr*)
 Win, M. *et al.*, *Agric. Biol. Chem.*, 1988, **52**, 1151 (*enzymic synth*)
 Vrsanka, M. *et al.*, *Carbohydr. Res.*, 1990, **206**, 251 (*β -Me pyr, enzymic hydrol*)

2-O- α -D-Xylopyranosyl-D-xylose, 9CI X-75
 [76491-01-5]



β -Pyranose-form

$C_{10}H_{18}O_9$ 282.247
 Foam. $[\alpha]_D^{22}$ +140 (c, 0.1 in H_2O). $[\alpha]_D^{22}$ +105 (c, 1.4 in H_2O).

β -Pyranose-form

Me glycoside: Methyl 2-O- α -D-xylopyranosyl- β -D-xylopyranoside, 9CI [74405-60-0]
 $C_{11}H_{20}O_9$ 296.274
 Mp 183-184°. $[\alpha]_D^{22}$ +70.2 (c, 1.0 in H_2O).

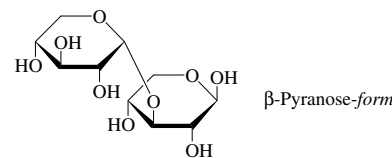
Me glycoside, penta-Ac: [74405-58-6]
 $C_{21}H_{30}O_{14}$ 506.46
 Cryst. (EtOH). Mp 159-160°. $[\alpha]_D^{22}$ +100.2 (c, 1.0 in $CHCl_3$).

Benzylglycoside, 2',3',4'-tri-Ac, di-benzyl: $C_{37}H_{42}O_{12}$ 678.732
 Cryst. (MeOH). Mp 92-93.5°. $[\alpha]_D^{22}$ +48.7 (c, 1.0 in $CHCl_3$).

[78954-50-4]

Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 892 (*Me gly, synth*)
 Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 193 (*cmr*)
 Kovac, P. *et al.*, *Chem. Zvesti*, 1984, **34**, 537; *CA*, **94**, 84400g
 Zong, N. *et al.*, *Agric. Biol. Chem.*, 1989, **53**, 2129

3-O- α -D-Xylopyranosyl-D-xylose, 9CI X-76
 [6893-99-8]



β -Pyranose-form

$C_{10}H_{18}O_9$ 282.247
Mp 178°. $[\alpha]_D^{25} +125$ (c, 0.5 in H_2O).

 β -Pyranose-form

Me glycoside: Methyl 3-O- α -D-xylopyranosyl- β -D-xylopyranoside, 9CI
[74405-66-6]
 $C_{11}H_{20}O_9$ 296.274
Cryst. (MeOH). Mp 195-196°. $[\alpha]_D^{22} +87$ (c, 1.0 in H_2O).

Me glycoside, penta-Ac: Methyl 2,4-di-O-acetyl-3-O-(2,3,4-tri-O-acetyl- α -D-xylopyranosyl)- β -D-xylopyranoside
[74405-64-4]
 $C_{21}H_{30}O_{14}$ 506.46
Cryst. (EtOH). Mp 150-151°. $[\alpha]_D^{22} +45.5$ (c, 1.0 in $CHCl_3$).

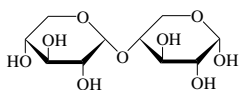
Benzyl glycoside: Benzyl 3-O- α -D-xylopyranosyl- β -D-xylopyranoside
 $C_{17}H_{24}O_9$ 372.371
Cryst. (MeOH). Mp 215-217°. $[\alpha]_D +57$ (H_2O).

[78954-49-1]

Ball, D.H. *et al.*, *J.C.S.*, 1958, 33 (*synth*)
Ferrier, R.J. *et al.*, *J.C.S.*, 1965, 7429 (*benzyl gly*)
Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 892 (*Me gly*)
Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 193 (*cmr*)
Zong, N. *et al.*, *Agric. Biol. Chem.*, 1989, **53**, 2129

4-O- α -D-Xylopyranosyl-D-xylose, 9CI

[82970-38-5]

 α -Pyranose-form

$C_{10}H_{18}O_9$ 282.247
Occurs as side chains in the xylomannan polysaccharide obt. from mycelia of *Armillaria mellea* (honey mushroom).
Amorph. $[\alpha]_D^{25} +108$ (c, 1.5 in H_2O).

 α -Pyranose-form [78932-92-0]

Benzyl glycoside, 3'-Ac, tetrabenzyl: Benzyl 4-O-(3-O-acetyl-2,4-di-O-benzyl- α -D-xylopyranosyl)-2,3-di-O-benzyl- α -D-xylopyranoside
[99388-75-7]
 $C_{47}H_{50}O_{10}$ 774.906
 $[\alpha]_D^{20} +86$ (c, 1.8 in $CHCl_3$).

Benzyl glycoside, 3'-benzoyl, tetrabenzyl: Benzyl 4-O-(3-O-benzoyl-2,4-di-O-benzyl- α -D-xylopyranosyl)-2,3-di-O-benzyl- α -D-xylopyranoside
[99388-76-8]
 $C_{52}H_{52}O_{10}$ 836.977
 $[\alpha]_D^{20} +82$ (c, 2.5 in $CHCl_3$).

 β -Pyranose-form

Hexa-Ac: 1,2,3-Tri-O-acetyl-4-O-(2,3,4-tri-O-acetyl- α -D-xylopyranosyl)- β -D-xylopyranose
[63939-21-9]
 $C_{22}H_{30}O_{15}$ 534.47
Cryst. (MeOH). Mp 136-137°. $[\alpha]_D^{25} +46$ (c, 1.1 in $CHCl_3$).

Benzyl glycoside, tetrabenzyl: Benzyl 2,3-di-O-benzyl-4-O-(2,4-di-O-benzyl- α -D-xylopyranosyl)- β -D-xylopyranoside
 $C_{45}H_{48}O_9$ 732.869
 $[\alpha]_D^{20} +92$ (c, 2.5 in $CHCl_3$).

Me glycoside: Methyl 4-O- α -D-xylopyranosyl- β -D-xylopyranoside
[73654-61-2]
 $C_{11}H_{20}O_9$ 296.274
Cryst. (EtOH/Me₂CO). Mp 150-150.5°. $[\alpha]_D^{22} +57.5$ (c, 1.0 in H_2O).

Me glycoside, tetra-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,4-di-O-acetyl- α -D-xylopyranosyl)- β -D-xylopyranoside
[73654-62-3]
 $C_{19}H_{28}O_{13}$ 464.422
Cryst. (MeOH). Mp 172-173°. $[\alpha]_D^{22} +29.5$ (c, 1.0 in $CHCl_3$).

Me glycoside, penta-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl- α -D-xylopyranosyl)- β -D-xylopyranoside
[74405-70-2]
Cryst. (MeOH). Mp 150-155° Mp 168-169° (double Mp). $[\alpha]_D^{22} +29.6$ (c, 1.0 in $CHCl_3$).

Me glycoside, 3'-benzyl, tetra-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,4-di-O-acetyl-3-O-benzyl- α -D-xylopyranosyl)- β -D-xylopyranoside
[73654-58-7]
 $C_{26}H_{34}O_{13}$ 554.547
Cryst. (EtOH). Mp 150-152°. $[\alpha]_D^{22} +5$ (c, 1.0 in $CHCl_3$).

Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 892

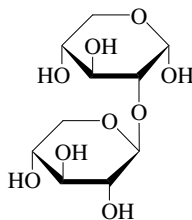
Kovac, P. *et al.*, *Carbohydr. Res.*, 1981, **90**, C5 (*deriv*)

Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1985, **58**, 1464

Takeo, K. *et al.*, *Carbohydr. Res.*, 1991, **209**, 167 (*synth*)

2-O- β -D-Xylopyranosyl-D-xylose, 9CI

[43179-86-8]

 α -Pyranose-form

$C_{10}H_{18}O_9$ 282.247
Constit. of opium poppy pectin. Isol. from the partial hydrolysate of Plantasan, the seed mucilage of *Plantago major*.

 α -Pyranose-form [76491-00-4]

Cryst. (MeOH). Mp 193-194.5°. $[\alpha]_D^{22} +10.4 \rightarrow -8.4$ (4 hr) (c, 1.0 in H_2O). $[\alpha]_D -28.9$ (H_2O).

Me glycoside: Methyl 2-O- β -D-xylopyranosyl- β -D-xylopyranoside
[74405-61-1]
 $C_{11}H_{20}O_9$ 296.274
Mp 153-154°. $[\alpha]_D^{22} -71$ (c, 1.0 in H_2O).

Me glycoside, penta-Ac: Methyl 3,4-di-O-acetyl-2-O-(2,3,4-tri-O-acetyl- β -D-xylopyranosyl)- β -D-xylopyranoside
[74405-59-7]

$C_{21}H_{30}O_{14}$ 506.46
Cryst. (EtOH). Mp 142-143°. $[\alpha]_D^{22} -62.2$ (c, 1.0 in $CHCl_3$).

Hexa-Me: Methyl 3,4-di-O-methyl-2-O-(2,3,4-tri-O-methyl- β -D-xylopyranosyl)- β -D-xylopyranoside
[74405-63-3]

$C_{16}H_{30}O_9$ 366.408
Cryst. (hexane). Mp 66-67°. $[\alpha]_D^{22} -83.3$ (c, 1.0 in $CHCl_3$).

Benzyl glycoside, 3,4-dibenzy: Benzyl 3,4-di-O-benzyl-2-O- β -D-xylopyranosyl- β -D-xylopyranoside
[76490-99-8]
 $C_{31}H_{36}O_9$ 552.62
Cryst. (EtOH). Mp 124-125.5°. $[\alpha]_D^{22} -46.2$ (c, 1.0 in $CHCl_3$).

Wold, J.K. *et al.*, *Acta Chem. Scand.*, 1970, **24**, 2472 (*occur*)

Tomoda, M. *et al.*, *Chem. Pharm. Bull.*, 1973, **21**, 989 (*isol*)

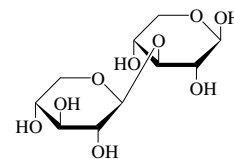
Kovac, P. *et al.*, *Chem. Zvesti*, 1980, **34**, 537; *CA*, **94**, 84400g (*synth*)

Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 892 (*Me gly, synth*)

Bock, K. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1984, **42**, 193 (*cmr*)

3-O- β -D-Xylopyranosyl-D-xylose

Rhodymenabiose

 β -Pyranose-form

$C_{10}H_{18}O_9$ 282.247
Isol. from a partial enzymatic hydrolysate of the seaweed polysaccharide rhodymenan from *Rhodymenia palmata*.
Mp 192-193°. $[\alpha]_D -22$ (H_2O).

Phenylosazone: Mp 194-196°. $[\alpha]_D +47$ (H_2O).

 β -Pyranose-form

Me glycoside: Methyl 3-O- β -D-xylopyranosyl- β -D-xylopyranoside
[74405-67-7]
 $C_{11}H_{20}O_9$ 296.274
Cryst. (2-propanol). Mp 161-162°. $[\alpha]_D^{22} -72$ (c, 1.0 in H_2O).

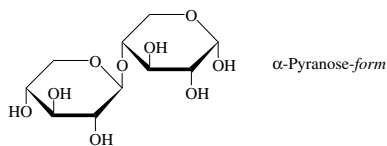
Me glycoside, penta-Ac: Methyl 2,4-di-O-acetyl-3-O-(2,3,4-tri-O-acetyl- β -D-xylopyranosyl)- β -D-xylopyranoside
[74405-65-5]
 $C_{21}H_{30}O_{14}$ 506.46
Mp 131-132°. $[\alpha]_D^{22} -93$ (c, 1.0 in $CHCl_3$).

Me glycoside, penta-Me: Methyl 2,4-di-O-methyl-3-O-(2,3,4-tri-O-methyl- β -D-xylopyranosyl)- β -D-xylopyranoside
[74405-69-9]
 $C_{16}H_{30}O_9$ 366.408
Cryst. (hexane). Mp 60-61°. $[\alpha]_D^{22} -73.7$ (c, 1.0 in $CHCl_3$).

Benzyl glycoside, 2',3',4'-tri-Ac: Benzyl 3-O-(2,3,4-tri-O-acetyl-β-D-xylopyranosyl)-β-D-xylopyranoside
C₂₃H₃₀O₁₂ 498.483
Mp 173-174.5°. [α]_D²⁵ +47 (CHCl₃).
Howard, B.H. *et al.*, *Biochem. J.*, 1957, **67**, 643; 1960, **74**, 173 (*isol.*, *synth*)
Curtis, E.J.C. *et al.*, *Can. J. Chem.*, 1960, **38**, 1305 (*synth*)
Ferrier, R.J. *et al.*, *J.C.S.*, 1965, 7429 (*benzyl glycoside*)
Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 892 (*Me glycoside*)

4-O-β-D-Xylopyranosyl-D-xylose, 9CI, 8CI

Xylobiose
[6860-47-5]



α-Pyranose-form

C₁₀H₁₈O₉ 282.247
Major or sole repeating unit in the main xylan chains of the plant xylans, arabinoxylans and glucuronoxylans. *Isol.* from the autohydrolysate of wheat-straw xylan; acid hydrolysates of linseed (*Linum usitatissimum*) mucilage, aspen (*Populus tremuloides*), western hemlock (*Tsuga heterophylla*), Scotch pine (*Pinus sylvestris*), black spruce (*Picea nigra*) hemicelluloses and of corn-cob hemicellulose. *Prepd.* by the action of various endoxylanases on xylans. The rumen protozoan *Epidinium ecaudatum* contains an exoxylanase which liberates xylobiose from xylans.
Mp 185-190°. [α]_D²² -32 → -25.5 (H₂O).
Phenylosazone: Mp 195-196° dec. [α]_D²² -22.5 → -77 (c, 0.65 in 7:3 Py/EtOH).

α-Pyranose-form

Benzyl glycoside, tetrabenzyl: Benzyl 4-O-(2,4-di-O-benzyl-β-D-xylopyranosyl)-2,3-di-O-benzyl-α-D-xylopyranoside
[99388-73-5]
C₄₅H₄₈O₉ 732.869
[α]_D²⁰ +39 (c, 2.2 in CHCl₃).

β-Pyranose-form [552-71-6]

1,2,2',3,3'-Penta-Ac: 4-O-(2,3-Di-O-acetyl-β-D-xylopyranosyl)-1,2,3-tri-O-acetyl-β-D-xylopyranose
[78423-92-4]
C₂₀H₂₈O₁₄ 492.433
Mp 180-181°. [α]_D²² -76 (CHCl₃).
Hexa-Ac: 4-O-(2,3,4-Tri-O-acetyl-β-D-xylopyranosyl)-1,2,3-tri-O-acetyl-β-D-xylopyranose
[35395-99-4]
C₂₂H₃₀O₁₅ 534.47
Cryst. (EtOH). Mp 155-156°. [α]_D²⁵ -75 (c, 1.0 in CHCl₃).
Me glycoside: Methyl 4-O-β-D-xylopyranosyl-β-D-xylopyranoside
[69973-32-6]
C₁₁H₂₀O₉ 296.274
Mp 148.5-149.5°. [α]_D²⁰ -75 (c, 1.0 in H₂O).

Me glycoside, 2,2',3,3'-tetra-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3-di-O-acetyl-β-D-xylopyranosyl)-β-D-xylopyranoside
[78423-96-8]
C₁₉H₂₈O₁₃ 464.422
Mp 121-123°. [α]_D²² -104 (in CHCl₃).
Me glycoside, 2,2',3,3',4'-penta-Ac: Methyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl-β-D-xylopyranosyl)-β-D-xylopyranoside
[68977-81-1]
C₂₁H₃₀O₁₄ 506.46
Mp 145-146°. [α]_D²⁵ -99.7 (c, 5.0 in CHCl₃).

Me glycoside, 2'-benzyl: Methyl 4-O-(2-O-benzyl-β-D-xylopyranosyl)-β-D-xylopyranoside
[72127-38-9]
C₁₈H₂₆O₉ 386.398
Cryst. (MeOH). Mp 202.5-203°. [α]_D²² -73.5 (c, 0.6 in H₂O).

Me glycoside, 2',3,3',4'-tetrabenzyl: Methyl 3-O-benzyl-4-O-(2,3,4-tri-O-benzyl-β-D-xylopyranosyl)-β-D-xylopyranoside
[63879-70-9]
C₃₉H₄₄O₉ 656.771
Mp 102-103°. [α]_D²⁰ -24 (c, 1.25 in CHCl₃).

Me glycoside, penta-Me: Methyl 2,3-di-O-methyl-4-O-(2,3,4-tri-O-methyl-β-D-xylopyranosyl)-β-D-xylopyranoside
[74405-72-4]
C₁₆H₃₀O₉ 366.408
Cryst. (hexane). Mp 87-88°. [α]_D²² -71.3 (c, 1.8 in CHCl₃).

Benzyl glycoside: Benzyl 4-O-β-D-xylopyranosyl-β-D-xylopyranoside
[75736-87-7]
C₁₇H₂₄O₉ 372.371
[α]_D¹⁸ -120 (c, 1.6 in H₂O).

Benzyl glycoside, penta-Ac: Benzyl 2,3-di-O-acetyl-4-O-(2,3,4-tri-O-acetyl-β-D-xylopyranosyl)-β-D-xylopyranoside
[72661-85-9]
C₂₇H₃₄O₁₄ 582.557
Cryst. (EtOH). Mp 125-127°. [α]_D²² -104.7 (c, 1.28 in CHCl₃).

Benzyl glycoside, 3-Me: Benzyl 3-O-methyl-4-O-(β-D-xylopyranosyl)-β-D-xylopyranoside
C₁₈H₂₆O₉ 386.398
[α]_D¹⁸ -115 (c, 2.0 in H₂O).

Benzyl glycoside, 3-Me, tetra-Ac: Benzyl 2-O-acetyl-3-O-methyl-4-O-(2,3,4-tri-O-acetyl-β-D-xylopyranosyl)-β-D-xylopyranoside
C₂₆H₃₄O₁₃ 554.547
Mp 154-156°. [α]_D¹⁸ -101 (c, 0.66 in CHCl₃).

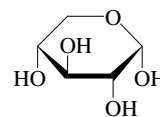
Benzyl glycoside, penta-Me: Benzyl 2,3-di-O-methyl-4-O-(2,3,4-tri-O-methyl-β-D-xylopyranosyl)-β-D-xylopyranoside
C₂₂H₃₄O₉ 442.505
Mp 88-90°. [α]_D¹⁸ -80 (c, 0.4 in CHCl₃).

4-Nitrophenyl glycoside: 4-Nitrophenyl β-xylobioside
[6819-07-4]
C₁₆H₂₁NO₁₁ 403.342
Chromogenic substrate for xylanases.
Foamy solid. [α]_D²⁰ -88.5 (c, 1 in MeOH).
Whistler, R.L. *et al.*, *J.A.C.S.*, 1952, **74**, 3059; 3609 (*isol.*, *synth*)

Aspinall, G.O. *et al.*, *J.C.S.*, 1961, 3674, (β-benzyl gly)
Myhre, D.V. *et al.*, *J.O.C.*, 1961, **26**, 4609 (*synth*)
Tu, C.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 357 (*synth*)
Bailey, R.W. *et al.*, *Oligosaccharides*, Pergamon, 1965, 43 (*occur*)
Pazur, J.H. *et al.*, *The Carbohydrates*, 2nd edn., (Eds., Pigman, W. *et al.*), Academic Press, New York, 1970, 114 (*rev*)
Utile, J.-P. *et al.*, *Carbohydr. Res.*, 1977, **53**, 259 (β-hexa-Ac)
Kovac, P. *et al.*, *J. Carbohydr. Nucleosides, Nucleotides*, 1977, **4**, 165 (β-Me gly)
Kovac, P. *et al.*, *Carbohydr. Res.*, 1979, **75**, 109; 1981, **90**, C5 (β-Me gly derivs)
Gast, J.C. *et al.*, *Carbohydr. Res.*, 1980, **84**, 137 (*cmr*)
Kovac, P. *et al.*, *Coll. Czech. Chem. Comm.*, 1980, **45**, 892 (*synth*)
Wise, W.B. *et al.*, *J. Carbohydr. Chem.*, 1984, **3**, 513-524 (*Me β-pyr, pmr, cmr*)
Koto, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1985, **58**, 1464 (α-benzyl gly)
Mechaly, A. *et al.*, *Carbohydr. Res.*, 1997, **304**, 111-115 (*synth*, 4-nitrophenyl gly)

Xylose, 9CI, 8CI, USAN X-81

Wood sugar. *Losan. Xylomed. Xylo-Pfan. FEMA 3606*



α-D-Pyranose-form

C₅H₁₀O₅ 150.131
An aq. soln. at 31° contains 36.5% α-pyr, 63% β-pyr, <1% α- and β-fur and 0.02% aldehyde.

D-form [58-86-6]

Prod. industrially by hydrol. of wood.
Found mainly in the form of Xylan or as glycosides. Present in wood (maple and cherry), straw, corncoobs, cottonseed hulls and pecan shells. Sweetener. Inexpensive starting material for synthesis. Diagnostic aid (intestinal function determination).
Needles (EtOH).
Mp 153° (144-145°). [α]_D²⁰ +19 (H₂O, equilib.). pK_{a1} 12.29 (25°). Weak sweet taste, sweetness = 0.26 × sucrose.

►ZF2285000

p-Bromophenylhydrazone: Mp 128°. [α]_D -21.

Di-Et dithioacetal: See Xylose diethyl dithioacetal, X-83

2,3-Di-Ac: 2,3-Di-O-acetyl-D-xylose
[62891-41-2]
C₉H₁₄O₇ 234.205

Constit. of the glycopeptides of *Flavobacterium columnare*.

Tetra-Ac: Tetra-O-acetyl-D-xylose.
Aldehyde-D-Xylose tetraacetate
[30571-56-3]
C₁₃H₁₈O₉ 318.28
Cryst. (Et₂O). Mp 87-89°. [α]_D²⁰ -22.5 (c, 2.5 in CHCl₃).

2-Me: See 2-O-Methylxylose, M-306

3-Me: See 3-O-Methylxylose, M-307

α -D-Pyranose-form [6763-34-4]

2,3,4-Tri-Ac: 2,3,4-Tri-O-acetyl- α -D-xylopyranose
[10369-25-2]
C₁₁H₁₆O₈ 276.243
Mp 160°. [α]_D²⁰ +94 → +64 (c, 1 in Py).

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- α -D-xylopyranose
[4257-98-1]
C₁₃H₁₈O₉ 318.28

Needles (Et₂O/petrol). Mp 58.5°. [α]_D +88.9 (c, 1.42 in CHCl₃).

1,2,4-Tribenzoyl: 1,2,4-Tri-O-benzoyl- α -D-xylopyranose
[56933-08-5]
C₂₆H₂₂O₈ 462.455
Syrup. [α]_D²⁰ +88 (CHCl₃).

2,3,4-Tribenzoyl: 2,3,4-Tri-O-benzoyl- α -D-xylopyranose
[56933-07-4]
C₂₆H₂₂O₈ 462.455
Mp 181-183°. [α]_D²⁰ +24 (CHCl₃ 5 min).

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl- α -D-xylopyranose
[30319-44-9]
C₃₃H₂₆O₉ 566.563
Mp 119-121°. [α]_D²⁰ +149 (CHCl₃).

3,4-Dibenzyl: 3,4-Di-O-benzyl- α -D-xylopyranose
C₁₉H₂₂O₅ 330.38
Cryst. Mp 135-136°.

3,4-Dibenzyl, 1,2-di-Ac: 1,2-Di-O-acetyl-3,4-di-O-benzyl- α -D-xylopyranose
C₂₃H₂₆O₇ 414.454
Syrup. [α]_D +127 (c, 0.7 in CHCl₃).
Predominantly α -anomer.

Me glycoside: See Methyl xylopyranoside, M-217

2,2,2-Trichloroethyl glycoside, tri-Ac: C₁₃H₁₅Cl₃O₈ 405.615
Mp 117-120°. [α]_D²⁰ +130.3 (CHCl₃).

 β -D-Pyranose-form [2460-44-8]

Tetra-Ac: 1,2,3,4-Tetra-O-acetyl- β -D-xylopyranose
[4049-33-6]
C₁₃H₁₈O₉ 318.28
Mp 126-128°. [α]_D¹ -24.4 (CHCl₃).

Tetrabenzoyl: 1,2,3,4-Tetra-O-benzoyl- β -D-xylopyranose
C₃₃H₂₆O₉ 566.563
Cryst. (Me₂CO aq.). Mp 177° (173°). [α]_D²⁰ -42.1 (c, 2.3 in CHCl₃).

2,3,4-Tribenzyl, 1-(4-nitrobenzoyl): Mp 126-128°. [α]_D²⁵ -52.4 (c, 1 in CHCl₃).

Tetrabenzyl: 1,2,3,4-Tetra-O-benzyl- β -D-xylopyranose
C₃₃H₃₄O₅ 510.629
Mp 76-80°. [α]_D -11.5 (CHCl₃).

Me glycoside: See Methyl xylopyranoside, M-217

2,2,2-Trichloroethyl glycoside, tri-Ac: Mp 155-157°. [α]_D²⁰ -64.5 (CHCl₃).

Hexadecyl glycoside: Hexadecyl β -D-xylopyranoside. Cetyl β -D-xylopyranoside
[115211-19-3]
C₂₁H₄₂O₅ 374.56

Constit. of the red alga *Laurencia karlae*. Solid.
Mp 94-95°. [α]_D -25 (c, 0.03 in CHCl₃).

 α -D-Furanose-form [14795-83-6]

Tetra-Ac: Tetra-O-acetyl- α -D-xylofuranose
[61248-15-5]
C₁₃H₁₈O₉ 318.28

Oil. [α]_D²⁰ +102.4 (c, 1.25 in CHCl₃).

1,2-O-

Isopropylidene: See 1,2-O-Isopropylidene-xylose, I-76

1,2:3,5-Di-O-benzylidene (first isomer):

1,2:3,5-Di-O-benzylidene- α -D-xylofuranose
[18422-74-7]
C₁₉H₁₈O₅ 326.348

Mp 155-156°. [α]_D +27 (CHCl₃).

1,2:3,5-Di-O-benzylidene (second isomer):

[18422-73-6]
Mp 132-133°. [α]_D +25 (CHCl₃).

1,2-O-Cyclohexylidene: See 1,2-O-Cyclohexylidenexylofuranose, C-191

Me glycoside: See Methyl xylofuranoside, M-216

 β -D-Furanose-form [37110-85-3]

Tetra-Ac: Tetra-O-acetyl- β -D-xylofuranose
[23094-61-3]
C₁₃H₁₈O₉ 318.28

Oil. [α]_D²⁰ -16.2 (c, 0.9 in CHCl₃).

1-Benzoyl, 2,3,5-tri-Ac: 2,3,5-Tri-O-acetyl-1-O-benzoyl- β -D-xylofuranose
[55734-49-1]
C₁₈H₂₀O₉ 380.351

Syrup. [α]_D²⁵ -46.8 (c, 4.8 in CHCl₃).

Butyl glycoside: Butyl β -D-xylofuranoside
C₉H₁₈O₅ 206.238

Constit. of *Inula crithmoides*.

L-form [609-06-3]

Mp 144°. [α]_D²⁰ -79.3 → -18.6 (H₂O).

Phenylosazone:

C₁₆H₂₀N₄O₃ 316.359
Mp 160-163°. [α]_D +0.1 (Py/EtOH).

2,4-Dinitrophenylhydrazones: Mp 165°.

2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-isopropylidene-L-xylose
[120522-10-3]
C₁₁H₁₈O₅ 230.26

[α]_D +26.1 (c, 1.9 in EtOH).

2,4-Benzylidene: 2,4-O-Benzylidene-L-xylose
[30608-02-7]
C₁₂H₁₄O₅ 238.24

Mp 162°. [α]_D +4.4.

2,4-Benzylidene, 3-Me: 2,4-O-Benzylidene-3-O-methyl-L-xylose
C₁₃H₁₆O₅ 252.266
Mp 168-170° (as 4-nitrophenylhydrazones).

 α -L-Pyranose-form [7296-58-4]

Tetrabenzoyl: Tetra-O-benzoyl- α -L-xylopyranose
C₃₃H₂₆O₉ 566.563
Mp 115-116°. [α]_D²⁰ -115 (CHCl₃).

 β -L-Pyranose-form [7322-30-7]

Tetra-Ac: Tetra-O-acetyl- β -L-xylopyranose
[78088-17-2]
C₁₃H₁₈O₉ 318.28
Mp 126°. [α]_D²⁵ +25.7 (CHCl₃).

Tetrabenzoyl: 2,3,4,5-Tetra-O-benzoyl- β -L-xylopyranose
C₃₃H₂₆O₉ 566.563
Mp 173-174°. [α]_D²⁰ +44.5 (CHCl₃).

DL-form [41247-05-6]

Mp 129-131°.

[3154-36-7, 41546-29-6, 41546-30-9]

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Wolfson, M. et al., *J.A.C.S.*, 1944, 66, 204 (aldehyde tetra-Ac)

Fletcher, H.G. et al., *J.A.C.S.*, 1947, 69, 921, (α -D-pyr tetrabenzoyl, β -D-pyr tetrabenzoyl)

Whistler, R.L. et al., *Methods Carbohydr. Chem.*, 1962, 1, 88 (synth, D-form)

Ness, R.K. et al., *Methods Carbohydr. Chem.*, 1962, 1, 90 (synth, D-form)

de Belder, A.N. et al., *Adv. Carbohydr. Chem. Biochem.*, 1965, 20, 219; 1977, 34, 179 (acetals)

Hough, L. et al., *Rodd's Chem. Carbon Compd. (2nd edn.)*, 1967, 1F, 231 (occur, isol)

Durette, P.L. et al., *J.O.C.*, 1971, 36, 2658 (α -D-pyr tetra-Ac)

Karrer, W. et al., *Konstitution und Vorkommen der Organischen Pflanzenstoffe*, 2nd edn., Birkhäuser Verlag, Basel, 1972, no. 585 (occur)

Bock, K. et al., *Tet. Lett.*, 1973, 13, 1037 (cmr)

Bock, K. et al., *Acta Chem. Scand., Ser. B*, 1975, 29, 185; 258 (β -D-fur tri-Ac benzoyl, cmr)

Excoffier, G. et al., *Carbohydr. Res.*, 1975, 39, 368 (α -D-pyr tri-Ac)

Batey, J.F. et al., *Carbohydr. Res.*, 1975, 43, 43 (α -D-pyr benzoyl derivs)

Kam, B.L. et al., *Carbohydr. Res.*, 1979, 69, 135 (α , β -D-fur tetra-Ac)

Magnusson, G. et al., *Acta Chem. Scand., Ser. B*, 1981, 35, 213 (β -D-trichloroethyl pyr tri-Ac)

Bock, K. et al., *Annu. Rep. NMR Spectrosc.*, (Webb, G.A. ed.), Acad. Press, London and New York, 1982, 13, 38; 41 (pmr, cmr)

Utile, J.P. et al., *Carbohydr. Res.*, 1982, 106, 43 (tri-Ac derivs)

Decoster, E. et al., *J. Carbohydr. Chem.*, 1983, 2, 329-341 (β -D-pyr tetrabenzoyl)

Angyal, S.J. et al., *Adv. Carbohydr. Chem. Biochem.*, 1984, 42, 15 (equilib)

Ray, R.N. et al., *J. Indian Chem. Soc.*, 1987, 64, 371 (L-2,4-benzylidene)

Schmid, W. et al., *Annalen*, 1992, 95 (synth, L-form)

Kuszmarn, J. et al., *Carbohydr. Res.*, 1992, 232, 17 (L-form, 3-Me-2,4-benzylidene)

Martindale, *The Extra Pharmacopoeia*, 30th edn., Pharmaceutical Press, 1993, 780

Benesi, A.J. et al., *Carbohydr. Res.*, 1994, 258, 27 (pmr, cmr)

Yang, G. et al., *Carbohydr. Res.*, 1994, 258, 49 (3,4-dibenzyl)

Zhong, Y.-L. et al., *CA*, 1996, 124, 170194n (hexadecyl glycoside)

Martindale, *The Extra Pharmacopoeia*, 31st edn., Pharmaceutical Press, 1996, 1109

Dondoni, A. et al., *J.O.C.*, 1997, 62, 6261-6267 (L-diisopropylidene, synth, pmr)

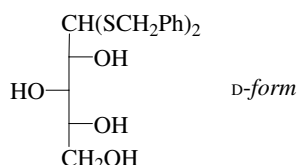
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Vinogradov, E. et al., *Carbohydr. Res.*, 2003, 338, 2653-2658 (D-form, 2,3-di-Ac, occur)

El-Lakany, A.M. et al., *Pharmazie*, 2003, 58, 940-942 (Butyl glycoside)

Xylose dibenzyl dithioacetal**X-82**

Xylose dibenzyl mercaptal. 5,5-Bis(benzylthio)-1,2,3,4-pentanetetrol†

C₁₉H₂₄O₄S₂ 380.528**D-form** [64780-54-7]Needles (EtOAc). Mp 77-78°. [α]_D²⁰ -129.5 (c, 1.82 in MeOH).

2,3,5-Tribenzoyl: 2,3,5-Tri-O-benzoyl-D-xylose dibenzyl dithioacetal

C₄₀H₃₆O₇S₂ 692.852

Cryst. (MeOH). Mp 109-111°.

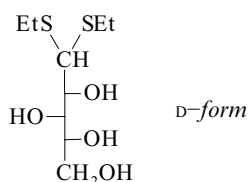
2,3,5-Tri-Me: 2,3,5-Tri-O-methyl-D-xylose dibenzyl dithioacetal

[58886-13-8]

C₂₂H₃₀O₄S₂ 422.609Syrup. [α]_D²⁷ -34 (c, 1.19 in CHCl₃).

2,3,5-Tribenzyl: 2,3,5-Tri-O-benzyl-D-xylose dibenzyl dithioacetal

[222191-90-4]

C₄₀H₄₂O₄S₂ 650.901Yellow syrup. [α]_D²⁰ -77.4 (c, 1.0 in CHCl₃).Zinner, H. *et al.*, *Chem. Ber.*, 1956, **89**, 2451-2454; 1957, **90**, 1761-1768 (*D-form*)Van Es, T. *et al.*, *Chem. Ber.*, 1976, **46**, 237-244 (*D-2,3,5-tri-Me*)Wirsching, J. *et al.*, *Eur. J. Org. Chem.*, 1999, 691-696 (*D-2,3,5-tribenzyl*)Birtwistle, I. *et al.*, *Synth. Commun.*, 2001, **31**, 3807-3815 (*D-2,3,5-tribenzoyl*)**Xylose diethyl dithioacetal, 9CI, 8CI****X-83**C₉H₂₀O₄S₂ 256.387**D-form** [13263-74-6]Mp 63-65°. [α]_D -30.8 (H₂O).

Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-D-xylose diethyl dithioacetal

[7226-49-5]

C₁₇H₂₈O₈S₂ 424.535Mp 46-48°. [α]_D +12.8 (CHCl₃).

2,4-Isopropylidene: 2,4-O-Isopropylidene-D-xylose diethyl dithioacetal

[16885-47-5]

C₁₂H₂₄O₄S₂ 296.451

Mp 117-118°.

2,5-Isopropylidene: 2,5-O-Isopropylidene-D-xylose diethyl dithioacetal

C₁₂H₂₄O₄S₂ 296.451Mp 78.5-80°. [α]_D²⁶ -3.6 (c, 2.26 in CHCl₃).

3,4-Isopropylidene: 3,4-O-Isopropylidene-D-xylose diethyl dithioacetal

[52545-16-1]

C₁₂H₂₄O₄S₂ 296.451Syrup. [α]_D²⁰ +45 (c, 1.48 in CHCl₃).

3,5-Isopropylidene: 3,5-O-Isopropylidene-D-xylose diethyl dithioacetal

C₁₂H₂₄O₄S₂ 296.451Syrup. [α]_D²⁵ +1 (c, 1.47 in CHCl₃).

4,5-Isopropylidene: 4,5-O-Isopropylidene-D-xylose diethyl dithioacetal

[16885-46-4]

C₁₂H₂₄O₄S₂ 296.451Mp 76-77°. [α]_D²⁴ +48 (c, 1.54 in CHCl₃).

2,3:4,5-Diisopropylidene: 2,3:4,5-Di-O-isopropylidene-D-xylose diethyl dithioacetal

[3673-14-1]

C₁₅H₂₈O₄S₂ 336.516Mp 108-109°. [α]_D -67. [α]_D²⁴ -54 (c, 1.44 in Me₂CO).

2,4:3,5-Diisopropylidene: 2,4:3,5-Di-O-isopropylidene-D-xylose diethyl dithioacetal

C₁₅H₂₈O₄S₂ 336.516Cryst. (EtOH aq.). Mp 113.5-114°. [α]_D +8 (c, 1.04 in Me₂CO).

2,5-Cyclohexylidene: 2,5-O-Cyclohexylidene-D-xylose diethyl dithioacetal

C₁₅H₂₈O₄S₂ 336.516Mp 82-84°. [α]_D²⁴ -4 (c, 1.37 in CHCl₃).

4,5-Cyclohexylidene: 4,5-O-Cyclohexylidene-D-xylose diethyl dithioacetal

C₁₅H₂₈O₄S₂ 336.516Mp 66-67°. [α]_D²⁴ +21 (c, 1.02 in CHCl₃).

2,4:3,5-Dibenzylidene: 2,4:3,5-Di-O-benzylidene-D-xylose diethyl dithioacetal

[13231-44-2]

C₂₃H₂₈O₄S₂ 432.604Needles (EtOH). Mp 179°. [α]_D²⁰ -2.8 (c, 2.1 in CHCl₃).

2,3,4-Tri-Me: 2,3,4-Tri-O-methyl-D-xylose diethyl dithioacetal

[54623-08-4]

C₁₂H₂₆O₄S₂ 298.467Syrup. Bp_{0.01} 142-146°. [α]_D²¹ +20 (c, 1.6 in CHCl₃).

2,3,4,5-Tetra-Me: 2,3,4,5-Tetra-O-methyl-D-xylose diethyl dithioacetal

[52545-19-4]

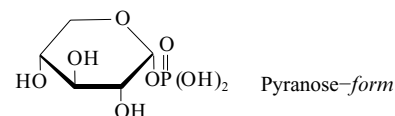
C₁₃H₂₈O₄S₂ 312.494Syrup. [α]_D²⁵ +6 (c, 1.41 in CHCl₃).**L-form** [23259-79-2]Mp 63-64°. [α]_D +70 (CHCl₃).

Tetra-Ac: 2,3,4,5-Tetra-O-acetyl-L-xylose diethyldithioacetal

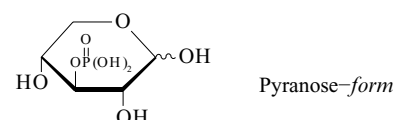
[23259-80-5]

C₁₇H₂₈O₈S₂ 424.535Mp 49-50°. [α]_D -13 (CHCl₃).Wolfson, M.L. *et al.*, *J.A.C.S.*, 1931, **53**, 4379-4383 (*D-form*, *synth*)Zissis, E. *et al.*, *J.A.C.S.*, 1953, **75**, 129-131, (*D-form*, *synth*)Zinner, H. *et al.*, *Carbohydr. Res.*, 1966, **2**, 197 (*2,4:3,5-dibenzylidene*)v. Es, T. *et al.*, *Carbohydr. Res.*, 1974, **32**, 370-374 (*D-2,3,4,5-tetra-Me*, *D-isopropylidene* derivs)Wander, J.D. *et al.*, *Adv. Carbohydr. Chem. Biochem.*, 1976, **32**, 15Grindley, T.B. *et al.*, *Carbohydr. Res.*, 1985, **140**, 215 (*synth*, *pmr*, *cmr*, *isopropylidene*, *cyclohexylidene* derivs)**Xylose 1-dihydrogen phosphate****X-84**

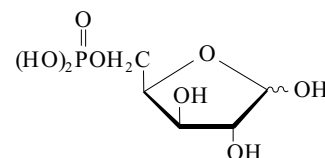
Xylosyl phosphate. Xylose-1-phosphate

C₅H₁₁O₈P 230.111**α-D-Pyranose-form** [25799-81-9]Ba salt: [α]_D +65 (c, 2.0 in H₂O).Di-K salt: [α]_D +76 (c, 2.0 in H₂O).Dicyclohexylammonium salt: Mp 152-158°. [α]_D²⁶ +58 (c, 2.5 in H₂O).**β-D-Pyranose-form**Ba salt: [α]_D -13.3 (5% AcOH aq.).Dicyclohexylammonium salt: Mp 144-150°. [α]_D²⁶ +0.8 (c, 2.5 in H₂O).Meagher, W.R. *et al.*, *J.A.C.S.*, 1946, **68**, 2135 (*synth*)Putman, E.W. *et al.*, *J.A.C.S.*, 1957, **79**, 5057 (*synth*)MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (*rev*)**Xylose 3-dihydrogen phosphate****X-85**

Xylose-3-phosphate

C₅H₁₁O₈P 230.111**D-form**Ba salt: [α]_D²² +1.27 (c, 5.13 in H₂O).Moffatt, J.G. *et al.*, *J.A.C.S.*, 1956, **78**, 883 (*synth*)MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (*rev*)**Xylose 5-dihydrogen phosphate****X-86**

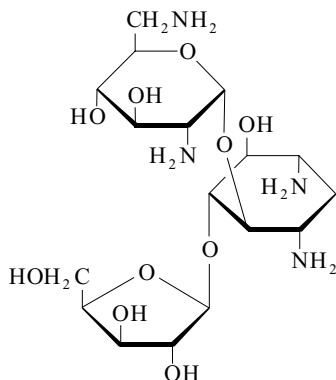
Xylose-5-phosphate

C₅H₁₁O₈P 230.111**D-form**[α]_D²⁰ +25 (c, 2.0 in H₂O).Ba salt: [α]_D +8 (H₂O).Na salt: [α]_D²⁰ +10 → +4.4 (c, 2.0 in H₂O).Dibrucine salt: Mp 150° dec. [α]_D²⁰ -37.8 (c, 2.02 in CHCl₃).Levene, P.A. *et al.*, *J. Biol. Chem.*, 1933, **102**, 347 (*synth*)Barnwell, J.L. *et al.*, *Chem. Ind. (London)*, 1955, 173 (*synth*)

MacDonald, D.L. *et al.*, *The Carbohydrates*, 2nd Ed., Academic Press, 1972, **1A**, 253 (rev)

Xylostacin X-87

O-2,6-Diamino-2,6-dideoxy- α -D-glucopyranosyl-(1 \rightarrow 4)-O-[β -D-xylofuranosyl-(1 \rightarrow 5)]-2-deoxy-D-streptamine, 9CI
[50474-67-4]



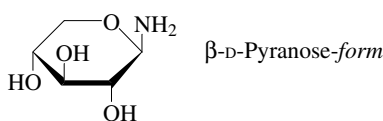
C₁₇H₃₄N₄O₁₀ 454.476

Aminoglycoside antibiotic. Isol. from *Bacillus circulans* and *Bacillus vitellinus*. Broad spectrum antibiotic. Cryst. Sol. H₂O; fairly sol. MeOH; poorly sol. butanol, hexane. $[\alpha]_D^{21} +34$ (c, 1 in H₂O). Dec. on heating. Isomeric with Ribos-tamycin.

► LD₅₀ (mus, ivn) 1000 mg/kg. WK2303000

Horii, S. *et al.*, *Antimicrob. Agents Chemother.*, 1974, **5**, 578 (isol, ir, nmr, struct)
Ohashi, M. *et al.*, *Biomed. Mass Spectrom.*, 1978, **5**, 578 (ms)
Furumai, T. *et al.*, *J. Antibiot.*, 1978, **31**, 966; 1979, **32**, 891 (isol, biosynth)

Xylosylamine X-88



C₅H₁₁NO₄ 149.146

D-form [7322-34-1]

Mp 128-129°. $[\alpha]_D^{20} -19.6$ (c, 2 in H₂O).

N-Ac: N-Acetyl-D-xylosamine

C₇H₁₃NO₅ 191.183

Mp 213-214°. $[\alpha]_D -0.7$ (H₂O).

N,2,3,4-Tetra-Ac: N-Acetyl-2,3,4-tri-O-acetyl-D-xylosamine
[30595-24-5]

C₁₃H₁₉NO₈ 317.295

Cryst. (CHCl₃/petrol). Mp 172-173°. $[\alpha]_D +28.5$ (CHCl₃).

L-form

Mp 138-139°. $[\alpha]_D +19$.

Tri-O-Ac: 2,3,4-Tri-O-acetyl-L-xylosylamine

C₁₁H₁₇NO₇ 275.258

Mp 173-175°. $[\alpha]_D^{20} -28$ (c, 0.5 in EtOH).

N,2,3,4-Tetra-Ac: N-Acetyl-2,3,4-tri-O-acetyl-L-xylosamine

C₁₃H₁₉NO₈ 317.295

Mp 216-217°. $[\alpha]_D^{20} +2$ (c, 0.5 in EtOH).

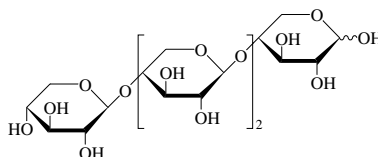
Isbell, H. *et al.*, *J.O.C.*, 1958, **23**, 1309 (D-form, synth, D-N-Ac, D-tetra-Ac)

Smiatecz, Z. *et al.*, *Pol. J. Chem. (Rocz. Chem.)*, 1970, **44**, 757 (L-tri-Ac)

Cerezo, A. *et al.*, *Chem. Ind. (London)*, 1971, 96 (pmr)

Xylotetraose, 8CI X-89

β-D-Xylopyranosyl-(1 \rightarrow 4)-[β-D-xylopyranosyl-(1 \rightarrow 4)]₂-D-xylose
[22416-58-6]



C₂₀H₃₄O₁₇ 546.478

Obt. by acid hydrol. of xylans.

Mp 219-220°. $[\alpha]_D^{25} -48.8 \rightarrow -60$ (H₂O).

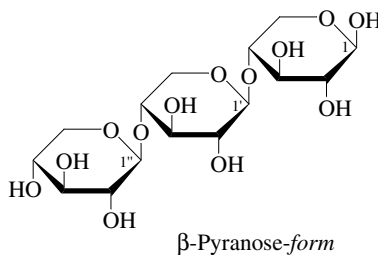
Deca-Ac: Mp 201-202°. $[\alpha]_D^{25} -93.7$ (c, 0.8 in CHCl₃).

Whistler, R.L. *et al.*, *J.A.C.S.*, 1952, **74**, 4334 (synth, isol)

Kamiyama, Y. *et al.*, *Agric. Biol. Chem.*, 1974, **38**, 2385 (glc)

Xylotriose, 9CI X-90

β-D-Xylopyranosyl-(1 \rightarrow 4)-β-D-xylopyranosyl-(1 \rightarrow 4)-D-xylose. 4-β-Xylosylxylobiose
[22416-59-7]



C₁₅H₂₆O₁₃ 414.363

See also under 4-O-β-D-Xylopyranosyl-D-xylose, X-80. Isol. from various acid and enzymic hydrolysates; see under 4-O-β-D-Xylopyranosyl-D-xylose X-80. Cryst. (MeOH).

Mp 204-206° (217-219°). $[\alpha]_D -47$ (c, 1.0 in H₂O).

β-Pyranose-form

1,2,2',2'',3,3',3''-Hepta-Ac: [78423-94-6]

C₂₉H₄₀O₂₀ 708.623

(EtOH). Mp 216-218°. $[\alpha]_D^{22} -92.3$ (c, 1.0 in CHCl₃).

Octa-Ac: [35395-98-3]

C₃₁H₄₂O₂₁ 750.66

Mp 109-110°. $[\alpha]_D -85$ (CHCl₃).

4'-Benzyl, hepta-Ac: [78423-93-5]

C₃₆H₄₆O₂₀ 798.747

Cryst. (MeOH). Mp 104-109°. $[\alpha]_D^{22} -81.9$ (c, 1.0 in CHCl₃).

Me glycoside: Methyl β-D-xylopyranosyl-(1 \rightarrow 4)-β-D-xylopyranosyl-(1 \rightarrow 4)-β-D-xylopyranoside

[74972-67-1]

C₁₆H₂₈O₁₃ 428.389

Mp 190-191°.

Me glycoside, 2,2',2'',3,3',3''-hexa-Ac:

[78437-57-7]

C₂₈H₄₀O₁₉ 680.613

Cryst. (MeOH/CHCl₃). Mp 144-148°.

$[\alpha]_D^{22} -109$ (c, 1.0 in CHCl₃).

Me glycoside, hepta-Ac: [74972-68-2]

C₃₀H₄₂O₂₀ 722.65

Cryst. (MeOH). Mp 110-114°. $[\alpha]_D -105$ (CHCl₃).

Me glycoside, 4'-benzyl, hexa-Ac:

[78423-97-9]

C₃₅H₄₆O₁₉ 770.737

Cryst. (MeOH). Mp 155-157°. $[\alpha]_D^{22} -98$ (c, 1.0 in CHCl₃).

[47592-59-6, 83058-47-3]

Whistler, R.L. *et al.*, *J.A.C.S.*, 1952, **74**, 3609; 4334 (isol)

Jones, J.K.N. *et al.*, *J.C.S.*, 1952, 2750 (isol)

Bishop, C.T. *et al.*, *Can. J. Chem.*, 1955, **33**, 1073

Erskine, A.J. *et al.*, *Can. J. Chem.*, 1957, **35**, 1174 (isol)

Tu, C.C. *et al.*, *Methods Carbohydr. Chem.*, 1962, **1**, 357 (isol)

Kamiyama, Y. *et al.*, *Agric. Biol. Chem.*, 1974, **38**, 2385 (glc)

Gast, J.C. *et al.*, *Carbohydr. Res.*, 1980, **84**, 137 (cmr)

Kovac, P. *et al.*, *Carbohydr. Res.*, 1981, **90**, C5; 1982, **100**, 177 (Me gly)

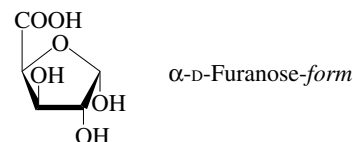
Hirsch, J. *et al.*, *Carbohydr. Res.*, 1982, **106**, 203 (β-pyr derivs)

Meagher, M.M. *et al.*, *Carbohydr. Res.*, 1988, **173**, 273 (enzymic synth)

Summerfelt, S.T. *et al.*, *Carbohydr. Res.*, 1990, **203**, 163 (pmr)

Xyluronic acid X-91

[30923-21-8]



C₅H₆O₆ 164.115

Aq. solns. contain acyclic, furanose and 2,5-lactone forms.

D-form

Syrup. $[\alpha]_D^{25} -11.3$ (c, 0.8 in H₂O).

α-D-Furanose-form

α-D-Xylofuranuronic acid

[134679-13-3]

1,2-Isopropylidene: 1,2-O-Isopropylidene-α-D-xylofuranuronic acid

[35522-89-5]

C₈H₁₂O₆ 204.179

Solid (H₂O). Mp 70°. $[\alpha]_D^{20} -32.6$ (c, 2.1 in Me₂CO).

1,2-Isopropylidene, Me ester: Methyl 1,2-O-isopropylidene-α-D-xylofuranuronate

[35522-91-9]

C₉H₁₄O₆ 218.206

Prisms (Et ₂ O/pentane). Mp 104-106°. [α] _D ²⁰ -42.2 (c, 1.0 in CHCl ₃).	C ₁₃ H ₁₈ O ₇ 286.281 Mp 137°.	Weidmann, H. <i>et al.</i> , <i>Monatsh. Chem.</i> , 1972, 103 , 210-217 (<i>α-D-fur 1,2-isopropylidene Me ester</i>)
<i>1,2-Cyclohexylidene, Et ester:</i> [114743-68-9] C ₁₃ H ₂₀ O ₆ 272.297 Mp 115°.	<i>1,2-Cyclohexylidene, 3-Ac, chloride:</i> [114743-66-7] C ₁₃ H ₁₇ ClO ₆ 304.726 Mp 97° (crude).	Miljković, D. <i>et al.</i> , <i>J. Carbohydr. Chem.</i> , 1987, 6 , 501-508 (<i>cyclohexylidene derivs</i>)
<i>1,2-Cyclohexylidene, 3-Ac: 3-O-Acetyl-1,2-O-cyclohexylidene-α-D-xylofuranouronic acid</i> [114743-65-6]	[134616-30-1, 134679-17-7] Heyns, K. <i>et al.</i> , <i>Chem. Ber.</i> , 1961, 94 , 348-352 (<i>D-form, synth</i>)	Lichtenthaler, W. <i>et al.</i> , <i>Synthesis</i> , 1988, 790-792 (<i>α-D-fur 1,2-isopropylidene Me ester</i>) Wu, J. <i>et al.</i> , <i>Carbohydr. Res.</i> , 1991, 210 , 51-70 (<i>pmr, cmr</i>) Davis, N.J. <i>et al.</i> , <i>Tet. Lett.</i> , 1993, 34 , 1181-1184 (<i>α-D-fur 1,2-isopropylidene</i>)

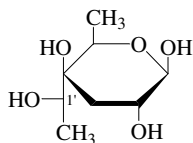
Yeastcidin**Y-1**

Glycoprotein. Prod. by *Aspergillus oryzae*
G. Shows antimicrobial activity.
Powder.

Hosaka, M. *et al.*, *Hakko Kagaku Zasshi*, 1987,
65, 191-197; *CA*, **107**, 112314q (*isol*)

Yersiniose**Y-2**

3,6-Dideoxy-4-C-(1-hydroxyethyl)-D-
xylo-hexose. *Yersiniose A*

 β -Pyranose-form

$C_8H_{16}O_5$ 192.211

CA refers to Yersiniose and Yersiniose A
as different compds. and assigns two
incorrect stereochemistries. (correct
stereochem. is D-xylo-). Stereochemis-

try is complex. See Zubkov, *et al* for a
discussion. Component of the antigenic
lipopolysaccharide of *Yersinia*
frederiksenii strain 867 and of *Yersinia*
pseudotuberculosis.
[α]_D²⁰ -6.1 (c, 0.6 in H₂O).

Tetra-Ac:

$C_{16}H_{24}O_9$ 360.36
[α]_D²⁰ -20 (c, 0.4 in CHCl₃).

1'-Epimer: *Yersiniose B*

$C_8H_{16}O_5$ 192.211

Synthetic.

 α -Pyranose-form

Me glycoside:

$C_9H_{18}O_5$ 206.238
Syrup. [α]_D +77 (c, 0.1 in H₂O).

 β -Pyranose-formMe glycoside: [α]_D²⁰ -48.2 (c, 1.0 in H₂O).

[89367-91-9, 126786-43-4]

Gorshkova, R.P. *et al.*, *Carbohydr. Res.*, 1984,
126, 308 (*isol, cmr, pmr, deriv*)

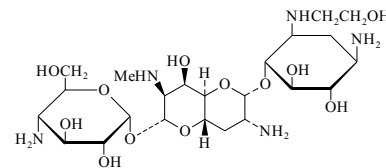
Gorshkova, R.P. *et al.*, *Bioorg. Khim.*, 1989, **15**,
1627; *Sov. J. Bioorg. Chem. (Engl. Transl.)*,
1989, **15**, 878 (*isol, cmr*)

Zubkov, V.A. *et al.*, *Carbohydr. Res.*, 1992, **225**,
189 (*synth, stereochem*)

Chen, H. *et al.*, *J.A.C.S.*, 1998, **120**,
11796-11797 (*rev, biosynth*)

Youlemycin**Y-3**

[110207-81-3]



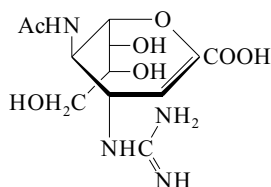
$C_{23}H_{45}N_5O_{12}$ 583.635

Aminoglycoside antibiotic. Prod. by
Streptomyces sp. Sol. H₂O; poorly sol.
butanol, hexane.

Ye, X. *et al.*, *CA*, 1987, **107**, 112294 (*isol, struct*)

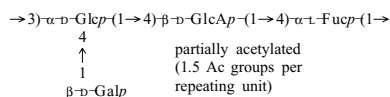
Zanamivir, BAN, USAN

5-(Acetylamino)-4-[(aminoiminomethyl)amino]-2,6-anhydro-3,4,5-trideoxy-D-glycero-D-galacto-non-2-enoic acid, 9CI, 2,4-Dideoxy-2,3-dehydro-4-guanidino-N-acetylneuraminic acid. Relenza. GG 167. GR 121167X [139110-80-8]



C₁₂H₂₀N₄O₇ 332.313
Neuraminidase (sialidase) inhibitor. Inhibits influenza virus replication *in vitro* and in mice. Antiviral agent. Launched 1999 (Australia). Cryst. Mp 256° dec. [α]_D²⁰ +40.9 (c, 0.9 in H₂O). Log P -4.81 (calc). [139110-56-8]

Pat. Coop. Treaty (WIPO), 1991, 91 16 320, (Glaxo); CA, 117, 49151y (synth, pharmacol)
Woods, J.M. et al., *Antimicrob. Agents Chemother.*, 1993, **37**, 1473 (pharmacol)
von Itzstein, M. et al., *Nature (London)*, 1993, **363**, 418 (pharmacol)
Ryan, D.M. et al., *Antimicrob. Agents Chemother.*, 1994, **38**, 2270 (activity)
Hayden, F.G. et al., *Antiviral Res.*, 1994, **25**, 123 (activity)
von Itzstein, M. et al., *Carbohydr. Res.*, 1994, **259**, 301 (synth)
Chandler, M. et al., *J.C.S. Perkin 1*, 1995, 1173-1180 (synth, pmr, ir, uv)
Scheigetz, J. et al., *Org. Prep. Proced. Int.*, 1995, **27**, 637-644 (synth)
Fromtling, R.A. et al., *Drugs of the Future*, 1996, **21**, 375-382 (rev)
Hayden, F.G. et al., *J. Am. Med. Assoc.*, 1996, **275**, 295-299 (pharmacol)
Smith, P.W. et al., *Spec. Publ. - R. Soc. Chem.*, 1997, **198**, 269-287 (rev)
Drugs, 1998, **55**, 721-725; 1999, **58**, 761 (rev)
Freund, B. et al., *Drug Saf.*, 1999, **21**, 267
Martindale, *The Extra Pharmacopoeia*, 32nd edn., Pharmaceutical Press, 1999, 630
Cheer, S.M. et al., *Drugs*, 2002, **62**, 71-106 (rev)

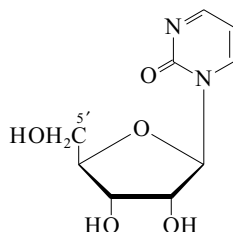
Zanflo**Z-2**

Prod. by *Erwinia tahitica*. Industrial polysaccharide showing superior viscosity and dye compatibility props. than Xanthan, X-1.

Johannsson, A. et al., *Carbohydr. Res.*, 1994, **264**, 129 (pmr, struct, bibl)

Zebularine

1-β-D-Ribofuranosyl-2-(1H)-pyrimidinone, 9CI, 8CI, 4-Deoxyuridine [3690-10-6]



C₉H₁₂N₂O₅ 228.204
Antineoplastic agent, cytidine deaminase inhibitor. Mp 158-159° (156.5-157°). [α]_D²⁵ +160.9 (c, 0.76 in MeOH). Log P -2.65 (calc).

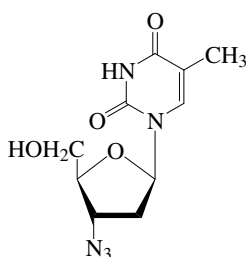
2',3',5'-Tri-O-benzoyl: Mp 165-167°.

[68926-06-7]

Ikehara, M. et al., *Chem. Pharm. Bull.*, 1960, **8**, 308 (synth)
Funakoshi, R. et al., *Chem. Pharm. Bull.*, 1961, **9**, 406 (synth)
Oeyen, T.B. et al., *Biochim. Biophys. Acta*, 1969, **186**, 237 (synth)
Hruska, F.E. et al., *Can. J. Chem.*, 1974, **52**, 497 (pmr, conformm)
Furberg, S. et al., *Acta Chem. Scand., Ser. B*, 1978, **32**, 478 (cryst struct)
Holy, A. et al., *Coll. Czech. Chem. Comm.*, 1985, **50**, 393 (synth)
Maeda, M. et al., *Nucleic Acids Symp. Ser.*, 1985, **16**, 77 (synth, props)
Driscoll, J.S. et al., *J. Med. Chem.*, 1991, **34**, 3280 (synth, props)
Laliberté, J. et al., *Cancer Chemother. Pharmacol.*, 1992, **30**, 7 (pharmacol)

Zidovudine, BAN, INN, USAN**Z-4**

3'-Azido-3'-deoxythymidine, 9CI, 3'-Azidothymidine. Apovir. Novo-AZT. Retrovir. Zidovir. AZT. BW A509U. NSC 602670 [30516-87-1]



C₁₀H₁₃N₅O₄ 267.244
Antiviral agent active exclusively against retroviruses, esp. AIDS virus and leukemias. Drugs of choice for AIDS treatment. Nucleoside transporter substrate. Marketed drug. Launched 1987. As Combivir (combination product with Lamivudine, L-23), worldwide 63rd best selling prescription drug (\$0.88 bn, 2002) (GlaxoSmithKline) (Med Ad News). Needles (Et₂O). Mp 106-112° Mp 119-121° (after drying). [α]_D²⁵ +99 (c, 0.5 in H₂O). pK_a 9.68. Component of Combivir.

► Possible human carcinogen (IARC 2B). XP2072000

Phosphate (ester): 3'-Azido-3'-deoxy-5'-thymidylic acid, 9CI [29706-85-2]
C₁₀H₁₄N₅O₇P 347.224
Needles (as NH₄ salt). Mp 199-200° (NH₄ salt).

Phosphate, 2-(decyloxy)-3-(dodecylthio)-propyl ester: See Fozivudine tidoxil, F-42

5'-Triphosphate: [92586-35-1]

C₁₀H₁₆N₅O₁₃P₃ 507.184
HIV reverse transcriptase inhibitor. Active metabolite of zidovudine. Oil.

5'-(Hydrogen phosphonate): **Phosphazid** [124930-59-2]
C₁₀H₁₄N₅O₆P 331.224
Antiviral agent.

Aldrich Library of 13C and 1H FT NMR Spectra, 1992, **3**, 393A (nmr)

Horowitz, J.P. et al., *J.O.C.*, 1964, **29**, 2076 (synth, uv)

Lin, T.-S. et al., *J. Med. Chem.*, 1978, **21**, 109 (synth)

Mitsuya, H. et al., *Proc. Natl. Acad. Sci. U.S.A.*, 1985, **82**, 7096 (pharmacol)

Vrang, L. et al., *Antiviral Res.*, 1987, **7**, 139-149 (5'-triphosphate, synth, pmr, P-31 nmr, uv, biochem)

Dyer, I. et al., *Acta Cryst. C*, 1988, **44**, 767 (cryst struct)

Van Roey, P. et al., *J.A.C.S.*, 1988, **110**, 2277 (cryst struct)

Fleet, G.W.J. et al., *Tetrahedron*, 1988, **44**, 625 (synth)

Coe, D. et al., *Chem. Ind. (London)*, 1989, 724 (phosphate, synth, ir, pmr, bibl)

Collins, J.M. et al., *Clin. Pharmacokinet.*, 1989, **17**, 1 (rev, pharmacokinet)

Sethi, M.L. et al., *Anal. Profiles Drug Subst.*, 1991, **20**, 729 (rev)

Jung, M.E. et al., *J.O.C.*, 1991, **56**, 2614 (synth)

Dyatkina, N.B. et al., *Nucleosides Nucleotides*, 1991, **10**, 731-732; 1992, **11**, 177-196 (phosphazid, synth)

Good, S.S. et al., *Antiviral Chem. Chemother.*, 1992, **3**, 65 (rev)

Van Wijk, G.M.T. et al., *J. Lipid Res.*, 1992, **33**, 1211 (phosphate, synth)

Wilde, M.I. et al., *Drugs*, 1993, **46**, 515 (rev)

Hu, M. et al., *J. Pharm. Sci.*, 1993, **82**, 829-833 (pharmacol)

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IARC Monog. (Web),

Zosterine, 9CI**Z-5**

[11113-95-4]

Pectic polysaccharide, mol. wt. *ca.* 40000-45000. Contains galacturonan, apiogalacturonan and heteroglycanogalacturonan, interlinked by residues of galacturonic acid and rhamnose. Isol. from *Zosteraceae* spp. Shows antibacterial activity. $[\alpha]_{\text{D}}^{20} +230$ (c, 0.5 in H₂O).

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 6'-Acetylasperuloside, A-872
 6-*O*-Acetyl-2-azido-3,4-di-*O*-benzyl-2-deoxy-α-*D*-galactopyranosyl bromide, A-902
 6-*O*-Acetyl-2-azido-3,4-di-*O*-benzyl-2-deoxy-α-*D*-glucopyranosyl bromide, A-905
N-Acetylbaicillosamine, D-474
 5-*O*-Acetyl-6-*O*-benzoyl-3-*O*-benzyl-1,2-*O*-isopropylidene-α-*D*-glucofuranose, I-66
 6-*O*-Acetyl-3-*O*-benzoyl-5-chloro-5-deoxy-1,2-*O*-isopropylidene-β-*L*-talofuranose, C-105
 3-*O*-Acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene-5-*O*-tosyl-α-*D*-glucofuranose, I-66
 5-*O*-Acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene-3-*O*-tosyl-β-*L*-idofuranose, I-69
 6-*O*-Acetyl-5-*O*-benzoyl-1,2-*O*-isopropylidene-3-*O*-tosyl-β-*L*-idofuranose, I-69
 1-*O*-Acetyl-3-*O*-benzyl-2-deoxy-2-fluoro-β-*D*-arabinofuranose, D-68
 3-*O*-Acetyl-4,6-*O*-benzylidene-*D*-allal, A-72
 3-*O*-Acetyl-4,6-*O*-benzylidene-1,2-dideoxy-*D*-ribo-hex-1-enopyranose, A-72
 6-*O*-Acetyl-3,5-*O*-benzylidene-1,2-*O*-isopropylidene-α-*D*-glucofuranose, B-28
 3-*O*-Acetyl-4,6-*O*-benzylidene-1,2-*O*-(1-methoxyethylidene)-α-*D*-glucopyranose, M-142
 3-*O*-Acetyl-2,4-*O*-benzylidene-*D*-ribono-1,5-lactone, R-129
 4-*O*-Acetyl-5-*O*-benzyl-1,2-*O*-isopropylidene-3-*O*-methyl-α-*D*-guloseptanose, G-588
 5-*O*-Acetyl-3-*O*-benzyl-1,2-*O*-isopropylidene-6-*O*-trityl-α-*D*-glucofuranose, I-66
 3-*O*-Acetyl-5-bromo-2,5-dideoxy-*D*-erythro-pentono-1,4-lactone, B-112
 4-*O*-Acetyl-2,3-*O*-carbonyl-α-*L*-rhamnopyranosyl bromide, R-11
 5-*O*-Acetyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene-3-*O*-tosyl-α-*D*-glucofuranose, C-88
 Acetylcoenzyme A, C-144
 5'-Acetylcardycepine, C-152
 2-*O*-Acetyl-3-*trans*-*O*-*p*-coumaroyltartaric acid, T-12
 2-*O*-Acetyl-3-*cis*-*p*-coumaroyltartaric acid, T-12
 2-*O*-Acetyl-*trans*-coumaric acid, T-12
 2-*O*-Acetyl-*cis*-coumaric acid, T-12
 3-*O*-Acetyl-1,2-*O*-cyclohexylidene-α-*D*-xylofuranouronic acid, X-91
 2-(*N*-Acetylcysteinyl)amido-2-deoxy-α-*D*-glucopyranosyl-*D*-myo-inositol disulfide, A-14
*N*⁴-Acetylcytidine, C-201
 6'-Acetyldeacetylasperuloside, A-872
 5'-Acetyl-3'-deoxyadenosine, C-152
 7-*O*-Acetyl-6-deoxy-1,2,3,4-di-*O*-isopropylidene-α-*D*-galacto-heptopyranose, D-157
 6-*O*-Acetyl-1-deoxy-*D*-galactitol, D-123
 4-*C*-Acetyl-6-deoxygalactonic acid, A-15
 3-*O*-Acetyl-5-deoxy-5-iodo-1,2-*O*-isopropylidene-β-*L*-arabinofuranose, D-251
 1-*O*-Acetyl-5-deoxy-5-iodo-2,3-*O*-isopropylidene-β-*D*-ribofuranose, D-272
 1-*O*-Acetyl-6-deoxy-6-iodo-2,3-*O*-isopropylidene-α-*L*-sorbofuranose, D-274
 3-*O*-Acetyl-5-deoxy-1,2-*O*-isopropylidene-α-*D*-erythro-hexoseptanos-4-*ulose*, H-93
 6-*O*-Acetyl-1-deoxy-3,4-*O*-isopropylidene-*D*-lyxo-2-hexulofuranose, D-221
 3-*O*-Acetyl-5-deoxy-1,2-*O*-isopropylidene-β-*L*-threo-pent-4-enofuranose, D-332
 4-*C*-Acetyl-6-deoxy-2,3-*O*-methylenehexopyranosylidene-(1 → 3-4)-*L*-lyxopyranosyl 6-deoxy-3-*C*-methyl-*D*-mannopyranosyl-(1 → 2)-*O*-6-deoxy-4-*O*-methyl-β-*D*-galactopyranosyl-(1 → 4)-2,6-di-*O*-methyl-*D*-mannopyranoside, F-9
 4-*O*-Acetyl-6-deoxy-3-*O*-methyl-*D*-glucal, D-679
 5-*O*-Acetyl-3-deoxy-*L*-threo-pentofuranose, D-349
 1-*O*-Acetyl-2-*O*-(3,6-diacetoxyicosanoyl)glycerol, O-35
 2-*O*-Acetyl-1,4,3,6-dianhydro-*D*-glucitol, D-503
 5-*O*-Acetyl-1,4,3,6-dianhydro-*D*-glucitol, D-503
 4-*O*-Acetyl-1,6,2,3-dianhydro-β-*D*-gulopyranose, D-505
 4-*O*-Acetyl-1,3,2,5-dianhydro-6-*O*-tosyl-*L*-iditol, D-506
 3-*O*-Acetyl-1,2,4,5-dianhydroxylytol, D-516
 2-*O*-Acetyl-3,5-di-*O*-benzoyl-α-*L*-arabinofuranosyl bromide, A-793
 1-*O*-Acetyl-2,3-di-*O*-benzoyl-5-bromo-5-deoxy-β-*D*-ribofuranose, B-93
 2-*O*-Acetyl-3,5-di-*O*-benzoyl-6-deoxy-β-*D*-glucofuranosyl fluoride, D-128
 1-*O*-Acetyl-2,3-di-*O*-benzoyl-5-deoxy-5-iodo-β-*D*-ribofuranose, D-272
 1-*O*-Acetyl-2,5-di-*O*-benzoyl-3,6-dideoxy-α-*L*-arabino-hexofuranose, D-608
 1-*O*-Acetyl-2,5-di-*O*-benzoyl-3,6-dideoxy-β-*D*-xylo-hexofuranose, D-617
 3-*O*-Acetyl-4,5-di-*O*-benzoyl-1,2-*O*-isopropylidene-β-*D*-fructopyranose, I-62
 3-*O*-Acetyl-5,6-di-*O*-benzoyl-1,2-*O*-isopropylidene-α-*D*-glucofuranose, I-66
 2-*O*-Acetyl-3,5-di-*O*-benzoyl-β-*D*-ribofuranosyl bromide, R-96
 3-*O*-Acetyl-2,5-di-*O*-benzoyl-β-*D*-ribofuranosyl fluoride, R-97
 5-*O*-Acetyl-2,3-di-*O*-benzoyl-β-*D*-ribofuranosyl fluoride, R-97
 2-*O*-Acetyl-3,5-di-*O*-benzoyl-β-*D*-ribofuranosyl fluoride, R-97
 2-*O*-Acetyl-3,4-di-*O*-benzyl-α-*D*-fucopyranosyl chloride, F-96

- 2-*O*-Acetyl-3,4-di-*O*-benzyl-β-D-fucopyranosyl fluoride, F-97
 6-*O*-Acetyl-3,4-di-*O*-benzyl-D-galactal, G-1
 4-*O*-Acetyl-3,6-di-*O*-benzyl-D-galactal, G-1
 3-*O*-Acetyl-4,6-di-*O*-benzyl-D-galactal, G-1
 1-*O*-Acetyl-2,3,4,5-di-*O*-benzylidene-D-arabinitol, A-792
 1-*O*-Acetyl-2,3,4,5-di-*O*-benzylidene-β-D-fructopyranose, F-84
 6-*O*-Acetyl-1,2,3,5-di-*O*-benzylidene-α-D-glucopyranose, B-27
 3-*O*-Acetyl-1,2,4,6-di-*O*-benzylidene-α-D-glucopyranose, B-26
 1-*O*-Acetyl-2,3,4,5-di-*O*-benzylideneribitol, R-94
 2-Acetyl-3',4-di-*p*-coumaroylsucrose, S-92
 3-Acetyl-3',4-di-*p*-coumaroylsucrose, S-92
 2-*C*-Acetyl-2,3-dideoxy-erythro-hexopyranos-4-ulose, A-16
 2-*C*-Acetyl-2,3-dideoxy-threo-hexopyranos-4-ulose, A-17
 4-*C*-Acetyl-2,6-dideoxy-xyllo-hexose, A-18
 3-*O*-Acetyl-2,6-dideoxy-lyxo-hexose, D-610
 4-*O*-Acetyl-2,6-dideoxy-3-*C*-methyl-L-arabino-hexopyranose, D-634
 4-*O*-Acetyl-2,6-dideoxy-3-*C*-methyl-L-ribo-hexopyranose, D-636
 5-*O*-Acetyl-2,3-dideoxy-2-*C*-methyl-threo-pentono-1,4-lactone, D-641
 5-*O*-Acetyl-2,3-dideoxy-D-glycero-pent-2-enono-1,4-lactone, H-164
 4-*O*-Acetyl-2,3-dideoxy-6-*O*-tosyl-D-erythro-hex-2-enono-1,5-lactone, D-580
 6-Acetyl-3',6'-diferuloylsucrose, S-92
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-α-D-allofuranose, I-58
 1-*O*-Acetyl-2,3:5,6-di-*O*-isopropylidene-β-D-allofuranose, D-713
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-β-D-altrofuranose, I-59
 5-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene-β-L-altroseptanose, A-114
 3-*O*-Acetyl-1,2:4,5-di-*O*-isopropylidene-β-D-fructopyranose, D-714
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-α-D-galactofuranose, I-64
 6-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene-α-D-galactopyranose, D-716
 3-*O*-Acetyl-1,2:4,5-di-*O*-isopropylidene-α-D-galactoseptanose, G-203
 5-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene-α-D-galactoseptanose, G-203
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-α-D-glucufuranose, D-717
 4-*O*-Acetyl-2,3:5,6-di-*O*-isopropylidene-D-glucose diethyl dithioacetate, G-516
 5-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene-α-D-glucoseptanose, G-528
 3-*O*-Acetyl-1,2:4,5-di-*O*-isopropylidene-α-D-glucoseptanose, G-528
 1-*O*-Acetyl-2,3:4,5-di-*O*-isopropylidene-α-D-glucoseptanose, G-528
 1-*O*-Acetyl-2,3:4,5-di-*O*-isopropylidene-β-L-glucoseptanose, G-528
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-α-D-glucufuranose, D-718
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-α-D-erythro-hex-3-enofuranose, D-171
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-β-D-idofuranose, I-69
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-β-L-idofuranose, I-69
 5-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene-β-L-idoseptanose, I-10
 3-*O*-Acetyl-1,2:4,5-di-*O*-isopropylidene-β-L-idoseptanose, I-10
 1-*O*-Acetyl-2,3:5,6-di-*O*-isopropylidene-β-D-mannofuranose, I-71
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene-β-D-talofuranose, I-75
 3-*S*-Acetyl-1,2:5,6-di-*O*-isopropylidene-3-thio-α-D-allofuranose, T-53
 3-*O*-Acetyl-1,2-*O*:5,6-*S*-*O*-diisopropylidene-5-thio-α-D-allofuranose, T-54
 3-*S*-Acetyl-1,2:5,6-di-*O*-isopropylidene-3-thio-α-D-glucufuranose, T-72
 6-*O*-Acetyl-1,2-*O*-ethylene-β-D-glucopyranose, E-29
 2-*O*-Acetyl-4,6-*O*-ethylidene-3-*O*-tosyl-α-D-galactopyranosyl bromide, G-27
 4-*O*-Acetyl-2-*O*-feruloyl-α-L-rhamnopyranose, R-79
 1'-Acetyl-3'-feruloylsucrose, S-92
 6-Acetyl-6'-feruloylsucrose, S-92
 1-*O*-Acetyl-L-fucitol, D-123
N-Acetyl-D-fucosamine, A-375
N-Acetyl-L-fucosamine, A-375
 1-*O*-Acetyl-β-D-galactopyranose, G-193
 2-*O*-Acetyl-β-D-galactopyranosyl azide, G-26
N-Acetyl-α-D-galactopyranosylamine, G-207
N-Acetyl-β-D-galactopyranosylamine, G-207
N-Acetyl-galactosamine 1-phosphate, A-211
 6-*N*-Acetyl-galactosaminyl-*N*-acetyl-galactosamine, A-170
 3-α-*N*-Acetyl-galactosaminyl-galactose, A-201
 4-α-*N*-Acetyl-galactosaminyl-galactose, A-202
 3²-α-*N*-Acetyl-galactosaminyl-3-β-galactosyl-*N*-acetylglucosamine, A-198
 3²-β-*N*-Acetyl-galactosaminyl-4-β-galactosyl-*N*-acetylglucosamine, A-199
 4²-α-D-Acetyl-galactosaminyl-4-β-galactosyl-*N*-acetylglucosamine, A-200
N-Acetylglucobrassicin, I-17
N-Acetyl-β-D-glucopyranosylamine, G-533
N-Acetylglucosamine, A-8
 1-*O*-Acetylglucosamine, A-13
 6-α-*N*-Acetylglucosaminyl-*N*-acetylglucosamine, A-171
 6-β-*N*-Acetylglucosaminyl-*N*-acetylglucosamine, A-172
 4²-β-*N*-Acetylglucosaminyl-4-β-*N*-acetylglucosaminyl-*N*-acetylglucosamine, C-64
N-Acetyl-β-D-glucosaminyl-(1 → 4)-*N*-acetylmuramyl-L-alanyl-D-isoglutamine, A-11
 3-β-*N*-Acetylglucosaminyl-galactose, A-252
 6-β-*N*-Acetylglucosaminyl-galactose, A-253
 6-β-*N*-Acetylglucosaminyl-glucose, A-257
 3²-β-*N*-Acetylglucosaminyl-lacto-*N*-biose I, A-244
 6²-β-*N*-Acetylglucosaminyl-lacto-*N*-biose I, A-245
 6'-β-*N*-Acetylglucosaminyl-lacto-*N*-biose II, A-232
 3²-β-*N*-Acetylglucosaminyl-lactose, A-247
 4-*N*-Acetylglucosaminylribitol, A-264
 6-*O*-Acetylglucose, A-19
 1-*O*-Acetyl-D-glucuronic acid, G-538
N-[3-[Acetyl(2-hydroxyethyl)amino]-2,4,6-triiodo-5-[(methylamino)carbonyl]phenyl]gluconamide, I-42
 (1-Acetyl-1*H*-indol-3-yl)methyl glucosinolate, I-17
 2-*O*-Acetyl-*myo*-inositol, I-32
N-Acetylisomuramic acid, M-324
 3-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-allofuranose, I-58
 5-*O*-Acetyl-1,2-*O*-isopropylidene-3,4-di-*O*-mesyl-β-D-fructopyranose, I-62
 3-*O*-Acetyl-1,2-*O*-isopropylidene-4,5-di-*O*-tosyl-β-D-fructopyranose, I-62
 3-*O*-Acetyl-1,2-*O*-isopropylidene-5,6-di-*O*-tosyl-α-D-glucufuranose, I-66
 3-*O*-Acetyl-1,2-*O*-isopropylidene-β-D-fructopyranose, I-62
 3-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-glucufuranose, I-66
 6-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-glucufuranose, I-66
 3-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-glucufuranuronamide, G-537
 1-*O*-Acetyl-2,3-*O*-isopropylidene-α-D-mannofuranose, I-71
 2-*O*-Acetyl-3,5-*O*-isopropylidene-2-*C*-methyl-D-xylono-1,4-lactone, M-304
 5-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-erythro-pentofuranos-3-ulose tosylhydrazone, P-43
 5-*O*-Acetyl-2,3-*O*-isopropylidene-β-D-ribofuranose, I-74
 5-*O*-Acetyl-2,3-*O*-isopropylidene-D-ribono-1,4-lactone, R-128
 3-*S*-Acetyl-1,2-*O*-isopropylidene-3-thio-α-D-allofuranose, T-53
 3-*O*-Acetyl-1,2-*O*-isopropylidene-β-D-threofuranose, T-102
 6-*O*-Acetyl-1,2-*O*-isopropylidene-5-*O*-tosyl-α-D-glucufuranose, I-66
 5-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-xylofuranose, I-76
N-Acetylkanamycin B, K-4
N-Acetyl-lactosamine, L-11
N-Acetyl-lividamine, A-395
N-Acetyl-β-D-mannopyranosylamine, M-118
N-Acetyl-D-mannosamine, A-312
N-Acetyl-melibiosamine, A-203
N-[3-(Acetylmethylamino)-5-[(2-hydroxyethyl)amino]carbonyl]-2,4,6-triiodophenyl]gluconamide, I-44
N-Acetyl-*N*-methyl-D-fucosamine, A-375
 4-*O*-Acetyl-3-*C*-methyl-3-*O*-methyl-L-xyllo-hexose, D-637
 4-*O*-Acetyl-3-*O*-methyl-L-rhamnal, D-679
 Acetylmuramic acid, M-324
N-(*N*-Acetylmuramoyl)-L-alanyl-D-α-glutamyl-*N*-[(7*R*)-4-hydroxy-4-oxido-10-oxo-[(1-oxohexadecyl)oxy]-3,5,9-trioxo-4-phosphapentacos-1-yl]-L-alaninamide, M-325
*N*²-[*N*-(*N*-Acetylmuramoyl)-L-alanyl]-D-glutamine butyl ester, M-322
*N*²-[*N*-(*N*-Acetylmuramoyl)-L-alanyl]-D-α-glutamine, A-57
*N*²-[*N*-(*N*-Acetylmuramoyl)glycyl]-α-D-glutamine, A-99
*N*²-[*N*-(*N*-Acetylmuramoyl)-L-threonyl]-D-α-glutamine, T-16
N-Acetylmuramyl-L-alanyl-D-isoglutamine, A-57
N-Acetyl-β-neuraminic acid 2-(hydrogen 5'-cytidylate), A-21
N-Acetylneuraminic acid, A-20
*II*³-α-*N*-Acetylneuraminosyl-*II*²β internal ester gangliotetraglycosyl-ceramide, S-36
 α-(*N*-Acetylneuraminosyl-(2 → 3)-β-D-galactopyranosyl)-(1 → 4)-[α-L-fucopyranosyl-(1 → 3)]-2-acetamido-2-deoxy-D-glucose, S-38
 6-*O*-(*N*-Acetyl-α-D-neuraminyl)-D-galactose, A-22
 2-(Acetyloxy)-1-(hydroxymethyl)ethyl β-D-glucopyranoside, L-40
*N*¹-Acetylparomomycin I, P-13
 5-*O*-Acetyl-1,2,3,4,6-penta-*O*-methylallitol, A-75
 3-Acetylpyridine adenine dinucleotide, A-23
 3-Acetylpyridine NAD, A-23
N-Acetyl-D-quinovosamine, A-380
N-Acetyl-L-quinovosamine, A-380
 3-*O*-Acetyl-L-rhamnal, D-679
 4-*O*-Acetyl-L-rhamnal, D-679
N-Acetyl-β-L-rhamnopyranosylamine, R-80
N-Acetyl-D-ribitylamine, A-326
N-Acetyl-α-D-ribofuranosylamine, R-145
*N*³-Acetylribostamycin, R-143
 4''-Acetylspiramycin B, F-24
 4'''-Acetylspiramycin C, F-24
N-Acetyl-2,3,4,6-tetra-*O*-acetyl-α-D-galactopyranosylamine, G-207
N-Acetyl-2,3,4,6-tetra-*O*-acetyl-β-D-galactopyranosylamine, G-207
N-Acetyl-2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranosylamine, G-533
 2-*O*-Acetyl-1,3,4,6-tetra-*O*-benzoyl-β-D-fructofuranose, F-84
 2-*O*-Acetyl-1,3,4,5-tetra-*O*-benzoyl-β-D-fructofuranose, F-84
 1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzoyl-β-D-galactopyranose, G-193
 1-*O*-Acetyl-4-*O*-(2,3,4,6-tetra-*O*-benzoyl-β-D-galactopyranosyl)-2,3,6-tri-*O*-benzoyl-α-D-allopyranose, G-40
 1-*O*-Acetyl-4-*O*-(2,3,4,6-tetra-*O*-benzoyl-β-D-galactopyranosyl)-2,3,6-tri-*O*-benzoyl-β-D-allopyranose, G-40
 1-*O*-Acetyl-2,3,5,6-tetra-*O*-benzoyl-β-D-glucufuranose, G-514
 2-*O*-Acetyl-1,3,4,5-tetra-*O*-benzoyl-α-L-sorbopyranose, S-60
 2-*O*-Acetyl-1,3,4,5-tetra-*O*-benzoyl-β-L-sorbopyranose, S-60

- 1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzyl- α -D-galactopyranose, T-21
 1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzyl- β -D-galactopyranose, T-21
 1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzyl- α -D-mannopyranose, T-23
 4-*N*-Acetyl-3',5'-*O*-(tetraisopropylidisiloxane-1,3-diyl)cytidine, T-38
N-Acetyl-5-thio-D-glucosamine, A-349
N-Acetylthomosamine, A-377
N-Acetyl-2,3,4-tri-*O*-acetyl-D-ribosylamine, R-145
N-Acetyl-2,3,4-tri-*O*-acetyl-D-xylosamine, X-88
N-Acetyl-2,3,4-tri-*O*-acetyl-L-xylosamine, X-88
5-*O*-Acetyl-1,2,3-tri-*O*-benzoyl- α -D-arabinofuranose, A-850
4-*O*-Acetyl-1,2,3-tri-*O*-benzoyl- α -D-arabinopyranose, A-850
1-*O*-Acetyl-2,3,5-tri-*O*-benzoyl-4-bromo- β -D-ribofuranose, B-124
6-*O*-Acetyl-2,3,4-tri-*O*-benzoyl- α -L-idopyranosyl bromide, I-5
1-*O*-Acetyl-2,3,4-tri-*O*-benzoyl- α -D-lyxopyranose, L-72
1-*O*-Acetyl-2,3,5-tri-*O*-benzoyl- β -D-ribofuranose, R-138
1-*O*-Acetyl-2,3,5-tri-*O*-benzoyl- β -D-fucofuranose, F-163
1-*O*-Acetyl-2,3,4-tri-*O*-benzoyl- α -D-fucopyranose, F-163
2-*O*-Acetyl-3,4,6-tri-*O*-benzoyl- α -D-galactopyranosyl chloride, G-205
6-*O*-Acetyl-2,3,4-tri-*O*-benzoyl- α -D-glucopyranosyl chloride, G-261
2-*O*-Acetyl-3,4,6-tri-*O*-benzoyl- β -L-gulopyranosyl chloride, G-586
2-*O*-Acetyl-3,4,6-tri-*O*-benzoyl- β -D-mannopyranosyl 2-*O*-acetyl-3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, M-46
6-*O*-Acetyl-2,3,4-trideoxy-DL-*glycero*-hex-2-enose, T-154
1-*O*-Acetyl-2,3,6-trideoxy-3-*C*-methyl-4-*O*-methyl-3-nitro-L-*arabino*-hexopyranose, E-37
1-*O*-Acetyl-3,4,6-tri-*O*-methyl- α -D-glucopyranose, T-188
2-*O*-Acetyl-3,4,6-tri-*O*-methyl- α -D-glucopyranose, T-188
4-*O*-Acetyl-2,3,6-tri-*O*-methyl-D-mannose, T-190
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 6-Azido-6-deoxy-1,2:3,4-di-*O*-isopropylidene-α-L-galactopyranose, A-904
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 Benzyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl- β -D-galactopyranoside, B-15
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 Benzyl 2-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, B-15
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 Benzyl 4-*O*-benzyl-2,3-*O*-isopropylidene- α -L-rhamnopyranoside, B-20
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 Benzyl 4-*O*-benzyl- β -L-rhamnopyranoside, B-20
 Benzyl 3-*O*-benzyl-4-*O*-(2,3,4,6-tetra-*O*-benzyl- α -D-glucopyranosyl)- β -D-xylopyranoside, G-473
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 Benzyl 4-bromo-4-deoxy-2,3-*O*-isopropylidene- β -L-lyxopyranoside, B-84
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 Benzyl 2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranoside, B-16
 Benzyl 2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranoside, B-16
 Benzyl 3-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-xylopyranoside, G-475
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 Benzyl 2,3,4,6-tetra-*O*-benzyl-1-thio- α -D-glucopyranoside, T-70
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 5-*O*-Benzyl-1,2,3,4-di-*O*-isopropylidene- α -D-glucoseptanose, G-528
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 3-*O*-Benzyl-1,2-*O*-isopropylidene- β -D-arabinofuranose, I-60
 3-*O*-Benzyl-1,2-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-allofuranose, I-58
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 2'-Deoxy-5-hydroxymethyluridine, D-236
 10-Deoxy-12-hydroxymethylmycin, N-21
 1-Deoxyiditol, D-237
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 1-Deoxy-D-idonijirimycin, H-175
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 6-Deoxy-β-L-idopyranosyl β-D-fructofuranoside, F-54
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 2'-Deoxy-2'-iodoadenosine, D-242
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 2-Deoxy-2-iodoaltrose, D-246
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 2-Deoxy-2-iodoarabinose, D-249
 3-Deoxy-3-iodoarabinose, D-250
 5-Deoxy-5-iodoarabinose, D-251
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 3-Deoxy-3-iodo-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, D-243
 3-Deoxy-3-iodo-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, D-247
 1-Deoxy-1-iodo-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, D-254
 6-Deoxy-6-iodo-1,2,3,4-di-*O*-isopropylidene- β -D-psicofuranose, D-269
 1-Deoxy-1-iodo-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, D-273
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 6-Deoxy-6-iodofructose, D-256
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 6-Deoxy-6-iodoglucose, D-258
 3-Deoxy-3-iodogulose, D-259
 6-Deoxy-6-iodogulose, D-260
 2-Deoxy-2-iodoidose, D-261
 6-Deoxy-6-iodoidose, D-262
 3-Deoxy-3-iodo-1,2-*O*-isopropylidene- α -D-allofuranose, D-243
 5-Deoxy-5-iodo-1,2-*O*-isopropylidene- β -L-arabinofuranose, D-251
 3-Deoxy-3-iodo-1,2-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-allofuranose, D-243
 5-Deoxy-5-iodo-1,2-*O*-isopropylidene- α -D-ribofuranose, D-272
 1-Deoxy-1-iodo-2,3-*O*-isopropylidene- α -L-sorbofuranose, D-273
 6-Deoxy-6-iodo-2,3-*O*-isopropylidene-1-*O*-tosyl- β -D-fructofuranose, D-256
 6-Deoxy-6-iodo-2,3-*O*-isopropylidene-1-*O*-tosyl-L-sorbofuranose, D-274
 2-Deoxy-2-iodolxylose, D-263
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 2-Deoxy-2-iodoribose, D-270
 3-Deoxy-3-iodoribose, D-271
 5-Deoxy-5-iodoribose, D-272
 1-Deoxy-1-iodosorbose, D-273
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 5-Deoxy-2,3-*O*-isopropylidene-D-arabinose diethyl acetal, D-41
 5-Deoxy-2,3-*O*-isopropylidene-D-arabinose diethyl dithioacetal, D-41
 6-Deoxy-1,2-*O*-isopropylidene-3,5-di-*O*-mesyl- α -D-glucofuranose, D-283
 6-Deoxy-2,3-*O*-isopropylidene-1,6-di-*O*-tosyl- β -D-arabino-2-hexulofuranose, D-218
 6-Deoxy-1,2-*O*-isopropylidene-glucofuranose, D-283
 6-Deoxy-1,2-*O*-isopropylidene- α -D-*gluco*-heptofuranose, D-158
 6-Deoxy-1,2-*O*-isopropylidene- β -L-*ido*-heptofuranose, D-163
 1-Deoxy-4,5-*O*-isopropylidene-D-*erythro*-hexo-2,3-diulo-3,6-furanose, D-186
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 5-Deoxy-1,2-*O*-isopropylidene- α -D-*xylo*-hexofuranoside, D-211
 6-Deoxy-1,2-*O*-isopropylidene- β -D-*arabino*-hexofuranos-5-ulose, D-212
 6-Deoxy-1,2-*O*-isopropylidene- α -D-*xylo*-hexofuranos-5-ulose, D-217
 1-Deoxy-5,6-*O*-isopropylidene-D-*lyxo*-hexose, D-221
 6-Deoxy-2,3-*O*-isopropylidene- β -D-*arabino*-2-hexulofuranose, D-218
 1-Deoxy-3,4-*O*-isopropylidene-D-*lyxo*-2-hexulofuranose, D-221
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 3-Deoxy-1,2-*O*-isopropylidene-3-*C*-(methoxycarbonylmethyl)- α -D-allofuranose, C-24
 3-Deoxy-1,2-*O*-isopropylidene-3-(*N*-methylacetamido)- β -L-arabinofuranose, D-293
 3-Deoxy-1,2-*O*-isopropylidene-3-(*N*-methylacetamido)- α -D-xylofuranose, D-294
 6-Deoxy-2,3-*O*-isopropylidene-6-methylamino- α -L-sorbofuranose, A-337
 3-Deoxy-1,2-*O*-isopropylidene-3-(*N*-methylbenzamido)- α -D-xylofuranose, D-294
 3-Deoxy-1,2-*O*-isopropylidene-3-(*N*-methylbenzamido)- α -D-xylopyranose, D-294
 3-Deoxy-1,2-*O*-isopropylidene-3-*C*-methyl- α -D-glucofuranose, D-301
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 6-Deoxy-2,3-*O*-isopropylidene-4-*O*-methyl- β -L-gulopyranosyl chloride, D-145
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 3-Deoxy-1,2-*O*-isopropylidene- α -D-*erythro*-pentofuranoside, D-346
 5-Deoxy-1,2-*O*-isopropylidene- α -D-*erythro*-pentofuranos-3-ulose, P-43
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 3-Deoxy-1,2-*O*-isopropylidene- α -L-ribofuranose, D-346
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 5-Deoxy-2,3-*O*-isopropylidene-4-*O*-tosyl-D-arabinose diethyl acetal, D-41
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 3-Deoxy-1,2-*O*-isopropylidene-5-tosyl- β -L-*threo*-pentofuranose, D-349
 3-Deoxy-1,2-*O*-isopropylidene-5-*O*-tosyl-4-*C*-(tosyloxymethyl)- α -L-*glycero*-pentofuranose, D-232
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 5-Deoxy-1,2-*O*-isopropylidene- α -D-xylofuranose, D-386
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 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, R-14
 2-*O*-(6-Deoxy- α -L-mannopyranosyl)-D-arabinose, R-15
 2-*O*-(6-Deoxy- α -L-mannopyranosyl)-6-deoxy-D-galactose, R-22
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 6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -D-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-D-mannose, R-52
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 6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy-L-mannose, R-55
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, R-58

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 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, R-63
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, R-64
 6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-D-mannose, R-65
 6-Deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-D-mannose, R-66
 6-Deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, R-68
 6-Deoxy- α -D-mannopyranosyl-(1 \rightarrow 3)-6-deoxy-L-mannose, R-70
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-6-deoxy- α -L-mannose, R-71
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-6-deoxy- α -L-mannose, R-72
 (6-Deoxy- α -L-mannopyranosyl)-(1 \rightarrow 4)-6-deoxy- α -L-mannose, R-73
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 6-Deoxy- β -L-mannopyranosyl-(1 \rightarrow 4)-6-deoxy- α -L-mannose, R-76
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 6-*O*-(6-Deoxy- α -L-mannopyranosyl)-D-galactose, R-28
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 2-*O*-(6-Deoxy- α -L-mannopyranosyl)-D-glucose, R-40
 3-*O*-(6-Deoxy- α -L-mannopyranosyl)-D-glucose, R-41
 6-*O*-(6-Deoxy- α -L-mannopyranosyl)-D-glucose, R-44
 6-Deoxy-4-*O*- α -D-mannopyranosyl-L-mannose, M-105
 6-*O*-(6-Deoxy- α -L-mannopyranosyl)-D-mannose, R-48
N-[*N*-[[[6-Deoxy- α -L-mannopyranosyl]oxy]hydroxyphosphinyl]-L-leucyl]-L-tryptophan, P-70
 6-Deoxy-4-*O*- β -D-mannopyranosyl-L-rhamnose, M-106
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 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-[6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)]-6-deoxy-D-glucose, R-49
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-[6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, R-57
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 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-[6-deoxy- α -L-mannopyranosyl-(1 \rightarrow 4)]-D-glucopyranose, C-53
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 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 2)]-6-deoxy-L-mannose, G-441
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, G-442
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 2)]-6-deoxy-L-mannose, G-445
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-glucose, G-564
 6-Deoxy- α -L-mannopyranosyl-(1 \rightarrow 6)-[β -D-glucopyranosyl-(1 \rightarrow 2)]-D-glucose, R-37
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 2'-Deoxy-2-methyladenosine, D-287
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 4-*O*-(6-Deoxy-2-*O*-methyl- β -D-allopyranosyl)-D-boivinose, B-51
 6-Deoxy-3-*O*-methyl- β -D-allopyranosyl-(1 \rightarrow 4)-2-deoxy-D-*arabino*-hexose, D-774
 6-Deoxy-3-*O*-methyl- β -D-allopyranosyl-(1 \rightarrow 4)-3-*O*-methyl-D-*arabino*-hexose, P-1
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 6-Deoxy-3-*C*-methyl-2-*O*-methyltalose, D-309
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 1-(2-Deoxy-4-*C*-methyl- β -D-*threo*-pentofuranosyl)thymine, M-300
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 1-Deoxy-3-*C*-methylsorbose, D-313
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 1,3-Di-*O*-acetyl-2,7-anhydro-4,5-*O*-isopropylidene-*D*-*altro*-2-heptulopyranose, H-56
 1,6-Di-*O*-acetyl-3,4-anhydro-*D*-psicofuranosyl 4,6-di-*O*-acetyl-2,3-anhydro-*D*-allopyranoside, P-104
 2,3-Di-*O*-acetyl-1,5-anhydro-*D*-ribofuranose, A-692
 2,3-Di-*O*-acetyl-1,4-anhydro-*D*-ribofuranose, A-692
 2,3-Di-*O*-acetyl-1,4-anhydro-5-*O*-trityl-*D*-ribitol, A-688
 3,4-Di-*O*-acetyl-*D*-arabinal, A-790
 3,4-Di-*O*-acetyl-*L*-arabinal, A-790
N,N-Diacetyl-*D*-arabinosylamine, A-854
N,N-Diacetyl-*L*-arabinosylamine, A-854
 3,6-Di-*O*-acetyl-2-azido-4-*O*-benzyl-2-deoxy-*D*-glucopyranosyl bromide, A-905
 4,6-Di-*O*-acetyl-2-azido-3-*O*-benzyl-2-deoxy-*D*-glucopyranosyl bromide, A-905
 1,3-Di-*O*-Acetyl-2-azido-4,6-di-*O*-benzyl-2-deoxy-*D*-mannopyranose, A-912
Di-N-acetylbaicillosamine, D-474
 3,4-Di-*O*-acetyl-1-*O*-benzoyl-2-bromo-2-deoxy-*D*-arabinopyranose, B-62
 2,3-Di-*O*-acetyl-1-*O*-benzoyl-4-bromo-4-deoxy-*D*-lyxopyranose, B-84
 1,2-Di-*O*-acetyl-5-*O*-benzoyl-3-deoxy-3-fluoro-*D*-xylofuranose, D-119
 1,2-Di-*O*-acetyl-5-*O*-benzoyl-3-deoxy-*L*-*erythro*-pentofuranose, D-346
 4,5-Di-*O*-acetyl-3-*O*-benzoyl-1,2-*O*-isopropylidene-*D*-fructopyranose, I-62
 5,6-Di-*O*-acetyl-3-*O*-benzoyl-1,2-*O*-isopropylidene-*D*-glucofuranose, I-66
 3,5-Di-*O*-acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene-*D*-glucofuranose, I-66
 3,5-Di-*O*-acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene-*D*-idofuranose, I-69
 1,2-Di-*O*-acetyl-5-*O*-benzoyl-3-*O*-methyl-*D*-xylofuranose, M-307
 1,3-Di-*O*-acetyl-5-*O*-benzoyl-2-*O*-(2,3,5-tri-*O*-benzoyl-*D*-ribofuranosyl)-*D*-ribofuranose, R-120
 4,7-Di-*O*-acetyl-3-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene-*D*-*gluco*-heptofuranose, D-158
 5,7-Di-*O*-acetyl-3-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene-*D*-*ido*-heptofuranose, D-163
 4,6-Di-*O*-acetyl-3-*O*-benzyl-1,2-*O*-ethylidene-*D*-allopyranose, A-86
 2,3-Di-*O*-acetyl-4,6-*O*-benzylidene-*D*-allopyranosyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-*D*-allopyranoside, A-80
 2,3-Di-*O*-acetyl-4,6-*O*-benzylidene-*D*-glucopyranose, B-26
 2,3-Di-*O*-acetyl-4,6-*O*-benzylidene-*D*-glucopyranose, B-26
 1,5-Di-*O*-acetyl-2,3-*O*-(*R*)-benzylidene-*D*-ribofuranose, R-138
 1,5-Di-*O*-acetyl-2,3-*O*-(*S*)-benzylidene-*D*-ribofuranose, R-138
 5,6-Di-*O*-acetyl-3-*O*-benzyl-1,2-*O*-isopropylidene-*D*-allofuranose, I-58
 5,6-Di-*O*-acetyl-3-*O*-benzyl-1,2-*O*-isopropylidene-*D*-gulofuranose, I-68
 3,5-Di-*O*-acetyl-2-*O*-benzyl-*D*-ribofuranosyl chloride, R-144
 3,4-Di-*O*-acetyl-2-*O*-benzyl-*D*-xylopyranosyl 3,4-di-*O*-acetyl-2-*O*-benzyl-*D*-xylopyranoside, X-18
 3,5-Di-*O*-acetyl-6-bromo-2,6-dideoxy-*D*-*arabino*-hexono-1,4-lactone, B-109
 3,4-Di-*O*-acetyl-2-bromo-2,6-dideoxy-*D*-talopyranosyl bromide, B-110
 2,5-Di-*O*-acetyl-2-*C*-(bromomethyl)-3-deoxy-*D*-*erythro*-1,4-pentonolactone, B-123
 4,6-Di-*O*-acetyl-5-*tert*-butyl-2-deoxy-3-thio-*D*-*arabino*-hexopyranose, D-375
 4,6-Di-*O*-acetyl-3-(*tert*-butylthio)-2,3-dideoxy-*D*-*arabino*-hexopyranose, D-375
N,N'-Diacetylchitobiosamine, A-241
 3,5-Di-*O*-acetyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene-*D*-glucofuranose, C-88
 3,4-Di-*O*-acetyl-2-chloro-2-deoxy-*D*-xylopyranose, C-108
 3,4-Di-*O*-acetyl-2-chloro-2,6-dideoxy-*D*-talopyranosyl chloride, C-116
 3,4-Di-*O*-acetyl-6-deoxy-*D*-allal, D-679
 1,4-Di-*O*-acetyl-6-deoxy-2,3-di-*O*-methyl-*D*-allose, D-57
 4,6-Di-*O*-acetyl-2-deoxy-3-*S*-ethyl-3-thio-*D*-*arabino*-hexopyranose, D-375
 3,5-Di-*O*-acetyl-4-deoxy-4-fluoro-1,2-*O*-isopropylidene-*D*-sorbofuranose, D-107
 3,4-Di-*O*-acetyl-5-deoxy-5-fluoro-1,2-*O*-isopropylidene-*D*-sorbofuranose, D-108
 3,5-Di-*O*-acetyl-4-deoxy-4-fluoro-1,2-*O*-isopropylidene-*D*-tagatopyranose, D-109
 3,4-Di-*O*-acetyl-6-deoxy-1,2-*O*-isopropylidene-*D*-idofuranose, D-238
 5,7-Di-*O*-acetyl-6-deoxy-1,2-*O*-isopropylidene-3-*O*-methyl-*D*-*gluco*-heptofuranose, D-158
 5,6-Di-*O*-acetyl-3-deoxy-1,2-*O*-isopropylidene-3-nitro-*D*-glucofuranose, D-318
 1,5-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl-*D*-talofuranose, D-309
 1,4-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl-*D*-talopyranose, D-309
 1,4-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl-*D*-talopyranose, D-309
 2,5-Di-*O*-acetyl-3-deoxy-2-*C*-methyl-*D*-*erythro*-1,4-pentonolactone, D-310
 1,6-Di-*O*-acetyl-2,3,4,5-dianhydroallitol, D-662
 1,6-Di-*O*-acetyl-2,5,3,4-dianhydro-*D*-altritol, D-489
 3,4-Di-*O*-acetyl-1,2,5,6-dianhydrogalactitol, D-661
 2,4-Di-*O*-acetyl-1,6,3,6-dianhydro-*D*-galactohexodialdopyranose, D-500
 4,6-Di-*O*-acetyl-1,3,2,5-dianhydro-*D*-glucitol, D-502
 2,5-Di-*O*-acetyl-1,4,3,6-dianhydro-*D*-iditol, D-507
 2,5-Di-*O*-acetyl-1,4,3,6-dianhydro-*D*-iditol, D-507
 1,6-Di-*O*-acetyl-2,3,4,5-dianhydro-*D*-iditol, D-662
 2,5-Di-*O*-acetyl-1,4,3,6-dianhydro-*D*-mannitol, D-509
 4,6-Di-*O*-acetyl-2,3-di-*O*-benzyl-*D*-mannopyranosyl chloride, M-42
 2,4-Di-*O*-acetyl-3,6-di-*O*-benzyl-*D*-mannopyranosyl chloride, M-42
 1,2-Di-*O*-acetyl-3,4-di-*O*-benzyl-*D*-xylopyranose, X-81
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-*D*-gluco-1,4-lactone, D-531
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-*D*-idono-1,4-lactone, D-535
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-*D*-mannono-1,4-lactone, D-539
 4,6-Di-*O*-acetyl-2,3-dideoxy-*D*-erythro-hex-2-enose, D-591
 4,6-Di-*O*-acetyl-2,3-dideoxy-3-(ethylthio)-*D*-*arabino*-hexopyranose, D-375
 4,6-Di-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, D-580
 2,4-Di-*O*-acetyl-3,6-dideoxy-*L*-*erythro*-hex-2-enono-1,5-lactone, D-581
 1,6-Di-*O*-acetyl-3,4-dideoxy-*D*-*glycero*-hex-3-enopyranos-2-ulose, D-594
 1,6-Di-*O*-acetyl-3,4-dideoxy-*D*-*glycero*-hex-3-enopyranos-2-ulose, D-594
 5,6-Di-*O*-acetyl-2,3-dideoxy-*L*-*threo*-1,4-hexonolactone, T-167
 3,5-Di-*O*-acetyl-2,6-dideoxy-*D*-*arabino*-hexono-1,4-lactone, D-596
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-*D*-*ribo*-hexose, D-636
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-3-*O*-methyl-*D*-*ribo*-hexopyranose, D-636
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-3-*O*-methyl-*D*-*ribo*-hexopyranose, D-636
 4,4'-Diacetyl-3',6'-diferylulose, S-92
 3',5'-Diacetyl-5,6-dihydro-5-azathymidine, D-671
 3,7-Di-*O*-acetyl-1,2,5,6-di-*O*-isopropylidene-*D*-*glycero*-*L*-*gluco*-*D*-heptofuranose, H-41
 3,5-Di-*O*-acetyl-1,2,6,7-di-*O*-isopropylidene-*D*-*glycero*-*L*-*gluco*-*D*-heptofuranose, H-41
 1,5-Di-*O*-acetyl-2,3,6,7-di-*O*-isopropylidene-*D*-*glycero*-*L*-*manno*-heptofuranose, H-49
 6,7-Di-*O*-acetyl-1,2,3,4-di-*O*-isopropylidene-*D*-*glycero*-*D*-*galacto*-*D*-heptopyranose, H-36
 1,2-Di-*O*-acetyl-3,4,6,7-di-*O*-isopropylidene-*L*-*glycero*-*D*-*tal*-heptopyranose, H-53
 3,4-Di-*O*-acetyl-1,2,5,6-di-*O*-isopropylidene-*L*-*chiro*-inositol, I-28
 4,5-Di-*O*-acetyl-1,2,3,6-di-*O*-isopropylidene-*myo*-inositol, I-32
 1,6-Di-*O*-acetyl-2,3,4,5-di-*O*-isopropylidene-*myo*-inositol, I-32
 3,4-Di-*O*-acetyl-1,2,5,6-di-*O*-isopropylidene-*D*-mannitol, M-25
 1,4-Di-*O*-acetyl-3-(dimethylamino)-2,3,6-trideoxy-*D*-*arabino*-hexose, D-726
 1,2-Di-*O*-acetyl-3,4-di-*O*-methyl-*D*-fucopyranose, F-163
 1,3-Di-*O*-acetyl-2,6-di-*O*-methyl-*L*-*arabino*-hexofuranos-5-ulose, H-96
 1,3-Di-*O*-acetyl-4,6-di-*O*-methyl-*D*-*arabino*-hexopyranos-2-ulose, H-94
 3,4-Di-*O*-acetyl-1,6-di-*O*-trityl-*D*-fructofuranosyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl-*D*-allopyranoside, F-51
 2,3-Di-*O*-acetyl-*D*-*erythro*-1,4-lactone, T-161
 1,3-Di-*O*-acetyl-4,6-*O*-ethylidene-2-*O*-methyl-*D*-glucopyranose, M-255
 3,4'-Diacetylforomacidin A, F-24
 3,4-Di-*O*-acetyl-*L*-fucal, D-679
 1,6-Di-*O*-acetyl-*D*-galactitol, G-4
 2,5-Di-*O*-acetyl-*D*-1,4,6,3-glucarodilactone, G-242
 1,2-Diacetylglycerol, G-549
 4,6-Di-*O*-acetyl-*D*-*threo*-hex-2-enono-1,5-lactone, D-582
 3,6-Di-*O*-acetyl-*muco*-inositol, I-31
 5,6-Di-*O*-acetyl-1,2-*O*-isopropylidene-*D*-allofuranose, I-58
 1',3-Di-*O*-acetyl-1,2-*O*-isopropylidene-*D*-apio-*D*-furanose, A-785
 1',3-Di-*O*-acetyl-1,2-*O*-isopropylidene-*D*-apio-*D*-furanoside, A-785
 1,2-Di-*O*-acetyl-3,4-*O*-isopropylidene-*D*-*arabino*pyranose, I-61
 3,6-Di-*O*-acetyl-1,2-*O*-isopropylidene-*D*-glucofuranose, I-66
 1,5-Di-*O*-acetyl-2,3-*O*-isopropylidene-*D*-*lyxo*furanose, I-70
 3,6-Di-*O*-acetyl-1,2-*O*-isopropylidene-5-*O*-methyl-*D*-glucofuranose, M-258
 4,5-Di-*O*-acetyl-1,2-*O*-isopropylidene-3-*O*-methyl-*D*-glucoseptanose, G-588
 1,5-Di-*O*-acetyl-2,3-*O*-isopropylidene-*L*-rhamnose, I-72
 1,2-Di-*O*-acetyl-3,4-*O*-isopropylidene-*D*-ribofuranose, R-138
 1',3-Di-*O*-acetyl-1,2-*O*-isopropylidene-*D*-*erythro*-tetraofuranose, A-785
 1',3-Di-*O*-acetyl-1,2-*O*-isopropylidene-*D*-*threo*-tetraofuranose, A-785
 3,5-*S*-Diacetyl-1,2-*O*-isopropylidene-5-thio-*D*-arabinofuranoside, T-58
 1,4-Di-*O*-acetyl-2,3-isopropylidene-5-thio-*D*-ribofuranose, T-91

- 5,6-Di-*O*-acetyl-1,2-*O*-isopropylidene-3-*O*-tosyl- α -D-allofuranose, I-58
 4,5-Di-*O*-acetyl-1,2-*O*-isopropylidene-3-*O*-tosyl- β -D-fructopyranose, I-62
 3,5-Di-*O*-acetyl-1,2-*O*-isopropylidene-6-*O*-trityl- α -D-glucofuranose, I-66
 3,5-Di-*O*-acetyl-1,2-*O*-isopropylidene- α -D-xylofuranose, I-76
 1,2-Di-*O*-acetyl-3,5-*O*-isopropylidene- α -D-xylofuranose, I-77
 4,6-Di-*O*-acetyl- α -D-mannopyranosyl bromide 2,3-carbonate, M-41
 3,4-Di-*O*-acetyl-2-*O*-methyl- β -D-arabinopyranosyl fluoride, A-832
 2,3-Di-*O*-acetyl-2-*C*-methyl-D-1,4-erythrionolactone, M-246
 4,6-Di-*O*-acetyl-3-*O*-methyl-D-glucal, G-237
 3,4-Di-*O*-acetyl-D-rhamnal, D-679
 3,4-Di-*O*-acetyl-L-rhamnal, D-679
 2,3-Di-*O*-acetyltartaric acid, T-12
 4,5-Di-*O*-acetyl-1,2,3,6-tetra-*O*-benzyl-*myo*-inositol, I-32
 1,6-Di-*O*-acetyl-2,3,4,5-tetra-*O*-benzyl-*myo*-inositol, I-32
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 1,2-Di-*O*-Acetyl-3,5,6-tri-*O*-benzyl- α -L-gulofuranose, G-587
 1,4-Di-*O*-acetyl-2,3,6-trideoxy-3-(dimethylamino)- α -L-*lyxo*-hexopyranose, D-727
 1,4-Di-*O*-acetyl-2,3,6-trideoxy-3-(dimethylamino)- β -L-*lyxo*-hexopyranose, D-727
 3,4-Di-*O*-acetyl-1,2,6-trideoxy-D-*ribo*-hex-1-enopyranose, D-679
 1,2-Di-*O*-acetyl-3,4,6-tri-*O*-methyl- α -D-glucopyranose, T-188
 3,4-Di-*O*-acetyl-D-xylal, D-680
 4-*O*-(2,3-Di-*O*-acetyl- β -D-xylopyranosyl)-1,2,3-tri-*O*-acetyl- β -D-xylopyranose, X-80
 2,3-Di-*O*-acetyl-D-xylose, X-81
 1,2-Diacylglycerol 3-(6-deoxy-6-sulfo- α -D-glucopyranosides), D-395
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 1,4-Diamino-3-*O*-(2-amino-2-deoxy- α -D-glucopyranosyl)-1,4-dideoxy-D-glucitol, A-759
 1,6-Diamino-2,5-anhydro-1,6-dideoxy-3,4-di-*O*-mesyl-D-glucitol, D-397
 1,6-Diamino-2,5-anhydro-1,6-dideoxy-3,4-di-*O*-methyl-D-mannitol, D-399
 1,6-Diamino-2,5-anhydro-1,6-dideoxyglucitol, D-397
 1,6-Diamino-2,5-anhydro-1,6-dideoxyditol, D-398
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 1,6-Diamino-2,5-anhydro-1,6-dideoxy-4-*O*-mesyl-D-glucitol, D-397
 2,4-Diamino-1,6-anhydro-2,4-dideoxytalose, D-400
 4,6-Diamino-1,2,3,5-cyclohexanetetrol, D-401
 1,6-Diamino-2,5,3,4-dianhydro-1,6-dideoxyaltritol, D-402
 1,6-Diamino-2,5,3,4-dianhydro-1,6-dideoxygalactitol, D-403
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxyglucitol, D-404
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxyditol, D-405
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxymannitol, D-406
 1,6-Diamino-2,5,3,4-dianhydro-1,6-dideoxytalitol, D-402
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 2,3-Diamino-2,3-dideoxyallose, D-409
 2,6-Diamino-2,6-dideoxyallose, D-410
 1,5-Diamino-1,5-dideoxyaltritol, D-456
 5,6-Diamino-5,6-dideoxyaltrose, D-411
 1,5-Diamino-1,5-dideoxyarabinitol, D-412
 2,4-Diamino-2,4-dideoxyarabinose, D-413
 3,4-Diamino-3,4-dideoxyarabinose, D-414
 2,3-Diamino-2,3-dideoxyascorbic acid, D-415
 1,6-Diamino-1,6-dideoxyfructose, D-416
 2,4-Diamino-2,4-dideoxyfucose, D-473
 1,4-Diamino-1,4-dideoxygalactitol, D-417
 1,6-Diamino-1,6-dideoxygalactitol, D-418
 2,3-Diamino-2,3-dideoxygalactitol, D-419
 2,4-Diamino-2,4-dideoxygalactitol, D-420
 2,3-Diamino-2,3-dideoxygalactose, D-421
 2,4-Diamino-2,4-dideoxygalactose, D-422
 2,6-Diamino-2,6-dideoxygalactose, D-423
 4,6-Diamino-4,6-dideoxygalactose, D-424
 1,2-Diamino-1,2-dideoxyglucitol, D-425
 1,4-Diamino-1,4-dideoxyglucitol, D-426
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 9-(2,3-Diamino-2,3-dideoxyglucopyranosyl)hypoxanthine, D-428
 2,6-Diamino-2,6-dideoxy- α -D-glucopyranosyl-(1 \rightarrow 4)- β -D-ribofuranosyl-(1 \rightarrow 5)]-2-deoxy-D-streptamine, R-143
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 2,4-Diamino-2,4-dideoxyglucose, D-430
 2,5-Diamino-2,5-dideoxyglucose, D-431
 2,6-Diamino-2,6-dideoxyglucose, D-432
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 2,3-Diamino-2,3-dideoxygulose, D-435
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 2,3-Diamino-2,3-dideoxy-*threo*-hex-2-enono-1,4-lactone, D-415
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 3,4-Diamino-3,4-dideoxyditol, D-438
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 2,5-Diamino-2,5-dideoxyidose, D-441
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 5,6-Diamino-5,6-dideoxyidose, D-444
 1,3-Diamino-1,3-dideoxy-*scyllo*-inositol, D-401
 1,6-Diamino-1,6-dideoxy-2,3-*O*-isopropylidene- β -D-fructofuranose, D-416
 3,6-Diamino-3,6-dideoxy-1,2-*O*-isopropylidene- α -D-glucofuranose, D-433
 3,6-Diamino-3,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose, D-458
 2,5-Diamino-2,5-dideoxy-*xylono*-1,5-lactam, D-445
 3,5-Diamino-3,5-dideoxyxylose, D-446
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 2,3-Diamino-2,3-dideoxymannose, D-449
 2,6-Diamino-2,6-dideoxymannose, D-450
 3,6-Diamino-3,6-dideoxymannose, D-451
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 2,3-Diamino-2,3-dideoxyrhamnose, D-482
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 9-(2,3-Diamino-2,3-dideoxy- β -D-ribofuranosyl)adenine, D-407
 2,5-Diamino-2,5-dideoxyribose, D-454
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 1,4-Diamino-1,4-dideoxysorbitol, D-426
 6,6'-Diamino-6,6'-dideoxysucrose, D-455
 2,6-Diamino-2,6-dideoxytalitol, D-456
 2,3-Diamino-2,3-dideoxytalose, D-457
 3,6-Diamino-3,6-dideoxytalose, D-458
 1,6-Diamino-1,6-dideoxy-2,3,4,5-tetra-*O*-methyl-L-iditol, D-437
 1,6-Diamino-1,6-dideoxy-2,3,4,5-tetra-*O*-methyl-D-mannitol, D-448
 6,6'-Diamino-6,6'-dideoxy- α -trehalose, D-459
 1,5-Diamino-1,5-dideoxy-2,3,4-tri-*O*-methyl-L-arabinitol, D-412
 1,5-Diamino-1,5-dideoxy-2,3,4-tri-*O*-methylxylytol, D-460
 1,5-Diamino-1,5-dideoxyxylytol, D-460
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 2,3-Diamino-2,3-dideoxyxylose, D-462
 2,5-Diamino-2,5-dideoxyxylose, D-463
 3,4-Diamino-3,4-dideoxyxylose, D-464
 3,6-Diamino-1,5-dihydro-1- β -D-ribofuranosyl-4*H*-pyrazolo[3,4-*d*]pyrimidin-4-one, D-465
 2,5-Diamino-1,6-diphenyl-3,4-hexanediol, D-466
 2,6-Diamino-3-hydroxyheptanedioic acid, D-467
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 2,6-Diamino-2,4,5,6-tetradeoxy-*xylo*-heptaric acid, D-467
 2,6-Diamino-2,4,5,6-tetradeoxy-*lyxo*-heptaric acid, D-467
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 2,3-Di-*O*-benzyl-5-*O*-methyl-α-*D*-ribofuranosyl fluoride, R-97
 2,3-Di-*O*-benzyl-5-*O*-methyl-β-*D*-ribofuranosyl fluoride, R-97
 2,3-Di-*O*-benzyl-5-*O*-(4-nitrobenzoyl)-α-*D*-arabinofuranosyl chloride, A-794
 1,3-Di-*O*-benzyl-*D*-glycero-tetrolase, T-162
 1,4-Di-*O*-benzyl-*D*-threitol, T-100
 2,3-Di-*O*-benzyl-*D*-threitol, T-100
 1,2-Di-*O*-benzyl-*L*-threitol, T-100
 1,4-Di-*O*-benzyl-*L*-threitol, T-100
 3,4-Di-*O*-benzyl-α-*D*-xylopyranose, X-81
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 3,6-Dibromo-3,6-dideoxyallose, D-523
 2,6-Dibromo-2,6-dideoxyaltronic acid, D-524
 2,6-Dibromo-2,6-dideoxy-*D*-altrono-1,4-lactone, D-524
 2,3-Dibromo-2,3-dideoxyaltrose, D-525
 2,5-Dibromo-2,5-dideoxy-*D*-arabino-1,4-lactone, D-526
 2,5-Dibromo-2,5-dideoxyarabinonic acid, D-526
 1,5-Dibromo-1,5-dideoxygalactitol, D-527
 2,6-Dibromo-2,6-dideoxygalactitol, D-527
 1,6-Dibromo-1,6-dideoxygalactitol, D-528
 1,6-Dibromo-1,6-dideoxyglucitol, D-529
 2,6-Dibromo-2,6-dideoxyglucitol, D-530
 2,6-Dibromo-2,6-dideoxygluconic acid, D-531
 2,6-Dibromo-2,6-dideoxy-*D*-glucono-1,4-lactone, D-531
 2,6-Dibromo-2,6-dideoxy-*L*-glucono-1,4-lactone, D-531
 3,6-Dibromo-3,6-dideoxyglucose, D-532
 1,5-Dibromo-1,5-dideoxygulitol, D-530
 2,7-Dibromo-2,7-dideoxy-*D*-glycero-*D*-ido-heptonic acid, D-533
 2,7-Dibromo-2,7-dideoxy-*D*-glycero-*D*-ido-heptono-1,4-lactone, D-533
 1,5-Dibromo-1,5-dideoxyiditol, D-534
 2,6-Dibromo-2,6-dideoxyiditol, D-534
 2,6-Dibromo-2,6-dideoxyidonic acid, D-535
 2,6-Dibromo-2,6-dideoxy-*D*-idono-1,4-lactone, D-535
 2,6-Dibromo-2,6-dideoxy-*L*-idono-1,4-lactone, D-535
 1,6-Dibromo-1,6-dideoxy-3,4-*O*-isopropylidene-*D*-mannitol, D-538
 2,5-Dibromo-2,5-dideoxylyxonic acid, D-536
 2,5-Dibromo-2,5-dideoxy-*D*-lyxono-1,4-lactone, D-536
 1,5-Dibromo-1,5-dideoxymannitol, D-537
 2,6-Dibromo-2,6-dideoxymannitol, D-537
 1,6-Dibromo-1,6-dideoxymannitol, D-538
 2,6-Dibromo-2,6-dideoxymannonic acid, D-539
 2,6-Dibromo-2,6-dideoxy-*D*-mannono-1,4-lactone, D-539
 2,6-Dibromo-2,6-dideoxy-*L*-mannono-1,4-lactone, D-539
 2,5-Dibromo-2,5-dideoxyxylonic acid, D-540
 2,5-Dibromo-2,5-dideoxy-*D*-xylono-1,4-lactone, D-540
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 3,6-Di-*O*-butanoyl-*D*-glucose, G-514
 2,3-Di-*tert*-butoxybutanedioic acid, T-12
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 4,6-Dichloro-4,6-dideoxyglucose, D-543
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 6,6'-Dichloro-6,6'-dideoxymaltose, D-544
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 5,6-Dichloro-*N*-(1-methylethyl)-1-ribofuranosyl-1*H*-benzimidazol-2-amine, M-124
 3,4-Dichloro-2,3,4-trideoxy-*glycero*-pent-2-enopyranose, D-547
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 1,2-Dicyanoethanol, M-6
 1,2:5,6-Di-*O*-cyclohexylidene-α-*D*-allofuranose, C-189
 1,2:5,6-Di-*O*-cyclohexylidene-3-*C*-ethyl-α-*D*-allofuranose, C-189
 1,2:4,5-Di-*O*-cyclohexylidene-β-*D*-fructopyranose, F-84
 1,2:5,6-Di-*O*-cyclohexylidene-α-*D*-glucofuranose, C-190
 1,2:4,5-Di-*O*-cyclohexylidene-β-*D*-erythro-hexo-2,3-diulose-2,6-pyranose, H-86
 1,2:5,6-Di-*O*-cyclohexylidene-α-*D*-ribo-hexofuranos-3-ulose, H-101
 1,2:3,4-Di-*O*-cyclohexylidene-*cis*-inositol, I-29
 1,2:3,4-Di-*O*-cyclohexylidene-*epi*-inositol, I-30
 1,2:5,6-Di-*O*-cyclohexylidene-*myo*-inositol, I-32
 1,2:5,6-Di-*O*-cyclohexylidene-*D*-mannitol, M-25
 2,3:5,6-Di-*O*-cyclohexylidene-α-*D*-mannofuranose, M-114
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 1,2,3,4-Di-*O*-cyclohexylidene-6-*O*-tosyl- α -D-galactopyranose, G-193
 1,2,5,6-Di-*O*-cyclohexylidene-3-*O*-tosyl- α -D-glucopyranose, C-190
 1,2,5,6-Di-*O*-cyclohexylidene-3-*C*-vinyl- α -D-allofuranose, C-189
 1,2,3,5-Di-*O*-cyclohexylidene- α -D-xylofuranose, C-191
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 2',3'-Didehydro-2',3'-dideoxycytidine, D-551
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 2',3'-Didehydro-2',3'-dideoxy-2'-fluorouridine, D-554
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 N,6-Didehydro-1,2,3,6-tetrahydro-1-methyl-2-oxoadenosine, D-773
 2',3'-Didehydro-2',3',5'-trideoxyadenosine, D-550
 6,27-Didemethoxyantibiotic A 204A, C-29
 2,8-Didemethoxy-2'-de-*O*-methylsteffimycin D, S-77
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 2,3-Dideoxy-2,2-bis(hydroxymethyl)-*glycero*-hexopyranos-4-ulose, D-558
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 2,6-Dideoxy-4-*O*-(6-deoxy-2-*O*-methyl- β -D-allopyranosyl)-D-*xylo*-hexose, B-51
 2,6-Dideoxy-4-*O*-(6-deoxy-3-*O*-methyl- β -D-allopyranosyl)-3-*O*-methyl-D-*arabino*-hexose, P-1
 2,6-Dideoxy-4-*O*-(6-deoxy-3-*O*-methyl- β -D-glucopyranosyl)-D-*ribo*-hexose, V-18
 2,6-Dideoxy-4-*O*-(6-deoxy-3-*O*-methyl- β -D-glucopyranosyl)-3-*O*-methyl-D-*arabino*-hexose, M-125
 2',3'-Dideoxy-2',3'-didehydroadenosine, D-550
 2',3'-Dideoxy-2',3'-didehydrocytidine, D-551
 3,6-Dideoxy-4-*C*-(2,6-dideoxyhexitol-1-*C*-yl)- β -D-*xylo*-hexopyranoside, C-31
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 2,4-Dideoxy-2,4-difluoroglucose, D-561
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 3,4-Dideoxy-1,2:5,6-di-*O*-isopropylidene-D-*threo*-hex-3*Z*-enitol, H-77
 3,4-Dideoxy-1,2:5,6-di-*O*-isopropylidene-DL-*erythro*-hex-3*E*-enitol, H-77
 3,4-Dideoxy-1,2:5,6-di-*O*-isopropylidene-DL-*erythro*-hex-3*Z*-enitol, H-77
 1,2-Dideoxy-3,4:5,6-di-*O*-isopropylidene-D-*arabino*-hex-1-enitol, D-576
 4,6-Dideoxy-4-(*N*-dimethylamino)-D-allose, A-365
 4,6-Dideoxy-4-(*N*-dimethylamino)-D-altrose, A-370
 4-*O*-(4,6-Dideoxy-4-dimethylamino- α -D-glucopyranosyl)-2,3,6-trideoxy-D-*erythro*-hexose, A-118
 3,6-Dideoxy-3-dimethylamino-D-glucose, A-381
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 3,6-Dideoxy-3-dimethylamino-D-idose, A-402
 4,6-Dideoxy-4-dimethylamino- α -D-talopyranose, A-417
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 4,6-Dideoxy-2,3-di-*O*-methyl-L-*xylo*-hexose, D-611
 4,6-Dideoxy-2,3-di-*O*-methyl-L-*ribo*-hexose, D-614
 2,6-Dideoxy-3-*C*,3-*O*-dimethyl-D-*ribo*-hexose, D-636
 2,6-Dideoxy-3-*C*,3-*O*-dimethyl-L-*ribo*-hexose, D-636
 2,6-Dideoxy-3-*C*,3-*O*-dimethyl-L-*xylo*-hexose, D-637
 3',4'-Dideoxy-3',6'-di-*N*-methylkanamycin B, D-625
 1,4-Dideoxy-1,4-epithioribitol, A-713
 2,3-Dideoxy-3-*C*-ethenyl-*erythro*-hex-2-enose, D-660
 2,6-Dideoxy-3-*O*-ethyl-L-*arabino*-hexopyranose, D-607
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 1-(2,3-Dideoxy-2-fluoro- β -D-*glycero*-2-pentenofuranosyl)cytosine, D-552
 1-(2,3-Dideoxy-2-fluoro- β -D-*glycero*-pent-2-enofuranosyl)thymine, D-553
 1-(2,3-Dideoxy-2-fluoro- β -D-*erythro*-pentofuranosyl)cytosine, D-564
 1-(2,3-Dideoxy-2-fluoro- β -D-*threo*-pentofuranosyl)-3,4-dihydro-4-thioxo-2(1*H*)-pyrimidinone, D-567
 1-(2,3-Dideoxy-2-fluoro- β -D-*threo*-pentofuranosyl)-5-methyl-2,4(1*H*,3*H*)-pyrimidinedione, D-568
 9-(2,3-Dideoxy-2-fluoro- β -D-*threo*-pentofuranosyl)-9*H*-purin-6-amine, L-48
 1-(2,3-Dideoxy-2-fluoro- β -D-*threo*-pentofuranosyl)-2,4(1*H*,3*H*)-pyrimidinedione, D-570
 1-(2,3-Dideoxy-2-fluoro- β -D-*threo*-pentofuranosyl)-4-thiouracil, D-567
 1-(2,3-Dideoxy-2-fluoro- β -D-*threo*-pentofuranosyl)thymine, D-568
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 2',3'-Dideoxy-3'-fluorouridine, D-571
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 2',5'-Dideoxy-5-fluorouridine, D-573
 3,6-Dideoxy-3-formamido-D-glucose, A-381
 2,6-Dideoxygalactose, D-610
 3,6-Dideoxygalactose, D-617
 2,6-Dideoxy-7-*O*- β -D-glucopyranosyl-2,6-imino-D-*glycero*-L-*gulo*-heptitol, B-34
 2,6-Dideoxy-4-*O*- β -D-glucopyranosyl-3-*O*-methyl-D-*ribo*-hexose, S-89
 3,6-Dideoxyglucose, D-613
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 4,6-Dideoxygulose, D-614
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 2,3-Dideoxy-*arabino*-heptonic acid, D-574
 2,7-Dideoxy-*gluco*-heptonic acid, D-575
 2,7-Dideoxy-D-*gluco*-heptono-1,4-lactone, D-575
 3,4-Dideoxyhexaric acid, D-694
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 1,2-Dideoxy-*lyxo*-hex-1-enitol, D-577
 5,6-Dideoxy-*arabino*-hex-5-enitol, D-577
 1,2-Dideoxy-*ribo*-hex-1-enitol, D-578
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 1,2-Dideoxy-*xylo*-hex-1-enitol, D-579
 2,3-Dideoxy-*erythro*-hex-2-enonic acid δ -lactone, D-580
 2,3-Dideoxy-*erythro*-hex-2-enono-1,5-lactone, D-580
 3,6-Dideoxy-*erythro*-hex-2-enono-1,5-lactone, D-581
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 2,3-Dideoxyhex-2-enono-1,4-lactone, D-583
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 1,2-Dideoxy-*xylo*-hex-1-enopyranose, G-581
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 3,4-Dideoxy-*erythro*-hex-3-enopyranose, D-585
 4,6-Dideoxy-*erythro*-hex-4-enopyranose, D-586
 2,3-Dideoxy-*threo*-hex-2-enopyranose, D-587
 4,6-Dideoxy-*threo*-hex-4-enopyranose, D-588
 1,2-Dideoxy-*lyxo*-1-hexenopyranose, G-1
 1,2-Dideoxy-*threo*-hex-1-enopyranos-3-ulose, A-535
 1,2-Dideoxy-*erythro*-hex-1-enopyranos-3-ulose, A-544
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 3,4-Dideoxy-*glycero*-hex-3-enopyranos-2-ulose, D-594
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 5,6-Dideoxy-*lyxo*-hex-5-enose, D-592
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 2,3-Dideoxyhexonic acid, T-167
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 2,4-Dideoxy-*erythro*-hexonic acid, D-598
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 2,6-Dideoxy-*threo*-hexopyranos-4-ulose, D-603
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 2,6-Dideoxy- α -*D-ribo*-hexopyranosyl 2,6-dideoxy- α -*D-ribo*-hexopyranoside, D-604
 2,6-Dideoxy- β -*D-arabino*-hexopyranosyl-(1 \rightarrow 4)-6-deoxy-D-allose, D-605
 2,6-Dideoxy- β -*D-ribo*-hexopyranosyl-(1 \rightarrow 4)-2,6-dideoxy- β -*D-ribo*-hexopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-*D-ribo*-hexose, D-669
 4-*O*-(3,6-Dideoxy- α -*D-arabino*-hexopyranosyl)-*L*-rhamnose, D-606
 2,6-Dideoxy-*arabino*-hexose, D-607
 3,6-Dideoxy-*arabino*-hexose, D-608
 2,4-Dideoxy-*erythro*-hexose, D-609
 2,6-Dideoxy-*lyxo*-hexose, D-610
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 1,2-Dideoxy-*D-arabino*-hex-1-ynitol, H-120
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 2,6-Dideoxy-4-*C*-(1*S*-hydroxyethyl)-*L-xylo*-hexose, O-17
 3,6-Dideoxy-4-*C*-(1-hydroxyethyl)-*D-xylo*-hexose, Y-2
 2,3-Dideoxy-3-*C*-(hydroxymethyl)-*ribo*-hexose, D-620
 2,3-Dideoxy-2-*C*-(hydroxymethyl)-*threo*-hexos-4-ulose, D-621
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 1,2-Dideoxy-2-(hydroxymethyl)-*L-chiro*-inositol, H-158
 4,5-Dideoxy-4-(hydroxymethyl)-*D-myo*-inositol, H-158
 2,3-Dideoxy-3-(hydroxymethyl)-*D-allo*-inositol, H-158
 2,3-Dideoxy-3-(hydroxymethyl)-*D-myo*-inositol, H-158
 1,6-Dideoxy-1-(hydroxymethyl)-*L-chiro*-inositol, H-158
 2,3-Dideoxy-2-(hydroxymethyl)-*D-allo*-inositol, H-158
 1,2-Dideoxy-1-(hydroxymethyl)-*D-epi*-inositol, H-158
 1,2-Dideoxy-2-(hydroxymethyl)-*D-chiro*-inositol, H-158
 1,2-Dideoxy-2-(hydroxymethyl)-*D-allo*-inositol, H-158
 1,2-Dideoxy-2-(hydroxymethyl)-*D-allo*-inositol, H-158
 1,2-Dideoxy-1-(hydroxymethyl)-*DL-epi*-inositol, H-158
 2,3-Dideoxy-3-(hydroxymethyl)-*DL-chiro*-inositol, H-158
 1,2-Dideoxy-1-(hydroxymethyl)-*DL-myo*-inositol, H-158
 1,6-Dideoxy-1-(hydroxymethyl)-*DL-chiro*-inositol, H-158
 3,5-Dideoxy-3-*C*-hydroxymethylxylose, D-622
 1,6-Dideoxy-*L*-idonojirimycin, M-281
 2,5-Dideoxy-2,5-imino-allitol, D-686
 1,5-Dideoxy-1,5-imino-D-altritol, H-175
 1,5-Dideoxy-1,5-imino-L-altritol, H-175
 2,5-Dideoxy-2,5-imino-L-altritol, D-686
 1,5-Dideoxy-1,5-imino-D-arabinitol, P-74
 1,5-Dideoxy-1,5-imino-L-arabinitol, P-74
 1,4-Dideoxy-1,4-imino-D-arabinitol, D-697
 1,4-Dideoxy-1,4-imino-L-arabinitol, D-697
 1,5-Dideoxy-1,5-imino-D-fucitol, M-281
 1,5-Dideoxy-1,5-imino-L-fucitol, M-281
 1,5-Dideoxy-1,5-imino-D-galactitol, H-175
 1,5-Dideoxy-1,5-imino-L-galactitol, H-175
 2,5-Dideoxy-2,5-iminogalactitol, D-686
 1,5-Dideoxy-1,5-imino-D-glucitol, H-175
 1,5-Dideoxy-1,5-imino-L-glucitol, H-175
 2,5-Dideoxy-2,5-imino-D-glucitol, D-686
 1,4-Dideoxy-1,4-imino-5-*O*- β -D-glucopyranosyl-D-arabinitol, D-697
 1,5-Dideoxy-1,5-imino-L-gulitol, H-175
 1,4-Dideoxy-1,4-iminogulitol, D-623
 2,6-Dideoxy-2,6-iminoheptitol, B-34
 1,5-Dideoxy-1,5-iminohexitol, H-175
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 2,5-Dideoxy-2,5-imino-L-iditol, D-686
 1,5-Dideoxy-1,5-imino-D-lyxitol, P-74
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 1,4-Dideoxy-1,4-imino-D-lyxitol, D-697
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 1,5-Dideoxy-1,5-imino-D-mannitol, H-175
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 2,5-Dideoxy-2,5-imino-D-mannitol, D-686
 1,5-Dideoxy-1,5-iminopentitol, P-74
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 1,5-Dideoxy-1,5-imino-D-rhamnitol, M-281
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 1,5-Dideoxy-1,5-iminoribitol, P-74
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 1,5-Dideoxy-1,5-imino-D-talitol, H-175
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 1,4-Dideoxy-1,4-imino-D-xylitol, D-697
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 5,6-Dideoxy-3,4-*O*-isopropylidene-*L-arabino*-hex-5-enitol, D-577
 1,2-Dideoxy-4,5-*O*-isopropylidene-*D-ribo*-hex-1-enitol, D-578
 5,6-Dideoxy-2,3-*O*-isopropylidene-*L-ribo*-hex-5-enitol, D-578
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 5,6-Dideoxy-1,2-*O*-isopropylidene-*L-ribo*-hex-1-enitol, D-578
 5,6-Dideoxy-2,3-*O*-isopropylidene-*D-lyxo*-hex-5-enofuranose, D-592
 5,6-Dideoxy-1,2-*O*-isopropylidene- α -*D-xylo*-hex-5-enofuranose, D-593
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 3,6-Dideoxy-1,2-*O*-isopropylidene- α -*D-erythro*-hexopyranos-4-ulose, D-601
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 3,6-Dideoxy-1,2-*O*-isopropylidene-3-*C*-methyl- α -D-glucopyranose, D-630
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 2,6-Dideoxy-3-*O*-methyl-L-*arabino*-hexose, D-607
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 2,3-Dideoxy-2-*C*-methyl-*threo*-hexos-4-ulose, D-639
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 1,2-Dideoxy-1-nitro-*ribo*-hex-1-enitol, D-644
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 1,6-Dideoxynojirimycin, M-281
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α -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-fructofuranosyl-(2 \rightarrow 1)-[α -D-galactopyranosyl-(1 \rightarrow 6)]- α -D-glucopyranoside, S-32
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4-*O*- β -D-Galactopyranosyl-L-fucose, G-76
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 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, G-78
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose, G-79
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 β -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose, G-94
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 α -D-Galactopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 2)-D-glucose, G-101
 α -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, G-103
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6-*O*- α -D-Galactopyranosyl-D-glucitol, M-131
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 β -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose, G-133
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 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, G-136
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3- O - α -D-Galactopyranosyl-D-*chiro*-inositol, I-28
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 α -D-Galactopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, G-159
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 β -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-6-deoxy-L-mannose, G-161
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 α -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-mannose, G-156
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 α -D-Galactopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-L-rhamnose, G-159
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 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-xylose, G-399
 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 2)]-L-arabinose, C-160
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-ribose, G-400
 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranuronyl-(1 \rightarrow 3)-D-mannose, G-403
2-*O*- α -D-Glucopyranosyl-D-glucose, G-404
3-*O*- α -D-Glucopyranosyl-D-glucose, G-405
6-*O*- α -D-Glucopyranosyl-D-glucose, G-406
2-*O*- β -D-Glucopyranosyl-D-glucose, G-407
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5-*O*- β -D-Glucopyranosyl-D-glucose, G-409
6-*O*- β -D-Glucopyranosyl-D-glucose, G-410
2-*O*- β -L-Glucopyranosyl-D-glucose, G-411
4-*O*- α -D-Glucopyranosyl-D-glucose, M-15
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 α -D-Glucopyranosyl-(1 \rightarrow 4)-glucosylamine, M-14
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4-*O*- α -D-Glucopyranosyl-D-glucuronic acid, G-413
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3-*O*- β -D-Glucopyranosyl-*sn*-glycerol, G-414
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1''-*O*- β -D-Glucopyranosyl- α -homonojirimycin, B-34
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4-*O*- α -D-Glucopyranosyl- α -L-idopyranosiduronic acid, G-416
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3'-*O*- α -D-Glucopyranosylinosine, I-24
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1-*O*- β -D-Glucopyranosyl-*myo*-inositol, I-32
4'-*O*- α -D-Glucopyranosylkanamycin B, K-4
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 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-mannose, G-426
2-*O*- α -D-Glucopyranosyl-D-mannose, G-427
3-*O*- α -D-Glucopyranosyl-D-mannose, G-428
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4-*O*- β -D-Glucopyranosyl-D-mannose, G-432
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 β -D-Glucopyranosyl-(1 \rightarrow 4)-3-*O*-methyl- β -D-allomethylpyranosyl-(1 \rightarrow 4)-D-cymaropyranoside, D-775
 β -D-Glucopyranosylmethyl-(1 \rightarrow 4)-4-deoxy-D-galactose, G-434
1- β -D-Glucopyranosyl-5-methyl-2,4(1*H*,3*H*)-pyrimidinedione, G-535
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5-(β -D-Glucopyranosyloxy)-5,6-dihydro-4,6-dimethyl-2*H*-pyran-2-one, C-155
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[6-(β -D-Glucopyranosyloxy)-2-hydroxy-3,4-dimethoxycyclohexylidene]-acetonitrile, S-41
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[[3-[[[4-(β -D-Glucopyranosyloxy)phenyl]methoxy]carbonyl]-3-hydroxy-1,5-dioxo-1,5-pentanediy]]bis(oxyethylene-4,1-phenylene)]bis- β -D-glucopyranoside, P-10
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3- β -D-Glucopyranosyl-1-propene, A-718
3- α -D-Glucopyranosyl-1-propene, A-719
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1- β -D-Glucopyranosyl-2,4(1*H*,3*H*)-pyrimidinedione, G-536
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 α -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-mannose, G-438
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 α -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose, G-444
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4-*O*- α -D-Glucopyranosyl-D-ribose, G-459
5-*O*- α -D-Glucopyranosyl-D-ribose, G-460
4-*O*- β -D-Glucopyranosyl-D-ribose, G-461
5-*O*- β -D-Glucopyranosyl-D-ribose, G-462
6-*O*- α -D-Glucopyranosyl-D-sorbitol, G-318
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 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose, G-329
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, G-395
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-6-deoxy-L-mannose, G-396
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose, G-332
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- O-β-D-Glucopyranosyl-[(1 → 4)-O-β-D-glucopyranosyl]₃-(1 → 4)-D-glucopyranose, C-45
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- β-D-Glucopyranosyl-(1 → 2)-[α-D-glucopyranosyl-(1 → 4)]-D-glucose, G-372
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- β-D-Glucopyranosyl-(1 → 3)-[α-D-glucopyranosyl-(1 → 6)]-D-glucose, G-375
- β-D-Glucopyranosyl-(1 → 2)-[β-D-glucopyranosyl-(1 → 3)]-D-glucose, G-381
- β-D-Glucopyranosyl-(1 → 3)-[β-D-glucopyranosyl-(1 → 6)]-D-glucose, G-382
- β-D-Glucopyranosyl-(1 → 3)-[β-D-glucopyranosyl-(1 → 6)]-D-glucose, G-385
- O-α-D-Glucopyranosyl-(1 → 4)-[O-α-D-glucopyranosyl-(1 → 4)]₅-D-glucose, M-9
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- O-α-D-Glucopyranosyl-(1 → 4)-[O-α-D-glucopyranosyl-(1 → 4)]₇-D-glucose, M-11
- O-α-D-Glucopyranosyl-(1 → 4)-[O-α-D-glucopyranosyl-(1 → 4)]₆-D-glucose, M-12
- O-α-D-Glucopyranosyl-(1 → 4)-[O-α-D-glucopyranosyl-(1 → 4)]₃-D-glucose, M-13
- O-α-D-Glucopyranosyl-(1 → 4)-[O-α-D-glucopyranosyl-(1 → 4)]₂-D-glucose, M-18
- O-β-D-Glucopyranosyl-[(1 → 4)-O-β-D-glucopyranosyl]₅-(1 → 4)-D-glucose, C-42
- O-β-D-Glucopyranosyl-[(1 → 4)-O-β-D-glucopyranosyl]₄-(1 → 4)-D-glucose, C-43
- O-β-D-Glucopyranosyl-[(1 → 4)-O-β-D-glucopyranosyl]₆-(1 → 4)-D-glucose, C-44
- α-D-Glucopyranosyl-(1 → 2)-[β-D-glucopyranosyl-(1 → 3)]-L-rhamnose, G-395
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- α-D-Glucopyranosyl-(1 → 2)-[α-D-glucopyranosyl-(1 → 4)]-α-L-sorbopyranose, G-397
- β-D-Glucopyranosyl-(1 → 4)-[β-D-glucopyranuronosyl-(1 → 2)]-D-glucose, G-401
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- α-D-Glucopyranosyl-(1 → 2)-[α-D-mannopyranosyl-(1 → 3)]-D-galactose, G-420
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- α-D-Glucopyranosyl-(1 → 3)-[α-D-mannopyranosyl-(1 → 6)]-D-mannose, G-424
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- Methyl 2-acetamido-4-*O*-benzoyl-2-deoxy-3-*O*-methyl- α -D-glucopyranoside, M-145
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- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-altropyranoside, A-369
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- Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
- Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy- β -D-*xylo*-hexopyranoside, A-398
- Methyl 3-acetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-*xylo*-hexopyranoside, A-399
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-idopyranoside, A-402
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-idopyranoside, A-402
- Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-idopyranoside, A-403
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-mannopyranoside, A-407
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-mannopyranoside, A-407
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -L-mannopyranoside, A-407
- Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-mannopyranoside, A-408
- Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -L-mannopyranoside, A-408
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-talopyranoside, A-416
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -L-talopyranoside, A-416
- Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-talopyranoside, A-417
- Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -L-talopyranoside, A-417
- Methyl 3-acetamido-2,4-di-*O*-acetyl- α -L-idopyranoside, A-402
- Methyl 2-acetamido-3,6-di-*O*-benzoyl-2-deoxy- α -D-galactopyranoside, A-206
- Methyl 2-acetamido-3,6-di-*O*-benzoyl-2-deoxy- β -D-galactopyranoside, A-206
- Methyl 2-acetamido-4,6-di-*O*-benzoyl-2-deoxy-3-*O*-methyl- α -D-glucopyranoside, M-145
- Methyl 2-acetamido-3,4-di-*O*-benzoyl-2-deoxy-6-*O*-methyl- α -D-glucopyranoside, M-147
- Methyl 2-acetamido-3,6-di-*O*-benzoyl-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
- Methyl 6-acetamido-2,3-di-*O*-benzyl-6-deoxy- α -L-altrofuranose, A-168
- Methyl 2-acetamido-3,4-di-*O*-benzyl-2-deoxy-6-*O*-methyl- α -D-glucopyranoside, M-147
- Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372
- Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
- Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy- β -D-*xylo*-hexopyranoside, A-398
- Methyl 4-acetamido-2,3-di-*O*-benzyl-4,6-dideoxy- α -D-idopyranoside, A-403
- Methyl 4-acetamido-4,6-dideoxy- α -D-allopyranoside, A-365
- Methyl 4-acetamido-4,6-dideoxy- β -D-allopyranoside, A-365
- Methyl 3-acetamido-3,6-dideoxy- α -D-altropyranoside, A-369
- Methyl 4-acetamido-4,6-dideoxy- α -D-altropyranoside, A-370
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-*O*-mesyl- α -D-altropyranoside, A-369
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-*O*-mesyl- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-*O*-mesyl- α -L-galactopyranoside, A-376
- Methyl 2-acetamido-2,3-dideoxy-4,6-di-*O*-mesyl- α -D-*ribo*-hexopyranoside, A-395
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-glucopyranoside, A-373
- Methyl 2-acetamido-2,6-dideoxy- α -D-galactopyranoside, A-375
- Methyl 3-acetamido-3,6-dideoxy- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- α -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- β -L-galactopyranoside, A-376
- Methyl 2-acetamido-2,6-dideoxy- α -D-glucopyranoside, A-380
- Methyl 3-acetamido-3,6-dideoxy- β -D-glucopyranoside, A-381
- Methyl 3-acetamido-3,6-dideoxy- α -L-glucopyranoside, A-381
- Methyl 3-acetamido-3,6-dideoxy- β -L-glucopyranoside, A-381
- Methyl 3-acetamido-3,6-dideoxy- α -L-glucopyranoside, A-384
- Methyl 3-acetamido-3,6-dideoxy- β -L-glucopyranoside, A-384
- Methyl 3-acetamido-2,3-dideoxy- α -D-*arabino*-hexopyranoside, A-392
- Methyl 3-acetamido-2,3-dideoxy- β -D-*arabino*-hexopyranoside, A-392
- Methyl 2-acetamido-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-395
- Methyl 2-acetamido-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
- Methyl 2-acetamido-2,4-dideoxy- β -D-*xylo*-hexopyranoside, A-398
- Methyl 3-acetamido-3,6-dideoxy- α -D-idopyranoside, A-402
- Methyl 3-acetamido-3,6-dideoxy- β -D-idopyranoside, A-402
- Methyl 3-acetamido-3,6-dideoxy- α -L-idopyranoside, A-402
- Methyl 4-acetamido-4,6-dideoxy- α -D-idopyranoside, A-403
- Methyl 2-acetamido-2,6-dideoxy-3,4-*O*-isopropylidene- α -D-galactopyranoside, A-375
- Methyl 5-acetamido-5,6-dideoxy-2,3-*O*-isopropylidene- α -L-talofuranoside, A-418
- Methyl 4-acetamido-4,6-dideoxy-2,3-*O*-isopropylidene- α -D-talopyranoside, A-417
- Methyl 4-acetamido-4,6-dideoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, A-417
- Methyl 3-acetamido-3,6-dideoxy- α -D-mannopyranoside, A-407
- Methyl 3-acetamido-3,6-dideoxy- β -D-mannopyranoside, A-407
- Methyl 3-acetamido-3,6-dideoxy- β -L-mannopyranoside, A-407
- Methyl 4-acetamido-4,6-dideoxy- α -D-mannopyranoside, A-408
- Methyl 3-acetamido-3,6-dideoxy-4-*O*-mesyl- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-2-*O*-mesyl- α -L-galactopyranoside, A-376
- Methyl 2-acetamido-2,4-dideoxy- β -DL-*erythro*-pentapyranoside, A-411
- Methyl 2-acetamido-2,4-dideoxy- α -DL-*erythro*-pentopyranoside, A-411
- Methyl 2-acetamido-2,4-dideoxy- α -L-*threo*-pentopyranoside, A-412
- Methyl 2-acetamido-2,4-dideoxy- β -L-*threo*-pentopyranoside, A-412
- Methyl 2-acetamido-2,4-dideoxy- α -DL-*threo*-pentopyranoside, A-412
- Methyl 2-acetamido-2,4-dideoxy- β -DL-*threo*-pentopyranoside, A-412
- Methyl 3-acetamido-3,6-dideoxy- α -D-talopyranoside, A-416
- Methyl 3-acetamido-3,6-dideoxy- β -D-talopyranoside, A-416
- Methyl 3-acetamido-3,6-dideoxy- α -L-talopyranoside, A-416
- Methyl 4-acetamido-4,6-dideoxy- α -D-talopyranoside, A-417
- Methyl 4-acetamido-4,6-dideoxy- α -L-talopyranoside, A-417
- Methyl 6-acetamido-6,8-dideoxy-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, L-43
- Methyl 2-acetamido-3,4,5,6-tetra-*O*-acetyl-2-deoxy-D-gluconate, A-218
- Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-6,8-dideoxy-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, L-43
- Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-6,8-dideoxy-1-thio-D-*erythro*- β -D-*galacto*-octopyranoside, L-43
- Methyl 3-acetamido-2,5,6-tri-*O*-acetyl-3-deoxy- β -D-allofuranoside, A-157
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-allopyranoside, A-157
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- β -D-allopyranoside, A-157
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-altropyranoside, A-165
- Methyl 1-acetamido-3,4,6-tri-*O*-acetyl-1-deoxy- β -D-fructofuranoside, A-184
- Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- α -D-galactopyranoside, A-208
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-glucopyranoside, A-267
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- β -D-glucopyranoside, A-267
- Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- α -D-glucopyranoside, A-268
- Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- β -D-glucopyranoside, A-268
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- α -D-glucopyranoside, M-144
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-glucopyranoside, M-144
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- α -D-gulopyranoside, A-279
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-gulopyranoside, A-279
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-idopyranoside, A-292
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-mannopyranoside, A-312
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 4-acetamido-1,3,5-tri-*O*-acetyl-4-deoxy- α -L-sorbofuranoside, A-335
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- α -D-talopyranoside, A-340
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-talopyranoside, A-341
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl- α -D-galactopyranoside, A-207
- Methyl 1-acetamido-3,4,6-tri-*O*-benzoyl-1-deoxy- β -D-psicofuranoside, A-323
- Methyl 2-acetamido-3,4,6-tri-*O*-benzyl-2-deoxy-D-gluconate, A-218
- Methyl 2-acetamido-3,4,6-tri-*O*-benzyl-2-deoxy- β -D-glucopyranoside, M-144
- Methyl 3-acetamido-2,3,6-trideoxy- α -D-*arabino*-hexopyranoside, A-458
- Methyl 3-acetamido-2,3,6-trideoxy- β -D-*arabino*-hexopyranoside, A-458
- Methyl 3-acetamido-2,3,6-trideoxy- α -L-*arabino*-hexopyranoside, A-458
- Methyl 4-acetamido-2,4,6-trideoxy-DL-*arabino*-hexopyranoside, A-459
- Methyl 2-acetamido-2,3,6-trideoxy- β -L-*hyxo*-hexopyranoside, A-460
- Methyl 3-acetamido-2,3,6-trideoxy-4-*O*-methyl- α -L-*arabino*-hexopyranoside, A-458
- Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -L-*arabino*-hexopyranoside, A-459
- Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -L-*arabino*-hexopyranoside, A-459
- Methyl 3-acetamido-2,3,6-trideoxy-3-*C*-methyl- α -D-*lyxo*-hexopyranoside, A-464

- Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -D-*ribo*-hexopyranoside, A-467
- Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -D-*ribo*-hexopyranoside, A-467
- Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -D-*xylo*-hexopyranoside, A-468
- Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -D-*xylo*-hexopyranoside, A-468
- Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-tosyl- β -DL-*arabino*-hexopyranoside, A-459
- Methyl 5-*C*-acetoxy-tetra-*O*-acetyl- α -L-idopyranuronate, H-151
- Methyl *N*-acetyl glucosaminide, M-144
- Methyl 4-*O*-acetyl-5-*S*-acetyl-1,3-*O*-benzylidene-5-thio- β -D-fructopyranoside, T-61
- Methyl 4-*C*-acetyl-5-*O*-acetyl-2,3-*O*-methylene-D-galactonate, A-15
- Methyl 4-*O*-acetyl-5-*S*-acetyl-5-thio- β -D-fructopyranoside, T-61
- Methyl *N*-acetylacosaminide, A-458
- Methyl *N*-acetyllactinosaminide, A-458
- Methyl 2-*O*-acetyl-3-*C*-allyl-4,6-*O*-benzylidene-3-deoxy- α -D-*erythro*-hex-3-enopyranoside, M-159
- Methyl 2-*O*-acetyl-3,4-anhydro- α -D-arabinopyranoside, A-504
- Methyl 2-*O*-acetyl-3,4-anhydro- β -L-arabinopyranoside, A-504
- Methyl 4-*O*-acetyl-2,3-anhydro-6-deoxy- α -D-gulopyranoside, A-527
- Methyl 4-*O*-acetyl-2,3-anhydro-6-deoxy- β -D-gulopyranoside, A-527
- Methyl 4-*O*-acetyl-2,3-anhydro-6-deoxy- α -D-mannopyranoside, A-687
- Methyl 4-*O*-acetyl-3,6-anhydro- α -D-galactopyranoside, A-620
- Methyl 5-*O*-acetyl-2,3-anhydro- α -D-lyxofuranoside, A-664
- Methyl 5-*O*-acetyl-2,3-anhydro- β -D-lyxofuranoside, A-664
- Methyl 3-*O*-acetyl-2,6-anhydro-4-*O*-methyl- β -D-mannopyranoside, A-678
- Methyl 4-*O*-acetyl-2,3-anhydro- α -D-rhamnopyranoside, A-687
- Methyl 5-*O*-acetyl-2,3-anhydro- α -D-ribofuranoside, A-690
- Methyl 5-*O*-acetyl-2,3-anhydro- β -D-ribofuranoside, A-690
- Methyl 4-*O*-acetyl-2,3-anhydro- β -D-ribofuranoside, A-693
- Methyl 4-*O*-acetyl-2,3-anhydro-6-*O*-trityl- α -D-mannopyranoside, A-676
- Methyl 2-*O*-acetyl- β -L-arabinopyranoside, M-153
- Methyl 3-*O*-acetyl-2-azido-4,6-*O*-benzylidene-2-deoxy- α -D-mannopyranoside, A-912
- Methyl 3-*O*-acetyl-2-azido-4,6-*O*-benzylidene-2-deoxy- β -D-mannopyranoside, A-912
- Methyl 3-*O*-acetyl-2-azido-2-deoxy-4,6-*O*-isopropylidene- β -D-galactopyranoside, A-903
- Methyl 3-*O*-acetyl-2-azido-4,6-di-*O*-benzyl-2-deoxy- α -D-mannopyranoside, A-912
- Methyl 3-*O*-acetyl-2-benzamido-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 3-*O*-acetyl-2-benzamido-2-deoxy-4,6-di-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 4-*O*-acetyl-2-benzamido-2-deoxy-3,6-di-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 2-*O*-acetyl-6-*O*-benzoyl-3,4-*O*-benzylidene- α -D-galactopyranoside, M-185
- Methyl 2-*O*-acetyl-4-*O*-benzoyl- α -D-*ribo*-hexopyranosid-3-ulose, H-101
- Methyl 3-*O*-acetyl-2-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
- Methyl 2-*O*-acetyl-5-*O*-benzyl- β -D-glucofuranosiduronamide, G-537
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-allopyranoside, M-155
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-gulopyranoside, B-77
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
- Methyl 2-*O*-acetyl-4,6-*O*-(*R*)-benzylidene-3-chloro-3-deoxy- β -D-allopyranoside, C-71
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside, C-73
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy- β -D-*erythro*-hex-3-enopyranoside, M-159
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy- β -D-*arabino*-hexopyranoside, M-171
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside, D-246
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-idopyranoside, D-261
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -D-*erythro*-hex-3-enopyranoside, M-159
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-*xylo*-hexopyranosid-3-ulose, H-103
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- α -D-*arabino*-hexopyranosid-2-ulose, M-166
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-*ribo*-hexopyranosid-3-ulose, M-167
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- β -D-*ribo*-hexopyranosid-3-ulose, M-167
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl- α -D-allopyranoside, M-224
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-tosyl- α -D-allopyranoside, M-224
- Methyl 5-*O*-acetyl-3-bromo-3-deoxy- α -D-arabinofuranoside, B-63
- Methyl 5-*O*-acetyl-3-bromo-3-deoxy- β -D-arabinofuranoside, B-63
- Methyl 4-*O*-acetyl-6-deoxy-2,3-di-*O*-tosyl- β -D-*xylo*-hex-5-enopyranoside, D-177
- Methyl 3-*O*-acetyl-6-deoxy- α -D-gulopyranoside, D-146
- Methyl 2-*O*-acetyl-3-deoxy-3-iodo-4-*O*-methyl- β -L-xylopyranoside, D-280
- Methyl 4-*O*-acetyl-3-deoxy-3-iodo-2-*O*-tosyl- α -L-xylopyranoside, D-280
- Methyl 4-*O*-acetyl-3-deoxy-3-iodo-2-*O*-tosyl- β -L-xylopyranoside, D-280
- Methyl 4-*O*-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside, D-280
- Methyl 4-*O*-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
- Methyl 4-*O*-acetyl-6-deoxy-2,3-*O*-isopropylidene- α -D-gulopyranoside, D-146
- Methyl 4-*O*-acetyl-6-deoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, D-372
- Methyl 4-*C*-acetyl-6-deoxy-2,3-*O*-methylene-D-galactonate, A-15
- Methyl 3-*O*-acetyl-2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside, D-480
- Methyl 5-*O*-acetyl-2,3-di-*O*-benzoyl- α -D-arabinofuranoside, M-152
- Methyl 3-*O*-acetyl-2,4-dibenzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
- Methyl 4-*O*-acetyl-2,3-di-*O*-benzoyl- α -L-rhamnopyranoside, M-207
- Methyl 4-*O*-acetyl-2,3-di-*O*-benzyl- α -L-fucopyranoside, M-183
- Methyl 3-*O*-acetyl-2,4-di-*O*-benzyl- α -L-fucopyranoside, M-183
- Methyl 2-*O*-acetyl-3,4-di-*O*-benzyl- α -L-fucopyranoside, M-183
- Methyl 6-*O*-acetyl-2,3-di-*O*-benzyl- α -D-galactopyranoside, M-185
- Methyl 6-*O*-acetyl-2,3-di-*O*-benzyl- α -D-mannopyranoside, M-204
- Methyl 3-*O*-acetyl-2,4-dideoxy-2-dibenzylamino- α -DL-*threo*-pentopyranoside, A-412
- Methyl 3-*O*-acetyl-2,4-dideoxy-2-dibenzylamino- β -DL-*threo*-pentopyranoside, A-412
- Methyl 3-*O*-acetyl-2,6-dideoxy- α -D-*lyxo*-hexopyranoside, D-610
- Methyl 4-*C*-acetyl-2,6-dideoxy- α -L-*xylo*-hexopyranoside, A-18
- Methyl 4-*C*-acetyl-2,6-dideoxy- β -L-*xylo*-hexopyranoside, A-18
- Methyl 4-*O*-acetyl-2,6-dideoxy-3-*O*-methyl-DL-*arabino*-hexose, D-607
- Methyl 4-*O*-acetyl-2,3-dideoxy- α -D-*glycero*-pent-2-enopyranoside, D-650
- Methyl 2-*O*-acetyl-3,4,5,6-di-*O*-isopropylidene-D-gluconate, G-250
- Methyl 4-*O*-acetyl-2,3-di-*O*-methyl- β -D-glucopyranosiduronic acid, M-192
- Methyl 4-*O*-acetyl-2,3-di-*O*-methyl- α -D-mannopyranoside, D-748
- Methyl 2-*O*-acetyl- α -L-fucopyranoside, M-183
- Methyl 2-*O*-acetyl- β -D-galactofuranoside, M-184
- Methyl 6-*O*-acetyl- β -D-galactofuranoside, M-184
- Methyl 2-*O*-acetyl- α -D-galactopyranoside, M-185
- Methyl 3-*O*-acetyl- α -D-galactopyranoside, M-185
- Methyl 6-*O*-acetyl- α -D-galactopyranoside, M-185
- Methyl 2-*O*-acetyl- β -D-galactopyranoside, M-186
- Methyl 3-*O*-acetyl- β -D-galactopyranoside, M-186
- Methyl 4-*O*-acetyl- β -D-galactopyranoside, M-186
- Methyl 6-*O*-acetyl- β -D-galactopyranoside, M-186
- Methyl 6-*O*-acetyl- α -D-glucopyranoside, M-190
- Methyl 2-*O*-acetyl- β -D-glucopyranoside, M-191
- Methyl 3-*O*-acetyl- β -D-glucopyranoside, M-191
- Methyl 4-*O*-acetyl- β -D-glucopyranoside, M-191
- Methyl 6-*O*-acetyl- β -D-glucopyranoside, M-191
- Methyl 3-*O*-acetyl- α -D-gulopyranoside, M-194
- Methyl 2-*O*-acetyl-3,4-*O*-isopropylidene- β -D-arabinopyranoside, M-153
- Methyl 2-*O*-acetyl-3,4-*O*-isopropylidene- β -L-arabinopyranoside, M-197
- Methyl 2-*O*-acetyl-3,4-*O*-isopropylidene- α -L-fucopyranoside, M-198
- Methyl 2-*O*-acetyl-3,4-*O*-isopropylidene- α -D-galactopyranosiduronamide, M-188
- Methyl 2-*O*-acetyl-4,6-*O*-isopropylidene- α -D-gulopyranoside, M-194
- Methyl 4-*O*-acetyl-2,3-*O*-isopropylidene-6-*O*-methyl- α -D-mannopyranoside, M-200
- Methyl 4-*O*-acetyl-2,3-*O*-isopropylidene- α -L-rhamnopyranoside, M-207
- Methyl 5-*S*-acetyl-2,3-*O*-isopropylidene-5-thio- α -D-lyxofuranoside, T-80
- Methyl 5-*S*-acetyl-2,3-*O*-isopropylidene-5-thio- α -L-rhamnifuranoside, T-88
- Methyl 4-*O*-acetyl-2,3-*O*-isopropylidene-1-thio- β -D-xylopyranoside, T-98
- Methyl 2-*O*-acetyl-4,6-*O*-isopropylidene-3-*O*-tosyl- α -D-gulopyranoside, M-194
- Methyl 4-*O*-acetyl- α -D-mannopyranoside, M-204
- Methyl 6-*O*-acetyl- β -D-mannopyranoside, M-205
- Methyl 4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside, A-382
- Methyl 4-*O*-acetyl-6-*O*-methyl- α -D-mannopyranoside, M-274

Methyl 4-*O*-acetyl-2-*O*-methyl-3-*O*-tosyl-6-*O*-trityl- α -D-altropyranoside, M-149
Methyl *N*-acetylneuraminate α -allylpyranoside, A-20
Methyl *N*-acetyl- β -D-neuraminate, A-20
Methyl *N*-acetylneuraminate, A-20
Methyl 5-*N*-acetyl-2,4,7,8,9-penta-*O*-acetylneuraminate, A-20
Methyl 4-*O*-acetyl- α -L-rhamnopyranoside, M-207
Methyl 6-*O*-acetyl-2,3,4-tri-*O*-benzoyl- β -D-glucopyranoside, M-191
Methyl 6-*O*-acetyl-2,3,5-tri-*O*-benzyl- β -D-galactofuranoside, M-184
Methyl 4-*O*-acetyl-2,3,6-tri-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 2-*O*-acetyl-3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 4-*O*-acetyl-2,3,6-trideoxy- α -L-*threo*-hex-2-enopyranoside, T-155
Methyl 4-*O*-acetyl-2,3,6-tri-*O*-methyl- α -D-mannopyranoside, T-190
Methyl 2-*O*-acetyl-3-*O*-trityl- α -L-fucopyranoside, M-183
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Methyl α -L-aculoside, H-179
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Methyl α -amicetoside, D-692
Methyl 6-amino-2-acetamido-3,4-di-*O*-acetyl- β -D-idopyranoside, D-442
Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-altropyranoside, A-164
Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- β -D-altropyranoside, A-164
Methyl 5-amino-1,3-*O*-benzylidene-5-deoxy- β -D-fructopyranoside, A-185
Methyl 3-amino-4,6-*O*-benzylidene-3-deoxy- α -D-glucopyranoside, A-267
Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-150
Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- β -D-glucopyranoside, M-150
Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-idopyranoside, A-291
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Methyl 3-amino-4,6-*O*-benzylidene-3-deoxy- α -D-idopyranoside, A-292
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Methyl 5-amino-1,3-*O*-benzylidene-5-deoxy- α -L-sorbopyranoside, A-336
Methyl 3-amino-3-deoxy- β -D-allofuranoside, A-157
Methyl 3-amino-3-deoxy- α -D-allopyranoside, A-157
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Methyl 2-amino-2-deoxy- α -D-arabinopyranoside, A-178
Methyl 2-amino-2-deoxy- β -D-arabinopyranoside, A-178
Methyl 4-amino-4-deoxy- α -D-arabinopyranoside, A-179
Methyl 4-amino-4-deoxy- α -L-arabinopyranoside, A-179
Methyl 4-amino-4-deoxy- β -L-arabinopyranoside, A-179
Methyl 2-amino-2-deoxy-4,6-*O*-ethylidene-3-*O*-methyl- α -D-glucopyranoside, M-150
Methyl 2-amino-2-deoxy-4,6-*O*-ethylidene-3-*O*-methyl- β -D-glucopyranoside, M-150
Methyl 1-amino-1-deoxy- α -D-fructofuranoside, A-184
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Methyl 3-amino-3-deoxy- α -D-galactopyranoside, A-207
Methyl 2-amino-2-deoxy- α -D-glucofuranoside, A-266
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Methyl 4-amino-4-deoxy- α -D-glucopyranoside, A-268
Methyl 6-amino-6-deoxy- α -D-glucopyranoside, A-270
Methyl 2-amino-2-deoxyglucopyranoside, M-150
Methyl 4-amino-4-deoxy- α -D-glucopyranosiduronic acid, A-276
Methyl 3-amino-3-deoxy- β -D-gulopyranoside, A-280
Methyl 6-amino-6-deoxy- α -L-idopyranoside, A-294
Methyl 6-amino-6-deoxy- β -L-idopyranoside, A-294
Methyl 6-amino-6-deoxy-3,4-*O*-isopropylidene- α -D-galactopyranoside, A-210
Methyl 5-amino-5-deoxy-2,3-*O*-isopropylidene- β -D-ribofuranoside, A-332
Methyl 4-amino-4-deoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, A-342
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Methyl 2-amino-2-deoxy- α -D-lyxofuranoside, A-296
Methyl 3-amino-3-deoxy- α -D-lyxopyranoside, A-297
Methyl 3-amino-3-deoxy- α -D-mannopyranoside, A-313
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Methyl 6-amino-6-deoxy- α -D-mannopyranoside, A-316
Methyl 4-amino-4-deoxy-2-*O*-mesyl- α -L-lyxopyranoside, A-298

Methyl 3-amino-3-deoxy- β -D-ribofuranoside, A-330
Methyl 2-amino-2-deoxy- β -D-ribofuranoside, A-329
Methyl 2-amino-2-deoxy- β -L-ribofuranoside, A-329
Methyl 4-amino-4-deoxy- α -L-sorbopyranoside, A-335
Methyl 3-amino-3-deoxy- α -D-talopyranoside, A-341
Methyl 2-amino-2-deoxy-5-thio- α -D-altropyranoside, A-345
Methyl 4-amino-4-deoxy-5-thio- β -L-lyxopyranoside, A-350
Methyl 3-amino-3-deoxy-5-thio- α -D-xylopyranoside, A-352
Methyl 2-amino-2-deoxy-3,4,6-tri-*O*-methyl- α -D-glucopyranoside, M-150
Methyl 2-amino-2-deoxy-3,5,6-tri-*O*-methyl- β -D-mannofuranoside, A-312
Methyl 4-amino-4-deoxy- α -D-xylopyranoside, A-357
Methyl 2-amino-3,6-di-*O*-benzyl-2-deoxy- β -D-glucopyranoside, M-150
Methyl 4-amino-4,6-dideoxy- α -D-allopyranoside, A-365
Methyl 4-amino-4,6-dideoxy- β -D-allopyranoside, A-365
Methyl 4-amino-4,6-dideoxy- α -D-altropyranoside, A-370
Methyl 3-amino-3,6-dideoxy- β -D-galactopyranoside, A-376
Methyl 4-amino-4,6-dideoxy- α -D-galactopyranoside, A-377
Methyl 3-amino-3,6-dideoxy- α -D-glucopyranoside, A-381
Methyl 3-amino-3,6-dideoxy- β -D-glucopyranoside, A-381
Methyl 3-amino-3,6-dideoxy- α -L-glucopyranoside, A-381
Methyl 3-amino-3,6-dideoxy- β -L-glucopyranoside, A-381
Methyl 4-amino-4,6-dideoxy- α -D-glucopyranoside, A-382
Methyl 3-amino-2,3-dideoxy- α -D-*arabino*-hexopyranoside, A-392
Methyl 3-amino-2,3-dideoxy- β -D-*arabino*-hexopyranoside, A-392
Methyl 2-amino-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-395
Methyl 3-amino-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-397
Methyl 3-amino-3,4-dideoxy- α -D-*xylo*-hexopyranoside, A-400
Methyl 3-amino-3,4-dideoxy- β -D-*xylo*-hexopyranoside, A-400
Methyl 3-amino-3,6-dideoxy- α -D-idopyranoside, A-402
Methyl 3-amino-3,6-dideoxy- β -D-idopyranoside, A-402
Methyl 3-amino-3,6-dideoxy- α -L-idopyranoside, A-402
Methyl 3-amino-3,6-dideoxy- β -L-idopyranoside, A-402
Methyl 4-amino-4,6-dideoxy- α -D-idopyranoside, A-403
Methyl 5-amino-5,6-dideoxy-2,3-*O*-isopropylidene- β -D-allofuranoside, A-366
Methyl 5-amino-5,6-dideoxy-2,3-*O*-isopropylidene- α -D-talofuranoside, A-418
Methyl 5-amino-5,6-dideoxy-2,3-*O*-isopropylidene- α -L-talofuranoside, A-418
Methyl 4-amino-6-dideoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, A-417
Methyl 6-amino-6,8-dideoxy-3,4-*O*-isopropylidene-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, L-43
Methyl 3-amino-3,6-dideoxy- α -D-mannopyranoside, A-407
Methyl 3-amino-3,6-dideoxy- β -D-mannopyranoside, A-407
Methyl 4-amino-4,6-dideoxy- α -D-mannopyranoside, A-408
Methyl 4-amino-4,6-dideoxy- α -L-mannopyranoside, A-408
Methyl 6-amino-6,8-dideoxy-7-*O*-methyl-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, L-43
Methyl 6-amino-6,8-dideoxy-7-*O*-methyl-1-thio-D-*erythro*- β -D-*galacto*-octopyranoside, L-43
Methyl 2-amino-2,4-dideoxy- α -DL-*erythro*-pentopyranoside, A-411
Methyl 2-amino-2,4-dideoxy- α -DL-*threo*-pentopyranoside, A-412
Methyl 4-amino-4,6-dideoxy- α -D-talopyranoside, A-417
Methyl 6-amino-6,8-dideoxy-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, L-43
Methyl 4-amino-3-hydroxy-4-oxobutanoate, M-6
Methyl 2-amino-3,4,6-tri-*O*-benzyl-2-deoxy- α -D-glucopyranoside, M-150
Methyl 4-amino-2,3,4-trideoxy- α -D-*erythro*-hex-2-enopyranosiduronic acid, A-454
Methyl 3-amino-2,3,6-trideoxy- α -D-*arabino*-hexopyranoside, A-458
Methyl 3-amino-2,3,6-trideoxy- α -L-*arabino*-hexopyranoside, A-458
Methyl 3-amino-2,3,6-trideoxy- α -L-*lyxo*-hexopyranoside, A-461
Methyl 2-amino-2,3,6-trideoxy-3-methylamino- α -L-idopyranoside, D-479
Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, A-464
Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- β -L-*lyxo*-hexopyranoside, A-464
Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -L-*ribo*-hexopyranoside, A-465
Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, A-466
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Methyl β -amosaminide, A-382
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Methyl 2,3-anhydro- α -D-allopyranoside, A-484
Methyl 2,3-anhydro- β -D-allopyranoside, A-484
Methyl 3,4-anhydro- α -DL-allopyranoside, A-486
Methyl 2,6-anhydro- α -D-altropyranoside, A-494
Methyl 2,6-anhydro- β -D-altropyranoside, A-494
Methyl 3,4-anhydro- α -D-altropyranoside, A-495
Methyl 2,5-anhydro- α -L-arabinofuranoside, A-503
Methyl 3,4-anhydro- α -D-arabinopyranoside, A-504
Methyl 3,4-anhydro- α -L-arabinopyranoside, A-504
Methyl 3,4-anhydro- β -L-arabinopyranoside, A-504
Methyl 2,3-anhydro-5-*O*-benzoyl- α -D-lyxofuranoside, A-664
Methyl 2,3-anhydro-5-*O*-benzoyl- β -D-ribofuranoside, A-690
Methyl 2,3-anhydro-4-*O*-benzoyl- β -D-ribofuranoside, A-693
Methyl 2,3-anhydro-6-*O*-benzoyl-5-*O*-tosyl- β -D-allofuranoside, A-484

- Methyl 2,3-anhydro-6-*O*-benzyl- α -D-allopyranoside, A-484
Methyl 2,3-anhydro-6-*O*-benzyl- β -D-allopyranoside, A-484
Methyl 2,3-anhydro-5-*O*-benzyl-6-deoxy- α -D-allofuranoside, A-484
Methyl 2,5-anhydro-3-*O*-benzyl-6-deoxy-D-gluconate, A-523
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Methyl 3,6-anhydro-2-*O*-benzyl- α -D-galactopyranoside, A-620
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Methyl 2,3-anhydro-6-*O*-benzyl- α -D-gulopyranoside, A-639
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Methyl 2,3-anhydro-5-*O*-benzyl- α -D-ribofuranoside, A-690
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Methyl 2,3-anhydro-4-*O*-benzyl- β -D-ribofuranoside, A-693
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Methyl 2,3-anhydro-4-*O*-benzyl-6-*O*-trityl- α -D-mannopyranoside, A-676
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Methyl 2,3-anhydro-6-deoxy- α -D-allopyranoside, A-516
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Methyl 2,3-anhydro-6-deoxy- α -D-gulopyranoside, A-527
Methyl 2,3-anhydro-6-deoxy- β -D-gulopyranoside, A-527
Methyl 3,4-anhydro-6-deoxy- α -L-arabino-hex-5-enopyranoside, A-542
Methyl 3,4-anhydro-6-deoxy- β -L-arabino-hex-5-enopyranoside, A-542
Methyl 3,4-anhydro-6-deoxy-ribo-hex-5-enopyranoside, A-543
Methyl 2,3-anhydro-4-deoxy- α -L-ribo-hexopyranoside, A-555
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Methyl 2,3-anhydro-4-deoxy- α -DL-lyxo-hexopyranoside, A-555
Methyl 2,3-anhydro-4-deoxy- α -DL-ribo-hexopyranoside, A-558
Methyl 2,3-anhydro-6-deoxy- α -D-lyxo-hexopyranosid-4-ulose, A-549
Methyl 2,3-anhydro-6-deoxy- α -D-ribo-hexopyranosid-4-ulose, D-191
Methyl 2,3-anhydro-6-deoxy- α -D-ribo-hexopyranosid-4-ulose, D-191
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Methyl 2,3-anhydro-6-deoxy- α -D-mannopyranoside, A-687
Methyl 2,3-anhydro-6-deoxy-4-*O*-methyl- α -D-allopyranoside, A-516
Methyl 2,3-anhydro-5-deoxy- α -D-ribofuranoside, A-690
Methyl 2,3-anhydro-5-deoxy- β -D-ribofuranoside, A-690
Methyl 2,3-anhydro-4-*O*-(3,4-di-*O*-acetyl-2-*O*-benzyl- β -D-xylopyranosyl)- β -D-ribofuranoside, X-58
Methyl 2,3-anhydro-4-*O*-(3,4-di-*O*-acetyl- β -D-xylopyranosyl)- β -D-ribofuranoside, X-58
Methyl 2,3-anhydro-5,6-di-*O*-benzoyl- β -D-allofuranoside, A-484
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Methyl 3,6-anhydro-2,5-di-*O*-benzoyl- β -D-glucopyranoside, A-635
Methyl 2,3-anhydro-4,6-di-*O*-mesyl- α -D-allopyranoside, A-484
Methyl 2,3-anhydro-4,6-di-*O*-methyl- α -D-allopyranoside, A-484
Methyl 2,3-anhydro-4,6-di-*O*-methyl- β -D-allopyranoside, A-484
Methyl 4,6-anhydro-2,3-di-*O*-methyl- α -D-galactopyranose, A-621
Methyl 2,3-anhydro-4,6-di-*O*-methyl- β -D-mannopyranoside, A-676
Methyl 2,6-anhydro-3,4-di-*O*-methyl- β -D-talopyranoside, A-710
Methyl 2,3-anhydro-5,6-di-*O*-tosyl- β -D-allofuranoside, A-484
Methyl 2,3-anhydro-4,6-di-*O*-tosyl- α -D-mannopyranoside, A-676
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Methyl 2,3-anhydro- α -DL-erythrofuranoside, A-602
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Methyl 2,3-anhydro-4,6-*O*-ethylidene- α -D-mannopyranoside, A-676
Methyl 1,4-anhydro- β -D-fructopyranoside, A-605
Methyl 3,6-anhydro- α -D-galactopyranoside, A-620
Methyl 3,6-anhydro- β -D-galactopyranoside, A-620
Methyl 3,6-anhydro- α -D-glucopyranoside, A-635
Methyl 3,6-anhydro- β -D-glucopyranoside, A-635
Methyl 3,6-anhydro- α -D-glucopyranoside, A-635
Methyl 3,6-anhydro- β -D-glucopyranoside, A-635
Methyl 3,6-anhydro- α -L-gulofuranoside, A-640
Methyl 3,6-anhydro- α -L-idofuranoside, A-659
Methyl 3,6-anhydro- β -L-idofuranoside, A-659
Methyl 2,6-anhydro- α -D-idopyranoside, A-658
Methyl 2,6-anhydro- β -D-idopyranoside, A-658
Methyl 5,6-anhydro-2,3-*O*-isopropylidene- β -L-allofuranoside, M-148
Methyl 2,6-anhydro-3,4-*O*-isopropylidene- α -D-altropyranoside, A-494
Methyl 2,6-anhydro-3,4-*O*-isopropylidene- β -D-altropyranoside, A-494
Methyl 4,5-anhydro-2,3-*O*-isopropylidene-2-*C*-methyl-D-ribonate, M-285
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Methyl 2,6-anhydro-3,4-*O*-isopropylidene- α -D-talopyranoside, A-710
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Methyl 2,3-anhydro- α -D-lyxofuranoside, A-664
Methyl 2,3-anhydro- β -D-lyxofuranoside, A-664
Methyl 2,3-anhydro- α -D-lyxopyranoside, A-664
Methyl 2,6-anhydro- α -D-mannofuranoside, A-671
Methyl 3,6-anhydro- α -D-mannofuranoside, A-679
Methyl 2,3-anhydro- α -D-mannopyranoside, A-676
Methyl 2,3-anhydro- β -D-mannopyranoside, A-676
Methyl 2,6-anhydro- α -D-mannopyranoside, A-678
Methyl 3,6-anhydro- α -D-mannopyranoside, A-679
Methyl 3,6-anhydro- β -D-mannopyranoside, A-679
Methyl 2,3-anhydro-4-*O*-methyl- α -D-allopyranoside, A-484
Methyl 2,3-anhydro-6-*O*-methyl- α -D-allopyranoside, A-484
Methyl 2,3-anhydro-5-*O*-methyl- α -D-lyxofuranoside, A-664
Methyl 2,3-anhydro-5-*O*-methyl- β -D-lyxofuranoside, A-664
Methyl 4,5-anhydro-2-*C*-methyl-D-ribonate, M-285
Methyl 2,3-anhydro-4-*O*-methyl- α -D-ribofuranoside, A-693
Methyl 2,3-anhydro-4-*O*-methyl- β -D-ribofuranoside, A-693
Methyl 2,3-anhydro- β -D-erythro-pentopyranosid-4-ulose, A-682
Methyl 2,3-anhydro- β -L-erythro-pentopyranosid-4-ulose, A-682
Methyl 2,3-anhydro-4,6-*O*-propylidene- α -D-allopyranoside, A-484
Methyl 2,3-anhydro- α -D-rhamnopyranoside, A-687
Methyl 2,3-anhydro- α -D-ribofuranoside, A-690
Methyl 2,3-anhydro- β -D-ribofuranoside, A-690
Methyl 2,3-anhydro- α -D-ribofuranoside, A-693
Methyl 2,3-anhydro- β -D-ribofuranoside, A-693
Methyl 1,3-anhydro- β -D-sorbofuranoside, A-695
Methyl 3,4-anhydro- α -D-tagatofuranoside, A-701
Methyl 3,4-anhydro- β -D-tagatofuranoside, A-701
Methyl 2,6-anhydro- α -D-talopyranoside, A-710
Methyl 2,6-anhydro- β -D-talopyranoside, A-710
Methyl 2,3-anhydro-6-*O*-tosyl- α -D-gulopyranoside, A-639
Methyl 2,3-anhydro-5-*O*-tosyl- α -D-lyxofuranoside, A-664
Methyl 2,3-anhydro-5-*O*-tosyl- β -D-lyxofuranoside, A-664
Methyl 2,3-anhydro-5-*O*-tosyl- α -D-ribofuranoside, A-690
Methyl 2,3-anhydro-5-*O*-tosyl- β -D-ribofuranoside, A-690
Methyl 2,3-anhydro-4-*O*-tosyl- α -D-ribofuranoside, A-693
Methyl 2,3-anhydro-4-*O*-tosyl- β -D-ribofuranoside, A-693
Methyl 3,6-anhydro-2-*O*-tosyl-D-talonate, A-702
Methyl 3,6-anhydro-4,5,7-tri-*O*-benzyl-2-deoxy-D-allo-heptonate, A-532
Methyl 4-anhydro-5,6,8-tri-*O*-benzyl-2,3-dideoxy-2,2,3,3-tetrahydro-D-allo-octonoate, M-212
Methyl 4,7-anhydro-5,6,8-tri-*O*-benzyl-2,3-dideoxy-2,2,3,3-tetrahydro-D-altro-octonoate, M-212
Methyl 2,3-anhydro-4-*O*-(2,3,4-tri-*O*-benzyl- β -D-xylopyranosyl)- β -D-ribofuranoside, X-58
Methyl 2,3-anhydro-6-*O*-trityl- α -D-allopyranoside, A-484
Methyl 3,4-anhydro-6-*O*-trityl- α -D-altropyranoside, A-495
Methyl 2,3-anhydro-6-*O*-trityl- α -D-gulopyranoside, A-639
Methyl 2,3-anhydro-5-*O*-trityl- α -D-lyxofuranoside, A-664
Methyl 2,3-anhydro-5-*O*-trityl- β -D-lyxofuranoside, A-664
Methyl 2,3-anhydro-6-*O*-trityl- α -D-mannopyranoside, A-676
Methyl 2,3-anhydro-5-*O*-trityl- α -D-ribofuranoside, A-690
Methyl 2,3-anhydro-5-*O*-trityl- β -D-ribofuranoside, A-690
Methyl 3,5-anhydro- β -D-xylofuranoside, A-728
Methyl β -D-apiofuranosyl-(1 \rightarrow 6)- β -D-glucopyranoside, A-784
Methyl arabinofuranoside, M-152
Methyl 3-*O*- α -L-arabinofuranosyl- β -D-xylopyranoside, A-823
Methyl α -L-arabinofuranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranoside, A-822
Methyl arabinopyranoside, M-153
Methyl 2-*O*- α -L-arabinopyranosyl- α -L-arabinopyranoside, A-834
Methyl 2-*O*- α -L-arabinopyranosyl- β -L-arabinopyranoside, A-834
Methyl 3-*O*- α -L-arabinopyranosyl- α -L-arabinopyranoside, A-835
Methyl 3-*O*- α -L-arabinopyranosyl- β -L-arabinopyranoside, A-835
Methyl 4-*O*- α -L-arabinopyranosyl- α -L-arabinopyranoside, A-836
Methyl 4-*O*- α -L-arabinopyranosyl- β -L-arabinopyranoside, A-836
Methyl 3-*O*- β -L-arabinopyranosyl- α -L-arabinopyranoside, A-839
Methyl 4-*O*- β -L-arabinopyranosyl- α -L-arabinopyranoside, A-840
Methyl 4-*O*- β -L-arabinopyranosyl- β -L-arabinopyranoside, A-840
Methyl 2-azido-3-*O*-benzoyl-4,6-di-*O*-benzyl-2-deoxy- α -D-mannopyranoside, A-912
Methyl 2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α -D-mannopyranoside, A-912

- Methyl 2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- β -D-mannopyranoside, A-912
- Methyl 2-azido-6-*O*-benzyl-2-deoxy- β -D-galactopyranoside, A-903
- Methyl 2-azido-6-*O*-benzyl-2-deoxy-3,4-*O*-isopropylidene- β -D-galactopyranoside, A-903
- Methyl 2-azido-3-*O*-benzyl-2-deoxy- α -D-mannopyranoside, A-912
- Methyl 2-azido-4,6-*O*-benzylidene-2-deoxy- β -D-galactopyranoside, A-903
- Methyl 2-azido-4,6-*O*-benzylidene-2-deoxy- α -D-mannopyranoside, A-912
- Methyl 6-azido-6-deoxy-2,3,4-tri-*O*-methyl- α -D-galactopyranoside, A-904
- Methyl 3-azido-3-deoxy- α -D-altropyranoside, A-899
- Methyl 6-azido-6-deoxy- β -D-galactofuranoside, A-904
- Methyl 2-azido-2-deoxy- α -D-galactopyranoside, A-903
- Methyl 2-azido-2-deoxy- β -D-galactopyranoside, A-903
- Methyl 6-azido-6-deoxy- α -D-galactopyranoside, A-904
- Methyl 6-azido-6-deoxy- β -D-galactopyranoside, A-904
- Methyl 3-azido-3-deoxy- β -D-glucopyranoside, A-909
- Methyl 6-azido-6-deoxy- α -D-glucopyranoside, A-910
- Methyl 2-azido-2-deoxy-4,6-*O*-isopropylidene- β -D-galactopyranoside, A-903
- Methyl 6-azido-6-deoxy-2,3-*O*-isopropylidene- α -D-mannofuranoside, A-913
- Methyl 6-azido-6-deoxy-2,3-*O*-isopropylidene- α -D-mannopyranoside, A-913
- Methyl 2-azido-2-deoxy- β -D-mannopyranoside, A-912
- Methyl 6-azido-6-deoxy- α -D-mannopyranoside, A-913
- Methyl 3-azido-3-deoxy-2,4,6-tri-*O*-methyl- α -D-altropyranoside, A-899
- Methyl 6-azido-6-deoxy-2,3,5-tri-*O*-methyl- β -D-galactofuranoside, A-904
- Methyl 2-azido-3,4-*O*-dibenzyl-2-deoxy- α -D-mannopyranoside, A-912
- Methyl 2-azido-4,6-di-*O*-benzyl-2-deoxy- α -D-mannopyranoside, A-912
- Methyl 3-azido-2,3-dideoxy- α -D-*arabino*-hexopyranoside, A-918
- Methyl 3-azido-2,3-dideoxy- α -D-*lyxo*-hexopyranoside, A-919
- Methyl 2-benzamido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-3-*O*-benzoyl-2-deoxy-4,6-di-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-3-*O*-benzoyl-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy- α -L-*lyxo*-hexopyranoside, A-461
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -L-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, A-466
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -L-*xylo*-hexopyranoside, A-466
- Methyl 2-benzamido-4-*O*-benzyl-2-deoxy-3-*O*-methyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy- α -D-*ribo*-hexopyranosid-3-ulose, A-288
- Methyl 3-benzamido-4,6-*O*-benzylidene-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-3-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-3-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-3-*O*-tosyl- α -D-idopyranoside, A-291
- Methyl 2-benzamido-4,6-*O*-benzylidene-2,3-dideoxy- β -D-*ribo*-hexopyranoside, A-395
- Methyl 5-benzamido-5-deoxy- β -DL-altropyranoside, A-167
- Methyl 2-benzamido-2-deoxy-4,6-di-*O*-mesyl-3-*O*-methyl- β -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-4,6-di-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxyglucopyranoside, M-154
- Methyl 3-benzamido-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 2-benzamido-2-deoxy-3-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3-*O*-methyl- β -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3,4,6-tri-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3,4,6-tri-*O*-methyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3,4,6-tri-*O*-methyl- β -D-glucopyranoside, M-154
- Methyl 2-benzamido-3,4-di-*O*-benzoyl- β -D-arabinopyranoside, A-178
- Methyl 2-benzamido-3,6-di-*O*-benzoyl-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 3-benzamido-2,4-di-*O*-benzoyl-3-deoxy- α -DL-*lyxopyranoside*, A-297
- Methyl 2-benzamido-3,6-di-*O*-benzoyl-2-deoxy-4-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-di-*O*-benzoyl-2-deoxy-3-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 3-benzamido-2,4-di-*O*-benzoyl-3,6-dideoxy- α -D-idopyranoside, A-402
- Methyl 2-benzamido-2,3-dideoxy- β -D-*ribo*-hexopyranoside, A-395
- Methyl 3-benzamido-2,3,6-trideoxy- α -L-*arabino*-hexopyranoside, A-458
- Methyl 3-benzamido-2,3,6-trideoxy- α -L-*lyxo*-hexopyranoside, A-461
- Methyl 3-benzamido-2,3,6-trideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, A-466
- Methyl 2-*O*-benzoyl- α -D-arabinofuranoside, M-152
- Methyl 2-*O*-benzoyl-3-*O*-benzyl- α -D-arabinofuranoside, M-152
- Methyl 3-*O*-benzoyl-5-*O*-benzyl-2-deoxy-2-fluoro- β -D-xylofuranoside, D-118
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-allopyranoside, M-155
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
- Methyl 2-*O*-benzoyl-3,4-*O*-benzylidene- β -L-arabinopyranoside, M-153
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
- Methyl 2-benzoyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- β -D-mannopyranoside, B-88
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
- Methyl 6-*O*-benzoyl-3,4-*O*-benzylidene- α -D-galactopyranoside, M-185
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-*arabino*-hexopyranosid-3-ulose oxime, H-95
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-*arabino*-hexopyranosid-2-ulose, M-166
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- β -D-*arabino*-hexopyranosid-2-ulose, M-166
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-*ribo*-hexopyranosid-3-ulose, M-167
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- β -D-*ribo*-hexopyranosid-3-ulose, M-167
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
- Methyl 5-*O*-benzoyl-1,3-*O*-benzylidene-4-*O*-mesyl- β -D-fructopyranoside, M-182
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-methyl- β -D-glucopyranoside, M-165
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-methyl- α -D-mannopyranoside, M-169
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-methyl- β -D-mannopyranoside, M-169
- Methyl 5-*O*-benzoyl-2,3-*O*-benzylidene- β -D-ribofuranoside, M-208
- Methyl 3-*O*-benzoyl-4,6-benzylidene-2-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-allopyranoside, G-277
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-1-thio- β -D-glucopyranoside, T-70
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-1-thio- β -D-glucopyranoside, T-70
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl- α -D-altropyranoside, M-156
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-altropyranoside, M-156
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-glucopyranoside, M-164
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-glucopyranoside, M-164
- Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl- α -D-mannopyranoside, M-169
- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-mannopyranoside, M-169
- Methyl 5-*O*-benzoyl-3-bromo-3-deoxy- β -D-arabinofuranoside, B-63
- Methyl 4-*O*-benzoyl-6-bromo-6-deoxy- α -D-galactopyranoside, B-72
- Methyl 4-*O*-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
- Methyl 4-*O*-benzoyl-6-bromo-6-deoxy- β -D-glucopyranoside, B-76
- Methyl 6-*O*-benzoyl-3-bromo-3-deoxy- β -D-gulopyranoside, B-77
- Methyl 4-*O*-benzoyl-3-bromo-3-deoxy-2-*O*-methyl- β -D-*lyxopyranoside*, B-83
- Methyl 3-*O*-benzoyl-4-bromo-4-deoxy-2-*O*-methyl- α -L-*xylopyranoside*, B-104
- Methyl 2-*O*-benzoyl-3-bromo-2,6-dideoxy- α -L-altropyranoside, B-106
- Methyl 2-*O*-benzoyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
- Methyl 2-*O*-benzoyl-3-chloro-3-deoxy-5-*O*-trityl- β -D-xylofuranoside, C-109
- Methyl 4-*O*-benzoyl-6-deoxy-2,3-di-*O*-methyl- α -D-altropyranoside, D-37
- Methyl 6-*O*-benzoyl-2-deoxy- β -D-*lyxo*-hexopyranoside, D-202
- Methyl 5-*O*-benzoyl-3-deoxy-3-iodo- α -D-arabinofuranoside, D-250
- Methyl 4-*O*-benzoyl-2-deoxy-2-iodo- β -L-arabinopyranoside, D-249
- Methyl 4-*O*-benzoyl-6-deoxy-6-iodo-2,3-*O*-isopropylidene- α -D-mannopyranoside, D-266
- Methyl 4-*O*-benzoyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
- Methyl 6-*O*-benzoyl-2-deoxy-3,4-*O*-isopropylidene- β -D-*lyxo*-hexopyranoside, D-202
- Methyl 4-*O*-benzoyl-2-deoxy-3-*O*-methyl- β -D-*erythro*-pentopyranoside, D-345
- Methyl 4-*O*-benzoyl-2,3-di-*O*-benzyl- β -L-idopyranoside, I-9
- Methyl 6-*O*-benzoyl-2,3-di-*O*-benzyl-5-*O*-tosyl- β -D-galactofuranoside, M-184

- Methyl 6-*O*-benzoyl-3,4-dideoxy- α -D-*glycero*-hex-3-enopyranosid-2-ulose, D-594
- Methyl 2-*O*-benzoyl-4,6-dideoxy- β -L-*ribo*-hexopyranoside, D-614
- Methyl 2-*O*-benzoyl-4,6-dideoxy-3-*O*-methyl- β -L-*ribo*-hexopyranoside, D-614
- Methyl 2-*O*-benzoyl-3,4-dideoxy-6-*O*-trityl- α -D-*erythro*-hex-3-enopyranoside, D-585
- Methyl 2-*O*-benzoyl-4,6-di-*O*-mesyl-3-*O*-methyl- β -D-mannopyranoside, M-205
- Methyl 2-*O*-benzoyl-3,4-di-*O*-mesyl-6-*O*-trityl- α -D-altropyranoside, M-149
- Methyl 2-*O*-benzoyl-3,4-di-*O*-mesyl-6-*O*-trityl- α -D-glucopyranoside, M-213
- Methyl 6-*O*-benzoyl-2,3-di-*O*-methyl- α -D-galactopyranoside, D-732
- Methyl 5-*O*-benzoyl-2,3-di-*O*-tosyl- β -D-lyxofuranoside, M-201
- Methyl 5-*O*-benzoyl-2,3-di-*O*-tosyl- β -D-ribofuranoside, M-208
- Methyl 2-*O*-benzoyl-3,4-*O*-ethylidene- β -L-arabinopyranoside, M-153
- Methyl 6-*O*-benzoyl- α -D-galactopyranoside, M-185
- Methyl 3-*O*-benzoyl- β -D-galactopyranoside, M-186
- Methyl 6-*O*-benzoyl- β -D-galactopyranoside, M-186
- Methyl 6-*O*-benzoyl- α -D-glucopyranoside, M-190
- Methyl 6-*O*-benzoyl- β -D-glucopyranoside, M-191
- Methyl 3-*O*-benzoyl- α -D-*arabino*-hexopyranosid-2-ulose, H-94
- Methyl 2-*O*-benzoyl-3,4-*O*-isopropylidene- β -L-arabinopyranoside, M-197
- Methyl 3-*O*-benzoyl-4,5-*O*-isopropylidene- β -D-glucoseptanoside, G-528
- Methyl 2-*O*-benzoyl-3,4-*O*-isopropylidene- β -L-idoseptanoside, I-10
- Methyl 5-*O*-benzoyl-2,3-*O*-isopropylidene- α -D-rhamnofuranoside, M-206
- Methyl 5-*O*-benzoyl-2,3-*O*-isopropylidene- α -L-rhamnofuranoside, M-206
- Methyl 4-*O*-benzoyl-2,3-*O*-isopropylidene- α -L-rhamnopyranoside, M-207
- Methyl 5-*S*-benzoyl-2,3-*O*-isopropylidene-5-thio- α -D-lyxofuranoside, T-80
- Methyl 6-*O*-benzoyl-3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-allopyranoside, M-148
- Methyl 2-*O*-benzoyl-3,5-*O*-isopropylidene- α -D-xylofuranoside, M-216
- Methyl 5-*O*-benzoyl-2,3-*O*-methylen- β -D-ribofuranoside, M-208
- Methyl 2-*O*-benzoyl-3,4-*O*-methyl- β -D-mannopyranoside, M-205
- Methyl 5-*O*-benzoyl-3-*O*-methyl- α -D-xylofuranoside, M-216
- Methyl 5-*O*-benzoyl-2-*O*-methyl- β -D-xylofuranoside, M-216
- Methyl 4-*C*-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -D-*threo*-hexopyranoside, P-73
- Methyl 4-*C*-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -L-*threo*-hexopyranoside, P-73
- Methyl 4-*O*-benzoyl-1-thio- α -L-rhamnopyranoside, T-86
- Methyl 6-*O*-benzoyl-2,3,4-tri-*O*-mesyl- α -D-galactopyranoside, M-185
- Methyl 2-*O*-benzoyl-3,4,6-tri-*O*-methyl- β -D-glucopyranoside, T-188
- Methyl 2-*O*-benzoyl-6-*O*-trityl- α -D-glucopyranoside, M-213
- Methyl 3-*O*-benzoyl- α -D-xylopyranoside, M-217
- Methyl (benzyl 2,3-di-*O*-benzyl- α -D-glucopyranosid)uronate, B-17
- Methyl (benzyl 2,3-di-*O*-benzyl- β -D-glucopyranosid)uronate, B-17
- Methyl (benzyl 2,3-di-*O*-benzyl-4-*O*-mesyl- α -D-glucopyranosid)uronate, B-17
- Methyl 2-*O*-benzyl 4,6-dideoxy- α -D-*ribo*-hexopyranoside, D-614
- Methyl (benzyl β -D-glucopyranosid)uronate, B-17
- Methyl (benzyl 2,3-*O*-isopropylidene- β -D-ribofuranosid)uronate, R-146
- Methyl (benzyl 2,3,4-tri-*O*-acetyl- β -D-glucopyranosid)uronate, B-17
- Methyl (benzyl 2,3,4-tri-*O*-benzyl- β -D-glucopyranosid)uronate, B-17
- Methyl (benzyl 4,5,7-tri-*O*-benzyl- α -D-*gluco*-2-heptulopyranosid)onate, H-64
- Methyl 2-*O*-benzyl- β -D-arabinofuranoside, M-152
- Methyl 2-*O*-benzyl- β -L-arabinopyranoside, M-153
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-(benzyloxycarbonyl)amino-2-deoxy- α -D-glucopyranoside, M-150
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-chloro-2-deoxy- β -D-glucopyranoside, C-85
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
- Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
- Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
- Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
- Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
- Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- β -D-mannopyranoside, M-169
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- β -D-mannopyranoside, M-169
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-*O*-methyl- α -D-allopyranoside, M-155
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-3-*C*-methyl- α -D-allopyranoside, M-224
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-methyl- α -D-allopyranoside, M-224
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-tosyl- α -D-allopyranoside, M-224
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-allopyranoside, M-155
- Methyl 5-*O*-benzyl-2-deoxy-2-fluoro- β -D-xylofuranoside, D-118
- Methyl 3-*O*-benzyl-2-deoxy- α -D-*arabino*-hexofuranoside, D-199
- Methyl 5-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- α -D-xylofuranoside, D-294
- Methyl 5-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- β -D-xylofuranoside, D-294
- Methyl 6-*O*-benzyl-2-deoxy-2-*C*-methyl- α -D-altropyranoside, D-290
- Methyl 5-*O*-benzyl-3-deoxy-3-(methylamino)- α -D-xylofuranoside, D-294
- Methyl 5-*O*-benzyl-3-deoxy-3-(methylamino)- β -D-xylofuranoside, D-294
- Methyl 4-*O*-benzyl-2,3-dideoxy- α -D-*erythro*-hex-2-enopyranoside, D-584
- Methyl 4-*O*-benzyl-2,6-dideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, D-635
- Methyl 5-*O*-benzyl-2,3-di-*O*-methyl- α -D-xylofuranoside, M-216
- Methyl 2-*O*-benzyl- α -L-fucopyranoside, M-183
- Methyl 3-*O*-benzyl- α -L-fucopyranoside, M-183
- Methyl 3-*O*-benzyl- α -D-galactopyranoside, M-185
- Methyl 3-*O*-benzyl- α -D-glucofuranoside 5,6-carbonate, M-189
- Methyl 3-*O*-benzyl- β -D-glucofuranoside 5,6-carbonate, M-189
- Methyl 5-*O*-benzyl- β -D-glucofuranosiduronamide, G-537
- Methyl 4,6-*O*-benzylideneallopyranoside, M-155
- Methyl 4-*O*-(4,6-*O*-benzylidene- β -D-allopyranosyl)- β -D-allopyranoside, A-84
- Methyl 4,6-*O*-benzylidenealtropyranoside, M-156
- Methyl 3,4-*O*-benzylidene- β -L-arabinopyranoside, M-153
- Methyl 4,6-*O*-benzylidene-2,3-bis-*O*-(diphenylphosphino)glucopyranoside, M-157
- Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- β -D-allopyranoside, B-56
- Methyl 4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-altropyranoside, B-58
- Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
- Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-glucopyranoside, B-75
- Methyl 4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
- Methyl 4,6-*O*-benzylidene-2-bromo-2,3-dideoxy-*threo*-hex-3-enopyranoside, M-158
- Methyl 3,4-*O*-(*R*)-benzylidene-2-chloro-2-deoxy- α -D-allopyranoside, C-70
- Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-allopyranoside, C-70
- Methyl 4,6-*O*-benzylidene-3-chloro-3-deoxy- β -D-allopyranoside, C-71
- Methyl 4,6-*O*-(*R*)-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside, C-73
- Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
- Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- β -D-*arabino*-hexopyranoside, C-85
- Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-idopyranoside, C-91
- Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy-3-*O*-methyl- α -D-allopyranoside, C-70
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-ethyl- α -D-*arabino*-hexopyranosid-2-ulose, M-166
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
- Methyl 4,6-*O*-benzylidene-3-deoxy-*erythro*-hex-3-enopyranoside, M-159
- Methyl 4,6-*O*-benzylidene-2-deoxy- α -D-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-2-deoxy- β -D-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-3-deoxy- α -D-*arabino*-hexopyranoside, D-200
- Methyl 4,6-*O*-benzylidene-3-deoxy- α -D-*ribo*-hexopyranoside, D-206
- Methyl 4,6-*O*-benzylidene-3-deoxy- β -D-*ribo*-hexopyranoside, D-206
- Methyl 4,6-*O*-benzylidene-3-deoxy-*erythro*-hexopyranosid-2-ulose, M-160
- Methyl 4,6-*O*-benzylidene-2-deoxy- α -D-*threo*-hexopyranosid-3-ulose, D-192
- Methyl 4,6-*O*-benzylidene-2-deoxy- β -D-*threo*-hexopyranosid-3-ulose, D-192
- Methyl 4,6-*O*-benzylidene-2-deoxy- α -D-*erythro*-hexopyranosid-3-ulose, D-213
- Methyl 4,6-*O*-benzylidene-3-deoxy- α -D-*threo*-hexopyranosid-2-ulose, D-216
- Methyl 4,6-*O*-benzylidene-3-deoxy- β -D-*threo*-hexopyranosid-2-ulose, D-216
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo- β -D-allopyranoside, D-243
- Methyl 3,4-*O*-(*R*)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
- Methyl 3,4-*O*-(*S*)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
- Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
- Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside, D-246
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo- α -D-altropyranoside, D-247
- Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-idopyranoside, D-261
- Methyl 2,3-*O*-benzylidene-5-deoxy-5-iodo- β -D-ribofuranoside, D-272
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo-2-*O*-tosyl- α -D-altropyranoside, D-247
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-mesyl- α -D-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-mesyl- α -D-*ribo*-hexopyranoside, D-205
- Methyl 4,6-*O*-benzylidene-2-deoxy-2-*C*-methyl- α -D-altropyranoside, D-290
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -D-altropyranoside, D-291
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methylene- α -D-*ribo*-hexopyranoside, D-297
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-methyl- α -D-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -D-*arabino*-hexopyranosid-2-ulose, M-166
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-nitro- β -D-galactopyranoside, D-315
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-nitro- β -L-galactopyranoside, D-315
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-tosyl- α -D-*arabino*-hexopyranoside, M-171
- Methyl 4,7-*O*-benzylidene-2,3-di-*O*-benzyl-6-deoxy- α -D-*gluco*-heptopyranoside, D-158

Methyl 4,6-*O*-benzylidene-2,3-dibromo-2,3-dideoxy-α-D-altropyranoside, D-525
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-α-D-*erythro*-hex-2-enopyranoside, D-584
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-β-D-*erythro*-hex-2-enopyranoside, D-584
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-α-D-*threo*-hex-2-enopyranoside, D-587
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-β-D-*threo*-hex-2-enopyranoside, D-587
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-2-*C*-methyl-3-nitro-α-D-*threo*-hex-2-enopyranoside, M-161
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-nitro-*threo*-hex-2-enopyranoside, M-161
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-nitro-α-D-*erythro*-hex-2-enopyranoside, D-646
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-nitro-β-D-*erythro*-hex-2-enopyranoside, D-646
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-2-*C*-vinyl-α-D-*erythro*-hex-2-enopyranoside, D-659
Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-*C*-vinyl-α-D-*erythro*-hex-2-enopyranoside, D-660
Methyl 1,3-*O*-benzylidene-4,5-di-*O*-mesyl-β-D-fructopyranoside, M-182
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-mesyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-mesyl-α-D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-α-D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-α-D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-β-D-galactopyranoside, M-163
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-α-D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-α-D-glucopyranoside, D-738
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-α-D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-α-D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-α-D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-β-D-galactopyranoside, M-163
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-α-D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-α-D-idopyranoside, M-168
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-α-D-mannopyranoside, M-169
Methyl 1,3-*O*-benzylidene-β-D-fructopyranoside, M-182
Methyl 4,6-*O*-benzylidene-α-D-galactopyranoside 2,3-carbonate, M-162
Methyl 4,6-*O*-benzylidene-α-D-*lyxo*-hexopyranoside, M-162
Methyl 4,6-*O*-benzylidene-β-D-galactopyranoside, M-163
Methyl 3,4-*O*-benzylidene-β-D-galactopyranoside, M-186
Methyl 4,6-*O*-benzylidene-β-D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-β-D-glucopyranosyl-β-D-allopyranoside, G-277
Methyl 4,6-*O*-benzylidene-α-D-gulopyranoside, M-194
Methyl 4,6-*O*-benzylidene-β-D-gulopyranoside, M-194
Methyl 4,6-*O*-benzylidene-α-D-*lyxo*-hexopyranoside, D-202
Methyl 4,6-*O*-benzylidene-β-D-*lyxo*-hexopyranoside, D-202
Methyl 4,6-*O*-benzylidene-*arabino*-hexopyranosid-2-ulose, M-166
Methyl 4,6-*O*-benzylidene-*ribo*-hexopyranosid-3-ulose, M-167
Methyl 4,6-*O*-benzylideneidopyranoside, M-168
Methyl 4,6-*O*-benzylidene-2,3-*O*-isopropylidene-α-D-allopyranoside, M-155
Methyl 4',6'-*O*-benzylidene-β-maltoside, M-15
Methyl 4,6-*O*-benzylidenemannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-α-D-allopyranoside, M-155
Methyl 1,3-*O*-benzylidene-4-*O*-mesyl-β-D-fructopyranoside, M-182
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-α-D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-mesyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-α-D-*ribo*-hexopyranosid-3-ulose, M-167
Methyl 1,3-*O*-benzylidene-4-*O*-mesyl-5-*O*-methyl-β-D-fructopyranoside, M-182
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl-β-D-galactopyranoside, M-250
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl-α-D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl-β-D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-3-*C*-methyl α-D-allopyranoside, M-224
Methyl 4,6-*O*-benzylidene-2-*O*-methyl β-D-*ribo*-hexopyranosid-3-ulose, M-167
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-α-D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-α-D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-α-D-galactopyranoside, M-249
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-α-D-galactopyranoside, M-250

Methyl 4,6-*O*-benzylidene-3-*O*-methyl-β-D-galactopyranoside, M-250
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*C*-methyl-α-D-glucopyranoside, M-254
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-α-D-glucopyranoside, M-255
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-α-D-glucopyranoside, M-256
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-α-D-*arabino*-hexopyranosid-2-ulose, M-166
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-β-D-*arabino*-hexopyranosid-2-ulose, M-166
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-α-D-*ribo*-hexopyranosid-3-ulose, M-167
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-α-D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-β-D-mannopyranoside, M-169
Methyl 1,3-*O*-benzylidene-5-*O*-methyl-α-L-sorbopyranoside, M-210
Methyl 3,4-*O*-benzylidene-2-*O*-methyl-1-thio-β-L-fucopyranoside, T-63
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl-α-D-allopyranoside, M-155
Methyl 4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-tosyl-α-D-allopyranoside, M-224
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl-α-D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-3-*O*-tosyl-α-D-galactopyranoside, M-249
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-3-*O*-tosyl-β-D-galactopyranoside, M-249
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-3-*O*-tosyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl-β-D-mannopyranoside, M-169
Methyl 1,3-*O*-benzylidene-α-L-sorbopyranoside, M-210
Methyl 4,6-*O*-benzylidene-1-thio-β-D-glucopyranoside, T-70
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-β-D-allopyranoside, M-148
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-allopyranoside, M-155
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-altropyranoside, M-156
Methyl 3,4-*O*-benzylidene-2-*O*-tosyl-β-L-arabinopyranoside, M-153
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-α-D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-β-D-galactopyranoside, M-163
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-α-D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-*ribo*-hexopyranoside, D-206
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-α-D-*arabino*-hexopyranosid-2-ulose, M-166
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-β-D-*arabino*-hexopyranosid-2-ulose, M-166
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-*ribo*-hexopyranosid-3-ulose, M-167
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-β-D-*ribo*-hexopyranosid-3-ulose, M-167
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl-α-D-mannopyranoside, M-169
Methyl 3-*O*-benzyl-1-idopyranuronate, I-12
Methyl 2-*O*-benzyl-3,4-*O*-isopropylidene-β-L-arabinopyranoside, M-197
Methyl 2-*O*-benzyl-3,4-*O*-isopropylidene-α-L-fucopyranoside, M-198
Methyl 3-*O*-benzyl-1,2-*O*-isopropylidene-β-L-idofuranuronate, I-12
Methyl 5-*O*-benzyl-2,3-*O*-isopropylidene-α-D-lyxofuranoside, I-70
Methyl 5-*O*-benzyl-2,3-*O*-isopropylidene-α-D-mannofuranoside, I-71
Methyl 6-*O*-benzyl-2,3-*O*-isopropylidene-α-D-mannofuranoside, I-71
Methyl 4-*O*-benzyl-2,3-*O*-isopropylidene-α-L-rhamnopyranoside, M-207
Methyl 2-*O*-benzyl-3,5-*O*-isopropylidene-α-D-xylofuranoside, M-216
Methyl 2-*O*-benzyl-3,5-*O*-isopropylidene-β-D-xylofuranoside, M-216
Methyl 3-*O*-benzyl-2-*O*-methyl-α-D-allopyranoside, M-148
Methyl 5-*O*-benzyl-2-*O*-methyl-α-D-glucufuranosidurono-6,3-lactone, G-539
Methyl 5-*O*-benzyl-2-*O*-methyl-β-D-glucufuranosidurono-6,3-lactone, G-539
Methyl 2,6-*O*-benzyl-3-*O*-methyl-α-D-mannopyranoside, M-271
Methyl 3-*O*-benzyl-2-*O*-methyl-6-*O*-tosyl-α-D-allopyranoside, M-148
Methyl 5-*O*-benzyl-3-*O*-methyl-α-D-xylofuranoside, M-216
Methyl 3-*O*-benzyl-α-L-rhamnopyranoside, M-207
Methyl 4-*O*-benzyl-α-L-rhamnopyranoside, M-207
Methyl 3-*O*-benzyl-β-L-ribofuranoside, M-208
Methyl 3-*O*-benzyl-4-*O*-(2,3,4-tri-*O*-benzyl-β-D-xylopyranosyl)-β-D-xylopyranoside, X-80
Methyl 6-benzyl-2,3,4-tri-*O*-methyl-α-D-glucopyranoside, T-184
Methyl 2-*O*-benzyl-3,4,6-tri-*O*-methyl-β-D-glucopyranoside, T-188
Methyl 4-*O*-benzyl-6-*O*-trityl-α-D-mannopyranoside, M-215
Methyl 2-*O*-benzyl-α-D-xylofuranoside, M-216
Methyl 4-*O*-(2-*O*-benzyl-β-D-xylopyranosyl)-β-D-xylopyranoside, X-80
Methyl 2,4-bis-*O*-trimethylsilyl-α-D-glucopyranoside, M-190
Methyl 3-bromo-3-deoxy-β-D-allopyranoside, B-56
Methyl 2-bromo-2-deoxy-α-D-altropyranoside, B-58
Methyl 6-bromo-6-deoxy-α-D-altropyranoside, B-60
Methyl 2-bromo-2-deoxy-α-D-arabinopyranoside, B-62
Methyl 3-bromo-3-deoxy-β-D-arabinopyranoside, B-63

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 Methyl 2-deoxy-5-O-tosyl- α -D-erythro-pentofuranoside, D-345
 Methyl 6-deoxy-2,3,4-tri-O-tosyl- β -D-glucopyranoside, D-142
 Methyl 2-deoxy-6-O-trityl- α -D-lyxo-hexopyranoside, D-202
 Methyl 2-deoxy-5-O-trityl- α -D-erythro-pentofuranoside, D-345
 Methyl 2-deoxy-5-O-trityl- β -D-erythro-pentofuranoside, D-345
 Methyl 2-deoxy-5-O-trityl- α -D-glycero-pentofuranosid-3-ulose, P-43
 Methyl 2-deoxy-5-O-trityl- β -D-glycero-pentofuranosid-3-ulose, P-43
 Methyl 5-deoxy- α -D-xylofuranoside, D-386
 Methyl 5-deoxy- β -D-xylofuranoside, D-386
 Methyl 6-deoxy-6-[3,4,5-trihydroxy-2-(hydroxymethyl)-1-piperidinyl]- α -D-glucopyranoside, C-4
 Methyl DL-desmethylholantosaminide, A-459
 Methyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 2,4-diacetamido-3-O-acetyl-2,4,6-trideoxy- α -L-idopyranoside, D-480
 Methyl 2,3-diacetamido-4,6-O-benzylidene-2,3-dideoxy- α -D-gulopyranoside, D-435
 Methyl 2,3-diacetamido-4,6-O-benzylidene-2,3-dideoxy- α -D-mannopyranoside, D-449
 Methyl 4,6-diacetamido-2,3-di-O-acetyl-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- α -D-glucopyranoside, D-433
 Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- β -D-glucopyranoside, D-433
 Methyl 2,4-diacetamido-3,6-di-O-acetyl-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 2,3-diacetamido-4,6-di-O-acetyl-2,3-dideoxy- α -D-mannopyranoside, D-449
 Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- α -D-mannopyranoside, D-451
 Methyl 3,6-diacetamido-2,5-di-O-acetyl-3,6-dideoxy-L-talofuranoside, D-458
 Methyl 2,3-diacetamido-4,6-di-O-acetyl-2,3-dideoxy- α -D-talopyranoside, D-457
 Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- α -L-talopyranoside, D-458
 Methyl 3,6-diacetamido-2,4-di-O-acetyl-3,6-dideoxy- β -L-talopyranoside, D-458

Methyl 2,4-diacetamido-3,6-di-*O*-benzoyl-2,4-dideoxy- α -D-idopyranoside, D-440
Methyl 5,6-diacetamido-2,3-di-*O*-benzyl-5,6-dideoxy- α -L-altrofuranoside, D-411
Methyl 4,6-diacetamido-2,3-di-*O*-benzyl-4,6-dideoxy- α -D-galactopyranoside, D-424
Methyl 2,4-diacetamido-2,4-dideoxy-3,6-di-*O*-methyl- α -D-idopyranoside, D-440
Methyl 4,6-diacetamido-4,6-dideoxy- α -D-galactopyranoside, D-424
Methyl 2,3-diacetamido-2,3-dideoxy- α -D-gulopyranoside, D-435
Methyl 2,4-diacetamido-2,4-dideoxy- α -D-idopyranoside, D-440
Methyl 2,3-diacetamido-2,3-dideoxy- α -D-mannopyranoside, D-449
Methyl 2,3-diacetamido-2,3-dideoxy- β -D-mannopyranoside, D-449
Methyl 3,6-diacetamido-3,6-dideoxy- α -D-mannopyranoside, D-451
Methyl 2,3-diacetamido-2,3-dideoxy- α -D-talopyranoside, D-457
Methyl 3,6-diacetamido-3,6-dideoxy- α -L-talopyranoside, D-458
Methyl 2,6-diacetamido-2,3,4,6,7-pentadeoxy- α -DL-*ribo*-heptopyranoside, P-20
Methyl 2,4-diacetamido-2,3,4,6-tetradeoxy- α -D-*arabino*-hexopyranoside, D-470
Methyl 2,4-diacetamido-2,3,4,6-tetradeoxy- β -D-*arabino*-hexopyranoside, D-470
Methyl 2,6-diacetamido-2,3,4,6-tetradeoxy- α -D-*erythro*-hexopyranoside, D-471
Methyl 3,4-diacetamido-3,4,6-trideoxy- α -D-glucopyranoside, D-475
Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-*ribo*-hexofuranoside, D-478
Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-*ribo*-hexopyranoside, D-478
Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-idopyranoside, D-480
Methyl 2,6-diacetamido-2,3,6-trideoxy-4-*O*-mesyl- α -D-*ribo*-hexopyranoside, D-478
Methyl 3,4-diacetamido-3,4,6-trideoxy-2-*O*-methyl- α -L-glucopyranoside, D-475
Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-talopyranoside, D-484
Methyl 2,3-di-*O*-acetyl-4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside, A-382
Methyl 2,4-di-*O*-acetyl-3-amino-3,6-dideoxy- α -L-glucopyranoside, A-381
Methyl 4,6-di-*O*-acetyl-2,3-anhydro- α -D-allopyranoside, A-484
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-altropyranoside, A-494
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-altropyranoside, A-494
Methyl 3,4-di-*O*-acetyl-2,6-anhydro-5-deoxy-D-*lyxo*-hex-5-enoate, A-541
Methyl 3,5-di-*O*-acetyl-1,4-anhydro- β -D-fructopyranoside, A-605
Methyl 2,5-di-*O*-acetyl-3,6-anhydro- α -L-gulofuranoside, A-640
Methyl 2,5-di-*O*-acetyl-3,6-anhydro- β -L-gulofuranoside, A-640
Methyl 2,5-di-*O*-acetyl-3,6-anhydro- α -L-idofuranoside, A-659
Methyl 2,5-di-*O*-acetyl-3,6-anhydro- β -L-idofuranoside, A-659
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-idopyranoside, A-658
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-idopyranoside, A-658
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-mannopyranoside, A-678
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-mannopyranoside, A-678
Methyl 1,6-di-*O*-acetyl-3,4-anhydro- α -D-tagatofuranoside, A-701
Methyl 1,6-di-*O*-acetyl-3,4-anhydro- α -L-tagatofuranoside, A-701
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-talopyranoside, A-710
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-talopyranoside, A-710
Methyl 2,6-di-*O*-acetyl-3,6-anhydro- α -DL-talopyranoside, A-711
Methyl 4,6-di-*O*-acetyl-3-azido-2,3-dideoxy- α -D-*arabino*-hexopyranoside, A-918
Methyl 2,6-di-*O*-acetyl-5-benzamido-5-deoxy-3,4-*O*-isopropylidene- β -DL-altropyranoside, A-167
Methyl 3,5-di-*O*-acetyl-2-benzamido-2-deoxy- β -D-ribofuranoside, A-329
Methyl 3,4-di-*O*-acetyl-2-benzamido-2-deoxy-6-*O*-tosyl- α -D-glucopyranoside, M-154
Methyl 3,5-di-*O*-acetyl-2-benzamido-2-deoxy- α -D-xylofuranoside, A-356
Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-bromo-6-deoxy- β -D-glucopyranoside, B-76
Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-deoxy- α -D-glucopyranoside, D-142
Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-deoxy- α -D-*arabino*-hex-5-enopyranoside, D-174
Methyl 3,4-di-*O*-acetyl-1-*O*-benzoyl-2-deoxy-2-iodo- β -D-ribofuranoside, D-270
Methyl 2,6-di-*O*-acetyl-3-*O*-benzoyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)- β -D-allopyranoside, G-276
Methyl 3,4-di-*O*-acetyl-2-*O*-benzyl- α -L-fucopyranoside, M-183
Methyl 2,3-di-*O*-acetyl-5-*O*-benzyl- β -D-glucosyluronamide, G-537
Methyl 2,3-di-*O*-acetyl-6-*O*-benzyl- β -D-glucopyranoside, M-191
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-allopyranoside, M-155
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 4-*O*,5-*S*-diacetyl-1,3-*O*-benzylidene- β -D-fructopyranoside, T-61
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163

Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-arabinofuranoside, M-194
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl- α -D-allopyranoside, M-224
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl- α -D-glucopyranoside, M-254
Methyl 2,3-di-*O*-acetyl-5-*O*-benzyl- α -D-lyxofuranoside, M-201
Methyl 2,5-*O*-diacetyl-3-*O*-benzyl- β -L-ribofuranoside, M-208
Methyl 3,5-di-*O*-acetyl-2-bromo-2-deoxy- α -D-arabinofuranoside, B-62
Methyl 3,5-di-*O*-acetyl-2-bromo-2-deoxy- β -D-arabinofuranoside, B-62
Methyl 3,4-di-*O*-acetyl-2-bromo-2-deoxy- α -D-lyxopyranoside, B-82
Methyl 3,4-di-*O*-acetyl-6-bromo-6-deoxy-2-*O*-mesyl- α -D-glucopyranoside, B-76
Methyl 2,5-di-*O*-acetyl-3-bromo-3-deoxy- α -D-xylofuranoside, B-103
Methyl 2,5-di-*O*-acetyl-3-bromo-3-deoxy- β -D-xylofuranoside, B-103
Methyl 3,5-di-*O*-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
Methyl 3,5-di-*O*-acetyl-2-chloro-2-deoxy- β -D-arabinofuranoside, C-74
Methyl 3,4-di-*O*-acetyl-2-chloro-2-deoxy- α -D-arabinopyranoside, C-74
Methyl 3,4-di-*O*-acetyl-2-chloro-2-deoxy- α -D-lyxopyranoside, C-95
Methyl 2,4-di-*O*-acetyl-3-chloro-3-deoxy- β -D-xylopyranoside, C-109
Methyl 2,3-di-*O*-acetyl-4-deoxy- β -L-*erythro*-hex-4-enodialdo-1,5-pyranose, D-169
Methyl 2,3-di-*O*-acetyl-4-deoxy- α -D-*threo*-hex-4-enopyranoside, D-181
Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -D-arabinopyranoside, D-249
Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -L-arabinopyranoside, D-249
Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -D-lyxopyranoside, D-263
Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -L-lyxopyranoside, D-263
Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- β -D-ribofuranoside, D-270
Methyl 2,4-di-*O*-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside, D-280
Methyl 2,4-di-*O*-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
Methyl 5,7-di-*O*-acetyl-6-deoxy-2,3-*O*-isopropylidene- β -L-*gulo*-heptofuranoside, D-162
Methyl 5,7-di-*O*-acetyl-6-deoxy-2,3-isopropylidene- α -D-heptofuranoside, D-164
Methyl 2,5-di-*O*-acetyl-3-deoxy-3-(*N*-methylacetamido)- α -D-arabinofuranoside, D-293
Methyl 2,3-di-*O*-acetyl-6-deoxy-4-*O*-methyl- α -D-altropyranoside, D-37
Methyl 2,4-di-*O*-acetyl-6-deoxy-3-*O*-methyl- α -D-glucopyranoside, D-142
Methyl 2,4-di-*O*-acetyl-6-deoxy-3-*O*-methyl- β -D-glucopyranoside, D-142
Methyl 2,4-di-*O*-acetyl-6-deoxy-3-*O*-methyl- β -D-xylo-*hex*-5-enopyranoside, D-177
Methyl 2,3-di-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-*lyxo*-hexopyranosid-4-*ulose*, D-303
Methyl 2,3-di-*O*-acetyl-6-deoxy-5-*C*-methyl-4-*O*-methyl- β -DL-*lyxo*-hexopyranoside, D-304
Methyl 2,6-di-*O*-acetyl-3-deoxy-3-nitro- β -D-glucopyranoside, D-318
Methyl 3,5-di-*O*-acetyl-2-deoxy- α -D-*erythro*-pentofuranoside, D-345
Methyl 2,5-di-*O*-acetyl-3-deoxy- β -D-*threo*-pentofuranoside, D-349
Methyl 3,4-di-*O*-acetyl-2-deoxy- α -L-*erythro*-pentopyranoside, D-345
Methyl 2,4-di-*O*-acetyl-3-deoxy- β -L-*erythro*-pentopyranoside, D-346
Methyl 2,3-di-*O*-acetyl-4-deoxy- β -D-*erythro*-pentopyranoside, D-347
Methyl 2,3-di-*O*-acetyl-4-deoxy- β -DL-*erythro*-pentopyranoside, D-347
Methyl 2,3-di-*O*-acetyl-5-deoxy- α -D-xylofuranose, D-386
Methyl 2,3-di-*O*-acetyl-5-deoxy- β -D-xylofuranoside, D-386
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,4-di-*O*-acetyl-3-*O*-benzyl- α -D-xylopyranosyl)- β -D-xylopyranoside, X-77
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,4-di-*O*-acetyl- α -D-xylopyranosyl)- β -D-xylopyranoside, X-77
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3-di-*O*-acetyl- β -D-xylopyranosyl)- β -D-xylopyranoside, X-80
Methyl 2,3-di-*O*-acetyl-4,6-diamino-4,6-dideoxy- α -D-galactopyranoside, D-424
Methyl 4,6-di-*O*-acetyl-2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside, D-421
Methyl 2,4-di-*O*-acetyl-3,6-di-*O*-benzoyl- α -D-mannopyranoside, M-204
Methyl 4,6-di-*O*-acetyl-2,3-di-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 4,6-di-*O*-acetyl-2,3-di-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 3,4-di-*O*-acetyl-2,6-di-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 4,6-di-*O*-acetyl-2,3-di-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 2,4-di-*O*-acetyl-3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, D-532
Methyl 2,3-di-*O*-acetyl-4,6-dichloro-4,6-dideoxy- α -D-galactopyranoside, D-542
Methyl 2,3-di-*O*-acetyl-4,6-dideoxy-4-dimethylamino- α -D-talopyranoside, A-417
Methyl 4,6-di-*O*-acetyl-2,3-dideoxy- α -D-*threo*-hex-2-enopyranoside, D-587
Methyl 3,4-di-*O*-acetyl-2,6-dideoxy- α -L-*lyxo*-hexopyranoside, D-610
Methyl 2,3-di-*O*-acetyl-4,6-dideoxy- β -L-*ribo*-hexopyranoside, D-614
Methyl 2,4-di-*O*-acetyl-3,6-di-*O*-methyl- β -D-glucopyranoside, D-743
Methyl 2,4-di-*O*-acetyl-3,6-di-*O*-tosyl- β -D-allopyranoside, M-148
Methyl 2,3-di-*O*-acetyl-4,6-*O*-ethylidene- α -D-glucopyranoside, M-190
Methyl 2,3-di-*O*-acetyl-4,6-*O*-ethylidene- β -D-glucopyranoside, M-191

- Methyl 2,3-di-*O*-acetyl-4,6-*O*-ethylidene-α-*D*-mannopyranoside, M-180
Methyl 2,4-di-*O*-acetyl-α-*L*-fucopyranoside, M-183
Methyl 3,4-di-*O*-acetyl-α-*L*-fucopyranoside, M-183
Methyl 4,6-di-*O*-acetyl-α-*D*-galactopyranoside, M-185
Methyl 2,6-di-*O*-acetyl-β-*D*-galactopyranoside, M-186
Methyl 3,4-di-*O*-acetyl-β-*D*-galactopyranoside, M-186
Methyl 4,6-di-*O*-acetyl-β-*D*-galactopyranoside, M-186
Methyl 2,3-di-*O*-acetyl-α-*D*-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-acetyl-β-*D*-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-acetyl-β-*D*-glucofuranosiduronamide, G-537
Methyl 2,3-di-*O*-acetyl-α-*D*-glucopyranoside, M-190
Methyl 2,3-di-*O*-acetyl-β-*D*-glucopyranoside, M-191
Methyl 3,6-di-*O*-acetyl-β-*D*-glucopyranoside, M-191
Methyl 4,6-di-*O*-acetyl-β-*D*-glucopyranoside, M-191
Methyl 3,5-di-*O*-acetyl-β-*L*-*lyxo*-hexofuranoside, D-610
Methyl 2,3-di-*O*-acetyl-4,6-*O*-isopropylidene-α-*D*-altropyranoside, M-149
Methyl 4,5-di-*O*-acetyl-2,3-*O*-isopropylidene-α-*D*-glucoseptanoside, G-528
Methyl 2,5-di-*O*-acetyl-3,4-*O*-isopropylidene-α-*D*-glucoseptanoside, G-528
Methyl 2,3-di-*O*-acetyl-4,5-*O*-isopropylidene-α-*D*-glucoseptanoside, G-528
Methyl 5,6-di-*O*-acetyl-2,3-*O*-isopropylidene-β-*L*-gulofuranoside, G-587
Methyl 2,5-di-*O*-acetyl-3,4-*O*-isopropylidene-β-*L*-idoseptanoside, I-10
Methyl 5,6-di-*O*-acetyl-2,3-*O*-isopropylidene-α-*D*-mannofuranoside, I-71
Methyl 4,6-di-*O*-acetyl-2,3-*O*-isopropylidene-α-*D*-talopyranoside, T-9
Methyl *N,N'*-diacetyl-α-kasugaminide, D-470
Methyl *N,N'*-diacetyl-β-kasugaminide, D-470
Methyl 4,6-di-*O*-acetyl-α-*D*-mannopyranoside, M-204
Methyl 2,3-di-*O*-acetyl-4-*O*-methyl-β-*D*-altropyranoside, D-37
Methyl 3,5-di-*O*-acetyl-2-*O*-methyl-α-*D*-arabinofuranoside, M-152
Methyl 3,5-di-*O*-acetyl-2-*O*-methyl-β-*D*-arabinofuranoside, M-152
Methyl 3,4-di-*O*-acetyl-2-*O*-methyl-β-*L*-arabinopyranoside, M-153
Methyl 2,3-di-*O*-acetyl-4-*O*-methyl-α-*D*-L-arabinopyranoside, M-153
Methyl 2,3-di-*O*-acetyl-4,6-*O*-methylene-α-*D*-mannopyranoside, M-204
Methyl 3,4-di-*O*-acetyl-2-*O*-methyl-α-*L*-fucopyranoside, M-183
Methyl 2,4-di-*O*-acetyl-3-*O*-methyl-α-*L*-fucopyranoside, M-183
Methyl 2,3-di-*O*-acetyl-4-*O*-methyl-α-*L*-fucopyranoside, M-183
Methyl 2,4-di-*O*-acetyl-3-*O*-methyl-α-*L*-fucopyranoside, M-183
Methyl 2,4-di-*O*-acetyl-3-*O*-methyl-α-*L*-rhamnopyranoside, M-207
Methyl 4-*O*,5-*S*-diacetyl-5-thio-β-*D*-fructopyranoside, T-61
Methyl 2,3-di-*O*-acetyl-4-thio-α-*L*-rhamnopyranoside, T-87
Methyl 3,4-di-*O*-acetyl-2-*O*-tosyl-α-*D*-xylopyranoside, M-217
Methyl 2,3-di-*O*-acetyl-5-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-arabinofuranosyl)-α-*L*-arabinofuranoside, R-19
Methyl 3,5-di-*O*-acetyl-2-*O*-(2,3,5-tri-*O*-acetyl-α-*L*-arabinofuranosyl)-α-*L*-arabinofuranoside, A-801
Methyl 2,5-di-*O*-acetyl-3-*O*-(2,3,5-tri-*O*-acetyl-α-*L*-arabinofuranosyl)-α-*L*-arabinofuranoside, A-802
Methyl 2,3-di-*O*-acetyl-5-*O*-(2,3,5-tri-*O*-acetyl-α-*L*-arabinofuranosyl)-α-*L*-arabinofuranoside, A-803
Methyl 2,4-di-*O*-acetyl-3-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-arabinopyranosyl)-α-*L*-arabinopyranoside, A-835
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-arabinopyranosyl)-α-*L*-arabinopyranoside, A-836
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-arabinopyranosyl)-β-*L*-arabinopyranoside, A-836
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-β-*L*-arabinopyranosyl)-α-*L*-arabinopyranoside, A-840
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-β-*L*-arabinopyranosyl)-β-*L*-arabinopyranoside, A-840
Methyl 3,4-di-*O*-acetyl-2-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*L*-arabinopyranoside, R-16
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-β-*L*-arabinopyranoside, R-18
Methyl 2,4-di-*O*-acetyl-3-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*D*-xylopyranoside, R-77
Methyl 2,4-di-*O*-acetyl-3-*O*-(2,3,4-tri-*O*-acetyl-α-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-76
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-77
Methyl 3,4-di-*O*-acetyl-2-*O*-(2,3,4-tri-*O*-acetyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-78
Methyl 2,4-di-*O*-acetyl-3-*O*-(2,3,4-tri-*O*-acetyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-79
Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-80
Methyl 2,5-di-*O*-acetyl-3-*O*-(2,3,5-tri-*O*-benzoyl-α-*L*-arabinofuranosyl)-α-*L*-arabinofuranoside, A-802
Methyl 3,4-di-*O*-acetyl-2-*O*-trityl-α-*L*-fucopyranoside, M-183
Methyl 2,4-di-*O*-acetyl-3-*O*-trityl-α-*L*-fucopyranoside, M-183
Methyl 2,3-di-*O*-acetyl-β-*D*-xylopyranoside, M-217
Methyl 2,6-diamino-2,6-dideoxy-α-*D*-glucopyranoside, D-432
Methyl 3,6-diamino-3,6-dideoxy-α-*D*-glucopyranoside, D-433
Methyl 3,6-diamino-3,6-dideoxy-β-*D*-glucopyranoside, D-433
Methyl 2,4-diamino-2,4-dideoxy-α-*D*-idopyranoside, D-440
Methyl 2,6-diamino-2,6-dideoxy-α-*L*-idopyranoside, D-442
Methyl 2,3-diamino-2,3-dideoxy-β-*D*-mannopyranoside, D-449
Methyl 3,6-diamino-3,6-dideoxy-α-*D*-mannopyranoside, D-451
Methyl 3,6-diamino-3,6-dideoxy-α-*L*-talopyranoside, D-458
Methyl 3,6-diamino-3,6-dideoxy-β-*L*-talopyranoside, D-458
Methyl 3,4-diamino-3,4-dideoxy-β-*L*-xylopyranoside, D-464
Methyl 2,6-diamino-2,3,4,6-tetradeoxy-α-*D*-*erythro*-hexopyranoside, D-471
Methyl 2,3-diamino-2,3,6-trideoxy-α-*L*-gulopyranoside, D-476
Methyl 2,3-diamino-2,3,6-trideoxy-α-*L*-idopyranoside, D-479
Methyl 2,4-diamino-2,4,6-trideoxy-α-*D*-idopyranoside, D-480
Methyl 3,4-diamino-3,4,6-trideoxy-2-*O*-methyl-α-*L*-glucopyranoside, D-475
Methyl 2,6,3,4-dianhydro-α-*D*-altropyranoside, D-491
Methyl 2,3,4,6-dianhydro-α-*D*-gulopyranoside, A-639
Methyl 4,6-dibenzamido-2,3-di-*O*-benzoyl-4,6-dideoxy-α-*D*-galactopyranoside, D-424
Methyl 2,6-dibenzamido-2,6-dideoxy-α-*D*-allopopyranoside, D-410
Methyl 2,3-dibenzamido-2,3-dideoxy-β-*D*-galactopyranoside, D-421
Methyl 2,3-di-*O*-benzoyl-β-*L*-arabinopyranoside, M-153
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene β-*D*-gulopyranoside, M-194
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-altropyranoside, M-156
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-galactopyranoside, M-162
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-glucopyranoside, M-164
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene-β-*D*-glucopyranoside, M-165
Methyl 3,5-di-*O*-benzoyl-2-bromo-2-deoxy-β-*D*-arabinofuranoside, B-62
Methyl 2,4-di-*O*-benzoyl-3-bromo-3-deoxy-β-*D*-arabinopyranoside, B-63
Methyl 2,4-di-*O*-benzoyl-3-bromo-3-deoxy-α-*D*-lyxopyranoside, B-83
Methyl 2,3-di-*O*-benzoyl-6-bromo-6-deoxy-4-*O*-mesyl-α-*D*-glucopyranoside, B-76
Methyl 3,5-di-*O*-benzoyl-2-bromo-2-deoxy-α-*D*-ribofuranoside, B-92
Methyl 2,3-di-*O*-benzoyl-5-bromo-5-deoxy-β-*D*-ribofuranoside, B-93
Methyl 2,5-di-*O*-benzoyl-3-bromo-3-deoxy-α-*D*-xylofuranoside, B-103
Methyl 2,5-di-*O*-benzoyl-3-bromo-3-deoxy-β-*D*-xylofuranoside, B-103
Methyl 2,3-di-*O*-benzoyl-4-bromo-4-deoxy-α-*L*-xylopyranoside, B-104
Methyl 2,3-di-*O*-benzoyl-6-chloro-6-deoxy-α-*D*-glucopyranoside, C-88
Methyl 3,4-di-*O*-benzoyl-2-deoxy-2-fluoro-β-*D*-ribofuranoside, D-106
Methyl 3,4-di-*O*-benzoyl-2-deoxy-2-fluoro-β-*D*-ribofuranoside, D-106
Methyl 3,6-di-*O*-benzoyl-2-deoxy-α-*D*-glycero-hex-2-enopyranosid-4-ulose, D-178
Methyl 2,4-di-*O*-benzoyl-3-deoxy-3-iodo-β-*L*-ribofuranoside, D-271
Methyl 2,5-di-*O*-benzoyl-3-deoxy-α-*D*-*threo*-pentofuranoside, D-349
Methyl 4,6-di-*O*-benzoyl-2,3-dideoxy-α-*D*-*erythro*-hex-2-enopyranoside, D-584
Methyl 2,6-di-*O*-benzoyl-3,4-dideoxy-α-*D*-*erythro*-hex-3-enopyranoside, D-585
Methyl 2,5-di-*O*-benzoyl-3,6-dideoxy-β-*D*-*xylo*-hexofuranoside, D-617
Methyl 3,6-di-*O*-benzoyl-2,4-dideoxy-β-*erythro*-hexopyranoside, D-609
Methyl 3,4-di-*O*-benzoyl-2,6-dideoxy-β-*L*-*lyxo*-hexopyranoside, D-610
Methyl 3,4-di-*O*-benzoyl-2,6-dideoxy-α-*D*-ribo-hexopyranoside, D-612
Methyl 2,3-di-*O*-benzoyl-4,6-di-*O*-methyl-β-*D*-galactopyranoside, D-737
Methyl 2,4-di-*O*-benzoyl-3,6-di-*O*-methyl-β-*D*-glucopyranoside, D-743
Methyl 3,6-di-*O*-benzoyl-2,4-di-*O*-methyl-α-*D*-mannopyranoside, D-749
Methyl 2,3-di-*O*-benzoyl-α-*L*-fucopyranoside, M-183
Methyl 3,6-di-*O*-benzoyl-α-*D*-galactopyranoside, M-185
Methyl 3,6-di-*O*-benzoyl-β-*D*-galactopyranoside, M-186
Methyl 2,6-di-*O*-benzoyl-α-*D*-glucopyranoside, M-190
Methyl 4,5-di-*O*-benzoyl-2,3-*O*-isopropylidene-α-*D*-glucoseptanoside, G-528
Methyl 2,5-di-*O*-benzoyl-3,4-*O*-isopropylidene-α-*D*-glucoseptanoside, G-528
Methyl 2,3-di-*O*-benzoyl-4,5-*O*-isopropylidene-α-*D*-glucoseptanoside, G-528
Methyl 2,5-di-*O*-benzoyl-3,4-*O*-isopropylidene-β-*L*-idoseptanoside, I-10
Methyl 5,6-di-*O*-benzoyl-2,3-*O*-isopropylidene-α-*L*-talofuranoside, T-9
Methyl 3,6-di-*O*-benzoyl-α-*D*-mannopyranoside, M-204
Methyl 4,6-di-*O*-benzoyl-2-*O*-mesyl-3-*O*-methyl-β-*D*-galactopyranoside, M-250
Methyl 2,6-di-*O*-benzoyl-3-*O*-methyl-β-*D*-mannopyranoside, M-205
Methyl 3,5-di-*O*-benzoyl-2-*O*-methyl-β-*D*-ribofuranoside, M-208
Methyl 4,6-di-*O*-benzoyl-2-*O*-methyl-3-*O*-tosyl-α-*D*-altropyranoside, M-149
Methyl 3,5-di-*O*-benzoyl-β-*D*-*threo*-pentofuranosid-2-ulose, P-45
Methyl 2,3-di-*O*-benzoyl-α-*L*-rhamnopyranoside, M-207
Methyl 2,4-di-*O*-benzoyl-α-*L*-rhamnopyranoside, M-207
Methyl 3,5-di-*O*-benzoyl-β-*D*-ribofuranoside, M-208
Methyl 2,3-di-*O*-benzoyl-1-thio-β-*L*-fucopyranoside, T-63
Methyl 2,3-di-*O*-benzoyl-1-thio-α-*L*-rhamnopyranoside, T-86
Methyl 2,3-di-*O*-benzoyl-5-*O*-tosyl-α-*L*-arabinofuranoside, M-152
Methyl 3,5-di-*O*-benzoyl-2-*O*-tosyl-β-*D*-lyxofuranoside, M-201
Methyl 2,3-di-*O*-benzoyl-4-*O*-tosyl-α-*L*-rhamnopyranoside, M-207
Methyl 2,4-di-*O*-benzoyl-3-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*D*-xylopyranoside, R-77
Methyl 2,3-dibenzoyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*D*-xylopyranoside, R-78
Methyl 2,3-di-*O*-benzoyl-5-*O*-(2,3,5-tri-*O*-benzoyl-α-*L*-arabinofuranosyl)-α-*L*-arabinofuranoside, A-803
Methyl 2,3-di-*O*-benzyl-α-*L*-altrofuranoside, A-113
Methyl 2,3-di-*O*-benzyl-β-*L*-altrofuranoside, A-113

Methyl 2,3-di-*O*-benzyl- α -D-altropyranoside, M-149
Methyl 2,3-di-*O*-benzyl- α -L-arabinofuranoside, M-152
Methyl 2,3-di-*O*-benzyl- β -L-arabinofuranoside, M-152
Methyl 2,3-di-*O*-benzyl-4-*O*-benzoyl-6-*O*-trityl- β -L-idopyranoside, I-9
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
Methyl 3,5-di-*O*-benzyl-2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
Methyl 2,3-di-*O*-benzyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
Methyl 2,3-di-*O*-benzyl-6-deoxy- α -D-glucopyranoside, D-142
Methyl 2,3-di-*O*-benzyl-6-deoxy- β -D-*gluco*-heptopyranoside, D-158
Methyl 2,3-di-*O*-benzyl-4-deoxy- β -L-*threo*-hex-4-enodialdo-1,4-pyranose, D-170
Methyl 2,3-di-*O*-benzyl-4-deoxy- β -L-*threo*-hex-4-enopyranoside, D-181
Methyl 2,3-di-*O*-benzyl-4-deoxy- β -L-*arabino*-hexodialdopyranoside, D-184
Methyl 2,3-di-*O*-benzyl-4-deoxy- α -D-*xylo*-hexodialdopyranoside, D-185
Methyl 2,3-di-*O*-benzyl-4-deoxy- β -L-*arabino*-hexopyranoside, D-201
Methyl 2,3-di-*O*-benzyl-4-deoxy- α -D-*xylo*-hexopyranoside, D-210
Methyl 2,3-di-*O*-benzyl-6-deoxy-4-*O*-methoxymethyl- α -D-*gluco*-heptopyranoside, D-158
Methyl 2,5-di-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- α -D-xylofuranoside, D-294
Methyl 2,5-di-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- β -D-xylofuranoside, D-294
Methyl 3,5-di-*O*-benzyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- α -L-talofuranoside, D-309
Methyl 3,5-di-*O*-benzyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- β -L-talofuranoside, D-309
Methyl 3,5-di-*O*-benzyl-2-deoxy- α -L-*erythro*-pentofuranoside, D-345
Methyl 3,5-di-*O*-benzyl-2-deoxy- β -L-*erythro*-pentofuranoside, D-345
Methyl 3,4-di-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbamoyle)- α -L-arabinopyranoside, C-8
Methyl 3,4-di-*O*-benzyl-2-deoxy-2-*C*-[(tosylamino)carbonyl]- α -L-arabinopyranoside, C-8
Methyl 2,4-di-*O*-benzyl-3-*O*-(2,4-di-*O*-benzyl- α -D-mannopyranosyl)- α -D-mannopyranoside, M-93
Methyl 4,6-di-*O*-benzyl-2,3-dideoxy- α -D-*erythro*-hex-2-enopyranoside, D-584
Methyl 2,3-di-*O*-benzyl-4,6-dideoxy- α -D-*threo*-hex-4-enopyranoside, D-588
Methyl 2,4-di-*O*-benzyl-3,6-dideoxy- α -D-*arabino*-hexopyranoside, D-608
Methyl 2,4-di-*O*-benzyl-3,6-dideoxy- α -L-*arabino*-hexopyranoside, D-608
Methyl 2,3-di-*O*-benzyl-4,6-di-*O*-methyl- β -D-galactopyranoside, D-737
Methyl 2,3-di-*O*-benzyl-4,6-di-*O*-methyl- α -D-glucopyranoside, D-744
Methyl 2,3-di-*O*-benzyl-5,6-di-*O*-tosyl- β -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl- α -L-fucopyranoside, M-183
Methyl 2,4-di-*O*-benzyl- α -L-fucopyranoside, M-183
Methyl 3,4-di-*O*-benzyl- α -L-fucopyranoside, M-183
Methyl 2,3-di-*O*-benzyl- α -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl- β -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl- α -D-galactofuranoside, M-185
Methyl 2,3-di-*O*-benzyl- α -D-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-benzyl- β -D-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-benzyl- β -D-glucopyranoside, M-189
Methyl 2,3-di-*O*-benzyl- α -D-glucopyranoside, M-190
Methyl 2,3-di-*O*-benzyl- β -D-glucopyranoside, M-191
Methyl 2,3-di-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
Methyl 2,6-di-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
Methyl 1,2,3,4-di-*O*-benzylidene- α -D-galactopyranosuronate, G-210
Methyl 2,3,4,6-di-*O*-benzylidenemannopyranoside, M-172
Methyl 2,4,3,5-di-*O*-benzylidene- α -D-ribonate, R-128
Methyl 2,4,3,5-di-*O*-benzylidene- α -D-xylonate, X-9
Methyl 2,3-di-*O*-benzyl- β -L-idopyranoside, I-9
Methyl 2,3-di-*O*-benzyl-5,6-*O*-isopropylidene- α -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl-5,6-*O*-isopropylidene- β -D-galactofuranoside, M-184
Methyl 2,6-di-*O*-benzyl- α -D-mannofuranoside, M-203
Methyl 2,3-di-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 3,6-di-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 2,3-di-*O*-benzyl-5-*O*-mesyl-6-*O*-trityl- β -D-glucopyranoside, M-189
Methyl 2,4-di-*O*-benzyl-3-*O*-methyl- α -L-fucopyranoside, M-183
Methyl 3,4-di-*O*-benzyl-2-*O*-methyl- α -L-fucopyranoside, M-183
Methyl 3,4-di-*O*-benzyl-2-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 3,4-di-*O*-benzyl- α -D-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 2,4-di-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 3,4-di-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 3,5-di-*O*-benzyl- α -D-ribofuranoside, M-208
Methyl 2,3-di-*O*-benzyl-6-*O*-tosyl- α -D-altropyranoside, M-149
Methyl 2,3-di-*O*-benzyl-6-*O*-tosyl- β -D-galactofuranoside, M-184
Methyl 2,4-di-*O*-benzyl-3-*O*-(2,3,4-tri-*O*-acetyl- α -L-rhamnopyranosyl)- α -D-xylopyranoside, R-77

Methyl 2,4-di-*O*-benzyl-3-*O*-(2,3,5-tri-*O*-benzyl- α -L-arabinofuranosyl)- β -D-xylopyranoside, A-823
Methyl 3,6-di-*O*-benzyl-4-*O*-(3,4,6-tri-*O*-benzyl- α -D-mannopyranosyl)- α -D-mannopyranoside, M-94
Methyl 2,3-di-*O*-benzyl-5-*O*-trityl- α -L-arabinofuranoside, M-152
Methyl 2,3-di-*O*-benzyl-5-*O*-trityl- β -L-arabinofuranoside, M-152
Methyl 2,3-di-*O*-benzyl-6-*O*-trityl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
Methyl 2,3-di-*O*-benzyl-4-*O*-trityl- β -D-xylopyranoside, M-217
Methyl 3,6-dibromo-3,6-dideoxy- β -D-allopyranoside, D-523
Methyl 2,4-dibromo-2,4-dideoxy-L-erythronate, D-541
Methyl 3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, D-532
Methyl 2,4-dibromo-2,4-dideoxy-D-threonate, D-541
Methyl 2,4-dibromo-2,4-dideoxy-L-threonate, D-541
Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-*O*-tosyl- α -D-galactopyranoside, D-542
Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-*O*-tosyl- β -D-galactopyranoside, D-542
Methyl 4,6-dichloro-4,6-dideoxy- α -D-galactopyranoside, D-542
Methyl 4,6-dichloro-4,6-dideoxy- β -D-galactopyranoside, D-542
Methyl 4,6-dichloro-4,6-dideoxy- α -D-glucopyranoside, D-543
Methyl 3,4-dichloro-3,4-dideoxy- β -D-ribofuranoside, D-545
Methyl 3,4-dichloro-2,3,4-trideoxy- α -D-*glycero*-pent-2-enopyranoside, D-547
Methyl 3,4-dichloro-2,3,4-trideoxy- β -D-*glycero*-pent-2-enopyranoside, D-547
Methyl 2,3,4,6-di-*O*-cyclohexylidene- α -D-glucopyranoside, M-190
Methyl 4,6-dideoxy-4,6-diido- α -D-galactopyranoside, D-563
Methyl 3,4-dideoxy-2,6-di-*O*-mesyl- α -D-*erythro*-hex-3-enopyranoside, D-585
Methyl 3,6-dideoxy-3-dimethylamino- α -L-glucopyranoside, A-369
Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-altropyranoside, A-370
Methyl 3,6-dideoxy-3-dimethylamino- α -D-glucopyranoside, A-381
Methyl 3,6-dideoxy-3-dimethylamino- α -L-glucopyranoside, A-381
Methyl 4,6-dideoxy-4-dimethylamino- α -D-glucopyranoside, A-382
Methyl 4,6-dideoxy-4-dimethylamino- β -D-glucopyranoside, A-382
Methyl 3,6-dideoxy-3-dimethylamino- α -D-idopyranoside, A-402
Methyl 3,6-dideoxy-3-dimethylamino- α -L-idopyranoside, A-402
Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-idopyranoside, A-403
Methyl 4,6-dideoxy-4-dimethylamino- α -D-talopyranoside, A-417
Methyl 4,6-dideoxy-2,3-di-*O*-methyl- β -D-*erythro*-hex-4-enopyranoside, D-586
Methyl 4,6-dideoxy-2,3-di-*O*-methyl- α -L-*lyxo*-hexopyranoside, D-611
Methyl 4,6-dideoxy-2,3-di-*O*-methyl- α -L-*ribo*-hexopyranoside, D-614
Methyl 4,6-dideoxy-2,3-di-*O*-methyl- β -L-*ribo*-hexopyranoside, D-614
Methyl 2,6-dideoxy-3,4-di-*O*-tosyl- α -D-*xylo*-hexopyranoside, D-616
Methyl 3,6-dideoxy-3-ethylamino- α -D-mannopyranoside, A-407
Methyl 2,6-dideoxy-2-fluoro- β -L-talopyranoside, D-569
Methyl 3,4-dideoxy- α -D-*erythro*-hex-3-enopyranoside, D-585
Methyl 2,3-dideoxy- α -D-*threo*-hex-2-enopyranoside, D-587
Methyl 3,4-dideoxy- α -D-*glycero*-hex-3-enopyranosid-2-ulose, D-594
Methyl 2,6-dideoxy- β -L-*lyxo*-hexofuranoside, D-610
Methyl 2,6-dideoxy- α -L-*ribo*-hexofuranoside, D-612
Methyl 2,6-dideoxy- β -L-*ribo*-hexofuranoside, D-612
Methyl 2,6-dideoxy- α -D-*arabino*-hexopyranoside, D-607
Methyl 2,6-dideoxy- β -D-*arabino*-hexopyranoside, D-607
Methyl 2,6-dideoxy- α -L-*arabino*-hexopyranoside, D-607
Methyl 2,6-dideoxy- β -L-*arabino*-hexopyranoside, D-607
Methyl 2,6-dideoxy- α -DL-*arabino*-hexopyranoside, D-607
Methyl 3,6-dideoxy- α -D-*arabino*-hexopyranoside, D-608
Methyl 3,6-dideoxy- β -D-*arabino*-hexopyranoside, D-608
Methyl 3,6-dideoxy- α -L-*arabino*-hexopyranoside, D-608
Methyl 2,6-dideoxy- α -L-*lyxo*-hexopyranoside, D-610
Methyl 2,6-dideoxy- β -L-*lyxo*-hexopyranoside, D-610
Methyl 4,6-dideoxy- α -L-*lyxo*-hexopyranoside, D-611
Methyl 2,6-dideoxy- α -D-*ribo*-hexopyranoside, D-612
Methyl 2,6-dideoxy- α -L-*ribo*-hexopyranoside, D-612
Methyl 2,6-dideoxy- β -L-*ribo*-hexopyranoside, D-612
Methyl 3,6-dideoxy- α -D-*ribo*-hexopyranoside, D-613
Methyl 3,6-dideoxy- β -D-*ribo*-hexopyranoside, D-613
Methyl 4,6-dideoxy- α -D-*ribo*-hexopyranoside, D-614
Methyl 4,6-dideoxy- α -L-*ribo*-hexopyranoside, D-614
Methyl 4,6-dideoxy- β -L-*ribo*-hexopyranoside, D-614
Methyl 2,6-dideoxy- α -D-*xylo*-hexopyranoside, D-616
Methyl 3,6-dideoxy- α -D-*xylo*-hexopyranoside, D-617
Methyl 3,6-dideoxy- β -L-*xylo*-hexopyranoside, D-617
Methyl 4,6-dideoxy- α -L-*xylo*-hexopyranoside, D-618
Methyl 3,6-dideoxy- α -L-*threo*-hexopyranosid-2-ulose, D-193
Methyl 3,6-dideoxy- α -L-*erythro*-hexopyranosid-4-ulose, D-601
Methyl 2,3-dideoxy- β -D-*glycero*-hexopyranosid-4-ulose, D-602
Methyl 2,6-dideoxy- α -L-*erythro*-hexopyranosid-3-ulose, D-619
Methyl 5,6-dideoxy-2,3-*O*-isopropylidene- α -D-*lyxo*-hex-5-enofuranoside, D-592
Methyl 5,6-dideoxy-2,3-*O*-isopropylidene- α -L-*lyxo*-hex-5-enofuranoside, D-592
Methyl 4,6-dideoxy-2,3-*O*-isopropylidene- β -D-*erythro*-hex-4-enopyranoside, D-586

Methyl 4,6-dideoxy-2,3-*O*-isopropylidene- β -L-*erythro*-hex-4-enopyranoside, D-586
Methyl 2,3-dideoxy-5,6-*O*-isopropylidene-D-*erythro*-hexonate, T-167
Methyl 4,6-dideoxy-2,3-*O*-isopropylidene-4-methylamino- α -D-talopyranoside, A-417
Methyl 2,3-dideoxy-5,6-*O*-isopropylidene-4-*O*-tosyl-D-*erythro*-hexonate, T-167
Methyl 2,6-dideoxy-4-*O*-methoxymethyl- α -L-*erythro*-hexopyranosid-3-ulose, D-619
Methyl 4,6-dideoxy-4-methylamino- α -D-glucopyranoside, A-382
Methyl 3,6-dideoxy-3-*C*-methyl- α -D-glucopyranoside, D-630
Methyl 2,6-dideoxy-3-*O*-methyl- α -D-*ribo*-hexofuranoside, D-612
Methyl 2,6-dideoxy-4-*O*-methyl- α -D-*arabino*-hexopyranoside, D-607
Methyl 2,6-dideoxy-4-*O*-methyl- α -L-*arabino*-hexopyranoside, D-607
Methyl 2,6-dideoxy-4-*O*-methyl- α -L-*xylo*-hexopyranoside, D-610
Methyl 2,6-dideoxy-4-*O*-methyl- β -D-*lyxo*-hexopyranoside, D-610
Methyl 4,6-dideoxy-2-*O*-methyl- α -L-*lyxo*-hexopyranoside, D-611
Methyl 4,6-dideoxy-3-*O*-methyl- α -L-*xylo*-hexopyranoside, D-611
Methyl 2,6-dideoxy-3-*O*-methyl- α -D-*ribo*-hexopyranoside, D-612
Methyl 2,6-dideoxy-4-*O*-methyl- α -L-*ribo*-hexopyranoside, D-612
Methyl 4,6-dideoxy-3-*O*-methyl- α -D-*ribo*-hexopyranoside, D-614
Methyl 4,6-dideoxy-2-*O*-methyl- α -L-*ribo*-hexopyranoside, D-614
Methyl 4,6-dideoxy-2-*O*-methyl- β -L-*ribo*-hexopyranoside, D-614
Methyl 4,6-dideoxy-3-*O*-methyl- β -L-*ribo*-hexopyranoside, D-614
Methyl 2,6-dideoxy-3-*O*-methyl- α -D-*xylo*-hexopyranoside, D-616
Methyl 2,6-dideoxy-3-*O*-methyl- β -D-*xylo*-hexopyranoside, D-616
Methyl 4,6-dideoxy-3-*O*-methyl- β -D-*xylo*-hexopyranoside, D-618
Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*arabino*-hexopyranoside, D-634
Methyl 2,6-dideoxy-3-*C*-methyl- β -L-*arabino*-hexopyranoside, D-634
Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, D-635
Methyl 2,6-dideoxy-3-*C*-methyl- α -D-*ribo*-hexopyranoside, D-636
Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*ribo*-hexopyranoside, D-636
Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, D-637
Methyl 2,6-dideoxy-3-*C*-methyl- β -L-*xylo*-hexopyranoside, D-637
Methyl 2,6-dideoxy-3-*O*-methyl- α -D-*lyxo*-hexopyranoside, D-638
Methyl 2,6-dideoxy-4-*O*-methyl- α -L-*erythro*-hexopyranosid-3-ulose, D-619
Methyl 2,6-dideoxy-4-*O*-methyl- β -L-*erythro*-hexopyranosid-3-ulose, D-619
Methyl 4,6-dideoxy-3-*C*-methyl-4-(methylamino)- α -D-mannopyranoside, A-409
Methyl 4,6-dideoxy-3-*C*-methyl-4-(methylamino)- β -D-mannopyranoside, A-409
Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -D-*ribo*-hexopyranoside, D-636
Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -L-*ribo*-hexopyranoside, D-636
Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -D-*xylo*-hexopyranoside, D-637
Methyl 2,6-dideoxy-3-*O*-methyl-4-*O*-tosyl- α -D-*ribo*-hexopyranoside, D-612
Methyl 3,4-dideoxy-4-*C*-methyl-6-*O*-trityl- α -D-*threo*-hexopyranosid-2-ulose, D-633
Methyl 3,4-dideoxy- β -D-*glycero*-pentopyranoside, T-28
Methyl 3,4-dideoxy- α -D-*glycero*-pentopyranoside, T-28
Methyl 3,4-dideoxy- β -L-*glycero*-pentopyranoside, T-28
Methyl 2,6-dideoxy-4-*O*-(tetrahydro-2*H*-pyran-2-yl)- α -L-*erythro*-hexopyranosid-3-ulose, D-619
Methyl 2,6-dideoxy-4-thio- α -D-*ribo*-hexopyranoside, D-656
Methyl 4,6-dideoxy-2-*O*-tosyl- α -D-*ribo*-hexopyranoside, D-614
Methyl 5,6-dideoxy-2,3,8,9,10,11-tri-*O*-isopropylidene-L-*lyxo*- α -L-*talo*-undec-5-enodialdo-1,4-furanoside-11,7-pyranose, M-173
Methyl 3,4-dideoxy-6-*O*-trityl- α -D-*erythro*-hex-3-enopyranoside, D-585
Methyl 3,4-dideoxy-6-*O*-trityl- α -D-*glycero*-hex-3-enopyranosid-2-ulose, D-594
Methyl 2,3-dideoxy-5-*O*-trityl- α -D-*glycero*-pent-2-enofuranoside, D-650
Methyl 2,3-dideoxy-5-*O*-trityl- β -D-*glycero*-pent-2-enofuranoside, D-650
Methyl 2,3,4,6-di-*O*-ethylidene- α -D-allopyranoside, M-148
Methyl 2,3,4,6-di-*O*-ethylidene- α -D-mannopyranoside, M-180
Methyl 2,3,4,6-di-*O*-ethylidene- β -D-mannopyranoside, M-180
Methyl α -D-digitoxoside, D-612
Methyl α -L-digitoxoside, D-612
Methyl α -dihydrostreptoside, D-230
Methyl β -dihydrostreptoside, D-230
Methyl 2,3,5,6-di-*O*-isopropylidene- β -D-allofuranoside, M-148
Methyl 2,3,4,5-di-*O*-isopropylidene- α -D-alloseptanoside, A-87
Methyl 2,3,4,6-di-*O*-isopropylidene- α -D-galactopyranoside, M-185
Methyl 2,3,4,6-di-*O*-isopropylidene- β -D-galactopyranoside, M-186
Methyl 1,2,3,4-di-*O*-isopropylidene- α -D-galactopyranosuronate, G-210
Methyl 3,4,5,6-di-*O*-isopropylidene-D-gluconate, G-250
Methyl 2,3,4,6-di-*O*-isopropylidene- α -D-glucopyranoside, M-199
Methyl 2,3,4,6-di-*O*-isopropylidene- β -D-glucopyranoside, M-199
Methyl 2,3,4,5-di-*O*-isopropylidene- α -D-glucoseptanoside, G-528
Methyl 2,3,4,5-di-*O*-isopropylidene- β -D-glucoseptanoside, G-528
Methyl 2,3,5,6-di-*O*-isopropylidene- β -D-gulofuranoside, G-587
Methyl 2,3,5,6-di-*O*-isopropylidene- β -L-gulofuranoside, G-587
Methyl 2,3,4,5-di-*O*-isopropylidene-L-gulonate, G-589
Methyl 2,3,6,7-di-*O*-isopropylidene-L-*glycero*- β -L-*allo*-heptofuranoside, H-33

Methyl 2,3,6,7-di-*O*-isopropylidene- β -D-*allo*-heptopyranos-4-ulose, H-54
Methyl 2,3,4,5-di-*O*-isopropylidene- β -L-idoseptanoside, I-10
Methyl 2,3,5,6-di-*O*-isopropylidene- α -D-mannofuranoside, I-71
Methyl 2,3,5,6-di-*O*-isopropylidene- β -D-mannofuranoside, I-71
Methyl (2,3,5,6-di-*O*-isopropylidenemannofuranosyl)acetate, M-174
Methyl 5-*O*-(2,3,5,6-di-*O*-isopropylidene- α -D-mannofuranosyl)-2,3-*O*-isopropylidene- β -D-ribofuranoside, M-33
Methyl 2,3,4,6-di-*O*-isopropylidene- α -D-mannopyranoside, M-200
Methyl 2,3-di-*O*-isopropylidene-5-*O*-methyl- α -D-mannofuranoside, I-71
Methyl 2,3,4,6-di-*O*-isopropylidene-5-thio- α -L-idopyranoside, T-76
Methyl 2,3,4,6-di-*O*-isopropylidene-5-thio- β -L-idopyranoside, T-76
Methyl 3,4,5,6-di-*O*-isopropylidene-2-*O*-tosyl-D-gluconate, G-250
Methyl 2,3-di-*O*-mesyl-4,6-di-*O*-methyl- α -D-mannopyranoside, D-753
Methyl 2,3-di-*O*-mesyl- α -D-mannopyranoside, M-204
Methyl 2,3-di-*O*-mesyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 2,3-di-*O*-mesyl-5-*O*-trityl- α -D-xylofuranoside, M-216
Methyl 2,3-di-*O*-mesyl-5-*O*-trityl- β -D-xylofuranoside, M-216
Methyl dimethoxyacetate, G-559
Methyl 4-(dimethylamino)-2,3,4,6-tetraideoxy- α -D-*threo*-hexopyranoside, D-725
Methyl 3-(dimethylamino)-2,3,6-trideoxy- α -D-*arabino*-hexopyranoside, D-726
Methyl 3-(dimethylamino)-2,3,6-trideoxy- β -D-*arabino*-hexopyranoside, D-726
Methyl 3,4-di-*O*-methyl- β -L-arabinopyranoside, M-153
Methyl 3,4-di-*O*-methyl-1,6-di-*O*-tosyl- α -D-fructofuranoside, M-181
Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- β -D-galactopyranoside, D-737
Methyl 3,6-di-*O*-methyl-2,4-di-*O*-tosyl- β -D-glucopyranoside, D-743
Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- α -D-glucopyranoside, D-744
Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- β -D-glucopyranoside, D-744
Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- α -D-mannopyranoside, D-753
Methyl 2,3,4,5-di-*O*-methylene-D-arabinonate, A-825
Methyl 2,4,3,5-di-*O*-methylene-D-arabinonate, A-825
Methyl 2,5,3,4-di-*O*-methylene-D-arabinonate, A-825
Methyl 2,3,5,6-di-*O*-methylene- α -D-mannofuranoside, M-203
Methyl 2,3,4,6-di-*O*-methylene- α -D-mannopyranoside, M-204
Methyl 3,4-di-*O*-methyl- α -L-fucopyranoside, M-183
Methyl 2,3-di-*O*-methyl- β -D-galactofuranosiduronamide, M-188
Methyl 2,3-di-*O*-methyl- α -D-galactopyranoside, D-732
Methyl 2,3-di-*O*-methyl- β -D-galactopyranoside, D-732
Methyl 2,4-di-*O*-methyl- α -D-galactopyranoside, D-733
Methyl 2,4-di-*O*-methyl- β -D-galactopyranoside, D-733
Methyl 2,6-di-*O*-methyl- β -D-galactopyranoside, D-734
Methyl 3,4-di-*O*-methyl- β -D-galactopyranoside, D-735
Methyl 3,6-di-*O*-methyl- β -D-galactopyranoside, D-736
Methyl 4,6-di-*O*-methyl- β -D-galactopyranoside, D-737
Methyl 3,4-di-*O*-methyl- α -D-galactopyranosiduronamide, M-188
Methyl 3,4-di-*O*-methyl- α -D-galactopyranosiduronic acid, M-187
Methyl 2,5-di-*O*-methyl- α -D-glucofuranosiduronamide, G-537
Methyl 2,5-di-*O*-methyl- β -D-glucofuranosiduronamide, G-537
Methyl 2,5-di-*O*-methyl- α -D-glucofuranosidurono-6,3-lactone, G-539
Methyl 2,5-di-*O*-methyl- β -D-glucofuranosidurono-6,3-lactone, G-539
Methyl 2,3-di-*O*-methylglucopyranoside 4,6-cyclic phosphonate, M-175
Methyl 2,3-di-*O*-methylglucopyranoside 4,6-cyclic phosphonothioate, M-176
Methyl 2,3-di-*O*-methyl- α -D-glucopyranoside, D-738
Methyl 2,3-di-*O*-methyl- β -D-glucopyranoside, D-738
Methyl 2,4-di-*O*-methyl- β -D-glucopyranoside, D-739
Methyl 2,6-di-*O*-methyl- α -D-glucopyranoside, D-740
Methyl 2,6-di-*O*-methyl- β -D-glucopyranoside, D-740
Methyl 3,4-di-*O*-methyl- α -D-glucopyranoside, D-741
Methyl 3,4-di-*O*-methyl- β -D-glucopyranoside, D-741
Methyl 3,6-di-*O*-methyl- β -D-glucopyranoside, D-743
Methyl 4,6-di-*O*-methyl- α -D-glucopyranoside, D-744
Methyl 4,6-di-*O*-methyl- β -D-glucopyranoside, D-744
Methyl 3,4-di-*O*-methyl- α -D-glucopyranosiduronamide, G-537
Methyl 2,6-di-*O*-methyl- α -D-mannofuranoside, M-203
Methyl 3,5-di-*O*-methyl- α -D-mannofuranoside, M-203
Methyl 5,6-di-*O*-methyl- α -D-mannofuranoside, M-203
Methyl 2,3-di-*O*-methyl- α -D-mannopyranoside, D-748
Methyl 2,4-di-*O*-methyl- α -D-mannopyranoside, D-749
Methyl 3,4-di-*O*-methyl- α -D-mannopyranoside, D-751
Methyl 4,6-di-*O*-methyl- α -D-mannopyranoside, D-753
Methyl 2,2-dimethyl- β -oxo-1,3-dioxolane-4-propanoic acid, D-704
Methyl 2,3-di-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 2,4-di-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 3,4-di-*O*-methyl- β -L-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-methyl-4-thioglucofuranoside 4,6-cyclic phosphonate, M-177
Methyl 2,3-di-*O*-methyl-6-thioglucofuranoside 4,6-cyclic phosphonate, M-178
Methyl 2,3-di-*O*-methyl-4-thioglucofuranoside 4,6-cyclic phosphonothioate, M-179

- Methyl 2,3-di-*O*-methyl-4-*O*-tosyl- α -D-mannopyranoside, D-748
 Methyl 3,4-di-*O*-methyl-2-*O*-tosyl- α -D-mannopyranoside, D-751
 Methyl 2,3-di-*O*-methyl-4-*O*-tosyl- α -L-rhamnopyranoside, M-207
 Methyl 3,4-di-*O*-methyl-2-*O*-(2,3,4-tri-*O*-methyl- β -D-xylopyranosyl)- β -D-xylopyranoside, X-78
 Methyl 2,4-di-*O*-methyl-3-*O*-(2,3,4-tri-*O*-methyl- β -D-xylopyranosyl)- β -D-xylopyranoside, X-79
 Methyl 2,3-di-*O*-methyl-4-*O*-(2,3,4-tri-*O*-methyl- β -D-xylopyranosyl)- β -D-xylopyranoside, X-80
 Methyl 3,4-di-*O*-methyl-6-*O*-trityl- α -D-fructofuranoside, M-181
 Methyl 3,4-di-*O*-methyl-6-*O*-trityl- β -D-glucopyranoside, D-741
 Methyl 2,3-di-*O*-methyl-6-*O*-trityl- α -D-xylo-hexopyranosid-4-ulose, H-104
 Methyl 2,3-di-*O*-methyl-6-*O*-trityl- β -D-xylo-hexopyranosid-4-ulose, H-104
 Methyl 2,3-di-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 3,4-di-*O*-tosyl- α -L-arabinopyranoside, M-153
 Methyl 2,3-di-*O*-tosyl- β -L-arabinopyranoside, M-153
 Methyl 2,4-di-*O*-tosyl- β -L-arabinopyranoside, M-153
 Methyl 2,6-di-*O*-tosyl- α -D-galactopyranoside, M-185
 Methyl 3,6-di-*O*-tosyl- α -D-galactopyranoside, M-185
 Methyl 2,3-di-*O*-tosyl- α -D-glucopyranoside, M-190
 Methyl 2,4-di-*O*-tosyl- α -D-glucopyranoside, M-190
 Methyl 2,6-di-*O*-tosyl- α -D-glucopyranoside, M-190
 Methyl 2,3-di-*O*-tosyl- β -D-lyxofuranoside, M-201
 Methyl 2,3-di-*O*-tosyl- α -D-mannopyranoside, M-204
 Methyl 2,6-di-*O*-tosyl- α -D-mannopyranoside, M-204
 Methyl 3,6-di-*O*-tosyl- α -D-mannopyranoside, M-204
 Methyl 2,6-di-*O*-trityl- β -D-galactopyranoside, M-186
 α -Methyl dredehongbionide, M-171
 Methyl α -dredehongbionide, D-774
 Methyl 5-ethenyl-2,2-dimethyl-1,3-dioxolane-4-carboxylate, D-708
 Methyl (ethyl 2,3,4-tri-*O*-benzyl-1-thio- β -D-glucopyranosid)uronate, T-75
 Methyl 3,4-*O*-ethylidene- β -L-arabinopyranoside, M-153
 Methyl 4,6-*O*-ethylidene-2,3-di-*O*-methyl- β -D-galactopyranoside, M-186
 Methyl 4,6-*O*-ethylidene-2,3-di-*O*-methyl- α -D-mannopyranoside, M-180
 Methyl 4,6-*O*-ethylidene-2,3-di-*O*-tosyl- α -D-glucopyranoside, M-190
 Methyl 4,6-*O*-ethylidene-2,3-di-*O*-tosyl- α -D-mannopyranoside, M-180
 Methyl 4,6-*O*-ethylidene- α -D-galactopyranoside, M-185
 Methyl 3,4-*O*-ethylidene- β -D-galactopyranoside, M-186
 Methyl 4,6-*O*-ethylidene- α -D-glucopyranoside, M-190
 Methyl 4,6-*O*-ethylidenemannopyranoside, M-180
 Methyl 4,6-*O*-ethylidene-2-*O*-methyl- α -D-altropyranoside, M-149
 Methyl 4,6-*O*-ethylidene-2-*O*-methyl- α -D-*arabino*-hexopyranosid-3-ulose, H-95
 Methyl 4,6-*O*-ethylidene-2-*O*-tosyl- α -D-glucopyranoside, M-190
 Methyl 4,6-*O*-ethylidene-3-*O*-tosyl- α -D-glucopyranoside, M-190
 Methyl 4,6-*O*-ethylidene-2-*O*-tosyl- β -D-glucopyranoside, M-191
 Methyl 4,6-*O*-ethylidene-2-*O*-tosyl- α -D-mannopyranoside, M-180
 Methyl 4,6-*O*-ethylidene-3-*O*-tosyl- α -D-mannopyranoside, M-180
 Methyl eurenkate, A-15
 Methyl α -L-evalopyranoside, D-308
 Methyl α -D-evaloside, D-308
 Methyl 2-*C*-formyl-3,4-*O*-isopropylidene- β -D-ribopyranoside, F-23
 Methyl α -D-forosaminide, A-449
 Methyl fructofuranoside, M-181
 Methyl fructopyranoside, M-182
 Methyl α -D-fucofuranoside, F-163
 Methyl β -D-fucofuranoside, F-163
 Methyl α -L-fucofuranoside, F-163
 Methyl fucopyranoside, M-183
 Methyl 2-*O*- α -L-fucopyranosyl- α -L-fucopyranoside, F-113
 Methyl 2-*O*- α -L-fucopyranosyl- β -L-fucopyranoside, F-113
 Methyl 2-*O*- β -L-fucopyranosyl- α -L-fucopyranoside, F-116
 Methyl 2-*O*- β -L-fucopyranosyl- β -L-fucopyranoside, F-116
 Methyl 3-*O*- α -D-fucopyranosyl- α -D-galactopyranoside, F-136
 Methyl 2-*O*- α -L-fucopyranosyl- α -D-galactopyranoside, F-137
 Methyl 2-*O*- α -L-fucopyranosyl- β -D-galactopyranoside, F-137
 Methyl 3-*O*- α -L-fucopyranosyl- α -D-galactopyranoside, F-138
 Methyl 4-*O*- α -L-fucopyranosyl- α -D-galactopyranoside, F-139
 Methyl 6-*O*- α -L-fucopyranosyl- α -D-galactopyranoside, F-140
 Methyl 4-*O*- β -L-fucopyranosyl- α -D-galactopyranoside, F-142
 Methyl 6-*O*- β -L-fucopyranosyl- α -D-galactopyranoside, F-143
 Methyl 3-*O*- α -D-fucopyranosyl- α -D-mannopyranoside, F-158
 Methyl galactofuranoside, M-184
 Methyl 2-*O*- β -D-galactofuranosyl- β -D-galactofuranoside, G-13
 Methyl 3-*O*- β -D-galactofuranosyl- β -D-galactofuranoside, G-14
 Methyl 3-*O*- β -D-galactofuranosyl- α -D-mannopyranoside, G-20
 Methyl 6-*O*- β -D-galactofuranosyl- α -D-mannopyranoside, G-21
 Methyl α -D-galactopyranoside, M-185
 Methyl β -D-galactopyranoside, M-186
 Methyl α -D-galactopyranosiduronamide, M-188
 Methyl galactopyranosiduronic acid, M-187
 Methyl D-galactopyranosuronate, G-210
 Methyl 4-*O*- α -D-galactopyranosyl- β -D-allopyranoside, G-38
 Methyl 2-*O*- β -D-galactopyranosyl- α -D-allopyranoside, G-39
 Methyl 3-*O*- α -D-galactopyranosyl- α -D-galactopyranoside, G-117
 Methyl 3-*O*- α -D-galactopyranosyl- β -D-galactopyranoside, G-117
 Methyl 4-*O*- β -D-galactopyranosyl- α -D-mannopyranoside, G-164
 Methyl galactosiduronamide, M-188
 Methyl galactouronic acid, M-187
 Methyl β -garosamide, G-217
 Methyl α -gentiobionide, G-410
 Methyl β -gentiobionide, G-410
 Methyl α -gentosaminide, D-294
 Methyl β -gentosaminide, D-294
 Methyl α -glucobionide, G-236
 Methyl β -glucobionide, G-236
 Methyl α -D-glucofuranoside 5,6-carbonate, M-189
 Methyl β -D-glucofuranoside 5,6-carbonate, M-189
 Methyl glucofuranoside, M-189
 Methyl α -D-glucofuranosiduronono-6,3-lactone, G-539
 Methyl β -D-glucofuranosiduronono-6,3-lactone, G-539
 Methyl D-*glycero*- α -L-glucuheptopyranoside, H-41
 Methyl α -L-glucopyranoside, G-514
 Methyl α -D-glucopyranoside, M-190
 Methyl β -D-glucopyranoside, M-191
 Methyl β -D-glucopyranosiduronamide, G-537
 Methyl glucopyranosiduronic acid, M-192
 Methyl 2-*O*- β -D-glucopyranosyl- α -D-allopyranoside, G-277
 Methyl 4-*O*- β -D-glucopyranosyl- β -D-allopyranoside, G-278
 Methyl 2-*O*- β -D-glucopyranosyl- α -L-arabinofuranoside, G-288
 Methyl 2-*O*- β -D-glucopyranosyl- β -L-arabinofuranoside, G-288
 Methyl 5-*O*- β -D-glucopyranosyl- α -L-arabinofuranoside, G-289
 Methyl 5-*O*- β -D-glucopyranosyl- β -L-arabinofuranoside, G-289
 Methyl 2-*O*- β -D-glucopyranosyl- α -L-arabinopyranoside, G-288
 Methyl 2-*O*- β -D-glucopyranosyl- β -L-arabinopyranoside, G-288
 Methyl 2-*O*- α -D-glucopyranosyl- β -D-galactopyranoside, G-309
 Methyl 3-*O*- α -D-glucopyranosyl- β -D-galactopyranoside, G-310
 Methyl 4-*O*- α -D-glucopyranosyl- α -D-galactopyranoside, G-311
 Methyl 2-*O*- β -D-glucopyranosyl- β -D-galactopyranoside, G-313
 Methyl 2-*O*- β -D-glucopyranosyl- α -D-glucopyranoside, G-407
 Methyl 3-*O*- β -D-glucopyranosyl- β -D-glucopyranoside, G-408
 Methyl 4-*O*- β -D-glucopyranosyl- α -D-glucopyranoside, C-38
 Methyl 4-*O*- β -D-glucopyranosyl- β -D-glucopyranoside, C-38
 Methyl 5-*O*- β -D-glucopyranosyl-2,3-*O*-isopropylidene- β -D-ribofuranose, G-462
 Methyl 4-*O*- β -D-glucopyranosyl-1-thio- β -D-glucopyranoside, T-60
 Methyl 4-*S*- α -D-glucopyranosyl-4-thio- α -D-glucopyranoside, T-81
 Methyl 4-*S*- α -D-glucopyranosyl-4-thio- β -D-glucopyranoside, T-81
 Methyl glucopyranuronate, G-538
 Methyl glucosamine, M-150
 Methyl α -D-glucoseptanoside, G-528
 Methyl β -D-glucoseptanoside, G-528
 Methyl glucosinolate, M-193
 Methyl glucuronate, G-538
 Methyl 2-*O*- β -D-glycopyranosyl-D-xylopyranoside, G-474
 Methyl glyoxylate, G-559
 Methyl α -L-gulofuranosiduronic acid γ -lactone, G-590
 Methyl β -L-gulofuranosiduronic acid γ -lactone, G-590
 Methyl α -L-gulofuranosiduronono-6,3-lactone, G-590
 Methyl β -L-gulofuranosiduronono-6,3-lactone, G-590
 Methyl gulopyranoside, M-194
 Methyl gulopyranosiduronic acid, M-195
 Methyl hepta-*O*-acetyl- α -D-galactopyranosyl- β -D-glucopyranoside, G-145
 Methyl hepta-*O*-acetyl- α -gentiobionide, G-410
 Methyl hepta-*O*-acetyl- β -gentiobionide, G-410
 Methyl 2,3,4,5,6,7,8-hepta-*O*-acetyl-D-*erythro*-L-*gluco*-octonoate, O-11
 Methyl 2,3,4,5,6,7,8-hepta-*O*-acetyl-D-*erythro*-L-*manno*-octonoate, O-12
 Methyl hepta-*O*-acetyl- β -turanyranoside, T-201
 Methyl hepta-*O*-benzoyl- α -D-galactopyranosyl- β -D-glucopyranoside, G-145
 Methyl hepta-*O*-methyl- α -D-galactopyranosyl- α -D-glucopyranoside, G-145
 Methyl hepta-*O*-methyl- α -D-galactopyranosyl- β -D-glucopyranoside, G-145
 Methyl D-*glycero*-D-*gulo*- α -heptofuranoside, H-43
 Methyl D-*glycero*- α -D-*manno*-heptofuranoside, H-48
 Methyl L-*glycero*- α -D-*manno*-heptofuranoside, H-50
 Methyl D-*glycero*-D-*galacto*- α -heptopyranoside, H-36
 Methyl D-*glycero*- β -D-*galacto*-heptopyranoside, H-36
 Methyl D-*glycero*- β -L-*gluco*-heptopyranoside, H-41
 Methyl L-*glycero*- α -D-*gluco*-heptopyranoside, H-42
 Methyl D-*glycero*-D-*gulo*- α -heptopyranoside, H-43
 Methyl D-*glycero*-D-*gulo*- β -heptopyranoside, H-43
 Methyl β -D-*glycero*-L-*manno*-heptopyranoside, H-49
 Methyl D-*glycero*- α -D-*talo*-heptopyranoside, H-51
 Methyl D-*glycero*- β -D-*talo*-heptopyranoside, H-51
 Methyl α -D-*gluco*-2-heptulopyranoside, H-59
 Methyl α -D-*manno*-2-heptulopyranoside, H-62

Methyl 6-*O*-(*N*-heptylcarbonyl)- α -D-glucopyranoside, M-196
Methyl 2,3,4,6,7,8-hexa-*O*-acetyl-D-*glycero*- α -D-*tal*-oct-2-ulofuranosonate, O-27
Methyl 2,3,4,6,7,8-hexa-*O*-acetyl-D-*glycero*- β -D-*tal*-oct-2-ulofuranosonate, O-27
Methyl 2,3,4,5,7,8-hexa-*O*-acetyl-D-*glycero*- α -D-*tal*-oct-2-ulopyranosonate, O-27
Methyl α -D-*galacto*-hexodialdo-1,5-pyranoside, H-84
Methyl β -D-*galacto*-hexodialdo-1,5-pyranoside, H-84
Methyl α -D-*gluco*-hexodialdopyranoside, H-85
Methyl β -D-*gluco*-hexodialdopyranoside, H-85
Methyl α -L-*gluco*-hexodialdopyranoside, H-85
Methyl β -L-*gluco*-hexodialdopyranoside, H-85
Methyl α -D-*xylo*-hexopyranosid-4-ulose *O*-methyloxime, H-104
Methyl α -D-*arabino*-hexopyranosid-2-ulose, H-94
Methyl β -D-*xylo*-hexopyranosid-4-ulose, H-104
Methyl α -D-*ribo*-hexopyranos-3-uloside, H-101
Methyl D-*arabino*-hex-2-ulosonate, H-111
Methyl 3-*O*-(4-hydroxycinnamoyl)glycerate, D-709
Methyl 4-*C*-(hydroxymethyl)-2,3-*O*-isopropylidene- β -D-*erythro*-pentofuranoside, H-172
Methyl 2-*C*-hydroxymethyl-2,3-*O*-isopropylidene- β -D-ribofuranoside, H-181
Methyl 2-*C*-hydroxymethyl-3,4-*O*-isopropylidene- β -D-ribofuranoside, H-181
Methyl 2-*C*-hydroxymethyl- β -D-ribofuranoside, H-181
Methyl α -D-idopyranoside, I-9
Methyl β -D-idopyranoside, I-9
Methyl α -L-idopyranoside, I-9
Methyl β -L-idopyranoside, I-9
Methyl (β -L-idopyranosid)uronate, I-12
Methyl β -L-idoseptanoside, I-10
Methyl β -isomaltoside, G-406
Methyl 1,2-*O*-isopropylidene- α -D-xylofuranuronate, X-91
Methyl 2,3-*O*-isopropylidene- α -D-allofuranoside, M-148
Methyl 2,3-*O*-isopropylidene- β -L-allofuranoside, M-148
Methyl 3,4-*O*-isopropylidene- α -D-altropyranoside, M-149
Methyl 4,6-*O*-isopropylidene- α -D-altropyranoside, M-149
Methyl 1,2-*O*-isopropylidene-D-arabinofuranuronate, A-855
Methyl 3,4-*O*-isopropylidene- α -D-arabinopyranoside, M-153
Methyl 3,4-*O*-isopropylidene- β -D-arabinopyranoside, M-153
Methyl 3,4-*O*-isopropylidene-arabinopyranoside, M-197
Methyl 2,3-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-mannofuranoside, I-71
Methyl 2,3-*O*-isopropylidene-1,6-di-*O*-mesyl- α -L-mannofuranoside, M-203
Methyl 2,3-*O*-isopropylidene-4,6-di-*O*-mesyl- α -D-mannopyranoside, M-200
Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-methyl- α -D-galactopyranoside, D-734
Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-methyl- β -D-galactopyranoside, D-734
Methyl 4,6-*O*-isopropylidene-2,3-di-*O*-methyl- α -D-glucopyranoside, D-738
Methyl 2,3-*O*-isopropylidene-4,6-di-*O*-methyl- α -D-mannopyranoside, M-200
Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-tosyl- α -D-allopyranoside, M-148
Methyl 3,4-*O*-isopropylidene-fucopyranoside, M-198
Methyl 5,6-*O*-isopropylidene- α -D-galactofuranoside, M-184
Methyl 5,6-*O*-isopropylidene- β -D-galactofuranoside, M-184
Methyl 3,4-*O*-isopropylidene- α -D-galactopyranoside, M-185
Methyl 3,4-*O*-isopropylidene- β -D-galactopyranoside, M-186
Methyl 4,6-*O*-isopropylidene- β -D-galactopyranoside, M-186
Methyl 3,4-*O*-isopropylidene- α -D-galactopyranosiduronamide, M-188
Methyl 4,6-*O*-isopropylidene-glucopyranoside, M-199
Methyl 2,3-*O*-isopropylidene- α -D-glucoseptanoside, G-528
Methyl 3,4-*O*-isopropylidene- α -D-glucoseptanoside, G-528
Methyl 4,5-*O*-isopropylidene- α -D-glucoseptanoside, G-528
Methyl 2,3-*O*-isopropylidene- β -D-gulofuranoside, G-587
Methyl 2,3-*O*-isopropylidene- β -L-gulofuranoside, G-587
Methyl 4,6-*O*-isopropylidene- α -D-gulopyranoside, M-194
Methyl 3,4-*O*-isopropylidene- β -L-idoseptanoside, I-10
Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3-*O*-isopropylidene- α -D-ribofuranosyl)- β -D-ribofuranoside, R-119
Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3-*O*-isopropylidene- β -D-ribofuranosyl)- β -D-ribofuranoside, R-121
Methyl 2,3-*O*-isopropylidene- β -D-lyxofuranoside, I-70
Methyl 2,3-*O*-isopropylidene-L-lyxopyranoside, I-70
Methyl 2,3-*O*-isopropylidene- α -D-lyxopyranoside, M-202
Methyl 2,3-*O*-isopropylidene- α -D-mannofuranoside, I-71
Methyl 2,3-*O*-isopropylidene-mannopyranoside, M-200
Methyl 3,4-*O*-isopropylidene-2-*O*-mesyl- α -D-arabinopyranoside, M-153
Methyl 3,4-*O*-isopropylidene-2-*O*-mesyl- β -D-arabinopyranoside, M-153
Methyl 2,3-*O*-isopropylidene-6-*O*-mesyl- α -D-*lyxo*-hexopyranosid-4-ulose, H-99
Methyl 2,3-*O*-isopropylidene-5-*O*-mesyl- α -D-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-4-*O*-mesyl- α -D-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene-4-*O*-mesyl- α -L-rhamnopyranoside, M-207
Methyl 3,5-*O*-isopropylidene-2-*O*-mesyl- α -D-xylofuranoside, M-216
Methyl 2,3-*O*-isopropylidene-6-*O*-methyl- β -L-allofuranoside, M-148
Methyl 2,3-*O*-isopropylidene-3'-methyl-D-apio- β -D-furanoside, A-785
Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -D-arabinopyranoside, M-153

Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -L-arabinopyranoside, M-197
Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- α -D-galactopyranoside, M-249
Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -D-galactopyranoside, M-249
Methyl 2,3-*O*-isopropylidene-6-*O*-methyl- α -D-*lyxo*-hexopyranosid-4-ulose, H-99
Methyl 2,3-*O*-isopropylidene-4-*O*-methyl- α -D-lyxopyranoside, M-202
Methyl 2,3-*O*-isopropylidene-6-*O*-methyl- α -D-mannopyranoside, M-200
Methyl 2,3-*O*-isopropylidene-5-*O*-methyl- α -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-5-*O*-methyl- β -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-4-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -D-ribofuranoside, M-209
Methyl 3,4-*O*-isopropylidene-2-*O*-methyl-1-thio- β -L-fucopyranoside, T-63
Methyl 2,3-*O*-isopropylidene-5-*S*-methyl-5-thio- β -D-ribofuranoside, T-91
Methyl 2,3-*O*-isopropylidene-6-*O*-methyl-5-*O*-tosyl- β -L-allofuranoside, M-148
Methyl 3,5-*O*-isopropylidene-2-*O*-methyl- α -D-xylofuranoside, M-216
Methyl 3,5-*O*-isopropylidene-2-*O*-methyl- β -D-xylofuranoside, M-216
Methyl 2,3-*O*-isopropylidene- β -D-*ribo*-pentodialdo-1,4-furanoside, P-35
Methyl 3,5-*O*-isopropylidene- β -D-*threo*-pentofuranoside, P-45
Methyl 3,5-*O*-isopropylidene- α -D-*threo*-pentofuranosid-2-ulose, P-45
Methyl 3,4-*O*-isopropylidene- β -D-*erythro*-pentopyranosid-2-ulose, P-42
Methyl 3,4-*O*-isopropylidene- α -L-*erythro*-pentopyranosid-2-ulose, P-42
Methyl 3,4-*O*-isopropylidene- β -L-*erythro*-pentopyranosid-2-ulose, P-42
Methyl 2,3-*O*-isopropylidene- β -L-*erythro*-pentopyranosid-4-ulose, P-44
Methyl 2,3-*O*-isopropylidene- β -DL-*erythro*-pentopyranosid-4-ulose, P-44
Methyl 2,3-*O*-isopropylidene- α -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene- α -D-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene- α -L-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene- β -D-ribofuranoside, I-74
Methyl 2,3-*O*-isopropylidene- β -L-ribofuranoside, I-74
Methyl 2,3-*O*-isopropylidene-5-*O*- α -D-ribofuranosyl- β -D-ribofuranoside, R-119
Methyl 1,2-*O*-isopropylidene- α -D-ribofuranuronate, R-146
Methyl 2,3-*O*-isopropylidene- β -D-ribofuranuronate, R-146
Methyl 2,3-*O*-isopropylidene- β -D-ribofuranuronoside, R-146
Methyl 2,3-*O*-isopropylidene- β -D-ribofuranoside, M-209
Methyl 3,4-*O*-isopropylidene- β -D-ribofuranoside, M-209
Methyl 3,4-*O*-isopropylidene- β -D-tagatopyranoside, T-2
Methyl 2,3-*O*-isopropylidene- α -L-talofuranoside, T-9
Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-ribofuranoside, G-462
Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3,4,6-tetra-*O*-benzyl- β -D-glucopyranosyl)- β -D-ribofuranoside, G-462
Methyl 3,4-*O*-isopropylidene-5-thio- α -D-altropyranoside, T-55
Methyl 3,4-*O*-isopropylidene-5-thio- β -D-arabinopyranoside, T-58
Methyl 3,4-*O*-isopropylidene-1-thio- β -L-fucopyranoside, T-63
Methyl 2,3-*O*-isopropylidene-1-thio- α -L-rhamnopyranoside, T-86
Methyl 2,3-*O*-isopropylidene-1-thio- β -L-rhamnopyranoside, T-86
Methyl 2,3-*O*-isopropylidene-5-thio- β -D-ribofuranoside, T-91
Methyl 2,3-*O*-isopropylidene-5-thio- β -D-ribofuranoside, T-91
Methyl 3,4-*O*-isopropylidene-5-thio- β -D-ribofuranoside, T-91
Methyl 2,3-*O*-isopropylidene-1-thio- β -D-xylopyranoside, T-98
Methyl 2,3-*O*-isopropylidene-L-threonate, T-161
Methyl 3,4-*O*-isopropylidene-L-threonate, T-161
Methyl 2,3-*O*-isopropylidene-D-threonate, T-161
Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-allopyranoside, M-148
Methyl 2,3-*O*-isopropylidene-1'-tosyl-D-apio- β -D-furanoside, A-785
Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- β -D-arabinopyranoside, M-153
Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- β -L-arabinopyranoside, M-197
Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- α -L-fucopyranoside, M-198
Methyl 3,4-*O*-isopropylidene-6-*O*-tosyl- β -D-galactopyranoside, M-186
Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-galactopyranosiduronamide, M-188
Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl-L-lyxopyranoside, I-70
Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl- α -D-lyxopyranoside, M-202
Methyl 2,3-*O*-isopropylidene-6-*O*-tosyl- α -D-mannofuranoside, I-71
Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl- α -D-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl- α -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl- β -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl- α -D-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl- α -L-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl- β -D-ribofuranoside, I-74
Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl- β -L-ribofuranoside, I-74
Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl- β -D-ribofuranoside, M-209
Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- β -D-ribofuranoside, M-209
Methyl 3,4-*O*-isopropylidene-6-*O*-trityl- α -D-galactopyranoside, M-185
Methyl 2,3-*O*-isopropylidene-6-*O*-trityl- α -D-mannopyranoside, M-200
Methyl 2,3-*O*-isopropylidene-5-*O*-trityl- β -D-ribofuranoside, I-74
Methyl 3,5-*O*-isopropylidene- α -D-xylofuranoside, M-216
Methyl 3,5-*O*-isopropylidene- β -D-xylofuranoside, M-216
Methyl α -D-lactopyranoside, L-13
Methyl β -D-lactopyranoside, L-13
Methyl lyxofuranoside, M-201

- Methyl lyxopyranoside, M-202
Methyl 3-*O*- α -D-lyxopyranosyl- α -D-mannopyranoside, L-71
Methyl L-lyxuronate, L-78
Methyl β -malamate, M-6
Methyl 6-*O*-malonyl- β -D-glucopyranoside, M-191
Methyl α -maltopyranoside, M-15
Methyl β -maltopyranoside, M-15
Methyl α -maltoside, G-406
Methyl mannofuranoside, M-203
Methyl D-mannonate, M-36
Methyl α -L-mannopyranoside, M-114
Methyl α -D-mannopyranoside, M-204
Methyl β -D-mannopyranoside, M-205
Methyl α -D-mannopyranosiduronamide, M-123
Methyl α -D-mannopyranosiduronic acid, M-123
Methyl α -D-mannopyranosidurono-6,3-lactone, M-123
Methyl 2-*O*- α -D-mannopyranosyl- α -D-glucopyranoside, M-61
Methyl 2-*O*- α -D-mannopyranosyl- β -D-glucopyranoside, M-61
Methyl 2-*O*- β -D-mannopyranosyl- β -D-glucopyranoside, M-65
Methyl 2-*O*- α -D-mannopyranosyl- α -D-mannopyranoside, M-92
Methyl 2-*O*- α -D-mannopyranosyl- β -D-mannopyranoside, M-92
Methyl 3-*O*- α -D-mannopyranosyl- α -D-mannopyranoside, M-93
Methyl 4-*O*- α -D-mannopyranosyl- α -D-mannopyranoside, M-94
Methyl 3-*O*- β -D-mannopyranosyl- α -D-mannopyranoside, M-97
Methyl 6-*O*- β -D-mannopyranosyl- α -D-mannopyranoside, M-99
Methyl β -melibioside, G-145
Methyl 4-*O*-mesyl-2,3-di-*O*-methyl- β -D-glucopyranosiduronic acid, M-192
Methyl 2-*O*-mesyl- β -D-glucofuranosiduronamide, G-537
Methyl 2-*O*-mesyl-3,4,6-tri-*O*-methyl- β -D-galactopyranoside, T-183
Methyl 2-*O*-mesyl- α -D-xylofuranoside, M-216
Methyl 3-*C*-(methoxymethyl)-2,3-di-*O*-methyl- α -D-erythro-tetrofuranoside, A-785
Methyl 3-*C*-(methoxymethyl)-2,3-di-*O*-methyl- β -D-erythro-tetrofuranoside, A-785
Methyl (methyl 5-acetamido-4,7,8,9-tetra-*O*-acetyl-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranosid)onate, A-20
Methyl (methyl 4-*O*-acetyl-2,3-di-*O*-methyl- β -D-glucopyranosid)uronate, M-192
Methyl (methyl 3-*O*-acetyl-4-*O*-(3,4,6-tri-*O*-acetyl- α -D-glucopyranosyl)- α -L-idopyranosid)uronate, G-416
Methyl (methyl 3-benzamido-2-*O*-benzoyl-3,4-dideoxy- α -D-xylo-hexopyranosid)uronate, A-401
Methyl (methyl 3-benzamido-2-*O*-benzoyl-3,4-dideoxy- β -D-xylo-hexopyranosid)uronate, A-401
Methyl (methyl 4-deoxy-2,3-di-*O*-methyl- α -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 4-deoxy-2,3-di-*O*-methyl- β -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 3-deoxy- β -D-arabino-heptulofuranosonate), D-168
Methyl (methyl 4-deoxy- α -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 4-deoxy- β -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 4-deoxy-2-*O*-methyl- β -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 3-deoxy-4,6,7-tri-*O*-methyl- β -D-arabino-heptulopyranosonate), D-168
Methyl (methyl 2,3-di-*O*-acetyl-4-deoxy- α -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 2,3-di-*O*-acetyl-4-deoxy- β -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 2,3-di-*O*-acetyl-4-*O*-mesyl- α -D-glucopyranosid)uronate, M-192
Methyl (methyl 2,3-di-*O*-benzoyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3-di-*O*-benzoyl-4-*O*-mesyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3-di-*O*-benzyl-4-deoxy- α -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 2,3-di-*O*-benzyl-4-deoxy- β -L-threo-hex-4-enopyranosid)uronate, D-179
Methyl (methyl 2,3-di-*O*-benzyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3-di-*O*-benzyl- β -L-idopyranosid)uronate, I-12
Methyl (methyl 2,3-di-*O*-benzyl-4-*O*-mesyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3-di-*O*-benzyl-4-*O*-mesyl- α -D-glucopyranosid)uronate, M-192
Methyl (methyl 4,5,7,8-di-*O*-isopropylidene-D-glycero- β -D-talo-oct-2-ulopyranosid)onate, O-27
Methyl (methyl 2,3-di-*O*-methyl- β -D-galactofuranosid)uronate, G-210
Methyl (methyl 3,4-di-*O*-methyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3-di-*O*-methyl- β -D-galactopyranosid)uronate, M-187
Methyl (methyl α -D-galactopyranosid)uronate, M-187
Methyl (methyl β -D-galactopyranosid)uronate, M-187
Methyl (methyl α -L-glucopyranosid)uronate, M-192
Methyl (methyl D-ribo-hexofuranosid)uronate, H-115
Methyl (methyl β -D-arabino-hex-2-ulopyranosid)onate, H-111
Methyl (methyl β -L-xylo-2-hexulopyranosid)onate, H-112
Methyl (methyl α -D-idopyranosid)uronate, I-12
Methyl (methyl β -D-idopyranosid)uronate, I-12
Methyl (methyl α -L-idopyranosid)uronate, I-12
Methyl (methyl 3,4-*O*-isopropylidene- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 3,4-*O*-isopropylidene- β -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3-*O*-isopropylidene- β -D-ribofuranosid)uronate, R-146
Methyl (methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl α -D-lyxofuranosid)uronate, L-78
Methyl (methyl α -L-lyxofuranosid)uronate, L-78
Methyl (methyl α -D-mannopyranosid)uronate, M-123
Methyl (methyl 2-*O*-methyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 4-*O*-methyl- α -D-glucopyranosid)uronate, M-192
Methyl (methyl 3,4,5,7,8-penta-*O*-acetyl-D-glycero- β -D-talo-oct-2-ulopyranosid)onate, O-27
Methyl (methyl 4,5,7,8-tetra-*O*-acetyl-3-deoxy- α -D-manno-oct-2-ulopyranosid)onate, D-329
Methyl (methyl 4,5,7,8-tetra-*O*-acetyl-3-deoxy- β -D-manno-oct-2-ulopyranosid)onate, D-329
Methyl (methyl 4,6,7,8-tetra-*O*-benzoyl-3-deoxy-D-manno-oct-2-ulofuranosid)onate, D-329
Methyl (methyl 4,5,7,8-tetra-*O*-benzoyl-3-deoxy-D-manno-oct-2-ulopyranosid)onate, D-329
Methyl (methyl 2-*O*-tosyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3,4-tri-*O*-acetyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3,4-tri-*O*-acetyl- β -D-glucopyranosid)uronate, M-192
Methyl (methyl 2,3,4-tri-*O*-acetyl- α -L-idopyranosid)uronate, I-12
Methyl (methyl 2,3,4-tri-*O*-acetyl- β -L-idopyranosid)uronate, I-12
Methyl (methyl 2,3,4-tri-*O*-benzoyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 4,6,7-tri-*O*-benzyl-3-deoxy- β -D-arabino-heptulopyranosonate), D-168
Methyl (methyl 2,3,5-tri-*O*-methyl- β -D-galactofuranosid)uronate, G-210
Methyl (methyl 2,3,4-tri-*O*-methyl- α -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3,4-tri-*O*-methyl- β -D-galactopyranosid)uronate, M-187
Methyl (methyl 2,3,4-tri-*O*-methyl- α -D-glucopyranosid)uronate, M-192
Methyl (methyl 2,3,4-tri-*O*-methyl- β -D-glucopyranosid)uronate, M-192
Methyl (methyl 2,3,4-tri-*O*-methyl- α -L-idopyranosid)uronate, I-12
Methyl (methyl 2,3,4-tri-*O*-methyl- α -D-mannopyranosid)uronate, M-123
Methyl 2-*O*-methyl- α -D-arabinofuranoside, M-152
Methyl 3-*O*-methyl- α -D-arabinofuranoside, M-152
Methyl 5-*O*-methyl- α -D-arabinofuranoside, M-152
Methyl 2-*O*-methyl- β -D-arabinofuranoside, M-152
Methyl (methyl-D-arabinofuranosid)uronate, A-855
Methyl 2-*O*-methyl- β -D-arabinopyranoside, M-153
Methyl 4-*O*-methyl- β -D-arabinopyranoside, M-153
Methyl 2-*O*-methyl- β -L-arabinopyranoside, M-153
Methyl 4-*O*-methyl- β -L-arabinopyranoside, M-153
Methyl 4-*O*-methyl- α -DL-arabinopyranoside, M-153
Methyl 2-*C*-methyl-D-arabinopyranoside, M-229
Methyl 2-*C*-methyl- β -L-arabinopyranoside, M-229
Methyl 3,4-*O*-methylene- α -D-galactopyranoside, M-185
Methyl 4,6-*O*-methylene- α -D-galactopyranoside, M-185
Methyl 4,6-*O*-methylene- α -D-glucopyranoside, M-190
Methyl 4,6-*O*-methylene- β -D-glucopyranoside, M-191
Methyl 4,6-*O*-methylene- α -D-mannopyranoside, M-204
Methyl 4,6-*O*-(1-methylethylidene)glucopyranoside, M-199
Methyl 1-*O*-methyl- α -D-fructopyranoside, M-182
Methyl 3-*O*-methyl- α -D-fucopyranoside, M-183
Methyl 2-*O*-methyl- α -L-fucopyranoside, M-183
Methyl 3-*O*-methyl- α -L-fucopyranoside, M-183
Methyl 4-*O*-methyl- α -L-fucopyranoside, M-183
Methyl 3-*O*-methyl- β -L-fucopyranoside, M-183
Methyl 3-*O*-methyl- β -D-galactofuranoside, M-250
Methyl 2-*O*-methyl- α -D-galactopyranoside, M-249
Methyl 2-*O*-methyl- β -D-galactopyranoside, M-249
Methyl 3-*O*-methyl- α -D-galactopyranoside, M-250
Methyl 3-*O*-methyl- β -D-galactopyranoside, M-250
Methyl 4-*O*-methyl- α -D-galactopyranoside, M-251
Methyl 4-*O*-methyl- β -D-galactopyranoside, M-251
Methyl 6-*O*-methyl- α -D-galactopyranoside, M-253
Methyl 6-*O*-methyl- β -D-galactopyranoside, M-253
Methyl 2-*O*-methyl- α -D-galactopyranosiduronamide, M-188
Methyl 2-*O*-methyl- α -D-glucopyranoside, M-255
Methyl 2-*O*-methyl- β -D-glucopyranoside, M-255
Methyl 3-*O*-methyl- α -D-glucopyranoside, M-256
Methyl 3-*O*-methyl- β -D-glucopyranoside, M-256
Methyl 4-*O*-methyl- α -D-glucopyranoside, M-257
Methyl 4-*O*-methyl- β -D-glucopyranoside, M-257
Methyl 6-*O*-methyl- α -D-glucopyranoside, M-259
Methyl 6-*O*-methyl- β -D-glucopyranoside, M-259
Methyl 4-*O*-methyl- α -D-glucopyranosiduronamide, G-537

- Methyl 4-*O*-methyl-β-D-glucopyranosiduronamide, G-537
Methyl 4-*O*-methyl-α-D-glucopyranosiduronic acid, M-192
Methyl 4-*C*-methyl-α-D-glucopyranosiduronic acid, M-260
Methyl 4-*O*-methyl-β-D-glucopyranosyl-(1 →4)-β-D-glucopyranoside, C-38
Methyl 3-*O*-methyl-β-D-*gluco*-hexodialdopyranoside, H-85
Methyl 2-*O*-methyl-α-D-lyxofuranoside, M-201
Methyl 3-*O*-methyl-α-D-mannopyranoside, M-271
Methyl 4-*O*-methyl-α-D-mannopyranoside, M-272
Methyl 6-*O*-methyl-α-D-mannopyranoside, M-274
Methyl (methyl-4-*O*-mesyl-2,3-di-*O*-methyl-β-D-glucopyranosid)uronate, M-192
Methyl 3-*C*-methyl-2-*O*-methyl-α-D-allopyranoside, M-224
Methyl 3-*C*-methyl-2-*O*-methyl-4,6-di-*O*-tosyl-α-D-allopyranoside, M-224
Methyl 5-*O*-methyl-2,3-*O*-methylene-α-D-mannofuranoside, M-203
Methyl 6-*O*-methyl-2,3-*O*-methylene-α-D-mannofuranoside, M-203
Methyl 3-*C*-methyl-2-*O*-methyl-6-*O*-tosyl-α-D-allopyranoside, M-224
Methyl 5-*O*-methyl-α-L-rhamnopyranoside, M-206
Methyl 2-*O*-methyl-α-D-rhamnopyranoside, M-207
Methyl 4-*O*-methyl-α-D-rhamnopyranoside, M-207
Methyl 2-*O*-methyl-α-L-rhamnopyranoside, M-207
Methyl 3-*O*-methyl-α-L-rhamnopyranoside, M-207
Methyl 4-*O*-methyl-α-L-rhamnopyranoside, M-207
Methyl 4-*O*-methyl-β-L-rhamnopyranoside, M-207
Methyl 2-*O*-methyl-β-D-ribofuranoside, M-208
Methyl 2-*C*-methyl-β-D-ribofuranoside, M-286
Methyl (methyl-β-D-ribofuranosid)uronate, R-146
Methyl 2-*O*-methyl-β-D-ribofuranoside, M-209
Methyl 2-*C*-methyl-β-L-ribofuranoside, M-286
Methyl 2-*O*-methyl-1-thio-β-L-fucopyranoside, T-63
Methyl 7-*O*-methyl-1-thio-α-lincosaminide, L-43
Methyl 7-*O*-methyl-1-thio-β-lincosaminide, L-43
Methyl 2-*O*-methyl-3-*O*-tosyl-α-D-altropyranoside, M-149
Methyl 3-*O*-methyl-6-*O*-trityl-β-D-galactofuranoside, M-250
Methyl 2-*O*-methyl-α-D-xylofuranoside, M-216
Methyl 3-*O*-methyl-α-D-xylofuranoside, M-216
Methyl 2-*O*-methyl-β-D-xylopyranoside, M-306
Methyl β-D-mycinoside, D-57
Methyl α-L-nogalioside, D-308
Methyl octa-*O*-methyl-D-lactonate, L-10
Methyl octa-*O*-methylmaltobionate, G-324
Methyl octa-*O*-methylmelibionate, M-132
Methyl α-pachybioside, P-1
Methyl β-pachybioside, P-1
Methyl (2,4,6,7,8-penta-*O*-acetyl-3-deoxy-D-*manno*-oct-2-ulofuranosid)-onate, D-329
Methyl 4,5,6,7,8-penta-*O*-acetyl-3-deoxy-D-*manno*-oct-2-ulopyranosonate, D-329
Methyl 2,4,5,7,8-penta-*O*-acetyl-3-deoxy-α-D-*manno*-2-octulopyranosonate, D-329
Methyl 2,3,4,5,6-penta-*O*-acetyl-D-glucuronate, G-250
Methyl 2,3,4,6,7-penta-*O*-acetyl-L-*glycero*-α-D-*galacto*-heptopyranoside, H-38
Methyl penta-*O*-acetyl-α-D-*manno*-2-heptulopyranoside, H-62
Methyl 2,3,4,5,7-penta-*O*-acetyl-α-*gluco*-2-heptulopyranosonate, H-64
Methyl 2,3,4,5,6-penta-*O*-acetyl-L-idonate, I-4
Methyl 2,3,4,5,6-penta-*O*-acetyl-D-mannonate, M-36
Methyl 2,3,4,5,6-penta-*O*-acetyl-L-mannonate, M-36
Methyl 2,3,4,6,7-penta-*O*-benzyl-L-*glycero*-β-D-*allo*-heptopyranoside, H-32
Methyl α-L-*threo*-pentopyranosid-4-ulose *O*-methylloxime, P-46
Methyl β-L-*threo*-pentopyranosid-4-ulose, P-46
Methyl α-D-*erythro*-pentopyranosid-3-ulose, P-43
Methyl β-D-*erythro*-pentopyranosid-3-ulose, P-43
Methyl α-L-*erythro*-2-pentulofuranoside, P-47
Methyl β-L-*erythro*-2-pentulofuranoside, P-47
Methyl α-D-*threo*-pentulofuranoside, P-48
Methyl β-D-*threo*-pentulofuranoside, P-48
Methyl (phenyl β-D-glucopyranosid)uronate, P-59
Methyl (phenyl 2,3,4-tri-*O*-acetyl-α-D-glucopyranosid)uronate, P-59
Methyl (phenyl 2,3,4-tri-*O*-acetyl-β-D-glucopyranosid)uronate, P-59
Methyl 4,6-*O*-(phenylmethylene)-α-D-galactopyranoside, M-162
Methyl 4,6-*O*-(phenylmethylene)-β-D-galactopyranoside, M-163
Methyl 4,6-*O*-(phenylmethylene)-β-D-glucopyranoside, M-165
Methyl 4,6-*O*-propylidene-α-D-glucopyranoside, M-190
Methyl pseudo-α-L-fucopyranoside, M-238
Methyl rhamnopyranoside, M-206
Methyl rhamnopyranoside, M-207
Methyl 5-*O*-α-L-rhamnopyranosyl-α-L-arabinofuranoside, R-19
Methyl 2-*O*-α-L-rhamnopyranosyl-α-L-arabinopyranoside, R-16
Methyl 2-*O*-α-L-rhamnopyranosyl-β-L-arabinopyranoside, R-16
Methyl 4-*O*-α-L-rhamnopyranosyl-β-L-arabinopyranoside, R-18
Methyl 2-*O*-β-L-rhamnopyranosyl-α-L-arabinopyranoside, R-20
Methyl 2-*O*-α-L-rhamnopyranosyl-β-D-galactopyranoside, R-26
Methyl 3-*O*-α-L-rhamnopyranosyl-β-D-galactopyranoside, R-27
Methyl 2-*O*-β-L-rhamnopyranosyl-β-D-galactopyranoside, R-29
Methyl 3-*O*-β-L-rhamnopyranosyl-β-D-galactopyranoside, R-30
Methyl 4-*O*-α-L-rhamnopyranosyl-α-D-glucopyranosiduronic acid, R-46
Methyl 3-*O*-(α-L-rhamnopyranosyl)-2-*O*-methyl-α-L-rhamnopyranoside, R-72
Methyl 3-*O*-α-L-rhamnopyranosyl-α-D-xylopyranoside, R-77
Methyl 4-*O*-α-L-rhamnopyranosyl-α-D-xylopyranoside, R-78
Methyl ribofuranoside, M-208
Methyl 4-ribofuranosyl-1*H*-pyrazole-3-carboxylate, M-141
Methyl 2-*O*-β-D-ribofuranosyl-β-D-ribofuranoside, R-120
Methyl D-ribonate, R-128
Methyl ribopyranoside, M-209
Methyl β-D-sophoropyranoside, G-407
Methyl sorboside, M-210
Methyl 2-*O*-sulfo-4-*O*-(2'-*O*-sulfo-α-D-glucopyranosyl)-α-L-idopyranosiduronic acid, G-416
Methyl α-D-tagatopyranoside, T-2
Methyl α-L-tagatopyranoside, T-2
Methyl α-D-talofuranoside, T-9
Methyl β-D-talofuranoside, T-9
Methyl α-D-talopyranoside, T-9
Methyl β-D-talopyranoside, T-9
Methyl 2,3,4,6-tetraacetamido-2,3,4,6-tetra-deoxy-α-D-idopyranoside, T-20
Methyl 2,3,4,6-tetra-*O*-acetyl-α-D-allopyranoside, M-148
Methyl 2,3,4,5-tetra-*O*-acetyl-β-D-alloseptanoside, A-87
Methyl 2,3,4,6-tetra-*O*-acetyl-α-D-altropyranoside, M-149
Methyl 2,3,4,6-tetra-*O*-acetyl-β-D-altropyranoside, M-149
Methyl 1,2,3,4-tetra-*O*-acetyl-5-bromo-β-D-glucopyranuronate, B-117
Methyl 2,3,4,7-tetra-*O*-acetyl-6-deoxy-α-D-*altro*-heptopyranoside, D-156
Methyl 2,3,4,7-tetra-*O*-acetyl-6-deoxy-α-D-*manno*-heptopyranoside, D-164
Methyl 2,3,4,7-tetra-*O*-acetyl-6-deoxy-α-D-*talo*-heptopyranoside, D-165
Methyl 3,4,5,6-tetra-*O*-acetyl-2-deoxy-D-*arabino*-hexonate, D-187
Methyl 1,3,4,6-tetra-*O*-acetyl-α-D-fructofuranoside, M-181
Methyl 1,3,4,5-tetra-*O*-acetyl-α-D-fructopyranoside, M-182
Methyl 1,3,4,5-tetra-*O*-acetyl-β-D-fructopyranoside, M-182
Methyl 2,3,4,6-tetra-*O*-acetyl-α-D-galactopyranoside, M-185
Methyl 2,3,4,6-tetra-*O*-acetyl-β-D-galactopyranoside, M-186
Methyl 2,3,4,5-tetra-*O*-acetyl-α-D-galactoseptanoside, G-203
Methyl 2,3,4,5-tetra-*O*-acetyl-β-D-galactoseptanoside, G-203
Methyl 2,3,4,6-tetra-*O*-acetyl-D-glucuronate, G-250
Methyl 2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranoside, M-190
Methyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, M-191
Methyl 2-*O*-(2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranosyl)-3,4,6-tri-*O*-acetyl-α-D-allopyranoside, G-277
Methyl 4-*O*-(2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranosyl)-2,3,6-tri-*O*-acetyl-α-D-mannopyranoside, G-432
Methyl 1,2,3,4-tetra-*O*-acetyl-α-D-glucopyranuronate, G-538
Methyl 1,2,3,4-tetra-*O*-acetyl-β-D-glucopyranuronate, G-538
Methyl 2,3,4,5-tetra-*O*-acetyl-α-D-glucoseptanoside, G-528
Methyl 2,3,4,5-tetra-*O*-acetyl-β-D-glucoseptanoside, G-528
Methyl 2,3,4,6-tetra-*O*-acetyl-α-D-gulopyranoside, M-194
Methyl 2,3,4,6-tetra-*O*-acetyl-β-D-gulopyranoside, M-194
Methyl 2,3,4,6-tetra-*O*-acetyl-α-L-gulopyranoside, M-194
Methyl 3,4,5,6-tetra-*O*-acetyl-D-*arabino*-hex-2-ulosonate, H-111
Methyl 2,3,4,6-tetra-*O*-acetyl-D-*xylo*-hex-5-ulosonate, H-113
Methyl 2,3,4,6-tetra-*O*-acetyl-α-D-idopyranoside, I-9
Methyl 1,2,3,4-tetra-*O*-acetyl-α-L-idopyranuronate, I-12
Methyl 1,2,3,4-tetra-*O*-acetyl-β-L-idopyranuronate, I-12
Methyl 2,3,4,5-tetra-*O*-acetyl-β-L-idoseptanoside, I-10
Methyl 2,3,4,5-tetra-*O*-acetyl-α-L-idoseptanoside, I-10
Methyl 2,3,4,5-tetra-*O*-acetyl-D-lyxonate, L-65
Methyl 2,3,5,6-tetra-*O*-acetyl-α-D-mannofuranoside, M-203
Methyl 2,3,4,6-tetra-*O*-acetyl-α-L-mannopyranoside, M-114
Methyl 2,3,4,6-tetra-*O*-acetyl-α-D-mannopyranoside, M-204
Methyl 2,3,4,6-tetra-*O*-acetyl-β-D-mannopyranoside, M-205
Methyl 3-*O*-(2,3,4,6-tetra-*O*-acetyl-α-D-mannopyranosyl)-α-D-mannopyranoside, M-93
Methyl 4,5,7,8-tetra-*O*-acetyl-D-*glycero*-α-D-*talo*-oct-2-ulopyranosonate, O-27
Methyl 1,3,4,5-tetra-*O*-acetyl-α-D-tagatopyranoside, T-2
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio-α-D-allopyranoside, T-54
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio-β-D-allopyranoside, T-54
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio-α-D-altropyranoside, T-55
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio-β-D-altropyranoside, T-55
Methyl 1-*O*,3-*O*,4-*O*,5-*S*-tetra-*O*-acetyl-5-thio-β-D-fructopyranoside, T-61
Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-galactopyranoside, T-65
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio-α-D-galactopyranoside, T-66
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio-β-D-galactopyranoside, T-66
Methyl 2,3,4,5-tetra-*O*-acetyl-6-thio-β-D-galactoseptanoside, T-67
Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio-α-D-glucopyranoside, T-70
Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-glucopyranoside, T-70
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio-α-D-glucopyranoside, T-73

- Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- β -D-glucopyranoside, T-73
 Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- α -L-idopyranoside, T-76
 Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- β -L-idopyranoside, T-76
 Methyl 2,3,5,6-tetra-*O*-acetyl-4-thio- α -D-talofuranoside, T-93
 Methyl 1,3,4,6-tetra-*O*-benzoyl- α -D-fructofuranoside, M-181
 Methyl 1,3,4,5-tetra-*O*-benzoyl- α -D-fructopyranoside, M-182
 Methyl 1,2,3,4-tetra-*O*-benzoyl- β -D-fructopyranoside, M-182
 Methyl 2,3,5,6-tetra-*O*-benzoyl- β -D-galactofuranoside, M-184
 Methyl 2,3,4,6-tetra-*O*-benzoyl- α -D-gluconate, G-250
 Methyl 2,3,5,6-tetra-*O*-benzoyl- α -D-gluconate, G-250
 Methyl 2,3,4,6-tetra-*O*-benzoyl- α -D-glucopyranoside, M-190
 Methyl 2,3,4,6-tetra-*O*-benzoyl- β -D-glucopyranoside, M-191
 Methyl 2,3,4,5-tetra-*O*-benzoyl- β -L-idoseptanoside, I-10
 Methyl 2,3,4,6-tetra-*O*-benzoyl- α -D-mannopyranoside, M-204
 Methyl 1,3,4,5-tetra-*O*-benzoyl- α -L-sorbofuranoside, M-210
 Methyl 1,3,4,5-tetra-*O*-benzoyl- β -L-sorbofuranoside, M-210
 Methyl 1,3,4,5-tetra-*O*-benzoyl- α -L-sorbopyranoside, M-210
 Methyl 2,3,5,6-tetra-*O*-benzyl- α -D-galactofuranoside, M-184
 Methyl 2,3,5,6-tetra-*O*-benzyl- β -D-galactofuranoside, M-184
 Methyl 2,3,4,6-tetra-*O*-benzyl- β -D-galactopyranoside, T-21
 Methyl 2,3,4,6-tetra-*O*-benzyl- α -D-glucopyranoside, T-22
 Methyl 2,3,4,6-tetra-*O*-benzyl- β -D-glucopyranoside, T-22
 Methyl 2,3,4,7-tetra-*O*-benzyl- α -D-glycero- α -D-galacto-heptopyranoside, H-36
 Methyl 2,3,4,6-tetra-*O*-benzyl- α -D-mannopyranoside, T-23
 Methyl 2,3,4,6-tetra-*O*-benzyl- β -D-mannopyranoside, T-23
 Methyl 1,3,4,5-tetra-*O*-benzyl- α -L-sorbopyranoside, M-210
 Methyl 2,3,4,6-tetra-*O*-benzyl-1-thio- α -D-glucopyranoside, T-70
 Methyl 2,3,4,6-tetra-*O*-benzyl-1-thio- β -D-glucopyranoside, T-70
 Methyl 2,3,5,6-tetra-*O*-benzyl-4-thio- α -D-talofuranoside, T-93
 Methyl 2,3,4,6-tetradeoxy-(4-dimethylamino)- α -D-erythro-hexopyranoside, A-449
 Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- α -D-xylo-hexopyranoside, K-16
 Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- β -D-xylo-hexopyranoside, K-16
 Methyl 2,3,4,6-tetradeoxy-4-(methylamino)- α -D-erythro-hexopyranoside, A-449
 Methyl 2,3,5,6-tetra-*O*-methyl- α -D-galactofuranoside, T-42
 Methyl 2,3,4,6-tetra-*O*-methyl- α -D-galactopyranoside, M-185
 Methyl 2,3,4,6-tetra-*O*-methyl- β -D-galactopyranoside, M-186
 Methyl 2,3,5,6-tetra-*O*-methyl- α -D-glucofuranoside, T-44
 Methyl 2,3,5,6-tetra-*O*-methyl- β -D-glucofuranoside, T-44
 Methyl 2,3,4,6-tetra-*O*-methyl- α -D-glucopyranoside, T-43
 Methyl 2,3,4,6-tetra-*O*-methyl- β -D-glucopyranoside, T-43
 Methyl 2,3,4,6-tetra-*O*-methyl- β -D-mannopyranoside, M-205
 Methyl 1,3,4,5-tetra-*O*-methyl- α -D-tagatopyranoside, T-2
 Methyl 2,3,4,6-tetra-*O*-tosyl- β -D-glucopyranoside, M-191
 Methyl 5-thio- α -D-allopyranoside, T-54
 Methyl 5-thio- β -D-allopyranoside, T-54
 Methyl 5-thio- α -D-altropyranoside, T-55
 Methyl 5-thio- β -D-altropyranoside, T-55
 Methyl 5-thio- α -D-arabinopyranoside, T-58
 Methyl 5-thio- β -D-arabinopyranoside, T-58
 Methyl 5-thio- β -L-arabinopyranoside, T-58
 Methyl 1-thio- β -D-cellobioside, T-60
 Methyl 1-thio- β -L-fucopyranoside, T-63
 Methyl 1-thio- β -D-galactopyranoside, T-65
 Methyl 5-thio- α -D-galactopyranoside, T-66
 Methyl 5-thio- β -D-galactopyranoside, T-66
 Methyl 6-thio- β -D-galactoseptanoside, T-67
 Methyl 1-thio- α -D-glucopyranoside, T-70
 Methyl 1-thio- β -D-glucopyranoside, T-70
 Methyl 5-thio- α -D-glucopyranoside, T-73
 Methyl 5-thio- β -D-glucopyranoside, T-73
 Methyl 5-thio- α -L-idopyranoside, T-76
 Methyl 5-thio- β -L-idopyranoside, T-76
 Methyl α -thiolinosaminide, L-43
 Methyl 5-thio- α -D-lyxopyranoside, T-80
 Methyl 5-thio- β -D-lyxopyranoside, T-80
 Methyl 1-thio- α -L-rhamnopyranoside, T-86
 Methyl 1-thio- β -L-rhamnopyranoside, T-86
 Methyl 5-thio- α -D-ribosepyranoside, T-91
 Methyl 5-thio- β -D-ribosepyranoside, T-91
 Methyl 4-thio- α -D-talofuranoside, T-93
 Methyl 1-thio- β -D-xylopyranoside, T-98
 Methyl α -D-threofuranoside, T-102
 Methyl β -D-threofuranoside, T-102
 Methyl 2-*O*-tosyl- α -D-allopyranoside, M-148
 Methyl 5-*O*-tosyl- α -L-arabinofuranoside, M-152
 Methyl 5-*O*-tosyl- β -L-arabinofuranoside, M-152
 Methyl 2-*O*-tosyl- α -L-arabinopyranoside, M-153
 Methyl 3-*O*-tosyl- α -L-arabinopyranoside, M-153
 Methyl 4-*O*-tosyl- α -L-arabinopyranoside, M-153
 Methyl 2-*O*-tosyl- β -L-arabinopyranoside, M-153
 Methyl 4-*O*-tosyl- β -L-arabinopyranoside, M-153
 Methyl 1-*O*-tosyl- α -D-fructofuranoside, M-181
 Methyl 2-*O*-tosyl- α -L-fucopyranoside, M-183
 Methyl 6-*O*-tosyl- α -D-galactopyranoside, M-185
 Methyl 2-*O*-tosyl- α -D-galactopyranosiduronamide, M-188
 Methyl 6-*O*-tosyl- α -D-glucopyranoside, M-190
 Methyl 2-*O*-tosyl- α -D-mannopyranoside, M-204
 Methyl 3-*O*-tosyl- α -D-mannopyranoside, M-204
 Methyl 2-*O*-tosyl-6-*O*-trityl- α -D-mannopyranoside, M-215
 Methyl 3-*O*-tosyl-6-*O*-trityl- α -D-mannopyranoside, M-215
 Methyl 4-*O*-tosyl-6-*O*-trityl- α -D-mannopyranoside, M-215
 Methyl 2-*O*-tosyl- α -D-xylopyranoside, M-217
 Methyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy- α -L-mannopyranoside, T-131
 Methyl 2,3,5-triacetamido-2,3,5-trideoxy- β -D-arabinofuranoside, T-134
 Methyl 2,4,6-tri-*O*-acetyl 3-*O*-methyl- α -D-galactopyranoside, M-250
 Methyl 1,3,4-tri-*O*-acetyl-5-*S*-acetyl-5-thio- β -D-fructopyranoside, T-61
 Methyl 2,3,4-tri-*O*-acetyl-6-amino-6-deoxy- α -D-galactopyranoside, A-210
 Methyl 2,3,4-tri-*O*-acetyl-6-amino-6-deoxy- α -D-glucopyranoside, A-270
 Methyl 3,4,6-tri-*O*-acetyl-2-amino-2-deoxy- β -D-glucopyranoside, M-150
 Methyl 2,3,4-tri-*O*-acetyl-6-amino-6-deoxy- α -D-mannopyranoside, A-316
 Methyl 2,3,5-tri-*O*-acetyl- α -D-arabinofuranoside, M-152
 Methyl 2,3,4-tri-*O*-acetyl- α -D-arabinopyranoside, M-153
 Methyl 2,3,4-tri-*O*-acetyl- β -D-arabinopyranoside, M-153
 Methyl 2,3,4-tri-*O*-acetyl- β -L-arabinopyranoside, M-153
 Methyl 3,4,6-tri-*O*-acetyl-2-azido-2-deoxy- β -D-galactopyranoside, A-903
 Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -D-galactopyranoside, A-904
 Methyl 2,4,6-tri-*O*-acetyl-3-azido-3-deoxy- β -D-glucopyranoside, A-909
 Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -D-glucopyranoside, A-910
 Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -D-mannopyranoside, A-913
 Methyl 3,4,6-tri-*O*-acetyl-2-benzamido-2-deoxy- α -D-glucopyranoside, M-154
 Methyl 3,4,6-tri-*O*-acetyl-2-benzamido-2-deoxy- β -D-glucopyranoside, M-154
 Methyl 2,4,6-tri-*O*-acetyl-3-benzamido-3-deoxy- α -D-mannopyranoside, A-313
 Methyl 2,4,6-tri-*O*-acetyl-3-*O*-benzyl- α -D-galactopyranoside, M-185
 Methyl 3,4,6-tri-*O*-acetyl-2-*O*-benzyl- β -D-glucopyranoside, B-24
 Methyl 1,2,5-tri-*O*-acetyl-3-*O*-benzyl- α -L-idofuranuronate, I-12
 Methyl 1,2,5-tri-*O*-acetyl-3-*O*-benzyl- β -L-idofuranuronate, I-12
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- α -D-galactopyranoside, B-70
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-galactopyranoside, B-70
 Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- α -D-galactopyranoside, B-71
 Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- α -D-galactopyranoside, B-71
 Methyl 2,3,4-tri-*O*-acetyl-6-bromo-6-deoxy- α -D-galactopyranoside, B-72
 Methyl 2,3,4-tri-*O*-acetyl-6-bromo-6-deoxy- β -D-galactopyranoside, B-72
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-glucopyranoside, B-74
 Methyl 2,3,4-tri-*O*-acetyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
 Methyl 2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- α -D-glucopyranuronate, G-469
 Methyl 2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- β -D-glucopyranuronate, G-469
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-mannopyranoside, B-87
 Methyl 2,3,5-tri-*O*-acetyl-4-bromo-4-deoxy- α -L-tagatopyranoside, B-96
 Methyl 2,3,5-tri-*O*-acetyl-4-bromo-4-deoxy- β -tagatopyranoside, B-96
 Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- α -D-talopyranoside, B-97
 Methyl 2,4,6-tri-*O*-acetyl-3-chloro-3-deoxy- α -D-altropyranoside, C-73
 Methyl 3,4,6-tri-*O*-acetyl-1-chloro-1-deoxy- α -D-fructofuranoside, C-79
 Methyl 3,4,6-tri-*O*-acetyl-1-chloro-1-deoxy- β -D-fructofuranoside, C-79
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- α -D-galactopyranoside, C-82
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- β -D-galactopyranoside, C-82
 Methyl 2,3,6-tri-*O*-acetyl-4-chloro-4-deoxy- β -D-galactopyranoside, C-83
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- β -D-glucopyranoside, C-85
 Methyl 2,3,4-tri-*O*-acetyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 2,3,5-tri-*O*-acetyl-6-chloro-6-deoxy- β -D-glucopyranoside, C-88
 Methyl 2,4,6-tri-*O*-acetyl-3-deoxy-3-dimethylamino- α -D-L-talopyranoside, A-341
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-fluoro- β -D-galactopyranoside, D-80
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-fluoro- α -D-galactopyranoside, D-82
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-fluoro- α -D-galactopyranoside, D-83
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-fluoro- β -D-galactopyranoside, D-83
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-fluoro- β -D-glucopyranoside, D-88
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-fluoro- α -D-glucopyranoside, D-92
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -D-gulopyranoside, D-146
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -D-lyxo-hex-5-enopyranoside, D-176
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -D-xylo-hex-5-enopyranoside, D-177
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- β -D-xylo-hex-5-enopyranoside, D-177
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy- β -D-arabino-hexopyranoside, M-171
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy- α -D-lyxo-hexopyranoside, D-202
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy- α -D-xylo-hexopyranoside, D-210
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy- β -D-xylo-hexopyranoside, D-210
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-iodo- α -D-altropyranoside, D-246
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-iodo- β -D-fructofuranoside, D-255
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-iodo- β -D-galactopyranoside, D-257

- Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-iodo- α -D-mannopyranoside, D-266
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-iodo- β -D-mannopyranoside, D-266
Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-iodo- α -D-talopyranoside, D-275
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-1,2-*O*-isopropylidene- β -L-idopyranoside, D-238
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-3-*C*-methyl- β -D-gulopyranoside, D-302
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-mannopyranoside, D-308
Methyl 2,4,6-tri-*O*-acetyl-3-deoxy-3-nitro- β -D-glucopyranoside, D-318
Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-phthalimido-1-thio- β -D-glucopyranoside, D-353
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -D-talopyranoside, D-372
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -L-talopyranoside, D-372
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-5-thio- α -D-glucopyranoside, D-373
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-(2,3-di-*O*-acetyl-4,6-*O*-benzylidene- β -D-allopyranosyl)- β -D-allopyranoside, A-84
Methyl 2,3,5-tri-*O*-acetyl- β -D-fucopyranoside, F-163
Methyl 2,3,4-tri-*O*-acetyl- α -D-fucopyranoside, M-183
Methyl 2,3,4-tri-*O*-acetyl- β -D-fucopyranoside, M-183
Methyl 2,3,4-tri-*O*-acetyl- α -L-fucopyranoside, M-183
Methyl 2,3,4-tri-*O*-acetyl- β -L-fucopyranoside, M-183
Methyl 2,3,6-tri-*O*-acetyl- α -D-galactopyranoside, M-185
Methyl 2,3,4-tri-*O*-acetyl- α -D-glucopyranoside, M-190
Methyl 2,3,4-tri-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl 2,3,6-tri-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl 2,4,6-tri-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl 3,4,6-tri-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl (2,3,4-tri-*O*-acetyl- α -D-glucopyranosid)uronate, G-538
Methyl 2,3,4-tri-*O*-acetyl- α -D-glucopyranosyl iodide uronate, D-131
Methyl (2,3,4-tri-*O*-acetyl- α -D-glucopyranosyltrichloroacetimidate)uronate, G-467
Methyl (2,3,4-tri-*O*-acetyl- α -D-glucopyranosyl)uronate bromide, G-469
Methyl (2,3,4-tri-*O*-acetyl- β -D-glucopyranosyl)uronate bromide, G-469
Methyl 3,4,6-tri-*O*-acetyl- β -D-*arabino*-hexopyranosid-2-ulose, H-94
Methyl 2,3,4-tri-*O*-acetyl- α -D-lyxopyranoside, M-202
Methyl 2,3,4-tri-*O*-acetyl- β -D-lyxopyranoside, M-202
Methyl 2,3,4-tri-*O*-acetyl- α -D-mannopyranoside, M-204
Methyl 2,3,4-tri-*O*-acetyl- α -D-mannopyranosiduronic acid, M-123
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-mesyl- α -D-glucopyranoside, M-190
Methyl 3,4,5-tri-*O*-acetyl-1-*O*-methyl- α -D-fructopyranoside, M-182
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- α -D-galactopyranoside, M-251
Methyl 3,4,6-tri-*O*-acetyl-2-*O*-methyl- α -D-glucopyranoside, M-255
Methyl 3,4,6-tri-*O*-acetyl-2-*O*-methyl- β -D-glucopyranoside, M-255
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- α -D-glucopyranoside, M-257
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- β -D-glucopyranoside, M-257
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-methyl- α -D-glucopyranoside, M-259
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-methyl- β -D-glucopyranoside, M-259
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-methyl- α -D-mannopyranoside, M-274
Methyl 2,3,4-tri-*O*-acetyl- α -L-rhamnopyranoside, M-207
Methyl 2,3,4-tri-*O*-acetyl- β -L-rhamnopyranoside, M-207
Methyl 3-*O*-(2,3,4-tri-*O*-acetyl- α -L-rhamnopyranosyl)- α -D-xylopyranoside, R-77
Methyl 2,3,4-tri-*O*-acetyl- α -L-ribofuranoside, M-208
Methyl 3,4,6-tri-*O*-acetyl-2-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranosyl)- α -D-allopyranoside, G-39
Methyl 3,4,6-tri-*O*-acetyl-2-*S*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)-2-thio- β -D-glucopyranoside, T-78
Methyl 2,4,6-tri-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-mannopyranosyl)- α -D-mannopyranoside, M-93
Methyl 2,3,4-tri-*O*-acetyl-5-thio- β -D-arabinopyranoside, T-58
Methyl 2,3,4-tri-*O*-acetyl-5-thio- β -D-lyxopyranoside, T-80
Methyl 2,3,4-tri-*O*-acetyl-5-thio- α -D-ribofuranoside, T-91
Methyl 2,3,4-tri-*O*-acetyl-5-thio- β -D-ribofuranoside, T-91
Methyl 2,3,4-tri-*O*-acetyl-1-thio- β -D-xylopyranoside, T-98
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-tosyl- α -D-galactopyranoside, M-185
Methyl 2,4,6-tri-*O*-acetyl-3-*O*-tosyl- α -D-mannopyranoside, M-204
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- α -D-galactopyranoside, M-185
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- β -D-galactopyranoside, M-186
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- α -D-glucopyranoside, M-213
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- β -D-glucopyranoside, M-213
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- α -D-talopyranoside, T-9
Methyl 2,3,4-tri-*O*-acetyl- α -D-xylopyranoside, M-217
Methyl 2,3,4-tri-*O*-acetyl- β -D-xylopyranoside, M-217
Methyl 2,3,5-triamino-2,3,5-trideoxy- β -D-arabinofuranoside, T-134
Methyl 2,3,5-tri-*O*-benzoyl- α -D-arabinofuranoside, M-152
Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
Methyl 2,3,6-tri-*O*-benzoyl-4-bromo-4-deoxy- β -D-galactopyranoside, B-71
Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- α -D-galactopyranoside, B-72
Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- β -D-galactopyranoside, B-72
Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
Methyl 2,3,6-tri-*O*-benzoyl-4-chloro-4-deoxy- β -D-galactopyranoside, C-83
Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
Methyl 2,3,4-tri-*O*-benzoyl-6-deoxy-6-fluoro- α -D-glucopyranoside, D-92
Methyl 2,3,4-tri-*O*-benzoyl-6-deoxy- α -D-glucopyranoside, D-142
Methyl 2,3,6-tri-*O*-benzoyl-3-deoxy- β -D-*xylo*-hexopyranoside, D-209
Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy- β -D-*xylo*-hexopyranoside, D-210
Methyl 2,4,6-tri-*O*-benzoyl-3-deoxy- α -D-*erythro*-hex-2-ulofuranosonate, D-225
Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy-4-iodo- β -D-galactopyranoside, D-257
Methyl 2,4,6-tri-*O*-benzoyl-3-deoxy-3-iodo- β -D-gulopyranoside, D-259
Methyl 2,3,4-tri-*O*-benzoyl-L-erythronate, T-161
Methyl 2,3,4-tri-*O*-benzoyl- β -D-fucopyranoside, M-183
Methyl 2,3,4-tri-*O*-benzoyl- α -L-fucopyranoside, M-183
Methyl 2,3,6-tri-*O*-benzoyl- α -D-galactopyranoside, M-185
Methyl 2,4,6-tri-*O*-benzoyl- β -D-galactopyranoside, M-186
Methyl 2,3,4-tri-*O*-benzoyl- α -D-glucopyranoside, M-190
Methyl 2,3,6-tri-*O*-benzoyl- α -D-glucopyranoside, M-190
Methyl 2,3,4-tri-*O*-benzoyl- β -D-*gluco*-hexodialdopyranoside 6-dimethyl acetal, H-85
Methyl 3,4,6-tri-*O*-benzoyl- α -D-*arabino*-hexopyranosid-2-ulose, H-94
Methyl 2,3,6-tri-*O*-benzoyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
Methyl 2,3,5-tri-*O*-benzoyl- β -D-lyxofuranoside, M-201
Methyl 2,3,4-tri-*O*-benzoyl- α -D-lyxopyranoside, M-202
Methyl 2,3,6-tri-*O*-benzoyl- α -D-mannopyranoside, M-204
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-mesyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-mesyl- α -D-mannopyranoside, M-204
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-methyl- β -D-galactopyranoside, M-251
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-methyl- α -D-glucopyranoside, M-257
Methyl 2,4,6-tri-*O*-benzoyl-3-*O*-methyl- β -D-mannopyranoside, M-205
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 2,3,5-tri-*O*-benzoyl- β -D-ribofuranoside, M-208
Methyl 2,3,5-tri-*O*-benzoyl- α -L-ribofuranoside, M-208
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-(2,3,4,6-tetra-*O*-benzoyl- β -D-galactopyranosyl)- β -D-allopyranoside, G-40
Methyl 2,3,4-tri-*O*-benzoyl-6-*O*-tosyl- β -D-galactopyranoside, M-186
Methyl 2,3,4-tri-*O*-benzoyl-6-*O*-trityl- β -D-galactopyranoside, M-186
Methyl 2,3,4-tri-*O*-benzoyl-6-*O*-trityl- α -D-glucopyranoside, M-213
Methyl 2,3,4-tri-*O*-benzoyl- α -D-xylopyranoside, M-217
Methyl 2,3,4-tri-*O*-benzoyl- β -D-xylopyranoside, M-217
Methyl 2,3,4-tri-*O*-benzyl-6-amino-6-deoxy- α -D-glucopyranoside, A-270
Methyl 2,3,6-tri-*O*-benzyl-4-bromo-4-deoxy- α -D-galactopyranoside, B-71
Methyl 2,3,4-tri-*O*-benzyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
Methyl 2,3,4-tri-*O*-benzyl-6-bromo-6-deoxy- β -D-glucopyranoside, B-76
Methyl 3,4,6-tri-*O*-benzyl-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
Methyl 3,4,6-tri-*O*-benzyl-2-bromo-2-deoxy- β -D-mannopyranoside, B-87
Methyl 2,3,6-tri-*O*-benzyl-4-chloro-4-deoxy- α -D-galactopyranoside, C-83
Methyl 2,3,4-tri-*O*-benzyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
Methyl 2,3,6-tri-*O*-benzyl-4-cyano-4-deoxy- α -D-galactopyranoside, C-158
Methyl 2,3,6-tri-*O*-benzyl-4-cyano-4-deoxy- α -D-glucopyranoside, C-159
Methyl 2,3,6-tri-*O*-benzyl-4-deoxy-4-fluoro- α -D-glucopyranoside, D-90
Methyl 2,3,4-tri-*O*-benzyl-6-deoxy- α -D-*altro*-heptopyranoside, D-156
Methyl 2,4,7-tri-*O*-benzyl-6-deoxy- α -D-*altro*-heptopyranoside, D-156
Methyl 2,3,4-tri-*O*-benzyl-6-deoxy- α -D-*gluco*-heptopyranoside, D-158
Methyl 2,3,4-tri-*O*-benzyl-6-deoxy- α -D-*manno*-heptopyranoside, D-164
Methyl 2,4,7-tri-*O*-benzyl-6-deoxy- α -D-*manno*-heptopyranoside, D-164
Methyl 2,3,6-tri-*O*-benzyl-4-deoxy-4-*C*-methylene- α -D-*xylo*-hexopyranoside, D-298
Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-methyl- α -D-talopyranoside, D-314
Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbamoyle)- β -D-galactopyranoside, C-9
Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbamoyle)- β -D-glucopyranoside, C-10
Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-[(tosylamino)carbonyl]- β -D-glucopyranoside, C-10
Methyl 1,3,4-tri-*O*-benzyl- β -D-fructofuranoside, M-181
Methyl 3,4,6-tri-*O*-benzyl- β -D-fructofuranoside, M-181
Methyl 2,3,5-tri-*O*-benzyl- α -D-fucopyranoside, F-163
Methyl 2,3,5-tri-*O*-benzyl- β -D-fucopyranoside, F-163
Methyl 2,3,4-tri-*O*-benzyl- α -D-fucopyranoside, M-183
Methyl 2,3,4-tri-*O*-benzyl- α -L-fucopyranoside, M-183
Methyl 2,3,5-tri-*O*-benzyl- β -D-galactofuranoside, M-184
Methyl 2,3,4-tri-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 2,4,6-tri-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 2,3,4-tri-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 2,3,6-tri-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 3,4,6-tri-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 3,5,6-tri-*O*-benzylglucopyranoside, M-211
Methyl 2,3,4-tri-*O*-benzyl- α -D-glucopyranoside, M-190
Methyl 2,3,6-tri-*O*-benzyl- α -D-glucopyranoside, M-190
Methyl 2,4,6-tri-*O*-benzyl- α -D-glucopyranoside, M-190
Methyl 2,3,4-tri-*O*-benzyl- β -D-glucopyranoside, M-191
Methyl 2,3,6-tri-*O*-benzyl- β -D-glucopyranoside, M-191
Methyl 3,4,6-tri-*O*-benzyl- β -D-glucopyranoside, M-191
Methyl 3,5,6-tri-*O*-benzyl- β -L-gulofuranoside, G-587
Methyl 2,4,6-tri-*O*-benzyl- α -D-gulopyranoside, M-194

Methyl 2,3,4-tri-*O*-benzyl-*L*-glycero- β -D-*allo*-heptopyranoside, H-32
Methyl 2,3,4-tri-*O*-benzyl-*L*-glycero- α -D-*gluco*-heptopyranoside, H-42
Methyl 4,5,7-tri-*O*-benzyl- α -D-*gluco*-2-heptulopyranosonate, H-64
Methyl 2,3,6-tri-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
Methyl 3,4,6-tri-*O*-benzyl-D-mannopyranoside, M-204
Methyl 3,4,6-tri-*O*-benzyl-2-*O*-mesyl- β -D-mannopyranoside, M-205
Methyl 2,3,5-tri-*O*-benzyl- β -D-ribofuranoside, M-208
Methyl 3-(2,3,5-tri-*O*-benzylribofuranosyl)propionate, M-212
Methyl 2,4,6-tri-*O*-benzyl-3-*O*-(3,4,6-tri-*O*-benzyl- β -D-mannopyranosyl)- α -D-mannopyranoside, M-97
Methyl 2,3,4-tri-*O*-benzyl-6-*O*-trityl- α -D-mannopyranoside, M-215
Methyl 3-trichloroacetamido-2,3,6-trideoxy- α -L-*ribo*-hexopyranoside, A-462
Methyl 3,4,6-trichloro-3,4,6-trideoxy- α -D-allopyranoside, T-146
Methyl 2,3,6-trideoxy-3-dimethylamino- α -L-*ribo*-hexopyranoside, T-150
Methyl 2,3,6-trideoxy-3-dimethylamino- β -L-*ribo*-hexopyranoside, T-150
Methyl 3,4,6-trideoxy-3-dimethylamino- α -D-*xylo*-hexopyranoside, T-151
Methyl 2,3,6-trideoxy-3-dimethylamino- β -L-*xylo*-hexopyranoside, A-463
Methyl 2,3,6-trideoxy-3-dimethylamino- α -D-*lyxo*-hexopyranoside, D-727
Methyl 2,3,6-trideoxy-3-dimethylamino- β -D-*lyxo*-hexopyranoside, D-727
Methyl 2,3,6-trideoxy- α -L-*threo*-hex-2-enopyranoside, T-155
Methyl 2,3,6-trideoxy- α -D-*erythro*-hexopyranoside, D-692
Methyl 2,3,6-trideoxy- α -D-*glycero*-hexopyranosid-4-ulose, D-602
Methyl 2,3,6-trideoxy- α -L-*glycero*-hexopyranosid-4-ulose, D-602
Methyl 2,3,6-trideoxy- α -D-*glycero*-hexos-1,4-diulopyranoside, H-188
Methyl 2,3,6-trideoxy-2-*C*-hydroxyacetyl- β -L-*erythro*-hexopyranos-4-uloside, T-156
Methyl 3,4,6-trideoxy-4-*C*-methyl- α -L-*threo*-hexopyranosid-2-ulose, D-633
Methyl 2,3,6-trideoxy-3-*C*-methyl-4-*O*-methyl-3-nitro- α -L-*xylo*-hexopyranoside, R-154
Methyl 2,3,6-trideoxy-3-*C*-methyl-3-nitro- α -L-*ribo*-hexopyranoside, D-17
Methyl 2,3,6-trideoxy-3-*C*-methyl-3-nitro- β -L-*ribo*-hexopyranoside, D-17
Methyl 2,3,6-tri-*O*-mesyl- α -D-mannopyranoside, M-204
Methyl 2,3,6-tri-*O*-mesyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 2,3,4-tri-*O*-mesyl- α -D-xylopyranoside, M-217
Methyl 2,3,4-tri-*O*-mesyl- β -D-xylopyranoside, M-217
Methyl 1',2,3-tri-*O*-methyl-D-*apio*- β -D-furanoside, A-785
Methyl 2,3,4-tri-*O*-methyl- β -D-arabinopyranoside, M-153
Methyl 2,3,4-tri-*O*-methyl- α -L-arabinopyranoside, M-153
Methyl 2,3,4-tri-*O*-methyl- β -L-arabinopyranoside, M-153
Methyl 3,4,6-tri-*O*-methyl-2-azido-2-deoxy- β -D-mannopyranoside, A-912
Methyl 3,4,6-tri-*O*-methyl- α -D-fructofuranoside, M-181
Methyl 2,3,5-tri-*O*-methyl- β -D-fucofuranoside, F-163
Methyl 1',2,3-tri-*O*-methyl-D-*apio*- α -D-furanoside, A-785
Methyl 2,3,5-tri-*O*-methyl- α -D-galactofuranoside, T-180
Methyl 2,3,5-tri-*O*-methyl- β -D-galactofuranosiduronamide, M-188
Methyl 2,3,4-tri-*O*-methyl- α -D-galactopyranoside, T-179
Methyl 2,3,6-tri-*O*-methyl- α -D-galactopyranoside, T-181
Methyl 2,3,6-tri-*O*-methyl- β -L-galactopyranoside, T-181
Methyl 2,4,6-tri-*O*-methyl- α -D-galactopyranoside, T-182
Methyl 2,4,6-tri-*O*-methyl- β -D-galactopyranoside, T-182
Methyl 2,3,4-tri-*O*-methyl- α -D-galactopyranosiduronamide, M-188
Methyl 2,3,4-tri-*O*-methyl- β -D-galactopyranosiduronic acid, M-187
Methyl 2,3,5-tri-*O*-methyl- β -D-glucofuranoside, T-185
Methyl 3,5,6-tri-*O*-methyl- α -D-glucopyranoside, T-189
Methyl 3,5,6-tri-*O*-methyl- β -D-glucopyranoside, T-189
Methyl 2,3,4-tri-*O*-methyl- α -D-glucopyranoside, T-184
Methyl 2,3,4-tri-*O*-methyl- β -D-glucopyranoside, T-184
Methyl 2,3,6-tri-*O*-methyl- α -D-glucopyranoside, T-186
Methyl 2,3,6-tri-*O*-methyl- β -D-glucopyranoside, T-186
Methyl 2,4,6-tri-*O*-methyl- β -D-glucopyranoside, T-187
Methyl 3,4,6-tri-*O*-methyl- α -D-glucopyranoside, T-188
Methyl 3,4,6-tri-*O*-methyl- β -D-glucopyranoside, T-188
Methyl 2,3,4-tri-*O*-methyl- α -D-glucopyranosiduronamide, G-537
Methyl 2,3,4-tri-*O*-methyl- β -D-glucopyranosiduronamide, G-537
Methyl 2,3,4-tri-*O*-methyl- β -D-glucopyranosiduronic acid, M-192
Methyl 3,5,6-tri-*O*-methyl- α -D-mannofuranoside, M-203
Methyl 2,3,6-tri-*O*-methyl- α -D-mannopyranoside, T-190
Methyl 2,4,6-tri-*O*-methyl- α -D-mannopyranoside, T-191
Methyl 3,4,6-tri-*O*-methyl- α -D-mannopyranoside, T-192
Methyl 2,3,4-tri-*O*-methyl- α -D-mannopyranoside, D-748
Methyl 2,3,4-tri-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 2,3,4-tri-*O*-methyl- β -L-rhamnopyranoside, M-207
Methyl 2,3,5-tri-*O*-methyl- β -D-ribofuranoside, M-208
Methyl 2,3,4-tri-*O*-methyl- β -D-ribofuranoside, M-209
Methyl 3,4,5-tri-*O*-methyl-D-threonate, T-161
Methyl 3,4,6-tri-*O*-methyl-1-*O*-tosyl- α -D-fructofuranoside, M-181
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- α -D-galactopyranoside, T-182
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- β -D-galactopyranoside, T-182
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- α -D-glucopyranoside, T-187
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- β -D-glucopyranoside, T-187
Methyl 3,4,6-tri-*O*-methyl-2-*O*-tosyl- β -D-glucopyranoside, T-188
Methyl 3,5,6-tri-*O*-methyl-2-*O*-tosyl- α -D-mannofuranoside, M-203
Methyl 2,3,6-tri-*O*-methyl-4-*O*-tosyl- α -D-mannopyranoside, T-190

Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- α -D-mannopyranoside, T-191
Methyl 3,4,6-tri-*O*-methyl-2-*O*-tosyl- α -D-mannopyranoside, T-192
Methyl 2,3,4-tri-*O*-methyl-6-trityl- α -D-glucopyranoside, M-213
Methyl 6-*O*-(triphenylmethyl)glucopyranoside, M-213
Methyl 2,3,4-tri-*O*-pivaloyl- α -D-glucopyranosyl iodide uronate, D-131
Methyl 3,4,6-tris-*O*-benzyl-2-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-mannopyranosyl)- α -D-glucopyranoside, M-61
Methyl 3,5,6-tris-*O*-(phenylmethyl)glucopyranoside, M-211
Methyl 2,3,4-tris(trimethylsilyl)- β -D-galactopyranoside, M-186
Methyl 2,3,4-tris(trimethylsilyl)- α -D-glucopyranoside, M-190
Methyl 2,3,4-tris(trimethylsilyl)- α -D-mannopyranoside, M-204
Methyl 2,3,4-tri-*O*-tosyl- β -L-arabinopyranoside, M-153
Methyl 2,3,6-tri-*O*-tosyl- α -D-galactopyranoside, M-185
Methyl 2,3,5-tri-*O*-tosyl- β -D-lyxofuranoside, M-201
Methyl 2,3,5-tri-*O*-tosyl- β -D-ribofuranoside, M-208
Methyl 5-*O*-trityl- α -D-arabinofuranoside, M-152
Methyl 5-*O*-trityl- α -L-arabinofuranoside, M-152
Methyl 5-*O*-trityl- β -L-arabinofuranoside, M-152
Methyl 3-*O*-trityl- α -L-fucopyranoside, M-183
Methyl 2-*O*-trityl- α -L-fucopyranoside, M-183
Methyl 6-*O*-trityl- β -D-galactofuranoside, M-184
Methyl 6-*O*-trityl- α -D-galactopyranoside, M-185
Methyl 6-*O*-trityl- β -D-galactopyranoside, M-186
Methyl 6-*O*-tritylglucopyranoside, M-213
Methyl 5-*O*-trityl- α -D-lyxofuranoside, M-201
Methyl 5-*O*-trityl- β -D-lyxofuranoside, M-201
Methyl 6-*O*-tritylmannofuranoside, M-214
Methyl 6-*O*-tritylmannopyranoside, M-215
Methyl β -turanopyranoside, T-201
Methyl uridine-5-acetate, U-11
Methyl uridine-5-oxyacetate, H-200
Methyl α -vancosaminide, A-464
Methyl β -L-vancosaminide, A-464
Methyl α -wilforiboside, W-2
Methyl β -wilforiboside, W-2
Methyl xylofuranoside, M-216
Methyl D-xylonate, X-9
Methyl xylopyranoside, M-217
Methyl 2-*O*- β -D-xylopyranosyl- α -L-arabinopyranoside, X-29
Methyl 2-*O*- β -D-xylopyranosyl- β -L-arabinopyranoside, X-29
Methyl 2-*O*- α -D-xylopyranosyl- α -D-mannopyranoside, X-48
Methyl 3-*O*- α -D-xylopyranosyl- α -D-mannopyranoside, X-49
Methyl 2-*O*- β -D-xylopyranosyl- α -D-mannopyranoside, X-50
Methyl 3-*O*- β -D-xylopyranosyl- α -D-mannopyranoside, X-51
Methyl 2-*O*- α -D-xylopyranosyl- β -D-xylopyranoside, X-75
Methyl 3-*O*- α -D-xylopyranosyl- β -D-xylopyranoside, X-76
Methyl 4-*O*- α -D-xylopyranosyl- β -D-xylopyranoside, X-77
Methyl 2-*O*- β -D-xylopyranosyl- β -D-xylopyranoside, X-78
Methyl 3-*O*- β -D-xylopyranosyl- β -D-xylopyranoside, X-79
Methyl 4-*O*- β -D-xylopyranosyl- β -D-xylopyranoside, X-80
Methyl β -D-xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranoside, X-90
Methyl 6-[[[(2-chloroethyl)nitrosoamino]carbonyl]amino]-6-deoxy- α -D-glucopyranoside, R-3
Methyl 3-[[[(2-chloroethyl)nitrosoamino]carbonyl]amino]-2,3-dideoxy- α -D-*arabino*-hexopyranoside, E-1
1-*O*-*N*-Methylacetimidyl-2,3,4-tri-*O*-benzylfucopyranose, M-218
Methyl-2-*O*-acetyl-3-*C*-benzyl-4,6-*O*-benzylidene-3-deoxy- α -D-*erythro*-hex-3-enopyranoside, M-159
13-Methylalacinomycin A, A-24
2'-*C*-Methyladenosine, M-219
3'-*C*-Methyladenosine, M-220
2'-*O*-Methyladenosine, M-221
1-Methyladenosine, M-222
2-Methyladenosine, M-223
*N*⁶-Methyladenosine, A-31
3-*O*-Methyl- β -D-allopyranose, A-86
Methylallosamidin, A-85
3-*C*-Methylallose, M-224
2-*O*-Methyl-DL-allose, A-86
2-[4-[(Methylamino)carbonyl]-1*H*-pyrazol-1-yl]adenosine, M-225
Methyl-4-amino-2-hydroxy-4-oxobutanoate, M-6
5-(Methylaminomethyl)-2-thiouridine, M-226
5-(Methylaminomethyl)uridine, M-227
2-*C*-Methylarabinonic acid, M-228
2-*C*-Methyl-D-arabinono-1,4-lactone, M-228
2-*C*-Methyl-L-arabinono-1,4-lactone, M-228
2-*C*-Methylarabinose, M-229
N-Methyl-L-arabinosylamine, A-854
Methylazoxymethanol, M-230
(Methyl-*O**NN*-azoxy)methanol, M-230
3-*O*-(4-Methylbenzenesulfonyl)glucose, T-118
2-Methyl-1,2,3,4-butanetetrol, M-231

- 2-Methyl-1,2,3-butanetriol, M-232
 3-Methyl-3-butenyl glucosinolate, M-233
N-(3-Methyl-2-butenyl)adenosine, M-234
N-(3-Methyl-1-butenyl)-2-(methylthio)adenosine, M-133
N-(3-Methyl-2-butenyl)-2-(methylthio)adenosine, M-133
 2-Methylbutyl glucosinolate, M-235
 3-Methylbutyl glucosinolate, M-236
 Methyl-7-chloro-6,7,8-trideoxy-6-[[[4-pentyl-2-pyrrolidinyl]carbonyl]amino]-1-thio-*galacto*-octopyranoside, M-315
 4-Methylcoumarin-7-yl 5-acetamido-3,5-dideoxy-*D*-glycero- α -*D*-*galacto*-2-nonulopyranosidonic acid, M-237
 β -Methylcrotonylcoenzyme A, C-144
 5-Methyl-1,2,3,4-cyclohexanetetrol, M-238
 5-Methylcytidine, M-239
 6-Methylcytidine, M-240
 3-Methylcytidine, C-201
 2'-*O*-Methylcytidine, C-201
 5-Methylcytosine deoxyriboside, D-295
 Methyl-*N*-demethylallosamidin, A-85
 3-*C*-Methyl-6-deoxy-*ribo*-hexopyranose-4-ulose, M-241
N-Methyl-1-deoxynojirimycin, H-175
N-Methyl-2-deoxystreptamine, D-481
 2-Methyl-4,5-dihydro-4-*O*-acetyl-6-*O*-benzyl-3-*O*-(2-butenyl)-1,2-dideoxyglucopyranosyl[2,1-*d*]-1,3-oxazole, M-242
 2-Methyl-4,5-dihydro(3,4,6-tri-*O*-acetyl-1,2-dideoxyglucopyranosyl)[2,1-*d*]-1,3-oxazole, M-243
 2-Methyl-6,8-dioxabicyclo[3.2.1]oct-2-en-4-one, A-596
 2-Methyl-1,3-dioxolane-4-methanol, M-244
 2,5-*O*-Methylene-*D*-mannitol, M-25
 1,5-*O*-Methylenetribofuranose, M-245
 17-Methylenespiramycin I, F-24
 2,4-*O*-Methylene-*D*-talitol, T-3
 2-*C*-Methyl-*D*-erythritol, M-231
 3-*C*-Methyl-*D*-erythritol, M-231
 6-*O*-Methylerythromycin, E-18
 2-*C*-Methyl-1,4-erythrondiolactone, M-246
 3-*C*-Methylerythrose, M-247
 1,2-*O*-(1-Methylethylidene)galactopyranose, I-65
 3-*C*-Methylfructose, M-248
 2-*O*-Methyl-*D*-fucose, F-163
 3-*O*-Methyl-*D*-fucose, F-163
 4-*O*-Methyl-*D*-fucose, F-163
 2-*O*-Methyl-*L*-fucose, F-163
 3-*O*-Methyl-*L*-fucose, F-163
 4-*O*-Methyl-*L*-fucose, F-163
 4-*O*-Methylgalactinol, G-3
 6-*O*-Methyl-*D*-galactonic acid, G-23
 3-*O*-Methyl- β -*D*-galactopyranosyl-(1 \rightarrow 4)-3-*O*-methyl- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*L*-rhamnose, G-115
 4-*O*-(3-*O*-Methyl- β -*D*-galactopyranosyl)-*L*-rhamnose, G-172
 2-*O*-Methylgalactose, M-249
 3-*O*-Methylgalactose, M-250
 4-*O*-Methylgalactose, M-251
 5-*O*-Methylgalactose, M-252
 6-*O*-Methylgalactose, M-253
 6'-Methylgentamicin A₁, G-220
 6'-Methylgentamicin A, G-224
 3-*O*-Methyl-*D*-glucal, G-237
 Methylglucamine, A-214
 4-*O*-Methyl- α -*D*-glucopyranosyl-(1 \rightarrow 2)- β -*D*-xylopyranosyl-(1 \rightarrow 4)-*D*-xylose, G-508
 2-*O*-(4-*O*-Methyl- α -*D*-glucopyranosyl)-*D*-xylose, G-471
 3-*O*-(4-*O*-Methyl- α -*D*-glucopyranuronosyl)-*L*-arabinose, G-478
 4-*O*-(4-*O*-Methyl- α -*D*-glucopyranuronosyl)-*L*-arabinose, G-479
 2-*O*-(4-*O*-Methyl- α -*D*-glucopyranuronosyl)-*D*-lyxose, G-503
 2-*O*-(4-*O*-Methyl- α -*D*-glucopyranuronosyl)-*D*-xylose, G-510
 3-*O*-(4-*O*-Methyl- α -*D*-glucopyranuronosyl)-*D*-xylose, G-511
N-Methyl-L-glucosaminidostreptosidostreptidine, S-83
 3-*O*-Methylglucosamine, A-318
 4-*O*-Methylglucosamine, A-319
 3-*C*-Methylglucose, M-254
 2-*O*-Methylglucose, M-255
 3-*O*-Methylglucose, M-256
 4-*O*-Methylglucose, M-257
 5-*O*-Methylglucose, M-258
 6-*O*-Methylglucose, M-259
 2-*O*-Methyl-*D*-glucuronic acid, G-538
 3-*O*-Methyl-*D*-glucuronic acid, G-538
 4-*O*-Methyl-*D*-glucuronic acid, G-538
 4-*C*-Methylglucuronic acid, M-260
 6-*O*-(4-*O*-Methyl- β -*D*-glucuronopyranuronosyl)-*D*-galactose, A-1
 6-*O*-(4-*O*-Methyl- β -*D*-glucuronopyranuronosyl)-*D*-galactose, A-1
 2-*C*-Methylglyceraldehyde, D-700
 3-Methylglyceric acid, D-688
 1-Methylglycerol, B-132
N-Methylguanosine, G-569
 2'-*O*-Methylguanosine, M-261
 7-Methylguanosine, M-262
 3-*O*-Methyl-*D*-*arabino*-hept-2-enono-1,4-lactone, G-248
 3-*O*-Methyl-*L*-*erythro*-hex-2-enono-1,4-lactone, I-49
N-Methylhygromycin A, D-390
 1-Methylinosine, I-24
 3-Methylinosine, I-24
 1-*O*-Methyl-*D*-*chiro*-inositol, I-28
 3-*O*-Methyl-*D*-*chiro*-inositol, I-28
 1-*O*-Methyl-*L*-*chiro*-inositol, I-28
 2-*O*-Methyl-*L*-*chiro*-inositol, I-28
 3-*O*-Methyl-*L*-*chiro*-inositol, I-28
 1-*O*-Methyl-*muco*-inositol, I-31
 1-*O*-Methyl-*scyllo*-inositol, I-34
 4-*C*-Methyl-*epi*-inositol, I-54
 4-*C*-Methyl-*myo*-inositol, M-263
 1-*C*-Methyl-*scyllo*-inositol, M-264
 1-*O*-Methyl-*myo*-inositol, M-265
 3-*O*-Methyl-*D*-*myo*-inositol, M-265
 2-*O*-Methyl-*myo*-inositol, M-266
 4-*O*-Methyl-*myo*-inositol, M-267
 6-*O*-Methyl-*D*-*myo*-inositol, M-267
 1-*O*-Methyl-*L*-*myo*-inositol, M-267
 5-*O*-Methyl-*myo*-inositol, S-30
 3-Methylisoguanosine, I-51
 1-Methylisoguanosine, D-773
 5-*O*-Methyl-1,2-*O*-isopropylidene-*L*-*chiro*-inositol, I-28
 3'-*N*-Methylkanamycin A, K-3
 3'-*N*-Methylkanamycin B, K-4
 7-*O*-Methylincosamine, L-43
 2-*C*-Methyllyxonic acid, M-268
 2-*C*-Methyl- Δ -*lyxo*-1,4-lactone, M-268
 2-*O*-Methyl- α -*L*-lyxopyranosyl 4-*O*-(6-deoxy-4-*O*-methyl- β -*D*-galactopyranosyl)-2,6-di-*O*-methyl- β -*D*-mannopyranoside, E-39
 2-*O*-Methyl- α -*L*-lyxopyranosyl *O*-2,6-dideoxy-3-*C*-methyl- β -*D*-*arabino*-hexopyranosyl-(1 \rightarrow 3)-*O*-6-deoxy-4-*O*-methyl- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2,6-di-*O*-methyl- β -*D*-mannopyranoside, E-38
 2-*O*-Methyl- α -*L*-lyxopyranosyl 2,6-di-*O*-methyl- β -*D*-mannopyranoside, E-36
 2-*O*-Methyl-*D*-lyxose, L-72
 2-*O*-Methyl-*L*-lyxose, L-72
 2-*C*-Methyllyxose, M-269
 Methylmalonylcoenzyme A, C-144
 2-*O*-Methylmannose, M-270
 3-*O*-Methylmannose, M-271
 4-*O*-Methylmannose, M-272
 5-*O*-Methylmannose, M-273
 6-*O*-Methylmannose, M-274
 2-Methyl-5-(1-methylethyl)pyrazine, I-78
 3-Methyl-5'-*O*-methyluridine, U-6
N-Methylmoranoline, H-175
 6'-*C*-Methylnepanocin A, M-275
 Methylol cellulose, C-48
 7-Methylolivomycin D, C-128
 2-Methyl-4-oxo-4*H*-pyran-3-yl 2-methylpropanoate, H-178
 3-*N*-Methylparomomycin I, P-13
 2-*C*-Methyl-*arabino*-pentonic acid, M-228
 2-*C*-Methyl-*ribo*-pentonic acid, M-276
 4-Methylpentyl glucosinolate, M-277
 2-*O*-Methylperosamine, A-408
N-(1-Methyl-2-phenylethyl)adenosine, M-278
N-[(2-Methylphenyl)methyl]adenosine, A-31
 5-Methyl-3,4-piperidinediol, M-279
 2-Methyl-3,4,5-piperidinetriol, M-280
 2-Methyl-3,4,5-piperidinetriol, M-281
 1-Methyl-3,4,5-piperidinetriol, P-74
 4''-(2-Methylpropanoyl)spiramycin B, F-24
 1-Methylpropyl glucosinolate, M-282
 2-Methylpropyl glucosinolate, M-283
 1-Methylpseudouridine, P-102
 3-Methylpseudouridine, P-102
 3-*C*-Methylpsicose, M-284
 3-*O*-Methylquinovosyl-(1 \rightarrow 4)-*D*-digitoxose, V-18
 3-*O*-Methyl-*D*-rhamnal, D-679
 3-*O*-Methyl-*L*-rhamnal, D-679
N-Methyl-*L*-rhamnopyranosylamine, R-80
 2-*O*-Methyl-*D*-rhamnose, R-79
 2-*O*-Methyl-*L*-rhamnose, R-79
 3-*O*-Methyl-*L*-rhamnose, R-79
 4-*O*-Methyl-*L*-rhamnose, R-79
 5-*O*-Methyl-*L*-rhamnose, R-79

- 2-*C*-Methyl-D-ribofuranose 2,3-*O*-carbonate, M-286
 9-(2-*C*-Methyl-β-D-ribofuranosyl)adenine, M-219
 9-(3-*C*-Methyl-β-D-ribofuranosyl)adenine, M-220
 9-(2'-*O*-Methyl-β-D-ribofuranosyl)adenine, M-221
 2-Methyl-9-β-D-ribofuranosyladenine, M-223
 1-(2-*C*-Methyl-β-D-ribofuranosyl)-2,4(1*H*,3*H*)-pyrimidinedione, M-301
 2-*C*-Methylribonic acid, M-285
 2-*C*-Methyl-D-ribono-1,4-lactone, M-285
 2-*C*-Methyl-L-ribono-1,4-lactone, M-285
 2-*C*-Methyl-DL-ribono-1,4-lactone, M-285
 5-*O*-Methyl-D-ribono-1,4-lactone, R-128
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 1,2,3,4-Tetra-*O*-benzoyl-5-deoxy-DL-arabinitol, D-40
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- α -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- β -D-galactopyranose, D-81
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy-6-fluoro- α -D-glucopyranose, D-92
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy-6-fluoro- β -D-glucopyranose, D-92
 2,3,4,5-Tetra-*O*-benzoyl-1-deoxy-D-galactitol, D-123
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy- β -L-glucopyranose, D-142
 2,5,6,7-Tetra-*O*-benzoyl-3-deoxy-D-*arabino*-hept-2-enono-1,4-lactone, D-149
 2,5,6,7-Tetra-*O*-benzoyl-3-deoxy-D-*lyxo*-hept-2-enono-1,4-lactone, D-150
 1,2,3,6-Tetra-*O*-benzoyl-4-deoxy- α -L-*threo*-hex-4-enopyranose, H-79
 1,3,4,6-Tetra-*O*-benzoyl-2-deoxy- β -D-*arabino*-hexopyranose, D-199
 1,2,4,5-Tetra-*O*-benzoyl-3-deoxy- β -D-*erythro*-hex-2-ulopyranose, D-219
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy-6-iodo-D-psicofuranose, D-269
 2,3,4,5-Tetra-*O*-benzoyl-1-deoxy-D-lyxitol, D-40
 2,3,4,5-Tetra-*O*-benzoyl-1-deoxy-DL-lyxitol, D-40
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 1,2,5,6-Tetra-*O*-benzoyl-3,4-di-*O*-tosyl-D-mannitol, M-25
 1,2,3,4-Tetra-*O*-benzoylerythritol, E-14
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 1,3,4,6-Tetra-*O*-benzoyl-D-fructofuranosyl bromide, F-53
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 2,3,4,6-Tetra-*O*-benzoyl- α -D-galactopyranosyl fluoride, G-28
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 2,3,4,6-Tetra-*O*-benzoyl- α -D-glucopyranosyl fluoride, G-262
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2,3,4,6-Tetra-*O*-benzyl- α -*D*-galactopyranosyl fluoride, G-28
2,3,4,6-Tetra-*O*-benzyl- α -*D*-galactopyranosyl tetramethylphosphoramidate, T-21
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2,3,4,6-Tetra-*O*-benzyl-*D*-glucitol, G-247
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2,3,4,6-Tetra-*O*-benzyl- α -*D*-glucopyranosyl isocyanide, G-532
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2,3,4,6-Tetra-*O*-benzyl- α -*D*-glucopyranosyl *N,N,N',N'*-tetramethylphosphoramidate, G-272
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2,3,4,6-Tetra-*O*-benzyl-*D*-glucothiono-1,5-lactam, T-171
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1,2,3,4-Tetrahydro-2,4-dioxo-1- β -*D*-ribofuranosyl-5-pyrimidineacetic acid, U-11
1,2,3,6-Tetrahydro-2,6-dioxo-3- β -*D*-ribofuranosyl-4-pyrimidinecarboxylic acid, O-38
1,2,3,4-Tetrahydro-2,4-dioxo-1- β -*D*-ribofuranosyl-5-pyrimidinecarboxylic acid, U-12
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N-(Tetrahydro-3-furanyl)adenosine, T-13
N-(3-Tetrahydrofuran-6-aminopurine riboside, T-13
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Tetrahydrofurfuryl cinnamate, T-25
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2,3,3*a*,9*a*-Tetrahydro-3-hydroxy-6-imino-6*H*-furo[2',3':4,5]oxazolo[3,2-*a*]pyrimidine-2-methanol, C-170
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5,6,7,8-Tetrahydro-*L*-monapterin, A-470
5,6,7,8-Tetrahydro-*L*-monapterin, A-470
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3,4,7,8-Tetrahydro-3- β -*D*-ribofuranosylimidazo[4,5-*d*][1,3]diazepin-8-ol, C-146
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3,4,4*a*,10*b*-Tetrahydro-3,4,8,10-tetrahydroxy-2-(hydroxymethyl)-9-methoxypyran[3,2-*c*][2]benzopyran-6(2*H*)-one, B-29
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Tetrahydro-2,2,6,6-tetramethyl[1,3]dioxino[5,4-*d*]-1,3-dioxin, E-14
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1,3,4,5-Tetrahydroxycyclohexanecarboxylic acid, Q-10
2,3,4,5-Tetrahydroxycyclohexanemethanol, H-158
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2,4,5,6-Tetrahydroxyhexanoic acid, T-34
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3',5'-*O*-(Tetraisopropylidisiloxane-1,3-diyl)adenosine, T-37
3',5'-*O*-(Tetraisopropylidisiloxane-1,3-diyl)cytidine, T-38
3',5'-*O*-(Tetraisopropylidisiloxane-1,3-diyl)guanosine, T-39
3',5'-*O*-(Tetraisopropylidisiloxane-1,3-diyl)uridine, T-40
3',5'-*O*-(Tetraisopropylidisiloxanyl)adenosine, T-37
3',5'-*O*-(Tetraisopropylidisiloxanyl)uridine, T-40
2,3,4,6-Tetrakis(*tert*-butyldimethylsilyl)-*D*-glucono-1,5-lactone, G-252
3',5'-*O*-[1,1,3,3-Tetrakis(1-methylethyl)-1,3-disiloxanediy]adenosine, T-37
3',5'-*O*-[1,1,3,3-Tetrakis(1-methylethyl)-1,3-disiloxanediy]cytidine, T-38
3',5'-*O*-[1,1,3,3-Tetrakis(1-methylethyl)-1,3-disiloxanediy]guanosine, T-39
3',5'-*O*-[1,1,3,3-Tetrakis(1-methylethyl)-1,3-disiloxanediy]uridine, T-40
1,2,3,4-Tetrakis-*O*-(*p*-nitrobenzoyl)-5-thio- β -*L*-rhamnopyranose, T-88
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2,3,4,5-Tetra-*O*-methyl-1,6-ditrityl-*D*-mannitol, M-25
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2,3,4,5-Tetra-*O*-methylgalactitol, G-4
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2,3,5,6-Tetra-*O*-methyl-*D*-galactonamide, G-23
2,3,4,6-Tetra-*O*-methyl-*D*-galactonic acid, G-23
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2,3,5,6-Tetra-*O*-methylgalactose, T-42
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2,3,5,6-Tetra-*O*-methyl-*D*-glucononitrile, G-250
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 2,3,4,6-Tetra-*O*-methyl- α -D-glucopyranosyl isocyanide, G-532
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 1,2,3-Tri-*O*-acetyl-4-deoxy-α-L-erythro-hex-4-enodialdo-1,5-pyranose, D-169
 1,2,3-Tri-*O*-acetyl-4-deoxy-β-L-erythro-hex-4-enodialdo-1,5-pyranose, D-169
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 2,5,6-Tri-*O*-acetyl-3-deoxy-*D*-ribo-hexono-1,4-lactone, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-*L*-lyxo-hexono-1,4-lactone, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-*L*-ribo-hexono-1,4-lactone, T-34
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 3,5,6-Tri-*O*-acetyl-2-deoxy-*D*-lyxo-hexono-1,4-lactone, D-188
 3,5,6-Tri-*O*-acetyl-2-deoxy-*L*-ribo-hexono-1,4-lactone, D-189
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 1,4,5-Tri-*O*-acetyl-3-deoxy-2-*C*-(hydroxymethyl)-2,2'-*O*-isopropylidene-*D*-erythro-pentitol, D-231
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 1,2,4-Tri-*O*-acetyl-6-deoxy-3-*O*-methyl-α-L-glucopyranose, D-142
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 1,3,6-Tri-*O*-acetyl-2,4-diazido-2,4-dideoxy-α-D-glucopyranose, D-519
 2,3,4-Tri-*O*-acetyl-1,6-di-*S*-benzoyl-1,6-dithio-β-D-glucopyranose, D-765
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 2,3,4-Tri-*O*-benzoyl-L-erythronamide, T-161
 2,3,4-Tri-*O*-benzoyl-D-erythronic acid, T-161
 3,4,6-Tri-*O*-benzoyl-1,2-*O*-ethylene- β -D-glucopyranose, E-29
 1,3,4-Tri-*O*-benzoyl- β -D-fructofuranosyl 6-*O*-acetyl- β -D-glucopyranosyl-
 (1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-4,6-di-*O*-acetyl- α -D-glucopyranoside,
 A-116
 2,3,4-Tri-*O*-benzoyl- α -D-fucopyranosyl fluoride, F-97
 2,3,5-Tri-*O*-benzoyl-D-galactono-1,4-lactone, G-24
 2,3,4-Tri-*O*-benzoyl- β -D-galactopyranose, A-616
 2,3,6-Tri-*O*-benzoyl- α -D-galactopyranosyl fluoride, G-28
 3,4,6-Tri-*O*-benzoyl-D-glucal, G-237
 2,3,4-Tri-*O*-benzoyl- α -D-glucose diethyl dithioacetate, G-260
 3,5,6-Tri-*O*-benzoyl-D-glucose diethyl dithioacetate, G-516
 3,4,6-Tri-*O*-benzoyl- α -D-*arabino*-hexopyranos-2-ulosyl bromide, H-116
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 1,4,6-Tri-*O*-benzoyl-2,3-*O*-isopropylidene- β -D-fructofuranose, I-63
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-glucofuranose, I-66
 3,4,5-Tri-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-glucoseptanose, G-528
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene- β -L-talofuranose, I-75
 2,3,5-Tri-*O*-benzoyl- α -D-lyxofuranosyl fluoride, L-63
 2,3,5-Tri-*O*-benzoyl- β -D-lyxofuranosyl fluoride, L-63
 2,3,5-Tri-*O*-benzoyl-DL-lyxono-1,4-lactone, M-268
 2,3,4-Tri-*O*-benzoyl- α -D-lyxopyranosyl fluoride, L-66
 2,3,5-Tri-*O*-benzoyl-L-lyxose dibenzyl dithioacetate, L-73
 2,5,6-Tri-*O*-benzoyl-D-mannono-1,4-lactone, M-37
 1,4,5-Tri-*O*-benzoyl-3-*O*-mesyl- β -D-fructopyranosyl bromide, F-79
 1,4,5-Tri-*O*-benzoyl-3-*O*-mesyl- β -D-fructopyranosyl chloride, F-80
 1,3,5-Tri-*O*-benzoyl-2-*O*-methyl- β -D-arabinofuranose, A-850
 2,3,6-Tri-*O*-benzoyl-5-*O*-methyl- β -D-glucofuranose, M-258
 2,3,5-Tri-*O*-benzoyl-2-*C*-methyl-L-lyxono-1,4-lactone, M-268
 1,3,4-Tri-*O*-benzoyl-2-*O*-methyl- β -D-xylopyranose, M-306
 2,3,4-Tri-*O*-benzoyl-L-rhamnono-1,5-lactone, D-286
 2,3,4-Tri-*O*-benzoyl- α -L-rhamnopyranosyl fluoride, R-12
 2,3,4-Tri-*O*-benzoylribitol, R-94
 1,3,5-Tri-*O*-benzoyl- α -D-ribofuranose, R-138
 2,3,5-Tri-*O*-benzoyl- β -D-ribofuranosyl bromide, R-96
 2,3,5-Tri-*O*-benzoyl- α -D-ribofuranosyl chloride, R-144
 2,3,5-Tri-*O*-benzoyl- β -D-ribofuranosyl chloride, R-144
 2,3,5-Tri-*O*-benzoyl- α -D-ribofuranosyl fluoride, R-97
 2,3,5-Tri-*O*-benzoyl- β -D-ribofuranosyl fluoride, R-97
 2,3,5-Tri-*O*-benzoyl- β -D-ribofuranosyl phenyl sulfoxide, T-89
 2,3,5-Tri-*O*-benzoyl- β -D-ribofuranosyl 2,3,5-tri-*O*-benzoyl- β -D-
 ribofuranoside, R-100
 2,3,4-Tri-*O*-benzoyl- α -D-ribofuranosyl bromide, R-131
 2,3,4-Tri-*O*-benzoyl- β -D-ribofuranosyl bromide, R-131
 2,3,4-Tri-*O*-benzoyl- α -D-ribofuranosyl chloride, R-144
 2,3,4-Tri-*O*-benzoyl- β -D-ribofuranosyl chloride, R-144
 2,3,4-Tri-*O*-benzoyl- α -D-ribofuranosyl fluoride, R-132
 2,3,4-Tri-*O*-benzoyl- β -D-ribofuranosyl fluoride, R-132
 2,3,5-Tri-*O*-benzoyl-D-ribose dibenzyl dithioacetate, R-139
 1,3,4-Tri-*O*-benzoyl-D-*glycero*-tetrolase, T-162
 2,3,5-Tri-*O*-benzoyl-6-*O*-trityl-D-galactono-1,4-lactone, G-24
 2,3,4-Tri-*O*-benzoyl-6-*O*-trityl- α -D-glucopyranosyl fluoride, G-262
 2,3,5-Tri-*O*-benzoyl- α -D-xylofuranosyl bromide, X-5
 2,3,5-Tri-*O*-benzoyl- β -D-xylofuranosyl bromide, X-5
 1,2,4-Tri-*O*-benzoyl- α -D-xylopyranose, X-81
 2,3,4-Tri-*O*-benzoyl- α -D-xylopyranose, X-81
 2,3,4-Tri-*O*-benzoyl- α -D-xylopyranosyl bromide, X-14
 2,3,4-Tri-*O*-benzoyl- β -D-xylopyranosyl bromide, X-14
 2,3,4-Tri-*O*-benzoyl- α -D-xylopyranosyl chloride, X-15
 2,3,4-Tri-*O*-benzoyl- β -D-xylopyranosyl chloride, X-15
 2,3,4-Tri-*O*-benzoyl- α -D-xylopyranosyl fluoride, X-16
 2,3,4-Tri-*O*-benzoyl- β -D-xylopyranosyl fluoride, X-16
 2,3,5-Tri-*O*-benzoyl-D-xylose dibenzyl dithioacetate, X-82
 2,3,5-Tri-*O*-benzoyl-D-arabinitol, A-792
 2,3,4-Tri-*O*-benzoyl-L-arabinitol, A-792
 2,3,5-Tri-*O*-benzoyl- α -L-arabinofuranose, A-850
 2,3,5-Tri-*O*-benzoyl- β -L-arabinofuranose, A-850
 2,3,5-Tri-*O*-benzoyl- α -D-arabinofuranosyl chloride, A-794
 2,3,5-Tri-*O*-benzoyl- α -L-arabinofuranosyl fluoride, A-795
 2,3,5-Tri-*O*-benzoyl- α -D-arabinofuranosyl isocyanide, A-853
 2,3,5-Tri-*O*-benzoyl-D-arabinono-1,4-lactone, A-826
 2,3,4-Tri-*O*-benzoyl- β -L-arabinopyranosyl 2,3,4-tri-*O*-benzoyl- β -L-
 arabinopyranoside, A-829
 2,3,4-Tri-*O*-benzoyl-6-*O*-chloroacetyl- α -L-idopyranosyl chloride, I-6
 2,3,4-Tri-*O*-benzoyl-6-deoxy- α -L-galactopyranosyl bromide, F-95
 2,4,6-Tri-*O*-benzoyl-3-deoxy-*threo*-hex-2-enono-1,5-lactone, D-173
 3,4,6-Tri-*O*-benzoyl-2-deoxy-D-*arabino*-hexose, D-199
 3,4,6-Tri-*O*-benzoyl-2-deoxy-D-*lyxo*-hexose, D-202
 3,4,6-Tri-*O*-benzoyl-2-deoxy-D-*ribo*-hexose, D-205
 3,4,6-Tri-*O*-benzoyl-2-deoxy-2-trichloroacetamido- α -D-glucopyranosyl
 trichloroacetimidate, A-273
 3,4,5-Tri-*O*-benzoyl-1,2-dideoxy-D-*arabino*-hex-1-enitol, D-576
 3,4,5-Tri-*O*-benzoyl-1,2-dideoxy-L-*lyxo*-hex-1-enitol, D-577
 2,3,4-Tri-*O*-benzoyl-5,6-dideoxy-L-*arabino*-hex-5-enitol, D-577
 2,3,4-Tri-*O*-benzoyl-5,6-dideoxy-D-*xylo*-hex-5-enitol, D-579
 2,3,4-Tribenzoyl-5,6-dideoxy-D-*xylo*-hex-5-enose, D-593
 2,3,4-Tri-*O*-benzoyl-1,5-ditosyl-L-arabinitol, A-792
 2,3,4-Tri-*O*-benzoyl-1,5-ditrityl-L-arabinitol, A-792
 2,3,4-Tri-*O*-benzoyl-1,5-di-*O*-tritylribitol, R-94
 2,3,4-Tri-*O*-benzoyl- α -D-fucopyranose, F-163
 2,3,4-Tri-*O*-benzoyl- α -L-fucopyranose, F-163
 2,3,4-Tri-*O*-benzoyl- α -L-fucopyranosyl bromide, F-95
 2,3,4-Tri-*O*-benzoyl-L-fucose, F-163
 2,3,4-Tri-*O*-benzoyl- α -D-galactopyranose, G-193
 3,4,6-Tri-*O*-benzoyl- β -D-galactopyranosylethene, A-600
 2,3,6-Tri-*O*-benzoyl-D-galactose, G-193
 2,4,6-Tri-*O*-benzoyl-D-galactose, G-193
 3,4,6-Tri-*O*-benzoyl-D-glucal, G-237
 2,3,4-Tri-*O*-benzoyl- α -D-glucopyranosyl fluoride, G-262
 2,3,6-Tri-*O*-benzoyl- β -D-glucopyranosyl fluoride, G-262
 2,3,4-Tri-*O*-benzoyl- α -D-glucopyranosylazide, G-259
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 1,2,3,5,4,6-Tri-*O*-benzylidene-L-gulitol, G-247
 1,3,2,5,4,6-Tri-*O*-benzylidene-D-mannitol, M-25
 1,2,5-Tri-*O*-benzyl-*myo*-inositol, I-32
 3,4,5-Tri-*O*-benzyl-*myo*-inositol, I-32
 3,5,6-Tri-*O*-benzyl-1,2-*O*-isopropylidene- α -D-glucofuranose, I-66
 3,4,6-Tri-*O*-benzyl- α -D-mannopyranosyl 3,4,6-tri-*O*-benzyl- α -D-
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 3,4,6-Tri-*O*-benzyl-D-mannose, M-114
 3,4,6-Tri-*O*-benzyl-1,2-*O*-(1-methoxyethylidene)- α -D-glucopyranose, M-142
 2,3,5-Tri-*O*-benzyl- α -D-ribofuranosyl fluoride, R-97
 2,3,5-Tri-*O*-benzyl- β -D-ribofuranosyl fluoride, R-97
 2,3,5-Tri-*O*-benzyl- β -D-ribofuranosyl 2,3,5-tri-*O*-benzyl- β -D-ribofuranoside,
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 2,3,5-Tri-*O*-benzyl-1-*O*-trityl-D-arabinitol, A-792
 2,3,4-Tri-*O*-benzyl- α -D-xylopyranosyl fluoride, X-16
 2,3,5-Tri-*O*-benzyl-D-xylose dibenzyl dithioacetate, X-82
 1-*O*-Trichloroacetimidylglucopyranose, G-273
 2,2,2-Trichloroethyl 2-acetamido-4,6-*O*-benzylidene-2-deoxy- β -D-
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 2,2,2-Trichloroethyl 2-acetamido-2-deoxyglucopyranoside, T-143
 2,2,2-Trichloroethyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-
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 2,2,2-Trichloroethyl 2-(acetylamino)-2-deoxyglucopyranoside, T-143
 2,2,2-Trichloroethyl 4-*O*-acetyl-2,3,6-tri-*O*-benzoyl- α -D-galactopyranoside,
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- 2,2,2-Trichloroethyl 3,6-di-*O*-benzyl-2-deoxy-2-phthalimido-β-D-glucopyranoside, D-353
 2,2,2-Trichloroethyl galactopyranoside, T-144
 2,2,2-Trichloroethyl glucopyranoside, T-145
 2,2,2-Trichloroethyl β-D-glucopyranosiduronic acid, U-18
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl-α-D-galactopyranoside, T-144
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl-β-D-galactopyranoside, T-144
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranoside, T-145
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, T-145
 2,2,2-Trichloroethyl 2,3,6-tri-*O*-benzoyl-α-D-galactopyranoside, T-144
 1,2-*O*-(2,2,2-Trichloroethylidene)glucofuranose, C-65
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 2,3,4-Tri-*O*-chlorosulfonyl-α-L-fucopyranosyl chloride, F-96
 2,3,4-Tri-*O*-chlorosulfonyl-β-L-fucopyranosyl chloride, F-96
 3,4,6-Trichloro-3,4,6-trideoxyallose, T-146
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 5,8,9-Trideoxy-7,10-dihydroxy-5-oxoamphotericin B, M-340
 2,3,6-Trideoxy-3-dimethylamino-*ribo*-hexose, T-150
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 1,2,5-Trideoxy-4-*O*-(β-D-glucopyranosyl)-1,5-imino-D-*arabino*-hexitol, T-152
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 2,3,7-Trideoxy-*arabino*-heptonic acid, T-153
 2,3,7-Trideoxy-D-*arabino*-heptono-1,4-lactone, T-153
 1,2,6-Trideoxy-D-*ribo*-hex-1-enopyranose, D-679
 2,3,6-Trideoxy-*glycero*-hex-2-enopyranos-4-ulose, H-179
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 2,3,6-Trideoxyhex-2-enos-4-ulose, H-179
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 3,6,10-Trideoxy-4-*C*-(1-hydroxyethyl)-D-*erythro*-D-*gulo*-decose, C-31
 2,3,6-Trideoxy-4-*C*-hydroxymethylcarbinyl-*threo*-hexopyranose, P-73
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 1,5,6-Trideoxy-1,5-imino-L-allitol, M-281
 1,5,6-Trideoxy-1,5-imino-D-altritol, M-281
 1,5,6-Trideoxy-1,5-imino-L-altritol, M-281
 1,5,6-Trideoxy-1,5-imino-D-galactitol, M-281
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 1,5,6-Trideoxy-1,5-imino-L-iditol, M-281
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 2,3,4-Trideoxy-2-methylene-hex-3-enopyranose, T-158
 2,3,6-Trideoxy-3-*C*-methyl-4-*O*-methyl-3-nitro-*xylo*-hexopyranose, R-154
 2,3,6-Trideoxy-3-*C*-methyl-4-*O*-methyl-3-nitro-*arabino*-hexose, E-37
 2,3,6-Trideoxy-3-*C*-methyl-3-nitro-L-*ribo*-hexose, D-17
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 1,3,5-Trideoxy-1,3,5-tris(dimethylamino)inositol, T-138
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 2,4,5-Trifluoro-6-(fluoromethyl)tetrahydro-2*H*-pyran-2-ol, T-159
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 1,4,5-Tri-*O*-galloyl-*proto*-quercitol, Q-6
 2,4,5-Tri-*O*-galloyl-*proto*-quercitol, Q-6
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 3,4,5-Trihydroxy-6-(hydroxymethyl)-2-piperidinethione, T-171
 3,4,5-Trihydroxy-6-(hydroxymethyl)-2-piperidinone, T-172
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 3,4,5-Trihydroxy-*N*-methylpiperidine, P-74
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 2,4,5-Trihydroxypentanoic acid, T-174
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 3,4,5-Trihydroxy-2-pentanone, T-176
 3,4,5-Trihydroxypiperidine, P-74
 3,4,5-Trihydroxy-2-piperidinemethanol, H-175
 3,4,5-Trihydroxy-2-piperidinone, T-177
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 1,2,3,4:5,6-Tri-*O*-isopropylidene-D-glucose, G-514
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 1,2,3,4:5,6-Tri-*O*-isopropylidene-L-*chiro*-inositol, I-28
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 8,9,10-Trimethoxy-2,7-dioxo-4-thia-3-phosphabicyclo[4.4.0]decane 3-oxide, M-178
 8,9,10-Trimethoxy-4,7-dioxo-2-thia-3-phosphabicyclo[4.4.0]decane 3-sulfide, M-179
 8,9,10-Trimethoxy-4-methyl-2,7,4-dioxaza-3-phosphabicyclo[4.4.0]decane 3-sulfide, M-170
 1,2,3-Trimethoxypropane, G-546
 8,9,10-Trimethoxy-2,4,7-trioxa-3-phosphabicyclo[4.4.0]decane 3-oxide, M-175
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 1,3,2,4:5,6-Tri-*O*-methylene-D-glucitol, G-247
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- Methyl 3,4-*O*-isopropylidene-arabinopyranoside; β -L-*form*, M-197
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- Methyl 3,4-*O*-isopropylidene- β -D-arabinopyranoside, M-153
- Methyl 3,4-*O*-isopropylidene-2-*O*-mesyl- α -D-arabinopyranoside, M-153
- Methyl 3,4-*O*-isopropylidene-2-*O*-mesyl- β -D-arabinopyranoside, M-153
- Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -D-arabinopyranoside, M-153
- Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -L-arabinopyranoside, M-197
- Methyl 3,4-*O*-isopropylidene-5-thio- β -D-arabinopyranoside, T-58
- Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- β -D-arabinopyranoside, M-153
- Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- β -L-arabinopyranoside, M-197
- Methyl 2-*O*-methyl- α -D-arabinofuranoside, M-152
- Methyl 3-*O*-methyl- α -D-arabinofuranoside, M-152
- Methyl 5-*O*-methyl- α -D-arabinofuranoside, M-152
- Methyl 2-*O*-methyl- β -D-arabinofuranoside, M-152
- Methyl 2-*O*-methyl- β -L-arabinopyranoside, 8CI, M-153
- Methyl 2-*O*-methyl- β -D-arabinopyranoside, M-153
- Methyl 4-*O*-methyl- β -D-arabinopyranoside, M-153
- Methyl 4-*O*-methyl- β -L-arabinopyranoside, M-153
- Methyl 4-*O*-methyl- α -DL-arabinopyranoside, M-153
- Methyl 2-*C*-methyl-D-arabinopyranoside, M-229
- Methyl 2-*C*-methyl- β -L-arabinopyranoside, M-229
- Methyl 5-thio- α -D-arabinopyranoside, T-58
- Methyl 5-thio- β -D-arabinopyranoside, T-58
- Methyl 5-thio- β -L-arabinopyranoside, T-58
- Methyl 5-*O*-tosyl- α -L-arabinofuranoside, M-152
- Methyl 5-*O*-tosyl- β -L-arabinofuranoside, M-152
- Methyl 2-*O*-tosyl- α -L-arabinopyranoside, M-153
- Methyl 3-*O*-tosyl- α -L-arabinopyranoside, M-153
- Methyl 4-*O*-tosyl- α -L-arabinopyranoside, M-153
- Methyl 2-*O*-tosyl- β -L-arabinopyranoside, M-153
- Methyl 4-*O*-tosyl- β -L-arabinopyranoside, M-153
- Methyl 2,3,5-triacetamido-2,3,5-trideoxy- β -D-arabinofuranoside, T-134
- Methyl 2,3,5-tri-*O*-acetyl- α -D-arabinofuranoside, M-152
- Methyl 2,3,4-tri-*O*-acetyl- α -D-arabinopyranoside, M-153
- Methyl 2,3,4-tri-*O*-acetyl- β -D-arabinopyranoside, M-153
- Methyl 2,3,4-tri-*O*-acetyl- β -L-arabinopyranoside, M-153
- Methyl 2,3,4-tri-*O*-acetyl-5-thio- β -D-arabinopyranoside, T-58
- Methyl 2,3,5-triamino-2,3,5-trideoxy- β -D-arabinofuranoside, T-134

Methyl 2,3,5-tri-*O*-benzoyl- α -D-arabinofuranoside, M-152
 Methyl 2,3,4-tri-*O*-methyl- β -L-arabinopyranoside, 8CI, M-153
 Methyl 2,3,4-tri-*O*-methyl- β -D-arabinopyranoside, M-153
 Methyl 2,3,4-tri-*O*-methyl- α -L-arabinopyranoside, M-153
 Methyl 2,3,4-tri-*O*-tosyl- β -L-arabinopyranoside, M-153
 Methyl 5-*O*-trityl- α -D-arabinofuranoside, M-152
 Methyl 5-*O*-trityl- α -L-arabinofuranoside, M-152
 Methyl 5-*O*-trityl- β -L-arabinofuranoside, M-152
 2-*C*-Methylarabinose; *D-form*, M-229
 2-*C*-Methylarabinose; *L-form*, M-229
N-Methyl-L-arabinosylamine, A-854
N-Phenyl-D-arabinosylamine, A-854
N-Phenyl-L-arabinosylamine, A-854
 1,2,3,5-Tetra-*O*-acetyl- α -D-arabinofuranose, A-850
 1,2,3,4-Tetra-*O*-acetyl- α -D-arabinopyranose, A-850
 1,2,3,4-Tetra-*O*-acetyl- β -D-arabinopyranose, A-850
 1,2,3,4-Tetra-*O*-acetyl- α -L-arabinopyranose, A-850
 1,2,3,4-Tetra-*O*-acetyl- β -L-arabinopyranose, A-850
 2,3,4,5-Tetra-*O*-acetyl-D-arabinose diethyl dithioacetal, A-852
 2,3,4,5-Tetra-*O*-acetyl-L-arabinose diethyl dithioacetal, A-852
 2,3,4,5-Tetra-*O*-acetyl-D-arabinose, A-850
N,2,3,4-Tetraacetyl-L-arabinosylamine, A-854
 1,2,3,4-Tetra-*O*-acetyl-5-thio- β -L-arabinopyranose, T-58
 1,2,3,4-Tetra-*O*-acetyl-5-thio- β -L-arabinopyranose, T-58
 1,2,3,4-Tetra-*O*-benzoyl- α -D-arabinopyranose, A-850
 1,2,3,4-Tetra-*O*-benzoyl- β -D-arabinopyranose, A-850
 1,2,3,4-Tetra-*O*-benzoyl- α -L-arabinopyranose, A-850
 1,2,3,4-Tetra-*O*-benzoyl- β -L-arabinopyranose, A-850
 1-Thioarabinose; α -L-Furanose-*form*; Et glycoside, tribenzoyl, T-57
 5-Thioarabinose; β -L-Furanose-*form*; Me glycoside, disulfide, T-58
 5-Thioarabinose; β -D-Pyranose-*form*, T-58
 1-Thioarabinose; *L-form*, T-57
 5-Thioarabinose; *L-form*, T-58
 2,3,5-Triacetamido-2,3,5-trideoxy-D-arabinofuranose, T-134
 2,3,4-Tri-*O*-acetyl-1-*S*-acetyl-1-thio-L-arabinose, T-57
 2,3,4-Tri-*O*-acetyl- α -D-arabinopyranosyl isothiocyanate, A-833
 2,3,4-Tri-*O*-acetyl-D-arabinosylamine, A-854
 1,3,5-Tri-*O*-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
 2,3,4-Tri-*O*-acetyl-5-*O*-tosyl-D-arabinose diethyl dithioacetal, A-852
 2,3,5-Tribenzamido-2,3,5-trideoxy-D-arabinofuranose, T-134
 1,2,3-Tri-*O*-benzoyl- β -L-arabinopyranose, A-850
 1,2,4-Tri-*O*-benzoyl- β -L-arabinopyranose, A-850
 1,3,5-Tri-*O*-benzoyl-2-*O*-methyl- β -D-arabinofuranose, A-850
 2,3,5-Tri-*O*-benzoyl- α -L-arabinofuranose, A-850
 2,3,5-Tri-*O*-benzoyl- β -L-arabinofuranose, A-850
 2,3,5-Tri-*O*-benzoyl- α -D-arabinofuranosyl isocyanide, A-853
 2,3,5-Tri-*O*-methyl- α -D-arabinofuranosyl isocyanide, A-853

lyxo-Pentoses

5-Acetamido-5-deoxy-2,3-*O*-isopropylidene- α -D-lyxofuranose, A-299
 5-Acetamido-5-deoxy- α -D-lyxopyranose, A-299
 2-Acetamido-2-deoxy-D-lyxose, A-296
 2-Acetamido-2-deoxy-L-lyxose, A-296
 4-Acetamido-4-deoxy-5-thio-L-lyxopyranose, A-350
 5-Acetamido-1,2,3,4-tetra-*O*-acetyl-5-deoxy- α -D-lyxopyranose, A-299
 5-Acetamido-1,2,3-tri-*O*-acetyl-4-deoxy-5-thio- α -L-lyxopyranose, A-350
 1-*O*-Acetyl-2,3,4-tri-*O*-benzoyl- α -D-lyxopyranose, L-72
 4-Amino-4-deoxylyxose; L-Furanose-*form*, A-298
 2-Amino-2-deoxylyxose; *D-form*, A-296
 2-Amino-2-deoxylyxose; *L-form*, A-296
 1,2-Anhydro-3,4-di-*O*-benzyl- β -D-lyxopyranose, A-663
 5-Azido-5-deoxy-1,2-*O*-isopropylidene- β -D-lyxofuranose, A-911
 5-Azido-5-deoxylyxose; *D-form*, A-911
 5-*O*-Benzoyl-2,3-*O*-carbonyl- α -D-lyxofuranosyl bromide, L-75
 Benzyl 5-acetamido-5-deoxy-2,3-*O*-isopropylidene- α -D-lyxofuranoside, A-299
 Benzyl 5-acetamido-5-deoxy- α -D-lyxofuranoside, A-299
 Benzyl 4-amino-2,3-anhydro-4-deoxy- α -D-lyxopyranoside, A-298
 Benzyl 4-amino-2,3-anhydro-4-deoxy- β -L-lyxopyranoside, A-298
 Benzyl 2-*O*-benzoyl-4-bromo-4-deoxy- β -L-lyxopyranoside, B-84
 Benzyl 2-*O*-benzoyl-3-*C*-benzylloxymethyl-3,5-dideoxy- α -L-lyxofuranoside, D-622
 Benzyl 4-bromo-4-deoxy-2,3-*O*-isopropylidene- α -L-lyxopyranoside, B-84
 Benzyl 4-bromo-4-deoxy-2,3-*O*-isopropylidene- β -L-lyxopyranoside, B-84
 Benzyl 4-bromo-4-deoxy- α -D-lyxopyranoside, B-84
 Benzyl 4-bromo-4-deoxy- α -L-lyxopyranoside, B-84
 Benzyl 4-bromo-4-deoxy- β -L-lyxopyranoside, B-84
 Benzyl 2,3-di-*O*-benzoyl-4-bromo-4-deoxy- β -L-lyxopyranoside, B-84
 Benzyl 2,3-*O*-isopropylidene- α -D-lyxofuranoside, I-70
 Benzyl 2,3-*O*-isopropylidene- β -D-lyxofuranoside, L-72
 Benzyl 2,3-*O*-isopropylidene-5-*O*-mesyl- α -D-lyxofuranoside, I-70
 3-*O*-Benzyl-1,2-*O*-isopropylidene- β -L-lyxofuranose, L-72

2-Chloro-2-deoxylyxose; α -D-Pyranose-*form*, C-95
 2,3-Di-*O*-acetyl-1-*O*-benzoyl-4-bromo-4-deoxy- α -L-lyxopyranose, B-84
 1,5-Di-*O*-acetyl-2,3-*O*-isopropylidene- α -D-lyxofuranose, I-70
 3,4-Di-*O*-benzoyl-2-bromo-2-deoxy- α -D-lyxopyranosyl bromide, L-75
 3,4-Di-*O*-benzoyl-2-bromo-2-deoxy- β -D-lyxopyranosyl bromide, L-75
 1,5-Di-*O*-benzoyl-2,3-*O*-isopropylidene- α -D-lyxofuranose, I-70
 4,5-Di-*O*-benzyl-2-deoxy-2-*C*-methyl-L-lyxose, D-306
 2,4-Di-*O*-methyl-D-lyxose, L-72
 3-*C*-Formyllyxose; *L-form*, F-22
 3-*C*-(Hydroxymethyl)lyxose; *L-form*, H-167
 1,2-*O*-Isopropylidene- β -L-lyxofuranose, L-72
 2,3-*O*-Isopropylidenelyxose; α -D-Furanose-*form*, I-70
 2,3-*O*-Isopropylidene-5-*O*-mesyl- α -D-lyxofuranose, I-70
 1,2-*O*-Isopropylidene-5-*O*-tosyl- β -L-lyxofuranose, L-72
 Lyxose dibenzyl dithioacetal; *D-form*, L-73
 Lyxose diethyl dithioacetal; *D-form*; 2,3,4-Tribenzyl, L-74
 Lyxose diethyl dithioacetal; *D-form*, L-74
 Lyxose diethyl dithioacetal; *L-form*, L-74
 Lyxose; α -D-Pyranose-*form*, L-72
 Lyxose; *D-form*, L-72
 Lyxose; *L-form*, L-72
 Lyxose; *DL-form*, L-72
 Lyxosyl chloride; α -D-Pyranose-*form*; Tribenzoyl, 2-*C*-chloro, L-76
 Lyxosyl chloride; β -D-Pyranose-*form*; Tribenzoyl, 2-*C*-chloro, L-76
 Lyxosylamine; *D-form*, L-77
 Lyxosylamine; *L-form*, L-77
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4-deoxy-5-thio- β -L-lyxopyranoside, A-350
 Methyl 5-*S*-acetyl-2,3-*O*-isopropylidene-5-thio- α -D-lyxofuranoside, T-80
 Methyl 2-amino-2-deoxy- α -D-lyxofuranoside, A-296
 Methyl 4-amino-4-deoxy-2-*O*-mesyl- α -L-lyxopyranoside, A-298
 Methyl 4-amino-4-deoxy-5-thio- β -L-lyxopyranoside, A-350
 Methyl 2,3-anhydro-4-bromo-4-deoxy- α -L-lyxopyranoside, B-84
 Methyl 4-*O*-benzoyl-3-bromo-3-deoxy-2-*O*-methyl- β -D-lyxopyranoside, B-83
 Methyl 5-*O*-benzoyl-2,3-di-*O*-tosyl- β -D-lyxofuranoside, M-201
 Methyl 5-*S*-benzoyl-2,3-*O*-isopropylidene-5-thio- α -D-lyxofuranoside, T-80
 Methyl 5-*O*-benzyl-2,3-*O*-isopropylidene- α -D-lyxofuranoside, I-70
 Methyl 4-bromo-4-deoxy-D-lyxopyranoside, B-84
 Methyl 5-chloro-5-deoxy- α -D-lyxofuranoside, C-96
 Methyl 2-chloro-2-deoxy- β -D-lyxopyranoside, C-95
 Methyl 4-deoxy-2,3-di-*O*-mesyl-4-(*N*-dimethylamino)- α -L-lyxopyranoside, A-298
 Methyl 3-deoxy-3-formyl- α -D-lyxofuranoside hemiacetal, D-121
 Methyl 2,3-di-*O*-acetyl-5-*O*-benzyl- α -D-lyxofuranoside, M-201
 Methyl 3,4-di-*O*-acetyl-2-bromo-2-deoxy- α -D-lyxopyranoside, B-82
 Methyl 3,4-di-*O*-acetyl-2-chloro-2-deoxy- α -D-lyxopyranoside, C-95
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -D-lyxopyranoside, D-263
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -L-lyxopyranoside, D-263
 Methyl 2,4-di-*O*-benzoyl-3-bromo-3-deoxy- α -D-lyxopyranoside, B-83
 Methyl 3,5-di-*O*-benzoyl-2-*O*-tosyl- β -D-lyxofuranoside, M-201
 Methyl 2,3-di-*O*-tosyl- β -D-lyxofuranoside, M-201
 Methyl 2,3-*O*-isopropylidene- β -D-lyxofuranoside, I-70
 Methyl 2,3-*O*-isopropylidene- α -D-lyxopyranoside, M-202
 Methyl 2,3-*O*-isopropylidene-L-lyxopyranoside, I-70
 Methyl 2,3-*O*-isopropylidene-4-*O*-methyl- α -D-lyxopyranoside, M-202
 Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl- α -D-lyxopyranoside, M-202
 Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl-L-lyxopyranoside, I-70
 Methyl lyxofuranoside; α -D-*form*, M-201
 Methyl lyxofuranoside; β -D-*form*, M-201
 Methyl lyxopyranoside; α -D-*form*, M-202
 Methyl lyxopyranoside; β -D-*form*, M-202
 Methyl 2-*O*-methyl- α -D-lyxofuranoside, M-201
 Methyl 5-thio- α -D-lyxopyranoside, T-80
 Methyl 5-thio- β -D-lyxopyranoside, T-80
 Methyl 2,3,4-tri-*O*-acetyl- α -D-lyxopyranoside, M-202
 Methyl 2,3,4-tri-*O*-acetyl- β -D-lyxopyranoside, M-202
 Methyl 2,3,4-tri-*O*-acetyl-5-thio- β -D-lyxopyranoside, T-80
 Methyl 2,3,5-tri-*O*-benzoyl- β -D-lyxofuranoside, M-201
 Methyl 2,3,4-tri-*O*-benzoyl- α -D-lyxopyranoside, M-202
 Methyl 2,3,5-tri-*O*-tosyl- β -D-lyxofuranoside, M-201
 Methyl 5-*O*-trityl- β -D-lyxofuranoside, M-201
 Methyl 5-*O*-trityl- α -D-lyxofuranoside, M-201
 2-*O*-Methyl-D-lyxose, L-72
 2-*O*-Methyl-L-lyxose, L-72
 1,2,3,4-Tetra-*O*-acetyl- α -D-lyxopyranose, L-72
 1,2,3,4-Tetra-*O*-acetyl- β -D-lyxopyranose, L-72
 2,3,4,5-Tetra-*O*-acetyl-D-lyxose dibenzyl dithioacetal, L-73
 2,3,4,5-Tetra-*O*-acetyl-D-lyxose diethyl dithioacetal, L-74
 1,2,3,4-Tetra-*O*-benzoyl- α -D-lyxopyranose, L-72
 1,2,3,4-Tetra-*O*-benzoyl- β -D-lyxopyranose, L-72
 1,2,3,4-Tetra-*O*-benzoyl- α -D-xylopyranose, X-81
 5-Thiolylxose; α -D-Pyranose-*form*, T-80

2,3,4-Tri-*O*-acetyl-1-*O*-benzoyl- α -D-lyxopyranose, L-72
 2,3,5-Tri-*O*-acetyl- α -D-lyxofuranosyl chloride, L-76
 2,3,4-Tri-*O*-acetyl- α -D-lyxopyranosyl chloride, L-76
 2,3,5-Tri-*O*-benzoyl-2-*C*-bromo- α -D-lyxopyranosyl bromide, B-122
 2,3,5-Tri-*O*-benzoyl-2-*C*-bromo- β -D-lyxopyranosyl bromide, B-122
 2,3,5-Tri-*O*-benzoyl-1-lyxose dibenzyl dithioacetal, L-73
 2,3,5-Tri-*O*-methyl-D-lyxose dibenzyl dithioacetal, L-73
 2,3,4-Tri-*O*-methyl-D-lyxose, L-72

ribo-Pentoses

3-Acetamido-5-*O*-acetyl-3-deoxy-1,2-*O*-isopropylidene- α -D-ribofuranose, A-330
 5-Acetamido-5-deoxy- β -D-ribofuranose, A-332
 5-Acetamido-3,4-di-*O*-acetyl-5-deoxy- β -D-ribofuranose, A-332
 3-Acetamido-1,2,5-tri-*O*-acetyl-3-deoxy- β -D-ribofuranose, A-330
 5-Acetamido-2,3,4-tri-*O*-acetyl-5-deoxy- β -D-ribofuranose, A-332
 1-*O*-Acetyl-5-deoxy-5-iodo-2,3-*O*-isopropylidene- β -D-ribofuranose, D-272
 1-*O*-Acetyl-2,3-di-*O*-benzoyl-5-bromo-5-deoxy- β -D-ribofuranose, B-93
 1-*O*-Acetyl-2,3-di-*O*-benzoyl-5-deoxy- β -D-ribofuranose, D-272
 5-*O*-Acetyl-2,3-*O*-isopropylidene- β -D-ribofuranose, I-74
N-Acetyl-2,3,4-tri-*O*-acetyl-D-ribosylamine, R-145
 1-*O*-Acetyl-2,3,5-tri-*O*-benzoyl- β -D-ribofuranose, R-138
 Allyl ribofuranoside; *D*-form, A-96
 Allyl 2,3,5-tri-*O*-benzoyl-D-ribofuranoside, A-96
 3-Amino-3-deoxy-1,2-*O*-isopropylidene- α -D-ribofuranose, A-330
 5-Amino-5-deoxy-*O*-methyl- α -D-ribofuranose, A-332
 5-Amino-5-deoxyribose; *DL*-form; Di-Me acetal, 2,3,4,5*N*-tetra-Ac, A-332
 4-Amino-4-deoxyribose; α -D-Pyranose-form, A-331
 4-Amino-4-deoxyribose; β -D-Pyranose-form, A-331
 2-Amino-2-deoxyribose; *D*-form, A-329
 2-Amino-2-deoxyribose; *L*-form, A-329
 3-Amino-3-deoxyribose; *D*-form, A-330
 1,5-Anhydro-2,3-di-*O*-benzoyl- β -D-ribofuranose, A-692
 1,5-Anhydro-2,3-di-*O*-benzoyl- β -D-ribofuranose, A-692
 1,2-Anhydro-3,5-di-*O*-benzyl- α -D-ribofuranose, A-694
 1,2-Anhydro-3,4-di-*O*-benzyl- α -L-ribofuranose, A-694
 1,5-Anhydro-2,3-*O*-isopropylidene- β -D-ribofuranose, A-692
 1,4-Anhydroribopyranose; β -D-form, A-692
 5-Azido-5-deoxy-1,2-*O*-isopropylidene- α -D-ribofuranose, A-914
 5-Azido-5-deoxyribose; *D*-form, A-914
 5-*O*-Benzoyl-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-ribofuranose, I-73
 5-*O*-Benzoyl-1,2-*O*-isopropylidene- α -L-ribofuranose, I-73
 5-*O*-Benzoyl-1,2-*O*-isopropylidene-2-*O*-methyl- β -L-ribofuranose, I-73
 5-*O*-Benzoyl-1,2-*O*-isopropylidene-3-*O*-tosyl- α -D-ribofuranose, I-73
 Benzyl 5-acetamido-5-deoxy-2,3-*O*-isopropylidene- β -D-ribofuranoside, A-332
 Benzyl 4-amino-2,3-anhydro-4-deoxy- β -D-ribofuranoside, A-331
 Benzyl 2-benzamido-2,5-dideoxy- α -D-ribofuranoside, A-413
 Benzyl 5-*O*-benzyl-2,3-*O*-isopropylidene- β -D-ribofuranoside, B-21
 Benzyl 2,5-diacetamido-3-*O*-acetyl-2,5-dideoxy- β -D-ribofuranoside, D-454
 Benzyl 2,5-diacetamido-2,5-dideoxy- β -D-ribofuranoside, D-454
 Benzyl 3,5-di-*O*-benzyl- β -D-ribofuranoside, B-21
 Benzyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -D-ribofuranoside, B-21
 Benzyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -L-ribofuranoside, B-21
 Benzyl 3,4-*O*-isopropylidene- β -D-ribofuranoside, B-21
 Benzyl 3,4-*O*-isopropylidene- β -L-ribofuranoside, B-21
 Benzyl 2-*O*-methyl- β -D-ribofuranoside, B-21
 Benzyl 2-*O*-methyl- β -L-ribofuranoside, B-21
 Benzyl riboside; β -D-Furanose-form, B-21
 Benzyl riboside; β -D-Pyranose-form, B-21
 Benzyl riboside; β -L-Pyranose-form, B-21
 Benzyl 5-*O*-tosyl- β -D-ribofuranoside, B-21
 Benzyl 2,3,5-triacetamido-2,3,5-trideoxy- β -D-ribofuranoside, T-139
 Benzyl 2,3,4-tri-*O*-benzoyl- β -D-ribofuranoside, B-21
 Benzyl 2,3,5-tri-*O*-tosyl- β -D-ribofuranoside, B-21
 3-*O*-Benzyl-5-deoxy-5-iodo-1,2-*O*-isopropylidene- α -D-ribofuranose, D-272
 1,2-*O*-Benzylidene- α -D-ribofuranose, R-138
 2,3-*O*-(*R*)-Benzylidene- β -D-ribofuranose, R-138
 2,3-*O*-(*S*)-Benzylidene- β -D-ribofuranose, R-138
 2,4-*O*-Benzylidene-D-ribose dipropyl dithioacetal, R-142
 5-*O*-Benzyl-1,2-*O*-isopropylidene- α -D-ribofuranose, I-73
 2-Bromo-2-deoxyribose; β -D-Furanose-form, B-92
 4,5-*O*-Cyclohexylidene-D-ribose diethyl dithioacetal, R-140
 3-[5-Deoxy-5-(dimethylarsinyl)ribofuranosyloxy]-2-hydroxy-1-propanesulfonic acid; β -D-form, D-62
 5-Deoxy-5-iodo-1,2-*O*-isopropylidene- α -D-ribofuranose, D-272
 5-Deoxy-5-iodoribose; α -D-Furanose-form; 1-(Dihydrogen phosphate), D-272
 2-Deoxy-2-iodoribose; β -D-Furanose-form, D-270
 3-Deoxy-1,2-*O*-isopropylidene-3-trifluoroacetamido- α -D-ribofuranose, A-330
 5-Deoxyribose; *D*-form, D-362
 5-Deoxyribose; *L*-form, D-362
 2,5-Diacetamido-2,5-dideoxy-D-ribofuranose, D-454
 2,3-Di-*O*-acetyl-1,5-anhydro- β -D-ribofuranose, A-692
 1,5-Di-*O*-acetyl-2,3-*O*-(*R*)-benzylidene- β -D-ribofuranose, R-138
 1,5-Di-*O*-acetyl-2,3-*O*-(*S*)-benzylidene- β -D-ribofuranose, R-138
 1,2-Di-*O*-acetyl-3,4-*O*-isopropylidene- β -D-ribofuranose, R-138
 1,4-Di-*O*-acetyl-2,3-isopropylidene-5-thio- β -D-ribofuranose, T-91
 3,5-Di-*O*-benzoyl-1,2-*O*-isopropylidene- α -L-ribofuranose, I-73
 2,4,3,5-Di-*O*-benzylidene-D-ribose dipropyl dithioacetal, R-142
 3,5-Di-*O*-benzyl-1,2-*O*-isopropylidene- α -D-ribofuranose, I-73
 3,4-Dichloro-3,4-dideoxy-1,2-*O*-isopropylidene- α -D-ribofuranose, D-545
 3,4-Dichloro-3,4-dideoxyribose; *D*-form, D-545
 2',3'-Dihydroxypropyl [5-deoxy-5-(demethylarsinyl)]ribofuranoside, D-711
 2',3'-Dihydroxypropyl [5-deoxy-5-(dimethylarsino)]ribofuranoside; (β -D, 2'*R*)-form; As-Oxide, 2,3:2',3'-diisopropylidene, D-711
 2',3'-Dihydroxypropyl [5-deoxy-5-(dimethylarsino)]ribofuranoside, D-711
 1,5,2,3-Di-*O*-isopropylidene- β -D-ribofuranose, I-74
 1,2,3,4-Di-*O*-isopropylidene- α -D-ribofuranose, R-138
 2,3,4,5-Di-*O*-isopropylidene-D-ribose diethyl dithioacetal, R-140
 2,5,3,4-Di-*O*-isopropylidene-D-ribose diethyl dithioacetal, R-140
 2,3,4,5-Di-*O*-isopropylidene-D-ribose, R-138
 Ethyl 1-thio- α -D-ribofuranoside, T-89
 Ethyl 2,3,5-tri-*O*-acetyl-1-thio- α -D-ribofuranoside, T-89
 2-Hydroxy-3-(sulfooxy)propyl-5-deoxy-5-(trimethylarsonio)- β -D-ribofuranoside, H-199
 1,2-*O*-Isopropylidene-3,5-di-*O*-tosyl- α -D-ribofuranose, I-73
 2,3-*O*-Isopropylidene-1,5-*O*-methylene- β -D-ribofuranose, M-245
 1,2-*O*-Isopropylidene-3-*O*-methyl- α -D-ribofuranose, I-73
 1,2-*O*-Isopropylidene-3-*O*-methyl-5-*O*-tosyl- α -D-ribofuranose, I-73
 3,4-*O*-Isopropylidene- β -D-ribofuranose, R-138
 2,4-*O*-Isopropylidene-D-ribose diethyl dithioacetal, R-140
 3,4-*O*-Isopropylidene-D-ribose diethyl dithioacetal, R-140
 4,5-*O*-Isopropylidene-D-ribose diethyl dithioacetal, R-140
 1,2-*O*-Isopropylideneribose; α -L-Furanose-form, I-73
 2,3-*O*-Isopropylideneribose; *D*-Furanose-form, I-74
 1,2-*O*-Isopropylideneribose; α -D-Furanose-form, I-73
 1,2-*O*-Isopropylideneribose; α -D-Pyranose-form, I-73
 2,3-*O*-Isopropylidene-5-thio- β -D-ribofuranose, T-91
 1,2-*O*-Isopropylidene-5-*O*-tosyl- α -D-ribofuranose, I-73
 1,2-*O*-Isopropylidene-5-trityl- α -L-ribofuranose, I-73
 1,2-*O*-Isopropylidene-5-*O*-trityl- α -D-ribofuranose, I-73
 Methyl 3-acetamido-2,5-di-*O*-acetyl-3-deoxy- α -D-ribofuranoside, A-330
 Methyl 3-acetamido-2,5-di-*O*-acetyl-3-deoxy- β -D-ribofuranoside, A-330
 Methyl 3-acetamido-2,4-di-*O*-acetyl-3-deoxy- α -D-ribofuranoside, A-330
 Methyl 5-amino-5-deoxy-2,3-*O*-isopropylidene- β -D-ribofuranoside, A-332
 Methyl 3-amino-3-deoxy- β -D-ribofuranoside, 8CI, A-330
 Methyl 5-*O*-benzoyl-2,3-*O*-benzylidene- β -D-ribofuranoside, M-208
 Methyl 5-*O*-benzoyl-2,3-di-*O*-tosyl- β -D-ribofuranoside, M-208
 Methyl 5-*O*-benzoyl-2,3-*O*-methylene- β -D-ribofuranoside, M-208
 Methyl 2,3-*O*-benzylidene-5-deoxy-5-iodo- β -D-ribofuranoside, D-272
 Methyl 3-bromo-5-deoxy-2,3-*O*-isopropylidene- α -D-ribofuranoside, B-93
 Methyl 5-bromo-5-deoxy-2,3-*O*-isopropylidene- β -D-ribofuranoside, B-93
 Methyl 5-bromo-5-deoxy-2,3-*O*-isopropylidene- β -L-ribofuranoside, B-93
 Methyl 5-bromo-5-deoxy-2,3-*O*-isopropylidene- β -DL-ribofuranoside, B-93
 Methyl 5-chloro-5-deoxy-2,3-*O*-isopropylidene- β -D-ribofuranoside, C-100
 Methyl 5-chloro-5-deoxy- α -D-ribofuranoside, C-100
 Methyl 5-chloro-5-deoxy- β -D-ribofuranoside, C-100
 Methyl 5-deoxy-5-iodo-2,3-*O*-isopropylidene- β -D-ribofuranoside, D-272
 Methyl 5-deoxy-2,3-*O*-isopropylidene- β -D-ribofuranoside, D-362
 Methyl 5-deoxy-D-ribofuranoside, D-362
 Methyl 3,4-di-*O*-acetyl-1-*O*-benzoyl-2-deoxy-2-iodo- β -D-ribofuranoside, D-270
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- β -D-ribofuranoside, D-270
 Methyl 3,5-di-*O*-benzoyl-2-bromo-2-deoxy- α -D-ribofuranoside, B-92
 Methyl 2,3-di-*O*-benzoyl-5-bromo-5-deoxy- β -D-ribofuranoside, B-93
 Methyl 2,4-di-*O*-benzoyl-3-deoxy-3-iodo- β -L-ribofuranoside, D-271
 Methyl 3,5-di-*O*-benzoyl-2-*O*-methyl- β -D-ribofuranoside, M-208
 Methyl 3,5-di-*O*-benzoyl- β -D-ribofuranoside, M-208
 Methyl 3,5-di-*O*-benzyl- α -D-ribofuranoside, M-208
 Methyl 3,4-dichloro-3,4-dideoxy- β -D-ribofuranoside, D-545
 Methyl 2-*C*-formyl-3,4-*O*-isopropylidene- β -D-ribofuranoside, F-23
 Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -D-ribofuranoside, M-209
 Methyl 2,3-*O*-isopropylidene-5-*S*-methyl-5-thio- β -D-ribofuranoside, T-91
 Methyl 2,3-*O*-isopropylidene- β -D-ribofuranoside, I-74
 Methyl 2,3-*O*-isopropylidene- β -L-ribofuranoside, I-74
 Methyl 2,3-*O*-isopropylidene- β -D-ribofuranoside, M-209
 Methyl 3,4-*O*-isopropylidene- β -D-ribofuranoside, M-209
 Methyl 2,3-*O*-isopropylidene-5-thio- β -D-ribofuranoside, T-91
 Methyl 2,3-*O*-isopropylidene-5-thio- β -D-ribofuranoside, T-91
 Methyl 3,4-*O*-isopropylidene-5-thio- β -D-ribofuranoside, T-91

Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl-β-D-ribofuranoside, I-74
 Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl-β-L-ribofuranoside, I-74
 Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl-β-D-ribofuranoside, M-209
 Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl-β-D-ribofuranoside, M-209
 Methyl 2,3-*O*-isopropylidene-5-*O*-trityl-β-D-ribofuranoside, I-74
 Methyl 2-*O*-methyl-β-D-ribofuranoside, M-208
 Methyl 2-*O*-methyl-β-D-ribofuranoside, M-209
 Methyl ribofuranoside; α-D-*form*, M-208
 Methyl ribofuranoside; β-D-*form*, M-208
 Methyl ribofuranoside; α-L-*form*, M-208
 Methyl ribofuranoside; β-L-*form*, M-208
 Methyl ribopyranoside; α-D-*form*, M-209
 Methyl ribopyranoside; β-D-*form*, M-209
 Methyl 5-thio-α-D-ribofuranoside, T-91
 Methyl 5-thio-β-D-ribofuranoside, T-91
 Methyl 2,3,4-tri-*O*-acetyl-α-L-ribofuranoside, M-208
 Methyl 2,3,4-tri-*O*-acetyl-5-thio-β-D-ribofuranoside, T-91
 Methyl 2,3,5-tri-*O*-benzoyl-β-D-ribofuranoside, M-208
 Methyl 2,3,5-tri-*O*-benzoyl-α-L-ribofuranoside, M-208
 Methyl 2,3,5-tri-*O*-methyl-β-D-ribofuranoside, M-208
 Methyl 2,3,4-tri-*O*-methyl-β-D-ribofuranoside, M-209
 Methyl 2,3,5-tri-*O*-tosyl-β-D-ribofuranoside, M-208
 1,5-*O*-Methylenetribofuranoside; β-D-*form*, M-245
 2-*O*-Methyl-D-ribose, R-138
 3-*O*-Methyl-D-ribose, R-138
 2-*O*-Methyl-L-ribose, R-138
N-Phenyl-α-D-ribofuranosylamine, R-145
N-α-D-Ribofuranosylacetamide, R-145
 2-(β-D-Ribofuranosyl)-4-oxazolocarbonyl acid; Me ester, R-112
 2-β-D-Ribofuranosyl-4-oxazolocarbonyl acid; Me ester, R-112
 2-β-D-Ribofuranosyl-4-oxazolocarbonyl acid, R-112
 2-*O*-[2-(β-D-Ribofuranosyloxy)ethyl] β-D-ribofuranoside, R-113
N-α-D-Ribopyranosylacetamide, R-145
 D-Ribopyranosylamine, R-145
 Ribose dibenzyl dithioacetal; D-*form*, R-139
 Ribose diethyl dithioacetal; D-*form*, R-140
 Ribose; α-D-Furanose-*form*; 1-Phosphate, R-138
 Ribose; α-D-Furanose-*form*; 5-Phosphate, R-138
 D-Ribose 1-triphosphate, A-70
 Ribose; D-*form*, R-138
 Ribose; L-*form*, R-138
 Ribose; DL-*form*, R-138
 D-Ribothiafuranose, T-90
 L-Ribothiafuranose, T-90
 1,2,3,5-Tetra-*O*-acetyl-β-D-ribofuranose, R-138
 1,2,3,4-Tetra-*O*-acetyl-β-D-ribofuranose, R-138
 5-Thiomethylribose, T-91
 1-Thioribose; D-*form*; Tetra-Ac, T-89
 5-Thioribose; β-D-Pyranose-*form*; Tetra-Ac, T-91
 5-Thioribose; α-D-Pyranose-*form*, T-91
 5-Thioribose; β-D-Pyranose-*form*, T-91
 1-Thioribose; D-*form*, T-89
 2,3,5-Triacetamido-1,4-di-*O*-acetyl-2,3,5-trideoxy-β-D-ribofuranose, T-139
 2,3,5-Triacetamido-2,3,5-trideoxy-β-D-ribofuranose, T-139
 2,3,5-Triacetamido-2,3,5-trideoxy-β-D-ribofuranose, T-139
 1,2,3-Tri-*O*-acetyl-5-deoxy-β-D-ribofuranose, D-272
 1,2,3-Tri-*O*-acetyl-5-deoxy-β-D-ribofuranose, D-362
 1,2,3-Tri-*O*-acetyl-α-D-ribofuranose, R-138
 1,2,3-Tri-*O*-acetyl-β-D-ribofuranose, R-138
 1,3,5-Tri-*O*-benzoyl-α-D-ribofuranose, R-138
 2,3,5-Tri-*O*-benzoyl-β-D-ribofuranosyl phenyl sulfoxide, T-89
 2,3,5-Tri-*O*-benzoyl-D-ribose dibenzyl dithioacetal, R-139
 2,3,5-Tri-*O*-methyl-D-ribose dibenzyl dithioacetal, R-139

xylo-Pentoses

4-Acetamido-5-*O*-benzoyl-4-deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, A-357
 5-Acetamido-1,2-*O*-cyclohexylidene-5-deoxy-α-D-xylofuranose, A-358
 4-Acetamido-4-deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, A-357
 5-Acetamido-5-deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, A-358
 3-Acetamido-3-deoxy-5-thio-D-xylose, A-352
 5-Acetamido-5-deoxy-D-xylofuranose, A-358
 5-Acetamido-5-deoxy-D-xylofuranose, A-358
 3-Acetamido-1,2,4-tri-*O*-acetyl-3-deoxy-5-thio-α-D-xylopyranose, A-352
 5-Acetamido-1,2,3-tri-*O*-acetyl-5-deoxy-D-xylofuranose, A-358
 2-*O*-Acetyl-1,5-anhydro-3-*O*-benzyl-β-D-xylofuranose, 9CI, A-725
 5-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-xylofuranose, I-76
 Allyl 3,4-di-*O*-acetyl-β-D-xylopyranoside, P-97
 Allyl 2,3-*O*-isopropylidene-α-D-xylopyranoside, P-97
 Allyl 2,3,4-tri-*O*-acetyl-α-D-xylopyranoside, P-97
 Allyl 2,3,4-tri-*O*-acetyl-β-D-xylopyranoside, P-97

Allyl 2,3,4-tri-*O*-benzyl-α-D-xylopyranoside, P-97
 Allyl 2,3,4-tri-*O*-benzyl-β-D-xylopyranoside, P-97
 5-Amino-3-*O*-benzyl-5-deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, A-358
 5-Amino-5-deoxy-1,2-*O*-isopropylidene-3-*O*-methyl-α-D-xylofuranose, A-358
 5-Amino-5-deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, A-358
 4-Amino-4-deoxyxylose; D-*form*; Di-Et dithioacetal, 5-benzoyl, *N*-Ac, A-357
 4-Amino-4-deoxyxylose; D-*form*; Di-Et dithioacetal, *N*-benzoyl, 5-Ac, A-357
 4-Amino-4-deoxyxylose; D-*form*; Di-Et dithioacetal, *N*-benzoyl, A-357
 4-Amino-4-deoxyxylose; D-*form*; Di-Et dithioacetal, 4*N*,5-dibenzoyl, A-357
 4-Amino-4-deoxyxylose; D-*form*; Di-Et dithioacetal, 2,3-*O*-isopropylidene, 4*N*,5-dibenzoyl, A-357
 2-Amino-2-deoxyxylose; α-D-*form*, A-356
 2-Amino-2-deoxyxylose; α-L-*form*, A-356
 2-Amino-2-deoxyxylose, A-356
 4-Aminophenyl xylopyranoside; β-D-*form*, A-444
 1,5-Anhydro-2,3-di-*O*-benzoyl-β-D-xylofuranose, A-725
 1,5-Anhydro-3-*O*-benzyl-2-*O*-pivaloyl-β-D-xylofuranose, A-725
 1,5-Anhydro-3-*O*-benzyl-β-D-xylofuranose, 9CI, A-725
 1,4-Anhydro-2,3-di-*O*-acetyl-α-D-xylopyranose, A-725
 1,5-Anhydro-2,3-di-*O*-benzyl-β-D-xylofuranose, A-725
 1,2-Anhydro-3,4-di-*O*-benzyl-α-D-xylopyranose, A-726
 3,5-Anhydro-1,2-*O*-isopropylidene-α-D-xylofuranose, A-728
 1,5-Anhydroxylofuranose; D-*form*; 2,3-Bis(4-methylbenzenesulfonyl), A-725
 1,5-Anhydroxylofuranose; D-*form*, A-725
 α-L-Arabinofuranosyl-(1 → 3)-[β-D-xylopyranosyl-(1 → 4)]-D-xylose; β-Pyranose-*form*; Me glycoside, A-821
 5-Azido-5-deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, A-916
 5-Azido-5-deoxyxylose; D-*form*, A-916
 4-Benzamido-4-deoxy-1,2,3,5-di-*O*-isopropylidene-α-D-xylofuranose, A-357
 5-*O*-Benzoyl-3-deoxy-3-fluoro-1,2-*O*-isopropylidene-α-D-xylofuranose, D-119
 5-*O*-Benzoyl-1,2-*O*-isopropylidene-α-D-xylofuranose, I-76
 5-*O*-Benzoyl-1,2-*O*-isopropylidene-α-L-xylofuranose, I-76
 Benzyl 3-*O*-acetyl-β-L-xylopyranoside, B-22
 Benzyl 4-amino-2,3-anhydro-4-deoxy-α-D-xylopyranoside, A-357
 Benzyl 4-amino-2,3-anhydro-4-deoxy-β-L-xylopyranoside, A-357
 Benzyl 2-*O*-benzyl-4-deoxy-4-iodo-α-D-xylopyranoside, D-281
 Benzyl 3-bromo-3-deoxy-2-*O*-methyl-β-D-xylopyranoside, B-103
 Benzyl 3-bromo-3-deoxy-4-*O*-methyl-β-D-xylopyranoside, B-103
 Benzyl 3-deoxy-3-iodo-β-L-xylopyranoside, D-280
 Benzyl 2,5-diacetamido-3-*O*-acetyl-2,5-dideoxy-β-D-xylofuranoside, D-463
 Benzyl 2,3-diacetamido-4-*O*-benzyl-2,3-dideoxy-α-D-xylopyranoside, D-462
 Benzyl 2,5-diacetamido-2,5-dideoxy-β-D-xylofuranoside, D-463
 Benzyl 2,4-di-*O*-benzoyl-3-bromo-3-deoxy-α-D-xylopyranoside, B-103
 Benzyl 3-*O*-methyl-β-L-xylopyranoside, B-22
 1,2-*O*-Benzylidene-4-bromo-4-deoxy-α-L-xylopyranose, B-104
 2,4-*O*-Benzylidene-3-*O*-methyl-L-xylose, X-81
 2,4-*O*-Benzylidene-L-xylose, X-81
 5-*O*-Benzyl-1,2-*O*-isopropylidene-3-*O*-methyl-α-D-xylofuranose, I-76
tert-Butyl 2,3,4-tri-*O*-acetyl-1-thio-α-D-xylopyranoside, T-98
tert-Butyl 2,3,4-tri-*O*-acetyl-1-thio-β-D-xylopyranoside, T-98
 4-Chloro-4-deoxyxylose; α-L-Pyranose-*form*; Me glycoside, 2-mesyl, 3-chlorosulfate, C-110
 2-Chloro-2-deoxyxylose; D-Pyranose-*form*, C-108
 4-Chloro-4-deoxyxylose; β-L-Pyranose-*form*, C-110
 1,2-*O*-Cyclohexylidene-3,5-di-*O*-mesyl-α-D-xylofuranose, C-191
 1,2-*O*-Cyclohexylidene-3,5-di-*O*-tosyl-α-D-xylofuranose, C-191
 1,2-*O*-Cyclohexylidene-5-*O*-mesyl-α-D-xylofuranose, C-191
 1,2-*O*-Cyclohexylidene-5-*O*-tosyl-α-D-xylofuranose, C-191
 1,2-*O*-Cyclohexylidene-5-*O*-tosyl-α-L-xylofuranose, C-191
 1,2-*O*-Cyclohexylidene-5-*O*-trityl-α-D-xylofuranose, C-191
 1,2-*O*-Cyclohexylidene-xylofuranose; α-D-*form*, C-191
 2,5-*O*-Cyclohexylidene-D-xylose diethyl dithioacetal, X-83
 4,5-*O*-Cyclohexylidene-D-xylose diethyl dithioacetal, X-83
 4-Deoxy-4-(*N*-dimethylamino)-D-xylose, A-357
 2-Deoxy-2-fluoroxxylose; α-D-Pyranose-*form*; Trifluoromethyl glycoside, di-Ac, D-118
 2-Deoxy-2-fluoroxxylose; β-D-Pyranose-*form*, D-118
 2-Deoxy-2-fluoroxxylose; D-*form*, D-118
 3-Deoxy-3-fluoroxxylose; D-*form*, D-119
 5-Deoxy-1,2-*O*-isopropylidene-3-*O*-mesyl-α-D-xylofuranose, D-386
 5-Deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, D-386
 5-Deoxyxylose; D-*form*, D-386
 2,5-Diacetamido-1,3-di-*O*-acetyl-2,5-dideoxy-α-D-xylofuranose, D-463
 2,3-Diacetamido-1,4-di-*O*-acetyl-2,3-dideoxy-D-xylopyranose, D-462

- 2,5-Diacetamido-2,5-dideoxy-D-xylofuranose, D-463
 2,3-Diacetamido-2,3-dideoxy-D-xylopyranose, D-462
 2,5-Diacetamido-2,5-dideoxy- α -D-xylopyranose, D-463
 2,5-Diacetamido-1,3,4-tri-*O*-acetyl-2,5-dideoxy- α -D-xylopyranose, D-463
 1,2-Di-*O*-acetyl-5-*O*-benzoyl-3-deoxy-3-fluoro- α -D-xylofuranose, D-119
 1,2-Di-*O*-acetyl-5-*O*-benzoyl-3-*O*-methyl- α -D-xylofuranose, M-307
 3,4-Di-*O*-acetyl-2-chloro-2-deoxy-D-xylopyranose, C-108
 1,2-Di-*O*-acetyl-3,4-di-*O*-benzyl- α -D-xylopyranose, X-81
 3,5-Di-*O*-acetyl-1,2-*O*-isopropylidene- α -D-xylofuranose, I-76
 1,2-Di-*O*-acetyl-3,5-*O*-isopropylidene- α -D-xylofuranose, I-77
 2,3-Di-*O*-acetyl-D-xylose, X-81
 3,4-Diamino-3,4-dideoxyxylose; α -D-Furanose-*form*;
 1,2-*O*-Isopropylidene, 5-benzoyl, 3*N*,4*N*-di-Ac, D-464
 3,4-Diamino-3,4-dideoxyxylose; β -L-Pyranose-*form*; Me glycoside,
 2,3*N*,4*N*-tribenzoyl, D-464
 3,4-Diamino-3,4-dideoxyxylose; L-*form*, D-464
 3,5-Di-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-xylofuranose, I-76
 3,5-Di-*O*-benzoyl-2-*O*-methyl- α -D-xylofuranosyl fluoride, X-6
 3,5-Di-*O*-benzoyl-2-*O*-methyl- β -D-xylofuranosyl fluoride, X-6
 3,4-Di-*O*-benzoyl-2-*O*-methyl- α -D-xylopyranosyl fluoride, X-16
 3,4-Di-*O*-benzoyl-2-*O*-methyl- β -D-xylopyranosyl fluoride, X-16
 1,2,3,5-Di-*O*-benzylidene- α -D-xylofuranose, X-81
 2,4,3,5-Di-*O*-benzylidene-D-xylose diethyl dithioacetal, X-83
 3,4-Di-*O*-benzyl- α -D-xylopyranose, X-81
 1,2,3,5-Di-*O*-cyclohexylidene- α -D-xylofuranose, C-191
 1,2,3,5-Di-*O*-cyclohexylidene- α -L-xylofuranose, C-191
 1,2,3,5-Di-*O*-isopropylidene-2-*C*-methyl- α -D-xylofuranose, M-305
 1,2,3,5-Di-*O*-isopropylidene- α -D-xylofuranose, I-76
 2,3,4,5-Di-*O*-isopropylidene-D-xylose diethyl dithioacetal, X-83
 2,4,3,5-Di-*O*-isopropylidene-D-xylose diethyl dithioacetal, X-83
 2,3,4,5-Di-*O*-isopropylidene-L-xylose, X-81
 2,3-Di-*O*-methyl- α -D-xylopyranose, M-306
 2,4-Di-*O*-methyl- β -D-xylopyranose, M-306
 2,5-Di-*O*-methyl-D-xylose, M-306
 3,4-Di-*O*-methyl-D-xylose, M-307
 3,5-Di-*O*-methyl-D-xylose, M-307
 1,2-*O*-Isopropylidene-3,5-di-*O*-tosyl- α -D-xylofuranose, I-76
 1,2-*O*-Isopropylidene-5-*O*-methyl- α -D-xylofuranose, I-76
 1,2-*O*-Isopropylidene-5-thio- α -D-xylofuranose, T-99
 1,2-*O*-Isopropylidene-5-*O*-tosyl- α -D-xylofuranose, I-76
 1,2-*O*-Isopropylidene- α -D-xylofuranuronic acid, X-91
 2,4-*O*-Isopropylidene-D-xylose diethyl dithioacetal, X-83
 3,4-*O*-Isopropylidene-D-xylose diethyl dithioacetal, X-83
 3,5-*O*-Isopropylidene-D-xylose diethyl dithioacetal, X-83
 4,5-*O*-Isopropylidene-D-xylose diethyl dithioacetal, X-83
 1,2-*O*-Isopropylidene- α -D-Furanose-*form*, I-76
 3,5-*O*-Isopropylidene- α -D-Furanose-*form*, I-77
 3,5-Di-acetamido-2,4-di-*O*-acetyl-3-deoxy-5-thio- α -D-xylopyranoside,
 A-352
 Methyl 2-*O*-acetyl-3-deoxy-3-iodo-4-*O*-methyl- β -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo-2-*O*-tosyl- α -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo-2-*O*-tosyl- β -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-2,3-*O*-isopropylidene-1-thio- β -D-xylopyranoside, T-98
 Methyl 3-amino-3-deoxy-5-thio- α -D-xylopyranoside, A-352
 Methyl 4-amino-4-deoxy- α -D-xylopyranoside, A-357
 Methyl 2,3-anhydro-4-chloro-4-deoxy- α -L-xylopyranoside, C-110
 Methyl 3,5-anhydro- β -D-xylofuranoside, A-728
 Methyl 3-*O*-benzoyl-5-*O*-benzyl-2-deoxy-2-fluoro- β -D-xylofuranoside,
 D-118
 Methyl 3-*O*-benzoyl-4-bromo-4-deoxy-2-*O*-methyl- α -L-xylopyranoside,
 B-104
 Methyl 2-*O*-benzoyl-3-chloro-3-deoxy-5-*O*-trityl- β -D-xylofuranoside,
 C-109
 Methyl 4-*O*-benzoyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
 Methyl 2-*O*-benzoyl-3,5-*O*-isopropylidene- α -D-xylofuranoside, M-216
 Methyl 5-*O*-benzoyl-3-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 5-*O*-benzoyl-2-*O*-methyl- β -D-xylofuranoside, M-216
 Methyl 3-*O*-benzoyl- α -D-xylopyranoside, M-217
 Methyl 5-*O*-benzyl-2-deoxy-2-fluoro- β -D-xylofuranoside, D-118
 Methyl 5-*O*-benzyl-2,3-di-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 2-*O*-benzyl-3,5-*O*-isopropylidene- α -D-xylofuranoside, M-216
 Methyl 2-*O*-benzyl-3,5-*O*-isopropylidene- β -D-xylofuranoside, M-216
 Methyl 5-*O*-benzyl-3-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 2-*O*-benzyl- α -D-xylofuranoside, M-216
 Methyl 3-bromo-3-deoxy- β -D-xylopyranoside, B-103
 Methyl 4-chloro-4-deoxy-2-*O*-mesyl- α -L-xylopyranoside, C-110
 Methyl 3-chloro-3-deoxy-5-*O*-trityl- β -D-xylofuranoside, C-109
 Methyl 3-chloro-3-deoxy-5-*O*-trityl- β -D-xylopyranoside, C-109
 Methyl 2-chloro-2-deoxy- β -D-xylopyranoside, C-108
 Methyl 3-chloro-3-deoxy- β -D-xylopyranoside, C-109
 Methyl 2-deoxy-2-fluoro- β -D-xylofuranoside, D-118
 Methyl 3-deoxy-3-formyl- α -D-xylofuranoside hemiacetal, D-122
 Methyl 3-deoxy-3-iodo-4-*O*-methyl- β -L-xylopyranoside, D-280
 Methyl 2,5-di-*O*-acetyl-3-bromo-3-deoxy- α -D-xylofuranoside, B-103
 Methyl 2,5-di-*O*-acetyl-3-bromo-3-deoxy- β -D-xylofuranoside, B-103
 Methyl 2,4-di-*O*-acetyl-3-chloro-3-deoxy- β -D-xylopyranoside, C-109
 Methyl 2,4-di-*O*-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside, D-280
 Methyl 2,4-di-*O*-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
 Methyl 3,4-di-*O*-acetyl-2-*O*-tosyl- α -D-xylopyranoside, M-217
 Methyl 2,3-di-*O*-acetyl- β -D-xylopyranoside, M-217
 Methyl 3,4-diamino-3,4-dideoxy- β -L-xylopyranoside, D-464
 Methyl 2,5-di-*O*-benzoyl-3-bromo-3-deoxy- α -D-xylofuranoside, B-103
 Methyl 2,5-di-*O*-benzoyl-3-bromo-3-deoxy- β -D-xylofuranoside, B-103
 Methyl 2,3-di-*O*-benzoyl-4-bromo-4-deoxy- α -L-xylopyranoside, B-104
 Methyl 2,3-di-*O*-benzyl-4-*O*-trityl- β -D-xylopyranoside, M-217
 Methyl 2,3-di-*O*-mesyl-5-*O*-trityl- α -D-xylofuranoside, M-216
 Methyl 2,3-di-*O*-mesyl-5-*O*-trityl- β -D-xylofuranoside, M-216
 Methyl 2,3-di-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 1,2-*O*-isopropylidene- α -D-xylofuranuronate, X-91
 Methyl 3,5-*O*-isopropylidene-2-*O*-mesyl- α -D-xylofuranoside, M-216
 Methyl 3,5-*O*-isopropylidene-2-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 3,5-*O*-isopropylidene-2-*O*-methyl- β -D-xylofuranoside, M-216
 Methyl 2,3-*O*-isopropylidene-1-thio- β -D-xylopyranoside, T-98
 Methyl 3,5-*O*-isopropylidene- α -D-xylofuranoside, M-216
 Methyl 3,5-*O*-isopropylidene- β -D-xylofuranoside, M-216
 Methyl 2-*O*-mesyl- α -D-xylofuranoside, M-216
 Methyl 2-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 3-*O*-methyl- α -D-xylofuranoside, M-216
 Methyl 2-*O*-methyl- β -D-xylopyranoside, M-306
 Methyl 1-thio- β -D-xylopyranoside, T-98
 Methyl 2-*O*-tosyl- α -D-xylopyranoside, M-217
 Methyl 2,3,4-tri-*O*-acetyl-1-thio- β -D-xylopyranoside, T-98
 Methyl 2,3,4-tri-*O*-acetyl- α -D-xylopyranoside, M-217
 Methyl 2,3,4-tri-*O*-acetyl- β -D-xylopyranoside, M-217
 Methyl 2,3,4-tri-*O*-benzoyl- α -D-xylopyranoside, M-217
 Methyl 2,3,4-tri-*O*-benzoyl- β -D-xylopyranoside, M-217
 Methyl 2,3,4-tri-*O*-mesyl- α -D-xylopyranoside, M-217
 Methyl 2,3,4-tri-*O*-mesyl- β -D-xylopyranoside, M-217
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 Methyl xylopyranoside; α -D-*form*, M-217
 Methyl xylopyranoside; β -D-*form*, M-217
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 2-*O*-Methylxylose; D-*form*; Di-Et dithioacetal, M-306
 2-*O*-Methylxylose; β -D-Pyranose-*form*, M-306
 2-*C*-Methylxylose; D-*form*, M-305
 2-*O*-Methylxylose; D-*form*, M-306
 3-*O*-Methylxylose; D-*form*, M-307
 3-*O*-Methylxylose; L-*form*, M-307
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 4-Nitrophenyl xyloside; β -D-Pyranose-*form*; 2,3,4-Tri-Ac, N-74
 4-Nitrophenyl xyloside; α -D-Pyranose-*form*, N-74
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 2-Propenyl xylopyranoside; α -D-*form*, P-97
 2-Propenyl xylopyranoside; β -D-*form*, P-97
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 1,2,3,4-Tetra-*O*-acetyl-5-thio- β -D-xylopyranose, T-99
 Tetra-*O*-acetyl- α -D-xylofuranose, X-81
 Tetra-*O*-acetyl- β -D-xylofuranose, X-81
 1,2,3,4-Tetra-*O*-acetyl- α -D-xylopyranose, X-81
 1,2,3,4-Tetra-*O*-acetyl- β -D-xylopyranose, X-81
 Tetra-*O*-acetyl- β -L-xylopyranose, X-81
 2,3,4,5-Tetra-*O*-acetyl-D-xylose diethyl dithioacetal, X-83
 2,3,4,5-Tetra-*O*-acetyl-L-xylose diethyldithioacetal, X-83
 Tetra-*O*-acetyl-D-xylose, X-81
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 Tetra-*O*-benzoyl- α -L-xylopyranose, X-81
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 1,2,3,4-Tetra-*O*-benzyl- β -D-xylopyranose, X-81
 2,3,4,5-Tetra-*O*-methyl-D-xylose diethyl dithioacetal, X-83
 1-Thioxylose; D-*form*; Tetra-Ac, T-98
 1-Thioxylose; β -D-Pyranose-*form*; Tri-Ac, T-98
 1-Thioxylose; D-*form*, T-98
 5-Thioxylose, T-99
 2,3,5-Triacetamido-1-*O*-acetyl-2,3,5-trideoxy- α -D-xylofuranose, T-141
 2,3,5-Tri-*O*-acetyl-1-*O*-benzoyl- β -D-xylofuranose, X-81
 1,3,4-Tri-*O*-acetyl-2-*O*-methyl- β -D-xylopyranose, M-306
 2,3,5-Tri-*O*-acetyl- α -D-xylofuranosyl bromide, X-5
 2,3,5-Tri-*O*-acetyl- β -D-xylofuranosyl bromide, X-5
 2,3,5-Tri-*O*-acetyl- β -D-xylofuranosyl fluoride, X-6
 2,3,4-Tri-*O*-acetyl- α -D-xylopyranose, X-81
 2,3,4-Tri-*O*-acetyl- α -D-xylopyranosyl fluoride, X-16
 2,3,4-Tri-*O*-acetyl- β -D-xylopyranosyl fluoride, X-16
 2,3,4-Tri-*O*-acetyl- α -L-xylopyranosyl fluoride, X-16
 2,3,4-Tri-*O*-acetyl- α -D-xylopyranosyl phenyl sulfoxide, T-98

2,3,4-Tri-*O*-acetyl-1-xylosylamine, X-88
 1,3,4-Tri-*O*-benzoyl-2-*O*-methyl- α -D-xylopyranose, M-306
 2,3,5-Tri-*O*-benzoyl- α -D-xylofuranosyl bromide, X-5
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 1,2,4-Tri-*O*-benzoyl- α -D-xylopyranose, X-81
 2,3,4-Tri-*O*-benzoyl- α -D-xylopyranose, X-81
 2,3,4-Tri-*O*-benzoyl- α -D-xylopyranosyl fluoride, X-16
 2,3,4-Tri-*O*-benzoyl- β -D-xylopyranosyl fluoride, X-16
 2,3,5-Tri-*O*-benzoyl-D-xylose dibenzyl dithioacetal, X-82
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 2,3,5-Tri-*O*-benzyl-D-xylose dibenzyl dithioacetal, X-82
 2,3,5-Tri-*O*-methyl-D-xylose dibenzyl dithioacetal, X-82
 2,3,4-Tri-*O*-methyl-D-xylose diethyl dithioacetal, X-83
 2,3,4-Tri-*O*-methyl-D-xylose, M-306
 2,3,5-Tri-*O*-methyl-D-xylose, M-307
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 Xylose diethyl dithioacetal; *D*-form, X-83
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 3-Acetamido-3-deoxy-1,2-*O*-isopropylidene- α -D-allofuranose, A-157
 3-Acetamido-1,2,5,6-di-*O*-cyclohexylidene-3-deoxy- α -D-allofuranose, A-157
 2-Acetamido-2,6-dideoxy-D-allose, A-364
 3-Acetamido-1,2,4,6-tetra-*O*-acetyl-3-deoxy-5-thio- β -D-allopyranose, A-344
 2-*O*-Acetyl-1,6-anhydro- β -D-allofuranose, A-483
 3-*O*-Acetyl-1,6-anhydro-4-*O*-benzyl-2-*O*-tosyl- β -D-allopyranose, A-483
 3-*O*-Acetyl-1,6-anhydro-2,4-di-*O*-tosyl- β -D-allopyranose, A-483
 2-*O*-Acetyl-1,6-anhydro-3,4-*O*-isopropylidene- β -D-allopyranose, A-483
 1-*O*-Acetyl-2,3,5,6-di-*O*-isopropylidene- β -D-allofuranose, D-713
 3-*O*-Acetyl-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, I-58
 3-*S*-Acetyl-1,2,5,6-di-*O*-isopropylidene-3-thio- α -D-allofuranose, T-53
 3-*O*-Acetyl-1,2-*O*:5,6-*S*,*O*-diisopropylidene-5-thio- α -D-allofuranose, T-54
 3-*O*-Acetyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
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 6-Amino-6-deoxyallose; *D*-form, A-159
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 6-Amino-6-deoxy-1,2-*O*-isopropylidene- α -D-allofuranose, A-159
 6-Amino-6-deoxy-1,2-*O*-isopropylidene-3-*O*-tosyl- α -D-allofuranose, A-159
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 1,6-Anhydro-4-*O*-benzyl-2-*O*-isopropylidene- β -D-allopyranose, A-483
 1,6-Anhydro-3,5-di-*O*-benzyl- β -D-allofuranose, A-483
 1,6-Anhydro-2,4-di-*O*-tosyl- β -D-allopyranose, A-483
 1,6-Anhydro-2,3-*O*-isopropylidene- β -D-allofuranose, A-483
 5,6-Anhydro-1,2-*O*-isopropylidene- α -D-allofuranose, A-488
 1,6-Anhydro-2,3-*O*-isopropylidene- β -D-allopyranose, A-483
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 2,5-Anhydro-3,4-*O*-isopropylidene-*DL*-alloseptanose, 9CI, A-87
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 1,6-Anhydro-2,3,4-tri-*O*-benzoyl- β -D-allopyranose, A-483
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 1,6-Anhydro-2,3,4-tri-*O*-methyl- β -D-allopyranose, A-483
 1,6-Anhydro-2,3,4-tri-*O*-tosyl- β -D-allopyranose, A-483
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 5-Benzamido-3-*O*-benzoyl-5-deoxy-1,2-*O*-isopropylidene-6-*O*-trityl- α -D-allofuranose, A-158
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 3-*O*-Benzoyl-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, I-58
 3-*O*-Benzoyl-1,2-*O*:5,6-*S*,*O*-diisopropylidene-5-thio- α -D-allofuranose, T-54
 3-*O*-Benzoyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 5-*O*-Benzoyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 3-*O*-Benzoyl-1,2-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-allofuranose, I-58
 6-*O*-Benzoyl-1,2-*O*-isopropylidene-3-*O*-methyl-5-*O*-tosyl- α -D-allofuranose, I-58
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 3-*O*-Benzyl-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, I-58
 3-*O*-Benzyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 3-*O*-Benzyl-1,2-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-allofuranose, I-58
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 3-Chloro-3-deoxy-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, C-71
 1,2-*O*-Cyclohexylideneallofuranose; α -D-form, C-189
 6-Deoxyallofuranosyl bromide; β -D-form; Tris(4-nitrobenzoyl), D-33
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 3-Deoxy-3-*C*-hydroxymethyl-1,2-*O*-isopropylidene- α -D-allofuranose, D-228
 3-Deoxy-3-iodoaltrose, D-247
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 3-Deoxy-3-iodo-1,2-*O*-isopropylidene- α -D-allofuranose, D-243
 3-Deoxy-3-iodo-1,2-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-allofuranose, D-243
 2,6-Diacetamido-2,6-dideoxy- α -D-allopyranoside, D-410
 5,6-Di-*O*-acetyl-3-*S*-acetyl-1,2-*O*-isopropylidene-3-thio- α -D-allofuranose, T-53
 3,4-Di-*O*-acetyl-1,6-anhydro-2-chloro-2-deoxy- α -D-allopyranose, C-70
 4,6-Di-*O*-acetyl-3-*O*-benzyl-1,2-*O*-ethylidene- α -D-allopyranose, A-86
 5,6-Di-*O*-acetyl-3-*O*-benzyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 5,6-Di-*O*-acetyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 5,6-Di-*O*-acetyl-1,2-*O*-isopropylidene-3-*O*-tosyl- α -D-allofuranose, I-58
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 1,6,3,4-Dianhydroallose; *D*-form, D-488
 1,6,2,3-Dianhydro-5-*O*-benzoyl- β -D-allofuranose, D-486
 1,6,2,3-Dianhydro-4-*O*-benzyl- β -D-allopyranose, D-487
 1,6,2,3-Dianhydro-4-*O*-tosyl- β -D-allopyranose, D-487
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 3,5-Di-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 1,2,5,6-Di-*O*-cyclohexylidene- α -D-allofuranose, C-189
 1,2,5,6-Di-*O*-cyclohexylidene-3-*C*-ethyl- α -D-allofuranose, C-189
 1,2,5,6-Di-*O*-cyclohexylidene-3-*O*-mesyl- α -D-allofuranose, C-189
 1,2,5,6-Di-*O*-cyclohexylidene-3-*C*-methyl- α -D-allofuranose, C-189
 1,2,5,6-Di-*O*-cyclohexylidene-3-*C*-vinyl- α -D-allofuranose, C-189
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 2,3,5,6-Di-*O*-ethylidene- β -D-allofuranose, A-86
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 2,3,5,6-Di-*O*-isopropylideneallofuranose; β -D-form, D-713
 1,2,5,6-Di-*O*-isopropylidene- α -D-allofuranose, I-58
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 2,3,5,6-Di-*O*-isopropylidene-D-allofuranosyl chloride, A-77
 2,3,5,6-Di-*O*-isopropylidene- β -D-allofuranosyl chloride, A-77
 1,2,5,6-Di-*O*-isopropylidene-3-*O*-methyl- α -D-allofuranose, I-58
 1,2,5,6-Di-*O*-isopropylidene-3-*C*-(nitromethyl)- α -D-allofuranose, N-59
 1,2,5,6-Di-*O*-isopropylidene-3-thio- α -D-allofuranose, T-53
 1,2-*O*:5,6-*S*,*O*-Diisopropylidene-5-thio- α -D-allofuranose, T-54
 1,2,5,6-Di-*O*-isopropylidene-3-*O*-tosyl- α -D-allofuranose, I-58
 Ethyl 2,3-dideoxy-2,3-*C*-methylene- α -D-allopyranoside, D-626
 Helicide, H-3
 1,2-*O*-Isopropylideneallose; α -D-Furanose-form, I-58

1,2-*O*-Isopropylidene-3-deoxy-3-*C*-methyl- α -D-allofuranose, D-289
 1,2-*O*-Isopropylidene-3,5-di-*O*-mesyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-5,6-di-*O*-mesyl-3-*O*-methyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-3,5-di-*O*-mesyl-6-*O*-trityl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-3,6-di-*O*-tosyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-3-*O*-methyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-3-*O*-tosyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-6-*O*-tosyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-3,5,6-tri-*O*-mesyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-3,5,6-tri-*O*-methyl- α -D-allofuranose, I-58
 1,2-*O*-Isopropylidene-6-*O*-trityl- α -D-allofuranose, I-58
 Methyl 3-acetamido-2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy- α -D-allopyranoside, A-157
 Methyl 4-acetamido-2,3-anhydro-4,6-dideoxy- α -D-allopyranoside, A-365
 Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- α -D-allopyranoside, A-157
 Methyl 3-acetamido-3-deoxy- α -D-allofuranoside, A-157
 Methyl 3-acetamido-3-deoxy- β -D-allofuranoside, A-157
 Methyl 4-acetamido-4,6-dideoxy- α -D-allopyranoside, A-365
 Methyl 4-acetamido-4,6-dideoxy- β -D-allopyranoside, A-365
 Methyl 3-acetamido-2,5,6-tri-*O*-acetyl-3-deoxy- β -D-allofuranoside, A-157
 Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-allopyranoside, A-157
 Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- β -D-allopyranoside, A-157
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-allopyranoside, M-155
 Methyl 2-*O*-acetyl-4,6-*O*-(*R*)-benzylidene-3-chloro-3-deoxy- β -D-allopyranoside, C-71
 Methyl α -D-allofuranoside, M-148
 Methyl β -D-allofuranoside, M-148
 Methyl α -D-allopyranoside, M-148
 Methyl β -D-allopyranoside, M-148
 Methyl 3-amino-3-deoxy- β -D-allofuranoside, A-157
 Methyl 3-amino-3-deoxy- α -D-allopyranoside, A-157
 Methyl 3-amino-3-deoxy- β -D-allopyranoside, A-157
 Methyl 4-amino-4,6-dideoxy- α -D-allopyranoside, A-365
 Methyl 4-amino-4,6-dideoxy- β -D-allopyranoside, A-365
 Methyl 5,6-anhydro-2,3-*O*-isopropylidene- β -L-allofuranoside, M-148
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-allopyranoside, M-155
 Methyl 6-*O*-benzoyl-3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-allopyranoside, M-148
 Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-*O*-methyl- α -D-allopyranoside, M-155
 Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-allopyranoside, M-155
 Methyl 4,6-*O*-benzylideneallopyranoside; α -D-*form*, M-155
 Methyl 4,6-*O*-benzylideneallopyranoside; β -D-*form*, M-155
 Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- β -D-allopyranoside, B-56
 Methyl 4,6-*O*-benzylidene-3-chloro-3-deoxy- β -D-allopyranoside, C-71
 Methyl 3,4-*O*-(*R*)-benzylidene-2-chloro-2-deoxy- α -D-allopyranoside, C-70
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-allopyranoside, C-70
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy-3-*O*-methyl- α -D-allopyranoside, C-70
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo- β -D-allopyranoside, D-243
 Methyl 4,6-*O*-benzylidene-2,3-*O*-isopropylidene- α -D-allopyranoside, M-155
 Methyl 4,6-*O*-benzylidene-2-*O*-mesyl- α -D-allopyranoside, M-155
 Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl- α -D-allopyranoside, M-155
 Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- β -D-allopyranoside, M-148
 Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- α -D-allopyranoside, M-155
 Methyl 3-*O*-benzyl-2-*O*-methyl- α -D-allopyranoside, M-148
 Methyl 3-*O*-benzyl-2-*O*-methyl-6-*O*-tosyl- α -D-allopyranoside, M-148
 Methyl 3-bromo-3-deoxy- β -D-allopyranoside, B-56
 Methyl 2-chloro-2-deoxy- α -D-allopyranoside, C-70
 Methyl 3-chloro-3-deoxy- β -D-allopyranoside, C-71
 Methyl 2-chloro-2-deoxy-3,4-*O*-isopropylidene- α -D-allopyranoside, C-70
 Methyl 5,6-*O*-cyclohexylidene- α -D-allofuranoside, M-148
 Methyl 5,6-*O*-cyclohexylidene-3-*O*-mesyl- α -D-allofuranoside, M-148
 Methyl 5,6-*O*-cyclohexylidene-3-*O*-mesyl- β -D-allofuranoside, M-148
 Methyl 3-deoxy-3-fluoro- β -D-allopyranoside, D-65
 Methyl 3-deoxy-3-fluoro-4,6-*O*-isopropylidene- β -D-allopyranoside, D-65
 Methyl 3-deoxy-3-fluoro-6-*O*-trityl- β -D-allopyranoside, D-65
 Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-allopyranoside, M-155
 Methyl 2,4-di-*O*-acetyl-3,6-di-*O*-tosyl- β -D-allopyranoside, M-148
 Methyl 2,6-dibenzamido-2,6-dideoxy- α -D-allopyranoside, D-410
 Methyl 2,3,4,6-di-*O*-ethylidene- α -D-allopyranoside, M-148
 Methyl 2,3,5,6-di-*O*-isopropylidene- β -D-allofuranoside, M-148
 Methyl 2,3,4,5-di-*O*-isopropylidene- α -D-allofuranoside, A-87
 Methyl 2,3-*O*-isopropylidene- α -D-allofuranoside, M-148
 Methyl 2,3-*O*-isopropylidene- β -L-allofuranoside, M-148
 Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-tosyl- α -D-allopyranoside, M-148
 Methyl 2,3-*O*-isopropylidene-6-*O*-methyl- β -L-allofuranoside, M-148

Methyl 2,3-*O*-isopropylidene-6-*O*-methyl-5-*O*-tosyl- β -L-allofuranoside, M-148
 Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-allopyranoside, M-148
 Methyl 2,3,4,6-tetra-*O*-acetyl- α -D-allopyranoside, M-148
 Methyl 2,3,4,5-tetra-*O*-acetyl- β -D-alloseptanose, A-87
 Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- α -D-allopyranoside, T-54
 Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- β -D-allopyranoside, T-54
 Methyl 5-thio- α -D-allopyranoside, T-54
 Methyl 5-thio- β -D-allopyranoside, T-54
 Methyl 2-*O*-tosyl- α -D-allopyranoside, M-148
 3-*O*-Methyl- β -D-allopyranose, A-86
 2-*O*-Methyl-DL-allose, A-86
 1,2,3,4,6-Penta-*O*-acetyl- β -D-allopyranose, A-86
 1,2,3,4,6-Penta-*O*-acetyl-DL-allose, A-86
 2,3,4,5,6-Penta-*O*-benzyl-D-allose diethyl dithioacetal, A-86
 2,3,4,5,6-Penta-*O*-benzyl-D-allose, A-86
 2,3,4,6-Tetra-*O*-acetyl- α -D-allopyranosyl bromide, A-81
 2,3,4,6-Tetra-*O*-acetyl- β -D-allopyranosyl bromide, A-81
 1,2,4,6-Tetra-*O*-acetyl-3-bromo-3-deoxy- β -D-allopyranose, B-56
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-methyl-DL-allose, A-86
 1,2,4,6-Tetra-*O*-benzoyl-3-*O*-methyl- β -D-allopyranose, A-86
 5-Thioallose; D-Pyranose-*form*, T-54
 5-Thioallose; L-*form*, T-54
 3-*O*-Tosyl-D-allose, A-86
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -D-allofuranose, A-483
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- β -D-allopyranose, A-483
 1,5,6-Tri-*O*-acetyl-2,3-*O*-ethylidene- β -D-allofuranose, A-86
 3,4,6-Tri-*O*-acetyl-1,2-*O*-ethylidene- α -D-allopyranose, A-86
 3,5,6-Tri-*O*-acetyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-allofuranose, I-58

altro-Hexoses

4-Acetamido-4-deoxy-D-altropyranose, A-166
 2-Acetamido-2-deoxy-D-altrose, A-164
 2-Acetamido-2-deoxy-5-thio- β -D-altropyranoside, 9CI, A-345
 4-Acetamido-1,2,3,6-tetra-*O*-acetyl-4-deoxy-D-altropyranose, A-166
 2-Acetamido-1,3,4,6-tetra-*O*-acetyl-2-deoxy-5-thio- β -D-altropyranoside, 9CI, A-345
 3-*O*-Acetyl-1,2,5,6-di-*O*-isopropylidene- β -D-altrofuranose, I-59
 5-*O*-Acetyl-1,2,3,4-di-*O*-isopropylidene- β -L-altroseptanose, A-114
 Altrose; D-*form*; Dibenzyl dithioacetal, A-113
 Altrose; D-*form*; Di-Et dithioacetal, A-113
 Altrose; D-*form*, A-113
 Altrose; L-*form*, A-113
 Altroseptanose, A-114
 6-Amino-6-deoxyaltrose; L-*form*; 1-Dibenzyl dithioacetal, *N*-benzoyl, A-168
 2-Amino-2-deoxyaltrose; D-*form*, A-164
 3-Amino-3-deoxyaltrose; D-*form*, A-165
 3-Amino-3-deoxy-2,4,5,6-tetra-*O*-methyl-D-altroic acid, A-163
 2,6-Anhydro-D-altrose dimethylacetal, 9CI, A-494
 1,6-Anhydroaltrose; β -D-Furanose-*form*, A-493
 1,6-Anhydroaltrose; β -L-Furanose-*form*, A-493
 1,6-Anhydroaltrose; β -D-Pyranose-*form*, A-493
 1,6-Anhydro-3-*O*-benzyl- β -D-altropyranose, A-493
 1,6-Anhydro-4-*O*-benzyl- β -D-altropyranose, A-493
 1,6-Anhydro-4-*O*-benzyl-3-deoxy-3-fluoro-D-altropyranose, A-518
 1,2-Anhydro-4,6-*O*-benzylidene-3-*O*-tert-butyltrimethylsilyl- β -D-altropyranose, A-492
 1,6-Anhydro-3-deoxy-3-fluoroaltrose; D-Pyranose-*form*, A-518
 1,2-Anhydro-3,4,6-tri-*O*-benzyl- β -D-altropyranose, A-492
 1,6-Anhydro-2,3,4-tri-*O*-benzyl- β -D-altropyranose, A-493
 3-Azido-3-deoxy-2,4,6-tri-*O*-methyl-D-altrose, A-899
 Benzyl 3-amino-3-deoxy- β -D-altropyranoside, A-165
 Benzyl 3,4-anhydro-2-*O*-mesyl-6-*O*-trityl- α -D-altropyranoside, A-495
 2,4-Di-*O*-acetyl-1,6-anhydro-3-*O*-benzyl- β -D-altropyranose, A-493
 2,3-Di-*O*-acetyl-1,6-anhydro-4-*O*-benzyl- β -D-altropyranose, A-493
 3,4-Di-*O*-acetyl-1,6-anhydro-2-bromo-2-deoxy- β -D-altropyranose, B-58
 2,4-Di-*O*-acetyl-1,6-anhydro-3-chloro-3-deoxy- β -D-altropyranose, C-73
 1,6,3,4-Dianhydroaltrose; D-*form*, D-490
 2,5-Di-*O*-benzyl-6-bromo-6-deoxy-3,4-di-*O*-methyl-D-altrose, B-60
 4,6-Dideoxy-4-(*N*-dimethylamino)-D-altrose, A-370
 1,2,5,6-Di-*O*-isopropylidene- β -D-altrofuranose, I-59
 1,2,3,4-Di-*O*-isopropylidene- β -D-altropyranose, I-59
 1,2,3,4-Di-*O*-isopropylidene- β -L-altroseptanose, A-114
 1,2,5,6-Di-*O*-isopropylidene-3-*O*-tosyl- β -D-altrofuranose, I-59
 1,2-*O*-Isopropylidenealtrose; β -D-Furanose-*form*, I-59
 1,2-*O*-Isopropylidenealtrose; β -D-Pyranose-*form*, I-59
 Methyl 2-acetamido-3-*O*-acetyl-2-deoxy-4,6-*O*-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
 Methyl 2-acetamido-4,6-*O*-benzylidene-2-deoxy- α -D-altropyranoside, A-164

- Methyl 2-acetamido-2-deoxy- α -D-altropyranoside, A-164
Methyl 2-acetamido-2-deoxy-4,6-*O*-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
Methyl 2-acetamido-2-deoxy-5-thio- α -D-altropyranoside, 9CI, A-345
Methyl 2-acetamido-2-deoxy-5-thio- β -D-altropyranoside, 9CI, A-345
Methyl 2-acetamido-2-deoxy-6-*O*-tosyl- α -D-altropyranoside, A-164
Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-altropyranoside, A-370
Methyl 6-acetamido-2,3-di-*O*-benzyl-6-deoxy- α -L-altrofuranose, A-168
Methyl 4-acetamido-4,6-dideoxy- α -D-altropyranoside, A-370
Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-altropyranoside, A-165
Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside, C-73
Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside, D-246
Methyl 3-*O*-acetyl-2,4-dibenzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
Methyl 4-*O*-acetyl-2-*O*-methyl-3-*O*-tosyl-6-*O*-trityl- α -D-altropyranoside, M-149
Methyl altroside; α -D-Pyranose-*form*, M-149
Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-altropyranoside, A-164
Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- β -D-altropyranoside, A-164
Methyl 3-amino-3-deoxy- α -D-altropyranoside, A-165
Methyl 2-amino-2-deoxy-4,6-*O*-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
Methyl 2-amino-2-deoxy-5-thio- α -D-altropyranoside, 9CI, A-345
Methyl 4-amino-4,6-dideoxy- α -D-altropyranoside, A-370
Methyl 2,6-anhydro- α -D-altropyranoside, A-494
Methyl 2,6-anhydro- β -D-altropyranoside, A-494
Methyl 3,4-anhydro- α -D-altropyranoside, A-495
Methyl 2,6-anhydro-3,4-*O*-isopropylidene- α -D-altropyranoside, A-494
Methyl 2,6-anhydro-3,4-*O*-isopropylidene- β -D-altropyranoside, A-494
Methyl 3,4-anhydro-6-*O*-trityl- α -D-altropyranoside, A-495
Methyl 3-azido-3-deoxy- α -D-altropyranoside, A-899
Methyl 3-azido-3-deoxy-2,4,6-tri-*O*-methyl- α -D-altropyranoside, A-899
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl- α -D-altropyranoside, M-156
Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-altropyranoside, M-156
Methyl 2-*O*-benzoyl-3,4-di-*O*-mesyl-6-*O*-trityl- α -D-altropyranoside, M-149
Methyl 6-*O*-benzyl-2-deoxy-2-*C*-methyl- α -D-altropyranoside, D-290
Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
Methyl 4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-altropyranoside, B-58
Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
Methyl 4,6-*O*-(*R*)-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside, C-73
Methyl 3,4-*O*-(*R*)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
Methyl 3,4-*O*-(*S*)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside, D-246
Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo- α -D-altropyranoside, D-247
Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo-2-*O*-tosyl- α -D-altropyranoside, D-247
Methyl 4,6-*O*-benzylidene-2-deoxy-2-*C*-methyl- α -D-altropyranoside, D-290
Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -D-altropyranoside, D-291
Methyl 4,6-*O*-benzylidene-2,3-dibromo-2,3-dideoxy- α -D-altropyranoside, D-525
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- α -D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl- α -D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-2-*O*-methyl- α -D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- α -D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl- α -D-altropyranoside, M-156
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- α -D-altropyranoside, M-156
Methyl 2-bromo-2-deoxy- α -D-altropyranoside, B-58
Methyl 6-bromo-6-deoxy- α -D-altropyranoside, B-60
Methyl 2-bromo-2-deoxy-3,4-*O*-isopropylidene- α -D-altropyranoside, B-58
Methyl 3-chloro-3-deoxy- α -D-altropyranoside, C-73
Methyl 3-chloro-3-deoxy- β -D-altropyranoside, C-73
Methyl 2-deoxy-2-iodo- α -D-altropyranoside, D-246
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-altropyranoside, A-494
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-altropyranoside, A-494
Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 2,3-di-*O*-acetyl-4,6-*O*-isopropylidene- α -D-altropyranoside, M-149
Methyl 2,6,3,4-dianhydro- α -D-altropyranoside, D-491
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 4,6-di-*O*-benzoyl-2-*O*-methyl-3-*O*-tosyl- α -D-altropyranoside, M-149
Methyl 2,3-di-*O*-benzyl- β -L-altrofuranoside, A-113
Methyl 2,3-di-*O*-benzyl- α -L-altrofuranoside, A-113
Methyl 2,3-di-*O*-benzyl- α -D-altropyranoside, M-149
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-altropyranoside, M-156
Methyl 2,3-di-*O*-benzyl-6-*O*-tosyl- α -D-altropyranoside, M-149
Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-altropyranoside, A-370
Methyl 4,6-*O*-ethylidene-2-*O*-methyl- α -D-altropyranoside, M-149
Methyl 3,4-*O*-isopropylidene- α -D-altropyranoside, M-149
Methyl 4,6-*O*-isopropylidene- α -D-altropyranoside, M-149
Methyl 3,4-*O*-isopropylidene-5-thio- α -D-altropyranoside, T-55
Methyl 2-*O*-methyl-3-*O*-tosyl- α -D-altropyranoside, M-149
Methyl 2,3,4,6-tetra-*O*-acetyl- α -D-altropyranoside, M-149
Methyl 2,3,4,6-tetra-*O*-acetyl- β -D-altropyranoside, M-149
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- α -D-altropyranoside, T-55
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- β -D-altropyranoside, T-55
Methyl 5-thio- α -D-altropyranoside, T-55
Methyl 5-thio- β -D-altropyranoside, T-55
Methyl 2,4,6-tri-*O*-acetyl-3-chloro-3-deoxy- α -D-altropyranoside, C-73
Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-iodo- α -D-altropyranoside, D-246
Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
1,2,3,4,6-Penta-*O*-acetyl- α -D-altropyranose, A-113
1,2,3,4,6-Penta-*O*-acetyl-5-thio- β -D-altropyranose, T-55
2,3,4,5,6-Penta-*O*-benzyl-D-altrose, A-113
1,2,3,6-Tetra-*O*-acetyl-5-*S*-acetyl-5-thio-L-altrofuranose, T-55
2,3,4,6-Tetra-*O*-acetyl- α -D-altropyranosyl bromide, A-104
2,3,4,6-Tetra-*O*-acetyl- α -D-altropyranosyl chloride, A-105
2,3,4,6-Tetra-*O*-benzyl-L-altrose, A-113
5-Thioaltrose; *D-form*, T-55
5-Thioaltrose; *L-form*, T-55
2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -L-altrofuranose, A-493

galacto-Hexoses

- 2-Acetamido-1,6-anhydro-2-deoxy- β -D-galactopyranose, A-127
3-Acetamido-3-deoxy- β -D-galactopyranose, A-207
4-Acetamido-4-deoxy-D-galactose, A-208
2-Acetamido-2-deoxy-5-thio- α -D-galactopyranose, A-346
2-Acetamido-3,4-di-*O*-acetyl-1,6-anhydro-2-deoxy- β -D-galactopyranose, A-127
2-Acetamido-2,4-dideoxy-4-fluoro-D-galactopyranose, A-372
2-Acetamido-1,3,6-tri-*O*-acetyl-2-deoxy-*S*-acetyl-5-thio-D-galactofuranose, A-346
2-Acetamido-1,3,6-tri-*O*-acetyl-2,4-dideoxy-4-fluoro-D-galactopyranose, A-372
6-*O*-Acetyl-2-azido-3,4-di-*O*-benzyl-2-deoxy- α -D-galactopyranosyl bromide, A-902
3-*O*-Acetyl-1,2,5,6-di-*O*-isopropylidene- α -D-galactofuranose, I-64
6-*O*-Acetyl-1,2,3,4-di-*O*-isopropylidene- α -D-galactopyranose, D-716
3-*O*-Acetyl-1,2,4,5-di-*O*-isopropylidene- α -D-galactoseptanose, G-203
5-*O*-Acetyl-1,2,3,4-di-*O*-isopropylidene- α -D-galactoseptanose, G-203
1-*O*-Acetyl- β -D-galactopyranose, G-193
2-*O*-Acetyl- β -D-galactopyranosyl azide, G-26
N-Acetyl- α -D-galactopyranosylamine, G-207
N-Acetyl- β -D-galactopyranosylamine, G-207
N-Acetyl-2,3,4,6-tetra-*O*-acetyl- α -D-galactopyranosylamine, G-207
N-Acetyl-2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranosylamine, G-207
1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzoyl- β -D-galactopyranose, G-193
1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzyl- α -D-galactopyranose, T-21
1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzyl- β -D-galactopyranose, T-21
Allyl 4,6-*O*-benzylidene- β -D-galactopyranoside, A-93
Allyl 4,6-*O*-benzylidene- α -D-galactopyranoside, A-93
Allyl 2,6-di-*O*-acetyl- β -D-galactopyranoside, A-93
Allyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-galactopyranoside, A-93
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Allyl 2,6-di-*O*-benzyl- α -D-galactopyranoside, A-93
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Allyl 2,3-di-*O*-benzyl-4,6-*O*-isopropylidene- β -D-galactopyranoside, A-93
Allyl 2,6-di-*O*-benzyl-3,4-*O*-isopropylidene- α -D-galactopyranoside, A-93
Allyl galactopyranoside; α -*D-form*, A-93
Allyl galactopyranoside; β -*D-form*, A-93
Allyl 3,4-*O*-isopropylidene- β -D-galactopyranoside, A-93
Allyl 4,6-*O*-isopropylidene- β -D-galactopyranoside, A-93
Allyl 3,4-*O*-isopropylidene- α -D-galactopyranoside, A-93
Allyl 2,3,4-tri-*O*-acetyl- β -D-galactopyranoside, A-93

- Allyl 3,4,6-tri-*O*-acetyl- β -D-galactopyranoside, A-93
Allyl 2,4,6-tri-*O*-benzyl- α -D-galactopyranoside, A-93
Allyl 2,3,6-tri-*O*-benzyl- α -D-galactopyranoside, A-93
6-*O*-Allyl-1,2,3,4-di-*O*-isopropylidene- α -D-galactopyranose, D-716
3-Amino-1,6-anhydro-3-deoxy- β -D-galactopyranose, A-207
2-Amino-1,6-anhydro-2-deoxygalactose; β -D-Pyranose-form, A-127
4-Amino-4-deoxygalactose; D-form, A-208
5-Amino-5-deoxygalactose; D-form, A-209
5-Amino-5-deoxy-1,2-*O*-isopropylidene-6-*O*-trityl- α -D-galactofuranose, A-209
6-Amino-6-deoxy-2,3,4,5-tetra-*O*-methyl-D-galactonic acid, A-190
4-Aminophenyl 2-acetamido-2-deoxygalactopyranoside; α -D-form, A-432
4-Aminophenyl 2-acetamido-2-deoxygalactopyranoside; β -D-form, A-432
4-Aminophenyl galactopyranoside; α -D-form, A-435
4-Aminophenyl galactopyranoside; β -D-form, A-435
1,6-Anhydro-2-deoxy-2-iodogalactose; β -D-Pyranose-form, A-561
1,6-Anhydro-2,3-di-*O*-tosyl- α -D-galactofuranose, A-615
1,6-Anhydro-2,5-di-*O*-tosyl- α -D-galactofuranose, A-615
1,6-Anhydro-3,5-di-*O*-tosyl- α -D-galactofuranose, A-615
1,6-Anhydrogalactofuranose; α -D-form, A-615
3,6-Anhydrogalactose; D-form, A-620
3,6-Anhydrogalactose; L-form, A-620
3,6-Anhydro-1,2-*O*-isopropylidene- α -D-galactopyranose, A-620
3,6-Anhydro-1,2-*O*-isopropylidene- α -L-galactopyranose, A-620
1,6-Anhydro-2-*O*-tosyl- α -D-galactofuranose, A-615
1,6-Anhydro-3-*O*-tosyl- α -D-galactofuranose, A-615
1,6-Anhydro-5-*O*-tosyl- α -D-galactofuranose, A-615
1,2-Anhydro-3,4,6-tri-*O*-benzyl- α -D-galactopyranose, A-617
1,3-Anhydro-2,4,6-tri-*O*-benzyl- β -D-galactopyranose, A-618
1,6-Anhydro-2,3,5-tri-*O*-mesyl- α -D-galactofuranose, A-615
1,6-Anhydro-2,3,5-tri-*O*-methyl- α -D-galactofuranose, A-615
1,6-Anhydro-2,3,4-tri-*O*-methyl- β -D-galactopyranose, T-179
1,6-Anhydro-2,3,5-tri-*O*-tosyl- α -D-galactofuranose, A-615
6-Azido-6-deoxy-1,2,3,4-di-*O*-isopropylidene- α -D-galactopyranose, A-904
6-Azido-6-deoxy-1,2,3,4-di-*O*-isopropylidene- α -L-galactopyranose, A-904
2-Azido-2-deoxygalactose; β -D-Pyranose-form, A-903
6-Azido-6-deoxygalactose; β -D-Pyranose-form, A-904
6-Azido-6-deoxy-2,3,4-tri-*O*-methyl-D-galactopyranose, A-904
6-(4-Azido-2-hydroxy-3,5-diiodobenzamido)-6-deoxygalactose; D-form, A-924
3-*O*-Benzoyl-1,2,5,6-di-*O*-isopropylidene- α -D-galactofuranose, I-64
3-*O*-Benzoyl-1,2-*O*-isopropylidene- α -D-galactofuranose, I-64
6-*O*-Benzoyl-1,2-*O*-isopropylidene- α -D-galactofuranose, I-64
6-*O*-Benzoyl-1,2-*O*-isopropylidene-5-*O*-mesyl-3-*O*-methyl- α -D-galactofuranose, I-64
6-*O*-Benzoyl-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-galactofuranose, I-64
Benzyl 2-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, B-15
Benzyl 3-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, B-15
Benzyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- β -D-galactopyranoside, B-15
Benzyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl- β -D-galactopyranoside, B-15
Benzyl 2-*O*-benzoyl- β -D-galactopyranoside, B-15
Benzyl 6-*O*-benzoyl- β -D-galactopyranoside, B-15
Benzyl 6-*O*-benzoyl-3,4-*O*-isopropylidene- β -D-galactopyranoside, B-15
Benzyl 2-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, B-15
Benzyl 2-*O*-benzoyl- β -D-galactopyranoside, B-15
Benzyl 4,6-*O*-benzylidene- β -D-galactopyranoside, B-15
Benzyl 4,6-*O*-benzylidene- α -D-galactopyranoside, B-15
Benzyl 2,6-di-*O*-acetyl- β -D-galactopyranoside, B-15
Benzyl 2,6-di-*O*-acetyl-3,4-*O*-isopropylidene- β -D-galactopyranoside, B-15
Benzyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, B-15
Benzyl 2,6-di-*O*-benzoyl-3,4-*O*-isopropylidene- β -D-galactopyranoside, B-15
Benzyl galactopyranoside; α -D-form; 2-Allyl, 6-benzyl, B-15
Benzyl galactopyranoside; β -D-form, B-15
Benzyl 3,4-*O*-isopropylidene- β -D-galactopyranoside, B-15
Benzyl 4,6-*O*-isopropylidene- α -D-galactopyranoside, B-15
Benzyl 3,4-*O*-isopropylidene-6-*O*-trityl- β -D-galactopyranoside, B-15
Benzyl 2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranoside, B-15
Benzyl 2,3,6-tri-*O*-acetyl- β -D-galactopyranoside, B-15
Benzyl 2,4,6-tri-*O*-acetyl- β -D-galactopyranoside, B-15
Benzyl 3,4,6-tri-*O*-acetyl- β -D-galactopyranoside, B-15
Benzyl 3,4,6-tri-*O*-acetyl-2-*O*-methyl- β -D-galactopyranoside, B-15
Benzyl 2,4,6-tri-*O*-acetyl-3-*O*-methyl- β -D-galactopyranoside, B-15
Benzyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- β -D-galactopyranoside, B-15
Benzyl 2,3,4-tri-*O*-benzyl- α -D-galactopyranoside, B-15
Benzyl 2,3,6-tri-*O*-benzyl- α -D-galactopyranoside, B-15
Benzyl 2,3,4-tri-*O*-benzyl-6-*O*-methyl- α -D-galactopyranoside, B-15
Benzyl 2,3,4-tri-*O*-benzyl-6-*O*-methyl- β -D-galactopyranoside, B-15
Benzyl 2,3,6-tri-*O*-benzyl-4-*O*-methyl- β -D-galactopyranoside, B-15
6-*O*-Benzyl-1,2,3,4-di-*O*-isopropylidene- α -D-galactopyranose, D-716
2-*O*-Benzyl-D-galactose, G-193
4,6-*O*-Benzylidene- α -D-galactopyranose, G-193
3,4-*O*-Benzylidene-1,2-*O*-isopropylidene- α -D-glucuronic acid, G-538
2-Bromo-2-deoxygalactose; D-form, B-70
2-Bromoethyl galactopyranoside; β -D-form; 4,6-*O*-Benzylidene, B-114
2-Bromoethyl galactopyranoside; α -D-form; Tetra-Ac, B-114
2-Bromoethyl galactopyranoside; α -D-form; Tetrabenzyl, B-114
tert-Butyl galactopyranoside; α -D-form, B-139
tert-Butyl 2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranoside, B-139
tert-Butyl 2,3,6-tri-*O*-benzoyl- α -D-galactopyranoside, B-139
4,6-*O*-(1-Carboxyethylidene)galactose; (β -D-Pyranose, 1'*R*)-form, C-21
4,6-*O*-(1-Carboxyethylidene)galactose; (β -D-Pyranose, 1'*S*)-form, C-21
Chondrosamine, A-206
4,6-*O*-Cyclohexylidene-D-galactose diethyl dithioacetal, G-195
5,6-*O*-Cyclohexylidene-D-galactose diethyl dithioacetal, G-195
3-Deoxy-3-fluoro-1,2,4,6-di-*O*-isopropylidene- α -D-galactofuranose, D-81
2-Deoxy-2-fluorogalactose; α -D-Pyranose-form; 1-(Dihydrogen phosphate), D-80
2-Deoxy-2-fluorogalactose; β -D-Pyranose-form, D-80
2-Deoxy-2-fluorogalactose; D-form, D-80
3-Deoxy-3-fluorogalactose; D-form, D-81
4-Deoxy-4-fluorogalactose; D-form, D-82
2,6-Diacetamido-2,6-dideoxy- α -D-galactopyranose, D-423
2,4-Diamino-2,4-dideoxygalactose; D-form, D-422
2,3-Diamino-2,3-dideoxygalactose, D-421
2,6-Diamino-2,6-dideoxygalactose, D-423
1,6,3,4-Dianhydro-2-*O*-benzyl- β -D-galactopyranose, D-501
1,6,3,4-Dianhydrogalactose; D-Pyranose-form, D-501
1,6,3,4-Dianhydro-2-*O*-methyl- β -D-galactopyranose, D-501
1,6,3,4-Dianhydro-2-*O*-tosyl- β -D-galactopyranose, D-501
3,6-Di-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-galactofuranose, I-64
2,3-Di-*O*-benzyl-4,6-*O*-benzylidene- α -D-galactopyranose, G-193
2,6-Di-*O*-benzyl- β -D-galactopyranose, G-193
2,3-Di-*O*-benzyl-D-galactose, G-193
1,2,3,4-Di-*O*-cyclohexylidene-6-*O*-tosyl- α -D-galactopyranose, G-193
1,2,5,6-Di-*O*-isopropylidene- α -D-galactofuranose, I-64
1,2,3,4-Di-*O*-isopropylidene- α -D-galactopyranose 6-dihydrogen phosphate, G-198
1,2,3,4-Di-*O*-isopropylidenegalactopyranose; α -D-form, D-716
2,3,4,6-Di-*O*-Isopropylidene-D-galactopyranose, G-193
1,2,3,4-Di-*O*-isopropylidene-6-*O*-mesyl- α -D-galactopyranose, D-716
1,2,5,6-Di-*O*-isopropylidene-3-*O*-methyl- α -D-galactofuranose, I-64
1,2,3,4-Di-*O*-isopropylidene-6-*O*-methyl- α -D-galactopyranose, D-716
1,2,3,4-Di-*O*-isopropylidene-6-*O*-methyl- α -D-galactopyranose, M-253
1,2,5,6-Di-*O*-isopropylidene-3-*O*-tosyl- α -D-galactofuranose, I-64
1,2,3,4-Di-*O*-isopropylidene-6-*O*-tosyl- α -D-galactopyranose, D-716
1,2,3,4-Di-*O*-isopropylidene-6-*O*-trityl- α -D-galactopyranose, D-716
2,3-Di-*O*-methylgalactose; α -D-Pyranose-form; Me glycoside, 4,6-dinitrate, D-732
2,6-Di-*O*-methylgalactose; α -D-Pyranose-form; Me glycoside, 3,4-dinitrate, D-734
2,6-Di-*O*-methylgalactose; β -D-Pyranose-form; Me glycoside, 3,4-dinitrate, D-734
3,4-Di-*O*-methylgalactose; β -D-Pyranose-form; Me glycoside, 2,6-dinitrate, D-735
2,3-Di-*O*-methylgalactose; D-form, D-732
2,4-Di-*O*-methylgalactose; D-form, D-733
2,6-Di-*O*-methylgalactose; D-form, D-734
3,4-Di-*O*-methylgalactose; D-form, D-735
3,6-Di-*O*-methylgalactose; D-form, D-736
4,6-Di-*O*-methylgalactose; D-form, D-737
2,3-Di-*O*-methyl-D-glucuronic acid, G-538
Eleutheroside C, E-24
Ethyl galactoside; β -D-Pyranose-form, E-24
Ethyl 2,3,4,6-tetra-*O*-acetyl- α -D-galactopyranoside, E-24
Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -D-galactofuranoside, T-65
Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -D-galactopyranoside, T-65
Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -D-galactopyranoside, T-65
Ethyl 2,3,4,6-tetra-*O*-benzoyl-1-thio- α -D-galactofuranoside, T-65
Ethyl 1-thio- α -D-galactofuranoside, T-65
Ethyl 1-thio- α -D-galactopyranoside, T-65
Ethyl 1-thio- β -D-galactopyranoside, T-65
4,6-*O*-Ethylidene- α -D-galactopyranose, G-193
5,6-*O*-Ethylidene-D-galactose diethyl dithioacetal, G-195
3,4-*O*-Ethylidene-1,2-*O*-isopropylidene- α -D-galactopyranose, I-65

Methyl 3-*O*-acetyl- α -D-galactopyranoside, M-185
Methyl 6-*O*-acetyl- α -D-galactopyranoside, M-185
Methyl 2-*O*-acetyl- β -D-galactopyranoside, M-186
Methyl 3-*O*-acetyl- β -D-galactopyranoside, M-186
Methyl 4-*O*-acetyl- β -D-galactopyranoside, M-186
Methyl 6-*O*-acetyl- β -D-galactopyranoside, M-186
Methyl 6-*O*-acetyl-2,3,5-tri-*O*-benzyl- β -D-galactofuranoside, M-184
Methyl 4-*O*-acetyl-2,3,6-tri-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 3-amino-3-deoxy- α -D-galactopyranoside, A-207
Methyl 3,6-anhydro-2-*O*-benzyl- α -D-galactopyranoside, A-620
Methyl 3,6-anhydro-2-*O*-benzyl- β -D-galactopyranoside, A-620
Methyl 3,6-anhydro- α -D-galactopyranoside, A-620
Methyl 3,6-anhydro- β -D-galactopyranoside, A-620
Methyl 2-azido-6-*O*-benzyl-2-deoxy- β -D-galactopyranoside, A-903
Methyl 2-azido-6-*O*-benzyl-2-deoxy-3,4-*O*-isopropylidene- β -D-galactopyranoside, A-903
Methyl 2-azido-4,6-*O*-benzylidene-2-deoxy- β -D-galactopyranoside, A-903
Methyl 6-azido-6-deoxy-2,3,4-tri-*O*-methyl- α -D-galactopyranoside, A-904
Methyl 6-azido-6-deoxy- β -D-galactofuranoside, A-904
Methyl 2-azido-2-deoxy- α -D-galactopyranoside, A-903
Methyl 2-azido-2-deoxy- β -D-galactopyranoside, A-903
Methyl 6-azido-6-deoxy- α -D-galactopyranoside, A-904
Methyl 6-azido-6-deoxy- β -D-galactopyranoside, A-904
Methyl 2-azido-2-deoxy-4,6-*O*-isopropylidene- β -D-galactopyranoside, A-903
Methyl 6-azido-6-deoxy-2,3,5-tri-*O*-methyl- β -D-galactofuranoside, A-904
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
Methyl 6-*O*-benzoyl-3,4-*O*-benzylidene- α -D-galactopyranoside, M-185
Methyl 6-*O*-benzoyl-2,3-di-*O*-benzyl-5-*O*-tosyl- β -D-galactofuranoside, M-184
Methyl 6-*O*-benzoyl-2,3-di-*O*-methyl- α -D-galactopyranoside, D-732
Methyl 6-*O*-benzoyl- α -D-galactopyranoside, M-185
Methyl 6-*O*-benzoyl-2,3,4-tri-*O*-mesyl- α -D-galactopyranoside, M-185
Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
Methyl 3-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 4,6-*O*-benzylidene-3-deoxy-3-nitro- β -D-galactopyranoside, D-315
Methyl 4,6-*O*-benzylidene-3-deoxy-3-nitro- β -L-galactopyranoside, D-315
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- α -D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- β -D-galactopyranoside, M-163
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl- α -D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl- β -D-galactopyranoside, M-163
Methyl 4,6-*O*-benzylidene- α -D-galactopyranoside 2,3-carbonate, M-162
Methyl 4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
Methyl 3,4-*O*-benzylidene- β -D-galactopyranoside, M-186
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl- β -D-galactopyranoside, M-250
Methyl 4,6-*O*-benzylidene-2-*O*-methyl- α -D-galactopyranoside, M-249
Methyl 4,6-*O*-benzylidene-2-*O*-methyl- β -D-galactopyranoside, M-249
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- α -D-galactopyranoside, M-250
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- β -D-galactopyranoside, M-250
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-3-*O*-tosyl- α -D-galactopyranoside, M-249
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-3-*O*-tosyl- β -D-galactopyranoside, M-249
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- α -D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- α -D-galactopyranoside, M-162
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- β -D-galactopyranoside, M-163
Methyl 2-bromo-2-deoxy- α -D-galactopyranoside, B-70
Methyl 2-bromo-2-deoxy- β -D-galactopyranoside, B-70
Methyl 4-bromo-4-deoxy- β -D-galactopyranoside, B-71
Methyl 3,4-*O*-(1-carboxyethylidene)- β -D-galactopyranoside, C-20
Methyl 2-chloro-2-deoxy- α -D-galactopyranoside, C-82
Methyl 2-chloro-2-deoxy- β -D-galactopyranoside, C-82
Methyl 4-chloro-4-deoxy- β -D-galactopyranoside, C-83
Methyl 3-deoxy-3-fluoro- β -D-galactofuranoside, D-81
Methyl 2-deoxy-2-fluoro- β -D-galactopyranoside, D-80
Methyl 3-deoxy-3-fluoro- α -D-galactopyranoside, D-81
Methyl 4-deoxy-4-fluoro- α -D-galactopyranoside, D-82
Methyl 4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
Methyl 4-deoxy-4-iodo- β -D-galactopyranoside, D-257
Methyl 3-deoxy-3-nitro- β -D-galactopyranoside, D-315
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
Methyl 4,6-di-*O*-acetyl-2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside, D-421
Methyl 4,6-di-*O*-acetyl-2,3-di-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 4,6-di-*O*-acetyl-2,3-di-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 3,4-di-*O*-acetyl-2,6-di-*O*-benzyl- β -D-galactopyranoside, M-186

- Methyl 4,6-di-*O*-acetyl- α -D-galactopyranoside, M-185
Methyl 2,6-di-*O*-acetyl- β -D-galactopyranoside, M-186
Methyl 3,4-di-*O*-acetyl- β -D-galactopyranoside, M-186
Methyl 4,6-di-*O*-acetyl- β -D-galactopyranoside, M-186
Methyl 2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside, D-421
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 2,3-di-*O*-benzoyl-4,6-di-*O*-methyl- β -D-galactopyranoside, D-737
Methyl 3,6-di-*O*-benzoyl- α -D-galactopyranoside, M-185
Methyl 3,6-di-*O*-benzoyl- β -D-galactopyranoside, M-186
Methyl 4,6-di-*O*-benzoyl-2-*O*-mesyl-3-*O*-methyl- β -D-galactopyranoside, M-250
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-galactopyranoside, M-162
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- β -D-galactopyranoside, M-163
Methyl 2,3-di-*O*-benzyl-4,6-di-*O*-methyl- β -D-galactopyranoside, D-737
Methyl 2,3-di-*O*-benzyl-5,6-di-*O*-tosyl- β -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl- α -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-isopropylidene- β -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 2,3-di-*O*-benzyl-5,6-*O*-isopropylidene- α -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl-5,6-*O*-isopropylidene- β -D-galactofuranoside, M-184
Methyl 2,3-di-*O*-benzyl-6-*O*-tosyl- β -D-galactofuranoside, M-184
Methyl 4,6-dideoxy-4,6-diiodo- α -D-galactopyranoside, D-563
Methyl 2,3,4,6-di-*O*-isopropylidene- α -D-galactopyranoside, M-185
Methyl 2,3,4,6-di-*O*-isopropylidene- β -D-galactopyranoside, M-186
Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- β -D-galactopyranoside, D-737
Methyl 2,3-di-*O*-methyl- α -D-galactopyranoside, D-732
Methyl 2,3-di-*O*-methyl- β -D-galactopyranoside, D-732
Methyl 2,4-di-*O*-methyl- α -D-galactopyranoside, D-733
Methyl 2,4-di-*O*-methyl- β -D-galactopyranoside, D-733
Methyl 2,6-di-*O*-methyl- β -D-galactopyranoside, D-734
Methyl 3,4-di-*O*-methyl- β -D-galactopyranoside, D-735
Methyl 3,6-di-*O*-methyl- β -D-galactopyranoside, D-736
Methyl 4,6-di-*O*-methyl- β -D-galactopyranoside, D-737
Methyl 2,6-di-*O*-tosyl- α -D-galactopyranoside, M-185
Methyl 3,6-di-*O*-tosyl- α -D-galactopyranoside, M-185
Methyl 2,6-di-*O*-trityl- β -D-galactopyranoside, M-186
Methyl 4,6-*O*-ethylidene-2,3-di-*O*-methyl- β -D-galactopyranoside, M-186
Methyl 4,6-*O*-ethylidene- α -D-galactopyranoside, M-185
Methyl 3,4-*O*-ethylidene- β -D-galactopyranoside, M-186
Methyl galactofuranoside; α -D-*form*, M-184
Methyl galactofuranoside; β -D-*form*, M-184
Methyl α -D-galactopyranoside, M-185
Methyl β -D-galactopyranoside, M-186
Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-methyl- α -D-galactopyranoside, D-734
Methyl 3,4-*O*-isopropylidene-2,6-di-*O*-methyl- β -D-galactopyranoside, D-734
Methyl 5,6-*O*-isopropylidene- α -D-galactofuranoside, M-184
Methyl 5,6-*O*-isopropylidene- β -D-galactofuranoside, M-184
Methyl 3,4-*O*-isopropylidene- α -D-galactopyranoside, M-185
Methyl 3,4-*O*-isopropylidene- β -D-galactopyranoside, M-186
Methyl 4,6-*O*-isopropylidene- β -D-galactopyranoside, M-186
Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- α -D-galactopyranoside, M-249
Methyl 3,4-*O*-isopropylidene-2-*O*-methyl- β -D-galactopyranoside, M-249
Methyl 3,4-*O*-isopropylidene-6-*O*-tosyl- β -D-galactopyranoside, M-186
Methyl 2-*O*-mesyl-3,4,6-tri-*O*-methyl- β -D-galactopyranoside, T-183
Methyl 3,4-*O*-methylene- α -D-galactopyranoside, M-185
Methyl 4,6-*O*-methylene- α -D-galactopyranoside, M-185
Methyl 3-*O*-methyl- β -D-galactofuranoside, M-250
Methyl 2-*O*-methyl- α -D-galactopyranoside, M-249
Methyl 2-*O*-methyl- β -D-galactopyranoside, M-249
Methyl 3-*O*-methyl- α -D-galactopyranoside, M-250
Methyl 3-*O*-methyl- β -D-galactopyranoside, M-250
Methyl 4-*O*-methyl- α -D-galactopyranoside, M-251
Methyl 4-*O*-methyl- β -D-galactopyranoside, M-251
Methyl 6-*O*-methyl- α -D-galactopyranoside, M-253
Methyl 6-*O*-methyl- β -D-galactopyranoside, M-253
Methyl 3-*O*-methyl-6-*O*-trityl- β -D-galactofuranoside, M-250
Methyl 2,3,4,6-tetra-*O*-acetyl- α -D-galactopyranoside, M-186
Methyl 2,3,4,5-tetra-*O*-acetyl- α -D-galactoseptanoside, G-203
Methyl 2,3,4,5-tetra-*O*-acetyl- β -D-galactoseptanoside, G-203
Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -D-galactopyranoside, T-65
Methyl 2,3,4,5-tetra-*O*-acetyl-6-thio- β -D-galactoseptanoside, T-67
Methyl 2,3,5,6-tetra-*O*-benzyl- β -D-galactofuranoside, M-184
Methyl 2,3,5,6-tetra-*O*-benzyl- α -D-galactofuranoside, M-184
Methyl 2,3,5,6-tetra-*O*-benzyl- β -D-galactofuranoside, M-184
Methyl 2,3,4,6-tetra-*O*-benzyl- β -D-galactopyranoside, T-21
Methyl 2,3,5,6-tetra-*O*-methyl- α -D-galactofuranoside, T-42
Methyl 2,3,4,6-tetra-*O*-methyl- α -D-galactopyranoside, M-185
Methyl 2,3,4,6-tetra-*O*-methyl- β -D-galactopyranoside, M-186
Methyl 1-thio- β -D-galactopyranoside, T-65
Methyl 6-thio- β -D-galactoseptanoside, T-67
Methyl 6-*O*-tosyl- α -D-galactopyranoside, M-185
Methyl 2,4,6-tri-*O*-acetyl 3-*O*-methyl- α -D-galactopyranoside, M-250
Methyl 3,4,6-tri-*O*-acetyl-2-azido-2-deoxy- β -D-galactopyranoside, A-903
Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -D-galactopyranoside, A-904
Methyl 2,4,6-tri-*O*-acetyl-3-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- α -D-galactopyranoside, B-70
Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-galactopyranoside, B-70
Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- α -D-galactopyranoside, B-71
Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- β -D-galactopyranoside, B-71
Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- α -D-galactopyranoside, C-82
Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- β -D-galactopyranoside, C-82
Methyl 2,3,6-tri-*O*-acetyl-4-chloro-4-deoxy- β -D-galactopyranoside, C-83
Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-fluoro- β -D-galactopyranoside, D-80
Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-fluoro- α -D-galactopyranoside, D-82
Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-iodo- β -D-galactopyranoside, D-257
Methyl 2,3,6-tri-*O*-acetyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- α -D-galactopyranoside, M-251
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-tosyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-benzoyl-4-bromo-4-deoxy- β -D-galactopyranoside, B-71
Methyl 2,3,6-tri-*O*-benzoyl-4-chloro-4-deoxy- β -D-galactopyranoside, C-83
Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy-4-iodo- β -D-galactopyranoside, D-257
Methyl 2,3,6-tri-*O*-benzoyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-mesyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-methyl- β -D-galactopyranoside, M-251
Methyl 2,3,4-tri-*O*-benzoyl-6-*O*-trityl- β -D-galactopyranoside, M-186
Methyl 2,3,6-tri-*O*-benzyl-4-bromo-4-deoxy- α -D-galactopyranoside, B-71
Methyl 2,3,6-tri-*O*-benzyl-4-chloro-4-deoxy- α -D-galactopyranoside, C-83
Methyl 2,3,6-tri-*O*-benzyl-4-cyano-4-deoxy- α -D-galactopyranoside, C-158
Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbamoyl)- β -D-galactopyranoside, C-9
Methyl 2,3,5-tri-*O*-benzyl- β -D-galactofuranoside, M-184
Methyl 2,3,4-tri-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 2,4,6-tri-*O*-benzyl- α -D-galactopyranoside, M-185
Methyl 2,3,6-tri-*O*-benzyl- β -D-galactopyranoside, M-186
Methyl 2,3,5-tri-*O*-methyl- α -D-galactofuranoside, T-180
Methyl 2,3,4-tri-*O*-methyl- α -D-galactopyranoside, T-179
Methyl 2,3,6-tri-*O*-methyl- α -D-galactopyranoside, T-181
Methyl 2,3,6-tri-*O*-methyl- β -D-galactopyranoside, T-181
Methyl 2,4,6-tri-*O*-methyl- α -D-galactopyranoside, T-182
Methyl 2,4,6-tri-*O*-methyl- β -D-galactopyranoside, T-182
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- α -D-galactopyranoside, T-182
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- β -D-galactopyranoside, T-182
Methyl 2,3,4-tris(trimethylsilyl)- β -D-galactopyranoside, M-186
Methyl 2,3,6-tri-*O*-tosyl- α -D-galactopyranoside, M-185
Methyl 6-*O*-trityl- β -D-galactofuranoside, M-184
3-*O*-Methylgalactose; D-*form*; Di-Et dithioacetal, 2,4,5,6-tetra-Ac, M-250
3-*O*-Methylgalactose; D-*form*; Di-Et dithioacetal, M-250
5-*O*-Methylgalactose; D-Furanose-*form*, M-252
2-*O*-Methylgalactose; D-*form*, M-249
3-*O*-Methylgalactose; D-*form*, M-250
4-*O*-Methylgalactose; D-*form*, M-251
4-*O*-Methylgalactose; L-*form*, M-251
6-*O*-Methylgalactose; D-*form*, M-253
6-*O*-Methylgalactose; L-*form*, M-253
2-Nitrophenyl galactoside; β -D-Pyranose-*form*; 6-Ac, N-64
2-Nitrophenyl galactoside; β -D-Pyranose-*form*; 2-Mesyl, 3,4,6-tri-Ac, N-64
2-Nitrophenyl galactoside; β -D-Pyranose-*form*; 6-Phosphate, N-64
2-Nitrophenyl galactoside; α -D-Pyranose-*form*; Tetra-Ac, N-64
2-Nitrophenyl galactoside; β -D-Pyranose-*form*; Tetra-Ac, N-64
3-Nitrophenyl galactoside; β -D-Pyranose-*form*; Tetra-Ac, N-65
4-Nitrophenyl galactoside; α -D-Pyranose-*form*; Tetra-Ac, N-66
4-Nitrophenyl galactoside; β -D-Pyranose-*form*; Tetra-Ac, N-66
2-Nitrophenyl galactoside; α -D-Pyranose-*form*; 2,3,6-Tribenzoyl, N-64
2-Nitrophenyl galactoside; β -D-Pyranose-*form*; 6-Trityl, N-64
2-Nitrophenyl galactoside; α -D-Pyranose-*form*; N-64
2-Nitrophenyl galactoside; β -D-Pyranose-*form*; N-64
3-Nitrophenyl galactoside; β -D-Pyranose-*form*; N-65
4-Nitrophenyl galactoside; α -D-Pyranose-*form*; N-66
4-Nitrophenyl galactoside; β -D-Pyranose-*form*; N-66
2,3,4,5,6-Penta-*O*-acetyl-D-galactose diethyl dithioacetal, G-195
1,2,3,4,6-Penta-*O*-acetylgalactose; α -D-Furanose-*form*, P-16
1,2,3,4,6-Penta-*O*-acetylgalactose; β -D-Furanose-*form*, P-16
1,2,3,4,6-Penta-*O*-acetylgalactose; α -D-Pyranose-*form*, P-16
1,2,3,4,6-Penta-*O*-acetylgalactose; β -D-Pyranose-*form*, P-16
1,2,3,4,6-Penta-*O*-acetylgalactose; L-*form*, P-16
1,2,3,4,6-Pentaacetyl-6-thio- α -D-galactopyranose, T-67

1,2,3,4,5-Penta-*O*-acetyl-6-thio- α -D-galactoseptanose, T-67
 1,2,3,4,5-Penta-*O*-acetyl-6-thio- β -D-galactoseptanose, T-67
 1,2,3,5,6-Penta-*O*-benzoyl- α -D-galactofuranose, G-193
 1,2,3,5,6-Penta-*O*-benzoyl- β -D-galactofuranose, G-193
 Phenyl 4-*O*-benzyl-2,3-di-*O*-methyl- β -D-galactopyranoside, P-56
 Phenyl 6-*O*-benzyl-2,3-di-*O*-methyl- β -D-galactopyranoside, P-56
 Phenyl 4,6-*O*-benzylidene- α -D-galactopyranoside, P-56
 Phenyl 4,6-*O*-benzylidene- β -D-galactopyranoside, P-56
 Phenyl 4-*O*-benzyl-2,3,6-tri-*O*-methyl- β -D-galactopyranoside, P-56
 Phenyl 6-*O*-benzyl-2,3,4-tri-*O*-methyl- β -D-galactopyranoside, P-56
 Phenyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- β -D-galactopyranoside, P-56
 Phenyl 3,6-di-*O*-benzoyl- β -D-galactopyranoside, P-56
 Phenyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-galactopyranoside, P-56
 Phenyl 2,3-di-*O*-benzyl- β -D-galactopyranoside, P-56
 Phenyl galactopyranoside; α -D-*form*, P-56
 Phenyl galactopyranoside; β -D-*form*, P-56
 Phenyl 3,4-*O*-isopropylidene-1-thio- β -D-galactopyranoside, T-65
 Phenyl tetra-*O*-acetyl- α -D-galactopyranoside, P-56
 Phenyl tetra-*O*-acetyl- β -D-galactopyranoside, P-56
 Phenyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -D-galactopyranoside, T-65
 Phenyl 2,3,4,6-tetraacetyl-6-thio- α -D-galactopyranoside, T-67
 Phenyl 2,3,4,6-tetraacetyl-6-thio- β -D-galactopyranoside, T-67
 Phenyl 2,3,4,6-tetra-*O*-benzoyl-1-thio- β -D-galactopyranoside, T-65
 Phenyl 2,3,4,6-tetra-*O*-pivaloyl- β -D-galactopyranosyl sulphoxide, T-65
 Phenyl 1-thio- α -D-galactofuranoside, T-65
 Phenyl 1-thio- β -D-galactopyranoside, T-65
 Phenyl 2,3,6-tri-*O*-benzoyl- β -D-galactopyranoside, P-56
 Phenyl 2,3,4-tri-*O*-benzoyl-1-thio- β -D-galactopyranoside, T-65
 Phenyl 2,3,4-tri-*O*-benzyl- α -D-galactopyranoside, P-56
 Phenyl 2,3,4-tri-*O*-benzyl- β -D-galactopyranoside, P-56
 Phenyl 2,3,6-tri-*O*-benzyl- β -D-galactopyranoside, P-56
 Phenyl 2,3,4-tri-*O*-benzyl-6-*O*-methyl- α -D-galactopyranoside, P-56
 Phenyl 2,3,4-tri-*O*-benzyl-6-*O*-methyl- β -D-galactopyranoside, P-56
 Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-methyl- β -D-galactopyranoside, P-56
 Phenyl 3,4,6-tri-*O*-benzyl-2-*O*-pivaloyl- β -D-galactopyranosyl sulfoxide, T-65
 Phenyl 2,3,6-tri-*O*-benzyl-1-thio- β -D-galactopyranoside, T-65
N-Phenyl- α -D-galactopyranosylamine, G-207
N-Phenyl- β -D-galactopyranosylamine, G-207
 3-*O*-Sulfo- β -D-galactopyranosyl(1 \rightarrow 3)-[(α -L-fucopyranosyl)(1 \rightarrow 4)]-2-acetamido-2-deoxy-D-glucopyranose, S-97
 1,3,4,6-Tetra-*O*-acetyl-2-azido-2-deoxy- α -D-galactopyranose, A-903
 1,2,3,4-Tetra-*O*-acetyl-6-azido-6-deoxy- α -D-galactopyranose, A-904
 1,2,3,6-Tetraacetyl-4-benzoyl-6-thio- α -D-galactopyranose, T-67
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-benzyl- α -D-galactopyranose, G-193
 1,3,4,6-Tetra-*O*-acetyl-2-chloro-2-deoxy- β -D-galactopyranose, C-82
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- α -D-galactofuranose, D-80
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- β -D-galactofuranose, D-80
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- α -D-galactopyranose, D-80
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- β -D-galactopyranose, D-80
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- α -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- β -D-galactopyranose, D-81
 1,2,3,6-Tetra-*O*-acetyl-4-deoxy-4-fluoro- α -D-galactopyranoside, D-82
 2,3,5,6-Tetra-*O*-acetyl- β -D-galactofuranosyl bromide, G-6
 2,3,5,6-Tetra-*O*-acetyl- α -D-galactofuranosyl fluoride, G-7
 2,3,5,6-Tetra-*O*-acetyl- β -D-galactofuranosyl fluoride, G-7
 1,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranose, G-193
 2,3,4,6-Tetra-*O*-acetyl- α -D-galactopyranose, G-193
 1,2,3,6-Tetra-*O*-acetyl- β -D-galactopyranose, G-193
 2,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranose, G-193
 2,3,4,6-Tetra-*O*-acetyl- α -D-galactopyranosyl azide, G-26
 2,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranosyl azide, G-26
 2,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranosylamine, G-207
 2,3,4,5-Tetra-*O*-acetyl- β -D-galactoseptanosyl chloride, G-204
 1,2,4,6-Tetra-*O*-acetyl-D-galactose, G-193
 1,2,3,4-Tetra-*O*-acetyl- β -D-glucopyranuronate, G-538
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-methyl- α -D-galactopyranose, M-249
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-methyl- β -D-galactopyranose, M-251
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl- α -D-galactopyranosylamine, G-207
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl- β -D-galactopyranosylamine, G-207
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- α -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- β -D-galactopyranose, D-81
 2,3,5,6-Tetra-*O*-benzoyl- β -D-galactofuranosyl fluoride, G-7
 2,3,4,6-Tetra-*O*-benzylgalactose; α -D-Pyranose-*form*, T-21
 2,3,5,6-Tetra-*O*-methylgalactose; D-Furanose-*form*, T-42
 2,3,4,6-Tetra-*O*-methylgalactose; α -D-Pyranose-*form*, T-41
 2,3,4,6-Tetra-*O*-methylgalactose; β -D-Pyranose-*form*, T-41
 6-*O*-Tosyl-D-galactose, G-193
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- α -D-galactofuranose, A-615
 1,2,3-Tri-*O*-acetyl-5,6-anhydro-D-galactofuranose, A-622
 3,4,6-Tri-*O*-acetyl-1,2-anhydro- α -D-galactopyranose, A-617
 3,4,6-Tri-*O*-acetyl-2-azido-2-deoxy- α -D-galactopyranosyl bromide, A-902
 2,3,6-Tri-*O*-acetyl-4-deoxy-4-fluoro- α -D-galactopyranosyl bromide, D-82

1,2,6-Tri-*O*-acetyl- β -D-galactopyranose, G-193
 3,5,6-Tri-*O*-acetyl-1,2-*O*-isopropylidene- α -D-galactofuranose, I-64
 3,4,5-Tri-*O*-acetyl-1,2-*O*-isopropylidene- α -D-galactoseptanose, G-203
 2,3,6-Tri-*O*-acetyl-5-*O*-methyl-D-galactofuranose, M-252
 2,3,4-Tri-*O*-benzyl- α -D-galactopyranose, G-193
 2,3,6-Tri-*O*-benzyl-D-galactose, G-193
 2,4,6-Tri-*O*-benzyl-D-galactose, G-193
 2,2,2-Trichloroethyl 4-*O*-acetyl-2,3,6-tri-*O*-benzoyl- α -D-galactopyranoside, T-144
 2,2,2-Trichloroethyl galactopyranoside; α -D-*form*, T-144
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl- α -D-galactopyranoside, 9CI, T-144
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranoside, 9CI, T-144
 2,2,2-Trichloroethyl 2,3,6-tri-*O*-benzoyl- α -D-galactopyranoside, T-144
 Trifluoromethyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-fluoro- α -D-galactopyranoside, D-80
 2,3,4-Tri-*O*-methylgalactose; α -D-Pyranose-*form*, T-179
 2,3,6-Tri-*O*-methylgalactose; D-Pyranose-*form*, T-181
 2,4,6-Tri-*O*-methylgalactose; α -D-Pyranose-*form*, T-182
 3,4,6-Tri-*O*-methylgalactose; α -D-Pyranose-*form*, T-183
 3,4,6-Tri-*O*-methylgalactose; β -D-Pyranose-*form*, T-183
 2,3,5-Tri-*O*-methylgalactose; D-Furanose-*form*, T-180
 3,4,6-Tri-*O*-methylgalactose; D-*form*, T-183

gluco-Hexoses

2-Acetamido-3-*O*-acetyl-1,6-anhydro-2-deoxy- β -D-glucopyranose, A-132
 2-Acetamido-4-*O*-acetyl-1,6-anhydro-2-deoxy- β -D-glucopyranose, A-132
 2-Acetamido-1,6-anhydro-2-deoxy- β -D-glucopyranose, A-132
 3-Acetamido-3-deoxy-1,2,5,6-di-*O*-isopropylidene- α -D-glucofuranose, A-267
 3-Acetamido-3-deoxy- β -D-glucopyranose, A-267
 4-Acetamido-4-deoxy- α -D-glucopyranose, A-268
 2-Acetamido-2-deoxy- β -D-glucopyranosyl azide, A-222
 6-Acetamido-6-deoxy- α -D-glucopyranosyl fluoride, A-225
 6-Acetamido-6-deoxy-D-glucose, A-270
 3-Acetamido-3-deoxy-1,2-*O*-isopropylidene- α -D-glucofuranose, A-267
 2-Acetamido-2-deoxy-5-thio-D-glucopyranose, A-349
 2-Acetamido-2-deoxy-5-thio- α -D-glucopyranose, A-349
 2-Acetamido-2-deoxy-3,4,6-tri-*O*-acetylglucopyranosyl chloride, A-9
 2-Acetamido-3,4-di-*O*-acetyl-1,6-anhydro-2-deoxy- β -D-glucopyranose, A-132
 2-Acetamido-2,4-dideoxy-4-fluoro-D-glucose, A-373
 4-Acetamido-1,2,3,6-tetra-*O*-acetyl-4-deoxy- α -D-glucopyranose, A-268
 4-Acetamido-1,2,3,6-tetra-*O*-acetyl-4-deoxy- β -D-glucopyranose, A-268
 6-Acetamido-1,2,3,4-tetra-*O*-acetyl-6-deoxy- α -D-glucopyranose, A-270
 6-Acetamido-1,2,3,4-tetra-*O*-acetyl-6-deoxy- β -D-glucopyranose, A-270
 2-Acetamido-1,3,4,6-tetra-*O*-acetyl-2-deoxy-5-thio- α -D-glucopyranose, A-349
 2-Acetamido-3,4,6-tri-*O*-acetyl-1-*S*-acetyl-2-deoxy-1-thio- β -D-glucopyranose, A-347
 2-Acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-glucopyranosyl azide, A-222
 2-Acetamido-3,4,6-tri-*O*-acetyl-2-deoxy-1-thio- β -D-glucopyranose, A-347
 2-Acetamido-1,3,6-tri-*O*-acetyl-2,4-dideoxy-4-fluoro- β -D-glucopyranose, A-373
 6-*O*-Acetyl-2-azido-3,4-di-*O*-benzyl-2-deoxy- α -D-glucopyranosyl bromide, A-905
 5-*O*-Acetyl-6-*O*-benzoyl-3-*O*-benzyl-1,2-*O*-isopropylidene- α -D-glucofuranose, I-66
 3-*O*-Acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene-5-*O*-tosyl- α -D-glucofuranose, I-66
 6-*O*-Acetyl-3,5-*O*-benzylidene-1,2-*O*-isopropylidene- α -D-glucofuranose, B-28
 3-*O*-Acetyl-4,6-*O*-benzylidene-1,2-*O*-(1-methoxyethylidene)- α -D-glucopyranose, 9CI, M-142
 5-*O*-Acetyl-3-*O*-benzyl-1,2-*O*-isopropylidene-6-*O*-trityl- α -D-glucofuranose, I-66
 5-*O*-Acetyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene-3-*O*-tosyl- α -D-glucofuranose, C-88
 3-*O*-Acetyl-5,6-di-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-glucofuranose, I-66
 6-*O*-Acetyl-1,2,3,5-di-*O*-benzylidene- α -D-glucofuranose, B-27
 3-*O*-Acetyl-1,2,4,6-di-*O*-benzylidene- α -D-glucopyranose, B-26
 3-*O*-Acetyl-1,2,5,6-di-*O*-isopropylidene- α -D-glucoseptanose, 8CI, D-717
 4-*O*-Acetyl-2,3,5,6-di-*O*-isopropylidene-D-glucose diethyl dithioacetal, G-516
 5-*O*-Acetyl-1,2,3,4-di-*O*-isopropylidene- α -D-glucoseptanose, G-527
 3-*O*-Acetyl-1,2,4,5-di-*O*-isopropylidene- α -D-glucoseptanose, G-527
 1-*O*-Acetyl-2,3,4,5-di-*O*-isopropylidene- α -D-glucoseptanose, G-527
 1-*O*-Acetyl-2,3,4,5-di-*O*-isopropylidene- β -L-glucoseptanose, G-527
 3-*S*-Acetyl-1,2,5,6-di-*O*-isopropylidene-3-thio- α -D-glucofuranose, T-72

- 6-*O*-Acetyl-1,2-*O*-ethylene-β-D-glucopyranose, E-29
N-Acetyl-β-D-glucopyranosylamine, G-533
 6-*O*-Acetylglucose; α-D-Pyranose-*form*, A-19
 6-*O*-Acetylglucose; β-D-Pyranose-*form*, A-19
 6-*O*-Acetylglucose; D-*form*, A-19
 6-*O*-Acetyl-1,2-*O*-isopropylidene-5,6-di-*O*-tosyl-α-D-glucofuranose, I-66
 3-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-glucofuranose, I-66
 6-*O*-Acetyl-1,2-*O*-isopropylidene-α-D-glucofuranose, I-66
 6-*O*-Acetyl-1,2-*O*-isopropylidene-5-*O*-tosyl-α-D-glucofuranose, I-66
N-Acetyl-2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranosylamine, G-533
 1-*O*-Acetyl-2,3,5,6-tetra-*O*-benzoyl-β-D-glucopyranose, G-514
 1-*O*-Acetyl-3,4,6-tri-*O*-methyl-α-D-glucopyranose, T-188
 2-*O*-Acetyl-3,4,6-tri-*O*-methyl-α-D-glucopyranose, T-188
 Agrocinopin C, A-64
 Agrocinopin D, A-65
 Allyl 2-acetamido-2-deoxy-α-D-glucopyranoside, A-266
 Allyl 2-amino-2-deoxy-α-D-glucopyranoside, A-266
 Allyl 2-amino-2-deoxy-α-D-glucopyranoside, A-266
 Allyl 6-*O*-benzyl-2-deoxy-2-phthalimido-β-D-glucopyranoside, A-266
 Allyl 2,3-di-*O*-benzoyl-α-D-glucopyranoside, A-94
 Allyl 2,6-di-*O*-benzoyl-α-D-glucopyranoside, A-94
 Allyl 2,6-di-*O*-benzoyl-3,4-*O*-isopropylidene-α-D-glucopyranoside, A-94
 Allyl 2,6-di-*O*-benzoyl-α-D-glucopyranoside, A-94
 Allyl 2,6-di-*O*-benzyl-3,4-*O*-isopropylidene-α-D-glucopyranoside, A-94
 Allyl 2,3-dibenzyl-4,6-*O*-isopropylidene-α-D-glucopyranoside, A-94
 Allyl glucopyranoside; β-D-*form*, A-94
 Allyl glucopyranoside; α-D-*form*, A-94
 Allyl glucopyranoside, A-94
 Allyl 3,4-*O*-isopropylidene-α-D-glucopyranoside, A-94
 Allyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, A-94
 Allyl 2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranoside, A-94
 Allyl 2,3,4-tri-*O*-benzoyl-α-D-glucopyranoside, A-94
 4-*C*-Allyl-1,6-anhydro-4-deoxy-2-*O*-tosyl-β-D-glucopyranose, A-98
 2-Amino-1,6-anhydro-2-deoxyglucose; β-D-Pyranose-*form*, A-132
 6-Amino-6-deoxyglucopyranosyl fluoride; α-D-*form*, A-225
 2-Amino-2-deoxyglucose; D-*form*; *N*-Benzylloxycarbonyl, A-266
 2-Amino-2-deoxyglucose; D-*form*; *N*-(*tert*-Butyloxycarbonyl), A-266
 6-Amino-6-deoxyglucose; D-*form*; Di-Et dithioacetal, A-270
 2-Amino-2-deoxyglucose; β-D-Pyranose-*form*; Ph glycoside, *N*-propanoyl, A-266
 2-Amino-2-deoxyglucose; α-D-Pyranose-*form*, A-266
 2-Amino-2-deoxyglucose; β-D-Pyranose-*form*, A-266
 3-Amino-3-deoxyglucose; D-*form*, A-267
 4-Amino-4-deoxyglucose; D-*form*, A-268
 6-Amino-6-deoxyglucose; D-*form*, A-270
 2-Amino-2-deoxy-3-thiogluco; D-*form*, A-348
 2-Aminophenyl glucopyranoside; β-D-*form*; *O*-Tetra-Ac, A-436
 2-Aminophenyl glucopyranoside; β-D-*form*, A-436
 4-Aminophenyl glucopyranoside; α-D-*form*, A-437
 4-Aminophenyl glucopyranoside; β-D-*form*, A-437
 1,6-Anhydro-2,4-diazido-2,4-dideoxy-β-D-glucopyranose, D-519
 3,6-Anhydroglucose; D-*form*, A-635
 3,6-Anhydro-1,2-*O*-isopropylidene-α-D-glucopyranose, A-635
 Asperuloside, A-872
 2-Azido-2-deoxyglucopyranosyl bromide; α-D-*form*, A-905
 6-Azido-6-deoxyglucopyranosyl fluoride; α-D-*form*, A-907
 2-Azido-2-deoxyglucose; D-*form*, A-908
 Bemisiotetrose, B-5
 4-Benzamido-1,2,3,6-tetra-*O*-benzoyl-4-deoxy-β-D-glucopyranose, A-268
 1-*O*-Benzoyl-4,6-*O*-benzylidene-β-D-glucopyranose, B-26
 6-*O*-Benzoyl-3,5-*O*-benzylidene-1,2-*O*-isopropylidene-α-D-glucopyranose, B-28
 6-*O*-Benzoyl-3-deoxy-3-fluoro-D-glucose, D-89
 6-*O*-Benzoyl-3-deoxy-3-fluoro-1,2-*O*-isopropylidene-α-D-glucopyranose, D-89
 6-*O*-Benzoyl-1,2,3,5-di-*O*-benzylidene-α-D-glucopyranose, B-27
 3-*O*-Benzoyl-1,2,4,6-di-*O*-benzylidene-α-D-glucopyranose, B-26
 3-*O*-Benzoyl-1,2,5,6-di-*O*-cyclohexylidene-α-D-glucopyranose, C-190
 3-*O*-Benzoyl-1,2,5,6-di-*O*-isopropylidene-α-D-glucopyranose, D-717
 6-*O*-Benzoyl-2,3,4,5-di-*O*-isopropylidene-D-glucose diethyl dithioacetal, G-516
 5-*O*-Benzoyl-1,2,3,4-di-*O*-isopropylidene-α-D-glucoseptanose, G-527
 6-*O*-Benzoyl-D-glucose diethyl dithioacetal, G-516
 2-*O*-Benzoylglucose; α-D-Pyranose-*form*, B-9
 3-*O*-Benzoylglucose; β-D-Pyranose-*form*, B-10
 2-*O*-Benzoylglucose; D-*form*, B-9
 6-*O*-Benzoylglucose; D-*form*, B-11
 3-*O*-Benzoyl-1,2-*O*-isopropylidene-α-D-glucopyranose, I-66
 6-*O*-Benzoyl-1,2-*O*-isopropylidene-α-D-glucopyranose, I-66
 1-*O*-Benzoyl-2,3,4,6-tetra-*O*-methyl-α-D-glucopyranose, T-43
 1-*O*-Benzoyl-2,3,4,6-tetra-*O*-methyl-β-D-glucopyranose, T-43
 Benzyl 2-acetamido-2,4-dideoxy-4-fluoro-α-D-glucopyranoside, A-373
 Benzyl 2-*O*-acetyl-4,6-*O*-benzylidene-β-D-glucopyranoside, B-16
 Benzyl 3-*O*-acetyl-4,6-*O*-benzylidene-β-D-glucopyranoside, B-16
 Benzyl 2-*O*-acetyl-3,4,6-tri-*O*-benzyl-β-D-glucopyranoside, B-16
 Benzyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl-α-D-glucopyranoside, B-16
 Benzyl 4,6-*O*-benzylidene-α-D-glucopyranoside, B-16
 Benzyl 4,6-*O*-benzylidene-β-D-glucopyranoside, B-16
 Benzyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-glucopyranoside, B-16
 Benzyl 3-deoxy-3-fluoro-β-D-glucopyranoside, D-89
 Benzyl 2,6-diacetamido-3,4-di-*O*-acetyl-2,6-dideoxy-α-D-glucopyranoside, D-432
 Benzyl 2,6-diacetamido-2,6-dideoxy-α-D-glucopyranoside, D-432
 Benzyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-α-D-glucopyranoside, B-16
 Benzyl 2,4-diamino-2,4-dideoxy-α-D-glucopyranoside, D-430
 Benzyl 2,6-diamino-2,6-dideoxy-α-D-glucopyranoside, D-432
 Benzyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene-α-D-glucopyranoside, B-16
 Benzyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene-β-D-glucopyranoside, B-16
 Benzyl 2,3-di-*O*-benzyl-α-D-glucopyranoside, B-16
 Benzyl 2,3-di-*O*-benzyl-β-D-glucopyranoside, B-16
 Benzyl 2,3-di-*O*-benzyl-6-*O*-trityl-α-D-glucopyranoside, B-16
 Benzyl glucopyranoside; β-D-*form*; 2,4,6-Tribenzoyl, B-16
 Benzyl glucopyranoside; α-D-*form*, B-16
 Benzyl glucopyranoside; β-D-*form*, B-16
 Benzyl 2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranoside, B-16
 Benzyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, B-16
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio-α-D-glucopyranoside, T-70
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-glucopyranoside, T-70
 Benzyl 2,3,4,6-tetra-*O*-benzyl-1-thio-α-D-glucopyranoside, T-70
 Benzyl 2,3,4,6-tetra-*O*-benzyl-1-thio-β-D-glucopyranoside, T-70
 Benzyl 1-thio-α-D-glucopyranoside, T-70
 Benzyl 2,4,6-tri-*O*-acetyl-3-deoxy-3-fluoro-β-D-glucopyranoside, D-89
 Benzyl 2,3,6-tri-*O*-benzoyl-α-D-glucopyranoside, B-16
 Benzyl 2,3,6-tri-*O*-benzyl-α-D-glucopyranoside, B-16
 Benzyl 2,3,4-tri-*O*-benzyl-β-D-glucopyranoside, B-16
 Benzyl 2,3,6-tri-*O*-benzyl-β-D-glucopyranoside, B-16
 Benzyl 3,4,6-tri-*O*-benzyl-β-D-glucopyranoside, B-16
 Benzyl 3,4,6-tri-*O*-mesyl-β-D-glucopyranoside, B-16
 Benzyl 2,3,4-tri-*O*-methyl-β-D-glucopyranoside, B-16
 Benzyl 2,3,4-tri-*O*-methyl-6-*O*-trityl-β-D-glucopyranoside, B-16
 6-*O*-Benzyl-3,5-*O*-benzylidene-1,2-*O*-cyclohexylidene-α-D-glucopyranose, C-190
 6-*O*-Benzyl-3,5-*O*-benzylidene-1,2-*O*-isopropylidene-α-D-glucopyranose, B-28
 3-*O*-Benzyl-1,2-*O*-cyclohexylidene-glucopyranose; α-D-*form*, B-23
 3-*O*-Benzyl-1,2,5,6-di-*O*-cyclohexylidene-α-D-glucopyranose, B-23
 3-*O*-Benzyl-1,2,5,6-di-*O*-isopropylidene-α-D-glucopyranose, D-717
 5-*O*-Benzyl-1,2,3,4-di-*O*-isopropylidene-α-D-glucoseptanose, G-527
 2-*O*-Benzylglucose; D-*form*, B-24
N-Benzyl-D-glucosylamine, G-533
 3,5-*O*-Benzylidene-1,2-*O*-cyclohexylidene-α-D-glucopyranose, C-190
 4,6-*O*-Benzylidene-glucopyranose; α-D-*form*, B-26
 2,4-*O*-Benzylidene-D-glucose dibenzyl dithioacetal, G-515
 4,6-*O*-Benzylidene-D-glucose diethyl dithioacetal, G-516
 5,6(*R*)-*O*-Benzylidene-D-glucose diethyl dithioacetal, G-516
 5,6(*S*)-*O*-Benzylidene-D-glucose diethyl dithioacetal, G-516
 1,2-*O*-Benzylidene-glucose; α-D-Furanose-*form*, B-27
 1,2-*O*-Benzylidene-glucose; α-D-Pyranose-(1'*R*)-*form*, B-27
 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-glucopyranose; α-D-*form*, B-28
 1,2-*O*-Benzylidene-5,6-*O*-isopropylidene-α-D-glucopyranose, B-27
 4,6-*O*-Benzylidene-1,2-*O*-isopropylidene-α-D-glucopyranose, B-26
 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-mesyl-α-D-glucopyranose, B-28
 1,2-*O*-Benzylidene-5,6-*O*-isopropylidene-3-*O*-methyl-α-D-glucopyranose, B-27
 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-methyl-α-D-glucopyranose, B-28
 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-tosyl-α-D-glucopyranose, B-28
 4,6-*O*-Benzylidene-1,2-*O*-(1-methoxyethylidene)-3-*O*-methyl-α-D-glucopyranose, M-142
 6-*O*-Benzyl-1,2-*O*-isopropylidene-3,5-di-*O*-methyl-α-D-glucopyranose, D-742
 3-*O*-Benzyl-1,2-*O*-isopropylidene-α-D-glucopyranose, I-66
 6-*O*-Benzyl-1,2-*O*-isopropylidene-α-D-glucopyranose, I-66
 5-*O*-Benzyl-1,2-*O*-isopropylidene-α-D-glucoseptanose, G-527
 6-*O*-Benzyl-2,3,4-tri-*O*-methyl-D-glucose, T-184
 6-Bromo-6-deoxyglucopyranosyl fluoride; α-D-*form*, B-73
 3-Bromo-3-deoxyglucose; D-*form*, B-75
 2-Bromoethyl 4,6-*O*-benzylidene-β-D-glucopyranoside, B-115
 2-Bromoethyl 2,3,6-tri-*O*-benzyl-β-D-glucopyranoside, B-115
 3-*O*-Butanoyl-D-glucose, G-514
 6-*O*-Butanoyl-D-glucose, G-514
 3-Buten-2-yl glucopyranoside; β-D-*form*, B-134
 3-Buten-2-yl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, B-134
 3-Buten-2-yl 2,3,4,6-tetra-*O*-benzyl-β-D-glucopyranoside, B-134

- 3-Buten-2-yl 2,3,4-tri-*O*-benzyl- β -D-glucopyranoside, B-134
tert-Butyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -D-glucopyranoside, T-70
tert-Butyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -D-glucopyranoside, T-70
N-Butyl-D-glucosylamine, G-533
N-Caffeoylglucosamine, A-266
8-Carboxyoctyl glucopyranose; α -D-form, C-25
8-Carboxyoctyl glucopyranose; β -D-form, C-25
Cerasine, C-51
3-Chloro-3-deoxy-1,2,5,6-di-*O*-isopropylidene- α -D-glucufuranose, C-86
6-Chloro-6-deoxy-1,2,3,5-di-*O*-methylidene- α -D-glucufuranose, C-88
2-Chloro-2-deoxyglucose; D-form, C-85
3-Chloro-3-deoxyglucose; D-form, C-86
6-Chloro-6-deoxyglucose; D-form, C-88
6-Chloro-6-deoxy-1,2-*O*-isopropylidene- α -D-glucufuranose, C-88
(2-Chloromethyl-4-nitrophenyl) α -D-glucopyranoside, C-120
(2-Chloromethyl-6-nitrophenyl) α -D-glucopyranoside, C-120
[2-(Chloromethyl)phenyl] glucopyranoside; α -D-form, C-120
Crassinodin, C-155
1,2-*O*-Cyclohexylidene-3-deoxy-3-fluoro- α -D-glucufuranose, D-89
1,2-*O*-Cyclohexylidene-3-deoxy- α -D-glucufuranose; α -D-form; 3,5,6-Orthoformate, C-190
1,2-*O*-Cyclohexylidene-3-deoxy- α -D-glucufuranose; α -D-form, C-190
1,2-*O*-Cyclohexylidene-3,5-*O*-methylene- α -D-glucufuranose, C-190
1,2-*O*-Cyclohexylidene-3-*O*-methyl- α -D-glucufuranose, M-256
Decyl glucoside; β -D-Pyranose-form; Tetra-Ac, D-19
Decyl glucoside; β -D-Pyranose-form, D-19
2-Deoxy-2,2-difluoro-*arabino*-hexose; D-form, D-55
3-Deoxy-1,2,5,6-di-*O*-isopropylidene-3-nitro- α -D-glucufuranose, D-318
3-Deoxy-3-fluoro-1,2,5,6-di-*O*-isopropylidene- α -D-glucufuranose, D-89
5-Deoxy-5-fluoroglucose; D-Furanose-form, D-91
3-Deoxy-3-fluoroglucose; D-form, D-89
3-Deoxy-3-fluoro-1,2-*O*-isopropylidene- α -D-glucufuranose 5,6-carbonate, D-89
3-Deoxy-3-fluoro-1,2-*O*-isopropylidene- α -D-glucufuranose, D-89
5-Deoxy-5-fluoro-1,2-*O*-isopropylidene- α -D-glucufuranose, D-91
1-Deoxy- α -D-glucopyranosyl iodide uronic acid; α -D-Pyranose-form, D-131
6-Deoxy-6-iodoglucose; D-form, D-258
2-Deoxy-2-methylamino-D-glucose, A-266
2-Deoxy-2-methylamino-L-glucose, A-266
2-Deoxy-2-*C*-methylglucose; D-form, D-300
3-Deoxy-3-nitroglucose; D-form, D-318
6-Deoxy-6-*C*-sulfoglucose; D-form, D-369
6-Deoxy-5-thioglucose; D-form, D-373
2,4-Diacetamido-2,6-dideoxy-D-glucose, D-430
3,6-Di-*O*-acetyl-2-azido-4-*O*-benzyl-2-deoxy- α -D-glucopyranosyl bromide, A-905
4,6-Di-*O*-acetyl-2-azido-3-*O*-benzyl-2-deoxy- α -D-glucopyranosyl bromide, A-905
5,6-Di-*O*-acetyl-3-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-glucufuranose, I-66
3,5-Di-*O*-acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-glucufuranose, I-66
2,3-Di-*O*-acetyl-4,6-*O*-benzylidene- α -D-glucopyranose, B-26
2,3-Di-*O*-acetyl-4,6-*O*-benzylidene- β -D-glucopyranose, B-26
3,5-Di-*O*-acetyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene- α -D-glucufuranose, C-88
5,6-Di-*O*-acetyl-3-deoxy-1,2-*O*-isopropylidene-3-nitro- α -D-glucufuranose, D-318
1,3-Di-*O*-acetyl-4,6-*O*-ethylidene-2-*O*-methyl- α -D-glucopyranose, M-255
3,6-Di-*O*-acetyl-1,2-*O*-isopropylidene- α -D-glucufuranose, I-66
3,6-Di-*O*-acetyl-1,2-*O*-isopropylidene-5-*O*-methyl- α -D-glucufuranose, M-258
3,5-Di-*O*-acetyl-1,2-*O*-isopropylidene-6-*O*-trityl- α -D-glucufuranose, I-66
1,2-Di-*O*-acetyl-3,4,6-tri-*O*-methyl- α -D-glucopyranose, T-188
2,3-Diamino-2,3-dideoxyglucose; α -D-Pyranose-form, D-429
2,3-Diamino-2,3-dideoxyglucose; β -D-Pyranose-form, D-429
2,6-Diamino-2,6-dideoxyglucose; α -D-Pyranose-form, D-432
2,6-Diamino-2,6-dideoxyglucose; β -D-Pyranose-form, D-432
2,4-Diamino-2,4-dideoxyglucose, D-430
2,4-Diazido-2,4-dideoxyglucose; D-form, D-519
3,5-Di-*O*-benzoyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene- α -D-glucufuranose, C-88
3,6-Di-*O*-benzoyl-1,2-*O*-isopropylidene- α -D-glucufuranose, I-66
3,6-Di-*O*-benzoyl-1,2-*O*-isopropylidene-5-*O*-methyl- α -D-glucufuranose, M-258
1,2,3,5-Di-*O*-benzylidene- α -D-glucufuranose, B-27
1,2,4,6-Di-*O*-benzylidene- α -D-glucopyranose, B-26
1,2,4,6-Di-*O*-benzylidene-3-*O*-mesyl- α -D-glucopyranose, B-26
1,2,3,5-Di-*O*-benzylidene-6-*O*-methyl- α -D-glucufuranose, B-27
1,2,4,6-Di-*O*-benzylidene-3-*O*-methyl- α -D-glucopyranose, B-26
3,6-Di-*O*-benzyl-1,2-*O*-isopropylidene- α -D-glucufuranose, I-66
2,6-Di-*O*-butanoyl-D-glucose, G-514
3,6-Di-*O*-butanoyl-D-glucose, G-514
1,2,5,6-Di-*O*-cyclohexylidene- α -D-glucufuranose, C-190
1,2,5,6-Di-*O*-cyclohexylidene-3-*O*-tosyl- α -D-glucufuranose, C-190
2,3-Dihydroxypropyl 2-amino-2-deoxy- β -D-glucopyranoside, A-266
1,2,5,6-Di-*O*-isopropylidene- α -D-glucufuranose; α -D-form; 3-Allyl, D-717
1,2,5,6-Di-*O*-isopropylidene- α -D-glucufuranose; α -D-form; 3-*tert*-Butyl, D-717
1,2,5,6-Di-*O*-isopropylidene- α -D-glucufuranose; α -D-form;
3-(Pentafluorophenylsulfonyl), D-717
1,2,5,6-Di-*O*-isopropylidene- α -D-glucufuranose; α -D-form;
3-(2,2,2-Trifluoroethylsulfonyl), D-717
1,2,5,6-Di-*O*-isopropylidene- α -D-glucufuranose; α -D-form, D-717
2,3,4,6-Di-*O*-isopropylidene- α -D-glucopyranose, G-514
2,3,4,6-Di-*O*-isopropylidene-D-glucose diethyl dithioacetal, G-516
2,3,5,6-Di-*O*-isopropylidene-D-glucose diethyl dithioacetal, G-516
3,4,5,6-Di-*O*-isopropylidene-D-glucose diethyl dithioacetal, G-516
1,2,3,4-Di-*O*-isopropylidene- α -D-glucoseptanose, G-527
1,2,5,6-Di-*O*-isopropylidene-3-*O*-mesyl- α -D-glucufuranose, D-717
1,2,3,4-Di-*O*-isopropylidene-5-*O*-mesyl- α -D-glucoseptanose, G-527
1,2,5,6-Di-*O*-isopropylidene-3-*C*-methyl- α -D-glucufuranose, M-254
1,2,5,6-Di-*O*-isopropylidene-3-*O*-methyl- α -D-glucufuranose, M-256
1,2,3,4-Di-*O*-isopropylidene-5-*O*-methyl- α -D-glucoseptanose, G-527
1,2,5,6-Di-*O*-isopropylidene-3-*C*-methyl-3-*O*-methyl- α -D-glucufuranose, M-254
1,2,5,6-Di-*O*-isopropylidene-3-thio- α -D-glucufuranose, T-72
1,2,5,6-Di-*O*-isopropylidene-3-*O*-tosyl- α -D-glucufuranose, D-717
1,2,3,4-Di-*O*-isopropylidene-5-*O*-tosyl- α -D-glucoseptanose, G-527
1,2,5,6-Di-*O*-isopropylidene-3-*O*-trityl- α -D-glucoseptanose, D-717
1,2,3,5-Di-*O*-methyleneglucoseptanose; α -D-form, D-730
3,4-Di-*O*-methylglucose; D-form; Anil, D-741
3,5-Di-*O*-methylglucose; D-Furanose-form, D-742
2,3-Di-*O*-methylglucose; α -D-Pyranose-form, D-738
2,3-Di-*O*-methylglucose; β -D-Pyranose-form, D-738
2,4-Di-*O*-methylglucose; β -D-Pyranose-form, D-739
3,4-Di-*O*-methylglucose; β -D-Pyranose-form, D-741
3,6-Di-*O*-methylglucose; α -D-Pyranose-form, D-743
4,6-Di-*O*-methylglucose; α -D-Pyranose-form, D-744
2,3-Di-*O*-methylglucose; D-form, D-738
2,6-Di-*O*-methylglucose; D-form, D-740
3,4-Di-*O*-methylglucose; D-form, D-741
3,6-Di-*O*-methylglucose; D-form, D-743
5,6-Di-*O*-methylglucose; D-form, D-745
2,4-Di-*O*-methylglucose, D-739
3,4-Di-*O*-methylglucose, D-741
1,6-Dithioglucofuranose; D-form, D-765
Dodecyl glucoside; β -D-Pyranose-form; Tetra-Ac, D-771
Dodecyl glucoside; β -D-Pyranose-form, D-771
Ethyl 2-*O*-acetyl-3,5,6-tri-*O*-benzyl- α -D-glucufuranoside, E-28
Ethyl 2-*O*-acetyl-3,5,6-tri-*O*-benzyl- β -D-glucopyranoside, E-28
Ethyl 2-amino-2-deoxy- α -D-glucufuranoside, A-266
Ethyl 2-amino-2-deoxy- α -D-glucopyranoside, A-266
Ethyl 4,6-*O*-benzylidene-1-thio- β -D-glucopyranoside, T-70
Ethyl β -D-glucosaminide, A-266
Ethyl glucoside; α -D-Furanose-form, E-25
Ethyl glucoside; β -D-Furanose-form, E-25
Ethyl glucoside; α -D-Pyranose-form, E-25
Ethyl glucoside; β -D-Pyranose-form, E-25
Ethyl 4-*O*-methyl- β -D-glucopyranoside, E-25
Ethyl 2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranoside, E-25
Ethyl 2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranoside, E-25
Ethyl 2,3,5,6-tetra-*O*-acetyl-1-thio- α -D-glucufuranoside, T-70
Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -D-glucopyranoside, T-70
Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -D-glucopyranoside, T-70
Ethyl 1-thio- α -D-glucufuranoside, T-70
Ethyl 1-thio- β -D-glucufuranoside, T-70
Ethyl 1-thio- α -D-glucopyranoside, T-70
Ethyl 1-thio- β -D-glucopyranoside, T-70
Ethyl 3,4,6-tri-*O*-acetyl-2-*O*-allyl- β -D-glucopyranoside, E-25
Ethyl 3,4,6-tri-*O*-acetyl-2-amino-2-deoxy- β -D-glucopyranoside, A-266
Ethyl 2,3,4-tri-*O*-acetyl- β -D-glucopyranoside, E-25
Ethyl 3,4,6-tri-*O*-acetyl-2-*O*-methyl- α -D-glucopyranoside, E-25
Ethyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- β -D-glucopyranoside, E-25
Ethyl 2,4,6-tri-*O*-acetyl-3-*O*-methyl- β -D-glucopyranoside, E-25
Ethyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- β -D-glucopyranoside, E-25
Ethyl 3,5,6-tri-*O*-benzoyl- α -D-glucufuranoside, E-25
Ethyl 3,5,6-tri-*O*-benzoyl- β -D-glucufuranoside, E-25
Ethyl 3,5,6-tri-*O*-benzylglucufuranoside; α -D-form; 2-Allyl, E-28
Ethyl 3,5,6-tri-*O*-benzylglucufuranoside; α -D-form, E-28
Ethyl 3,5,6-tri-*O*-benzylglucufuranoside; β -D-form, E-28
Ethyl 3,4,6-tri-*O*-benzyl- α -D-glucopyranoside, E-25
Ethyl 3,4,6-tri-*O*-benzyl- β -D-glucopyranoside, E-25
Ethyl 3,5,6-tri-*O*-benzyl-2-*O*-methyl- β -D-glucufuranoside, E-28
Ethyl 3,4,6-tri-*O*-benzyl-2-*O*-methyl- α -D-glucopyranoside, E-25
1,2-*O*-Ethylene- α -D-glucose; α -D-Furanose-form, E-29

- 1,2-*O*-Ethylene-glucose; α -D-Pyranose-*form*, E-29
 1,2-*O*-Ethylene-glucose; β -D-Pyranose-*form*, E-29
 1,2-*O*-Ethylene-3,4,6-tri-*O*-methyl- β -D-glucopyranose, E-29
 2-*S*-Ethyl-2-thio-D-glucopyranose, T-71
 Glucophos, G-255
 Glucopyranosyl azide; α -D-Pyranose-*form*, G-259
 Glucopyranosyl azide; β -D-Pyranose-*form*, G-259
 Glucopyranosyl iodide; α -D-*form*; 2,3,4,6-Tetra-Ac, G-265
 Glucopyranosyl iodide; α -D-*form*; 2,3,4,6-Tetrabenzoyl, G-265
 Glucopyranosyl iodide; α -D-*form*; 2,3,4,6-Tetrabenzyl, G-265
 Glucopyranosyl *N,N,N',N'*-tetramethylphosphoramidate; β -D-*form*; Tetrabenzyl, G-272
 1-(β -D-Glucopyranosyloxy)-2-cyclopentene-1-carbonitrile, 9CI, H-136
 3-*O*- α -D-Glucopyranosylribitol, G-456
 9-Glucopyranosyltheophylline; β -D-*form*, G-466
 Glucosamine, 9CI, 8CI, A-266
 Glucosamine pentanicoate, A-266
 Glucose; D-*form*; Di-Me dithioacetal, G-514
 Glucose; D-*form*; Penta-Ac, di-Me dithioacetal, G-514
 Glucose; D-*form*; Penta-Ac, oxime, G-514
 Glucose; D-*form*; Phenylhydrazine, G-514
 Glucose dibenzyl dithioacetal; D-*form*; Penta-Ac, G-515
 Glucose dibenzyl dithioacetal; D-*form*, G-515
 Glucose diethyl dithioacetal; D-*form*, G-516
 Glucose 1-dihydrogen phosphate; α -D-Pyranose-*form*, G-517
 Glucose 1-dihydrogen phosphate; α -L-Pyranose-*form*, G-517
 Glucose 1-dihydrogen phosphate; D-*form*, G-517
 Glucose 2-dihydrogen phosphate; D-*form*, G-518
 Glucose 3-dihydrogen phosphate; D-*form*, G-519
 Glucose 4-dihydrogen phosphate; D-*form*, G-520
 Glucose 6-dihydrogen phosphate; D-*form*, G-521
 Glucose diphenylformazan, G-522
 Glucose; D-Pyranose-*form*, G-514
 Glucose; α -D-Pyranose-*form*, G-514
 Glucose; β -D-Pyranose-*form*, G-514
 D-Glucose 1-triphosphate, A-70
 Glucose; D-*form*, G-514
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 Glucose; DL-*form*, G-514
 Glucoseptanose; α -L-*form*; 2,3:4,5-Di-*O*-isopropylidene, 1-Ac, G-527
 Glucoseptanose; α -D-*form*; 1,2:3,4-Di-*O*-isopropylidene, 5-(chloroacetyl), G-527
 Glucoseptanose; α -D-*form*; 1,2:3,4-Di-*O*-isopropylidene, 5-*p*-nitrobenzoyl, G-527
 Glucoseptanose; α -D-*form*; 1,2-*O*-Isopropylidene, 3,4,5-tri-Ac, G-527
 Glucosyl isocyanide; β -D-Pyranose-*form*, G-532
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Hydroxyphenyl), G-533
 Glucosylamine; α -D-Pyranose-*form*; *N*-(4-Methylphenyl), 2,3,4,6-tetra-Ac, G-533
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Methylphenyl), 2,3,4,6-tetra-Ac, G-533
 Glucosylamine; α -D-Pyranose-*form*; *N*-(4-Methylphenyl), G-533
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Methylphenyl), G-533
 Glucosylamine; α -D-Pyranose-*form*; *N*-(4-Nitrophenyl), 2,3,4,6-tetra-Ac, G-533
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Nitrophenyl), 2,3,4,6-tetra-Ac, G-533
 Glucosylamine; α -D-Pyranose-*form*; *N*-(4-Nitrophenyl), G-533
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Nitrophenyl), G-533
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Nitrophenyl), G-533
 Glucosylamine; β -D-Pyranose-*form*, G-533
 Glufosamide, G-543
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 6-*O*-Hexadecanoylglucose; D-*form*, H-66
 Isopropyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-glucopyranoside, B-74
 1,2-*O*-Isopropylidene-3,5-di-*O*-methyl- α -D-glucufuranose, D-742
 1,2-*O*-Isopropylidene-5,6-di-*O*-methyl- α -D-glucufuranose, D-745
 1,2-*O*-Isopropylidene-3,5-di-*O*-methyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-3,6-di-*O*-methyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-3,6-di-*O*-methyl- α -D-glucopyranose, D-743
 1,2-*O*-Isopropylidene-3,5-di-*O*-methyl-6-*O*-tosyl- α -D-glucufuranose, D-742
 1,2-*O*-Isopropylidene-3,5-di-*O*-methyl-6-*O*-trityl- α -D-glucufuranose, D-742
 1,2-*O*-Isopropylidene-3,6-di-*O*-tosyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-5,6-di-*O*-tosyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-glucufuranose; α -D-*form*; 3-Allyl, 5-mesyl, 6-benzoyl, I-66
 1,2-*O*-Isopropylidene-glucufuranose; α -D-*form*; 3-Allyl, 6-tosyl, I-66
 1,2-*O*-Isopropylidene-glucufuranose; α -D-*form*; 3-Allyl, I-66
 1,2-*O*-Isopropylidene- α -D-glucufuranose 5,6-carbonate, I-66
 1,2-*O*-Isopropylidene- α -D-glucufuranose 5,6-thiocarbonate, I-66
 1,2-*O*-Isopropylidene-glucufuranose; α -D-*form*, I-66
 2,3-*O*-Isopropylidene-D-glucose diethyl dithioacetal, G-516
 3,4-*O*-Isopropylidene-D-glucose diethyl dithioacetal, G-516
 5,6-*O*-Isopropylidene-D-glucose diethyl dithioacetal, G-516
 5,6-*O*-Isopropylidene-glucose; D-Furanose-*form*, I-67
 1,2-*O*-Isopropylidene- α -D-glucoseptanose, G-527
 4,6-*O*-Isopropylidene-D-glucose, G-514
 1,2-*O*-Isopropylidene-6-*O*-mesyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-5-*O*-methyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-3-*O*-methyl- α -D-glucufuranose, M-256
 1,2-*O*-Isopropylidene-5-*O*-methyl- α -D-glucufuranose, M-258
 1,2-*O*-Isopropylidene-6-thio- α -D-glucufuranose, T-74
 1,2-*O*-Isopropylidene-3-*O*-tosyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-6-*O*-tosyl- α -D-glucufuranose, I-66
 1,2-*O*-Isopropylidene-3,5,6-tri-*O*-methyl- α -D-glucufuranose, T-189
 1,2-*O*-Isopropylidene-3,4,6-tri-*O*-methyl- α -D-glucopyranose, T-188
 1,2-*O*-Isopropylidene-3,5,6-tri-*O*-tosyl- α -D-glucufuranose, I-66
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 Lilioides A, L-40
 Lilioides B, L-40
 Methyl 3-acetamido-2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy- β -D-glucopyranoside, A-267
 Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- α -D-glucopyranoside, A-267
 Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- β -D-glucopyranoside, A-267
 Methyl 3-acetamido-3-deoxy-4,6-*O*-ethylidene- α -D-glucopyranoside, A-267
 Methyl 3-acetamido-3-deoxy- β -D-glucopyranoside, A-267
 Methyl 2-acetamido-2-deoxy-5-thio- α -D-glucopyranoside, A-349
 Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
 Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy-4-fluoro- β -D-glucopyranoside, A-373
 Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
 Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-glucopyranoside, A-373
 Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-glucopyranoside, A-267
 Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- β -D-glucopyranoside, A-267
 Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- α -D-glucopyranoside, A-268
 Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- β -D-glucopyranoside, A-268
 Methyl 3-*O*-acetyl-2-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
 Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
 Methyl 6-*O*-acetyl- α -D-glucopyranoside, M-190
 Methyl 2-*O*-acetyl- β -D-glucopyranoside, M-191
 Methyl 3-*O*-acetyl- β -D-glucopyranoside, M-191
 Methyl 4-*O*-acetyl- β -D-glucopyranoside, M-191
 Methyl 6-*O*-acetyl- β -D-glucopyranoside, M-191
 Methyl 6-*O*-acetyl-2,3,4-tri-*O*-benzoyl- β -D-glucopyranoside, M-191
 Methyl 3-amino-4,6-*O*-benzylidene-3-deoxy- α -D-glucopyranoside, A-267
 Methyl 2-amino-2-deoxy- α -D-glucufuranoside, A-266
 Methyl 3-amino-3-deoxy- β -D-glucopyranoside, A-267
 Methyl 4-amino-4-deoxy- α -D-glucopyranoside, A-268
 Methyl 6-amino-6-deoxy- α -D-glucopyranoside, A-270
 Methyl 3,6-anhydro-2,5-di-*O*-benzoyl- α -D-glucufuranoside, A-635
 Methyl 3,6-anhydro-2,5-di-*O*-benzoyl- β -D-glucufuranoside, A-635
 Methyl 3,6-anhydro- α -D-glucufuranoside, A-635
 Methyl 3,6-anhydro- β -D-glucufuranoside, A-635
 Methyl 3,6-anhydro- α -D-glucopyranoside, A-635
 Methyl 3,6-anhydro- β -D-glucopyranoside, A-635
 Methyl 3-azido-3-deoxy- β -D-glucopyranoside, A-909
 Methyl 6-azido-6-deoxy- α -D-glucopyranoside, A-910
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
 Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-methyl- β -D-glucopyranoside, M-165
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-1-thio- β -D-glucopyranoside, T-70
 Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-1-thio- β -D-glucopyranoside, T-70
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-glucopyranoside, M-164
 Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-glucopyranoside, M-164
 Methyl 2-*O*-benzoyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 2-*O*-benzoyl-3,4-di-*O*-mesyl-6-*O*-trityl- α -D-glucopyranoside, M-213
 Methyl 6-*O*-benzoyl- α -D-glucopyranoside, M-190
 Methyl 6-*O*-benzoyl- β -D-glucopyranoside, M-191

- Methyl 3-*O*-benzoyl-4,5-*O*-isopropylidene- β -D-glucoseptanoside, G-527
Methyl 2-*O*-benzoyl-3,4,6-tri-*O*-methyl- β -D-glucopyranoside, T-188
Methyl 2-*O*-benzoyl-6-*O*-trityl- α -D-glucopyranoside, M-213
Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-chloro-2-deoxy- β -D-glucopyranoside, C-85
Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 3-*O*-benzyl- α -D-glucofuranoside 5,6-carbonate, M-189
Methyl 3-*O*-benzyl- β -D-glucofuranoside 5,6-carbonate, M-189
Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-glucopyranoside, B-75
Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- β -D-glucopyranoside, C-85
Methyl 4,6-*O*-benzylidene-3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- α -D-glucopyranoside, D-738
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- α -D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl- α -D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl- α -D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-mesyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-methyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- α -D-glucopyranoside, M-254
Methyl 4,6-*O*-benzylidene-2-*O*-methyl- α -D-glucopyranoside, M-255
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- α -D-glucopyranoside, M-256
Methyl 4,6-*O*-benzylidene-2-*O*-methyl-3-*O*-tosyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-1-thio- β -D-glucopyranoside, T-70
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- α -D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- α -D-glucopyranoside, M-164
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- β -D-glucopyranoside, M-165
Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- β -D-glucopyranoside, M-165
Methyl 6-benzyl-2,3,4-tri-*O*-methyl- α -D-glucopyranoside, T-184
Methyl 2-*O*-benzyl-3,4,6-tri-*O*-methyl- β -D-glucopyranoside, T-188
Methyl 2,4-bis-*O*-trimethylsilyl- α -D-glucopyranoside, M-190
Methyl 2-bromo-2-deoxy-4,6-*O*-benzylidene- β -D-glucopyranoside, B-74
Methyl 3-bromo-3-deoxy-4,6-*O*-ethylidene- α -D-glucopyranoside, B-75
Methyl 2-bromo-2-deoxy- β -D-glucopyranoside, B-74
Methyl 3-bromo-3-deoxy- α -D-glucopyranoside, B-75
Methyl 2-chloro-2-deoxy- β -D-glucofuranoside, C-85
Methyl 2-chloro-2-deoxy- α -D-glucopyranoside, C-85
Methyl 2-chloro-2-deoxy- β -D-glucopyranoside, C-85
Methyl 3-chloro-3-deoxy- α -D-glucopyranoside, C-86
Methyl 4-chloro-4-deoxy- α -D-glucopyranoside, C-87
Methyl 6-chloro-6-deoxy- α -D-glucopyranoside, C-88
Methyl 6-chloro-6-deoxy- β -D-glucopyranoside, C-88
Methyl 6-chloro-6-deoxy-2,3,4-tri-*O*-methyl- α -D-glucopyranoside, C-88
Methyl 6-deoxy-6-iodo- α -D-glucopyranoside, D-258
Methyl 3-deoxy-3-nitro- β -D-glucopyranoside, D-318
Methyl 3-deoxy-3-nitro- β -L-glucopyranoside, D-318
Methyl 2,3-di-*O*-acetyl-6-*O*-benzyl- β -D-glucopyranoside, M-191
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl- α -D-glucopyranoside, M-254
Methyl 2,6-di-*O*-acetyl-3-deoxy-3-nitro- β -D-glucopyranoside, D-318
Methyl 2,3-di-*O*-acetyl-4,6-*O*-ethylidene- α -D-glucopyranoside, M-190
Methyl 2,3-di-*O*-acetyl-4,6-*O*-ethylidene- β -D-glucopyranoside, M-191
Methyl 2,3-di-*O*-acetyl- α -D-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-acetyl- β -D-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-acetyl- α -D-glucopyranoside, M-190
Methyl 2,3-di-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl 3,6-di-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl 4,6-di-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl 2,5-di-*O*-acetyl-3,4-*O*-isopropylidene- α -D-glucoseptanoside, G-527
Methyl 2,3-di-*O*-acetyl-4,5-*O*-isopropylidene- α -D-glucoseptanoside, G-527
Methyl 2,6-diamino-2,6-dideoxy- α -D-glucopyranoside, D-432
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 2,3-di-*O*-benzoyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
Methyl 2,4-di-*O*-benzoyl-3,6-di-*O*-methyl- β -D-glucopyranoside, D-743
Methyl 2,6-di-*O*-benzoyl- α -D-glucopyranoside, M-190
Methyl 4,5-di-*O*-benzoyl-2,3-*O*-isopropylidene- α -D-glucoseptanoside, G-527
Methyl 2,3-di-*O*-benzoyl-4,5-*O*-isopropylidene- α -D-glucoseptanoside, G-527
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside, M-164
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- β -D-glucopyranoside, M-165
Methyl 2,3-di-*O*-benzyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
Methyl 2,3-di-*O*-benzyl-4,6-di-*O*-methyl- α -D-glucopyranoside, D-744
Methyl 2,3-di-*O*-benzyl- α -D-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-benzyl- β -D-glucofuranoside 5,6-carbonate, M-189
Methyl 2,3-di-*O*-benzyl- β -D-glucofuranoside, M-189
Methyl 2,3-di-*O*-benzyl- α -D-glucopyranoside, M-190
Methyl 2,3-di-*O*-benzyl- β -D-glucopyranoside, M-191
Methyl 2,3-di-*O*-benzyl- β -D-glucopyranoside 5,6-carbonate, M-190
Methyl 2,4-di-*O*-methyl- β -D-glucopyranoside, D-739
Methyl 2,6-di-*O*-methyl- α -D-glucopyranoside, D-740
Methyl 2,6-di-*O*-methyl- β -D-glucopyranoside, D-740
Methyl 3,4-di-*O*-methyl- α -D-glucopyranoside, D-741
Methyl 3,4-di-*O*-methyl- β -D-glucopyranoside, D-741
Methyl 3,6-di-*O*-methyl- β -D-glucopyranoside, D-743
Methyl 4,6-di-*O*-methyl- α -D-glucopyranoside, D-744
Methyl 4,6-di-*O*-methyl- β -D-glucopyranoside, D-744
Methyl 3,4-di-*O*-methyl-6-*O*-trityl- β -D-glucopyranoside, D-741
Methyl 2,3-di-*O*-tosyl- α -D-glucopyranoside, M-190
Methyl 2,4-di-*O*-tosyl- α -D-glucopyranoside, M-190
Methyl 2,6-di-*O*-tosyl- α -D-glucopyranoside, M-190
Methyl 4,6-*O*-ethylidene-2,3-di-*O*-tosyl- α -D-glucopyranoside, M-190
Methyl 4,6-*O*-ethylidene- α -D-glucopyranoside, M-190
Methyl 4,6-*O*-ethylidene-2-*O*-tosyl- α -D-glucopyranoside, M-190
Methyl 4,6-*O*-ethylidene-3-*O*-tosyl- α -D-glucopyranoside, M-190
Methyl 4,6-*O*-ethylidene-2-*O*-tosyl- β -D-glucopyranoside, M-191
Methyl α -D-glucofuranoside 5,6-carbonate, M-189
Methyl β -D-glucofuranoside 5,6-carbonate, M-189
Methyl glucofuranoside; α -D-form, M-189
Methyl glucofuranoside; β -D-form, M-189
Methyl β -D-glucopyranoside; 4,6-*O*-Ethylidene, M-191
Methyl α -L-glucopyranoside, G-514
Methyl α -D-glucopyranoside, M-190
Methyl β -D-glucopyranoside, M-191
Methyl α -D-glucoseptanoside, G-527
Methyl β -D-glucoseptanoside, G-527
Methyl 6-*O*-(*N*-heptylcarbonyl)- α -D-glucopyranoside, M-196
Methyl 4,6-*O*-isopropylidene-2,3-di-*O*-methyl- α -D-glucopyranoside, D-738
Methyl 4,6-*O*-isopropylidene-glucopyranoside; α -D-form, M-199
Methyl 4,6-*O*-isopropylidene-glucopyranoside; β -D-form, M-199
Methyl 2,3-*O*-isopropylidene- α -D-glucoseptanoside, G-527
Methyl 3,4-*O*-isopropylidene- α -D-glucoseptanoside, G-527
Methyl 4,5-*O*-isopropylidene- α -D-glucoseptanoside, G-527
Methyl 3,4-*O*-isopropylidene-6-*O*-trityl- α -D-galactopyranoside, M-185
Methyl (methyl α -L-glucopyranosid)uronate, M-192
Methyl 4,6-*O*-methylene- α -D-glucopyranoside, M-190
Methyl 4,6-*O*-methylene- β -D-glucopyranoside, M-191
Methyl 2-*O*-methyl- α -D-glucopyranoside, M-255
Methyl 2-*O*-methyl- β -D-glucopyranoside, M-255
Methyl 3-*O*-methyl- α -D-glucopyranoside, M-256
Methyl 3-*O*-methyl- β -D-glucopyranoside, M-256
Methyl 4-*O*-methyl- α -D-glucopyranoside, M-257
Methyl 4-*O*-methyl- β -D-glucopyranoside, M-257
Methyl 6-*O*-methyl- α -D-glucopyranoside, M-259
Methyl 6-*O*-methyl- β -D-glucopyranoside, M-259
Methyl 4,6-*O*-propylidene- α -D-glucopyranoside, M-190
Methyl 2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranoside, M-190
Methyl 2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranoside, M-191
Methyl 2,3,4,5-tetra-*O*-acetyl- α -D-glucoseptanoside, G-527
Methyl 2,3,4,5-tetra-*O*-acetyl- β -D-glucoseptanoside, G-527
Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -D-glucopyranoside, T-70
Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -D-glucopyranoside, T-70
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- α -D-glucopyranoside, T-73
Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- β -D-glucopyranoside, T-73
Methyl 2,3,4,6-tetra-*O*-benzoyl- α -D-glucopyranoside, M-190
Methyl 2,3,4,6-tetra-*O*-benzoyl- β -D-glucopyranoside, M-191
Methyl 2,3,4,6-tetra-*O*-benzyl- α -D-glucopyranoside, T-22

- Methyl 2,3,4,6-tetra-*O*-benzyl-β-D-glucopyranoside, T-22
Methyl 2,3,4,6-tetra-*O*-benzyl-1-thio-α-D-glucopyranoside, T-70
Methyl 2,3,4,6-tetra-*O*-benzyl-1-thio-β-D-glucopyranoside, T-70
Methyl 2,3,5,6-tetra-*O*-methyl-α-D-glucopyranoside, T-44
Methyl 2,3,5,6-tetra-*O*-methyl-β-D-glucopyranoside, T-44
Methyl 2,3,4,6-tetra-*O*-methyl-α-D-glucopyranoside, T-43
Methyl 2,3,4,6-tetra-*O*-methyl-β-D-glucopyranoside, T-43
Methyl 2,3,4,6-tetra-*O*-tosyl-β-D-glucopyranoside, M-191
Methyl 1-thio-α-D-glucopyranoside, T-70
Methyl 1-thio-β-D-glucopyranoside, T-70
Methyl 5-thio-α-D-glucopyranoside, T-73
Methyl 5-thio-β-D-glucopyranoside, T-73
Methyl 6-*O*-tosyl-α-D-glucopyranoside, M-190
Methyl 2,3,4-tri-*O*-acetyl-6-amino-6-deoxy-α-D-glucopyranoside, A-270
Methyl 2,3,4-tri-*O*-acetyl-3-azido-3-deoxy-β-D-glucopyranoside, A-909
Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy-α-D-glucopyranoside, A-910
Methyl 3,4,6-tri-*O*-acetyl-2-*O*-benzyl-β-D-glucopyranoside, B-24
Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy-β-D-glucopyranoside, B-74
Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy-α-D-glucopyranoside, C-85
Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy-β-D-glucopyranoside, C-85
Methyl 2,3,4-tri-*O*-acetyl-6-chloro-6-deoxy-α-D-glucopyranoside, C-88
Methyl 2,3,5-tri-*O*-acetyl-6-chloro-6-deoxy-β-D-glucopyranoside, C-88
Methyl 2,4,6-tri-*O*-acetyl-3-deoxy-3-nitro-β-D-glucopyranoside, D-318
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-5-thio-α-D-glucopyranoside, D-373
Methyl 2,3,4-tri-*O*-acetyl-α-D-glucopyranoside, M-190
Methyl 2,3,4-tri-*O*-acetyl-β-D-glucopyranoside, M-191
Methyl 2,3,6-tri-*O*-acetyl-β-D-glucopyranoside, M-191
Methyl 2,4,6-tri-*O*-acetyl-β-D-glucopyranoside, M-191
Methyl 3,4,6-tri-*O*-acetyl-β-D-glucopyranoside, M-191
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-mesyl-α-D-glucopyranoside, M-190
Methyl 3,4,6-tri-*O*-acetyl-2-*O*-methyl-α-D-glucopyranoside, M-255
Methyl 3,4,6-tri-*O*-acetyl-2-*O*-methyl-β-D-glucopyranoside, M-255
Methyl 2,3,6-tri-*O*-acetyl-6-*O*-methyl-α-D-glucopyranoside, M-259
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl-β-D-glucopyranoside, M-257
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-methyl-α-D-glucopyranoside, M-259
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-methyl-β-D-glucopyranoside, M-259
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl-α-D-galactopyranoside, M-185
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl-β-D-galactopyranoside, M-186
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl-α-D-glucopyranoside, M-213
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl-β-D-glucopyranoside, M-213
Methyl 2,3,4-tri-*O*-benzoyl-α-D-glucopyranoside, M-190
Methyl 2,3,6-tri-*O*-benzoyl-α-D-glucopyranoside, M-190
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-methyl-α-D-glucopyranoside, M-257
Methyl 2,3,4-tri-*O*-benzoyl-6-*O*-trityl-α-D-glucopyranoside, M-213
Methyl 2,3,4-tri-*O*-benzoyl-6-amino-6-deoxy-α-D-glucopyranoside, A-270
Methyl 2,3,4-tri-*O*-benzyl-6-chloro-6-deoxy-α-D-glucopyranoside, C-88
Methyl 2,3,6-tri-*O*-benzyl-4-cyano-4-deoxy-α-D-glucopyranoside, C-159
Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbonyl)-β-D-glucopyranoside, C-10
Methyl 3,5,6-tri-*O*-benzylglucopyranoside; α-D-form, M-211
Methyl 3,5,6-tri-*O*-benzylglucopyranoside; β-D-form, M-211
Methyl 2,3,4-tri-*O*-benzyl-α-D-glucopyranoside, M-190
Methyl 2,3,6-tri-*O*-benzyl-α-D-glucopyranoside, M-190
Methyl 2,4,6-tri-*O*-benzyl-α-D-glucopyranoside, M-190
Methyl 2,3,4-tri-*O*-benzyl-β-D-glucopyranoside, M-191
Methyl 2,3,6-tri-*O*-benzyl-β-D-glucopyranoside, M-191
Methyl 3,4,6-tri-*O*-benzyl-β-D-glucopyranoside, M-191
Methyl 2,3,5-tri-*O*-methyl-β-D-glucopyranoside, T-185
Methyl 3,5,6-tri-*O*-methyl-α-D-glucopyranoside, T-189
Methyl 3,5,6-tri-*O*-methyl-β-D-glucopyranoside, T-189
Methyl 2,3,4-tri-*O*-methyl-α-D-glucopyranoside, T-184
Methyl 2,3,4-tri-*O*-methyl-β-D-glucopyranoside, T-184
Methyl 2,3,6-tri-*O*-methyl-α-D-glucopyranoside, T-186
Methyl 2,3,6-tri-*O*-methyl-β-D-glucopyranoside, T-186
Methyl 2,4,6-tri-*O*-methyl-β-D-glucopyranoside, T-187
Methyl 3,4,6-tri-*O*-methyl-α-D-glucopyranoside, T-188
Methyl 3,4,6-tri-*O*-methyl-β-D-glucopyranoside, T-188
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl-α-D-glucopyranoside, T-187
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl-β-D-glucopyranoside, T-187
Methyl 3,4,6-tri-*O*-methyl-2-*O*-tosyl-β-D-glucopyranoside, T-188
Methyl 2,3,4-tri-*O*-methyl-6-trityl-α-D-glucopyranoside, M-213
Methyl 2,3,4-tris(trimethylsilyl)-α-D-glucopyranoside, M-190
Methyl 6-*O*-trityl-α-D-galactopyranoside, M-185
Methyl 6-*O*-trityl-β-D-galactopyranoside, M-186
Methyl 6-*O*-tritylglucopyranoside; α-D-form, M-213
Methyl 6-*O*-tritylglucopyranoside; β-D-form, M-213
3-*O*-Methylglucose; β-D-Pyranose-form, M-256
2-*O*-Methylglucose; D-form, M-255
3-*O*-Methylglucose; D-form, M-256
4-*O*-Methylglucose; D-form, M-257
5-*O*-Methylglucose; D-form, M-258
6-*O*-Methylglucose; D-form, M-259
Neosamine C, D-432
2-Nitrophenyl 2-amino-2-deoxyglucoside; α-D-Pyranose-form; N-Ac, N-60
2-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; N-Ac, N-60
4-Nitrophenyl 2-amino-2-deoxyglucoside; α-D-Pyranose-form; N-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; N-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 3-Benzyl, N-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 3,4-Dibenzoyl, N-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 3,4-Dibenzyl, N-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 3,6-Dibenzyl, N-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 4-Me, N-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 6-Me, N-Ac, N-62
2-Nitrophenyl 2-amino-2-deoxyglucoside; α-D-Pyranose-form; N,3,4,6-Tetra-Ac, N-60
2-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; N,3,4,6-Tetra-Ac, N-60
3-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; N,3,4,6-Tetra-Ac, N-61
4-Nitrophenyl 2-amino-2-deoxyglucoside; α-D-Pyranose-form; N,3,4,6-Tetra-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; N,3,4,6-Tetra-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; N,3,4-Tri-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; N,3,6-Tri-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 3,4,6-Tri-*O*-Ac, N-62
4-Nitrophenyl 2-amino-2-deoxyglucoside; β-D-Pyranose-form; 6-Trityl, N,3,4-tri-Ac, N-62
4-Nitrophenyl glucoside; β-D-Pyranose-form; 2-Ac, N-70
4-Nitrophenyl glucoside; β-D-Pyranose-form; 2,3-Di-Ac, N-70
4-Nitrophenyl glucoside; α-D-Pyranose-form; Tetra-Ac, N-70
4-Nitrophenyl glucoside; β-D-Pyranose-form; Tetra-Ac, N-70
4-Nitrophenyl glucoside; α-D-Pyranose-form; Tetrabenzoyl, N-70
4-Nitrophenyl glucoside; β-D-Pyranose-form; 2,3,4,6-Tetrabenzoyl, N-70
4-Nitrophenyl glucoside; α-D-Pyranose-form; 6-Tosyl, 2,3,4-tri-Ac, N-70
4-Nitrophenyl glucoside; β-D-Pyranose-form; 3,4,6-Tri-Ac, N-70
4-Nitrophenyl glucoside; α-D-Pyranose-form; 3,4,6-Tribenzoyl, N-70
4-Nitrophenyl glucoside; β-D-Pyranose-form; 3,4,6-Tribenzoyl, N-70
2-Nitrophenyl glucoside; α-D-Pyranose-form, N-69
2-Nitrophenyl glucoside; β-D-Pyranose-form, N-69
4-Nitrophenyl glucoside; α-D-Pyranose-form, N-70
4-Nitrophenyl glucoside; β-D-Pyranose-form, N-70
Octyl α-D-glucopyranoside, O-28
Octyl β-D-glucopyranoside, O-28
Octyl glucoside; β-D-Furanose-form, O-28
Octyl 1-thio-β-D-glucopyranoside, T-70
1,2,3,4,6-Penta-*O*-acetyl-5-bromo-β-D-glucopyranose, B-118
2,3,4,5,6-Penta-*O*-acetyl-D-glucose diethyl dithioacetal, G-516
1,2,3,5,6-Penta-*O*-acetylglucose; β-D-Furanose-form, P-18
1,2,3,4,6-Penta-*O*-acetylglucose; α-D-Pyranose-form, P-17
1,2,3,4,6-Penta-*O*-acetylglucose; β-D-Pyranose-form, P-17
2,3,4,5,6-Penta-*O*-acetyl-D-glucose, G-514
1,2,3,4,6-Pentaacetyl-1-thio-α-D-glucopyranose, T-70
1,2,3,4,6-Penta-*O*-acetyl-5-thio-α-D-glucopyranose, T-73
1,2,3,4,6-Penta-*O*-acetyl-5-thio-β-D-glucopyranose, T-73
Penta-*O*-acetyl-1-thio-β-D-glucopyranoside, T-70
1,2,3,4,6-Penta-*O*-benzoyl-5-bromo-α-D-glucopyranose, B-118
1,2,3,4,6-Penta-*O*-benzoyl-5-bromo-β-D-glucopyranose, B-118
1,2,3,4,6-Penta-*O*-benzoyl-α-D-glucopyranose, G-514
1,2,3,4,6-Penta-*O*-benzoyl-β-D-glucopyranose, G-514
2,3,4,5,6-Penta-*O*-benzoyl-D-glucose, G-514
1,2,3,4,6-Penta-*O*-benzyl-β-D-glucopyranose, G-514
Pentacosyl glucoside; β-D-Pyranose-form, P-19
2,3,4,5,6-Penta-*O*-methylglucose; D-form, P-21
4-Pentenyl 4,6-*O*-benzylidene-α-D-glucopyranoside, P-32
4-Pentenyl 4,6-*O*-benzylidene-β-D-glucopyranoside, P-32
4-Pentenyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-α-D-glucopyranoside, P-32
4-Pentenyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-β-D-glucopyranoside, P-32
4-Pentenyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene-α-D-glucopyranoside, P-32
4-Pentenyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene-β-D-glucopyranoside, P-32
4-Pentenyl 2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranoside, P-32
4-Pentenyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, P-32
Periplanetin, B-8
Phenyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl-β-D-glucopyranoside, D-738
Phenyl 4,6-*O*-benzylidene-α-D-glucopyranoside, P-58
Phenyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-D-glucopyranoside, P-58
Phenyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-β-D-glucopyranoside, P-58

- Phenyl 2,3-di-*O*-acetyl-β-D-glucopyranoside, P-58
 Phenyl 2,3-di-*O*-methyl-β-D-glucopyranoside, D-738
 Phenyl 2,4-di-*O*-methyl-β-D-glucopyranoside, D-739
 Phenyl glucofuranoside; β-D-*form*, P-57
 Phenyl glucopyranoside; α-D-*form*, P-58
 Phenyl glucopyranoside; β-D-*form*, P-58
 Phenyl 2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranoside, P-58
 Phenyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, P-58
 Phenyl 2,3,4,6-tetra-*O*-acetyl-1-thio-α-D-glucopyranoside, T-70
 Phenyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-glucopyranoside, T-70
 Phenyl 2,3,4,6-tetraacetyl-6-thio-α-D-glucopyranoside, T-74
 Phenyl 2,3,4,6-tetraacetyl-6-thio-β-D-glucopyranoside, T-74
 Phenyl 1-thio-α-D-glucopyranoside, T-70
 Phenyl 1-thio-α-D-glucopyranoside, T-70
 Phenyl 1-thio-β-D-glucopyranoside, T-70
N-Phenyl-α-D-glucopyranosylamine, G-533
N-Phenyl-β-D-glucopyranosylamine, G-533
 1-Phenyl-1*H*-tetrazol-5-yl 2,3,4,6-tetra-*O*-benzyl-α-D-glucopyranoside, P-65
 Piptoside, P-75
 Ranuncoside, R-4
 Ranunculoid, R-5
 Salvadoside, B-16
 1-Selenoglucose, S-26
 2,3,4,6-Tetra-*O*-acetyl-1-*O*-benzoyl-α-D-glucopyranose, G-514
 1,2,3,4-Tetra-*O*-acetyl-6-*O*-benzoyl-β-D-glucopyranose, G-514
 2,3,4,6-Tetra-*O*-acetyl-1-*O*-benzoyl-β-D-glucopyranoside, B-8
 2,3,4,6-Tetra-*O*-acetyl-1-*O*-benzoyl-1-thio-β-D-glucopyranoside, T-70
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-benzyl-α-D-glucopyranose, B-24
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-benzyl-β-D-glucopyranose, B-24
 2,3,4,6-Tetra-*O*-acetyl-*N*-benzyl-D-glucosylamine, G-533
 1,3,4,6-Tetra-*O*-acetyl-2-bromo-2-deoxy-β-D-glucopyranose, B-74
 1,2,4,6-Tetra-*O*-acetyl-3-bromo-3-deoxy-β-D-glucopyranose, B-75
 1,3,4,6-Tetra-*O*-acetyl-2-chloro-2-deoxy-β-D-glucopyranose, C-85
 1,2,4,6-Tetra-*O*-acetyl-3-chloro-3-deoxy-β-D-glucopyranose, C-86
 1,2,3,4-Tetra-*O*-acetyl-6-chloro-6-deoxy-β-D-glucopyranose, C-88
 2,3,4,6-Tetra-*O*-acetyl-1-*C*-chloro-α-D-glucopyranosyl bromide, C-118
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro-α-D-glucopyranose, D-89
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro-β-D-glucopyranose, D-89
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-6-iodo-α-D-glucopyranose, D-258
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-nitro-α-D-glucopyranose, D-318
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-5-thio-β-D-glucopyranose, D-373
 1,3,4,6-Tetra-*O*-acetyl-2-*S*-ethyl-2-thio-β-D-glucopyranose, T-71
 2,3,4,6-Tetra-*O*-acetyl-α-D-glucopyranose, G-514
 1,2,3,4-Tetra-*O*-acetyl-β-D-glucopyranose, G-514
 1,2,3,6-Tetra-*O*-acetyl-β-D-glucopyranose, G-514
 1,2,4,6-Tetra-*O*-acetyl-β-D-glucopyranose, G-514
 1,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranose, G-514
 2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranose, G-514
 2,3,4,6-Tetra-*O*-acetyl-α-D-glucopyranosyl azide, G-259
 2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranosyl azide, G-259
 2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranosyl isocyanate, G-531
 2,3,4,6-Tetra-*O*-acetyl-α-D-glucopyranosyl isocyanide, G-532
 2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranosyl isocyanide, G-532
 2,3,4,6-Tetra-*O*-acetyl-α-D-glucopyranosyl isothiocyanate, G-266
 2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranosyl isothiocyanate, G-266
 2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranosyl methanethiosulfonate, G-269
 2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranosylamine, G-533
O-(2,3,4,6-Tetra-*O*-acetyl-α-D-glucopyranosyl)trichloroacetimidate, G-273
 1,2,4,6-Tetra-*O*-acetyl-3-*C*-methyl-β-D-glucopyranose, M-254
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-methyl-α-D-glucopyranose, M-255
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-methyl-β-D-glucopyranose, M-255
 1,2,4,6-Tetra-*O*-acetyl-3-*O*-methyl-β-D-glucopyranose, M-256
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-methyl-β-D-glucopyranose, M-257
 1,2,3,4-Tetra-*O*-acetyl-6-*O*-methyl-α-D-glucopyranose, M-259
 1,2,3,4-Tetra-*O*-acetyl-6-*O*-methyl-β-D-glucopyranoside, M-259
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl α-D-glucopyranosylamine, G-533
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl-β-D-glucopyranosylamine, G-533
 2,3,4,6-Tetra-*O*-acetyl-1-thio-β-D-glucopyranose, T-70
 2,3,4,6-Tetra-*O*-acetyl-5-thio-α-D-glucopyranosyl bromide, T-73
 2,3,4,6-Tetra-*O*-acetyl-5-thio-β-D-glucopyranosyl bromide, T-73
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-tosyl-β-D-glucopyranose, G-514
 1,2,3,4-Tetra-*O*-acetyl-6-*O*-tosyl-β-D-glucopyranose, G-514
 2,3,4,6-Tetra-*O*-benzoyl-α-D-glucopyranosyl isocyanide, G-532
 2,3,4,6-Tetra-*O*-benzoyl-β-D-glucopyranosyl isocyanide, G-532
 3,4,5,6-Tetra-*O*-benzoyl-D-glucose diethyl dithioacetal, G-516
 1,2,3,6-Tetra-*O*-benzoyl-5-*O*-methyl-α-D-glucopyranose, M-258
 1,2,3,6-Tetra-*O*-benzoyl-5-*O*-methyl-β-D-glucopyranose, M-258
 2,3,4,6-Tetra-*O*-benzoyl-α-D-glucopyranosyl isocyanide, G-532
 2,3,5,6-Tetra-*O*-benzoyl-β-D-glucopyranosyl isocyanide, G-532
 2,3,4,6-Tetra-*O*-benzoyl-α-D-glucopyranosyl *N,N,N',N'*-tetramethylphosphoramidate, G-272
O-(2,3,4,6-Tetra-*O*-benzyl-α-D-glucopyranosyl)trichloroacetimidate, G-273
 2,3,4,6-Tetra-*O*-benzylglucose; α-D-Pyranose-*form*; 1-(4-Nitrobenzoyl), T-22
 2,3,4,6-Tetra-*O*-benzylglucose; β-D-Pyranose-*form*; 1-(4-Nitrobenzoyl), T-22
 2,3,4,6-Tetra-*O*-benzylglucose; α-D-Pyranose-*form*, T-22
 2,3,4,6-Tetra-*O*-methyl-β-D-glucopyranosyl azide, G-259
 2,3,4,6-Tetra-*O*-methyl-α-D-glucopyranosyl isocyanide, G-532
 2,3,4,6-Tetra-*O*-methyl-β-D-glucopyranosyl isocyanide, G-532
 2,3,5,6-Tetra-*O*-methylglucose; D-Furanose-*form*, T-44
 2,3,5,6-Tetra-*O*-methylglucose; β-D-Furanose-*form*, T-44
 2,3,4,6-Tetra-*O*-methylglucose; α-D-Pyranose-*form*, T-43
 2,3,4,6-Tetra-*O*-methylglucose; β-D-Pyranose-*form*, T-43
 2,3,4,6-Tetra-*O*-methyl-1-*O*-tosyl-α-D-glucopyranose, T-43
 2,3,4,5-Tetra-*O*-methyl-6-*O*-trityl-D-glucose dimethyl dithioacetal, G-516
 Tetraphyllin A, H-136
 5-Thioglucose; α-D-Pyranose-*form*; Me glycoside, 6-phosphate, T-73
 6-Thioglucose; β-D-Pyranose-*form*; 1,2,3,4,6-Penta-*O*(*S*)-Ac, T-74
 1-Thioglucose; β-D-Pyranose-*form*; Ph glycoside, tetra-Ac, *S*-oxide, T-70
 1-Thioglucose; D-*form*, T-70
 5-Thioglucose; D-*form*, T-73
 1-Thioglucose, T-70
 3-*O*-Tosylglucose; D-*form*, T-118
 3,4,6-Tri-*O*-acetyl-2-azido-2-deoxy-α-D-glucopyranosyl bromide, A-905
 2,4,6-Tri-*O*-acetyl-3-azido-3-deoxy-α-D-glucopyranosyl bromide, A-906
 3,4,6-Tri-*O*-acetyl-2-*O*-benzyl-D-glucopyranose, B-24
 3,5,6-Tri-*O*-acetyl-1,2-*O*-benzylidene-α-D-glucopyranose, B-27
 1,2,3-Tri-*O*-acetyl-4,6-*O*-benzylidene-β-D-glucopyranose, B-26
 3,4,6-Tri-*O*-acetyl-1,2-*O*-(*R*)-benzylidene-α-D-glucopyranose, B-27
 3,4,6-Tri-*O*-acetyl-1,2-*O*-(*S*)-benzylidene-α-D-glucopyranose, B-27
 2,4,6-Tri-*O*-acetyl-3-deoxy-3-nitro-β-D-glucopyranose, D-318
 3,4,6-Tri-*O*-acetyl-2-deoxy-2-trichloroacetamido-α-D-glucopyranosyl trichloroacetimidate, A-273
 1,3,6-Tri-*O*-acetyl-2,4-diazido-2,4-dideoxy-α-D-glucopyranose, D-519
 1,4,6-Tri-*O*-acetyl-2,3-di-*O*-benzoyl-α-D-glucopyranose, G-514
 1,3,6-Tri-*O*-acetyl-2,4-di-*O*-methyl-β-D-glucopyranose, D-739
 3,5,6-Tri-*O*-acetyl-1,2-*O*-ethylene-α-D-glucopyranose, E-29
 3,4,6-Tri-*O*-acetyl-1,2-*O*-ethylene-α-D-glucopyranose, E-29
 3,4,6-Tri-*O*-acetyl-1,2-*O*-ethylene-β-D-glucopyranose, E-29
 3,5,6-Tri-*O*-acetyl-1,2-*O*-isopropylidene-α-D-glucopyranose, I-66
 1,2,3-Tri-*O*-acetyl-5,6-*O*-isopropylidene-D-glucopyranose, I-67
 3,4,6-Tri-*O*-acetyl-1,2-*O*-(1-methoxyethylidene)-α-D-glucopyranose, M-142
 Tribenoside, BAN, INN, JAN, USAN, E-28
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-benzylidene-α-D-glucopyranose, B-27
 1,2,3-Tri-*O*-benzoyl-4,6-*O*-benzylidene-α-D-glucopyranose, B-26
 1,2,3-Tri-*O*-benzoyl-4,6-*O*-benzylidene-β-D-glucopyranose, B-26
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-cyclohexylidene-α-D-glucopyranose, C-190
 3,4,6-Tri-*O*-benzoyl-1,2-*O*-ethylene-β-D-glucopyranose, E-29
 3,5,6-Tri-*O*-benzoyl-D-glucose diethyl dithioacetal, G-516
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene-α-D-glucopyranose, I-66
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene-α-D-glucoseptanose, G-527
 2,3,6-Tri-*O*-benzoyl-5-*O*-methyl-β-D-glucopyranose, M-258
 3,4,6-Tri-*O*-benzyl-2-deoxy-2-trichloroacetamido-α-D-glucopyranosyl trichloroacetimidate, A-273
 2,3,4-Tri-*O*-benzyl-α-D-glucopyranosylazide, G-259
 3,4,6-Tri-*O*-benzyl-D-glucosamine, A-266
 3,5,6-Tri-*O*-benzyl-1,2-*O*-isopropylidene-α-D-glucopyranose, I-66
 3,4,6-Tri-*O*-benzyl-1,2-*O*-(1-methoxyethylidene)-α-D-glucopyranose, 9CI, M-142
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranoside, T-145
 2,2,2-Trichloroethyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, T-145
 2,3,4-Tri-*O*-methylglucose; α-D-Pyranose-*form*; 1,6-Bis(4-nitrobenzoyl), T-184
 2,3,4-Tri-*O*-methylglucose; β-D-Pyranose-*form*; 1,6-Bis(4-nitrobenzoyl), T-184
 2,3,4-Tri-*O*-methylglucose; D-Pyranose-*form*, T-184
 2,3,6-Tri-*O*-methylglucose; α-D-Pyranose-*form*, T-186
 2,4,6-Tri-*O*-methylglucose; α-D-Pyranose-*form*, T-187
 3,4,6-Tri-*O*-methylglucose; α-D-Pyranose-*form*, T-188
 3,4,6-Tri-*O*-methylglucose; β-D-Pyranose-*form*, T-188
 2,3,5-Tri-*O*-methylglucose; D-*form*, T-185
 3,5,6-Tri-*O*-methylglucose, T-189
 Trimethylsilyl glucopyranoside, T-193
 Trimethylsilyl 2,3,4,6-tetra-*O*-acetyl-β-D-glucopyranoside, T-193
 Trimethylsilyl 2,3,4,6-tetra-*O*-benzyl-α-D-glucopyranoside, T-193
 Trimethylsilyl 2,3,4,6-tetra-*O*-methyl-α-D-glucopyranoside, T-193
 Trimethylsilyl 2,3,4,6-tetra-*O*-methyl-β-D-glucopyranoside, T-193
 6-*O*-Trityl-D-glucose diethyl dithioacetal, G-516
 Uridine diphosphate glucose, U-8
 Uridine 5'-diphosphate glucuronic acid, U-8

gulo-Hexoses

3-Acetamido-3-deoxy-1,2:5,6-di-*O*-isopropylidene- α -D-gulofuranose, A-280
 2-Acetamido-2-deoxy-D-glucose, A-279
 3-Acetamido-3-deoxy-1,2-*O*-isopropylidene- α -D-gulofuranose, A-280
 4-*O*-Acetyl-5-*O*-benzyl-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-guloseptanose, G-588
 4-*O*-Acetyl-1,6:2,3-dianhydro- β -D-gulopyranose, D-505
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene- α -D-gulofuranose, D-718
 2-*O*-Acetyl-3,4,6-tri-*O*-benzyl- β -L-gulopyranosyl chloride, G-586
 2-Amino-2-deoxygulose; *D*-form, A-279
 2-Amino-2-deoxygulose; *L*-form, A-279
 3,6-Anhydrogulose; *L*-Furanose-form, A-640
 5,6-Anhydro-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-gulofuranose, I-68
 1,2-Anhydro-3,5,6-tri-*O*-benzyl- α -L-gulofuranose, A-637
 3-*O*-Benzoyl-4,6-*O*-ethylidene-1,2-*O*-isopropylidene- α -D-gulopyranose, G-587
 6-*O*-Benzoyl-1,2-*O*-isopropylidene-5-*O*-mesyl-3-*O*-methyl- α -D-gulofuranose, I-68
 6-*O*-Benzoyl-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-gulofuranose, I-68
 3-*O*-Benzyl-1,2-*O*-isopropylidene- α -D-gulofuranose, I-68
 6-Deoxy-2,3-*O*-isopropylidene-4-*O*-methyl- β -L-gulopyranosyl chloride, D-145
 2-Deoxy-2-(*N*-methylamino)-D-glucose, A-279
 5,6-Di-*O*-acetyl-3-*O*-benzyl-1,2-*O*-isopropylidene- α -D-gulofuranose, I-68
 4,5-Di-*O*-acetyl-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-guloseptanose, G-588
 1,2-Di-*O*-Acetyl-3,5,6-tri-*O*-benzyl- α -L-gulofuranose, G-587
 1,6:2,3-Dianhydrogulose; β -D-Pyranose-form, D-505
 1,6:2,3-Dianhydro-4-*O*-methyl- β -D-gulopyranose, D-505
 1,6:2,3-Dianhydro-4-*O*-tosyl- β -D-gulopyranose, D-505
 2,3:5,6-Di-*O*-isopropylidene- β -D-gulofuranose, G-587
 1,2:5,6-Di-*O*-isopropylidene- α -D-gulofuranose; α -D-form, D-718
 2,3:5,6-Di-*O*-isopropylidene- β -D-gulofuranosyl chloride, G-583
 1,2:5,6-Di-*O*-isopropylidene-3-*O*-methyl- α -D-gulofuranose, D-718
 1,2:5,6-Di-*O*-isopropylidene-3-*O*-tosyl- α -D-gulofuranose, D-718
 4,6-*O*-Ethylidene-1,2-*O*-isopropylidene- α -D-gulopyranose, G-587
 4,6-*O*-Ethylidene-1,2-*O*-isopropylidene-3-*O*-tosyl- α -D-gulopyranose, G-587
 Gulofuranosyl bromide; *D*-form; 2,3:5,6-Di-*O*-(ethylboranediyl), G-582
 Gulose; α -L-Pyranose-form, G-587
 Gulose; *D*-form, G-587
 Gulose; *L*-form, G-587
 1,2-*O*-Isopropylidene-5,6-di-*O*-mesyl-3-*O*-methyl- α -D-gulofuranose, I-68
 1,2-*O*-Isopropylidene-5-*O*-mesyl-3-*O*-methyl- α -D-gulofuranose, I-68
 1,2-*O*-Isopropylidene-6-*O*-mesyl-3-*O*-methyl- α -D-gulofuranose, I-68
 1,2-*O*-Isopropylidene-3-*O*-methyl- α -D-gulofuranose, I-68
 Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- α -D-gulopyranoside, A-279
 Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-gulopyranoside, A-279
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-gulopyranoside, B-77
 Methyl 3-*O*-acetyl- α -D-gulopyranoside, M-194
 Methyl 2-*O*-acetyl-4,6-*O*-isopropylidene- α -D-gulopyranoside, M-194
 Methyl 2-*O*-acetyl-4,6-*O*-isopropylidene-3-*O*-tosyl- α -D-gulopyranoside, M-194
 Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
 Methyl 3-amino-3-deoxy- β -D-gulopyranoside, A-280
 Methyl 2,3-anhydro-4-bromo-4-deoxy-6-*O*-trityl- α -D-gulopyranoside, B-78
 Methyl 3,6-anhydro- α -L-gulofuranoside, A-640
 Methyl 6-*O*-benzoyl-3-bromo-3-deoxy- β -D-gulopyranoside, B-77
 Methyl 4,6-*O*-benzylidene- α -D-gulopyranoside, M-194
 Methyl 4,6-*O*-benzylidene- β -D-gulopyranoside, M-194
 Methyl 3-chloro-3-deoxy- α -D-gulopyranoside, C-89
 Methyl 2,3-diacetamido-4,6-*O*-benzylidene-2,3-dideoxy- α -D-gulopyranoside, D-435
 Methyl 2,3-diacetamido-2,3-dideoxy- α -D-gulopyranoside, D-435
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro- α -L-gulofuranoside, A-640
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro- β -L-gulofuranoside, A-640
 Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-gulopyranoside, M-194
 Methyl 5,6-di-*O*-acetyl-2,3-*O*-isopropylidene- β -L-gulofuranoside, G-587
 Methyl 2,3-diamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
 Methyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene β -D-gulopyranoside, M-194
 Methyl 2,3:5,6-di-*O*-isopropylidene- β -D-gulofuranoside, G-587
 Methyl 2,3:5,6-di-*O*-isopropylidene- β -L-gulofuranoside, G-587
 Methyl gulopyranoside; α -D-form, M-194
 Methyl gulopyranoside; β -D-form, M-194
 Methyl gulopyranoside; α -L-form, M-194
 Methyl gulopyranoside; β -L-form, M-194
 Methyl 2,3-*O*-isopropylidene- β -D-gulofuranoside, G-587
 Methyl 2,3-*O*-isopropylidene- β -L-gulofuranoside, G-587
 Methyl 4,6-*O*-isopropylidene- α -D-gulopyranoside, M-194

Methyl 2,3,4,6-tetra-*O*-acetyl- α -D-gulopyranoside, M-194
 Methyl 2,3,4,6-tetra-*O*-acetyl- β -D-gulopyranoside, M-194
 Methyl 2,3,4,6-tetra-*O*-acetyl- α -L-gulopyranoside, M-194
 Methyl 2,3,4,6-tetra-*O*-acetyl- β -L-gulopyranoside, M-194
 Methyl 2,4,6-tri-*O*-benzoyl-3-deoxy-3-iodo- β -D-gulopyranoside, D-259
 Methyl 3,5,6-tri-*O*-benzyl- β -L-gulofuranoside, G-587
 Methyl 2,4,6-tri-*O*-benzyl- α -D-gulopyranoside, M-194
 Penta-*O*-acetyl- α -D-gulopyranose, G-587
 2,3,4,6-Tetra-*O*-acetyl- α -D-gulopyranosyl bromide, G-585
 2,3,4,6-Tetra-*O*-acetyl- β -L-gulopyranosyl bromide, G-585
 2,3,4,6-Tetra-*O*-benzyl-L-gulose, G-587
 1,2,5-Tri-*O*-acetyl-3,6-anhydro- α -L-gulofuranose, A-640
 1,2,5-Tri-*O*-acetyl-3,6-anhydro- β -L-gulofuranose, A-640
 3,5,6-Tri-*O*-acetyl-1,2-*O*-isopropylidene- α -D-gulofuranose, I-68

ido-Hexoses

2-Acetamido-5-amino-2,5-dideoxy-L-idopyranose, D-441
 5-Acetamido-1,6-anhydro-5-deoxy- β -L-idopyranose, A-293
 5-Acetamido-3-*O*-benzyl-5-deoxy-1,2-*O*-isopropylidene- β -L-idofuranose, A-293
 3-Acetamido-3-deoxy-1,2:5,6-di-*O*-isopropylidene- β -L-idofuranose, A-292
 5-Acetamido-3,6-di-*O*-acetyl-5-deoxy-1,2-*O*-isopropylidene- β -L-idofuranose, A-293
 5-Acetamido-2,3,4-tri-*O*-acetyl-1,6-anhydro-5-deoxy- β -L-idopyranose, A-293
 5-*O*-Acetyl-1,6-anhydro-2-*O*-tosyl- α -L-idofuranose, A-656
 5-*O*-Acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene-3-*O*-tosyl- β -L-idofuranose, I-69
 6-*O*-Acetyl-5-*O*-benzoyl-1,2-*O*-isopropylidene-3-*O*-tosyl- β -L-idofuranose, I-69
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene- β -D-idofuranose, I-69
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene- β -L-idofuranose, I-69
 5-*O*-Acetyl-1,2:3,4-di-*O*-isopropylidene- β -L-idoseptanose, I-10
 3-*O*-Acetyl-1,2:4,5-di-*O*-isopropylidene- β -L-idoseptanose, I-10
 6-*O*-Acetyl-2,3,4-tri-*O*-benzoyl- α -L-idopyranosyl bromide, I-5
 5-Amino-1,6-anhydro-5-deoxy- β -L-idopyranose, A-293
 3-Amino-3-deoxy-1,2:5,6-di-*O*-isopropylidene- β -D-idofuranose, A-292
 5-Amino-5-deoxyidose; β -L-Furanose-form; 1,2-*O*-Isopropylidene, *N*-benzyloxycarbonyl, A-293
 2-Amino-2-deoxyidose; *D*-form, A-291
 2-Amino-2-deoxyidose; *L*-form, A-291
 5-Amino-5-deoxy-1,2-*O*-isopropylidene- β -L-idofuranose, A-293
 1,6-Anhydro-3-*O*-benzyl- β -D-idopyranose, A-656
 5,6-Anhydro-3-*O*-benzyl-1,2-*O*-isopropylidene- β -L-idofuranose, 8CI, A-660
 1,6-Anhydro-3-*O*-benzyl-2-*O*-tosyl- α -L-idofuranose, A-656
 2,5-Anhydro-3-*O*-benzyl-6-*O*-tosyl-L-idose dithioacetal, A-657
 1,6-Anhydro-3-deoxy-3-fluoroidose; *L*-Pyranose-form, A-520
 1,6-Anhydro-2,3-di-*O*-benzyl- α -L-idofuranose, A-656
 2,5-Anhydro-3,6-di-*O*-tosyl-L-idose dimethyl dithioacetal, A-657
 1,6-Anhydro- α -L-idofuranose, A-656
 3,6-Anhydroidose; *L*-Furanose-form, A-659
 1,6-Anhydroidose; β -D-Pyranose-form, A-656
 2,5-Anhydroidose; *L*-form, A-657
 3,6-Anhydro-1,2-*O*-isopropylidene- β -L-idofuranose, A-659
 5,6-Anhydro-1,2-*O*-isopropylidene- β -L-idofuranose, A-660
 1,6-Anhydro-3-*O*-methyl-L-idopyranose, A-656
 2,5-Anhydro-6-*O*-tosyl-L-idose dimethyl acetal, A-657
 1,6-Anhydro-2,3,4-tri-*O*-benzyl- β -D-idopyranose, A-656
 1,6-Anhydro-2,3,4-tri-*O*-methyl- β -L-idopyranose, A-656
 6-*O*-Benzoyl-3-deoxy-3-fluoro-1,2-*O*-isopropylidene- β -L-idofuranose, D-96
 3-*O*-Benzoyl-1,2:5,6-di-*O*-isopropylidene- β -L-idofuranose, I-69
 5-*O*-Benzoyl-1,2:3,4-di-*O*-isopropylidene- β -L-idoseptanose, I-10
 6-*O*-Benzoyl-1,2-*O*-isopropylidene- β -L-idofuranose, I-69
 6-*O*-Benzoyl-1,2-*O*-isopropylidene-3-*O*-tosyl- β -L-idofuranose, I-69
 3-*O*-Benzyl-1,2-*O*-cyclohexylidene-5,6-dideoxy-5,6-bis(diphenylphosphino)- β -L-idofuranose, G-255
 3-*O*-Benzyl-1,2:5,6-di-*O*-isopropylidene- β -L-idofuranose, I-69
 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene- β -L-idofuranose, I-69
 3,5-*O*-Benzylidene-1,2-*O*-isopropylidene-6-*O*-tosyl- β -L-idofuranose, I-69
 3-Chloro-3-deoxy-1,2:5,6-di-*O*-isopropylidene- β -D-idofuranose, C-92
 6-Deoxy-1,2:3,5-di-*O*-isopropylidene-6-tosylamino- β -D-idofuranose, A-294
 3-Deoxy-3-fluoroidose; *L*-form, D-96
 3-Deoxy-3-fluoro-1,2-*O*-isopropylidene- β -L-idofuranose, D-96
 2,6-Diacetamido-2,6-dideoxy-L-idose, D-442
 3,4-Di-*O*-acetyl-1,6-anhydro-2-*O*-benzyl- β -D-idopyranose, A-656
 2,4-Di-*O*-acetyl-1,6-anhydro-3-*O*-benzyl- β -D-idopyranose, A-656
 2,3-Di-*O*-acetyl-1,6-anhydro-4-*O*-benzyl- β -D-idopyranose, A-656
 2,4-Di-*O*-acetyl-1,6-anhydro-3-deoxy-3-fluoro-L-idopyranose, A-520
 3,4-Di-*O*-acetyl-1,6-anhydro- β -D-idopyranose, A-656

3,4-Di-*O*-acetyl-2,6-anhydro- α -D-idopyranose, A-658
 3,5-Di-*O*-acetyl-6-*O*-benzoyl-1,2-*O*-isopropylidene- β -L-idofuranose, I-69
 2,6-Diamino-2,6-dideoxyidose; *L*-form; Dibenzyl dithioacetal, 2,6-di-*N*-Ac, D-442
 2,6-Diamino-2,6-dideoxyidose; *L*-form; Dibenzyl dithioacetal, D-442
 2,3-Diamino-2,3-dideoxyidose; α -D-Pyranose-form; Me glycoside, 4,6-*O*-benzylidene, 2*N*,3*N*-di-Ac, D-439
 2,3-Diamino-2,3-dideoxyidose; α -D-Pyranose-form; Me glycoside, 2*N*,3*N*-di-Ac, D-439
 2,4-Diamino-2,4-dideoxyidose; α -D-Pyranose-form; Me glycoside, 2*N*,3,4*N*,6-tetrabenzoyl, 2*N*,4*N*-di-Ac, D-440
 2,6-Diamino-2,6-dideoxyidose; *D*-form, D-442
 1,2:5,6-Di-*O*-isopropylidene- β -D-idofuranose, I-69
 1,2:3,5-Di-*O*-isopropylidene- β -L-idofuranose, I-69
 1,2:5,6-Di-*O*-isopropylidene- β -L-idofuranose, I-69
 1,2:3,4-Di-*O*-isopropylidene- β -L-idoseptanose, I-10
 1,2:4,5-Di-*O*-isopropylidene- β -L-idoseptanose, I-10
 1,2:5,6-*O*-Diisopropylidene-3-*O*-mesyl-5-thio- β -L-idofuranose, T-76
 1,2:5,6-Di-*O*-isopropylidene-3-*O*-methyl- β -L-idofuranose, I-69
 1,2-*O*:5*S*,6-*O*-Diisopropylidene-5-thio- β -L-idofuranose, T-76
 1,2:3,4-Di-*O*-isopropylidene-5-tosyl- β -L-idoseptanose, I-10
 Idose; α -L-Pyranose-form, I-9
 Idose; *D*-form, I-9
 Iduronic acid; *D*-form, I-12
 Iduronic acid; *L*-form, I-12
 D-Idurono-1,4-lactone, I-12
 L-Idurono-1,4-lactone, I-12
 Isopropyl 6-amino-6-deoxy- α -L-idopyranoside, A-294
 Isopropyl 6-amino-6-deoxy- β -L-idopyranoside, A-294
 1,2-*O*-Isopropylideneidose; β -D-Furanose-form, I-69
 1,2-*O*-Isopropylideneidose; β -L-Furanose-form, I-69
 1,2-*O*-Isopropylidene- β -L-idoseptanose, I-10
 1,2-*O*-Isopropylidene-L-idurono-1,4-lactone, I-12
 1,2-*O*-Isopropylidene-3-*O*-mesyl- β -L-idofuranose, I-69
 1,2-*O*-Isopropylidene-3-*O*-tosyl- β -L-idofuranose, I-69
 1,2-*O*-Isopropylidene-3-*O*-trityl- β -L-idofuranose, I-69
 1,2-*O*-Isopropylidene-3,5,6-tri-*O*-mesyl- β -L-idofuranose, I-69
 Methyl 2-acetamido-3-*O*-acetyl-2-deoxy- α -D-idopyranoside, A-291
 Methyl 2-acetamido-6-amino-2,6-dideoxy- β -D-idopyranoside, D-442
 Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- α -D-idopyranoside, A-292
 Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- β -D-idopyranoside, A-292
 Methyl 2-acetamido-4,6-*O*-benzylidene-2-deoxy- α -D-idopyranoside, A-291
 Methyl 3-acetamido-3-deoxy- α -D-idopyranoside, A-292
 Methyl 2-acetamido-2-deoxy-3-*O*-tosyl- α -D-idopyranoside, A-291
 Methyl 2-acetamido-3,6-di-*O*-acetyl-4-(diacetylamino)-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 4-acetamido-2,3-di-*O*-benzyl-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 4-acetamido-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-idopyranoside, A-292
 Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-idopyranoside, D-261
 Methyl 6-amino-2-acetamido-3,4-di-*O*-acetyl- β -D-idopyranoside, D-442
 Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
 Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-idopyranoside, A-291
 Methyl 3-amino-4,6-*O*-benzylidene-3-deoxy- α -D-idopyranoside, A-292
 Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- β -D-idopyranoside, A-291
 Methyl 6-amino-6-deoxy- α -L-idopyranoside, A-294
 Methyl 6-amino-6-deoxy- β -L-idopyranoside, A-294
 Methyl 4-amino-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 2-amino-2,3,6-trideoxy-3-methylamino- α -L-idopyranoside, D-479
 Methyl 3,6-anhydro- α -L-idofuranoside, A-659
 Methyl 3,6-anhydro- β -L-idofuranoside, A-659
 Methyl 2,6-anhydro- α -D-idopyranoside, A-658
 Methyl 2,6-anhydro- β -D-idopyranoside, A-658
 Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-3-*O*-tosyl- α -D-idopyranoside, A-291
 Methyl 4-*O*-benzoyl-2,3-di-*O*-benzyl- β -L-idopyranoside, I-9
 Methyl 2-*O*-benzoyl-3,4-*O*-isopropylidene- β -L-idoseptanose, I-10
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-idopyranoside, C-91
 Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-idopyranoside, D-261
 Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl- α -D-idopyranoside, M-168
 Methyl 4,6-*O*-benzylideneidopyranoside; α -D-(1'*R*)-form, M-168
 Methyl 4,6-*O*-benzylideneidopyranoside; α -D-(1'*S*)-form, M-168
 Methyl 3-*O*-benzyl-L-idopyranuronate, I-12
 Methyl 3-*O*-benzyl-1,2-*O*-isopropylidene- β -L-idofuranuronate, I-12
 Methyl 2-chloro-2-deoxy- α -D-idopyranoside, C-91
 Methyl 2,4-diacetamido-3,6-di-*O*-acetyl-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 2,4-diacetamido-3,6-di-*O*-benzoyl-2,4-dideoxy- α -D-idopyranoside, D-440

Methyl 2,4-diacetamido-2,4-dideoxy-3,6-di-*O*-methyl- α -D-idopyranoside, D-440
 Methyl 2,4-diacetamido-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro- α -L-idofuranoside, A-659
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro- β -L-idofuranoside, A-659
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-idopyranoside, A-658
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-idopyranoside, A-658
 Methyl 2,5-di-*O*-acetyl-3,4-*O*-isopropylidene- β -L-idoseptanose, I-10
 Methyl 2,4-diamino-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 2,6-diamino-2,6-dideoxy- α -L-idopyranoside, D-442
 Methyl 2,3-diamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
 Methyl 2,5-di-*O*-benzoyl-3,4-*O*-isopropylidene- β -L-idoseptanose, I-10
 Methyl 2,3-di-*O*-benzyl-4-*O*-benzoyl-6-*O*-trityl- β -L-idopyranoside, I-9
 Methyl 2,3-di-*O*-benzyl- β -L-idopyranoside, I-9
 Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-idopyranoside, A-403
 Methyl 2,3,4,5-di-*O*-isopropylidene- β -L-idoseptanose, I-10
 Methyl 2,3,4,6-di-*O*-isopropylidene-5-thio- α -L-idopyranoside, T-76
 Methyl 2,3,4,6-di-*O*-isopropylidene-5-thio- β -D-idopyranoside, T-76
 Methyl α -D-idopyranoside, I-9
 Methyl β -D-idopyranoside, I-9
 Methyl α -L-idopyranoside, I-9
 Methyl β -L-idopyranoside, I-9
 Methyl (β -L-idopyranosid)uronate, I-12
 Methyl β -L-idoseptanose, I-10
 Methyl 3,4-*O*-isopropylidene- β -L-idoseptanose, I-10
 Methyl (methyl 2,3-di-*O*-benzyl- β -L-idopyranosid)uronate, I-12
 Methyl (methyl α -D-idopyranosid)uronate, I-12
 Methyl (methyl β -D-idopyranosid)uronate, I-12
 Methyl (methyl α -L-idopyranosid)uronate, I-12
 Methyl (methyl 2,3,4-tri-*O*-acetyl- α -L-idopyranosid)uronate, I-12
 Methyl (methyl 2,3,4-tri-*O*-methyl- α -L-idopyranosid)uronate, I-12
 Methyl 2,3,4,6-tetraacetamido-2,3,4,6-tetradeoxy- α -D-idopyranoside, T-20
 Methyl 2,3,4,6-tetra-*O*-acetyl- α -D-idopyranoside, I-9
 Methyl 1,2,3,4-tetra-*O*-acetyl- α -L-idopyranuronate, I-12
 Methyl 1,2,3,4-tetra-*O*-acetyl- β -L-idopyranuronate, I-12
 Methyl 2,3,4,5-tetra-*O*-acetyl- β -L-idoseptanose, I-10
 Methyl 2,3,4,5-tetra-*O*-acetyl- α -L-idoseptanose, I-10
 Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- α -L-idopyranoside, T-76
 Methyl 2,3,4,6-tetra-*O*-acetyl-5-thio- β -L-idopyranoside, T-76
 Methyl 2,3,4,5-tetra-*O*-benzoyl- β -L-idoseptanose, I-10
 Methyl 5-thio- α -L-idopyranoside, T-76
 Methyl 5-thio- β -L-idopyranoside, T-76
 Methyl 1,2,5-tri-*O*-acetyl-3-*O*-benzyl- α -L-idofuranuronate, I-12
 Methyl 1,2,5-tri-*O*-acetyl-3-*O*-benzyl- β -L-idofuranuronate, I-12
 Neosamine B, D-442
 1,2,3,4,6-Penta-*O*-acetyl-5-deoxy-5-thio-L-idopyranose, T-76
 1,2,3,4,6-Penta-*O*-acetyl- α -D-idopyranose, I-9
 1,2,3,4,6-Penta-*O*-benzoyl- α -D-idopyranose, I-9
 1,2,3,4,5-Penta-*O*-benzyl-D-idose, I-9
 1,2,3,6-Tetra-*O*-acetyl- α -D-idopyranose, I-9
 2,3,4,6-Tetra-*O*-acetyl- α -L-idopyranosyl bromide, I-5
 2,3,4,6-Tetra-*O*-benzyl-L-idose, I-9
 2,3,4-Triacetamido-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- α -L-idofuranose, A-656
 1,2,5-Tri-*O*-acetyl-3,6-anhydro-L-idofuranose, A-659
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- β -D-idopyranose, A-656
 1,3,4-Tri-*O*-acetyl-2,6-anhydro-D-idopyranose, A-658
 2,4,6-Tri-*O*-acetyl-3-*O*-benzyl- α -L-idopyranosyl bromide, I-5
 1,2,3-Tri-*O*-acetyl-4,6-*O*-ethylidene- α -D-idopyranose, I-9
 3,5,6-Tri-*O*-acetyl-1,2-*O*-isopropylidene- β -L-idofuranose, I-69
 3,4,5-Tri-*O*-acetyl-1,2-*O*-isopropylidene- β -L-idoseptanose, I-10
 2,3,4-Triamino-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
 2,3,4-Tri-*O*-benzyl-6-*O*-chloroacetyl- α -L-idopyranosyl chloride, I-6

manno-Hexoses

2-Acetamido-2-deoxy-D-mannose, A-312
 2-Acetamido-2-deoxy-5-thio- α -D-mannopyranose, A-351
 4-Acetamido-2,3-di-*O*-acetyl-1,6-anhydro-4-deoxy- β -D-mannopyranose, A-314
 3-Acetamido-1,2,4,6-tetra-*O*-acetyl-3-deoxy- α -D-mannopyranose, A-313
 2-Acetamido-1,3,4,6-tetra-*O*-acetyl-2-deoxy-5-thio- α -D-mannopyranose, A-351
 3-Acetamido-1,4,6-tri-*O*-acetyl-3-deoxy- α -D-mannopyranose, A-313
 1-*O*-Acetyl-2,3:5,6-di-*O*-isopropylidene- β -D-mannofuranose, I-71
 1-*O*-Acetyl-2,3,4,6-tetra-*O*-benzyl- α -D-mannopyranose, T-23
 4-*O*-Acetyl-2,3,6-tri-*O*-methyl-D-mannose, T-190
 Allyl 2,4-di-*O*-benzyl- α -D-mannopyranoside, P-96
 Allyl 3,4-di-*O*-benzyl- α -D-mannopyranoside, P-96
 Allyl 2,3:5,6-di-*O*-isopropylidene- α -D-mannofuranoside, I-71
 Allyl 2,3:5,6-di-*O*-isopropylidene- β -D-mannofuranoside, I-71
 Allyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-methyl- α -D-mannopyranoside, D-307

- Allyl 2,3,4-tri-*O*-benzyl- α -D-mannopyranoside, P-96
 Allyl 2,4,6-tri-*O*-benzyl- α -D-mannopyranoside, P-96
 3-Amino-1,6-anhydro-3-deoxy- β -D-mannopyranose, A-313
 4-Amino-1,6-anhydro-4-deoxy- β -D-mannopyranose, A-314
 2-Amino-2-deoxymannose; *D*-form, A-312
 4-Amino-4-deoxymannose; *D*-form, A-314
 2-Amino-2-deoxymannose; *L*-form, A-312
 4-Aminophenyl mannopyranoside; α -*D*-form; *N,N*-Di-Me, A-438
 4-Aminophenyl mannopyranoside; α -*D*-form, A-438
 1,6-Anhydro-3-deoxy-3-fluoromannose; *D*-Pyranose-form, A-521
 1,6-Anhydro-2,4-di-*O*-benzoyl-3-deoxy-3-fluoro-D-mannopyranose, A-521
 2,6-Anhydro- β -D-mannopyranosyl fluoride, M-43
 2,6-Anhydro-D-mannose dimethylacetal, A-678
 2,3-Anhydromannose; β -D-Pyranose-form, A-676
 2,6-Anhydromannose; *D*-form, A-678
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 6-Azido-6-deoxymannose; *D*-form, A-913
 1-*O*-Benzoyl-2,3,5,6-di-*O*-isopropylidene- α -D-mannofuranose, I-71
 2-*O*-Benzoyl-4,6-di-*O*-methyl- α -D-mannopyranosyl fluoride, M-43
 2-*O*-Benzoyl-4,6-di-*O*-methyl- β -D-mannopyranosyl fluoride, M-43
 3-*O*-Benzoyl-4,6-di-*O*-methyl- β -D-mannopyranosyl fluoride, M-43
 1-*O*-Benzoyl-2,3-*O*-isopropylidene- α -D-mannofuranose, I-71
 Benzyl 2-*O*-acetyl-3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, B-19
 Benzyl 4-amino-4-deoxy-2,3-*O*-isopropylidene- α -D-mannofuranoside, A-314
 Benzyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-mannopyranoside, A-676
 Benzyl 2,3-anhydro- α -D-mannopyranoside, A-676
 Benzyl 2,3-anhydro- β -D-mannopyranoside, A-676
 Benzyl 2-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, B-19
 Benzyl 4,6-*O*-benzylidene- α -D-mannopyranoside, B-19
 Benzyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, B-19
 Benzyl 2,3,4,6-di-*O*-benzylidene- α -D-mannopyranoside, B-19
 Benzyl 2,3,5,6-di-*O*-isopropylidene- α -D-mannofuranoside, B-19
 Benzyl 2,3,4,6-di-*O*-isopropylidene- α -D-mannopyranoside, B-19
 Benzyl 2,3-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-mannofuranoside, B-19
 Benzyl 2,3-*O*-isopropylidene- α -D-mannofuranoside, B-19
 Benzyl 2,3-*O*-isopropylidene- α -D-mannopyranoside, B-19
 Benzyl 2,3-*O*-isopropylidene-6-*O*-mesyl- α -D-mannofuranoside, B-19
 Benzyl mannoside; α -D-Furanose-form, B-19
 Benzyl mannoside; β -D-Furanose-form, B-19
 Benzyl mannoside; α -D-Pyranose-form, B-19
 Benzyl 4-*O*-methyl- α -D-mannopyranoside, B-19
 Benzyl 2,3,4,6-tetra-*O*-acetyl- α -D-mannopyranoside, B-19
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -D-mannopyranoside, T-82
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -L-mannopyranoside, T-82
 Benzyl 2,3,4,6-tetra-*O*-benzoyl- α -D-mannopyranoside, B-19
 Benzyl 1-thio- α -D-mannopyranoside, T-82
 Benzyl 1-thio- β -D-mannopyranoside, T-82
 Benzyl 1-thio- α -L-mannopyranoside, T-82
 Benzyl 2,3,6-tri-*O*-acetyl- α -D-mannopyranoside, B-19
 Benzyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- α -D-mannopyranoside, B-19
 Benzyl 2,3,4-tri-*O*-benzyl- α -D-mannopyranoside, B-19
 Benzyl 3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, B-19
 Benzyl 3,4,6-tri-*O*-benzyl-2-*O*-mesyl- α -D-mannopyranoside, B-19
 Benzyl 2,3,4-tri-*O*-benzyl-6-*O*-methyl- α -D-mannopyranoside, B-19
exo-1,2-*O*-(1-Benzoyloxyethylidene)- β -D-mannopyranose, M-117
endo-1,2-*O*-(1-Benzoyloxyethylidene)- β -D-mannopyranose, M-117
 2-Bromo-2-deoxymannose; *D*-form, B-87
 3-Bromo-3-deoxymannose; *D*-form, B-88
 Butyl mannoside; α -D-Pyranose-form, B-141
 Butyl mannoside; β -D-Pyranose-form, B-141
 Butyl 2,3,4,6-tetra-*O*-benzoyl- α -D-mannopyranoside, B-141
 4-*O*-(1-Carboxyethyl)mannose, C-22
 2-Deoxy-2-fluoromannose; *D*-form, D-101
 3-Deoxy-3-fluoromannose; *D*-form, D-102
 4-Deoxy-*lyxo*-hexose; *D*-form, D-204
 6-Deoxy-6-iodomannose; α -D-Pyranose-form; Me glycoside, 2,3-*O*-isopropylidene, 4-*O*-(*p*-bromobenzenesulfonyl), D-266
 6-Deoxy-6-iodomannose; α -D-Pyranose-form; Me glycoside, tribenzyl, D-266
 2,6-Diacetamido-2,6-dideoxy- α -D-mannopyranose, D-450
 2,4-Di-*O*-acetyl-1,6-anhydro-3-deoxy-3-fluoro-D-mannopyranose, A-521
 4,6-Di-*O*-acetyl-2,3-di-*O*-benzyl- α -D-mannopyranosyl chloride, M-42
 2,4-Di-*O*-acetyl-3,6-di-*O*-benzyl- α -D-mannopyranosyl chloride, M-42
 2,6-Diamino-2,6-dideoxymannose, D-450
 2,3-Di-*O*-benzoyl-4,6-di-*O*-methyl- α -D-mannopyranosyl fluoride, M-43
 2,3-Di-*O*-benzoyl-4,6-di-*O*-methyl- β -D-mannopyranosyl fluoride, M-43
 2,3,5,6-Di-*O*-cyclohexylidene- α -D-mannofuranose, M-114
 2,3,4,6-Di-*O*-cyclohexylidene- α -D-mannopyranosyl chloride, M-42
 2,3,5,6-Di-*O*-isopropylidene- α -D-mannofuranose, I-71
 2,3,5,6-Di-*O*-isopropylidene- α -L-mannofuranose, I-71
 2,3,5,6-Di-*O*-isopropylidene- α -D-mannofuranosyl bromide, M-26
 2,3,5,6-Di-*O*-isopropylidene- α -D-mannofuranosyl chloride, M-27
 2,3,5,6-Di-*O*-isopropylidene- β -D-mannofuranosyl chloride, M-27
 2,3,5,6-Di-*O*-isopropylidene- α -D-mannofuranosyl iodide, M-29
 2,3,4,6-Di-*O*-isopropylidene- α -D-mannopyranose, M-114
 3,4,5,6-Di-*O*-isopropylidene-D-mannose dimethyl dithioacetal, M-116
 3,5-Di-*O*-methylmannose; *D*-Furanose-form, D-752
 3,4-Di-*O*-methylmannose; α -D-Pyranose-form, D-751
 2,3-Di-*O*-methylmannose; *D*-form, D-748
 2,4-Di-*O*-methylmannose; *D*-form, D-749
 2,6-Di-*O*-methylmannose; *D*-form, D-750
 3,4-Di-*O*-methylmannose; *D*-form, D-751
 4,6-Di-*O*-methylmannose; *D*-form, D-753
 2,6-Di-*O*-methylmannose, D-750
 3,6-Di-*O*-methyl-D-mannose, M-271
 Ethyl 2-*S*-ethyl-1,2-dithio- α -D-mannofuranoside, D-766
 Ethyl 2,3-*O*-isopropylidene-1-thio-6-*O*-tosyl- α -D-mannopyranoside, T-82
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -D-mannopyranoside, T-82
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -D-mannopyranoside, T-82
 Ethyl 1-thio- β -D-mannopyranoside, T-82
 Ethyl 1-thio-6-*O*-tosyl- α -D-mannopyranoside, T-82
 1,2-*O*-Ethylidene-3,4,6-tri-*O*-methyl- β -D-mannopyranose, M-114
 2,3-*O*-Isopropylidene-5,6-di-*O*-mesyl- α -D-mannofuranose, I-71
 2,3-*O*-Isopropylidene-4,6-di-*O*-methyl-D-mannose, D-753
 4,6-*O*-Isopropylidene- α -D-mannopyranose, M-114
 2,3-*O*-Isopropylidenemannose; α -D-Furanose-form; 5,6-Isopropylidene, 1-(2,4-dinitrobenzenesulfonyl), I-71
 2,3-*O*-Isopropylidenemannose, I-71
 2,3-*O*-Isopropylidene-5-*O*-methyl- α -L-mannofuranose, M-273
 Mannopyranosyl fluoride; α -*D*-form, M-43
 Mannopyranosyl iodide; α -*D*-form; 2,3,4,6-Tetra-Ac, M-44
 Mannopyranosyl iodide; α -*D*-form; 2,3,4,6-Tetrabenzoyl, M-44
 Mannose 6-dihydrogen phosphate; *D*-form, M-115
 Mannose; α -D-Pyranose-form, M-114
 Mannose; β -D-Pyranose-form, M-114
 D-Mannose 1-triphosphate, A-70
 Mannose; *D*-form, M-114
 Mannose; *L*-form, M-114
 Mannosylamine; *D*-form, M-118
 2-*O*-Mesyl-D-mannose, M-114
 Methyl 3-acetamido-3-deoxy- α -D-mannopyranoside, A-313
 Methyl 3-acetamido-4,6-di-*O*-acetyl-3-deoxy- α -D-mannopyranoside, A-313
 Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-mannopyranoside, A-313
 Methyl 3-*O*-acetyl-2,6-anhydro-4-*O*-methyl- β -D-mannopyranoside, A-678
 Methyl 4-*O*-acetyl-2,3-anhydro-6-*O*-trityl- α -D-mannopyranoside, A-676
 Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
 Methyl 6-*O*-acetyl-2,3-di-*O*-benzyl- α -D-mannopyranoside, M-204
 Methyl 4-*O*-acetyl-2,3-di-*O*-methyl- α -D-mannopyranoside, D-748
 Methyl 4-*O*-acetyl-2,3-*O*-isopropylidene-6-*O*-methyl- α -D-mannopyranoside, M-200
 Methyl 4-*O*-acetyl- α -D-mannopyranoside, M-204
 Methyl 6-*O*-acetyl- β -D-mannopyranoside, M-205
 Methyl 4-*O*-acetyl-6-*O*-methyl- α -D-mannopyranoside, M-274
 Methyl 2-*O*-acetyl-3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, M-204
 Methyl 4-*O*-acetyl-2,3,6-tri-*O*-methyl- α -D-mannopyranoside, T-190
 Methyl 3-amino-3-deoxy- β -D-mannopyranoside, A-313
 Methyl 3-amino-3-deoxy- α -D-mannopyranoside, A-313
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- β -D-mannopyranoside, M-169
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-4-*O*-benzyl-6-*O*-trityl- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-4,6-di-*O*-methyl- β -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-4,6-di-*O*-tosyl- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-4,6-*O*-ethylidene- α -D-mannopyranoside, A-676
 Methyl 2,6-anhydro- α -D-mannofuranoside, A-671
 Methyl 3,6-anhydro- α -D-mannofuranoside, A-679
 Methyl 2,3-anhydro- α -D-mannopyranoside, 8CI, A-676
 Methyl 2,3-anhydro- β -D-mannopyranoside, A-676
 Methyl 2,6-anhydro- α -D-mannopyranoside, A-678
 Methyl 3,6-anhydro- α -D-mannopyranoside, A-679
 Methyl 3,6-anhydro- β -D-mannopyranoside, A-679
 Methyl 2,3-anhydro-6-*O*-trityl- α -D-mannopyranoside, A-676
 Methyl 6-azido-6-deoxy-2,3-*O*-isopropylidene- α -D-mannofuranoside, A-913
 Methyl 6-azido-6-deoxy-2,3-*O*-isopropylidene- α -D-mannopyranoside, A-913
 Methyl 6-azido-6-deoxy- α -D-mannopyranoside, A-913
 Methyl 3-benzamido-4,6-*O*-benzylidene-3-deoxy- α -D-mannopyranoside, A-313
 Methyl 3-benzamido-3-deoxy- α -D-mannopyranoside, A-313
 Methyl 2-benzoyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- β -D-mannopyranoside, B-88
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169

- Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-methyl- α -D-mannopyranoside, M-169
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-methyl- β -D-mannopyranoside, M-169
Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl- α -D-mannopyranoside, M-169
Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl- α -D-mannopyranoside, M-169
Methyl 4-*O*-benzoyl-6-deoxy-6-iodo-2,3-*O*-isopropylidene- α -D-mannopyranoside, D-266
Methyl 2-*O*-benzoyl-4,6-di-*O*-mesyl-3-*O*-methyl- β -D-mannopyranoside, M-205
Methyl 2-*O*-benzoyl-3-*O*-methyl- β -D-mannopyranoside, M-205
Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
Methyl 2-*O*-benzyl-4,6-*O*-benzylidene- β -D-mannopyranoside, M-169
Methyl 3-*O*-benzyl-4,6-*O*-benzylidene- β -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-mesyl- α -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-methyl- α -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2,3-di-*O*-tosyl- α -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidenemannopyranoside; α -D-*form*, M-169
Methyl 4,6-*O*-benzylidenemannopyranoside; β -D-*form*, M-169
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl- α -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-3-*O*-methyl- β -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- α -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-3-*O*-methyl- β -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-3-*O*-methyl-2-*O*-tosyl- β -D-mannopyranoside, M-169
Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- α -D-mannopyranoside, M-169
Methyl 5-*O*-benzyl-2,3-*O*-isopropylidene- α -D-mannofuranoside, I-71
Methyl 6-*O*-benzyl-2,3-*O*-isopropylidene- α -D-mannofuranoside, I-71
Methyl 2,6-*O*-benzyl-3-*O*-methyl- α -D-mannopyranoside, M-271
Methyl 4-*O*-benzyl-6-*O*-trityl- α -D-mannopyranoside, M-215
Methyl 2-bromo-2-deoxy- α -D-mannopyranoside, B-87
Methyl 2-bromo-2-deoxy- β -D-mannopyranoside, B-87
Methyl 6-deoxy-6-iodo-2,3-di-*O*-mesyl- α -D-mannopyranoside, D-266
Methyl 6-deoxy-6-iodo-2,3-*O*-isopropylidene- α -D-mannopyranoside, D-266
Methyl 6-deoxy-6-iodo-2,3-*O*-isopropylidene-4-*O*-mesyl- α -D-mannopyranoside, D-266
Methyl 6-deoxy-6-iodo- α -D-mannopyranoside, D-266
Methyl 6-deoxy-6-iodo- β -D-mannopyranoside, D-266
Methyl 2,3-diacetamido-4,6-*O*-benzylidene-2,3-dideoxy- α -D-mannopyranoside, D-449
Methyl 2,3-diacetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-mannopyranoside, D-449
Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-mannopyranoside, D-451
Methyl 2,3-diacetamido-2,3-dideoxy- α -D-mannopyranoside, D-449
Methyl 2,3-diacetamido-2,3-dideoxy- β -D-mannopyranoside, D-449
Methyl 3,6-diacetamido-3,6-dideoxy- α -D-mannopyranoside, D-451
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-mannopyranoside, A-678
Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-mannopyranoside, A-678
Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
Methyl 2,4-di-*O*-acetyl-3,6-di-*O*-benzoyl- α -D-mannopyranoside, M-204
Methyl 4,6-di-*O*-acetyl-2,3-di-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 2,3-di-*O*-acetyl-4,6-*O*-ethylidene- α -D-mannopyranoside, M-180
Methyl 5,6-di-*O*-acetyl-2,3-*O*-isopropylidene- α -D-mannofuranoside, I-71
Methyl 4,6-di-*O*-acetyl- α -D-mannopyranoside, M-204
Methyl 2,3-di-*O*-acetyl-4,6-*O*-methylene- α -D-mannopyranoside, M-204
Methyl 2,3-diamino-2,3-dideoxy- β -D-mannopyranoside, D-449
Methyl 3,6-diamino-3,6-dideoxy- α -D-mannopyranoside, D-451
Methyl 3,6-di-*O*-benzoyl-2,4-di-*O*-methyl- α -D-mannopyranoside, D-749
Methyl 3,6-di-*O*-benzoyl- α -D-mannopyranoside, M-204
Methyl 2,6-di-*O*-benzoyl-3-*O*-methyl- β -D-mannopyranoside, M-205
Methyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside, M-169
Methyl 2,3,4,6-di-*O*-benzylidenemannopyranoside; α -D-(1'*S*,1'*R*)-*form*, M-172
Methyl 2,3,4,6-di-*O*-benzylidenemannopyranoside; α -D-(1'*S*,1'*R*)-*form*, M-172
Methyl 2,6-di-*O*-benzyl- α -D-mannofuranoside, M-203
Methyl 2,3-di-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 3,6-di-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 2,3,4,6-di-*O*-ethylidene- α -D-mannopyranoside, M-180
Methyl 2,3,4,6-di-*O*-ethylidene- β -D-mannopyranoside, M-180
Methyl 2,3,5,6-di-*O*-isopropylidene- α -D-mannofuranoside, I-71
Methyl 2,3,5,6-di-*O*-isopropylidene- β -D-mannofuranoside, I-71
Methyl 2,3,4,6-di-*O*-isopropylidene- α -D-mannopyranoside, M-200
Methyl 2,3-di-*O*-isopropylidene-5-*O*-methyl- α -D-mannofuranoside, I-71
Methyl 2,3-di-*O*-mesyl-4,6-di-*O*-methyl- α -D-mannopyranoside, D-753
Methyl 2,3-di-*O*-mesyl- α -D-mannopyranoside, M-204
Methyl 2,3-di-*O*-mesyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 4,6-di-*O*-methyl-2,3-di-*O*-tosyl- α -D-mannopyranoside, D-753
Methyl 2,3,5,6-di-*O*-methylene- α -D-mannofuranoside, M-203
Methyl 2,3,4,6-di-*O*-methylene- α -D-mannopyranoside, M-204
Methyl 2,6-di-*O*-methyl- α -D-mannofuranoside, M-203
Methyl 3,5-di-*O*-methyl- α -D-mannofuranoside, M-203
Methyl 5,6-di-*O*-methyl- α -D-mannofuranoside, M-203
Methyl 2,3-di-*O*-methyl- α -D-mannopyranoside, D-748
Methyl 2,4-di-*O*-methyl- α -D-mannopyranoside, D-749
Methyl 3,4-di-*O*-methyl- α -D-mannopyranoside, D-751
Methyl 4,6-di-*O*-methyl- α -D-mannopyranoside, D-753
Methyl 2,3-di-*O*-methyl-4-*O*-tosyl- α -D-mannopyranoside, D-748
Methyl 3,4-di-*O*-methyl-2-*O*-tosyl- α -D-mannopyranoside, D-751
Methyl 2,3-di-*O*-tosyl- α -D-mannopyranoside, M-204
Methyl 2,6-di-*O*-tosyl- α -D-mannopyranoside, M-204
Methyl 3,6-di-*O*-tosyl- α -D-mannopyranoside, M-204
Methyl 4,6-*O*-ethylidene-2,3-di-*O*-methyl- α -D-mannopyranoside, M-180
Methyl 4,6-*O*-ethylidene-2,3-di-*O*-tosyl- α -D-mannopyranoside, M-180
Methyl 4,6-*O*-ethylidenemannopyranoside; α -D-*form*, M-180
Methyl 4,6-*O*-ethylidenemannopyranoside; β -D-*form*, M-180
Methyl 4,6-*O*-ethylidene-2-*O*-tosyl- α -D-mannopyranoside, M-180
Methyl 4,6-*O*-ethylidene-3-*O*-tosyl- α -D-mannopyranoside, M-180
Methyl 2,3-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-mannofuranoside, I-71
Methyl 2,3-*O*-isopropylidene-1,6-di-*O*-mesyl- α -L-mannofuranoside, M-203
Methyl 2,3-*O*-isopropylidene-4,6-di-*O*-mesyl- α -D-mannopyranoside, M-200
Methyl 2,3-*O*-isopropylidene-4,6-di-*O*-methyl- α -D-mannopyranoside, M-200
Methyl 2,3-*O*-isopropylidene- α -D-mannofuranoside, I-71
Methyl 2,3-*O*-isopropylidenemannopyranoside; α -D-*form*, M-200
Methyl 2,3-*O*-isopropylidene-6-*O*-methyl- α -D-mannopyranoside, M-200
Methyl 2,3-*O*-isopropylidene-6-*O*-tosyl- α -D-mannofuranoside, I-71
Methyl 2,3-*O*-isopropylidene-6-*O*-trityl- α -D-mannopyranoside, M-200
Methyl mannofuranoside; α -D-*form*, M-203
Methyl mannofuranoside; β -D-*form*, M-203
Methyl α -L-mannopyranoside, M-114
Methyl α -D-mannopyranoside, M-204
Methyl β -D-mannopyranoside, M-205
Methyl 4,6-*O*-methylene- α -D-mannopyranoside, M-204
Methyl 3-*O*-methyl- α -D-mannopyranoside, M-271
Methyl 4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 6-*O*-methyl- α -D-mannopyranoside, M-274
Methyl 5-*O*-methyl-2,3-*O*-methylene- α -D-mannofuranoside, M-203
Methyl 6-*O*-methyl-2,3-*O*-methylene- α -D-mannofuranoside, M-203
Methyl 2,3,5,6-tetra-*O*-acetyl- α -D-mannofuranoside, M-203
Methyl 2,3,4,6-tetra-*O*-acetyl- α -L-mannopyranoside, M-114
Methyl 2,3,4,6-tetra-*O*-acetyl- α -D-mannopyranoside, M-204
Methyl 2,3,4,6-tetra-*O*-acetyl- β -D-mannopyranoside, M-205
Methyl 2,3,4,6-tetra-*O*-benzoyl- α -D-mannopyranoside, M-204
Methyl 2,3,4,6-tetra-*O*-benzyl- α -D-mannopyranoside, T-23
Methyl 2,3,4,6-tetra-*O*-benzyl- β -D-mannopyranoside, T-23
Methyl 2,3,4,6-tetra-*O*-methyl- β -D-mannopyranoside, M-205
Methyl 2-*O*-tosyl- α -D-mannopyranoside, M-204
Methyl 3-*O*-tosyl- α -D-mannopyranoside, M-204
Methyl 2-*O*-tosyl-6-*O*-trityl- α -D-mannopyranoside, M-215
Methyl 3-*O*-tosyl-6-*O*-trityl- α -D-mannopyranoside, M-215
Methyl 4-*O*-tosyl-6-*O*-trityl- α -D-mannopyranoside, M-215
Methyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy- α -L-mannopyranoside, T-131
Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -D-mannopyranoside, A-913
Methyl 2,4,6-tri-*O*-acetyl-3-benzamido-3-deoxy- α -D-mannopyranoside, A-313
Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-mannopyranoside, B-87
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-iodo- α -D-mannopyranoside, D-266
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-iodo- β -D-mannopyranoside, D-266
Methyl 2,3,4-tri-*O*-acetyl- α -D-mannopyranoside, M-204
Methyl 2,3,6-tri-*O*-acetyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 2,3,4-tri-*O*-acetyl-6-*O*-methyl- α -D-mannopyranoside, M-274
Methyl 2,4,6-tri-*O*-acetyl-3-*O*-tosyl- α -D-mannopyranoside, M-204
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-mesyl- α -D-mannopyranoside, M-204
Methyl 2,4,6-tri-*O*-benzoyl-3-*O*-methyl- β -D-mannopyranoside, M-205
Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 3,4,6-tri-*O*-benzyl-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
Methyl 3,4,6-tri-*O*-benzyl-2-bromo-2-deoxy- β -D-mannopyranoside, B-87
Methyl 3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, M-204
Methyl 3,4,6-tri-*O*-benzyl-2-*O*-mesyl- β -D-mannopyranoside, M-205
Methyl 2,3,4-tri-*O*-benzyl-6-*O*-trityl- α -D-mannopyranoside, M-215
Methyl 2,3,6-tri-*O*-mesyl- α -D-mannopyranoside, M-204
Methyl 2,3,6-tri-*O*-mesyl-4-*O*-methyl- α -D-mannopyranoside, M-272
Methyl 3,5,6-tri-*O*-methyl- α -D-mannofuranoside, M-203

Methyl 2,3,4-tri-*O*-methyl- α -D-mannopyranoside, D-748
Methyl 2,3,6-tri-*O*-methyl- α -D-mannopyranoside, T-190
Methyl 2,4,6-tri-*O*-methyl- α -D-mannopyranoside, T-191
Methyl 3,4,6-tri-*O*-methyl- α -D-mannopyranoside, T-192
Methyl 3,5,6-tri-*O*-methyl-2-*O*-tosyl- α -D-mannofuranoside, M-203
Methyl 2,3,6-tri-*O*-methyl-4-*O*-tosyl- α -D-mannopyranoside, T-190
Methyl 2,4,6-tri-*O*-methyl-3-*O*-tosyl- α -D-mannopyranoside, T-191
Methyl 3,4,6-tri-*O*-methyl-2-*O*-tosyl- α -D-mannopyranoside, T-192
Methyl 2,3,4-tris(trimethylsilyl)- α -D-mannopyranoside, M-204
Methyl 6-*O*-tritylmannofuranoside; α -D-form, M-214
Methyl 6-*O*-tritylmannopyranoside; α -D-form, M-215
4-*O*-Methylmannose; α -D-Pyranose-form, M-272
2-*O*-Methylmannose; D-form, M-270
2-*O*-Methylmannose; L-form, M-270
3-*O*-Methylmannose; D-form, M-271
4-*O*-Methylmannose; D-form, M-272
5-*O*-Methylmannose; D-form, M-273
6-*O*-Methylmannose; D-form, M-274
2-Nitrophenyl mannoside; α -D-Pyranose-form; 2,3,4,6-Tetra-Ac, N-71
4-Nitrophenyl mannoside; α -D-Pyranose-form; 2,3,4,6-Tetra-Ac, N-73
4-Nitrophenyl mannoside; β -D-Pyranose-form; 2,3,4,6-Tetra-Ac, N-73
4-Nitrophenyl mannoside; α -D-Pyranose-form; 2,3,4-Tribenzoyl, N-73
2-Nitrophenyl mannoside; α -D-Pyranose-form, N-71
3-Nitrophenyl mannoside; α -D-Pyranose-form, N-72
4-Nitrophenyl mannoside; α -D-Pyranose-form, N-73
4-Nitrophenyl mannoside; β -D-Pyranose-form, N-73
1,2,3,4,6-Penta-*O*-acetyl- α -D-mannopyranose, M-114
1,2,3,4,6-Penta-*O*-acetyl- β -D-mannopyranose, M-114
1,2,3,4,6-Penta-*O*-benzoyl- β -D-mannopyranose, M-114
4-Pentenyl mannopyranoside; α -D-form, P-34
4-Pentenyl mannopyranoside; β -D-form, P-34
Phenyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-mannopyranoside, 8CI, A-676
Phenyl 4,6-di-*O*-acetyl-1-thio- β -D-mannopyranoside, T-82
Phenyl 2,3,4,6-di-*O*-isopropylidene-1-thio- β -D-mannopyranoside, T-82
Phenyl 2,3-*O*-isopropylidene-1-thio-6-*O*-tosyl- α -D-mannopyranoside, T-82
Phenyl mannopyranoside; α -D-form, P-60
Phenyl mannopyranoside; β -D-form, P-60
Phenyl 2,3,4,6-tetra-*O*-acetyl- α -D-mannopyranoside, P-60
Phenyl 2,3,4,6-tetra-*O*-acetyl- β -D-mannopyranoside, P-60
Phenyl 1-thio- β -D-mannopyranoside, T-82
Phenyl 1-thio-6-*O*-tosyl- α -D-mannopyranoside, T-82
Phenyl 3,4,6-tri-*O*-benzyl- α -D-mannopyranosyl sulfoxide, T-82
2-Propenyl 4,6-di-*O*-acetyl- α -D-mannopyranoside, P-96
2-Propenyl 2,3-*O*-isopropylidene- α -D-mannopyranoside, P-96
2-Propenyl mannopyranoside; α -D-form, P-96
2-Propenyl mannopyranoside; β -D-form, P-96
2-Propenyl 2,3,4,6-tetra-*O*-benzoyl- α -D-mannopyranoside, P-96
2-Propenyl 2,4,6-tri-*O*-acetyl- α -D-mannopyranoside, P-96
2,3,4,6-Tetra-*O*-acetyl-1-*S*-acetyl-1-thio- β -D-mannopyranoside, T-82
1,2,4,6-Tetra-*O*-acetyl-3-amino-3-deoxy- α -D-mannopyranose, A-313
1,2,3,4-Tetra-*O*-acetyl-6-azido-6-deoxy- α -D-mannopyranose, A-913
1,2,4,6-Tetra-*O*-acetyl-3-benzamido-3-deoxy- α -D-mannopyranose, A-313
1,3,4,6-Tetra-*O*-acetyl-2-bromo-2-deoxy- α -D-mannopyranose, B-87
1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro-D-mannose, D-102
2,3,5,6-Tetra-*O*-acetyl- α -D-mannofuranosyl bromide, M-26
2,3,5,6-Tetra-*O*-acetyl- β -D-mannofuranosyl bromide, M-26
2,3,5,6-Tetra-*O*-acetyl- α -D-mannofuranosyl fluoride, M-28
2,3,5,6-Tetra-*O*-acetyl- β -D-mannofuranosyl fluoride, M-28
2,3,4,6-Tetra-*O*-acetyl- α -D-mannopyranose, M-114
1,2,3,4-Tetra-*O*-acetyl- β -D-mannopyranose, M-114
1,3,4,6-Tetra-*O*-acetyl- β -D-mannopyranose, M-114
2,3,4,6-Tetra-*O*-acetyl- β -D-mannopyranose, M-114
2,3,4,6-Tetra-*O*-acetyl- α -D-mannopyranosyl chloride, M-42
2,3,4,6-Tetra-*O*-acetyl- β -D-mannopyranosyl chloride, M-42
2,3,4,6-Tetra-*O*-acetyl- α -D-mannopyranosyl fluoride, M-43
2,3,4,6-Tetra-*O*-acetyl- β -D-mannopyranosyl fluoride, M-43
1,2,3,4-Tetra-*O*-acetyl-6-*O*-mesyl- β -D-mannopyranose, M-114
1,2,3,6-Tetra-*O*-acetyl-5-*O*-methyl- α -L-mannofuranose, M-273
1,3,4,6-Tetra-*O*-acetyl-2-*O*-methyl- β -D-mannopyranose, M-114
2,3,4,6-Tetra-*O*-acetyl-1-thio- α -D-mannopyranose, T-82
1,3,4,6-Tetra-*O*-acetyl-2-*O*-triflyl- β -D-mannopyranose, M-114
2,3,5,6-Tetra-*O*-benzoyl- α -D-mannofuranosyl fluoride, M-28
2,3,4,6-Tetra-*O*-benzoyl- α -D-mannopyranose, M-114
2,3,4,6-Tetra-*O*-benzoyl- α -D-mannopyranosyl chloride, M-42
2,3,4,6-Tetra-*O*-benzoyl- β -D-mannopyranosyl chloride, M-42
2,3,4,6-Tetra-*O*-benzoyl- β -D-mannopyranosyl fluoride, M-43
1,3,4,6-Tetra-*O*-benzyl-2-deoxy-2-fluoro- β -D-mannopyranoside, D-101
2,3,4,6-Tetra-*O*-benzylmannose; D-Pyranose-form, T-23
1-Thiomannose; β -D-Pyranose-form, T-82
1,2,5-Tri-*O*-acetyl-3,6-anhydro- α -D-mannofuranose, A-679
1,2,5-Tri-*O*-acetyl-3,6-anhydro- β -D-mannofuranoside, A-679

3,4,6-Tri-*O*-acetyl-1-*O*-benzoyl-2-bromo-2-deoxy- α -D-mannopyranose, B-87
1,2,3-Tri-*O*-acetyl-4,6-*O*-isopropylidene- α -D-mannopyranose, M-114
exo-3,4,6-Tri-*O*-acetyl-1,2-*O*-(1-methoxyethylidene)- β -D-mannopyranose, M-117
endo-3,4,6-Tri-*O*-acetyl-1,2-*O*-(1-methoxyethylidene)- β -D-mannopyranose, M-117
3,4,6-Tri-*O*-benzyl-D-mannose, M-114
3,5,6-Tri-*O*-methyl-D-mannofuranose, D-752
2,3,6-Tri-*O*-methylmannose; α -D-Pyranose-form, T-190
2,4,6-Tri-*O*-methylmannose; α -D-Pyranose-form, T-191
2,4,6-Tri-*O*-methylmannose; β -D-Pyranose-form, T-191
3,4,6-Tri-*O*-methylmannose; α -D-Pyranose-form, T-192
2,3,6-Tri-*O*-methylmannose; D-form, T-190
2,4,6-Tri-*O*-methylmannose; D-form, T-191
2,3,4-Tri-*O*-methyl-D-mannose, D-748

talo-Hexoses

3-*O*-Acetyl-1,6-anhydro-2,4-di-*O*-benzyl- β -D-talopyranose, A-707
6-*O*-Acetyl-3-*O*-benzoyl-5-chloro-5-deoxy-1,2-*O*-isopropylidene- β -L-talofuranose, C-105
3-*O*-Acetyl-1,2,5,6-di-*O*-isopropylidene- β -D-talofuranose, I-75
2-Amino-2-deoxytalose; D-form, A-340
1,6-Anhydro-5-*O*-benzoyl-2,3-*O*-isopropylidene- α -L-talofuranose, A-707
1,6-Anhydro-5-*O*-benzoyl- α -L-talofuranose, A-707
1,6-Anhydro-2,4-di-*O*-benzyl- β -D-talopyranose, A-707
1,6-Anhydro-2,3-*O*-isopropylidene- α -L-talofuranose, A-707
1,5-Anhydro-2,3-*O*-isopropylidene- α -D-talofuranose, A-703
1,5-Anhydro-2,3-*O*-isopropylidene-L-talofuranose, A-703
1,6-Anhydro-3,4-*O*-isopropylidene- β -D-talopyranose, A-707
1,5-Anhydro-2,3-*O*-isopropylidene-6-*O*-tosyl- α -D-talofuranose, A-703
1,4-Anhydrotalopyranose; D-form, A-703
1,6-Anhydrotalose; α -D-Furanose-form, A-707
1,6-Anhydrotalose; β -D-Pyranose-form, A-707
2,5-Anhydrotalose; D-form, A-709
1,6-Anhydro-2,3,4-tri-*O*-benzoyl- β -D-talopyranose, A-707
2,5-Anhydro-3,4,6-tri-*O*-benzoyl-L-talose dimethyl acetal, A-709
1,6-Anhydro-2,3,4-tri-*O*-benzyl- β -D-talopyranose, A-707
1,2-Anhydro-3,4,6-tri-*O*-benzyl- β -D-talopyranose, A-705
1,3-Anhydro-2,4,6-tri-*O*-benzyl- β -D-talopyranose, A-706
2,5-Anhydro-3,4,6-tri-*O*-benzyl-L-talose dimethyl acetal, A-709
Antibiotic SS-56B, 9CI, A-776
6-*O*-Benzoyl-1,2-*O*-isopropylidene-3-*O*-methyl- β -L-talofuranose, I-75
3-*O*-Benzoyl-1,2-*O*-isopropylidene- β -L-talofuranose, I-75
Benzyl 4,6-*O*-(*S*)-benzylidene-2-deoxy-2-iodo- α -D-talopyranoside, D-275
3-*O*-Benzyl-1,2,5,6-di-*O*-isopropylidene- β -L-talofuranose, I-75
3-*O*-Benzyl-1,2-*O*-isopropylidene-5-*O*-tosyl-6-*O*-trityl- β -L-talofuranose, I-75
3-*O*-Benzyl-1,2-*O*-isopropylidene-6-*O*-trityl- β -L-talofuranose, I-75
5-Chloro-5-deoxytalose; D-form, C-105
2-Deoxy-2-fluorotalose; β -D-Pyranose-form; Trifluoromethyl glycoside, tri-Ac, D-111
2-Deoxy-2-fluorotalose; α -D-Pyranose-form, D-111
2-Deoxy-2-fluorotalose; β -D-Pyranose-form, D-111
6-Deoxytalofuranosyl bromide; α -L-form; Tris(4-nitrobenzoyl), D-371
3,4-Di-*O*-acetyl-2-bromo-2,6-dideoxy- α -L-talopyranosyl bromide, B-110
3,4-Di-*O*-acetyl-2-chloro-2,6-dideoxy- β -L-talopyranosyl chloride, C-116
1,6,2,3-Dianhydro-5-*O*-benzoyl- α -L-talofuranose, D-513
1,6,2,3-Dianhydrotalopyranose; β -D-form, D-514
1,6,3,4-Dianhydrotalose; D-form, D-515
5,6-Di-*O*-benzoyl-3-*O*-benzyl-1,2-*O*-isopropylidene- β -L-talofuranose, I-75
3,5-Di-*O*-benzoyl-5-deoxy-5-iodo-1,2-*O*-isopropylidene- β -L-talofuranose, D-276
5,6-Di-*O*-benzoyl-1,2-*O*-isopropylidene-3-*O*-methyl- β -L-talofuranose, I-75
1,2,5,6-Di-*O*-isopropylidene- β -D-talofuranose, I-75
1,2,5,6-Di-*O*-isopropylidene- β -L-talofuranose, I-75
1,2,5,6-Di-*O*-isopropylidene-3-*O*-tosyl- β -D-talofuranose, I-75
1,2,5,6-Di-*O*-isopropylidene-3-*O*-tosyl- β -L-talofuranose, I-75
1,2-*O*-Isopropylidene-5,6-di-*O*-mesyl-3-*O*-methyl- β -L-talofuranose, I-75
1,2-*O*-Isopropylidene-3-*O*-methyl- β -L-talofuranose, I-75
1,2-*O*-Isopropylidenetalose; β -L-Furanose-form, I-75
Methyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-talopyranoside, A-708
Methyl 2,3-anhydro-4,6-*O*-benzylidene- β -D-talopyranoside, A-708
Methyl 2,6-anhydro-3,4-di-*O*-methyl- β -D-talopyranoside, A-710
Methyl 2,6-anhydro-3,4-*O*-isopropylidene- α -D-talopyranoside, A-710
Methyl 2,6-anhydro-3,4-*O*-isopropylidene- β -D-talopyranoside, A-710
Methyl 2,6-anhydro- α -D-talopyranoside, A-710
Methyl 2,6-anhydro- β -D-talopyranoside, A-710
Methyl 4-bromo-4-deoxy- α -D-talopyranoside, B-97
Methyl 4-bromo-4-deoxy-6-*O*-trityl- α -D-talopyranoside, B-97
Methyl 2-deoxy-2-iodo- α -D-talopyranoside, D-275

Methyl 2,3-diacetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-talopyranoside, D-457
 Methyl 2,3-diacetamido-2,3-dideoxy- α -D-talopyranoside, D-457
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-talopyranoside, A-710
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-talopyranoside, A-710
 Methyl 2,6-di-*O*-acetyl-3,4-anhydro- α -DL-talopyranoside, A-711
 Methyl 5,6-di-*O*-benzoyl-2,3-*O*-isopropylidene- α -L-talofuranoside, T-9
 Methyl 2,3-*O*-isopropylidene- α -L-talofuranoside, T-9
 Methyl α -D-talofuranoside, T-9
 Methyl β -D-talofuranoside, T-9
 Methyl α -D-talopyranoside, T-9
 Methyl β -D-talopyranoside, T-9
 Methyl 2,3,5,6-tetra-*O*-acetyl-4-thio- α -D-talofuranoside, T-93
 Methyl 2,3,5,6-tetra-*O*-benzyl-4-thio- α -D-talofuranoside, T-93
 Methyl 4-thio- α -D-talofuranoside, T-93
 Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- α -D-talopyranoside, B-97
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-iodo- α -D-talopyranoside, D-275
 Methyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- α -D-talopyranoside, T-9
 Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-methyl- α -D-talopyranoside, D-314
 1,2,3,4,6-Penta-*O*-acetyl- α -D-talopyranose, T-9
 1,2,3,5,6-Penta-*O*-benzoyl- α -D-talofuranoside, T-9
 2,3,4,5,6-Penta-*O*-benzyl-D-talose, T-9
 Talose; *L*-form; *N*-Methyl-*N*-phenylhydrazone, T-9
 Talose; α -D-Furanose-form, T-9
 Talose; α -D-Pyranose-form, T-9
 Talose; β -D-Pyranose-form, T-9
 Talose; *L*-form, T-9
 1,2,3,6-Tetra-*O*-acetyl-5-*O*-methyl- α -L-talofuranose, T-9
 2,3,4,6-Tetra-*O*-acetyl- α -D-talopyranosyl bromide, T-7
 2,3,4,6-Tetra-*O*-benzoyl-2-*C*-chloro- α -D-talopyranosyl chloride, C-121
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- α -D-talofuranose, A-707
 2,3,6-Tri-*O*-acetyl-1,5-anhydro- α -D-talofuranose, A-703
 3,5,6-Tri-*O*-benzoyl-1,2-*O*-isopropylidene- β -L-talofuranose, I-75

Higher aldoses

6-Acetamido-6,8-dideoxy-1,2,3,4-di-*O*-isopropylidene-D-*erythro*- α -D-galacto-octopyranose, 8C1, L-43
 6-Acetamido-1,2,3,4,7-penta-*O*-acetyl-6,8-dideoxy-D-*erythro*- α -D-galacto-octopyranose, L-43
 6-Acetamido-1,2,3,4,7-penta-*O*-acetyl-6,8-dideoxy-D-*erythro*- β -D-galacto-octopyranose, L-43
 7-*O*-Acetyl-6-deoxy-1,2,3,4-di-*O*-isopropylidene- α -D-galacto-heptopyranose, D-157
 1-*N*-Amidino-1-*N*-demethyl-2-hydroxydestomycin A, D-390
 6-Amino-6,8-dideoxy-7-*O*-methyl-D-*erythro*-D-galacto-octose, 9C1, L-43
 2,6-Anhydro-3-deoxy-*lyxo*-hept-2-enose; *D*-form, A-531
 1,6-Anhydro-2,3,4-tri-*O*-benzyl-7,8-dideoxy-L-*glycero*- β -D-*gluco*-octopyranose, A-601
 Antibiotic KA 6606IX, A-755
 Antibiotic KA 6606VIII, A-755
 Antibiotic KA 6606V, A-755
 Antibiotic KA 6606XIII, A-755
 Antibiotic KA 6606XI, S-68
 Antibiotic KA 6606X, A-755
 Antibiotic RH 5012C, D-390
 Antibiotic SF 1854, F-26
 Antibiotic Y 02077H γ , A-780
 Antibiotic Y 02077H δ , A-780
 Benzyl 2,3,4-tri-*O*-benzyl-L-*glycero*- β -D-*manno*-heptopyranoside, H-50
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene-5,7-di-*O*-methyl- α -D-galacto-heptofuranose, D-157
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- β -D-*altro*-heptofuranose, D-156
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-galacto-heptofuranose, D-157
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- α -L-galacto- α -L-heptofuranose, D-157
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-*gluco*-heptofuranose, D-158
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- β -L-*ido*-heptofuranose, D-163
 7-*O*-Benzyl-1,2,3,4-di-*O*-isopropylidene-L-*glycero*- α -D-galacto-heptopyranose, H-38
 3,5-*O*-Benzylidene-6-deoxy-1,2-*O*-isopropylidene- α -D-*gluco*-heptofuranose, D-158
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene-5,7-di-*O*-methyl- α -L-galacto-heptofuranose, D-157
 Boholmycin, B-46
 Caryophyllose, C-31
 Celesticetin C, C-35
 Celesticetin, C-35
 Dactimicin, D-1
N-Demethylcelesticetin, C-35
O-Demethylcelesticetin, C-35
 3-*O*-Demethylfortimicin A, F-26
 4'-Demethylgentamicin C₁, G-227
 4'-Demethylgentamicin C₂, G-227
 6-Deoxy-1,2,3,4-di-*O*-isopropylidene- α -D-galacto-heptopyranose, D-157
 7-Deoxy-galacto-heptopyranos-6-ulose; α -D-form; 1,2,3,4-Di-*O*-isopropylidene, D-154
 7-Deoxy-galacto-heptopyranos-6-ulose; α -D-form, D-154
 7-Deoxy-L-*glycero*-L-galacto-heptose; α -Pyranose-form; Penta-Ac, D-159
 7-Deoxy-L-*glycero*-L-galacto-heptose; β -Pyranose-form; Penta-Ac, D-159
 6-Deoxy-*ido*-heptose; *L*-form; Penta-Ac, D-163
 6-Deoxy-*gluco*-heptose; α -D-Furanose-form; 1,2-Isopropylidene, 3,5-benzylidene(*R*-), 7-tosyl, D-158
 6-Deoxy-*altro*-heptose; β -D-Furanose-form, D-156
 6-Deoxy-*altro*-heptose; β -L-Furanose-form, D-156
 6-Deoxy-*ido*-heptose; β -L-Furanose-form, D-163
 6-Deoxy-*manno*-heptose; α -D-Furanose-form, D-164
 6-Deoxy-*manno*-heptose; α -D-Pyranose-form; Me glycoside, 7-*O*-*tert*-butyldiphenylsilyl, D-164
 6-Deoxy-*manno*-heptose; α -D-Pyranose-form; Me glycoside, 2,3-isopropylidene, 7-*O*-*tert*-butyldiphenylsilyl, D-164
 6-Deoxy-*gluco*-heptose; α -D-Pyranose-form; Me glycoside, 2,3,4-tribenzyl, 7-methanesulfonyl, D-158
 6-Deoxy-*altro*-heptose; α -D-Pyranose-form, D-156
 6-Deoxy-*allo*-heptose; *D*-form, D-155
 6-Deoxy-*altro*-heptose; *D*-form, D-156
 6-Deoxy-galacto-heptose; *D*-form, D-157
 6-Deoxy-galacto-heptose; *L*-form, D-157
 6-Deoxy-*gluco*-heptose; *D*-form, D-158
 6-Deoxy-*gulo*-heptose; *L*-form, D-162
 6-Deoxy-*ido*-heptose; *L*-form, D-163
 6-Deoxy-*manno*-heptose; *D*-form, D-164
 6-Deoxy-*talo*-heptose; *D*-form, D-165
 6-Deoxy-*talo*-heptose; *L*-form, D-165
 6-Deoxy-*gluco*-heptose, D-158
 7-Deoxy-L-*glycero*-L-galacto-heptose, D-159
 7-Deoxy-D-*glycero*-D-*gluco*-heptose, D-160
 7-Deoxy-L-*glycero*-D-*gluco*-heptose, D-161
 6-Deoxy-*gulo*-heptose, D-162
 6-Deoxy-1,2-*O*-isopropylidene- β -L-*ido*-heptofuranose, D-163
 Destomycin A, D-390
 Destomycin B, D-390
 Destomycin C, D-390
 4,7-Di-*O*-acetyl-3-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-*gluco*-heptofuranose, D-158
 5,7-Di-*O*-acetyl-3-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene- β -L-*ido*-heptofuranose, D-163
 5,7-Di-*O*-acetyl-6-deoxy-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-*gluco*-heptofuranose, D-158
 3,7-Di-*O*-acetyl-1,2,5,6-di-*O*-isopropylidene-D-*glycero*-L-*gluco*- β -heptofuranose, H-41
 3,5-Di-*O*-acetyl-1,2,6,7-di-*O*-isopropylidene-D-*glycero*-L-*gluco*- β -heptofuranose, H-41
 1,5-Di-*O*-acetyl-2,3,6,7-di-*O*-isopropylidene- β -D-*glycero*-L-*manno*-heptofuranose, H-49
 6,7-Di-*O*-acetyl-1,2,3,4-di-*O*-isopropylidene-D-*glycero*-D-galacto- α -heptopyranose, H-36
 1,2-Di-*O*-acetyl-3,4,6,7-di-*O*-isopropylidene-L-*glycero*- α -L-*talo*-heptopyranose, H-53
 3,5-Di-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene- β -L-*altro*-heptofuranose, D-156
N,*O*-Didemethylcelesticetin, C-35
 7,8-Dideoxy-galacto-oct-7-enopyranos-6-ulose; α -D-form; 1,2,3,4-Di-*O*-isopropylidene, D-647
 7,8-Dideoxy-galacto-octopyranos-6-ulose; α -D-form; 1,2,3,4-Di-*O*-isopropylidene, D-648
 7,8-Dideoxy-galacto-octopyranos-6-ulose; α -D-form, D-648
 7,8-Dideoxy-galacto-oct-7-ynopyranos-6-ulose; α -D-form; 1,2,3,4-Di-*O*-isopropylidene, D-649
 7,8-Dideoxy-galacto-oct-7-ynopyranos-6-ulose; α -D-form, D-649
 Di-1-glucosylmethane; α , α -form, D-668
 Di-1-glucosylmethane; α , β -form, D-668
 Di-1-glucosylmethane; β , β -form, D-668
 1,2,5,6-Di-*O*-isopropylidene-D-*glycero*-L-*gluco*- β -heptofuranose, H-41
 1,2,6,7-Di-*O*-isopropylidene-D-*glycero*-L-*gluco*- β -heptofuranose, H-41
 2,3,5,6-Di-*O*-isopropylidene-D-*glycero*-D-*gulo*-heptofuranose, H-43
 2,3,6,7-Di-*O*-isopropylidene- β -D-*glycero*-L-*manno*-heptofuranose, H-49
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 D-glycero-L-gluco-Heptose; Di-Et dithioacetal, H-41
 D-glycero-D-gulo-Heptose; Di-Et dithioacetal, H-43
 L-glycero-L-gulo-Heptose; Di-Et dithioacetal, H-44
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 D-glycero-L-manno-Heptose; Di-Et dithioacetal, H-49
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 L-glycero-L-galacto-Heptose; Phenylhydrazine, H-39
 L-glycero-L-galacto-Heptose; Phenyllosazone, H-39
 L-glycero-D-manno-Heptose; 1-Phosphate, H-50
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 D-glycero-D-gluco-Heptose; β-Pyranose-form; Hexa-Ac, H-40
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 D-glycero-D-manno-Heptose; α-Pyranose-form; Me glycoside, 6,7-*O*-isopropylidene, 4-Ac, H-48
 D-glycero-D-altro-Heptose; α-Pyranose-form; Me glycoside, 3-*O*-Me, H-34
 D-glycero-D-altro-Heptose; α-Pyranose-form; Me glycoside, penta-Ac, H-34
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 D-glycero-L-gluco-Heptose; β-Pyranose-form, H-41
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 D-glycero-D-gulo-Heptose, H-43
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 1,2,3,4,6,7-Hexa-*O*-acetyl-L-glycero-D-galacto-heptose, H-38
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 Methyl 4-acetamido-4-deoxy-α-D-glycero-D-galacto-D-gluco-undecopyranoside, H-122
 Methyl 4-acetamido-4-deoxy-β-D-glycero-D-galacto-D-gluco-undecopyranoside, H-122
 Methyl 6-acetamido-6,8-dideoxy-1-thio-D-erythro-α-D-galacto-octopyranoside, 8CI, L-43
 Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-6,8-dideoxy-1-thio-D-erythro-α-D-galacto-octopyranoside, L-43
 Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-1-thio-D-erythro-β-D-galacto-octopyranoside, L-43
 Methyl 6-amino-6,8-dideoxy-3,4-*O*-isopropylidene-1-thio-D-erythro-α-D-galacto-octopyranoside, 8CI, L-43
 Methyl 6-amino-6,8-dideoxy-7-*O*-methyl-1-thio-D-erythro-α-D-galacto-octopyranoside, 9CI, L-43
 Methyl 6-amino-6,8-dideoxy-7-*O*-methyl-1-thio-D-erythro-β-D-galacto-octopyranoside, 9CI, L-43
 Methyl 6-amino-6,8-dideoxy-1-thio-D-erythro-α-D-galacto-octopyranoside, 9CI, 8CI, L-43
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 Methyl 6-deoxy-α-D-altro-heptopyranoside, D-156
 Methyl 7-deoxy-L-glycero-L-galacto-α-heptopyranoside, D-159
 Methyl 7-deoxy-L-glycero-L-galacto-β-heptopyranoside, D-159
 Methyl 6-deoxy-α-D-manno-heptopyranoside, D-164
 Methyl 6-deoxy-α-D-talo-heptopyranoside, D-165
 Methyl 6-deoxy-2,3-*O*-isopropylidene-β-L-gulo-heptofuranoside, D-162
 Methyl 6-deoxy-2,3-*O*-isopropylidene-α-D-manno-heptofuranoside, D-164
 Methyl 6-deoxy-2,3-*O*-isopropylidene-α-L-talo-heptofuranoside, D-165
 Methyl 6-deoxy-2,3-*O*-isopropylidene-7-*O*-tert-butylidiphenylsilyl-α-D-talo-heptopyranoside, D-165
 Methyl 5,7-di-*O*-acetyl-6-deoxy-2,3-*O*-isopropylidene-β-L-gulo-heptofuranoside, D-162
 Methyl 5,7-di-*O*-acetyl-6-deoxy-2,3-isopropylidene-α-D-heptofuranoside, D-164
 Methyl 2,3-di-*O*-benzyl-6-deoxy-β-D-gluco-heptopyranoside, D-158
 Methyl 2,3-di-*O*-benzyl-6-deoxy-4-*O*-methoxymethyl-α-D-gluco-heptopyranoside, D-158
 Methyl 5,6-dideoxy-2,3,8,9:10,11-tri-*O*-isopropylidene-L-lyxo-α-L-talo-undec-5-enodialdo-1,4-furanoside-11,7-pyranose; (*E*)-form, M-173
 Methyl 5,6-dideoxy-2,3,8,9:10,11-tri-*O*-isopropylidene-L-lyxo-α-L-talo-undec-5-enodialdo-1,4-furanoside-11,7-pyranose; (*Z*)-form, M-173
 Methyl 2,3,6,7-di-*O*-isopropylidene-L-glycero-β-L-allo-heptofuranoside, H-33
 Methyl 2,3,6,7-di-*O*-isopropylidene-β-D-allo-heptopyranos-4-uloside, H-54
 Methyl D-glycero-α-L-glucoheptopyranoside, H-41
 Methyl D-glycero-D-gulo-α-heptofuranoside, H-43
 Methyl D-glycero-D-gulo-β-heptofuranoside, H-43
 Methyl L-glycero-α-D-manno-heptofuranoside, H-50
 Methyl D-glycero-D-galacto-α-heptopyranoside, H-36
 Methyl D-glycero-β-D-galacto-heptopyranoside, H-36
 Methyl D-glycero-β-L-gluco-heptopyranoside, H-41
 Methyl L-glycero-α-D-gluco-heptopyranoside, H-42
 Methyl D-glycero-D-gulo-α-heptopyranoside, H-43
 Methyl D-glycero-D-gulo-β-heptopyranoside, H-43
 Methyl β-D-glycero-L-manno-heptopyranoside, H-49
 Methyl D-glycero-α-D-talo-heptopyranoside, H-51
 Methyl D-glycero-β-D-talo-heptopyranoside, H-51
 Methyl 2,3,4,6,7-penta-*O*-acetyl-L-glycero-α-D-galacto-heptopyranoside, H-38
 Methyl 2,3,4,6,7-penta-*O*-benzyl-L-glycero-β-D-allo-heptopyranoside, H-32
 Methyl 2,3,4,7-tetra-*O*-acetyl-6-deoxy-α-D-altro-heptopyranoside, D-156
 Methyl 2,3,4,7-tetra-*O*-acetyl-6-deoxy-α-D-manno-heptopyranoside, D-164
 Methyl 2,3,4,7-tetra-*O*-acetyl-6-deoxy-α-D-talo-heptopyranoside, D-165
 Methyl 2,3,4,7-tetra-*O*-benzyl-D-glycero-α-D-galacto-heptopyranoside, H-36
 Methyl 2,3,4-tri-*O*-benzyl-6-deoxy-α-D-altro-heptopyranoside, D-156
 Methyl 2,4,7-tri-*O*-benzyl-6-deoxy-α-D-altro-heptopyranoside, D-156
 Methyl 2,3,4-tri-*O*-benzyl-6-deoxy-α-D-gluco-heptopyranoside, D-158

Methyl 2,3,4-tri-*O*-benzyl-6-deoxy- α -D-manno-heptopyranoside, D-164
 Methyl 2,4,7-tri-*O*-benzyl-6-deoxy- α -D-manno-heptopyranoside, D-164
 Methyl 2,3,4-tri-*O*-benzyl-1-*glycero*- β -D-allo-heptopyranoside, H-32
 Methyl 2,3,4-tri-*O*-benzyl-1-*glycero*- α -D-gluco-heptopyranoside, H-42
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 D-erythro-D-galacto-Octose, O-14
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 v-Octose, O-17
 L-*glycero*-D-galacto-7-Octulose; α -Pyranose-form;
 1,2,3,4-Di-*O*-isopropylidene, trimethylene dithioacetal, 8-Ac, O-22
 L-*glycero*-D-galacto-7-Octulose; α -Pyranose-form;
 1,2,3,4-Di-*O*-isopropylidene, trimethylene dithioacetal, 6,8-di-Ac, O-22
 1,2,3,4,7-Penta-*O*-acetyl-6-deoxy- α -D-allo-heptopyranose, D-155
 1,2,3,4,7-Penta-*O*-acetyl-6-deoxy- α -D-manno-heptopyranose, D-164
 1,2,3,4,7-Penta-*O*-acetyl-6-deoxy- α -L-talo-heptopyranose, D-165
 1,2,3,4,7-Penta-*O*-acetyl-6-deoxy- β -L-talo-heptopyranose, D-165
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 1,2,3,4,6,7-Tri-*O*-isopropylidene-D-*glycero*-D-galacto- α -heptopyranose,
 H-36
 1,2,3,4,6,7-Tri-*O*-isopropylidene-D-*glycero*-L-galacto- β -heptopyranose,
 H-37

erythro-Pentuloses

Anthranelic deoxyribulotide, C-16
 4-*O*-Benzoyl-3,5-*O*-benzylidene-1-deoxy-D-erythro-2-pentulose, T-176
 4-*O*-Benzyl-1-deoxy-3,5-*O*-ethylidene-D-erythro-2-pentulose, T-176
 3,5-*O*-Benzylidene-1-deoxy-erythro-pentulose; D-form, B-25
 3,5-*O*-Benzylidene-1-deoxy-D-erythro-2-pentulose, T-176
 1-(2-Carboxyanilino)-1-deoxyribulose; D-form, C-16
 1,2,3,4-Di-*O*-isopropylidene- α -D-erythro-2-pentulose, P-47
 1,2,3,4-Di-*O*-isopropylidene- β -D-erythro-2-pentulose, P-47
 D-erythro-form, T-176
 Methyl α -L-erythro-2-pentulofuranoside, P-47
 Methyl β -L-erythro-2-pentulofuranoside, P-47
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 erythro-2-Pentulose; D-form, P-47
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5-*O*-Benzyl-1-deoxy-3,4-*O*-isopropylidene-L-erythro-2-pentulose, T-176
 1-Deoxy-D-xylulose, T-176
 2,3-*O*-Isopropylidene- β -D-threo-pentulofuranose, P-48
 Methyl α -D-threo-pentulofuranoside, P-48
 Methyl β -D-threo-pentulofuranoside, P-48
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 threo-Pentos-2-ulose; L-form, P-45
 threo-2-Pentulose; D-form, P-48
 threo-2-Pentulose; L-form, P-48

fructo-Hexuloses

3-*O*-Acetyl-4,5-di-*O*-benzoyl-1,2-*O*-isopropylidene- β -D-fructopyranose,
 I-62
 1-*O*-Acetyl-2,3,4,5-di-*O*-benzylidene- β -D-fructopyranose, F-84
 3-*O*-Acetyl-1,2,4,5-di-*O*-isopropylidene- β -D-fructopyranose, D-714
 5-*O*-Acetyl-1,2-*O*-isopropylidene-3,4-di-*O*-mesyl- β -D-fructopyranose,
 I-62
 3-*O*-Acetyl-1,2-*O*-isopropylidene-4,5-di-*O*-tosyl- β -D-fructopyranose,
 I-62
 3-*O*-Acetyl-1,2-*O*-isopropylidene- β -D-fructopyranose, I-62
 2-*O*-Acetyl-1,3,4,6-tetra-*O*-benzoyl- β -D-fructofuranose, F-84
 2-*O*-Acetyl-1,3,4,5-tetra-*O*-benzoyl- β -D-fructopyranose, F-84
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 Allyl 1,3,4,5-tetra-*O*-benzoyl- β -D-fructopyranoside, A-91
 1-Amino-1-deoxy-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, A-184
 6-Amino-6-deoxyfructose; D-form; 6*N*-Phosphonyl, 1-dihydrogen
 phosphate, A-186
 6-Amino-6-deoxyfructose; D-form; *N*-Trifluoroacetyl, A-186
 1-Amino-1-deoxyfructose; α -D-Furanose-form, A-184
 5-Amino-5-deoxyfructose; β -D-Pyranose-form, A-185
 6-Amino-6-deoxyfructose; D-form, A-186
 1-Amino-1-deoxyfructose; D-form, A-184
 3,6-Anhydrofructose; D-form, A-607
 1,2-Anhydro-3,4,5-tri-*O*-benzyl- β -D-fructopyranose, A-604
 6-Azido-6-deoxyfructose; D-form, A-901
 6-Azido-3,4-di-*O*-benzyl-6-deoxy- β -D-fructofuranose, A-901

6-*O*-Benzoyl-1-bromo-1-deoxy-2,3-*O*-isopropylidene- β -D-fructofuranose,
 B-67
 3-*O*-Benzoyl-1,2-*O*-isopropylidene-4,5-di-*O*-tosyl- β -D-fructopyranose,
 I-62
 6-*O*-Benzoyl-1,2-*O*-isopropylidene- β -D-fructofuranose, I-62
 3-*O*-Benzoyl-1,2-*O*-isopropylidene- β -D-fructopyranose, I-62
 1-*O*-Benzyl-3-deoxy-3-fluoro-D-fructose, D-74
 1-Bromo-1-deoxy-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, B-67
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 Butyl β -D-fructopyranoside, F-84
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 1-Chloro-1-deoxy-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, C-79
 1-Chloro-1-deoxyfructose; D-form, C-79
 6-Chloro-6-deoxyfructose; D-form, C-81
 4-Chloro-4-deoxy-2,3-*O*-isopropylidene-1,6-di-*O*-tosyl- β -D-
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 1-Chloro-1-deoxy-2,3-*O*-isopropylidene- β -D-fructofuranose, C-79
 6-Chloro-6-deoxy-2,3-*O*-isopropylidene- β -D-fructofuranose, C-81
 6-Chloro-6-deoxy-2,3-*O*-isopropylidene-1-*O*-tosyl- β -D-fructofuranose,
 C-81
 1-Deoxy-2,3,4,5-di-*O*-isopropylidene-3-*C*-methyl- β -D-arabino-
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 1-Deoxy-3,4,5,6-di-*O*-isopropylidene-3-*C*-methyl-D-arabino-hex-2-ulose,
 D-299
 1-Deoxy-1-fluoro-2,3,4,5-di-*O*-isopropylidene-D-fructose, D-73
 4-Deoxy-4-fluorofructose; β -D-Pyranose-form, D-75
 1-Deoxy-1-fluorofructose; D-form, D-73
 3-Deoxy-3-fluorofructose; D-form, D-74
 6-Deoxy-6-fluorofructose, D-76
 6-Deoxy-6-fluoro-2,3-*O*-isopropylidene-1-*O*-tosyl- β -D-fructofuranose,
 D-76
 6-Deoxy-arabino-2-hexulose; D-form, D-218
 6-Deoxy-arabino-2-hexulose; L-form, D-218
 3-Deoxy-erythro-2-hexulose; D-form, D-219
 1-Deoxy-1-iodo-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, D-254
 6-Deoxy-6-iodo-2,3-*O*-isopropylidene-1-*O*-tosyl- β -D-fructofuranose,
 D-256
 6-Deoxy-2,3-*O*-isopropylidene-1,6-di-*O*-tosyl- β -D-arabino-2-
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 6-Deoxy-2,3-*O*-isopropylidene- β -D-arabino-2-hexulofuranose, D-218
 3-Deoxy-5,6-*O*-isopropylidene-1-*O*-methyl-D-erythro-2-hexulose, D-219
 1-Deoxy-3-*C*-methylfructose; D-form, D-299
 4,5-Di-*O*-acetyl-3-*O*-benzoyl-1,2-*O*-isopropylidene- β -D-fructopyranose,
 I-62
 4,5-Di-*O*-acetyl-1,2-*O*-isopropylidene-3-*O*-tosyl- β -D-fructopyranose, I-62
 1,6-Diamino-1,6-dideoxy-2,3-*O*-isopropylidene- β -D-fructofuranose, D-416
 1,4,3,6-Dianhydrofructose; D-form, D-498
 1,4,3,6-Dianhydrosorbose; L-form, D-512
 4,5-Di-*O*-benzoyl-1,2-*O*-isopropylidene-3-*O*-tosyl- β -D-fructopyranose,
 I-62
 2,3,4,5-Di-*O*-benzylidene- β -D-fructopyranose, F-84
 2,3,4,5-Di-*O*-benzylidene-1-*O*-methyl- β -D-fructopyranose, F-84
 2,3,4,5-Di-*O*-benzylidene-1-*O*-tosyl- β -D-fructopyranose, F-84
 1,2,4,5-Di-*O*-cyclohexylidene- β -D-fructopyranose, F-84
 1,2,4,5-Di-*O*-isopropylidene-fructopyranose; β -L-form; 3-*O*-Benzyl, D-714
 1,2,4,5-Di-*O*-isopropylidene-fructopyranose; β -D-form, D-714
 1,2,4,5-Di-*O*-isopropylidene-fructopyranose; β -L-form, D-714
 2,3,4,5-Di-*O*-isopropylidene-fructopyranose; β -D-form, D-715
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 3,4,5,6-Di-*O*-isopropylidene-D-arabino-hex-2-ulosonic acid, H-111
 1,2,4,5-Di-*O*-isopropylidene-3-*O*-mesyl- β -D-fructopyranose, D-714
 1,2,4,5-Di-*O*-isopropylidene-3-*C*-methyl- β -D-fructopyranose, M-248
 2,3,4,5-Di-*O*-isopropylidene-1-*O*-methyl- β -D-fructopyranose, D-715
 2,3,4,5-Di-*O*-methylene-fructopyranose; β -D-form, D-729
 1,6-Di-*O*-tosyl- α -D-fructofuranose, F-84
 Ethyl D-arabino-hex-2-ulosonate, H-111
 Fosfructose, INN, F-85
 α -D-Fructofuranose- β -D-fructofuranose 1,2':2,6'-dianhydride, F-50
 Fructose 2,6-bis(dihydrogen phosphate); D-form, F-86
 Fructose 1-dihydrogen phosphate; D-form, F-87
 Fructose 6-dihydrogen phosphate; D-form, F-89
 Fructose 2-dihydrogen phosphate, F-88
 Fructose; L-form, F-84
 Fructose; D-form, F-84
 1-*O*-Galloylfructose, F-84
 arabino-2-Hexulosonic acid; D-form; 3,4,5,6-Di-*O*-isopropylidene, amide,
 H-111
 arabino-2-Hexulosonic acid; D-form; 3,4,5,6-Di-*O*-isopropylidene,
 Me ester, H-111
 arabino-2-Hexulosonic acid; D-form, H-111
 2,3-*O*-Isopropylidene-1,6-di-*O*-tosyl- β -D-fructofuranose, I-63
 2,3-*O*-Isopropylidene-1,6-di-*O*-trityl- β -D-fructofuranose, I-63
 1,2-*O*-Isopropylidene-fructose; β -D-Furanose-form, I-62

2,3-*O*-Isopropylidene-fructose; β -D-Furanose-*form*, I-63
 1,2-*O*-Isopropylidene-fructose; β -D-Pyranose-*form*, I-62
 1,2-*O*-Isopropylidene-3-*O*-mesyl- β -D-fructopyranose, I-62
 1,2-*O*-Isopropylidene-3-*O*-tosyl- β -D-fructopyranose, I-62
 1,2-*O*-Isopropylidene-3,4,5-tri-*O*-mesyl- β -D-fructopyranose, I-62
 2,3-*O*-Isopropylidene-1,4,6-tri-*O*-methyl- β -D-fructofuranose, I-63
 1,2-*O*-Isopropylidene-3,4,5-tri-*O*-methyl- β -D-fructopyranose, I-62
 1,2-*O*-Isopropylidene-3,4,5-tri-*O*-tosyl- β -D-fructopyranose, I-62
 Methyl 5-acetamido-4-*O*-acetyl-1,3-*O*-benzylidene-5-deoxy- β -D-fructopyranoside, A-185
 Methyl 5-acetamido-4-*O*-acetyl-1,3-*O*-benzylidene-5-deoxy- α -L-sorbofuranoside, A-336
 Methyl 5-acetamido-1,3-*O*-benzylidene-5-deoxy- β -D-fructopyranoside, A-185
 Methyl 1-acetamido-3,4,6-tri-*O*-acetyl-1-deoxy- β -D-fructofuranoside, A-184
 Methyl 5-amino-1,3-*O*-benzylidene-5-deoxy- β -D-fructopyranoside, A-185
 Methyl 5-amino-1,3-*O*-benzylidene-5-deoxy-4-*O*-mesyl- β -D-fructopyranoside, A-185
 Methyl 1-amino-1-deoxy- α -D-fructofuranoside, A-184
 Methyl 1-amino-1-deoxy- β -D-fructofuranoside, A-184
 Methyl 1,4-anhydro- β -D-fructopyranoside, A-605
 Methyl 5-*O*-benzoyl-1,3-*O*-benzylidene-4-*O*-mesyl- β -D-fructopyranoside, M-182
 Methyl 1,3-*O*-benzylidene-4,5-di-*O*-mesyl- β -D-fructopyranoside, M-182
 Methyl 1,3-*O*-benzylidene- β -D-fructopyranoside, M-182
 Methyl 1,3-*O*-benzylidene-4-*O*-mesyl- β -D-fructopyranoside, M-182
 Methyl 1,3-*O*-benzylidene-4-*O*-mesyl-5-*O*-methyl- β -D-fructopyranoside, M-182
 Methyl 1-bromo-1-deoxy- α -D-fructopyranoside, B-67
 Methyl 1-bromo-1-deoxy- β -D-fructopyranoside, B-67
 Methyl 1-chloro-1-deoxy- α -D-fructofuranoside, C-79
 Methyl 1-chloro-1-deoxy- β -D-fructofuranoside, C-79
 Methyl 6-chloro-6-deoxy- α -D-fructofuranoside, C-81
 Methyl 6-chloro-6-deoxy- β -D-fructofuranoside, C-81
 Methyl 6-chloro-6-deoxy-1-*O*-tosyl- α -D-fructofuranoside, C-81
 Methyl 6-chloro-6-deoxy-1-*O*-tosyl- β -D-fructofuranoside, C-81
 Methyl 3,5-di-*O*-acetyl-1,4-anhydro- β -D-fructopyranoside, A-605
 Methyl 3,4-di-*O*-methyl-1,6-di-*O*-tosyl- α -D-fructofuranoside, M-181
 Methyl 3,4-di-*O*-methyl-6-*O*-trityl- α -D-fructofuranoside, M-181
 Methyl fructofuranoside; β -D-*form*, M-181
 Methyl fructopyranoside; α -D-*form*, M-182
 Methyl fructopyranoside; β -D-*form*, M-182
 Methyl D-*arabino*-hex-2-ulosonate, H-111
 Methyl (methyl β -D-*arabino*-hex-2-ulopyranosid)onate, H-111
 Methyl 1-*O*-methyl- α -D-fructopyranoside, M-182
 Methyl 1,3,4,6-tetra-*O*-acetyl- α -D-fructofuranoside, M-181
 Methyl 1,3,4,5-tetra-*O*-acetyl- α -D-fructopyranoside, M-182
 Methyl 1,3,4,5-tetra-*O*-acetyl- β -D-fructopyranoside, M-182
 Methyl 3,4,5,6-tetra-*O*-acetyl-D-*arabino*-hex-2-ulosonate, H-111
 Methyl 1,3,4,6-tetra-*O*-benzoyl- α -D-fructofuranoside, M-181
 Methyl 1,3,4,5-tetra-*O*-benzoyl- α -D-fructopyranoside, M-182
 Methyl 1,2,3,4-tetra-*O*-benzoyl- β -D-fructopyranoside, M-182
 Methyl 1-*O*-tosyl- α -D-fructofuranoside, M-181
 Methyl 3,4,6-tri-*O*-acetyl-1-chloro-1-deoxy- α -D-fructofuranoside, C-79
 Methyl 3,4,6-tri-*O*-acetyl-1-chloro-1-deoxy- β -D-fructofuranoside, C-79
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-iodo- β -D-fructofuranoside, D-255
 Methyl 3,4,5-tri-*O*-acetyl-1-*O*-methyl- α -D-fructopyranoside, M-182
 Methyl 1,3,4-tri-*O*-benzyl- β -D-fructofuranoside, M-181
 Methyl 3,4,6-tri-*O*-benzyl- β -D-fructofuranoside, M-181
 Methyl 3,4,6-tri-*O*-methyl- α -D-fructofuranoside, M-181
 Methyl 3,4,6-tri-*O*-methyl-1-*O*-tosyl- α -D-fructofuranoside, M-181
 Nicofuranose, N-44
 1,2,3,4,6-Penta-*O*-acetyl- α -D-fructofuranose, F-84
 1,2,3,4,6-Penta-*O*-acetyl- β -D-fructofuranose, F-84
 1,2,3,4,5-Penta-*O*-acetyl- α -D-fructopyranose, F-84
 1,2,3,4,5-Penta-*O*-acetyl- β -D-fructopyranose, F-84
 1,3,4,5,6-Penta-*O*-acetyl-D-fructose, F-84
 1,3,4,5,6-Penta-*O*-benzoyl-D-fructose, F-84
 Stockiol, M-181
 1,3,4,5-Tetra-*O*-acetyl-6-*S*-acetyl-6-thio-D-fructose, T-62
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-D-fructose, B-67
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-L-fructose, B-67
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-DL-fructose, B-67
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-D-fructose, C-79
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-L-fructose, C-79
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-DL-fructose, C-79
 1,3,4,5-Tetra-*O*-acetyl-6-chloro-6-deoxy-D-fructose, C-81
 3,4,5,6-Tetra-*O*-acetyl-1-deoxy-1-iodo-D-fructose, D-254
 1,3,4,6-Tetra-*O*-acetyl- α -D-fructofuranosyl fluoride, F-55
 1,3,4,6-Tetra-*O*-acetyl- β -D-fructofuranosyl fluoride, F-55
 1,3,4,5-Tetra-*O*-acetyl- β -D-fructopyranose, F-84
 1,3,4,5-Tetra-*O*-acetyl- β -D-fructopyranosyl bromide, F-79

1,3,4,5-Tetra-*O*-acetyl- β -D-fructopyranosyl chloride, F-80
 1,3,4,5-Tetra-*O*-acetyl- β -D-fructopyranosyl fluoride, F-81
 2,3,4,5-Tetra-*O*-acetyl-1-*O*-methyl- β -D-fructopyranose, F-84
 1,3,4,5-Tetra-*O*-acetyl-6-thio- β -D-fructopyranose, T-62
 1,2,4,5-Tetra-*O*-benzoyl-3-deoxy- β -D-*erythro*-hex-2-ulopyranose, D-219
 1,3,4,6-Tetra-*O*-benzoyl- α -D-fructofuranose, F-84
 1,3,4,6-Tetra-*O*-benzoyl-D-fructofuranosyl bromide, F-53
 1,3,4,5-Tetra-*O*-benzoyl- β -D-fructopyranose, F-84
 1,3,4,5-Tetra-*O*-benzoyl- β -D-fructopyranosyl chloride, F-80
 1,3,4,6-Tetra-*O*-benzyl-D-fructose, F-84
 6-Thiofructose; β -D-Pyranose-*form*, T-62
 6-Thiofructose; D-*form*, T-62
 1-*O*-Tosyl- β -D-fructofuranose, F-84
 3-*O*-Tosyl- β -D-fructofuranose, F-84
 1,4,5-Tri-*O*-acetyl-3,6-anhydro-D-fructose, A-607
 3,4,5-Tri-*O*-acetyl-1,2-*O*-isopropylidene- β -D-fructofuranose, I-62
 3,4,6-Tri-*O*-acetyl-1,2-*O*-isopropylidene- β -D-fructofuranose, I-62
 1,4,6-Tri-*O*-acetyl-2,3-*O*-isopropylidene- β -D-fructofuranose, I-63
 3,4,5-Tri-*O*-acetyl-1,2-*O*-isopropylidene- β -D-fructopyranose, I-62
 3,4,5-Tri-*O*-benzoyl-1-deoxy-1-iodo- β -D-fructopyranose, D-254
 1,4,6-Tri-*O*-benzoyl-2,3-*O*-isopropylidene- β -D-fructofuranose, I-63
 1,4,5-Tri-*O*-benzoyl-3-*O*-mesyl- β -D-fructopyranosyl bromide, F-79
 1,4,5-Tri-*O*-benzoyl-3-*O*-mesyl- β -D-fructopyranosyl chloride, F-80

psico-Hexuloses

4-Acetamido-3,5-di-*O*-acetyl-4-deoxy-1,2-*O*-isopropylidene-4-*C*-methyl- β -D-psicopyranose, A-321
 1-Acetamido-3,4,5,6-tetra-*O*-acetyl-1-deoxy-D-psicose, A-323
 2,6-Anhydro-3,4-*O*-benzylidene-1-*O*-trityl- β -D-psicofuranose, A-683
 2,6-Anhydro-3,4-*O*-isopropylidene-1-*O*-trityl- β -D-psicofuranose, A-683
 6-*O*-Benzoyl-1-deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -D-psicofuranose, D-311
 6-Deoxy-1,2,3,4-di-*O*-isopropylidene-3-*C*-methyl- β -D-psicofuranose, M-284
 1-Deoxy-*ribo*-2-hexulose; L-*form*, D-222
 1-Deoxy-*ribo*-2-hexulose; D-*form*, D-222
 6-Deoxy-6-iodo-1,2,3,4-di-*O*-isopropylidene- β -D-psicofuranose, D-269
 6-Deoxy-6-iodopsicose; D-Furanose-*form*, D-269
 1-Deoxy-5,6-*O*-isopropylidene-D-*ribo*-2-hexulose, D-222
 1-Deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -D-psicofuranose, D-311
 1-Deoxy-3-*C*-methylpsicose; D-*form*, D-311
 6-Deoxy-3-*C*-methyl-D-psicose, M-284
 1,2,3,4-Di-*O*-isopropylidene-3-*C*-methyl- β -D-psicofuranose, M-284
 1,2,4,5-Di-*O*-isopropylidene-3-*C*-methyl- β -D-psicopyranose, M-284
 1,2,3,4-Di-*O*-isopropylidene-3-*C*-methyl-6-*O*-tosyl- β -D-psicofuranose, M-284
 1,2,3,4-Di-*O*-isopropylidene- β -D-psicofuranose, P-108
 1,2,3,4-Di-*O*-isopropylidene-L-psicofuranose, P-108
 1,2,4,5-Di-*O*-isopropylidene- β -D-psicopyranose, P-108
 Methyl 1-acetamido-3,4,6-tri-*O*-benzoyl-1-deoxy- β -D-psicofuranoside, A-323
 Methyl 1-deoxy-D-*ribo*-2-hexulopyranoside, D-222
 Psicose; D-*form*, P-108
 Psicose; L-*form*, P-108
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-D-psicose, B-90
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-D-psicose, C-99
 2,3,4,5-Tetra-*O*-acetyl-1-deoxy-D-*ribo*-2-hexulopyranoside, D-222
 3,4,5,6-Tetra-*O*-acetyl-1-deoxy-1-iodo-D-psicose, D-268
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy-6-iodo-D-psicofuranose, D-269
 1,3,4,6-Tetra-*O*-benzoyl-D-psicofuranosyl bromide, P-105
 1,3,4,6-Tetra-*O*-benzoyl-D-psicofuranosyl chloride, P-106

sorbo-Hexuloses

1-Acetamido-1-deoxy-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, A-334
 6-Acetamido-6-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, A-337
 6-Acetamido-6-deoxy-L-sorbofuranose, A-337
 4-Acetamido-3,5-di-*O*-acetyl-4-deoxy-1,2-*O*-isopropylidene- α -L-sorbofuranose, A-335
 1-*O*-Acetyl-6-deoxy-6-iodo-2,3-*O*-isopropylidene- α -L-sorbofuranose, D-274
 2-*O*-Acetyl-1,3,4,5-tetra-*O*-benzoyl- α -L-sorbofuranose, S-60
 2-*O*-Acetyl-1,3,4,5-tetra-*O*-benzoyl- β -L-sorbofuranose, S-60
 1-Amino-1-deoxy-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, A-334
 6-Amino-6-deoxy-2,3-*O*-isopropylidene-1-*O*-methyl- α -L-sorbofuranose, A-337
 6-Amino-6-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, A-337
 6-Amino-6-deoxysorbose; α -L-Furanose-*form*; N-Benzoyloxycarbonyl, A-337
 6-Amino-6-deoxysorbose; α -L-Furanose-*form*; 2,3-Isopropylidene, N-Benzoyloxycarbonyl, A-337

6-Amino-6-deoxysorbose; α -L-Furanose-*form*; 2,3-Isopropylidene, *N*-tosyl, A-337
 6-Amino-6-deoxysorbose; L-Furanose-*form*, A-337
 6-Amino-6-deoxysorbose; α -L-Furanose-*form*, A-337
 5-Amino-5-deoxysorbose; α -L-Pyranose-*form*, A-336
 1-Benzamido-1-deoxy-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, A-334
 6-Bromo-6-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, B-95
 5-Bromo-5-deoxysorbose; α -L-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3-Me, 4-(dimethylcarbamyl), B-94
 5-Bromo-5-deoxysorbose; α -L-Pyranose-*form*, B-94
 1-Chloro-1-deoxy-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, C-101
 1-Chloro-1-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, C-101
 5-Chloro-5-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, C-102
 6-Chloro-6-deoxysorbose; α -L-Furanose-*form*; 2,3-*O*-Isopropylidene, C-103
 6-Chloro-6-deoxysorbose; α -L-Furanose-*form*, C-103
 1-Chloro-1-deoxysorbose; L-*form*, C-101
 6-Chloro-6-deoxysorbose; L-*form*, C-103
 2-Chloroethyl 5-chloro-5-deoxy-1,3-*O*-isopropylidene- α -L-sorbofuranoside, C-102
 2-Chloroethyl 5-chloro-5-deoxy- α -L-sorbofuranoside, C-102
 2-Chloroethyl 1,3,4-tri-*O*-acetyl-5-chloro-5-deoxy- α -L-sorbofuranoside, C-102
 Dactylose A, D-2
 1-Deoxy-2,3,4,6-di-*O*-isopropylidene-3-*C*-methyl- α -D-sorbofuranose, D-313
 4-Deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-sorbofuranose, D-107
 5-Deoxy-5-fluoro-1,2-*O*-isopropylidene- α -L-sorbofuranose, D-108
 4-Deoxy-4-fluorosorbose; β -D-Pyranose-*form*, D-107
 5-Deoxy-5-fluorosorbose; α -L-Pyranose-*form*, D-108
 4-Deoxy-4-fluorosorbose; D-*form*, D-107
 1-Deoxy-1-iodo-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, D-273
 1-Deoxy-1-iodo-2,3-*O*-isopropylidene- α -L-sorbofuranose, D-273
 6-Deoxy-6-iodo-2,3-*O*-isopropylidene-1-*O*-tosyl-L-sorbofuranose, D-274
 6-Deoxy-2,3-*O*-isopropylidene-6-methylamino- α -L-sorbofuranose, A-337
 1-Deoxy-3-*C*-methylsorbose; D-*form*, D-313
 6-Deoxysorbose; L-*form*, D-363
 3,5-Di-*O*-acetyl-4-deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-sorbofuranose, D-107
 3,4-Di-*O*-acetyl-5-deoxy-5-fluoro-1,2-*O*-isopropylidene- α -L-sorbofuranose, D-108
 2,3,4,6-Di-*O*-isopropylidene- α -L-sorbofuranose, S-60
 5,6-Di-*O*-methyl-L-sorbose, S-60
 α -D-Glucopyranosyl β -D-sorbofuranoside, G-271
 2,3-*O*-Isopropylidene- α -L-sorbofuranose, S-60
 1,2-*O*-Isopropylidene- α -L-sorbofuranose, S-60
 1,2-*O*-Isopropylidene-5-*O*-tosyl- α -L-sorbofuranose, S-60
 1,2-*O*-Isopropylidene-3,4,5-tri-*O*-mesyl- α -L-sorbofuranose, S-60
 Methyl 5-acetamido-1,3-*O*-benzylidene-5-deoxy- α -L-sorbofuranoside, A-336
 Methyl 4-acetamido-4-deoxy- α -L-sorbofuranoside, A-335
 Methyl 4-acetamido-1,3,5-tri-*O*-acetyl-4-deoxy- α -L-sorbofuranoside, A-335
 Methyl 5-amino-1,3-*O*-benzylidene-5-deoxy- α -L-sorbofuranoside, A-336
 Methyl 4-amino-4-deoxy- α -L-sorbofuranoside, A-335
 Methyl 1,3-anhydro- β -D-sorbofuranoside, A-695
 Methyl 1,3-*O*-benzylidene-5-*O*-methyl- α -L-sorbofuranoside, M-210
 Methyl 1,3-*O*-benzylidene- α -L-sorbofuranoside, M-210
 Methyl sorboside; α -L-Furanose-*form*, M-210
 Methyl sorboside; β -L-Furanose-*form*, M-210
 Methyl sorboside; α -D-Pyranose-*form*, M-210
 Methyl sorboside; α -L-Pyranose-*form*, M-210
 Methyl sorboside; β -L-Pyranose-*form*, M-210
 Methyl 1,3,4,5-tetra-*O*-benzoyl- α -L-sorbofuranoside, M-210
 Methyl 1,3,4,5-tetra-*O*-benzoyl- β -L-sorbofuranoside, M-210
 Methyl 1,3,4,5-tetra-*O*-benzoyl- α -L-sorbofuranoside, M-210
 Methyl 1,3,4,5-tetra-*O*-benzyl- α -L-sorbofuranoside, M-210
 6-*O*-Methyl-L-sorbose, S-60
 Penta-*O*-acetyl- α -L-sorbofuranose, S-60
 Penta-*O*-acetyl- β -L-sorbofuranose, S-60
 1,3,4,5,6-Penta-*O*-acetyl-L-sorbose, S-60
 α -D-Sorbofuranose α -L-sorbofuranose 1,2':2,1'-dianhydride; Hexa-Ac, S-57
 α -D-Sorbofuranose α -L-sorbofuranose 1,2':2,1'-dianhydride, S-57
 α -L-Sorbofuranose α -L-sorbofuranose 1,2':2,1'-dianhydride; Hexa-Ac, S-59
 α -L-Sorbofuranose α -L-sorbofuranose 1,2':2,1'-dianhydride, S-59
 Sorbose; L-*form*, S-60
 Sorbose; D-*form*, S-60
 1,3,4,5-Tetra-*O*-acetyl-6-deoxy-L-sorbose, D-363
 1,3,4,5-Tetra-*O*-benzoyl- α -L-sorbofuranose, S-60
 1,3,4,5-Tetra-*O*-benzoyl- α -L-sorbofuranosyl bromide, S-60

1,3,4,5-Tetra-*O*-benzoyl- α -L-sorbofuranosyl chloride, S-60
 1,3,4,5-Tetra-*O*-benzyl- α -L-sorbofuranose, S-60
 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*; Benzyl glycoside, 3*N*,4*N*,5*N*-tri-Ac, T-140
 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3*N*,4*N*,5*N*-tri-Ac, T-140
 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*, T-140

tagato-Hexuloses

4-Acetamido-1,2,3,5-tetra-*O*-acetyl-4-deoxy- β -D-tagatopyranose, A-339
 4-Acetamido-1,2,3,5-tetra-*O*-acetyl-4-deoxy- α -L-tagatopyranose, A-339
 6-*O*-Acetyl-1-deoxy-3,4-*O*-isopropylidene-D-*lyxo*-2-hexulofuranose, D-221
 1-Amino-1-deoxytagatose; D-*form*; *N*-Benzyl, *N*-Me, A-338
 1-Amino-1-deoxytagatose; D-*form*; *N,N*-Dibenzyl, A-338
 1-Amino-1-deoxytagatose; D-*form*; *N*-Hexyl, A-338
 4-Amino-4-deoxytagatose; α -L-Pyranose-*form*, A-339
 1-Amino-1-deoxytagatose; D-*form*, A-338
 4-Amino-4-deoxytagatose; D-*form*, A-339
 3,4-Anhydro-1,2-*O*-isopropylidene- β -D-tagatopyranose, T-2
 1,5-Anhydro-3,4-*O*-isopropylidene-D-tagatose, 9CI, A-700
 1,5-Anhydrotagatose; D-*form*; Oxime (Z-?), A-700
 1,5-Anhydrotagatose; D-*form*, A-700
 Dactylose B, D-2
 6-Deoxy-1,2,3,4-di-*O*-isopropylidene-D-tagatofuranose, D-370
 4-Deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-tagatopyranose, D-109
 4-Deoxy-4-fluorotagatose; D-*form*, D-109
 1-Deoxy-*lyxo*-2-hexulose; D-*form*, D-221
 1-Deoxy-5,6-*O*-isopropylidene-D-*lyxo*-hexose, D-221
 1-Deoxy-3,4-*O*-isopropylidene-D-*lyxo*-2-hexulofuranose, D-221
 6-Deoxytagatose; D-*form*, D-370
 6-Deoxytagatose; L-*form*, D-370
 3,5-Di-*O*-acetyl-4-deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-tagatopyranose, D-109
 1,6-Di-*O*-benzoyl-2,3-*O*-isopropylidene- β -D-tagatofuranose, T-2
 1,2,3,4-Di-*O*-isopropylidene- α -D-tagatofuranose, T-2
 2,3-*O*-Isopropylidene-1,6-di-*O*-tosyl- β -D-tagatofuranose, T-2
 2,3-*O*-Isopropylidene- β -D-tagatofuranose, T-2
 1,2-*O*-Isopropylidene- β -D-tagatopyranose, T-2
 Methyl α -D-tagatopyranoside, 9CI, T-2
 Methyl α -L-tagatopyranoside, T-2
 Methyl 1,3,4,5-tetra-*O*-acetyl- α -D-tagatopyranoside, T-2
 Methyl 1,3,4,5-tetra-*O*-methyl- α -D-tagatopyranoside, T-2
 Methyl 2,3,5-tri-*O*-acetyl-4-bromo-4-deoxy- α -L-tagatopyranoside, B-96
 Methyl 2,3,5-tri-*O*-acetyl-4-bromo-4-deoxy- β -tagatopyranoside, B-96
 Tagatose; D-*form*; 6-Phosphate, T-2
 Tagatose; α -D-Furanose-*form*; 1,2,3,4-Di-*O*-isopropylidene, 6-phosphate, T-2
 Tagatose; D-*form*, T-2
 Tagatose; L-*form*, T-2
 1,3,5-Tri-*O*-acetyl-4-amino-4-deoxy- β -D-tagatopyranose, A-339
 1,4,6-Tri-*O*-acetyl-2,3-*O*-isopropylidene- β -D-tagatofuranose, T-2
 3,4,5-Tri-*O*-acetyl-1,2-*O*-isopropylidene- β -D-tagatopyranose, T-2
 1,4,5-Tri-*O*-acetyl-2,3-*O*-isopropylidene- β -D-tagatopyranose, T-2

Miscellaneous ketoses

5-*O*-Acetyl-2,6-anhydro-3-deoxy-7-*O*-trityl-D-*arabino*-4-heptulose, A-533
 5-*O*-Acetyl-2,6-anhydro-3-deoxy-7-*O*-trityl-D-*ribo*-4-heptulose, A-534
 2,6-Anhydro-5,7-*O*-benzylidene-1,3-dideoxy-D-*arabino*-4-heptulose, A-533
 2,6-Anhydro-5,7-*O*-benzylidene-1,3-dideoxy-D-*ribo*-4-heptulose, A-534
 6-Deoxy-*threo*-hex-5-enulofuranose; β -D-*form*; 2,3-*O*-Isopropylidene, D-182
 5-Deoxy-*erythro*-2-hexulose; D-Pyranose-*form*, D-220
 1,5-Di-*O*-acetyl-2,6-anhydro-3-deoxy-7-*O*-trityl-D-*arabino*-4-heptulose, A-533
 3,4-Di-*O*-benzoyl-D-*glycero*-tetrulose, T-162
 1,3-Di-*O*-benzyl-D-*glycero*-tetrulose, T-162
 3,4-Dihydroxy-2-oxobutanal; (*R*)-*form*, D-701
 1,2,3,4-Di-*O*-isopropylidene- α -D-*arabino*-3-hexulofuranose, H-107
 1,2,3,4-Di-*O*-isopropylidene- β -D-*lyxo*-3-hexulofuranose, H-108
 1,2,3,4-Di-*O*-isopropylidene- β -L-*lyxo*-3-hexulofuranose, H-108
 1,2,3,4-Di-*O*-isopropylidene- α -D-*ribo*-3-hexulofuranose, H-109
 2,3,4,5-Di-*O*-isopropylidene- β -D-*ribo*-3-hexulofuranose, H-109
 1,2,5,6-Di-*O*-isopropylidene-D-*arabino*-3-hexulose, H-107
 1,2,5,6-Di-*O*-isopropylidene-D-*ribo*-3-hexulose, H-109
 1,2,3,4-Di-*O*-isopropylidene- β -D-*xylo*-3-hexulose, H-110
 1,2,5,6-Di-*O*-isopropylidene-L-*xylo*-3-hexulose, H-110
 1,2,3,4-Di-*O*-isopropylidene- β -L-*xylo*-3-hexulose, H-110
arabino-3-Hexulose; D-*form*, H-107
ribo-3-Hexulose; D-*form*, H-109
xylo-3-Hexulose; L-*form*, H-110

Higher ketoses

7,8-Dideoxy-*galacto*-oct-7-ynopyranos-6-ulose; α -*D*-form; 1,2,3,4-Di-*O*-isopropylidene, D-649
7,8-Dideoxy-*galacto*-oct-7-ynopyranos-6-ulose; α -*D*-form, D-649
1,2,3,4-Di-*O*-isopropylidene-L-*glycero*- α -*D*-*galacto*-7-octulopyranose trimethylenedithioacetal, O-22
5,6-*O*-Ethylidene-D-*manno*-2-heptulose, H-62
manno-2-Heptulose; *D*-form; 1-Deoxy, H-62
manno-2-Heptulose; *D*-form; 3,4,6,7-Di-*O*-isopropylidene, H-62
manno-2-Heptulose; *D*-form; Hexa-Ac, H-62
altro-2-Heptulose; *D*-form; 7-Phosphate, H-56
gulo-2-Heptulose; β -L-Pyranose-form; 2,7-Anhydro, H-60
allo-2-Heptulose; *D*-form, H-55
allo-2-Heptulose; L-form, H-55
altro-2-Heptulose; *D*-form, H-56
altro-3-Heptulose; *D*-form, H-57
galacto-2-Heptulose; *D*-form, H-58
galacto-2-Heptulose; L-form, H-58
gluco-2-Heptulose; *D*-form, H-59
gulo-2-Heptulose; *D*-form, H-60
gulo-2-Heptulose; L-form, H-60
ido-2-Heptulose; *D*-form, H-61
manno-2-Heptulose; *D*-form, H-62
talo-2-Heptulose; *D*-form, H-63
1,2,3,4,5,7-Hexa-*O*-acetyl- α -D-*gluco*-2-heptulopyranose, H-59
1,3,4,5,6,7-Hexa-*O*-acetyl-D-*galacto*-2-heptulose, H-58
Methyl 2,3,6,7-di-*O*-isopropylidene- β -D-*allo*-heptopyranos-4-uloside, H-54
Methyl α -D-*gluco*-2-heptulopyranoside, H-59
Methyl α -D-*manno*-2-heptulopyranoside, H-62
Methyl penta-*O*-acetyl- α -D-*manno*-2-heptulopyranoside, H-62
Neuraminic acid; *N*-Benzoyl, N-35
Neuraminic acid; *N*-Benzyloxycarbonyl, N-35
Neuraminic acid; *N*-Ethoxycarbonyl, N-35
Neuraminic acid, N-35
D-*erythro*-L-*galacto*-Nonulose, H-79
D-*erythro*-L-*gluco*-Nonulose, N-80
D-*threo*-L-*talo*-Octose, O-16
D-*glycero*-D-*altro*-2-Octulose; 1,8-Diphosphate, O-19
D-*glycero*-D-*ido*-2-Octulose; 1,8-Diphosphate, O-23
D-*glycero*-D-*ido*-2-Octulose; α -Furanose-form; 1,3,4,6,7,8-Triisopropylidene, O-23
L-*glycero*-D-*galacto*-7-Octulose; α -Pyranose-form; 1,2,3,4-Di-*O*-isopropylidene, trimethylene dithioacetal, 8-Ac, O-22
L-*glycero*-D-*galacto*-7-Octulose; α -Pyranose-form; 1,2,3,4-Di-*O*-isopropylidene, trimethylene dithioacetal, 6,8-di-Ac, O-22
D-*glycero*-D-*ido*-3-Octulose; α -form, O-24
D-*glycero*-D-*galacto*-4-Octulose, O-20
D-*glycero*-L-*galacto*-2-Octulose, O-21
D-*glycero*-D-*ido*-2-Octulose, O-23
D-*glycero*-D-*ido*-3-Octulose, O-24
D-*glycero*-D-*ido*-4-Octulose, O-25
D-*glycero*-D-*manno*-2-Octulose, O-26
1,3,4,5-Tetra-*O*-acetyl-2,7-anhydro- β -D-*gluco*-2-heptulopyranose, H-59
3,4,5,7-Tetra-*O*-benzyl- α -D-*gluco*-2-heptulopyranose, H-59

1,2-Anhydrosugars

1,2-Anhydro-4,6-*O*-benzylidene-3-*O*-*tert*-butyldimethylsilyl-β-D-altpyranose, A-492
1,2-Anhydro-3,4-di-*O*-benzyl-β-L-arabinopyranose, A-501
1,2-Anhydro-3,4-di-*O*-benzyl-6-deoxy-α-D-glucopyranose, A-524
1,2-Anhydro-3,4-di-*O*-benzyl-6-deoxy-α-L-glucopyranose, A-524
1,2-Anhydro-3,4-di-*O*-benzyl-α-D-fucopyranose, A-610
1,2-Anhydro-3,4-di-*O*-benzyl-β-D-lyxopyranose, A-663
1,2-Anhydro-3,4-di-*O*-benzyl-β-D-rhamnopyranoside, A-685
1,2-Anhydro-3,5-di-*O*-benzyl-α-D-ribofuranose, A-694
1,2-Anhydro-3,4-di-*O*-benzyl-α-L-ribofuranose, A-694
1,2-Anhydro-3,4-di-*O*-benzyl-α-D-xylopyranose, A-726
1,2-Anhydro-3,4,5,6-di-*O*-isopropylidene-D-glucitol, A-623
1,2-Anhydro-3,4,5,6-di-*O*-isopropylidene-D-mannitol, A-667
1,2-Anhydromannitol; D-*form*, A-667
1,2-Anhydro-6-*O*-mesyl-D-mannitol, A-667
1,2-Anhydro-3,4,6-tri-*O*-benzyl-α-D-allopyranose, A-482
1,2-Anhydro-3,4,6-tri-*O*-benzyl-β-D-altpyranose, A-492
1,2-Anhydro-3,4,5-tri-*O*-benzyl-β-D-fructopyranose, A-604
1,2-Anhydro-3,4,6-tri-*O*-benzyl-α-D-galactopyranose, A-617
1,2-Anhydro-3,4,6-tri-*O*-benzyl-α-D-glucopyranose, A-632
1,2-Anhydro-3,5,6-tri-*O*-benzyl-α-L-gulofuranose, A-637
1,2-Anhydro-3,4,6-tri-*O*-benzyl-β-D-mannopyranose, A-673
1,2-Anhydro-3,4,6-tri-*O*-benzyl-β-D-talopyranose, A-705
1,2-Anhydro-3,4,6-tri-*O*-(*tert*-butyldimethylsilyl)-α-D-glucopyranose, A-632
Pictet's anhydride, A-632

3,4,6-Tri-*O*-acetyl-1,2-anhydro- α -D-galactopyranose, A-617
 3,4,6-Tri-*O*-acetyl-1,2-anhydro- α -D-glucopyranose, A-632

1,3-Anhydrosugars

1,3-Anhydro-2,4-di-*O*-benzyl- α -L-arabinopyranose, 9CI, A-502
 1,3-Anhydro-2,4-di-*O*-benzyl- β -D-fucopyranose, A-611
 1,3-Anhydro-2,4-di-*O*-benzyl- β -D-glucopyranose, A-525
 1,3-Anhydro-2,4-di-*O*-benzyl- β -D-rhamnopyranose, A-686
 1,3-Anhydro-2,4-di-*O*-benzyl- β -L-rhamnopyranose, A-686
 1,3-Anhydroglucitol; *D-form*, A-624
 1,3-Anhydro-2,4,6-tri-*O*-benzyl- β -D-galactopyranose, A-618
 1,3-Anhydro-2,4,6-tri-*O*-benzyl- β -D-glucopyranose, A-633
 1,3-Anhydro-2,4,6-tri-*O*-benzyl- β -D-mannopyranose, A-674
 1,3-Anhydro-2,4,6-tri-*O*-benzyl- β -D-talopyranose, A-706
 5,6-Di-*O*-acetyl-1,3-anhydro-2,4-*O*-benzylidene-D-glucitol, A-624
 Methyl 1,3-anhydro- β -D-sorbofuranoside, A-695

1,4-Anhydrosugars

2-*O*-Acetyl-1,5-anhydro-3-*O*-benzyl- β -D-xylofuranose, 9CI, A-725
 6-*O*-Acetyl-1,4-anhydro-2,3-di-*O*-benzoyl- β -D-galactopyranose, A-619
 1,5-Anhydro-2,3-di-*O*-benzyl- β -D-xylofuranose, A-725
 1,4-Anhydroallitol; (\pm)-*form*, A-479
 1,4-Anhydroaltritol; *D-form*, A-489
 3,6-Anhydroaltritol; *D-form*, A-491
 2,5-Anhydroarabinitol; *D-form*, A-498
 2,5-Anhydroarabinitol; *L-form*, A-498
 1,4-Anhydroarabinitol; *D-form*, A-496
 1,4-Anhydroarabinitol; *L-form*, A-496
 1,4-Anhydroarabinopyranose; *L-form*, A-500
 2,5-Anhydro-1-*O*-benzoyl-3,4-di-*O*-tosyl-D-xylitol, A-723
 1,4-Anhydro-3,5-*O*-(*S*)-benzylidene-2,6-di-*O*-methyl-D-mannitol, A-668
 1,4-Anhydro-2,3-*O*-(*R*)-benzylidene-5,6-di-*O*-methyl-D-mannitol, A-668
 1,4-Anhydro-2,3-*O*-(*S*)-benzylidene-5,6-di-*O*-methyl-D-mannitol, A-668
 1,4-Anhydro-3,5-*O*-(*R*)-benzylidene-2,6-di-*O*-tosyl-D-mannitol, A-668
 1,4-Anhydro-3,5-*O*-(*S*)-benzylidene-2,6-di-*O*-tosyl-D-mannitol, A-668
 1,4-Anhydro-2,3-*O*-(*R*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-2,3-*O*-(*S*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-5,6-*O*-(*R*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-5,6-*O*-(*S*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-3,5-*O*-(*R*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-3,5-*O*-(*S*)-benzylidene-D-mannitol, A-668
 1,5-Anhydro-2,3-*O*-*R*-benzylidene- β -D-ribofuranose, A-692
 1,5-Anhydro-2,3-*O*-*S*-benzylidene- β -D-ribofuranose, A-692
 1,4-Anhydro-2,3-*O*-(*R*)-benzylidene-6-*O*-tosyl-D-mannitol, A-668
 1,4-Anhydro-2,3-*O*-(*S*)-benzylidene-6-*O*-tosyl-D-mannitol, A-668
 1,5-Anhydro-3-*O*-benzyl-2-*O*-pivaloyl- β -D-xylofuranose, A-725
 1,5-Anhydro-3-*O*-benzyl- β -D-xylofuranose, 9CI, A-725
 1,5-Anhydro-5*S*-bromo-2,3-*O*-isopropylidene- β -D-lyxofuranose, A-511
 1,4-Anhydro-5*S*-bromo-2,3-*O*-isopropylidene- β -D-ribofuranose, A-513
 1,4-Anhydro-2-deoxy-5-*O*-(methoxymethyl)-2-*C*-methyl-D-erythro-pent-1-enitol, A-569
 1,4-Anhydro-2-deoxy-5-*O*-methoxymethyl-D-erythro-pent-1-enitol, A-571
 1,4-Anhydro-2-deoxy-erythro-pent-1-enitol; *D-form*; Dibenzoyl, A-571
 1,4-Anhydro-2,3-di-*O*-acetyl- α -D-xylopyranose, A-725
 1,4-Anhydro-5,6-di-*O*-benzyl-2,3-*O*-(*R*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-2,6-di-*O*-benzoyl-3,5-*O*-(*S*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-2,6-di-*O*-benzoyl-3,5-*O*-(*R*)-benzylidene-D-mannitol, A-668
 1,4-Anhydro-2,6-di-*O*-benzoyl-D-mannitol, A-668
 1,4-Anhydro-5,6-di-*O*-benzoyl-D-mannitol, A-668
 1,5-Anhydro-2,3-di-*O*-benzoyl- β -D-ribofuranose, A-692
 1,5-Anhydro-2,3-di-*O*-benzyl- β -D-ribofuranose, A-692
 1,5-Anhydro-2,3-di-*O*-benzyl- β -D-xylofuranose, A-725
 3,6-Anhydro-1,2,4,5-di-*O*-isopropylidene-D-altritol, A-491
 1,4-Anhydro-3,5-di-*O*-mesyl-6-*O*-tosyl-D-mannitol, A-668
 1,4-Anhydro-2,3-di-*O*-methyl- α -D-arabinopyranose, A-500
 1,5-Anhydro-2,3-di-*O*-methyl- β -D-ribofuranose, A-692
 2,5-Anhydro-3,4-di-*O*-tosyl-D-xylitol, A-723
 1,4-Anhydrofucitol; *L-form*, A-608
 3,6-Anhydro-D-galactitol, 9CI, A-612
 1,4-Anhydrogalactitol; *D-form*, A-612
 1,4-Anhydroglucitol; *D-form*, A-625
 1,4-Anhydroglucopyranose; α -*D-form*, A-630
 1,4-Anhydroiditol; *D-form*, A-653
 2,5-Anhydro-3,4-*O*-isopropylidene-D-arabinitol, A-498
 1,4-Anhydro-5,6-*O*-isopropylidene-2,3-di-*O*-mesyl-D-glucitol, A-625
 1,4-Anhydro-5,6-*O*-isopropylidene-D-glucitol, A-625
 1,5-Anhydro-2,3-*O*-isopropylidene- β -D-lyxofuranose, A-662
 1,4-Anhydro-2,3-*O*-isopropylidene-D-mannitol, A-668
 1,4-Anhydro-5,6-*O*-isopropylidene-D-mannitol, A-668
 1,4-Anhydro-5,6-*O*-isopropylidene-2-*O*-mesyl-D-glucitol, A-625
 1,5-Anhydro-2,3-*O*-isopropylidene- β -D-ribofuranose, A-692

1,5-Anhydro-2,3-*O*-isopropylidene- α -D-talofuranose, A-703
 1,5-Anhydro-2,3-*O*-isopropylidene-L-talofuranose, A-703
 1,4-Anhydro-2,3-*O*-isopropylidene-6-*O*-tosyl-D-mannitol, A-668
 1,5-Anhydro-2,3-*O*-isopropylidene-6-*O*-tosyl- α -D-talofuranose, A-703
 1,4-Anhydro-2,3-*O*-isopropylidene-5-*O*-trityl-D-ribitol, A-688
 1,4-Anhydroxylopyranose; *D-form*, A-662
 1,4-Anhydromannitol; *D-form*, A-668
 1,4-Anhydro-erythro-pent-1-enitol; *D-form*; Tribenzoyl, A-680
 1,4-Anhydrioribitol; *D-form*, A-688
 1,4-Anhydrioribitol; *L-form*, A-688
 1,4-Anhydrioribopyranose; β -*D-form*, A-692
 1,4-Anhydrotalopyranose; *D-form*, A-703
 1,4-Anhydro-2,3,5,6-tetra-*O*-methyl-D-glucitol, A-625
 1,4-Anhydro-4-thioribitol; *D-form*, A-713
 1,4-Anhydro-4-thioribitol; *L-form*, A-713
 2,5-Anhydro-1,3,4-tri-*O*-benzoyl-D-arabinitol, A-498
 1,4-Anhydro-2,3,5-tri-*O*-benzoyl-D-arabinitol, A-496
 1,4-Anhydro-2,3,5-tri-*O*-benzoyl-L-arabinitol, A-496
 1,4-Anhydro-2,3,6-tri-*O*-benzoyl- α -D-glucopyranose, A-630
 1,4-Anhydro-2,3,5-tri-*O*-benzoyl-D-xylitol, A-723
 1,4-Anhydro-2,3,5-tri-*O*-benzoyl-DL-xylitol, A-723
 1,4-Anhydro-2,3,6-tri-*O*-benzyl- α -D-glucopyranose, A-630
 1,4-Anhydro-2,3,4-tri-*O*-benzyl-4-thioribitol, A-713
 1,4-Anhydro-2,3,6-tri-*O*-methyl- β -D-galactopyranose, A-619
 2,5-Anhydro-1,3,4-tri-*O*-tosyl-D-arabinitol, A-498
 2,5-Anhydro-1,3,4-tri-*O*-tosyl-L-arabinitol, A-498
 1,4-Anhydro-2,3,5-tri-*O*-tosyl-L-xylitol, A-723
 1,4-Anhydro-5-*O*-trityl-D-ribitol, A-688
 1,4-Anhydroxylitol; *D-form*, A-723
 1,4-Anhydroxylitol; *DL-form*, A-723
 1,5-Anhydroxylofuranose; *D-form*; 2,3-Bis(4-methylbenzenesulfonyl), A-725
 1,5-Anhydroxylofuranose; *D-form*, A-725
 2,3-Di-*O*-acetyl-1,5-anhydro- β -D-ribofuranose, A-692
 2,3-Di-*O*-acetyl-1,4-anhydro-5-*O*-trityl-D-ribitol, A-688
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxymannitol; *D-form*, D-406
 Methyl 1,4-anhydro- β -D-fructopyranoside, A-605
 Methyl 3,5-di-*O*-acetyl-1,4-anhydro- β -D-fructopyranoside, A-605
 2,3,5,6-Tetra-*O*-acetyl-1,4-anhydro-DL-allitol, A-479
 2,3,5,6-Tetra-*O*-benzoyl-D-galactitol, A-612
 2,3,5,6-Tetra-*O*-benzoyl-L-galactitol, A-612
 Tetrahydro-3-hydroxy-5-hydroxymethyl-3-furancarboxylic acid, T-26
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-D-ribitol, A-688
 2,3,6-Tri-*O*-acetyl-1,5-anhydro- α -D-talofuranose, A-703
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-4-thioribitol, A-713
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-6-*O*-tosyl-DL-allitol, A-479
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-D-xylitol, A-723

1,5-Anhydrosugars

2-Acetamido-1,5-anhydro-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-D-mannitol, A-141
 2-Acetamido-1,5-anhydro-2-deoxy-D-mannitol, A-141
 2-Acetamido-1,5-anhydro-2-deoxy-D-talitol, A-144
 2-Acetamido-1,5-anhydro-3,4-di-*O*-benzyl-2-deoxy-D-mannitol, A-141
 2-Acetamido-1,5-anhydro-3,4-di-*O*-benzyl-2,6-dideoxy-D-mannitol, A-149
 2-Acetamido-1,5-anhydro-2,6-dideoxy-D-mannitol, A-149
 2-Acetamido-3,4,6-tri-*O*-acetyl-1,5-anhydro-2-deoxy-D-talitol, A-144
 2-*O*-Acetyl-1,5-anhydro-3-*O*-benzyl- β -D-xylofuranose, 9CI, A-725
 6-*O*-Acetyl-1,5-anhydro-2-deoxy-3,4-*O*-isopropylidene-D-lyxo-hex-1-enitol, G-1
 4-*O*-Acetyl-6-deoxy-3-*O*-methyl-D-glucal, D-679
 6-*O*-Acetyl-3,4-di-*O*-benzyl-D-galactal, G-1
 4-*O*-Acetyl-3,6-di-*O*-benzyl-D-galactal, G-1
 3-*O*-Acetyl-4,6-di-*O*-benzyl-D-galactal, G-1
 4-*O*-Acetyl-3-*O*-methyl-L-rhamnal, D-679
 3-*O*-Acetyl-L-rhamnal, D-679
 4-*O*-Acetyl-L-rhamnal, D-679
 2-Amino-1,5-anhydro-2-deoxyallitol; *D-form*, A-123
 6-Amino-1,5-anhydro-6-deoxyglucitol; *D-form*; *N*-Mesyl, 2,3,4-tri-Ac, A-130
 6-Amino-1,5-anhydro-6-deoxyglucitol; *D-form*; *N*-Tosyl, 2,3,4-tri-Ac, A-130
 6-Amino-1,5-anhydro-6-deoxyglucitol; *D-form*; 2,3,4-Tri-Ac, A-130
 3-Amino-1,5-anhydro-3-deoxyglucitol; *D-form*, A-129
 6-Amino-1,5-anhydro-6-deoxyglucitol; *D-form*, A-130
 2-Amino-1,5-anhydro-2-deoxy-4,6-*O*-isopropylidene-D-allitol, A-123
 2-Amino-1,5-anhydro-2-deoxymannitol; *D-form*, A-141
 3-Amino-1,5-anhydro-3-deoxyxylitol; *N*-Benzyl, *N*-Me, A-147
 3-Amino-1,5-anhydro-3-deoxyxylitol; *N*-Benzyl, A-147
 3-Amino-1,5-anhydro-3-deoxyxylitol; *N*-(3,4,5-Trimethoxybenzyl), A-147
 3-Amino-1,5-anhydro-3-deoxyxylitol, A-147
 1,5-Anhydro-2,3-di-*O*-benzoyl- β -D-xylofuranose, A-725

- 1,5-Anhydroallitol; *D-form*, A-480
 1,5-Anhydroarabinitol; *D-form*, A-497
 1,5-Anhydroarabinitol; *L-form*, A-497
 1,4-Anhydroarabinopyranose; *L-form*, A-500
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 1,5-Anhydro-3-*O*-benzoyl-4,6-*O*-benzylidene-*D*-galactitol, A-613
 1,5-Anhydro-2-*O*-benzoyl-4,6-*O*-benzylidene-3-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-3-*O*-benzoyl-4,6-*O*-benzylidene-2-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-4-*O*-benzoyl-2,6-dideoxy-3-*O*-methyl-*L*-arabino-hex-1-enitol, D-679
 1,5-Anhydro-4-*O*-benzoyl-2,3,6-tri-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-6-*O*-benzyl-2-deoxy-3,4-*O*-isopropylidene-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-4,6-*O*-benzylidene-3-*O*-(*tert*-butyldimethylsilyl)-*D*-fructose, A-606
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-4,6-*O*-benzylidene-2,3-dideoxy-*D*-erythro-hex-1-enitol, A-580
 1,5-Anhydro-4,6-*O*-benzylidene-2,3-dideoxy-3-(iodomethyl)-*D*-ribo-hex-1-enitol, A-593
 1,5-Anhydro-4,6-*O*-benzylidene-2,3-di-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-4,6-*O*-benzylidene-*D*-galactitol, A-613
 1,5-Anhydro-2,3-*O*-*R*-benzylidene- β -*D*-ribofuranose, A-692
 1,5-Anhydro-2,3-*O*-*S*-benzylidene- β -*D*-ribofuranose, A-692
 1,5-Anhydro-4,6-*O*-benzylidene-3-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-3-*O*-benzyl-2-*O*-pivaloyl- β -*D*-xylofuranose, A-725
 1,5-Anhydro-3-*O*-benzyl- β -*D*-xylofuranose, 9CI, A-725
 1,5-Anhydro-5S-bromo-2,3-*O*-isopropylidene- β -*D*-lyxofuranose, A-511
 1,5-Anhydro-5S-bromo-2,3-*O*-isopropylidene- β -*D*-ribofuranose, A-513
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 1,5-Anhydro-2-deoxy-*arabino*-hexitol; *D-form*, A-546
 1,5-Anhydro-2-deoxy-*lyxo*-hexitol; *D-form*, A-547
 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-2-deoxy-4,6-*O*-isopropylidene-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-6-*O*-mesyl-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-6-*O*-methyl-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-6-*O*-tosyl-*D*-lyxo-hex-1-enitol, G-1
 2,6-Anhydro-1-deoxy-*L*-mannitol, 9CI, A-684
 1,5-Anhydro-2-deoxy-*D*-erythro-pent-1-enitol, 9CI, A-790
 1,5-Anhydro-4-deoxy-*D*-erythro-pent-4-enitol, 9CI, A-790
 1,5-Anhydro-2-deoxy-4,6-*O*-(phenylmethylene)-*D*-*threo*-hex-1-en-3-ulose, 9CI, A-535
 1,5-Anhydro-2-deoxy-5-thio-*arabino*-hex-1-enitol; *D-form*, A-574
 1,5-Anhydro-2-deoxy-3,4,6-tri-*O*-methyl-*D*-lyxo-hex-1-enitol, G-1
 1,4-Anhydro-2,3-di-*O*-acetyl- α -*D*-xylopyranose, A-725
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 1,5-Anhydro-3,6-di-*O*-benzoyl-2-deoxy-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-3,4-di-*O*-benzoyl-2,6-dideoxy-*D*-*threo*-hexa-1,5-dienitol, A-579
 1,5-Anhydro-2,4-di-*O*-benzoyl-3,6-di-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-2,3-di-*O*-benzoyl- β -*D*-ribofuranose, A-692
 1,5-Anhydro-3,4-dibenzyl-6-deoxy-*D*-glucitol, A-522
 1,5-Anhydro-2,3-di-*O*-benzyl- β -*D*-ribofuranose, A-692
 1,5-Anhydro-2,3-di-*O*-benzyl- β -*D*-xylofuranose, A-725
 1,5-Anhydro-2,6-dideoxy-*threo*-hexa-1,5-dienitol; *D-form*, A-579
 1,5-Anhydro-2,6-dideoxy-*D*-*arabino*-hex-1-enitol, D-679
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 1,5-Anhydro-2,3-di-*O*-methyl- β -*D*-ribofuranose, A-692
 1,5-Anhydro-3,6-di-*O*-tosyl-*D*-galactitol, A-613
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 1,5-Anhydroglucitol; *D-form*, A-626
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 1,5-Anhydro-2,3-*O*-isopropylidene- β -*D*-lyxofuranose, A-662
 1,5-Anhydro-2,3-*O*-isopropylidene- β -*D*-ribofuranose, A-692
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 1,5-Anhydro-2,3-*O*-isopropylidene-*L*-talofuranose, A-703
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 1,5-Anhydromannitol; *D-form*, A-669
 1,5-Anhydroribitol, A-689
 1,4-Anhydroribopyranose; β -*D-form*, A-692
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 1,5-Anhydrotagatose; *D-form*, A-700
 1,4-Anhydrotalopyranose; *D-form*, A-703
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 1,5-Anhydro-2,3,4,6-tetra-*O*-benzoyl-*D*-mannitol, A-669
 1,5-Anhydro-2,3,4,6-tetra-*O*-methyl-*D*-mannitol, A-669
 1,5-Anhydro-2,3,4,6-tetra-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-6-*O*-tosyl-*D*-glucitol, A-626
 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-*D*-arabinitol, A-497
 1,5-Anhydro-3,4,6-tri-*O*-benzoyl-2-deoxy-*D*-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-2,3,6-tri-*O*-benzoyl-4-deoxy-*L*-erythro-hex-4-enitol, A-537
 1,5-Anhydro-2,4,6-tri-*O*-benzoyl-3-deoxy-3-methylene-*D*-erythro-hex-1-enitol, A-567
 1,4-Anhydro-2,3,6-tri-*O*-benzoyl- α -*D*-glucopyranose, A-630
 1,5-Anhydro-2,4,6-tri-*O*-benzoyl-*D*-erythro-hex-1-en-3-ulose, A-645
 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-*D*-erythro-pent-1-enitol, 9CI, A-681
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 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-*L*-rhamnitol, A-684
 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-6-*O*-tosyl-*D*-galactitol, A-613
 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-6-*O*-tosyl-*D*-mannitol, A-669
 1,5-Anhydro-2,3,4-tri-*O*-benzoylxylytol, A-724
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 1,4-Anhydro-2,3,6-tri-*O*-benzyl- α -*D*-glucopyranose, A-630
 1,5-Anhydro-2,3,6-tri-*O*-tosyl-*D*-galactitol, A-613
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 1,5-Anhydroxylytol; 2,3,4-Triphosphate, A-724
 1,5-Anhydroxylytol, A-724
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 4,6-Di-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-*threo*-hex-1-en-3-ulose, A-535
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 4,6-Di-*O*-acetyl-1,5-anhydro-2,3-dideoxy-*D*-erythro-hex-1-enitol, A-580
 2,6-Di-*O*-acetyl-1,5-anhydro-*D*-galactitol, A-613
 2,3-Di-*O*-acetyl-1,5-anhydro- β -*D*-ribofuranose, A-692
 3,4-Di-*O*-acetyl-*D*-arabinal, A-790
 3,4-Di-*O*-acetyl-*L*-arabinal, A-790
 3,4-Di-*O*-acetyl-*D*-rhamnal, D-679
 3,4-Di-*O*-acetyl-*L*-rhamnal, D-679
 1,6-Diamino-2,5-anhydro-1,6-dideoxy-3,4-di-*O*-methyl-*D*-mannitol, D-399
 3,4-Di-*O*-benzoyl-*D*-arabinal, A-790
 3,4-Di-*O*-benzoyl-*L*-rhamnal, D-679
 4,6-Di-*O*-benzyl-*D*-galactal, G-1
 3,4-Dihydro-2-methyl-2*H*-pyran-3,4-diol; (2*S*,3*R*,4*S*)-*form*, D-679
 Galactal; *D-form*, G-1
 4-Hydroxy-6-hydroxymethyl-2*H*-pyran-3(6*H*)-one; (*S*)-*form*; Di-Ac, H-150
 4-Hydroxy-6-hydroxymethyl-2*H*-pyran-3(6*H*)-one; (*S*)-*form*; Dibenzoyl, H-150
 3-*O*-Methyl-*D*-rhamnal, D-679
 3-*O*-Methyl-*L*-rhamnal, D-679
 2,3,4,6-Tetra-*O*-acetyl-1,5-anhydro-*D*-allitol, A-480
 2,3,4,6-Tetra-*O*-acetyl-1,5-anhydro-*D*-galactitol, A-613
 2,3,4,6-Tetra-*O*-acetyl-1,5-anhydro-*D*-mannitol, A-669
 2,3,4,6-Tetra-*O*-acetyl- α -*D*-galactopyranosyl isocyanide, G-206
 2,3,4,6-Tetra-*O*-acetyl- β -*D*-galactopyranosyl isocyanide, G-206
 3,4,6-Tri-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-lyxo-hex-1-enitol, G-1
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-deoxy-*D*-xylo-hex-5-enitol, A-540
 3,4,6-Tri-*O*-acetyl-1,5-anhydro-2-deoxy-5-thio-*D*-*arabino*-hex-1-enitol, A-574
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-*O*-mesyl-*D*-glucitol, A-626
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-*L*-rhamnitol, A-684
 2,3,6-Tri-*O*-acetyl-1,5-anhydro- α -*D*-talofuranose, A-703
 2,3,6-Tri-*O*-acetyl-1,5-anhydro-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -*D*-glucopyranosyl)-*D*-*arabino*-hex-1-enitol, A-631
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-*O*-tosyl-*D*-glucitol, A-626
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-*O*-trityl-*D*-glucitol, A-626
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 2,3,4-Tri-*O*-acetyl-*D*-arabinitol, A-497

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 2-Acetamido-4-*O*-acetyl-1,6-anhydro-2-deoxy- β -*D*-glucopyranose, A-132
 2-Acetamido-1,6-anhydro-2-deoxy- β -*D*-galactopyranose, A-127
 2-Acetamido-1,6-anhydro-2-deoxy- β -*D*-glucopyranose, A-132
 3-Acetamido-1,6-anhydro-3-deoxy- β -*D*-gulopyranose, A-133
 5-Acetamido-1,6-anhydro-5-deoxy- β -*L*-idopyranose, A-293
 5-Acetamido-3-*O*-benzyl-5-deoxy-1,2-*O*-isopropylidene- β -*L*-idofuranose, A-293

- 5-Acetamido-2,3-di-*O*-acetyl-1,6-anhydro-5-deoxy-β-*L*-altrofuranose, A-124
- 2-Acetamido-3,4-di-*O*-acetyl-1,6-anhydro-2-deoxy-β-*D*-galactopyranose, A-127
- 2-Acetamido-3,4-di-*O*-acetyl-1,6-anhydro-2-deoxy-β-*D*-glucopyranose, A-132
- 4-Acetamido-2,3-di-*O*-acetyl-1,6-anhydro-4-deoxy-β-*D*-mannopyranose, A-314
- 4-Acetamido-2,3-di-*O*-acetyl-1,6-anhydro-4-deoxy-β-*D*-talopyranose, A-145
- 5-Acetamido-3,6-di-*O*-acetyl-5-deoxy-1,2-*O*-isopropylidene-β-*L*-idofuranose, A-293
- 5-Acetamido-2,3,4-tri-*O*-acetyl-1,6-anhydro-5-deoxy-β-*L*-idopyranose, A-293
- 4-*O*-Acetyl-2-*C*-allyl-1,6-anhydro-2-deoxy-β-*D*-glucopyranose, A-97
- 2-*O*-Acetyl-1,6-anhydro-β-*D*-allofuranose, A-483
- 2-*O*-Acetyl-1,6-anhydro-3-*O*-benzyl-β-*D*-xylo-hexofuranos-5-ulose, A-646
- 3-*O*-Acetyl-1,6-anhydro-4-*O*-benzyl-2-*O*-tosyl-β-*D*-allopyranose, A-483
- 3-*O*-Acetyl-1,6-anhydro-4-deoxy-2-*O*-tosyl-β-*D*-xylo-hexopyranose, A-560
- 3-*O*-Acetyl-1,6-anhydro-2,4-dibenzamido-2,4-dideoxy-β-*D*-talopyranose, D-400
- 4-*O*-Acetyl-1,6-anhydro-2,3-di-*O*-benzyl-β-*D*-glucopyranose, A-634
- 3-*O*-Acetyl-1,6-anhydro-2,4-di-*O*-tosyl-β-*D*-talopyranose, A-707
- 2-*O*-Acetyl-1,6-anhydro-3,4-dideoxy-β-*DL*-erythro-hex-3-enopyranose, A-581
- 4-*O*-Acetyl-1,6-anhydro-2,3-dideoxy-β-*D*-erythro-hex-2-enopyranose, A-584
- 4-*O*-Acetyl-1,6-anhydro-2,3-dideoxy-β-*D*-threo-hex-2-enopyranose, A-585
- 3-*O*-Acetyl-1,6-anhydro-2,4-di-*O*-tosyl-β-*D*-allopyranose, A-483
- 2-*O*-Acetyl-1,6-anhydro-3,4-*O*-isopropylidene-β-*D*-allopyranose, A-483
- 2-*O*-Acetyl-1,6-anhydro-3,4-*O*-isopropylidene-β-*D*-galactopyranose, A-616
- 4-*O*-Acetyl-1,6-anhydro-2,3-*O*-isopropylidene-β-*D*-mannopyranose, A-675
- 5-*O*-Acetyl-1,6-anhydro-2-*O*-tosyl-α-*L*-idofuranose, A-656
- 2-*C*-Allyl-1,6-anhydro-2-deoxyglucose; β-*D*-Pyranose-*form*, A-97
- 4-*C*-Allyl-1,6-anhydro-4-deoxy-2-*O*-tosyl-β-*D*-glucopyranose, A-98
- 2-*O*-Allyl-1,6-anhydro-β-*D*-mannopyranose, A-675
- 5-Amino-1,6-anhydro-5-deoxyaltrose; β-*L*-Furanose-*form*, A-124
- 3-Amino-1,6-anhydro-3-deoxy-β-*D*-galactopyranose, A-207
- 2-Amino-1,6-anhydro-2-deoxygalactose; β-*D*-Pyranose-*form*, A-127
- 2-Amino-1,6-anhydro-2-deoxyglucose; β-*D*-Pyranose-*form*, A-132
- 5-Amino-1,6-anhydro-5-deoxy-β-*L*-idopyranose, A-293
- 3-Amino-1,6-anhydro-3-deoxy-β-*D*-mannopyranose, A-313
- 4-Amino-1,6-anhydro-4-deoxy-β-*D*-mannopyranose, A-314
- 4-Amino-1,6-anhydro-4-deoxytalose; β-*D*-Pyranose-*form*, A-145
- 2-Amino-2-deoxy-β-*D*-glucopyranosyl-(1 → 3)-[2-amino-2-deoxy-β-*D*-glucopyranosyl-(1 → 4)]-*D*-mannose; β-*D*-Pyranose-*form*; 1,6-Anhydro, 2'*N*,2''-*N*-di-allyloxycarbonyl, 3',3'',4',4'',6',6''-hexa-Ac, A-237
- 2-Amino-2-deoxy-α-*D*-glucopyranosyl-(1 → 3)-[β-*D*-ribofuranosyl-(1 → 4)]-2-amino-2-deoxy-*D*-glucose; β-*D*-Pyranose-*form*; 1,6-Anhydro, 2'*N*-benzyloxycarbonyl, 2''*N*-(2,4-dinitrophenyl), A-265
- 5-Amino-5-deoxyidose; β-*L*-Furanose-*form*; 1,2-*O*-Isopropylidene, *N*-benzyloxycarbonyl, A-293
- 5-Amino-5-deoxy-1,2-*O*-isopropylidene-β-*L*-idofuranose, A-293
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- 1,6-Anhydroaltrose; β-*D*-Furanose-*form*, A-483
- 1,6-Anhydroaltrose; β-*D*-Furanose-*form*, A-493
- 1,6-Anhydroaltrose; β-*D*-Pyranose-*form*, A-493
- 1,6-Anhydro-2-azido-3-*O*-benzyl-2-deoxy-β-*D*-glucopyranose, A-506
- 1,6-Anhydro-2-azido-2-deoxyglucose; β-*D*-Pyranose-*form*, A-506
- 1,6-Anhydro-2-azido-3,4-di-*O*-benzyl-2-deoxy-β-*D*-glucopyranose, A-506
- 1,6-Anhydro-4-*O*-benzoyl-2,3-dideoxy-β-*D*-erythro-hex-2-enopyranose, A-584
- 1,6-Anhydro-4-*O*-benzoyl-2,3-dideoxy-β-*D*-threo-hex-2-enopyranose, A-585
- 1,6-Anhydro-2-*O*-benzoyl-β-*D*-galactopyranose, A-616
- 1,6-Anhydro-2-*O*-benzoyl-3,4-*O*-isopropylidene-β-*D*-galactopyranose, A-616
- 1,6-Anhydro-5-*O*-benzoyl-2,3-*O*-isopropylidene-α-*L*-talofuranose, A-707
- 1,6-Anhydro-5-*O*-benzoyl-α-*L*-talofuranose, A-707
- 1,6-Anhydro-4-*O*-benzyl-β-*D*-allopyranose, A-483
- 1,6-Anhydro-3-*O*-benzyl-β-*D*-altropyranose, A-493
- 1,6-Anhydro-4-*O*-benzyl-β-*D*-altropyranose, A-493
- 1,6-Anhydro-4-*O*-benzyl-3-deoxy-3-fluoro-β-*D*-altropyranose, A-518
- 1,6-Anhydro-4-*O*-benzyl-2-deoxy-2-*C*-vinyl-β-*D*-glucopyranose, A-575
- 1,6-Anhydro-4-*O*-benzyl-2,3-dideoxy-β-*D*-erythro-hex-2-enopyranose, A-584
- 1,6-Anhydro-4-*O*-benzyl-2,3-dideoxy-β-*D*-threo-hex-2-enopyranose, A-585
- 1,6-Anhydro-2-*O*-benzyl-β-*D*-galactopyranose, A-616
- 1,6-Anhydro-4-*O*-benzyl-β-*D*-galactopyranose, A-616
- 1,6-Anhydro-4-*O*-benzyl-β-*D*-glucopyranose, A-634
- 1,6-Anhydro-2-*O*-benzyl-β-*D*-gulopyranose, A-638
- 1,6-Anhydro-3-*O*-benzyl-β-*D*-gulopyranose, A-638
- 1,6-Anhydro-*exo*-3,4-*O*-benzylidene-β-*D*-galactopyranose, A-616
- 1,6-Anhydro-*endo*-3,4-*O*-benzylidene-β-*D*-galactopyranose, A-616
- 1,6-Anhydro-3,4-*O*-*exo*-benzylidene-β-*D*-lyxo-hexopyranos-2-ulose, A-648
- 1,6-Anhydro-2,3-*O*-benzylidene-β-*D*-lyxo-hexopyranos-4-ulose, A-649
- 1,6-Anhydro-3,4-*O*-*endo*-benzylidene-β-*D*-ribo-hexopyranos-2-ulose, A-650
- 1,6-Anhydro-3,4-*O*-*exo*-benzylidene-β-*D*-ribo-hexopyranos-2-ulose, A-650
- 1,6-Anhydro-2,3-*O*-benzylidene-β-*D*-ribo-hexopyranos-4-ulose, A-651
- 1,6-Anhydro-2,3-*O*-benzylidene-β-*D*-mannopyranose, A-675
- 1,6-Anhydro-2,3-*O*-benzylidene-4-*O*-methyl-β-*D*-mannopyranose, A-675
- 1,6-Anhydro-3-*O*-benzyl-β-*D*-idopyranose, A-656
- 1,6-Anhydro-2-*O*-benzyl-3,4-*O*-isopropylidene-β-*D*-galactopyranose, A-616
- 1,6-Anhydro-2-*O*-benzyl-β-*D*-mannopyranose, A-675
- 1,6-Anhydro-3-*O*-benzyl-β-*D*-mannopyranose, A-675
- 1,6-Anhydro-4-*O*-benzyl-2-*O*-tosyl-β-*D*-allopyranose, A-483
- 1,6-Anhydro-3-*O*-benzyl-2-*O*-tosyl-β-*D*-xylo-hexofuranos-5-ulose, A-646
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 β -L-Fucopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; 1,6-Anhydro, 2,2',3,3',4'-pentabenzyl, 2'',3'',4''-tri-Ac, F-134
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 α -D-Galactopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; 1,6-Anhydro, 2'',3'',4'',6''-tetrabenzyl, penta-Ac, G-131
 α -D-Galactopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; 1,6-Anhydro, G-131
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 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-*form*; 1,6-Anhydro, nona-Ac, M-72
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 2,3,4-Triacetamido-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -D-allofuranose, A-483
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- β -D-allopyranose, A-483
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -L-altrofuranose, A-493
 2,3,4-Tri-*O*-acetyl-1,6-anhydro-6S-bromo- β -D-glucopyranose, A-510
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -D-galactofuranose, A-615
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- β -D-galactopyranose, A-616
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -D-glucofuranose, A-634
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- β -D-glucopyranose, A-634
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- α -L-gulofuranose, A-638
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- β -D-gulopyranose, A-638
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -D-idofuranose, A-656
 2,3,4-Tri-*O*-acetyl-1,6-anhydro- β -D-idopyranose, A-656
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -D-mannofuranose, A-675
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- β -D-mannopyranose, A-675
 2,3,5-Tri-*O*-acetyl-1,6-anhydro- α -D-talofuranose, A-707
 2,3,4-Triamino-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
 2,3,4-Tri-*O*-benzoyl- β -D-galactopyranose, A-616

2,3-Anhydrosugars

Allyl 2,3-anhydro- β -D-ribofuranoside, A-693
 2,3-Anhydroallose; α -D-Pyranose-*form*, A-484
 2,3-Anhydro-5-*O*-benzoyl- α -D-lyxofuranose, A-664
 2,3-Anhydro-5-bromo-5-deoxy-1,4-lyxonolactone; *D*-*form*, A-507
 2,3-Anhydro-6-deoxy-1,4-mannonolactone; *L*-*form*, A-566
 2,3-Anhydroxylose; α -D-Furanose-*form*; Et glycoside, 5-tetrahydropyranyl, A-664
 2,3-Anhydroxylose; β -D-Furanose-*form*; Et glycoside, 5-tetrahydropyranyl, A-664
 2,3-Anhydroxylose; α -D-Furanose-*form*; Me glycoside, 5-*p*-nitrobenzoyl, A-664
 2,3-Anhydroxylose; β -D-Furanose-*form*; Me glycoside, 5-*p*-nitrobenzoyl, A-664
 2,3-Anhydromannose; β -D-Pyranose-*form*, A-676

2,3-Anhydribofuranose; α -D-*form*; Me glycoside, 5-*p*-nitrobenzoyl, A-690
 2,3-Anhydribofuranose, A-690
 2,3-Anhydribofuranose; *D*-Pyranose-*form*, A-693
 2',3'-Anhydriuridine; 5',*N*-Di-Me, A-722
 2',3'-Anhydriuridine; *N*-Me, A-722
 1-*O*-Benzoyl-2,3-*O*-isopropylidene- β -DL-*erythro*-pentopyranos-4-ulose, P-44
 Benzyl 4-amino-2,3-anhydro-4-deoxy- α -D-lyxopyranoside, A-298
 Benzyl 4-amino-2,3-anhydro-4-deoxy- β -L-lyxopyranoside, A-298
 Benzyl 4-amino-2,3-anhydro-4-deoxy- β -D-ribofuranoside, A-331
 Benzyl 4-amino-2,3-anhydro-4-deoxy- α -D-xylofuranoside, A-357
 Benzyl 4-amino-2,3-anhydro-4-deoxy- β -L-xylofuranoside, A-357
 Benzyl 2,3-anhydro- α -D-allopyranoside, A-484
 Benzyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-allopyranoside, A-484
 Benzyl 2,3-anhydro-4,6-*O*-benzylidene- β -D-gulopyranoside, 8CI, A-639
 Benzyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-mannopyranoside, A-676
 Benzyl 2,3-anhydro- α -D-mannopyranoside, A-676
 Benzyl 2,3-anhydro- β -D-mannopyranoside, A-676
 Benzyl 2,3-anhydro-4-*O*-methyl- β -D-ribofuranoside, A-693
 Benzyl 2,3-anhydro- β -D-*erythro*-pentopyranosid-4-ulose, A-682
 Benzyl 2,3-anhydro- β -L-*erythro*-pentopyranosid-4-ulose, A-682
 Benzyl 2,3-anhydro- α -D-ribofuranoside, A-693
 Benzyl 2,3-anhydro- β -D-ribofuranoside, A-693
 Benzyl 2,3-anhydro- β -L-ribofuranoside, A-693
 Benzyl 2,3-anhydro-4-*O*-triflyl- α -D-ribofuranoside, A-693
 4-Chloro-4-deoxyxylose; β -L-Pyranose-*form*, C-110
 Ethyl 5-*O*-acetyl-2,3-anhydro- α -D-lyxofuranoside, A-664
 Ethyl 5-*O*-acetyl-2,3-anhydro- β -D-lyxofuranoside, A-664
 Ethyl 5-*O*-acetyl-2,3-anhydro- α -D-ribofuranoside, A-690
 Ethyl 5-*O*-acetyl-2,3-anhydro- β -D-ribofuranoside, A-690
 Ethyl 2,3-anhydro- α -D-lyxofuranoside, A-664
 Ethyl 2,3-anhydro- β -D-lyxofuranoside, A-664
 Ethyl 2,3-anhydro- α -D-ribofuranoside, A-690
 Ethyl 2,3-anhydro- β -D-ribofuranoside, A-690
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-ribose; β -Pyranose-*form*; Benzyl glycoside, 2,3-anhydro, heptabenzyl, G-400
 Methyl 4-acetamido-2,3-anhydro-4,6-dideoxy- α -D-allopyranoside, A-365
 Methyl 4-*O*-acetyl-2,3-anhydro-6-deoxy- α -D-gulopyranoside, A-527
 Methyl 4-*O*-acetyl-2,3-anhydro-6-deoxy- β -D-gulopyranoside, A-527
 Methyl 5-*O*-acetyl-2,3-anhydro- α -D-lyxofuranoside, A-664
 Methyl 5-*O*-acetyl-2,3-anhydro- β -D-lyxofuranoside, A-664
 Methyl 4-*O*-acetyl-2,3-anhydro- α -D-rhamnopyranoside, A-687
 Methyl 5-*O*-acetyl-2,3-anhydro- β -D-ribofuranoside, A-690
 Methyl 5-*O*-acetyl-2,3-anhydro- α -D-ribofuranoside, A-690
 Methyl 4-*O*-acetyl-2,3-anhydro- β -D-ribofuranoside, A-693
 Methyl 2,3-anhydro- β -D-allopyranoside, A-484
 Methyl 2,3-anhydro- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-5-*O*-benzoyl- α -D-lyxofuranoside, A-664
 Methyl 2,3-anhydro-5-*O*-benzoyl- β -D-ribofuranoside, A-690
 Methyl 2,3-anhydro-4-*O*-benzoyl- β -D-ribofuranoside, A-693
 Methyl 2,3-anhydro-6-*O*-benzoyl-5-*O*-tosyl- β -D-allofuranoside, A-484
 Methyl 2,3-anhydro-6-*O*-benzoyl- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-6-*O*-benzoyl- β -D-allopyranoside, A-484
 Methyl 2,3-anhydro-5-*O*-benzoyl-6-deoxy- α -D-allofuranoside, 9CI, A-484
 Methyl 2,3-anhydro-6-*O*-benzoyl- α -D-gulopyranoside, A-639
 Methyl 2,3-anhydro-4,6-*O*-benzylideneallopyranoside; α -D-*form*, M-151
 Methyl 2,3-anhydro-4,6-*O*-benzylideneallopyranoside; β -D-*form*, M-151
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-gulopyranoside, 8CI, A-639
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- β -D-gulopyranoside, A-639
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- β -D-mannopyranoside, M-169
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-talopyranoside, A-708
 Methyl 2,3-anhydro-4,6-*O*-benzylidene- β -D-talopyranoside, A-708
 Methyl 2,3-anhydro-5-*O*-benzoyl- α -D-lyxofuranoside, 8CI, A-664
 Methyl 2,3-anhydro-5-*O*-benzoyl- β -D-lyxofuranoside, 8CI, A-664
 Methyl 2,3-anhydro-5-*O*-benzoyl- α -D-ribofuranoside, 8CI, A-690
 Methyl 2,3-anhydro-5-*O*-benzoyl- β -D-ribofuranoside, 8CI, A-690
 Methyl 2,3-anhydro-4-*O*-benzoyl- β -D-ribofuranoside, 8CI, A-693
 Methyl 2,3-anhydro-4-*O*-benzoyl-6-*O*-trityl- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-4-*O*-benzoyl-6-*O*-trityl- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-4-bromo-4-deoxy-6-*O*-trityl- α -D-gulopyranoside, B-78
 Methyl 2,3-anhydro-4-chloro-4-deoxy- α -L-xylopyranoside, C-110
 Methyl 2,3-anhydro-6-deoxy- α -D-allopyranoside, A-516
 Methyl 2,3-anhydro-6-deoxy- α -L-allopyranoside, A-516
 Methyl 2,3-anhydro-6-deoxy- α -D-gulopyranoside, 9CI, 8CI, A-527
 Methyl 2,3-anhydro-6-deoxy- β -D-gulopyranoside, 9CI, A-527
 Methyl 2,3-anhydro-4-deoxy- α -D-lyxo-hexopyranoside, A-555
 Methyl 2,3-anhydro-4-deoxy- β -D-lyxo-hexopyranoside, A-555
 Methyl 2,3-anhydro-4-deoxy- α -DL-lyxo-hexopyranoside, A-555
 Methyl 2,3-anhydro-4-deoxy- α -DL-ribo-hexopyranoside, A-558
 Methyl 2,3-anhydro-6-deoxy- α -D-ribo-hexopyranosid-4-ulose, 9CI, D-191
 Methyl 2,3-anhydro-6-deoxy- α -L-ribo-hexopyranosid-4-ulose, D-191

Methyl 2,3-anhydro-6-deoxy- α -D-*lyxo*-hexopyranosid-4-ulose, A-549
 Methyl 2,3-anhydro-6-deoxy-4-*O*-methyl- α -D-allopyranoside, A-516
 Methyl 2,3-anhydro-5-deoxy- α -D-ribofuranoside, 9CI, A-690
 Methyl 2,3-anhydro-5-deoxy- β -D-ribofuranoside, 9CI, A-690
 Methyl 2,3-anhydro-5,6-di-*O*-benzoyl- β -D-allofuranoside, A-484
 Methyl 2,3-anhydro-4,6-di-*O*-methyl- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-4,6-di-*O*-methyl- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-4,6-di-*O*-methyl- β -D-allopyranoside, A-484
 Methyl 2,3-anhydro-4,6-di-*O*-methyl- β -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-5,6-di-*O*-tosyl- β -D-allofuranoside, A-484
 Methyl 2,3-anhydro-4,6-di-*O*-tosyl- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro- α -L-erythrofuranside, A-602
 Methyl 2,3-anhydro- β -L-erythrofuranside, A-602
 Methyl 2,3-anhydro- α -DL-erythrofuranside, A-602
 Methyl 2,3-anhydro- β -DL-erythrofuranside, A-602
 Methyl 2,3-anhydro-4,6-*O*-ethylidene- α -D-allopyranoside, 9CI, 8CI, A-484
 Methyl 2,3-anhydro-4,6-*O*-ethylidene- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro- α -D-lyxofuranoside, 9CI, 8CI, A-664
 Methyl 2,3-anhydro- β -D-lyxofuranoside, 9CI, A-664
 Methyl 2,3-anhydro- α -D-lyxopyranoside, A-664
 Methyl 2,3-anhydro- α -D-mannopyranoside, 8CI, A-676
 Methyl 2,3-anhydro- β -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-4-*O*-methyl- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-6-*O*-methyl- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-5-*O*-methyl- α -D-lyxofuranoside, A-664
 Methyl 2,3-anhydro-5-*O*-methyl- β -D-lyxofuranoside, A-664
 Methyl 2,3-anhydro-4-*O*-methyl- β -D-ribofuranoside, 9CI, A-693
 Methyl 2,3-anhydro-4-*O*-methyl- α -D-ribofuranoside, A-693
 Methyl 2,3-anhydro- β -D-*erythro*-pentopyranosid-4-ulose, 9CI, A-682
 Methyl 2,3-anhydro- β -L-*erythro*-pentopyranosid-4-ulose, A-682
 Methyl 2,3-anhydro-4,6-*O*-propylidene- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro- α -D-rhamnopyranoside, A-687
 Methyl 2,3-anhydro- β -D-ribofuranoside, 9CI, A-690
 Methyl 2,3-anhydro- α -D-ribofuranoside, 9CI, A-690
 Methyl 2,3-anhydro- β -D-ribofuranoside, 9CI, 8CI, A-693
 Methyl 2,3-anhydro- α -D-ribofuranoside, 9CI, A-693
 Methyl 2,3-anhydro-6-*O*-tosyl- α -D-gulopyranoside, A-639
 Methyl 2,3-anhydro-5-*O*-tosyl- α -D-lyxofuranoside, A-664
 Methyl 2,3-anhydro-5-*O*-tosyl- β -D-lyxofuranoside, A-664
 Methyl 2,3-anhydro-5-*O*-tosyl- β -D-ribofuranoside, A-690
 Methyl 2,3-anhydro-4-*O*-trityl- α -D-ribofuranoside, A-693
 Methyl 2,3-anhydro-4-*O*-trityl- β -D-ribofuranoside, A-693
 Methyl 2,3-anhydro-6-*O*-trityl- α -D-allopyranoside, A-484
 Methyl 2,3-anhydro-6-*O*-trityl- α -D-gulopyranoside, A-639
 Methyl 2,3-anhydro-5-*O*-trityl- α -D-lyxofuranoside, A-664
 Methyl 2,3-anhydro-5-*O*-trityl- β -D-lyxofuranoside, A-664
 Methyl 2,3-anhydro-6-*O*-trityl- α -D-mannopyranoside, A-676
 Methyl 2,3-anhydro-5-*O*-trityl- α -D-ribofuranoside, A-690
 Methyl 2,3-anhydro-5-*O*-trityl- β -D-ribofuranoside, A-690
 Methyl 4,6-di-*O*-acetyl-2,3-anhydro- α -D-allopyranoside, A-484
 Methyl 2,3-*O*-isopropylidene- β -DL-*erythro*-pentopyranosid-4-ulose, P-44
 Phenyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-mannopyranoside, 8CI, A-676
 1,5,6-Tri-*O*-acetyl-2,3-anhydro- β -D-allofuranose, A-484
 2,3,4-Tri-*O*-acetyl-1,5-anhydrobitol, A-689
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-*form*; Me glycoside, 2,3-anhydro, 2'',3',3'',4',4''-penta-Ac, X-60
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-*form*; Me glycoside, 2,3-anhydro, 2',2'',3',3'',4''-penta-Ac, X-61
 β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-*form*; Me glycoside, 2,3-anhydro, X-60
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-*form*; Me glycoside, 2,3-anhydro, X-61

2,5-Anhydrosugars

1-Acetamido-6-*O*-acetyl-2,5-anhydro-1-deoxy-3,4-*O*-isopropylidene-D-talitol, A-143
 1-Acetamido-2,5-anhydro-1-deoxy-D-allitol, A-122
 1-Acetamido-2,5-anhydro-1-deoxy-3,4,6-tri-*O*-methyl-D-talitol, A-143
 1-Acetamido-2,5-anhydro-3,4,6-tri-*O*-benzoyl-1-deoxy-D-allitol, A-122
 1-Acetamido-2,5-anhydro-3,4,6-tri-*O*-benzyl-1-deoxy-D-allitol, A-122
 6-*O*-Acetyl-2,5-anhydro-1,3,4-tri-*O*-methyl-D-glucitol, A-627
 1-*O*-Acetyl-2,5-anhydro-3,4,6-tri-*O*-methyl-D-glucitol, A-627
 1-Amino-2,5-anhydro-1-deoxyarabinitol; D-*form*, A-125
 6-Amino-2,5-anhydro-6-deoxyglucitol; D-*form*, A-131
 1-Amino-2,5-anhydro-1-deoxymannitol; D-*form*; N-Benzyl, A-139
 1-Amino-2,5-anhydro-1-deoxymannitol; D-*form*; N-Ph, A-139
 1-Amino-2,5-anhydro-1-deoxymannitol; D-*form*, A-139
 1-Amino-2,5-anhydro-1-deoxyribitol; D-*form*, A-142

1-Amino-2,5-anhydro-1-deoxytalitol; D-*form*; 3,4-*O*-Isopropylidene, N-allyl, N-Ac, A-143
 1-Amino-2,5-anhydro-1-deoxyxylitol; D-*form*, A-146
 6-Amino-2,5-anhydro-1,6-dideoxyglucitol; D-*form*, A-148
 6-Amino-2,5-anhydro-1,6-dideoxyglucitol; L-*form*, A-148
 1-Amino-2,5-anhydro-3,4,6-tri-*O*-benzoyl-1-deoxy-D-allitol, A-122
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-D-mannose; 2,5-Anhydro, 2',N,2'',N,3,3',3'',4'',6,6',6''-nona-Ac, A-240
 2,5-Anhydroallonic acid; D-*form*; Tribenzoyl, Me ester, A-481
 2,5-Anhydroallonic acid; L-*form*, A-481
 2,5-Anhydroallose, A-485
 2,5-Anhydroaltritol; D-*form*, A-490
 2,5-Anhydro-L-arabinose dimethylacetal, A-503
 2,5-Anhydroarabinose; L-*form*, A-503
 2,5-Anhydro-6-*O*-benzoyl-D-allononitrile, A-481
 2,5-Anhydro-3-*O*-benzoyl-1,4-dideoxy-L-*arabino*-hexitol, A-587
 2,5-Anhydro-6-*O*-benzoyl-3,4-*O*-isopropylidene-D-allononitrile, 9CI, 8CI, A-481
 2,5-Anhydro-6-*O*-benzoyl-3,4-*O*-isopropylidene-D-allose, A-485
 2,5-Anhydro-3-*O*-benzyl-6-*O*-tosyl-L-idose dithioacetal, A-657
 2,5-Anhydro-6-deoxygluconic acid; D-*form*; Me ester, A-523
 2,5-Anhydro-6-deoxygluconic acid; L-*form*; Me ester, A-523
 2,5-Anhydro-1-deoxyxylitol; D-*form*, A-564
 2,5-Anhydro-1-deoxymannitol; D-*form*, A-565
 2,5-Anhydro-1-deoxytalitol; D-*form*, A-573
 2,5-Anhydro-1,6-di-*O*-benzoyl-D-altritol, A-490
 2,5-Anhydro-1,6-di-*O*-benzoyl-3,4-di-*O*-mesyl-D-mannitol, A-670
 2,5-Anhydro-1,6-di-*O*-benzoyl-D-glucitol, A-627
 2,5-Anhydro-1,6-di-*O*-benzoyl-D-iditol, A-654
 2,5-Anhydro-4,6-di-*O*-benzoyl-1,3-*O*-isopropylidene-D-glucitol, A-627
 2,5-Anhydro-1,6-di-*O*-benzoyl-D-mannitol, A-670
 2,5-Anhydro-1,3,4,6-di-*O*-benzylidene-L-iditol, A-654
 2,5-Anhydro-1,6-dideoxy-1,6-bis(dimethylamino)-3,4-di-*O*-mesyl-D-glucitol, D-397
 2,5-Anhydro-1,6-dideoxy-1,6-bis(dimethylamino)-D-glucitol, D-397
 2,5-Anhydro-1,6-dideoxy-1,6-bis(dimethylamino)-DL-glucitol, D-397
 2,5-Anhydro-1,6-dideoxy-1,6-bis(trimethylammonio)-DL-glucitol, D-397
 2,5-Anhydro-1,6-dideoxy-1,6-dimethylamino-D-gulitol, A-148
 2,5-Anhydro-1,4-dideoxy-xylo-hexitol; D-*form*, A-588
 2,5-Anhydro-1,3,4,6-di-*O*-isopropylidene-L-iditol, A-654
 2,5-Anhydro-1,6-di-*O*-mesyl-D-mannitol, A-670
 2,5-Anhydro-3,4-di-*O*-tosyl-1,6-di-*O*-trityl-D-mannitol, A-670
 2,5-Anhydro-1,6-di-*O*-tosyl-L-iditol, A-654
 2,5-Anhydro-3,6-di-*O*-tosyl-L-idose dimethyl dithioacetal, A-657
 2,5-Anhydro-3,4-di-*O*-tosyl-D-lyxose dimethyl acetal, A-665
 2,5-Anhydro-3,4-di-*O*-tosyl-L-lyxose dimethyl acetal, A-665
 2,5-Anhydrogalactitol, A-614
 2,5-Anhydroglucitol; D-*form*, A-627
 2,5-Anhydroiditol; D-*form*; 3-*O*-Benzyl, A-654
 2,5-Anhydroiditol; D-*form*, A-654
 2,5-Anhydroiditol; L-*form*, A-654
 2,5-Anhydroidose; L-*form*, A-657
 2,5-Anhydro-3,4-*O*-isopropylidene-D-allononitrile, A-481
 2,5-Anhydro-3,4-*O*-isopropylidene-D-allose, A-485
 2,5-Anhydro-3,4-*O*-isopropylidene-D-altritol, A-490
 2,5-Anhydro-3,4-*O*-isopropylidene-6-*O*-(4-nitrobenzoyl)-DL-allononitrile, A-481
 2,5-Anhydromannitol; D-*form*; 1,6-Diphosphate, A-670
 2,5-Anhydromannitol; D-*form*; 1-Phosphate, A-670
 2,5-Anhydromannitol; D-*form*, A-670
 2,5-Anhydromannose, A-677
 2,5-Anhydrotalose; D-*form*, A-709
 2,5-Anhydro-1,3,4,6-tetra-*O*-methyl-D-glucitol, A-627
 2,5-Anhydro-1,3,4,6-tetra-*O*-methyl-D-mannitol, A-670
 2,5'-Anhydrothymidine, A-715
 2,5-Anhydro-1-*O*-tosyl-L-iditol, A-654
 2,5-Anhydro-6-*O*-tosyl-L-idose dimethyl acetal, A-657
 2,5-Anhydro-1-*O*-tosyl-D-mannitol, A-670
 2,5-Anhydro-3-*O*-tosyl-D-xylose dimethyl acetal, A-727
 2,5-Anhydro-3,4,5-tri-*O*-benzoyl-D-allonic acid, A-481
 2,5-Anhydro-3,4,6-tri-*O*-benzoyl-D-allononitrile, 9CI, 8CI, A-481
 2,5-Anhydro-3,4,6-tri-*O*-benzoyl-D-allose, A-485
 2,5-Anhydro-3,4,6-tri-*O*-benzoyl-D-altronic acid, A-102
 2,5-Anhydro-3,4,6-tri-*O*-benzoyl-L-talose dimethyl acetal, A-709
 2,5-Anhydro-3,4,6-tri-*O*-benzoyl-D-allonic acid, A-481
 2,5-Anhydro-3,4,6-tri-*O*-benzyl-D-allose, A-485
 2,5-Anhydro-3,4,6-tri-*O*-benzyl-L-talose dimethyl acetal, A-709
 2,5-Anhydroxylose; D-*form*; Di-Me acetal, 3,4-ditosyl, A-727
 1,6-Diacetamido-2,5-anhydro-1,6-dideoxy-3,4-di-*O*-mesyl-L-iditol, D-398
 1,6-Diacetamido-2,5-anhydro-1,6-dideoxy-L-iditol, D-398
 1,6-Diacetamido-3,4-di-*O*-acetyl-2,5-anhydro-1,6-dideoxy-L-iditol, D-398
 3,4-Di-*O*-acetyl-2,5-anhydro-1,6-dideoxy-1,6-diido-D-mannitol, A-578

1,6-Di-*O*-acetyl-2,5-anhydro-3,4-di-*O*-methyl-D-glucitol, A-627
 3,4-Di-*O*-acetyl-2,5-anhydro-1,6-di-*O*-tosyl-D-mannitol, A-670
 1,6-Di-*O*-acetyl-2,5-anhydro-3,4-*O*-isopropylidene-D-altritol, A-490
 1,6-Diamino-2,5-anhydro-1,6-dideoxy-3,4-di-*O*-mesyl-D-glucitol, D-397
 1,6-Diamino-2,5-anhydro-1,6-dideoxyglucitol; *D,L*-form, D-397
 1,6-Diamino-2,5-anhydro-1,6-dideoxyglucitol; *D*-form, D-397
 1,6-Diamino-2,5-anhydro-1,6-dideoxyiditol; *L*-form;
N,N,N,N',N',N'-Hexa-Me, D-398
 1,6-Diamino-2,5-anhydro-1,6-dideoxyiditol; *L*-form; *N,N,N,N',N'*-Tetra-Me,
 3,4-dimesyl, D-398
 1,6-Diamino-2,5-anhydro-1,6-dideoxyiditol; *L*-form; *N,N,N,N',N'*-Tetra-Me,
 D-398
 1,6-Diamino-2,5-anhydro-1,6-dideoxyiditol; *L*-form, D-398
 1,6-Diamino-2,5-anhydro-1,6-dideoxy-4-*O*-mesyl-D-glucitol, D-397
 Ethyl 2,5-anhydro- α -L-arabinofuranoside, A-503
 Methyl 2,5-anhydro-D-allonate, A-481
 Methyl 2,5-anhydro- α -L-arabinofuranoside, A-503
 Methyl 2,5-anhydro-3-*O*-benzyl-6-deoxy-D-gluconate, A-523
 Methyl 2,5-anhydro-4-*O*-benzyl-6-deoxy-L-gluconate, A-523
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-D-altritol, A-490
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-D-glucitol, A-627
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-L-iditol, A-654
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-D-mannitol, A-670
 1,3,6-Triacetamido-4-*O*-acetyl-2,5-anhydro-1,3,6-trideoxy-L-iditol, T-129
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-D-mannitol, A-670
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-1-*O*-methyl-D-mannitol, A-670
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-1-*O*-tosyl-D-mannitol, A-670
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-1-*O*-trityl-D-mannitol, A-670
 1,3,6-Triamino-2,5-anhydro-1,3,6-trideoxyiditol; *L*-form, T-129

2,6-Anhydrosugars

4-*O*-Acetyl-2,6-anhydro-1,5-di-*O*-methyl-L-*threo*-hex-2-enitol, A-539
 1-*O*-Acetyl-2,6-anhydro-1,4,5-trideoxy-4-(trifluoroacetamido)-L-*arabino*-hex-5-enitol, A-150
 5-Amino-2,6-anhydro-5-deoxyiditol; *D*-form; *N*-Ac, A-138
 5-Amino-2,6-anhydro-5-deoxyiditol; *D*-form, A-138
 2,6-Anhydro-D-altrose dimethylacetal, 9CI, A-494
 2,6-Anhydro-3,4-*O*-benzylidene-1-*O*-trityl- β -D-psicofuranose, A-683
 2,6-Anhydro-3-deoxy-1,5-di-*O*-methyl-L-*threo*-hex-2-enitol, A-539
 2,6-Anhydro-1-deoxy-*gluco*-hept-1-enitol; *D*-form; Tetakis(*tert*-butyldi-
 methylsilyl), A-529
 2,6-Anhydro-1-deoxy-*galacto*-hept-1-enitol; *D*-form, A-528
 2,6-Anhydro-1-deoxy-*gluco*-hept-1-enitol; *D*-form, A-529
 2,6-Anhydro-3-deoxy-*lyxo*-hept-2-enitol; *D*-form, A-530
 2,6-Anhydro-3-deoxy-*lyxo*-hept-2-enose; *D*-form, A-531
 2,6-Anhydro-3-deoxy-*threo*-hex-2-enitol; *L*-form; Tri-Ac, A-539
 2,6-Anhydro-3-deoxy-*threo*-hex-2-enitol; *L*-form, A-539
 2,6-Anhydro-3-deoxy-*threo*-hexopyranos-4-ulose; β -*D*-form; Me glycoside,
 A-550
 2,6-Anhydro-3-deoxy-*threo*-hexopyranos-4-ulose; β -*D*-form, A-550
 2,6-Anhydro-1-deoxy-3,4,5,7-tetra-*O*-methyl-D-*gluco*-hept-1-enitol, A-529
 2,6-Anhydro-1,5-di-*O*-benzyl-3-deoxy-L-*threo*-hex-2-enitol, A-539
 2,6-Anhydrofructofuranose; β -*D*-form, A-603
 2,6-Anhydro-D-*glycero*-D-*gulo*-heptitol; Penta-Ac, A-641
 2,6-Anhydro-D-*glycero*-D-*gulo*-heptitol, A-641
 2,6-Anhydro-3,4-*O*-isopropylidene-1-*O*-trityl- β -D-psicofuranose, A-683
 2,6-Anhydro- β -D-mannopyranosyl fluoride, M-43
 2,6-Anhydro-D-mannose dimethylacetal, A-678
 2,6-Anhydromannose; *D*-form, A-678
 2,6-Anhydrotalopyranosyl fluoride; β -*D*-form; 3,4-Cyclic sulfite, A-704
 2,6-Anhydrotalopyranosyl fluoride; β -*D*-form, A-704
 2,6-Anhydro-1,3,4,5-tetra-*O*-benzoyl-D-*arabino*-hex-1-enitol, A-644
 2,6-Anhydro-3,4,5,7-tetra-*O*-benzyl-1-deoxy-D-*gluco*-hept-1-enitol, A-529
 2,6-Anhydro-1,4,5-trideoxy-4-(trifluoroacetamido)-L-*arabino*-hex-5-enitol,
 A-150
 3,4-Di-*O*-acetyl-2,6-anhydro-D-idopyranose, A-658
 D-*glycero*-L-*gulo*-Heptitol; 2,6-Anhydro, penta-Ac, H-17
 D-*glycero*-L-*gulo*-Heptitol; 2,6-Anhydro, pentabenzyl, H-17
 Methyl 3-*O*-acetyl-2,6-anhydro-4-*O*-methyl- β -D-mannopyranoside, A-678
 Methyl 2,6-anhydro- α -D-altropyranoside, A-494
 Methyl 2,6-anhydro- β -D-altropyranoside, A-494
 Methyl 2,6-anhydro-3,4-di-*O*-methyl- β -D-talopyranoside, A-710
 Methyl 2,6-anhydro- α -D-idopyranoside, A-658
 Methyl 2,6-anhydro- β -D-idopyranoside, A-658
 Methyl 2,6-anhydro-3,4-*O*-isopropylidene- β -D-altropyranoside, A-494
 Methyl 2,6-anhydro-3,4-*O*-isopropylidene- α -D-altropyranoside, A-494
 Methyl 2,6-anhydro-3,4-*O*-isopropylidene- α -D-talopyranoside, A-710
 Methyl 2,6-anhydro- α -D-mannofuranoside, A-671
 Methyl 2,6-anhydro- α -D-mannopyranoside, A-678
 Methyl 2,6-anhydro- α -D-talopyranoside, A-710
 Methyl 2,6-anhydro- β -D-talopyranoside, A-710

Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-altropyranoside, A-494
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-altropyranoside, A-494
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-idopyranoside, A-658
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-idopyranoside, A-658
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-mannopyranoside, A-678
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-mannopyranoside, A-678
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- α -D-talopyranoside, A-710
 Methyl 3,4-di-*O*-acetyl-2,6-anhydro- β -D-talopyranoside, A-710
 Methyl 2,6:3,4-dianhydro- α -D-altropyranoside, D-491
 3,4,5,7-Tetra-*O*-acetyl-2,6-anhydro-1-deoxy-D-*gluco*-hept-1-enitol, A-529
 1,3,4-Tri-*O*-acetyl-2,6-anhydro- β -D-fructofuranose, A-603
 1,3,4-Tri-*O*-acetyl-2,6-anhydro-D-idopyranose, A-658

3,4-Anhydrosugars

3,4-Anhydro-2,6-dideoxy- β -D-*ribo*-hexopyranosyl 6-deoxy-3-*O*-methyl- β -
 D-allopyranoside, S-14
 3,4-Anhydro-1,2-*O*-isopropylidene- β -D-tagatopyranose, T-2
 3,4-Anhydrotagatose, A-701
 Benzyl 3,4-anhydro-2,6-dideoxy- α -L-*ribo*-hexopyranoside, A-591
 Benzyl 3,4-anhydro-2-*O*-mesyl-6-*O*-trityl- α -D-altropyranoside, A-495
 Methyl 2-*O*-acetyl-3,4-anhydro- α -D-arabinopyranoside, A-504
 Methyl 2-*O*-acetyl-3,4-anhydro- β -L-arabinopyranoside, A-504
 Methyl 3,4-anhydro- α -DL-allopyranoside, A-486
 Methyl 3,4-anhydro- α -D-altropyranoside, A-495
 Methyl 3,4-anhydro- α -D-arabinopyranoside, A-504
 Methyl 3,4-anhydro- α -L-arabinopyranoside, A-504
 Methyl 3,4-anhydro- β -L-arabinopyranoside, A-504
 Methyl 3,4-anhydro-6-deoxy- β -L-*arabino*-hex-5-enopyranoside, A-542
 Methyl 3,4-anhydro-6-deoxy-*ribo*-hex-5-enopyranoside, A-543
 Methyl 3,4-anhydro-6-deoxy- α -L-*arabino*-hex-5-enopyranoside, A-542
 Methyl 3,4-anhydro-1,6-di-*O*-tosyl- α -D-tagatofuranoside, A-701
 Methyl 3,4-anhydro-1,6-di-*O*-tosyl- β -D-tagatofuranoside, A-701
 Methyl 3,4-anhydro- α -D-tagatofuranoside, 9CI, A-701
 Methyl 3,4-anhydro- β -D-tagatofuranoside, 9CI, A-701
 Methyl 3,4-anhydro-6-*O*-trityl- α -D-altropyranoside, A-495
 Methyl 1,6-di-*O*-acetyl-3,4-anhydro- α -D-tagatofuranoside, A-701
 Methyl 1,6-di-*O*-acetyl-3,4-anhydro- β -D-tagatofuranoside, A-701
 Methyl 2,6-di-*O*-acetyl-3,4-anhydro- α -DL-talopyranoside, A-711
 Methyl 2,6:3,4-dianhydro- α -D-altropyranoside, D-491
 Sarcobiose, S-14

3,6-Anhydrosugars

2-*O*-Acetyl-3,6-anhydro-5-*O*-benzoyl- β -L-idofuranosyl fluoride, A-655
 Agarobiose, A-60
 1-Amino-3,6-anhydro-1-deoxygalactitol; *D*-form, A-126
 2-Amino-3,6-anhydro-2-deoxyglucitol; *D*-form, A-128
 1-Amino-3,6-anhydro-1-deoxymannitol; *D*-form, A-140
 3,6-Anhydroallose; *D*-form, A-487
 3,6-Anhydro-5-deoxy-5-fluoro-1,2-*O*-isopropylidene- α -L-idofuranose,
 A-519
 3,6-Anhydro-2-deoxyglucose; *D*-form, A-526
 3,6-Anhydro-2-deoxy-4,5-*O*-isopropylidene-D-glucose, A-526
 3,6-Anhydro-1,2-dideoxy-D-*altro*-hept-1-ynitol, R-105
 3,6-Anhydro-1,2-dideoxy-D-*allo*-hept-1-ynitol, R-105
 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-D-*altro*-hept-1-ynitol,
 R-105
 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-D-*allo*-hept-1-ynitol,
 R-105
 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-D-*arabino*-hex-1-enitol,
 D-576
 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-7-*O*-trityl-D-*altro*-hept-1-
 ynitol, R-105
 3,6-Anhydro-1,2,4,5-di-*O*-isopropylidene-D-glucitol, A-628
 3,6-Anhydro-1,2,4,5-di-*O*-isopropylidene-L-glucitol, A-628
 3,6-Anhydro-2,5-di-*O*-methyl-D-mannono-1,4-lactone, A-672
 3,6-Anhydrofructose; *D*-form, A-607
 1,4-Anhydrofucitol; *L*-form, A-608
 3,6-Anhydrogalactose; *D*-form, A-620
 3,6-Anhydrogalactose; *L*-form, A-620
 3,6-Anhydro-L-glucitol, A-628
 3,6-Anhydro-1,4-gluconolactone; *D*-form, A-629
 3,6-Anhydroglucose; *D*-form, A-635
 1,4-Anhydro-L-gulitol, A-628
 3,6-Anhydroglucose; *L*-Furanose-form, A-640
 3,6-Anhydroidose; *L*-Furanose-form, A-659
 3,6-Anhydro-4,5-*O*-isopropylidene-D-allose dimethylacetal, A-487
 3,6-Anhydro-1,2-*O*-isopropylidene- α -D-galactopyranose, A-620
 3,6-Anhydro-1,2-*O*-isopropylidene- α -L-galactopyranose, A-620
 3,6-Anhydro-4,5-*O*-isopropylidene-D-glucitol, A-628
 3,6-Anhydro-1,2-*O*-isopropylidene-L-glucitol, A-628
 3,6-Anhydro-1,2-*O*-isopropylidene- α -D-glucufuranose, A-635

3,6-Anhydro-1,2-*O*-isopropylidene-β-L-idofuranose, A-659
 3,6-Anhydro-1,2-*O*-isopropylidene-5-*O*-mesyl-α-D-allofuranose, A-487
 3,6-Anhydro-1,4-mannonolactone; *D*-form, A-672
 3',6'-Anhydrosucrose, A-699
 3,6-Anhydro-2-*O*-tosyl-D-mannono-1,4-lactone, A-672
 3,6-Anhydro-4,5,7-tri-*O*-benzyl-1,2-dideoxy-D-*altro*-hept-1-ynitol, R-105
 3,6-Anhydro-4,5,7-tri-*O*-benzyl-1,2-dideoxy-D-*allo*-hept-1-ynitol, R-105
 4,5-Di-*O*-acetyl-3,6-anhydro-1,2-*O*-isopropylidene-L-glucitol, A-628
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxymannitol; *D*-form, D-406
 Ethyl 3,6-anhydro-7-*O*-benzoyl-2-deoxy-4,5-*O*-isopropylidene-D-*allo*-heptonate, A-532
 Ethyl 3,6-anhydro-2-deoxy-4,5-*O*-isopropylidene-D-*allo*-heptonate, A-532
 Ethyl 3,6-anhydro-4,5,7-tri-*O*-benzyl-2-deoxy-D-*allo*-heptonate, A-532
 Methyl 2-acetamido-4-*O*-acetyl-3,6-anhydro-2-deoxy-α-D-glucopyranoside, M-144
 Methyl 2-acetamido-3,6-anhydro-2-deoxy-α-D-glucopyranoside, M-144
 Methyl 4-*O*-acetyl-3,6-anhydro-α-D-galactopyranoside, A-620
 Methyl 3,6-anhydro-2-*O*-benzyl-α-D-galactopyranoside, A-620
 Methyl 3,6-anhydro-2-*O*-benzyl-β-D-galactopyranoside, A-620
 Methyl 3,6-anhydro-2-deoxy-4,5,7,8-di-*O*-isopropylidene-D-*glycero*-D-*talo*-octonate, 9CI, M-174
 Methyl 3,6-anhydro-2-deoxy-4,5,7,8-di-*O*-isopropylidene-D-*glycero*-D-*galacto*-octonate, 9CI, M-174
 Methyl 3,6-anhydro-2-deoxy-4,5-*O*-isopropylidene-D-*allo*-heptonate, A-532
 Methyl 3,6-anhydro-2,5-di-*O*-benzoyl-α-D-glucufuranoside, A-635
 Methyl 3,6-anhydro-2,5-di-*O*-benzoyl-β-D-glucufuranoside, A-635
 Methyl 3,6-anhydro-α-D-galactopyranoside, A-620
 Methyl 3,6-anhydro-β-D-galactopyranoside, A-620
 Methyl 3,6-anhydro-α-D-glucufuranoside, A-635
 Methyl 3,6-anhydro-β-D-glucufuranoside, A-635
 Methyl 3,6-anhydro-α-D-glucopyranoside, A-635
 Methyl 3,6-anhydro-β-D-glucopyranoside, A-635
 Methyl 3,6-anhydro-α-L-gulofuranoside, A-640
 Methyl 3,6-anhydro-α-L-idofuranoside, A-659
 Methyl 3,6-anhydro-β-L-idofuranoside, A-659
 Methyl 3,6-anhydro-α-D-mannofuranoside, A-679
 Methyl 3,6-anhydro-α-D-mannopyranoside, A-679
 Methyl 3,6-anhydro-β-D-mannopyranoside, A-679
 Methyl 3,6-anhydro-2-*O*-tosyl-D-talonate, A-702
 Methyl 3,6-anhydro-4,5,7-tri-*O*-benzyl-2-deoxy-D-*allo*-heptonate, A-532
 Methyl 2-deoxy-4,5-*O*-isopropylidene-7-*O*-trityl-D-*allo*-heptonate, A-532
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro-α-L-gulofuranoside, A-640
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro-β-L-gulofuranoside, A-640
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro-α-L-idofuranoside, A-659
 Methyl 2,5-di-*O*-acetyl-3,6-anhydro-β-L-idofuranoside, A-659
 Neocarrabiose, N-17
 4,5,7-Tri-*O*-acetyl-3,6-anhydro-1,2-dideoxy-D-*altro*-hept-1-ynitol, R-105
 1,4,5-Tri-*O*-acetyl-3,6-anhydro-D-fructose, A-607
 1,2,5-Tri-*O*-acetyl-3,6-anhydro-α-L-gulofuranose, A-640
 1,2,5-Tri-*O*-acetyl-3,6-anhydro-β-L-gulofuranose, A-640
 1,2,5-Tri-*O*-acetyl-3,6-anhydro-L-idofuranose, A-659
 1,2,5-Tri-*O*-acetyl-3,6-anhydro-α-D-mannofuranose, A-679
 1,2,5-Tri-*O*-acetyl-3,6-anhydro-β-D-mannofuranoside, A-679

4,6-Anhydrosugars

Methyl 4,6-anhydro-2,3-di-*O*-methyl-α-D-galactopyranose, A-621

5,6-Anhydrosugars

5,6-Anhydro-3-*O*-benzyl-1,2-*O*-isopropylidene-α-D-allofuranose, A-488
 5,6-Anhydro-3-*O*-benzyl-1,2-*O*-isopropylidene-β-L-idofuranose, 8CI, A-660
 5,6-Anhydro-1,2-*O*-isopropylidene-α-D-allofuranose, A-488
 5,6-Anhydro-1,2-*O*-isopropylidene-α-D-glucufuranose, A-636
 5,6-Anhydro-1,2-*O*-isopropylidene-β-L-idofuranose, A-660
 5,6-Anhydro-1,2-*O*-isopropylidene-3-*O*-mesyl-β-L-idofuranose, A-660
 5,6-Anhydro-1,2-*O*-isopropylidene-3-*O*-methyl-α-D-gulofuranose, I-68
 5,6-Anhydro-1,2-*O*-isopropylidene-3-*O*-tosyl-β-L-idofuranose, A-660
 Methyl 5,6-anhydro-2,3-*O*-isopropylidene-β-L-allofuranoside, M-148
 1,2,3-Tri-*O*-acetyl-5,6-anhydro-D-galactofuranose, A-622

Dianhydrosugars

2-*O*-Acetyl-1,4,3,6-dianhydro-D-glucitol, D-503
 5-*O*-Acetyl-1,4,3,6-dianhydro-D-glucitol, D-503
 4-*O*-Acetyl-1,6,2,3-dianhydro-β-D-gulopyranose, D-505
 4-*O*-Acetyl-1,3,2,5-dianhydro-6-*O*-tosyl-L-iditol, D-506
 3-*O*-Acetyl-1,2,4,5-dianhydroxylylitol, D-516
 2-Amino-2-deoxy-α-D-glucopyranosyl-(1 → 4)-β-D-glucopyranuronosyl-(1 → 4)-D-mannose; β-Pyranose-form; 1,6,2,3-Dianhydro, 2',3',3'',4''-tetrabenzyl, 6'-Me, 2''N,6''-di-Ac, A-256

2-Amino-1,4,3,6-dianhydro-2-deoxyditol; *L*-form; *N,N*-Di-Me, A-359
 2-Amino-1,4,3,6-dianhydro-2-deoxyditol; *L*-form, A-359
 2-Amino-1,4,3,6-dianhydro-2-deoxymannitol; *D*-form, A-360
 6-Amino-2,5,3,4-dianhydro-1,6-dideoxygalactitol; *D*-form; *N,N*-Di-Me, A-361
 6-Amino-2,5,3,4-dianhydro-1,6-dideoxygalactitol; *D*-form; *N,N,N*-Tri-Me, A-361
 6-Amino-2,5,3,4-dianhydro-1,6-dideoxygalactitol; *D*-form, A-361
 3',6'-Anhydrosucrose; 1',4':3,6-Dianhydro, di-Ac, A-699
 3',6'-Anhydrosucrose; 2,1':3,6-Dianhydro, di-Ac, A-699
 3',6'-Anhydrosucrose; 2,1':3,6-Dianhydro, di-Me, A-699
 3',6'-Anhydrosucrose; 2,1':3,6-Dianhydro, ditosyl, A-699
manno-Cerny epoxide, D-511
 1,6-Diacetamido-2,5,3,4-dianhydro-1,6-dideoxygalactitol, D-403
 1,6-Di-*O*-acetyl-2,5,3,4-dianhydro-D-altritol, D-489
 2,4-Di-*O*-acetyl-1,6,3,6-dianhydro-D-galactohexodialdopyranose, D-500
 4,6-Di-*O*-acetyl-1,3,2,5-dianhydro-D-glucitol, D-502
 2,5-Di-*O*-acetyl-1,4,3,6-dianhydro-D-iditol, D-507
 2,5-Di-*O*-acetyl-1,4,3,6-dianhydro-L-iditol, D-507
 2,5-Di-*O*-acetyl-1,4,3,6-dianhydro-D-mannitol, D-509
 1,6-Diamino-2,5,3,4-dianhydro-1,6-dideoxyaltritol; *L*-form; *N,N'*-Di-Ac, D-402
 1,6-Diamino-2,5,3,4-dianhydro-1,6-dideoxyaltritol; *L*-form; *N,N,N,N',N',N'*-Hexa-Me, D-402
 1,6-Diamino-2,5,3,4-dianhydro-1,6-dideoxyaltritol; *L*-form, D-402
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxyglucitol; *D*-form, D-404
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxyditol; *L*-form; Hydrochloride (1:2), D-405
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxyditol; *L*-form, D-405
 2,5-Diamino-1,4,3,6-dianhydro-2,5-dideoxymannitol; *D*-form, D-406
 1,6,2,3-Dianhydroallopuranose; β-D-Pyranose-form, D-487
 1,6,3,4-Dianhydroallose; *D*-form, D-488
 2,5,3,4-Dianhydroaltritol; *D*-form, D-489
 2,5,3,4-Dianhydroaltritol; *L*-form, D-489
 2,5,3,4-Dianhydroaltritol; *DL*-form, D-489
 1,6,3,4-Dianhydroaltrose; *D*-form, D-490
 1,6,2,3-Dianhydro-5-*O*-benzoyl-β-D-allofuranose, D-486
 1,6,2,3-Dianhydro-5-*O*-benzoyl-α-L-talofuranose, D-513
 1,2,4,5-Dianhydro-3-*O*-benzoylxylylitol, D-516
 1,6,2,3-Dianhydro-4-*O*-benzyl-β-D-allopyranose, D-487
 1,6,3,4-Dianhydro-2-*O*-benzyl-β-D-galactopyranose, D-501
 1,4,3,6-Dianhydro-5-*O*-benzyl-D-glucitol, D-503
 1,6,2,3-Dianhydro-4-*O*-benzyl-β-D-mannopyranose, D-511
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 2,6,3,4-Dianhydro-1-deoxy-*talo*-hept-1-enitol; *D*-form, D-493
 1,6,2,3-Dianhydro-4-deoxy-*lyxo*-hexopyranose; β-D-form, D-494
 1,6,2,3-Dianhydro-4-deoxy-*ribo*-hexopyranose; β-D-form, D-495
 1,6,3,4-Dianhydro-2-deoxy-*lyxo*-hexose; β-D-Pyranose-form, D-496
 1,6,3,4-Dianhydro-2-deoxy-*ribo*-hexose; β-D-Pyranose-form, D-497
 2,5,3,6-Dianhydro-1-deoxy-4-*O*-mesyl-D-glucitol, D-492
 2,5,3,6-Dianhydro-1-deoxy-4-*O*-tosyl-D-glucitol, D-492
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 1,4,3,6-Dianhydroglucitol; *D*-form; 2,5-Di-Me ether, D-503
 1,4,3,6-Dianhydroglucitol; *D*-form; 2,5-Ditosyl, D-503
 1,4,3,6-Dianhydroglucitol; *D*-form; 2-Tosyl, 5-Ac, D-503
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 1,4:3,6-Dianhydromannose; α -D-Pyranose-*form*, D-510
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 1,6:2,3-Dianhydro-4-*O*-methyl- β -D-gulopyranose, D-505
 1,6:2,3-Dianhydro-4-*O*-methyl- β -D-mannopyranose, D-511
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 2,7-Anhydro-4,5-*O*-*exo*-benzylidene-1-*O*-trityl- β -D-*ribo*-hepto-2,3-diulo-2,6-pyranose, A-642
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 3,7-Anhydro-1,2-dideoxy-D-*glycero*-D-*gulo*-oct-1-enitol, A-599
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 4,8-Anhydro-1,2,3-trideoxy-D-*glycero*-D-*gulo*-non-1-enitol; Tetra-Ac, A-718
 4,8-Anhydro-1,2,3-trideoxy-D-*glycero*-D-*ido*-non-1-enitol; Tetra-Ac, A-719
 4,8-Anhydro-1,2,3-trideoxy-D-*glycero*-L-*manno*-non-1-enitol; Tetra-Ac, A-720
 4,8-Anhydro-1,2,3-trideoxy-D-*glycero*-D-*tal*o-non-1-enitol; Tetra-Ac, A-721
 4,8-Anhydro-1,2,3-trideoxy-D-*glycero*-D-*gulo*-non-1-enitol; Tetrabenzoyl, A-718
 4,8-Anhydro-1,2,3-trideoxy-D-*glycero*-D-*ido*-non-1-enitol; Tetrabenzoyl, A-719
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 α -L-Sorbofuranose α -L-sorbopyranose 1,2':2,1'-dianhydride, S-54
 α -L-Sorbofuranose α -L-sorbopyranose 1,2':2,3'-dianhydride, S-55
 β -L-Sorbofuranose α -L-sorbopyranose 1,2':2,1'-dianhydride, S-56
 α -D-Sorbopyranose α -L-sorbopyranose 1,2':2,1'-dianhydride; Hexa-Ac, S-57
 α -L-Sorbopyranose β -L-sorbopyranose 1,2':2,1'-dianhydride; Hexa-Ac, S-58

α -D-Sorbopyranose α -L-sorbopyranose 1,2':2,1'-dianhydride, S-57
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6-*O*-Acetyl-2-azido-3,4-di-*O*-benzyl-2-deoxy- α -D-glucopyranosyl bromide, A-905
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2-*O*-Acetyl-3,4-di-*O*-benzyl- β -D-fucopyranosyl fluoride, F-97
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4-*O*-Benzoyl-2,3-di-*O*-benzyl- β -L-fucopyranosyl fluoride, F-97
2-*O*-Benzoyl-4,6-di-*O*-methyl- α -D-mannopyranosyl fluoride, M-43
2-*O*-Benzoyl-4,6-di-*O*-methyl- β -D-mannopyranosyl fluoride, M-43
3-*O*-Benzoyl-4,6-di-*O*-methyl- β -D-mannopyranosyl fluoride, M-43
Benzoyl-2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- α -D-galactopyranuronate, G-176
2-*O*-Benzyl-3,5-bis-*O*-(4-nitrobenzoyl)- α -D-arabinofuranosyl chloride, A-794
5-*O*-Benzyl-2,3-di-*O*-methyl- α -D-ribofuranosyl fluoride, R-97
5-*O*-Benzyl-2,3-di-*O*-methyl- β -D-ribofuranosyl fluoride, R-97
2-*O*-Benzyl-3,4,6-tris-*O*-(4-nitrobenzoyl)- α -D-glucopyranosyl bromide, G-260
2-*O*-Benzyl-3,4,6-tris-*O*-(4-nitrobenzoyl)- β -D-glucopyranosyl bromide, G-260
1-Bromo-1-deoxy-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, B-67
6-Bromo-6-deoxyglucopyranosyl fluoride; α -D-form, B-73
5-*O*-*tert*-Butyldimethylsilyl-2,3-*O*-isopropylidene- α -D-ribofuranosyl chloride, R-144
5-*O*-*tert*-Butyldimethylsilyl-2,3-*O*-isopropylidene- β -D-ribofuranosyl chloride, R-144
1-Chloro-1-deoxy-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, C-79
1-Chloro-1-deoxy-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, C-101
1-Chloro-1-deoxyfructose; *D*-form, C-79
1-Chloro-1-deoxy-2,3-*O*-isopropylidene- β -D-fructofuranose, C-79
1-Chloro-1-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, C-101
1-Chloro-1-deoxysorbose; *L*-form, C-101
1'-Chloro-1'-deoxysucrose; Hepta-Ac, C-104
1'-Chloro-1'-deoxysucrose, C-104
6-Deoxyallofuranosyl bromide; β -D-form; Tris(4-nitrobenzoyl), D-33
2-Deoxy-3,5-di-*O*-toluoyl- α -D-erythro-pentofuranosyl chloride, D-357
2-Deoxy-3,5-di-*O*-toluoyl- β -D-erythro-pentofuranosyl chloride, D-357
1-Deoxy-1-fluoro-2,3,4,5-di-*O*-isopropylidene-D-fructose, D-73
6-Deoxy-6-fluoro-1,2,3,4-di-*O*-isopropylidene- α -L-galactopyranose, D-83
1-Deoxy-1-fluorofructose; *D*-form, D-73
6-Deoxy-6-fluorogalactose; *L*-form, D-83
6-Deoxy-6-fluoro- α -D-glucopyranosyl fluoride, 8Cl, D-92
6-Deoxy-6-fluoro- β -D-glucopyranosyl fluoride, 8Cl, D-92
1'-Deoxy-1'-fluorosucrose, S-92
6-Deoxyglucopyranosyl fluoride; α -D-form, D-130
1-Deoxy- α -D-glucopyranosyl iodide uronic acid; α -D-Pyranose-form, D-131
3-Deoxy-erythro-hex-2-enopyranosyl fluoride; α -D-form; Tri-Ac, D-180
3-Deoxy-erythro-hex-2-enopyranosyl fluoride; α -D-form; Tribenzoyl, D-180
2-Deoxy-arabino-hexopyranosyl fluoride; α -D-form; 3,6-Dibenzoyl, D-196
2-Deoxy-lyxo-hexopyranosyl fluoride; α -D-form; 3,6-Dibenzoyl, D-197
2-Deoxy-lyxo-hexopyranosyl fluoride; α -D-form; 4,6-Dibenzoyl, D-197
2-Deoxy-ribo-hexopyranosyl fluoride; α -D-form; 3,6-Dibenzoyl, D-198
2-Deoxy-arabino-hexopyranosyl fluoride; α -D-form; Tri-Ac, D-196
2-Deoxy-arabino-hexopyranosyl fluoride; α -D-form; Tribenzoyl, D-196
2-Deoxy-lyxo-hexopyranosyl fluoride; α -D-form; Tribenzoyl, D-197
2-Deoxy-ribo-hexopyranosyl fluoride; α -D-form; Tribenzoyl, D-198
2-Deoxy-arabino-hexopyranosyl fluoride; α -D-form, D-196
2-Deoxy-lyxo-hexopyranosyl fluoride; α -D-form, D-197
2-Deoxy-ribo-hexopyranosyl fluoride; α -D-form, D-198
1-Deoxy-1-iodo-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, D-254
1-Deoxy-1-iodo-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, D-273
1-Deoxy-1-iodo-2,3-*O*-isopropylidene- α -L-sorbofuranose, D-273
6-Deoxy-2,3-*O*-isopropylidene-4-*O*-methyl- β -L-gulopyranosyl chloride, D-145
2-Deoxy-erythro-pentopyranosyl fluoride; α -D-form; Dibenzoil, D-343
2-Deoxy-erythro-pentopyranosyl fluoride; β -D-form; Dibenzoil, D-343
2-Deoxy-threo-pentopyranosyl fluoride; β -D-form; Dibenzoil, D-344
2-Deoxy-erythro-pentopyranosyl fluoride; α -D-form, D-343
2-Deoxy-threo-pentopyranosyl fluoride; α -D-form, D-344
2-Deoxyribofuranosyl chloride; α -D-form; 3,5-Bis(4-chlorobenzoyl), D-357
2-Deoxyribofuranosyl chloride; α -L-form; 3,5-Bis(4-methylbenzoyl), D-357
6-Deoxytalofuranosyl bromide; α -L-form; Tris(4-nitrobenzoyl), D-371
3,4-Di-*O*-acetyl-2,5-anhydro-1,6-dideoxy-1,6-diiodo-D-mannitol, A-578
3,6-Di-*O*-acetyl-2-azido-4-*O*-benzyl-2-deoxy- α -D-glucopyranosyl bromide, A-905
4,6-Di-*O*-acetyl-2-azido-3-*O*-benzyl-2-deoxy- α -D-glucopyranosyl bromide, A-905
3,5-Di-*O*-acetyl-2-*O*-benzyl-D-ribofuranosyl chloride, R-144
3,4-Di-*O*-acetyl-2-bromo-2,6-dideoxy- α -L-talopyranosyl bromide, B-110
3,4-Di-*O*-acetyl-2-chloro-2,6-dideoxy- β -L-talopyranosyl chloride, C-116

- 4,6-Di-*O*-acetyl-2,3-di-*O*-benzyl- α -D-mannopyranosyl chloride, M-42
 2,4-Di-*O*-acetyl-3,6-di-*O*-benzyl- α -D-mannopyranosyl chloride, M-42
 3,4-Di-*O*-acetyl-2-*O*-methyl- β -D-arabinopyranosyl fluoride, A-832
 3,5-Di-*O*-benzoyl- α -L-arabinofuranosyl bromide, A-793
 3,4-Di-*O*-benzoyl-2-bromo-2-deoxy- β -D-lyxopyranosyl bromide, L-75
 3,4-Di-*O*-benzoyl-2-bromo-2-deoxy- β -D-lyxopyranosyl bromide, L-75
 3,5-Di-*O*-benzoyl-6-deoxy- β -D-glucopyranosyl fluoride, D-128
 2,3-Di-*O*-benzoyl-4,6-di-*O*-methyl- α -D-mannopyranosyl fluoride, M-43
 2,3-Di-*O*-benzoyl-4,6-di-*O*-methyl- β -D-mannopyranosyl fluoride, M-43
 3,5-Di-*O*-benzoyl-2-*O*-methyl- α -D-arabinofuranosyl fluoride, A-795
 3,5-Di-*O*-benzoyl-2-*O*-methyl- β -D-arabinofuranosyl fluoride, A-795
 3,4-Di-*O*-benzoyl-2-bromo-2-deoxy- β -D-lyxopyranosyl fluoride, A-832
 3,4-Di-*O*-benzoyl-2-*O*-methyl- β -D-arabinopyranosyl fluoride, A-832
 3,5-Di-*O*-benzoyl-2-*O*-methyl- α -D-xylofuranosyl fluoride, X-6
 3,5-Di-*O*-benzoyl-2-*O*-methyl- β -D-xylofuranosyl fluoride, X-6
 3,4-Di-*O*-benzoyl-2-*O*-methyl- α -D-xylopyranosyl fluoride, X-16
 3,4-Di-*O*-benzoyl-2-*O*-methyl- β -D-xylopyranosyl fluoride, X-16
 3,5-Di-*O*-benzoyl- β -D-ribofuranosyl bromide, R-96
 3,5-Di-*O*-benzoyl- β -D-ribofuranosyl chloride, R-144
 2,5-Di-*O*-benzoyl- β -D-ribofuranosyl fluoride, R-97
 3,5-Di-*O*-benzoyl- β -D-ribofuranosyl fluoride, R-97
 2,3-Di-*O*-benzoyl-5-*O*-tosyl- α -L-arabinofuranosyl bromide, A-793
 2,3-Di-*O*-benzoyl-5-*O*-methyl- α -D-ribofuranosyl fluoride, R-97
 2,3-Di-*O*-benzoyl-5-*O*-methyl- β -D-ribofuranosyl fluoride, R-97
 2,3-Di-*O*-benzoyl-5-*O*-(4-nitrobenzoyl)- α -D-arabinofuranosyl chloride, A-794
 1,6-Dibromo-1,6-dideoxy-3,4-*O*-isopropylidene-D-mannitol, D-538
 1,6-Dibromo-1,6-dideoxymannitol; D-form; 3,4-*O*-Isopropylidene, 2,5-di-Ac, D-538
 1,6-Dibromo-1,6-dideoxymannitol; D-form, D-538
 2,3,4,6-Di-*O*-cyclohexylidene- α -D-mannopyranosyl chloride, M-42
 3,4-Dideoxy-*glycero*-hex-3-enopyranosulos-1-yl fluoride; α -D-form; Ac, D-590
 3,4-Dideoxy-*glycero*-hex-3-enopyranosulos-1-yl fluoride; α -D-form; Benzoyl, D-590
 2,3,5,6-Di-*O*-isopropylidene- β -D-allofuranosyl bromide, A-76
 2,3,5,6-Di-*O*-isopropylidene-D-allofuranosyl chloride, A-77
 2,3,5,6-Di-*O*-isopropylidene- β -D-allofuranosyl chloride, A-77
 2,3,5,6-Di-*O*-isopropylidene- β -D-gulofuranosyl chloride, G-583
 2,3,5,6-Di-*O*-isopropylidene- α -D-mannofuranosyl bromide, M-26
 2,3,5,6-Di-*O*-isopropylidene- α -D-mannofuranosyl chloride, M-27
 2,3,5,6-Di-*O*-isopropylidene- β -D-mannofuranosyl chloride, M-27
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 5-*C*-Fluorogalactosyl fluoride; α -D-Pyranose-form, F-14
 Fucopyranosyl chloride; α -L-form, F-96
 Fucopyranosyl fluoride; α -L-form, F-97
 Galactofuranosyl bromide; α -D-form; 2,3-Dibenzoyl, 5-chloroacetyl, 6-pivaloyl, G-6
 Galactofuranosyl bromide; β -D-form; 2,3-Dibenzoyl, 5,6-bis-(4-nitrobenzoyl), G-6
 Galactopyranosyl iodide; α -D-form; 2,3,4,6-Tetra-Ac, G-33
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 2,3-*O*-Isopropylidene-5-*O*-mesyl- β -D-ribofuranosyl chloride, R-144
 2,3-*O*-Isopropylidene-5-*O*-methoxymethyl- β -D-ribofuranosyl chloride, R-144
 2,3-*O*-Isopropylidene-5-*O*-methoxymethyl- α -D-ribofuranosyl chloride, R-144
 2,3-*O*-Isopropylidene-5-*O*-tosyl- α -L-rhamnofuranosyl chloride, R-8
 2,3-*O*-Isopropylidene-5-*O*-trityl- β -D-ribofuranosyl chloride, R-144
 Lyxosyl chloride; α -D-Pyranose-form; Tribenzoyl, 2-*C*-chloro, L-76
 Lyxosyl chloride; β -D-Pyranose-form; Tribenzoyl, 2-*C*-chloro, L-76
 Mannopyranosyl fluoride; α -D-form, M-43
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 Mannopyranosyl iodide; α -D-form; 2,3,4,6-Tetrabenzoyl, M-44
 Methyl 1-bromo-1-deoxy- α -D-fructopyranoside, B-67
 Methyl 1-bromo-1-deoxy- β -D-fructopyranoside, B-67
 Methyl 1-chloro-1-deoxy- α -D-fructofuranoside, C-79
 Methyl 1-chloro-1-deoxy- β -D-fructofuranoside, C-79
 Methyl 6-deoxy-6-fluoro- β -D-galactopyranoside, 9CI, D-83
 Methyl 2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- α -D-glucopyranuronate, 8CI, G-469
 Methyl 2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- β -D-glucopyranuronate, G-469
 Methyl 3,4,6-tri-*O*-acetyl-1-chloro-1-deoxy- α -D-fructofuranoside, C-79
 Methyl 3,4,6-tri-*O*-acetyl-1-chloro-1-deoxy- β -D-fructofuranoside, C-79
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-fluoro- β -D-galactopyranoside, D-83
 2-*O*-Nitro-3,5-bis-*O*-(4-nitrobenzoyl)- α -D-arabinofuranosyl chloride, A-794
 2-*O*-Nitro-3,5-bis-*O*-(4-nitrobenzoyl)- β -D-arabinofuranosyl chloride, A-794
 Rhamnopyranosyl bromide; α -L-form; Tribenzoyl, R-11
 Ribofuranosyl bromide; β -D-form; 3,5-Dibenzoyl, 2-(4-nitrobenzoyl), R-96
 Ribofuranosyl bromide; β -D-form; 2,3-*O*-Isopropylidene, 5-(4-nitrobenzoyl), R-96
 Ribofuranosyl bromide; β -D-form; Tris(4-nitrobenzoyl), R-96
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 2,3,4,6-Tetra-*O*-acetyl- α -D-allopyranosyl bromide, A-81
 2,3,4,6-Tetra-*O*-acetyl- β -D-allopyranosyl bromide, A-81
 2,3,4,6-Tetra-*O*-acetyl- β -D-allopyranosyl fluoride, A-82
 2,3,4,6-Tetra-*O*-acetyl- α -D-allopyranosyl fluoride, A-82
 2,3,4,6-Tetra-*O*-acetyl- α -D-altropyranosyl bromide, A-104
 2,3,4,6-Tetra-*O*-acetyl- α -D-altropyranosyl chloride, A-105
 2,3,4,6-Tetra-*O*-acetyl- α -D-altropyranosyl fluoride, A-106
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-D-fructose, B-67
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-L-fructose, B-67
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-DL-fructose, B-67
 3,4,5,6-Tetra-*O*-acetyl-1-bromo-1-deoxy-D-psicose, B-90
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-D-fructose, C-79
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-L-fructose, C-79
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-D-psicose, C-79
 3,4,5,6-Tetra-*O*-acetyl-1-chloro-1-deoxy-D-psicose, C-99
 2,3,4,6-Tetra-*O*-acetyl-1-*C*-chloro- α -D-glucopyranosyl bromide, C-118
 3,4,5,6-Tetra-*O*-acetyl-1-deoxy-1-iodo-D-fructose, D-254
 3,4,5,6-Tetra-*O*-acetyl-1-deoxy-1-iodo-D-psicose, D-268
 2,3,4,6-Tetra-*O*-acetyl-5-*C*-fluoro- α -D-galactopyranosyl fluoride, F-14
 1,3,4,6-Tetra-*O*-acetyl- α -D-fructofuranosyl fluoride, F-55
 1,3,4,6-Tetra-*O*-acetyl- β -D-fructofuranosyl fluoride, F-55
 1,3,4,5-Tetra-*O*-acetyl- β -D-fructopyranosyl bromide, F-79
 1,3,4,5-Tetra-*O*-acetyl- β -D-fructopyranosyl chloride, F-80
 1,3,4,5-Tetra-*O*-acetyl- β -D-fructopyranosyl fluoride, F-81
 2,3,5,6-Tetra-*O*-acetyl- β -D-galactofuranosyl bromide, G-6
 2,3,5,6-Tetra-*O*-acetyl- β -D-galactofuranosyl chloride, G-205
 2,3,5,6-Tetra-*O*-acetyl- α -D-galactofuranosyl fluoride, G-7
 2,3,5,6-Tetra-*O*-acetyl- β -D-galactofuranosyl fluoride, G-7
 2,3,4,6-Tetra-*O*-acetyl- α -D-galactopyranosyl bromide, 9CI, 8CI, G-27
 2,3,4,6-Tetra-*O*-acetyl- α -D-galactopyranosyl chloride, G-205
 2,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranosyl chloride, G-205
 2,3,4,6-Tetra-*O*-acetyl- α -D-galactopyranosyl fluoride, G-28
 2,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranosyl fluoride, G-28
 2,3,4,5-Tetra-*O*-acetyl- β -D-galactoseptanosyl chloride, G-204
 2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl bromide, G-260
 2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl bromide, G-260
 2,3,4,6-Tetra-*O*-acetyl- α -L-glucopyranosyl bromide, G-260
 2,3,4,6-Tetra-*O*-acetyl- α -DL-glucopyranosyl bromide, G-260
 2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl chloride, G-261
 2,3,4,6-Tetra-*O*-acetyl- β -D-glucopyranosyl chloride, G-261
 2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl fluoride, G-262
 2,3,4,6-Tetra-*O*-acetyl- β -D-glucopyranosyl fluoride, G-262
 4-*O*-(2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl)-tri-*O*-acetyl- α -D-glucopyranosyl bromide, M-15
 2,3,4,6-Tetra-*O*-acetyl- α -D-gulopyranosyl bromide, G-585
 2,3,4,6-Tetra-*O*-acetyl- β -L-gulopyranosyl bromide, G-585
 2,3,4,6-Tetra-*O*-acetyl- α -L-idopyranosyl bromide, I-5
 2,3,4,6-Tetra-*O*-acetyl- α -D-idopyranosyl fluoride, I-7
 2,3,5,6-Tetra-*O*-acetyl- α -D-mannofuranosyl bromide, M-26
 2,3,5,6-Tetra-*O*-acetyl- β -D-mannofuranosyl bromide, M-26
 2,3,5,6-Tetra-*O*-acetyl- α -D-mannofuranosyl fluoride, M-28
 2,3,5,6-Tetra-*O*-acetyl- β -D-mannofuranosyl fluoride, M-28
 2,3,4,6-Tetra-*O*-acetyl- α -D-mannopyranosyl bromide, 9CI, 8CI, M-41
 2,3,4,6-Tetra-*O*-acetyl- α -D-mannopyranosyl chloride, M-42
 2,3,4,6-Tetra-*O*-acetyl- β -D-mannopyranosyl chloride, M-42
 2,3,4,6-Tetra-*O*-acetyl- α -D-mannopyranosyl fluoride, M-43
 2,3,4,6-Tetra-*O*-acetyl- β -D-mannopyranosyl fluoride, M-43
 2,3,4,6-Tetra-*O*-acetyl-5-thio- α -D-glucopyranosyl bromide, T-73
 2,3,4,6-Tetra-*O*-acetyl-5-thio- β -D-glucopyranosyl bromide, T-73
 2,3,4,6-Tetra-*O*-benzoyl-2-*C*-chloro- α -D-talopyranosyl chloride, C-121
 1,3,4,6-Tetra-*O*-benzoyl-D-fructofuranosyl bromide, F-53
 1,3,4,5-Tetra-*O*-benzoyl- β -D-fructopyranosyl chloride, F-80
 2,3,5,6-Tetra-*O*-benzoyl- β -D-galactofuranosyl fluoride, G-7
 2,3,4,6-Tetra-*O*-benzoyl- α -D-galactopyranosyl chloride, G-205
 2,3,4,6-Tetra-*O*-benzoyl- α -D-galactopyranosyl fluoride, G-28
 2,3,4,6-Tetra-*O*-benzoyl- α -D-glucopyranosyl bromide, G-260
 2,3,4,6-Tetra-*O*-benzoyl- α -D-glucopyranosyl chloride, G-261

- 6-Bromo-6-deoxy-1,4-galactonolactone, B-69
 2-Bromo-2-deoxygalactose; *D-form*, B-70
 2-Bromo-2-deoxymannose; *D-form*, B-87
 2-Bromo-2-deoxyribose; β -*D*-Furanose-*form*, B-92
 2-Bromo-2-deoxy-L-threono-1,4-lactone, B-111
 2-Bromo-2,6-dideoxy-L-glucono-1,4-lactone, B-107
 2-C-Bromo-2,3,4,6-tetra-*O*-benzoyl-D-glucono-1,5-lactone, B-116
 2'-Chloro-2'-deoxyadenosine, C-68
 2-Chloro-2-deoxyarabinose; *D-form*; Di-Et dithioacetal, C-74
 2-Chloro-2-deoxyascorbic acid; *L-form*, C-78
 2-Chloro-2-deoxyglucose; *D-form*, C-85
 2-Chloro-2-deoxylyxose; α -*D*-Pyranose-*form*, C-95
 2-Chloro-2-deoxyxylose; *D*-Pyranose-*form*, C-108
 2-Deoxy-2,2-difluoro-*arabino*-hexose; *D-form*, D-55
 2'-Deoxy-2'-fluoro-adenosine, D-63
 1-(2-Deoxy-2-fluoro- β -D-arabinofuranosyl)uracil, D-66
 2-Deoxy-2-fluoroarabinose; α -*L*-Furanose-*form*; 1,3,5-Tribenzoyl, D-68
 2-Deoxy-2-fluoroarabinose; β -*D*-Furanose-*form*, D-68
 2-Deoxy-2-fluoroarabinose; α -*D*-Pyranose-*form*, D-68
 2-Deoxy-2-fluoroarabinose; β -*D*-Pyranose-*form*, D-68
 2-Deoxy-2-fluoroarabinose; *D-form*, D-68
 2'-Deoxy-2'-fluoro-*ara*-aristeromycin, D-70
 2-Deoxy-2-fluoroascorbic acid; *L-form*, D-71
 2'-Deoxy-2'-fluorocytidine, D-72
 2-Deoxy-2-fluorogalactose; α -*D*-Pyranose-*form*; 1-(Dihydrogen phosphate), D-80
 2-Deoxy-2-fluorogalactose; β -*D*-Pyranose-*form*, D-80
 2-Deoxy-2-fluorogalactose; *D-form*, D-80
 2-Deoxy-2-fluoroglucose; *D-form*, D-88
 2'-Deoxy-2'-fluoroguanosine, D-93
 2-Deoxy-2-fluoromannose; *D-form*, D-101
 2-Deoxy-2-fluororibose; *D-form*, D-106
 2-Deoxy-2-fluorotalose; β -*D*-Pyranose-*form*; Trifluoromethyl glycoside, tri-Ac, D-111
 2-Deoxy-2-fluorotalose; α -*D*-Pyranose-*form*, D-111
 2-Deoxy-2-fluorotalose; β -*D*-Pyranose-*form*, D-111
 2'-Deoxy-2'-fluorouridine, D-113
 2-Deoxy-2-fluoroxylase; α -*D*-Pyranose-*form*; Trifluoromethyl glycoside, di-Ac, D-118
 2-Deoxy-2-fluoroxylase; β -*D*-Pyranose-*form*, D-118
 2-Deoxy-2-fluoroxylase; *D-form*, D-118
 2'-Deoxy-2'-iodo-adenosine, D-242
 2-Deoxy-2-iodoascorbic acid; *L-form*, D-252
 2-Deoxy-2-iodoribose; β -*D*-Furanose-*form*, D-270
 3,4-Di-*O*-acetyl-1,6-anhydro-2-bromo-2-deoxy- β -D-altropyranose, B-58
 3,4-Di-*O*-acetyl-1,6-anhydro-2-chloro-2-deoxy- α -D-allopyranose, C-70
 3,4-Di-*O*-acetyl-1,6-anhydro-2-deoxy-2-iodo- β -D-glucopyranose, A-562
 3,4-Di-*O*-acetyl-1-*O*-benzoyl-2-bromo-2-deoxy- α -D-arabinopyranose, B-62
 3,4-Di-*O*-acetyl-2-bromo-2,6-dideoxy- α -L-talopyranosyl bromide, B-110
 3,4-Di-*O*-acetyl-2-chloro-2-deoxy-D-xylopyranose, C-108
 3,4-Di-*O*-acetyl-2-chloro-2,6-dideoxy- β -L-talopyranosyl chloride, C-116
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-D-glucono-1,4-lactone, D-531
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-D-idono-1,4-lactone, D-535
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-D-mannono-1,4-lactone, D-539
 3,4-Di-*O*-benzoyl-2-bromo-2-deoxy- α -D-lyxopyranosyl bromide, L-75
 3,4-Di-*O*-benzoyl-2-bromo-2-deoxy- β -D-lyxopyranosyl bromide, L-75
 3,5-Di-*O*-benzoyl-2-deoxy-2,2-difluoro-D-erythro-1,4-pentonolactone, D-56
 2,6-Dibromo-2,6-dideoxy-D-altrono-1,4-lactone, D-524
 2,6-Dibromo-2,6-dideoxy-D-glucono-1,4-lactone, D-531
 2,6-Dibromo-2,6-dideoxy-L-glucono-1,4-lactone, D-531
 2,7-Dibromo-2,7-dideoxy-D-glycero-D-ido-heptono-1,4-lactone, D-533
 2,6-Dibromo-2,6-dideoxy-D-idono-1,4-lactone, D-535
 2,6-Dibromo-2,6-dideoxy-L-idono-1,4-lactone, D-535
 2,5-Dibromo-2,5-dideoxy-D-lyxono-1,4-lactone, D-536
 2,6-Dibromo-2,6-dideoxy-D-mannono-1,4-lactone, D-539
 2,6-Dibromo-2,6-dideoxy-L-mannono-1,4-lactone, D-539
 2,5-Dibromo-2,5-dideoxy-D-xylo-1,4-lactone, D-540
 2',3'-Didehydro-2',3'-dideoxy-2'-fluorocytidine, D-552
 2',3'-Didehydro-2',3'-dideoxy-2'-fluorothymidine, D-553
 2',3'-Didehydro-2',3'-dideoxy-2'-fluorouridine, D-554
 2,4-Dideoxy-2,4-difluoroglucose; *D-form*, D-561
 2',3'-Dideoxy-2'-fluorocytidine; 2'-Epimer, di-Ac, D-564
 2',3'-Dideoxy-2'-fluorocytidine, D-564
 1,2-Dideoxy-2-fluoro-1,5-iminmannitol; *D-form*, D-566
 1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)-4-thiouracil, D-567
 1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)thymine, D-568
 2',3'-Dideoxy-2'-fluorouridine, D-570
 Ethyl 3,5-di-*O*-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
 F-DDC, D-564
 Lyxosyl chloride; α -*D*-Pyranose-*form*; Tribenzoyl, 2-*C*-chloro, L-76
 Lyxosyl chloride; β -*D*-Pyranose-*form*; Tribenzoyl, 2-*C*-chloro, L-76
 Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
 Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside, D-246
 Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-idopyranoside, D-261
 Methyl 3-*O*-benzoyl-5-*O*-benzyl-2-deoxy-2-fluoro- β -D-xylofuranoside, D-118
 Methyl 4-*O*-benzoyl-2-deoxy-2-iodo- β -L-arabinopyranoside, D-249
 Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
 Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-chloro-2-deoxy- β -D-glucopyranoside, C-85
 Methyl 5-*O*-benzyl-2-deoxy-2-fluoro- β -D-xylofuranoside, D-118
 Methyl 4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-altropyranoside, B-58
 Methyl 4,6-*O*-benzylidene-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
 Methyl 4,6-*O*-benzylidene-2-bromo-2,3-dideoxy-*threo*-hex-3-enopyranoside; α -*D-form*, M-158
 Methyl 3,4-*O*-(*R*)-benzylidene-2-chloro-2-deoxy- α -D-allopyranoside, C-70
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-allopyranoside, C-70
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- β -D-glucopyranoside, C-85
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy- α -D-idopyranoside, C-91
 Methyl 4,6-*O*-benzylidene-2-chloro-2-deoxy-3-*O*-methyl- α -D-allopyranoside, C-70
 Methyl 3,4-*O*-(*R*)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
 Methyl 3,4-*O*-(*S*)-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
 Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-altropyranoside, D-246
 Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- β -D-altropyranoside, D-246
 Methyl 4,6-*O*-benzylidene-2-deoxy-2-iodo- α -D-idopyranoside, D-261
 Methyl 4,6-*O*-benzylidene-2,3-dibromo-2,3-dideoxy- α -D-altropyranoside, D-525
 Methyl 2-bromo-2-deoxy- α -D-altropyranoside, B-58
 Methyl 2-bromo-2-deoxy- α -D-arabinopyranoside, B-62
 Methyl 2-bromo-2-deoxy- α -D-galactopyranoside, B-70
 Methyl 2-bromo-2-deoxy- β -D-galactopyranoside, B-70
 Methyl 2-bromo-2-deoxy-3,4-*O*-isopropylidene- α -D-altropyranoside, B-58
 Methyl 2-bromo-2-deoxy- α -D-mannopyranoside, B-87
 Methyl 2-bromo-2-deoxy- β -D-mannopyranoside, B-87
 Methyl 2-chloro-2-deoxy- α -D-allopyranoside, C-70
 Methyl 2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
 Methyl 2-chloro-2-deoxy- β -D-arabinofuranoside, C-74
 Methyl 2-chloro-2-deoxy- α -D-galactopyranoside, C-82
 Methyl 2-chloro-2-deoxy- β -D-galactopyranoside, C-82
 Methyl 2-chloro-2-deoxy- β -D-glucopyranoside, C-85
 Methyl 2-chloro-2-deoxy- α -D-glucopyranoside, C-85
 Methyl 2-chloro-2-deoxy- β -D-glucopyranoside, C-85
 Methyl 2-chloro-2-deoxy- α -D-idopyranoside, C-91
 Methyl 2-chloro-2-deoxy-3,4-*O*-isopropylidene- α -D-allopyranoside, C-70
 Methyl 2-chloro-2-deoxy- β -D-lyxopyranoside, C-95
 Methyl 2-chloro-2-deoxy- β -D-xylopyranoside, C-108
 Methyl 2-deoxy-2-fluoro- α -D-arabinofuranoside, D-68
 Methyl 2-deoxy-2-fluoro- β -D-galactopyranoside, D-80
 Methyl 2-deoxy-2-fluoro-D-ribofuranoside, D-106
 Methyl 2-deoxy-2-fluoro- β -D-xylofuranoside, D-118
 Methyl 2-deoxy-2-iodo- α -D-altropyranoside, D-246
 Methyl 2-deoxy-2-iodo- α -D-talopyranoside, D-275
 Methyl 3,4-di-*O*-acetyl-1-*O*-benzoyl-2-deoxy-2-iodo- β -D-ribofuranoside, D-270
 Methyl 3,5-di-*O*-acetyl-2-bromo-2-deoxy- α -D-arabinofuranoside, B-62
 Methyl 3,5-di-*O*-acetyl-2-bromo-2-deoxy- β -D-arabinofuranoside, B-62
 Methyl 3,4-di-*O*-acetyl-2-bromo-2-deoxy- α -D-lyxopyranoside, B-82
 Methyl 3,5-di-*O*-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
 Methyl 3,5-di-*O*-acetyl-2-chloro-2-deoxy- β -D-arabinofuranoside, C-74
 Methyl 3,4-di-*O*-acetyl-2-chloro-2-deoxy- α -D-arabinopyranoside, C-74
 Methyl 3,4-di-*O*-acetyl-2-chloro-2-deoxy- α -D-lyxopyranoside, C-95
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -D-arabinopyranoside, D-249
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -L-arabinopyranoside, D-249
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -D-lyxopyranoside, D-263
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- α -L-lyxopyranoside, D-263
 Methyl 3,4-di-*O*-acetyl-2-deoxy-2-iodo- β -D-ribofuranoside, D-270
 Methyl 3,5-di-*O*-benzoyl-2-bromo-2-deoxy- β -D-arabinofuranoside, B-62
 Methyl 3,5-di-*O*-benzoyl-2-bromo-2-deoxy- α -D-ribofuranoside, B-92
 Methyl 3,4-di-*O*-benzoyl-2-deoxy-2-fluoro-D-ribofuranoside, D-106
 Methyl 3,4-di-*O*-benzoyl-2-deoxy-2-fluoro-D-ribofuranoside, D-106
 Methyl 3,5-di-*O*-benzoyl-2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
 Methyl 2,4-dibromo-2,4-dideoxy-L-erythronate, D-541
 Methyl 2,4-dibromo-2,4-dideoxy-D-threonate, D-541
 Methyl 2,4-dibromo-2,4-dideoxy-L-threonate, D-541
 Methyl 2,6-dideoxy-2-fluoro- β -L-talopyranoside, D-569
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- α -D-galactopyranoside, B-70
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-galactopyranoside, B-70
 Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- α -D-mannopyranoside, B-87

Methyl 3,4,6-tri-*O*-acetyl-2-bromo-2-deoxy- β -D-mannopyranoside, B-87
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- α -D-galactopyranoside, C-82
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- β -D-galactopyranoside, C-82
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- α -D-glucopyranoside, C-85
 Methyl 3,4,6-tri-*O*-acetyl-2-chloro-2-deoxy- β -D-glucopyranoside, C-85
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-fluoro- β -D-galactopyranoside, D-80
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-fluoro- β -D-glucopyranoside, D-88
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-iodo- α -D-altropyranoside, D-246
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-iodo- α -D-talopyranoside, D-275
 Methyl 3,4,6-tri-*O*-benzyl-2-bromo-2-deoxy- α -D-mannopyranoside, B-87
 Methyl 3,4,6-tri-*O*-benzyl-2-bromo-2-deoxy- β -D-mannopyranoside, B-87
 1,3,4,6-Tetra-*O*-acetyl-2-bromo-2-deoxy- α -D-mannopyranose, B-87
 1,3,4,6-Tetra-*O*-acetyl-2-chloro-2-deoxy- β -D-galactopyranose, C-82
 1,3,4,6-Tetra-*O*-acetyl-2-chloro-2-deoxy- β -D-glucopyranose, C-85
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- α -D-galactofuranose, D-80
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- β -D-galactofuranose, D-80
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- α -D-galactopyranose, D-80
 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-2-fluoro- β -D-galactopyranose, D-80
 2,3,4,6-Tetra-*O*-acetyl- α -D-talopyranosyl bromide, T-7
 2,3,4,6-Tetra-*O*-benzoyl-2-*C*-chloro- α -D-talopyranosyl chloride, C-121
 1,3,4,5-Tetra-*O*-benzoyl- α -L-sorboxypyransyl bromide, S-60
 1,3,4,5-Tetra-*O*-benzoyl- α -L-sorboxypyransyl chloride, S-60
 1,3,4,6-Tetra-*O*-benzyl-2-deoxy-2-fluoro- β -D-mannopyranoside, D-101
 3,4,6-Tri-*O*-acetyl-1-*O*-benzoyl-2-bromo-2-deoxy- α -D-mannopyranose, B-87
 2,3,5-Tri-*O*-acetyl-6-bromo-6-deoxy-1,4-galactonolactone, B-69
 1,3,5-Tri-*O*-acetyl-2-chloro-2-deoxy- α -D-arabinofuranoside, C-74
 1,3,4-Tri-*O*-acetyl-2-deoxy-2-fluoro- β -D-arabinopyranose, D-68
 2,3,5-Tri-*O*-benzoyl-2-*C*-bromo- α -D-lyxopyranosyl bromide, B-122
 2,3,5-Tri-*O*-benzoyl-2-*C*-bromo- β -D-lyxopyranosyl bromide, B-122
 1,3,4-Tri-*O*-benzoyl-2-deoxy-2-fluoro- β -D-ribose, D-106
 Trifluoromethyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-fluoro- α -D-galactopyranoside, D-80

3-Halogenosugars

1,6-Anhydro-4-*O*-benzyl-3-deoxy-3-fluoro-D-altropyranose, A-518
 1,6-Anhydro-3-bromo-3,4-dideoxy-*glycero*-hex-3-enopyranose-2-ulose; *D-form*, A-508
 1,6-Anhydro-3-deoxy-3-fluoroaltrose; *D*-Pyranose-*form*, A-518
 1,6-Anhydro-3-deoxy-3-fluoroidose; *L*-Pyranose-*form*, A-520
 1,6-Anhydro-3-deoxy-3-fluoromannose; *D*-Pyranose-*form*, A-521
 1,6-Anhydro-2,4-di-*O*-benzoyl-3-deoxy-3-fluoro-D-mannopyranose, A-521
 6-*O*-Benzoyl-3-deoxy-3-fluoro-D-glucose, D-89
 6-*O*-Benzoyl-3-deoxy-3-fluoro-1,2-*O*-isopropylidene- α -D-glucofuranose, D-89
 6-*O*-Benzoyl-3-deoxy-3-fluoro-1,2-*O*-isopropylidene- β -L-idofuranose, D-96
 5-*O*-Benzoyl-3-deoxy-3-fluoro-1,2-*O*-isopropylidene- α -D-xylofuranose, D-119
 Benzyl 3-bromo-3-deoxy-2-*O*-methyl- β -D-xylopyranoside, B-103
 Benzyl 3-bromo-3-deoxy-4-*O*-methyl- β -D-xylopyranoside, B-103
 Benzyl 3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
 Benzyl 3-deoxy-3-iodo- β -L-xylopyranoside, D-280
 Benzyl 2,4-di-*O*-benzoyl-3-bromo-3-deoxy- α -D-xylopyranoside, B-103
 Benzyl 2,4,6-tri-*O*-acetyl-3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
 1-*O*-Benzoyl-3-deoxy-3-fluoro-D-fructose, D-74
 3-Bromo-3-deoxy-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, B-56
 3-Bromo-3-deoxyglucose; *D-form*, B-75
 3-Bromo-3-deoxymannose; *D-form*, B-88
 3'-Bromo-3'-deoxythymidine; 5'-Trityl, B-99
 3'-Bromo-3'-deoxythymidine, B-99
 5a-Bromo-1,2,5a,6,9,9a-hexahydro-1,4-epoxy-3-benzoxepin-5(4*H*)-one; *D-form*, B-119
 3'-Chloro-3'-deoxybutirosin A, B-138
 3-Chloro-3-deoxy-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, C-71
 3-Chloro-3-deoxy-1,2,5,6-di-*O*-isopropylidene- α -D-glucofuranose, C-86
 3-Chloro-3-deoxy-1,2,5,6-di-*O*-isopropylidene- β -D-idofuranose, C-92
 3-Chloro-3-deoxyglucose; *D-form*, C-86
 3'-Chloro-3'-deoxythymidine, C-107
 5-Chloro-2',3'-dideoxy-3'-fluorocytidine, C-115
 1,2-*O*-Cyclohexylidene-3-deoxy-3-fluoro- α -D-glucofuranose, D-89
 3-Deoxy-3-fluoro-1,2,4,6-di-*O*-isopropylidene- α -D-galactofuranose, D-81
 3-Deoxy-3-fluoro-1,2,5,6-di-*O*-isopropylidene- α -D-glucofuranose, D-89
 3-Deoxy-3-fluorofructose; *D-form*, D-74
 3-Deoxy-3-fluorogalactose; *D-form*, D-81
 3-Deoxy-3-fluorogluconic acid; *D-form*, D-84
 3-Deoxy-3-fluoroglucose; *D-form*, D-89
 3'-Deoxy-3'-fluoroguanosine, D-94
 3-Deoxy-3-fluoroidose; *L-form*, D-96
 3-Deoxy-3-fluoro-1,2-*O*-isopropylidene- α -D-glucofuranose 5,6-carbonate, D-89
 3-Deoxy-3-fluoro-1,2-*O*-isopropylidene- α -D-glucofuranose, D-89

3-Deoxy-3-fluoro-1,2-*O*-isopropylidene- β -L-idofuranose, D-96
 3-Deoxy-3-fluoromannose; *D-form*, D-102
 3-Deoxy-3-fluoroxylene; *D-form*, D-119
 3-Deoxy-3-iodoaltrose, D-247
 3-Deoxy-3-iodo-1,2,5,6-di-*O*-isopropylidene- α -D-allofuranose, D-243
 3-Deoxy-3-iodo-1,2-*O*-isopropylidene- α -D-allofuranose, D-243
 3-Deoxy-3-iodo-1,2-*O*-isopropylidene-5,6-di-*O*-mesyl- α -D-allofuranose, D-243
 3'-Deoxy-3'-iodothymidine; 5'-Trityl, D-277
 3'-Deoxy-3'-iodothymidine, D-277
 2,4-Di-*O*-acetyl-1,6-anhydro-3-chloro-3-deoxy- β -D-altropyranose, C-73
 2,4-Di-*O*-acetyl-1,6-anhydro-3-deoxy-3-fluoro-L-idopyranose, A-520
 2,4-Di-*O*-acetyl-1,6-anhydro-3-deoxy-3-fluoro-D-mannopyranose, A-521
 1,2-Di-*O*-acetyl-5-*O*-benzoyl-3-deoxy-3-fluoro- α -D-xylofuranose, D-119
 3,4-Dichloro-3,4-dideoxy-1,2-*O*-isopropylidene- α -D-ribose, D-545
 3,4-Dichloro-3,4-dideoxyribose; *D-form*, D-545
 3,4-Dichloro-2,3,4-trideoxy-*glycero*-pent-2-enopyranose; β -*D-form*, D-547
 2',3'-Dideoxy-3'-fluorouridine, D-571
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-gulopyranoside, B-77
 Methyl 2-*O*-acetyl-4,6-*O*-(*R*)-benzylidene-3-chloro-3-deoxy- β -D-altropyranoside, C-71
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside, C-73
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
 Methyl 5-*O*-acetyl-3-bromo-3-deoxy- α -D-arabinofuranoside, B-63
 Methyl 5-*O*-acetyl-3-bromo-3-deoxy- β -D-arabinofuranoside, B-63
 Methyl 2-*O*-acetyl-3-deoxy-3-iodo-4-*O*-methyl- β -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo-2-*O*-tosyl- α -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo-2-*O*-tosyl- β -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside, D-280
 Methyl 4-*O*-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
 Methyl 2-benzoyl-4,6-*O*-benzylidene-3-bromo-3-deoxy- β -D-mannopyranoside, B-88
 Methyl 5-*O*-benzoyl-3-bromo-3-deoxy- β -D-arabinofuranoside, B-63
 Methyl 6-*O*-benzoyl-3-bromo-3-deoxy- β -D-gulopyranoside, B-77
 Methyl 4-*O*-benzoyl-3-bromo-3-deoxy-2-*O*-methyl- β -D-lyxopyranoside, B-83
 Methyl 2-*O*-benzoyl-3-bromo-2,6-dideoxy- α -L-altropyranoside, B-106
 Methyl 2-*O*-benzoyl-3-chloro-3-deoxy-5-*O*-trityl- β -D-xylofuranoside, C-109
 Methyl 5-*O*-benzoyl-3-deoxy-3-iodo- α -D-arabinofuranoside, D-250
 Methyl 4-*O*-benzoyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
 Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- β -D-altropyranoside, B-56
 Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-altropyranoside, B-59
 Methyl 4,6-*O*-benzylidene-3-bromo-3-deoxy- α -D-glucopyranoside, B-75
 Methyl 4,6-*O*-benzylidene-3-chloro-3-deoxy- β -D-altropyranoside, C-71
 Methyl 4,6-*O*-(*R*)-benzylidene-3-chloro-3-deoxy- α -D-altropyranoside, C-73
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-fluoro- β -D-glucopyranoside, D-89
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo- β -D-altropyranoside, D-243
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo- α -D-altropyranoside, D-247
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-iodo-2-*O*-tosyl- α -D-altropyranoside, D-247
 Methyl 4,6-*O*-benzylidene-2,3-dibromo-2,3-dideoxy- α -D-altropyranoside, D-525
 Methyl 3-bromo-3-deoxy- β -D-altropyranoside, B-56
 Methyl 3-bromo-3-deoxy- β -D-arabinopyranoside, B-63
 Methyl 3-bromo-3-deoxy-4,6-*O*-ethylidene- α -D-glucopyranoside, B-75
 Methyl 3-bromo-3-deoxy- α -D-glucopyranoside, B-75
 Methyl 3-bromo-3-deoxy- β -D-xylopyranoside, B-103
 Methyl 3-bromo-3,6-dideoxy- α -D-xylo-hexopyranosid-4-ulose, D-194
 Methyl 3-chloro-3-deoxy- β -D-altropyranoside, C-71
 Methyl 3-chloro-3-deoxy- α -D-altropyranoside, C-73
 Methyl 3-chloro-3-deoxy- β -D-altropyranoside, C-73
 Methyl 3-chloro-3-deoxy- α -D-glucopyranoside, C-86
 Methyl 3-chloro-3-deoxy- α -D-gulopyranoside, C-89
 Methyl 3-chloro-3-deoxy-5-*O*-trityl- β -D-xylofuranoside, C-109
 Methyl 3-chloro-3-deoxy-5-*O*-trityl- β -D-xylopyranoside, C-109
 Methyl 3-chloro-3-deoxy- β -D-xylopyranoside, C-109
 Methyl 3-deoxy-3-fluoro- β -D-altropyranoside, D-65
 Methyl 3-deoxy-3-fluoro- β -D-galactofuranoside, D-81
 Methyl 3-deoxy-3-fluoro- α -D-galactopyranoside, D-81
 Methyl 3-deoxy-3-fluoro-4,6-*O*-isopropylidene- β -D-altropyranoside, D-65
 Methyl 3-deoxy-3-fluoro-6-*O*-trityl- β -D-altropyranoside, D-65
 Methyl 3-deoxy-3-iodo-4-*O*-methyl- β -L-xylopyranoside, D-280
 Methyl 2,5-di-*O*-acetyl-3-bromo-3-deoxy- α -D-xylofuranoside, B-103
 Methyl 2,5-di-*O*-acetyl-3-bromo-3-deoxy- β -D-xylofuranoside, B-103

Methyl 2,4-di-*O*-acetyl-3-chloro-3-deoxy- β -D-xylopyranoside, C-109
 Methyl 2,4-di-*O*-acetyl-3-deoxy-3-iodo- α -L-xylopyranoside, D-280
 Methyl 2,4-di-*O*-acetyl-3-deoxy-3-iodo- β -L-xylopyranoside, D-280
 Methyl 2,4-di-*O*-acetyl-3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, D-532
 Methyl 2,4-di-*O*-benzoyl-3-bromo-3-deoxy- β -D-arabinopyranoside, B-63
 Methyl 2,4-di-*O*-benzoyl-3-bromo-3-deoxy- α -D-lyxopyranoside, B-83
 Methyl 2,5-di-*O*-benzoyl-3-bromo-3-deoxy- α -D-xylofuranoside, B-103
 Methyl 2,5-di-*O*-benzoyl-3-bromo-3-deoxy- β -D-xylofuranoside, B-103
 Methyl 2,4-di-*O*-benzoyl-3-deoxy-3-iodo- β -L-ribofuranoside, D-271
 Methyl 3,6-dibromo-3,6-dideoxy- β -D-allopyranoside, 9CI, D-523
 Methyl 3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, 9CI, D-532
 Methyl 3,4-dichloro-3,4-dideoxy- β -D-ribofuranoside, D-545
 Methyl 3,4-dichloro-2,3,4-trideoxy- β -D-*glycero*-pent-2-enopyranoside, 8CI, D-547
 Methyl 3,4-dichloro-2,3,4-trideoxy- α -D-*glycero*-pent-2-enopyranoside, D-547
 Methyl 2,4,6-tri-*O*-acetyl-3-chloro-3-deoxy- α -D-altropyranoside, C-73
 Methyl 2,4,6-tri-*O*-benzoyl-3-deoxy-3-iodo- β -D-gulopyranoside, D-259
 Methyl 3,4,6-trichloro-3,4,6-trideoxy- α -D-allopyranoside, T-146
 Ralutidine, R-2
 1,2,4,6-Tetra-*O*-acetyl-3-bromo-3-deoxy- β -D-allopyranose, B-56
 1,2,4,6-Tetra-*O*-acetyl-3-bromo-3-deoxy- β -D-glucopyranose, B-75
 1,2,4,6-Tetra-*O*-acetyl-3-chloro-3-deoxy- β -D-glucopyranose, C-86
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- α -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- β -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- α -D-glucopyranose, D-89
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- β -D-glucopyranose, D-89
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- β -D-mannose, D-102
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- α -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- β -D-galactopyranose, D-81

4-Halogenosugars

2-Acetamido-2,4-dideoxy-4-fluoro-D-galactopyranose, A-372
 2-Acetamido-2,4-dideoxy-4-fluoro-D-glucose, A-373
 2-Acetamido-1,3,6-tri-*O*-acetyl-2,4-dideoxy-4-fluoro-D-galactopyranose, A-372
 2-Acetamido-1,3,6-tri-*O*-acetyl-2,4-dideoxy-4-fluoro- β -D-glucopyranose, A-373
 1-*O*-Acetyl-2,3,5-tri-*O*-benzoyl-4-bromo- β -D-ribofuranose, B-124
 1,6-Anhydro-2,4-dideoxy-2,4-difluoro- β -D-glucopyranose, D-561
 Benzyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
 Benzyl 2-*O*-benzoyl-4-bromo-4-deoxy- β -L-lyxopyranoside, B-84
 Benzyl 2-*O*-benzoyl-4-deoxy-4-iodo- α -D-xylopyranoside, D-281
 Benzyl 4-bromo-4-deoxy-2,3-*O*-isopropylidene- α -L-lyxopyranoside, B-84
 Benzyl 4-bromo-4-deoxy-2,3-*O*-isopropylidene- β -L-lyxopyranoside, B-84
 Benzyl 4-bromo-4-deoxy- α -D-lyxopyranoside, B-84
 Benzyl 4-bromo-4-deoxy- β -L-lyxopyranoside, B-84
 Benzyl 2,3-di-*O*-benzoyl-4-bromo-4-deoxy- β -L-lyxopyranoside, B-84
 1,2-*O*-Benzylidene-4-bromo-4-deoxy- α -L-xylopyranose, B-104
 5-Bromo-5-deoxysorbose; α -L-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3-Me, 4-(dimethylcarbamyl), B-94
 5-Bromo-5-deoxysorbose; α -L-Pyranose-*form*, B-94
 4-Chloro-4-deoxyarabinose; L-*form*, C-75
 4-Chloro-4-deoxy-2,3-*O*-isopropylidene-1,6-di-*O*-tosyl- β -D-fructofuranose, C-80
 4-Chloro-4-deoxyxylose; α -L-Pyranose-*form*; Me glycoside, 2-mesyl, 3-chlorosulfate, C-110
 4-Deoxy-4-fluoroarabinose; α -L-Pyranose-*form*, D-69
 4-Deoxy-4-fluoroarabinose; β -L-Pyranose-*form*, D-69
 4-Deoxy-4-fluorofructose; β -D-Pyranose-*form*, D-75
 4-Deoxy-4-fluorogalactose; D-*form*, D-82
 4-Deoxy-4-fluoroglucose; D-*form*, D-90
 4-Deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-sorbopyranose, D-107
 4-Deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-tagatopyranose, D-109
 4-Deoxy-4-fluoromannose; D-*form*, D-103
 4-Deoxy-4-fluorosorbose; β -D-Pyranose-*form*, D-107
 4-Deoxy-4-fluorosorbose; D-*form*, D-107
 4-Deoxy-4-fluorotagatose; D-*form*, D-109
 2,3-Di-*O*-acetyl-1-*O*-benzoyl-4-bromo-4-deoxy- α -L-lyxopyranose, B-84
 3,5-Di-*O*-acetyl-4-deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-sorbopyranose, D-107
 3,5-Di-*O*-acetyl-4-deoxy-4-fluoro-1,2-*O*-isopropylidene- β -D-tagatopyranose, D-109
 4,6-Dichloro-4,6-dideoxygalactose; D-*form*, D-542
 3,4-Dichloro-3,4-dideoxy-1,2-*O*-isopropylidene- α -D-ribofuranose, D-545
 3,4-Dichloro-3,4-dideoxyribose; D-*form*, D-545
 3,4-Dichloro-2,3,4-trideoxy-*glycero*-pent-2-enopyranose; β -D-*form*, D-547
 2,4-Dideoxy-2,4-difluoroglucose; D-*form*, D-561
 Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372

Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
 Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
 Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy-4-fluoro- β -D-glucopyranoside, A-373
 Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372
 Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
 Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372
 Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
 Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-glucopyranoside, A-373
 Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
 Methyl 2,3-anhydro-4-bromo-4-deoxy- α -L-lyxopyranoside, B-84
 Methyl 2,3-anhydro-4-bromo-4-deoxy-6-*O*-trityl- α -D-gulopyranoside, B-78
 Methyl 2,3-anhydro-4-chloro-4-deoxy- α -L-xylopyranoside, C-110
 Methyl 3-*O*-benzoyl-4-bromo-4-deoxy-2-*O*-methyl- α -L-xylopyranoside, B-104
 Methyl 4-bromo-4-deoxy- β -D-galactopyranoside, B-71
 Methyl 4-bromo-4-deoxy-D-lyxopyranoside, B-84
 Methyl 4-bromo-4-deoxy- α -D-talopyranoside, B-97
 Methyl 4-bromo-4-deoxy-6-*O*-trityl- α -D-talopyranoside, B-97
 Methyl 4-chloro-4-deoxy- β -D-arabinopyranoside, C-75
 Methyl 4-chloro-4-deoxy- β -D-galactopyranoside, C-83
 Methyl 4-chloro-4-deoxy- α -D-glucopyranoside, C-87
 Methyl 4-chloro-4-deoxy-2-*O*-mesyl- α -L-xylopyranoside, C-110
 Methyl 4-deoxy-4-fluoro- α -L-arabinopyranoside, D-69
 Methyl 4-deoxy-4-fluoro- β -L-arabinopyranoside, D-69
 Methyl 4-deoxy-4-fluoro- α -D-galactopyranoside, D-82
 Methyl 4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
 Methyl 4-deoxy-4-fluoro- β -D-glucopyranoside, D-90
 Methyl 4-deoxy-4-fluoro- α -D-talopyranoside, D-112
 Methyl 4-deoxy-4-fluoro-6-*O*-trityl- α -D-talopyranoside, D-112
 Methyl 4-deoxy-4-iodo- β -D-galactopyranoside, D-257
 Methyl 2,3-di-*O*-benzoyl-4-bromo-4-deoxy- α -L-xylopyranoside, B-104
 Methyl 2,4-dibromo-2,4-dideoxy-L-erythronate, D-541
 Methyl 2,4-dibromo-2,4-dideoxy-D-threonate, D-541
 Methyl 2,4-dibromo-2,4-dideoxy-L-threonate, D-541
 Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-*O*-tosyl- α -D-galactopyranoside, D-542
 Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-*O*-tosyl- β -D-galactopyranoside, D-542
 Methyl 4,6-dichloro-4,6-dideoxy- α -D-galactopyranoside, 9CI, 8CI, D-542
 Methyl 4,6-dichloro-4,6-dideoxy- β -D-galactopyranoside, D-542
 Methyl 4,6-dichloro-4,6-dideoxy- α -D-glucopyranoside, D-543
 Methyl 3,4-dichloro-3,4-dideoxy- β -D-ribofuranoside, D-545
 Methyl 3,4-dichloro-2,3,4-trideoxy- β -D-*glycero*-pent-2-enopyranoside, 8CI, D-547
 Methyl 3,4-dichloro-2,3,4-trideoxy- α -D-*glycero*-pent-2-enopyranoside, D-547
 Methyl 4,6-dideoxy-4,6-diiodo- α -D-galactopyranoside, D-563
 Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- α -D-galactopyranoside, B-71
 Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- β -D-galactopyranoside, B-71
 Methyl 2,3,5-tri-*O*-acetyl-4-bromo-4-deoxy- α -L-tagatopyranoside, B-96
 Methyl 2,3,5-tri-*O*-acetyl-4-bromo-4-deoxy- β -tagatopyranoside, B-96
 Methyl 2,3,6-tri-*O*-acetyl-4-bromo-4-deoxy- α -D-talopyranoside, B-97
 Methyl 2,3,6-tri-*O*-acetyl-4-chloro-4-deoxy- β -D-galactopyranoside, C-83
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-fluoro- α -D-galactopyranoside, D-82
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-iodo- β -D-fructofuranoside, D-255
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-4-iodo- β -D-galactopyranoside, D-257
 Methyl 2,3,6-tri-*O*-benzoyl-4-bromo-4-deoxy- β -D-galactopyranoside, B-71
 Methyl 2,3,6-tri-*O*-benzoyl-4-chloro-4-deoxy- β -D-galactopyranoside, C-83
 Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy-4-fluoro- β -D-galactopyranoside, D-82
 Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy-4-iodo- β -D-galactopyranoside, D-257
 Methyl 2,3,6-tri-*O*-benzyl-4-bromo-4-deoxy- α -D-galactopyranoside, B-71
 Methyl 2,3,6-tri-*O*-benzyl-4-chloro-4-deoxy- α -D-galactopyranoside, C-83
 Methyl 2,3,6-tri-*O*-benzyl-4-deoxy-4-fluoro- α -D-glucopyranoside, D-90
 Methyl 3,4,6-trichloro-3,4,6-trideoxy- α -D-allopyranoside, T-146
 1,2,3,6-Tetra-*O*-acetyl-4-deoxy-4-fluoro-D-galactopyranoside, D-82
 1,2,3,6-Tetra-*O*-acetyl-4-deoxy-4-fluoro- β -D-glucopyranose, D-90
 2,3,6-Tri-*O*-acetyl-4-deoxy-4-fluoro- α -D-galactopyranosyl bromide, D-82

5-Halogenosugars

6-*O*-Acetyl-3-*O*-benzoyl-5-chloro-5-deoxy-1,2-*O*-isopropylidene- β -L-talofuranose, C-105
 3-*O*-Acetyl-5-bromo-2,5-dideoxy-D-*erythro*-pentono-1,4-lactone, B-112
 3-*O*-Acetyl-5-deoxy-5-iodo-1,2-*O*-isopropylidene- β -L-arabinofuranose, D-251
 1-*O*-Acetyl-5-deoxy-5-iodo-2,3-*O*-isopropylidene- β -D-ribofuranose, D-272

1-*O*-Acetyl-2,3-di-*O*-benzoyl-5-bromo-5-deoxy-β-*D*-ribofuranose, B-93
 1-*O*-Acetyl-2,3-di-*O*-benzoyl-5-deoxy-5-iodo-β-*D*-ribofuranose, D-272
 2,3-Anhydro-5-bromo-5-deoxy-1,4-lyxonolactone; *D*-form, A-507
 1,5-Anhydro-5*S*-bromo-2,3-*O*-isopropylidene-β-*D*-lyxofuranose, A-511
 1,5-Anhydro-5*S*-bromo-2,3-*O*-isopropylidene-β-*D*-ribofuranose, A-513
 3,6-Anhydro-5-deoxy-5-fluoro-1,2-*O*-isopropylidene-α-*L*-idofuranose, A-519
 3-*O*-Benzyl-5-deoxy-5-iodo-1,2-*O*-isopropylidene-α-*D*-ribofuranose, D-272
 2,3-*O*-Benzylidene-5-bromo-5-deoxy-*D*-1,4-ribonolactone, B-91
 5-Bromo-5-deoxy-2,3-*O*-isopropylidene-*D*-ribo-1,4-lactone, B-91
 5-Bromo-5-deoxy-*D*-1,4-ribonolactone, B-91
 5-Bromo-5-deoxysorbose; α-*L*-Pyranose-form; 1,2-*O*-Isopropylidene, 3-Me, 4-(dimethylcarbamyl), B-94
 5-Bromo-5-deoxysorbose; α-*L*-Pyranose-form, B-94
 5'-Bromo-5'-deoxythymidine; 3'-Ac, B-100
 5'-Bromo-5'-deoxythymidine, B-100
 5-Bromo-2,5-dideoxy-*D*-threo-pentono-1,4-lactone, B-112
 5-Bromo-2,5-dideoxy-*D*-erythro-pentono-1,4-lactone, B-112
 5'-Chloro-5'-deoxyadenosine, C-69
 5'-Chloro-5'-deoxyarabinosylcytosine, C-77
 5-Chloro-5-deoxyidofuranurono-6,3-lactone; β-*L*-form; 1,2-Isopropylidene, C-90
 5-Chloro-5-deoxy-1,2-*O*-isopropylidene-3-*O*-mesyl-β-*L*-arabinofuranose, C-76
 5-Chloro-5-deoxy-2,3-*O*-isopropylidene-α-*L*-sorbopyranose, C-102
 5-Chloro-5-deoxytalose; *D*-form, C-105
 2-Chloroethyl 5-chloro-5-deoxy-1,3-*O*-isopropylidene-α-*L*-sorbopyranoside, C-102
 2-Chloroethyl 5-chloro-5-deoxy-α-*L*-sorbopyranoside, C-102
 2-Chloroethyl 1,3,4-tri-*O*-acetyl-5-chloro-5-deoxy-α-*L*-sorbopyranoside, C-102
 5-Deoxy-5-fluoroglucose; *D*-Furanose-form, D-91
 5-Deoxy-5-fluoroidose; *L*-form, D-97
 5-Deoxy-5-fluoro-1,2-*O*-isopropylidene-α-*D*-glucofuranose, D-91
 5-Deoxy-5-fluoro-1,2-*O*-isopropylidene-β-*L*-idofuranose, D-97
 5-Deoxy-5-fluoro-1,2-*O*-isopropylidene-α-*L*-sorbopyranose, D-108
 5-Deoxy-5-fluoro-1,2-*O*-isopropylidene-α-*D*-xylofuranose, D-120
 5-Deoxy-5-fluorosorbose; α-*L*-Pyranose-form, D-108
 5-Deoxy-5-fluoroxylase; *D*-Furanose-form, D-120
 5-Deoxy-5-iodoarabinose; *L*-form; Ethylene dithioacetal, 2,3,4-tri-Ac, D-251
 5-Deoxy-5-iodo-1,2-*O*-isopropylidene-β-*L*-arabinofuranose, D-251
 5-Deoxy-5-iodo-1,2-*O*-isopropylidene-α-*D*-ribofuranose, D-272
 5-Deoxy-5-iodoribose; α-*D*-Furanose-form; 1-(Dihydrogen phosphate), D-272
 3,4-Di-*O*-acetyl-5-deoxy-5-fluoro-1,2-*O*-isopropylidene-α-*L*-sorbopyranose, D-108
 3,6-Di-*O*-benzoyl-5-deoxy-5-iodo-1,2-*O*-isopropylidene-α-*D*-allofuranose, D-244
 3,5-Di-*O*-benzoyl-5-deoxy-5-iodo-1,2-*O*-isopropylidene-β-*L*-talofuranose, D-276
 2,5-Dibromo-2,5-dideoxy-*D*-lyxono-1,4-lactone, D-536
 2,5-Dibromo-2,5-dideoxy-*D*-xylono-1,4-lactone, D-540
 2',5'-Dideoxy-5'-fluorouridine; 3'-Ac, D-572
 2',5'-Dideoxy-5'-fluorouridine, D-572
 5-*C*-Fluorogalactosyl fluoride; α-*D*-Pyranose-form, F-14
 Methyl 2,3-*O*-benzylidene-5-deoxy-5-iodo-β-*D*-ribofuranoside, D-272
 Methyl 5-bromo-5-deoxy-2,3-*O*-isopropylidene-β-*D*-ribofuranoside, B-93
 Methyl 5-bromo-5-deoxy-2,3-*O*-isopropylidene-β-*L*-ribofuranoside, B-93
 Methyl 5-bromo-5-deoxy-2,3-*O*-isopropylidene-β-*D*-L-ribofuranoside, B-93
 Methyl 5-bromo-5-deoxy-2,3-*O*-isopropylidene-α-*D*-ribofuranoside, B-93
 Methyl 5-chloro-5-deoxy-α-*L*-idofuranosidurono-6,3-lactone, C-90
 Methyl 5-chloro-5-deoxy-2,3-*O*-isopropylidene-β-*D*-ribofuranoside, C-100
 Methyl 5-chloro-5-deoxy-α-*D*-ribofuranoside, C-96
 Methyl 5-chloro-5-deoxy-α-*D*-ribofuranoside, C-100
 Methyl 5-chloro-5-deoxy-β-*D*-ribofuranoside, C-100
 Methyl 5-deoxy-5-iodo-2,3-*O*-isopropylidene-β-*D*-ribofuranoside, D-272
 Methyl 2,3-di-*O*-benzoyl-5-bromo-5-deoxy-β-*D*-ribofuranoside, B-93
 Methyl 1,2,3,4-tetra-*O*-acetyl-5-bromo-β-*D*-glucopyranuronate, B-117
 1,2,3,4,6-Penta-*O*-acetyl-5-bromo-β-*D*-glucopyranose, B-118
 1,2,3,4,6-Penta-*O*-benzoyl-5-bromo-α-*D*-glucopyranose, B-118
 1,2,3,4,6-Penta-*O*-benzoyl-5-bromo-β-*D*-glucopyranose, B-118
 (5*R*)-1,2,3,4-Tetra-*O*-acetyl-5-bromo-β-*D*-xylopyranose, B-126
 (5*S*)-1,2,3,4-Tetra-*O*-acetyl-5-bromo-β-*D*-xylopyranose, B-126
 2,3,4,6-Tetra-*O*-acetyl-5-*C*-fluoro-α-*D*-galactopyranosyl fluoride, F-14
 1,2,3-Tri-*O*-acetyl-5-deoxy-5-iodo-β-*D*-ribofuranose, D-272

6-Halogenosugars

5-*O*-Acetyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene-3-*O*-tosyl-α-*D*-glucofuranose, C-88

1-*O*-Acetyl-6-deoxy-6-iodo-2,3-*O*-isopropylidene-α-*L*-sorbofuranose, D-274
 1,6-Anhydro-2,3,4-tri-*O*-benzoyl-6*S*-bromo-β-*D*-galactopyranose, A-509
 1,6-Anhydro-2,3,4-tri-*O*-benzoyl-6*S*-bromo-β-*D*-glucopyranose, A-510
 1,6-Anhydro-2,3,4-tri-*O*-benzoyl-6*S*-bromo-β-*D*-mannopyranose, A-512
 Benzyl 2-benzoyloxycarbonylamino-2,3,4,6-tetra-deoxy-6-iodo-α-*D*-erythro-hex-3-enopyranoside, A-451
 Benzyl 2,3,4-tri-*O*-benzyl-6-bromo-6-deoxy-α-*D*-glucopyranoside, B-76
 3,5-*O*-Benzylidene-6-bromo-6-deoxy-1,2-*O*-isopropylidene-α-*D*-glucofuranose, B-76
 3,5-*O*-Benzylidene-6-deoxy-6-fluoro-1,2-*O*-isopropylidene-α-*D*-glucofuranose, D-92
 6-Bromo-6-deoxyascorbic acid; *L*-form, B-65
 6-Bromo-6-deoxy-1,2,3,4-di-*O*-isopropylidene-α-*D*-galactopyranose, B-72
 6-Bromo-6-deoxy-1,2,3,4-di-*O*-isopropylidene-α-*L*-galactopyranose, B-72
 6-Bromo-6-deoxy-1,2,3,5-di-*O*-isopropylidene-α-*D*-glucofuranose, B-76
 6-Bromo-6-deoxy-1,2,3,5-di-*O*-methylene-α-*D*-glucofuranose, B-76
 6-Bromo-6-deoxygalactose; *D*-Pyranose-form, B-72
 6-Bromo-6-deoxyglucose; *D*-form, B-76
 6-Bromo-6-deoxy-*D*-idono-1,4-lactone, B-79
 6-Bromo-6-deoxy-1,2-*O*-isopropylidene-α-*D*-glucofuranose, B-76
 6-Bromo-6-deoxy-2,3-*O*-isopropylidene-α-*L*-sorbofuranose, B-95
 7-Bromo-3,7-dideoxy-*D*-gluco-heptono-1,4-lactone, B-108
 6-Bromo-2,6-dideoxy-*D*-arabino-hexono-1,4-lactone, B-109
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*R*)-form, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*S*)-form, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*R*)-form, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*S*)-form, B-120
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*R*,5*S*)-form, B-121
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*S*,5*R*)-form, B-121
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*S*,5*S*)-form, B-121
 6-Chloro-6-deoxy-1,2,3,4-di-*O*-isopropylidene-α-*D*-galactopyranose, C-84
 6-Chloro-6-deoxy-1,2,3,5-di-*O*-isopropylidene-α-*D*-glucofuranose, C-88
 6-Chloro-6-deoxy-1,2,3,5-di-*O*-methylene-α-*D*-glucofuranose, C-88
 6-Chloro-6-deoxyfructose; *D*-form, C-81
 6-Chloro-6-deoxyglucose; *D*-form, C-88
 6-Chloro-6-deoxy-2,3-*O*-isopropylidene-β-*D*-fructofuranose, C-81
 6-Chloro-6-deoxy-1,2-*O*-isopropylidene-α-*D*-glucofuranose, C-88
 6-Chloro-6-deoxy-2,3-*O*-isopropylidene-1-*O*-tosyl-β-*D*-fructofuranose, C-81
 6-Chloro-6-deoxysorbose; α-*L*-Furanose-form; 2,3-*O*-Isopropylidene, C-103
 6-Chloro-6-deoxysorbose; α-*L*-Furanose-form, C-103
 6-Chloro-6-deoxysorbose; *L*-form, C-103
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 6-Deoxy-6-fluoro-1,2,3,5-di-*O*-methylene-α-*D*-glucofuranose, 9CI, D-92
 6-Deoxy-6-fluorofructose, D-76
 6-Deoxy-6-fluoro-α-*D*-galactopyranose 1-(dihydrogen phosphate), D-83
 6-Deoxy-6-fluorogalactose; α-*D*-Pyranose-form, D-83
 6-Deoxy-6-fluoro-α-*D*-glucopyranosyl fluoride, 8CI, D-92
 6-Deoxy-6-fluoro-β-*D*-glucopyranosyl fluoride, 8CI, D-92
 6-Deoxy-6-fluoroglucose; *D*-form, D-92
 6-Deoxy-6-fluoro-1,2-*O*-isopropylidene-α-*D*-glucofuranose, D-92
 6-Deoxy-6-fluoro-2,3-*O*-isopropylidene-1-*O*-tosyl-β-*D*-fructofuranose, D-76
 6-Deoxy-6-fluoromannose; α-*D*-Pyranose-form, D-104
 6-Deoxy-6-iodo-1,2,3,4-di-*O*-isopropylidene-β-*D*-psicofuranose, D-269
 6-Deoxy-6-iodoglucose; *D*-form, D-258
 6-Deoxy-6-iodo-2,3-*O*-isopropylidene-1-*O*-tosyl-β-*D*-fructofuranose, D-256
 6-Deoxy-6-iodo-2,3-*O*-isopropylidene-1-*O*-tosyl-*L*-sorbofuranose, D-274
 6-Deoxy-6-iodomannose; α-*D*-Pyranose-form; Me glycoside, 2,3-*O*-isopropylidene, 4-*O*-(*p*-bromobenzenesulfonyl), D-266
 6-Deoxy-6-iodomannose; α-*D*-Pyranose-form; Me glycoside, tribenzyl, D-266
 6-Deoxy-6-iodopsicose; *D*-Furanose-form, D-269
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 3,5-Di-*O*-acetyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene-α-*D*-glucofuranose, C-88
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-*D*-glucono-1,4-lactone, D-531
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-*D*-idono-1,4-lactone, D-535
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-*D*-mannono-1,4-lactone, D-539
 3,5-Di-*O*-benzoyl-6-bromo-6-deoxy-1,2-*O*-isopropylidene-α-*D*-glucofuranose, B-76
 3,5-Di-*O*-benzoyl-6-chloro-6-deoxy-1,2-*O*-isopropylidene-α-*D*-glucofuranose, C-88
 2,5-Di-*O*-benzyl-6-bromo-6-deoxy-3,4-di-*O*-methyl-*D*-altrose, B-60
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2,6-Dibromo-2,6-dideoxy-D-glucono-1,4-lactone, D-531
 2,6-Dibromo-2,6-dideoxy-L-glucono-1,4-lactone, D-531
 2,6-Dibromo-2,6-dideoxy-D-idono-1,4-lactone, D-535
 2,6-Dibromo-2,6-dideoxy-L-idono-1,4-lactone, D-535
 2,6-Dibromo-2,6-dideoxy-D-mannono-1,4-lactone, D-539
 2,6-Dibromo-2,6-dideoxy-L-mannono-1,4-lactone, D-539
 4,6-Dichloro-4,6-dideoxygalactose; *D-form*, D-542
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 6,6'-Dichloro-6,6'-dideoxysucrose; Hexa-Ac, D-546
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 Methyl 4-*O*-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
 Methyl 4-*O*-benzoyl-6-bromo-6-deoxy- β -D-glucopyranoside, B-76
 Methyl 2-*O*-benzoyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 4-*O*-benzoyl-6-deoxy-6-iodo-2,3-*O*-isopropylidene- α -D-mannopyranoside, D-266
 Methyl 6-bromo-6-deoxy- α -D-altropyranoside, B-60
 Methyl 6-bromo-6-deoxy- α -D-galactopyranoside, 9CI, 8CI, B-72
 Methyl 6-bromo-6-deoxy- α -D-glucopyranoside, 9CI, 8CI, B-76
 Methyl 6-bromo-6-deoxy- β -D-glucopyranoside, 8CI, B-76
 Methyl 6-bromo-6-deoxy-3,4-*O*-isopropylidene- α -D-galactopyranoside, B-72
 Methyl 6-bromo-6-deoxy-3,4-*O*-isopropylidene- β -D-galactopyranoside, B-72
 Methyl 6-chloro-6-deoxy- α -D-fructofuranoside, C-81
 Methyl 6-chloro-6-deoxy- β -D-fructofuranoside, C-81
 Methyl 6-chloro-6-deoxy- α -D-galactopyranoside, C-84
 Methyl 6-chloro-6-deoxy- β -D-galactopyranoside, C-84
 Methyl 6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 6-chloro-6-deoxy- β -D-glucopyranoside, C-88
 Methyl 6-chloro-6-deoxy-1-*O*-tosyl- α -D-fructofuranoside, C-81
 Methyl 6-chloro-6-deoxy-1-*O*-tosyl- β -D-fructofuranoside, C-81
 Methyl 6-chloro-6-deoxy-2,3,4-tri-*O*-methyl- α -D-glucopyranoside, C-88
 Methyl 6-deoxy-6-fluoro-2,3-di-*O*-methyl- α -D-mannopyranoside, D-104
 Methyl 6-deoxy-6-fluoro- α -D-galactopyranoside, 8CI, D-83
 Methyl 6-deoxy-6-fluoro- α -D-glucopyranoside, 9CI, 8CI, D-92
 Methyl 6-deoxy-6-fluoro- β -D-glucopyranoside, D-92
 Methyl 6-deoxy-6-fluoro-2,3-*O*-isopropylidene- α -D-mannopyranoside, D-104
 Methyl 6-deoxy-6-fluoro- α -D-mannopyranoside, D-104
 Methyl 6-deoxy-6-fluoro-2,3,4-tri-*O*-mesyl- α -D-galactopyranoside, D-83
 Methyl 6-deoxy-6-iodo-2,3,4-tri-*O*-mesyl- α -D-mannopyranoside, D-266
 Methyl 6-deoxy-6-iodo- α -D-glucopyranoside, D-258
 Methyl 6-deoxy-6-iodo-2,3-*O*-isopropylidene- α -D-mannopyranoside, D-266
 Methyl 6-deoxy-6-iodo-2,3-*O*-isopropylidene-4-*O*-mesyl- α -D-mannopyranoside, D-266
 Methyl 6-deoxy-6-iodo- α -D-mannopyranoside, D-266
 Methyl 6-deoxy-6-iodo- β -D-mannopyranoside, D-266
 Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
 Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
 Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-bromo-6-deoxy- β -D-glucopyranoside, B-76
 Methyl 3,4-di-*O*-acetyl-6-bromo-6-deoxy-2-*O*-mesyl- α -D-glucopyranoside, B-76
 Methyl 2,4-di-*O*-acetyl-3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, D-532
 Methyl 2,3-di-*O*-benzoyl-6-bromo-6-deoxy-4-*O*-mesyl- α -D-glucopyranoside, B-76
 Methyl 2,3-di-*O*-benzoyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 2,3-di-*O*-benzyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 3,6-dibromo-3,6-dideoxy- β -D-allopyranoside, 9CI, D-523
 Methyl 3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, 9CI, D-532
 Methyl 4,6-dichloro-4,6-dideoxy- α -D-galactopyranoside, 9CI, 8CI, D-542
 Methyl 4,6-dichloro-4,6-dideoxy- α -D-glucopyranoside, D-543
 Methyl 4,6-dideoxy-4,6-diido- α -D-galactopyranoside, D-563
 Methyl 2,3,4-tri-*O*-acetyl-6-bromo-6-deoxy- α -D-galactopyranoside, B-72
 Methyl 2,3,4-tri-*O*-acetyl-6-bromo-6-deoxy- β -D-galactopyranoside, B-72
 Methyl 2,3,4-tri-*O*-acetyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
 Methyl 2,3,4-tri-*O*-acetyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 2,3,5-tri-*O*-acetyl-6-chloro-6-deoxy- β -D-glucopyranoside, C-88
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-fluoro- α -D-galactopyranoside, D-83
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-fluoro- α -D-glucopyranoside, D-92
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-iodo- α -D-mannopyranoside, D-266
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-6-iodo- β -D-mannopyranoside, D-266

Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- α -D-altropyranoside, B-60
 Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- α -D-galactopyranoside, B-72
 Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- β -D-galactopyranoside, B-72
 Methyl 2,3,4-tri-*O*-benzoyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
 Methyl 2,3,4-tri-*O*-benzoyl-6-deoxy-6-fluoro- α -D-glucopyranoside, D-92
 Methyl 2,3,4-tri-*O*-benzyl-6-bromo-6-deoxy- α -D-glucopyranoside, B-76
 Methyl 2,3,4-tri-*O*-benzyl-6-bromo-6-deoxy- β -D-glucopyranoside, B-76
 Methyl 2,3,4-tri-*O*-benzyl-6-chloro-6-deoxy- α -D-glucopyranoside, C-88
 Methyl 3,4,6-trichloro-3,4,6-trideoxy- α -D-allopyranoside, T-146
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 1,2,3,4-Tetra-*O*-acetyl-6-bromo-6-deoxy- β -D-glucopyranoside, B-76
 1,3,4,5-Tetra-*O*-acetyl-6-chloro-6-deoxy-D-fructose, C-81
 1,2,3,4-Tetra-*O*-acetyl-6-chloro-6-deoxy- β -D-glucopyranose, C-88
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-6-fluoro-L-galactopyranose, D-83
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-6-fluoro- β -D-glucopyranose, D-92
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-6-fluoro- α -D-glucopyranose, D-92
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-6-iodo- α -D-glucopyranose, D-258
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy-6-fluoro- β -D-glucopyranose, D-92
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy-6-fluoro- α -D-glucopyranose, D-92
 1,2,3,4-Tetra-*O*-benzoyl-6-deoxy-6-iodo-D-psicofuranose, D-269
 2,3,4-Tri-*O*-acetyl-1,6-anhydro-6S-bromo- β -D-glucopyranose, A-510
 2,3,4-Tri-*O*-acetyl-6-bromo-6-deoxy- α -D-galactopyranosyl bromide, G-27
 2,3,4-Tri-*O*-acetyl-6-deoxy-6-fluoro- α -D-galactopyranosyl bromide, D-83
 2,3,4-Tri-*O*-acetyl-6-deoxy-6-fluoro- α -D-glucopyranosyl fluoride, D-92
 2,3,4-Tri-*O*-acetyl-6-deoxy-6-fluoro- β -D-glucopyranosyl fluoride, D-92
 2,3,4-Tri-*O*-acetyl-6-deoxy-6-iodo- α -D-mannopyranosyl bromide, M-41

Glycosylamines

2-Acetamido-2-deoxy- β -D-glucopyranosylamine, A-226
N-Acetyl-L-arabinosylamine, A-854
N-Acetyl- α -D-galactopyranosylamine, G-207
N-Acetyl- β -D-galactopyranosylamine, G-207
N-Acetyl- β -D-glucopyranosylamine, G-533
N-Acetyl- β -D-mannopyranosylamine, M-118
N-Acetyl- β -L-rhamnopyranosylamine, R-80
N-Acetyl-2,3,4,6-tetra-*O*-acetyl- α -D-galactopyranosylamine, G-207
N-Acetyl-2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranosylamine, G-207
N-Acetyl-2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosylamine, G-533
N-Acetyl-2,3,4-tri-*O*-acetyl-D-ribosylamine, R-145
N-Acetyl-2,3,4-tri-*O*-acetyl-D-xylosamine, X-88
N-Acetyl-2,3,4-tri-*O*-acetyl-L-xylosamine, X-88
N-Acetyl-D-xylosamine, X-88
 2-Amino-2-deoxyglucopyranosylamine; β -D-Pyranose-*form*;
 2-*N*-Ac, 3,4,6-tri-*O*-Ac, A-226
 2-Amino-2-deoxyglucopyranosylamine; β -D-Pyranose-*form*;
 1-*N*-Ac, A-226
 2-Amino-2-deoxyglucopyranosylamine; β -D-Pyranose-*form*;
 1,2-Di-*N*-Ac, 3,4,6-tri-*O*-Ac, A-226
 2-Amino-2-deoxyglucopyranosylamine; β -D-Pyranose-*form*;
 1,2-Di-*N*-Ac, A-226
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucosylamine; β -D-Pyranose-*form*; 1-*N*-(4-L-Aspartyl), 2,2'-di-*N*-Ac, A-241
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucosylamine; β -D-Pyranose-*form*; 2,2',3,3',4',6,6'-*O*,*O*,*O*,*O*,*N*,*N*-Hepta-Ac, A-241
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucosylamine; β -D-Pyranose-*form*; 1,2,2'-*N*-Tri-Ac, A-241
N- α -D-Arabinopyranosyl- α -D-arabinopyranosylamine, D-517
N- α -L-Arabinopyranosyl- α -L-arabinopyranosylamine, D-517
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 Arabinosylamine; *L-form*, A-854
 Arabinosylamine, A-854
N-Benzoyl- β -D-mannopyranosylamine, M-118
N-Benzyl-D-glucosylamine, G-533
N-Benzyl- β -D-mannopyranosylamine, M-118
 Bis(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)amine, D-666
 Bis(2,3,4-tri-*O*-acetyl- β -D-xylopyranosyl)amine, D-770
N-Butyl-D-glucosylamine, G-533
 Cellobiosylamine, C-40
 6-Deoxy-*N*-(6-deoxy- β -L-mannopyranosyl)- β -L-mannopyranosylamine, 9CI, D-761
N,N-Diacetyl-D-arabinosylamine, A-854
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N,N'-Diacetylchitobiosamine, A-241
 Diglucopyranosylamine; *D*,*D*- β , β -*form*, D-666
 2,3:5,6-Di-*O*-isopropylidene-*N*-phenyl-D-mannosylamine, M-118
 Dimannopyranosylamine; *D*,*D*- β , β -*form*; *O*-Octa-Ac, D-720
 Dimannopyranosylamine; *D*,*D*- β , β -*form*, D-720
 Dirhamnopyranosylamine; *L*,*L*- β , β -*form*; *O*-Hexa-Ac, D-761
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Disorbitylamine; *D-form*, D-763
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N-Ethyl-L-rhamnopyranosylamine, R-80
 Fructosylamine; *D-form*; *N*-Benzyl, F-90
 Fructosylamine; *D-form*; *N*-Ph, F-90
 Galactosylamine; *β-D-Pyranose-form*, G-207
 Galactosylamine; *D-form*, G-207
 α -D-Glucopyranosyl- β -D-glucopyranosylamine, D-666
 1-Glucopyranosylpiperidine; *D-form*, G-435
 1-(Glucopyranosyl)pyridinium(1+); α -*D-form*; Bromide, G-436
 1-(Glucopyranosyl)pyridinium(1+); β -*D-form*; Bromide, G-436
 1-(Glucopyranosyl)pyridinium(1+); α -*D-form*; 4-Me, 2',3',4',6'-tetra-Ac, G-436
 1-(Glucopyranosyl)pyridinium(1+); β -*D-form*; 4-Me, 2',3',4',6'-tetra-Ac, G-436
 1-(Glucopyranosyl)pyridinium(1+); α -*D-form*; 4-Me, G-436
 1-(Glucopyranosyl)pyridinium(1+); β -*D-form*; 4-Me, G-436
 1-(Glucopyranosyl)pyridinium(1+); α -*D-form*; 2',3',4',6'-Tetra-Ac, G-436
 1-(Glucopyranosyl)pyridinium(1+); β -*D-form*; 2',3',4',6'-Tetra-Ac, G-436
 1-(Glucopyranosyl)pyridinium(1+); β -*D-form*; *O*-Tetrabenzyl, G-436
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Hydroxyphenyl), G-533
 Glucosylamine; α -D-Pyranose-*form*; *N*-(4-Methylphenyl), 2,3,4,6-tetra-Ac, G-533
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Methylphenyl), 2,3,4,6-tetra-Ac, G-533
 Glucosylamine; α -D-Pyranose-*form*; *N*-(4-Methylphenyl), G-533
 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Methylphenyl), G-533
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 Glucosylamine; β -D-Pyranose-*form*; *N*-(4-Nitrophenyl), 2,3,4,6-tetra-Ac, G-533
 Glucosylamine; α -D-Pyranose-*form*; *N*-(4-Nitrophenyl), G-533
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 3,4-*O*-Isopropylidene-D-arabinopyranosylamine, A-854
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 Lyxosylamine; *L-form*, L-77
 β -D-Mannopyranosylamine, M-118
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N-Phenyl-D-arabinosylamine, A-854
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N-Phenyl- β -D-galactopyranosylamine, G-207
N-Phenyl- α -D-glucopyranosylamine, G-533
N-Phenyl- β -D-glucopyranosylamine, G-533
N-Phenyl-L-rhamnopyranosylamine, R-80
N-Phenyl- α -D-ribosepyranosylamine, R-145
 Rhamnosylamine; *L-Pyranose-form*, R-80
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N- α -D-Ribopyranosylacetamide, R-145
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 Sorbosylamine; *L-form*; *N*-Cyclohexyl, S-61
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 Sorbosylamine; *L-Furanose-form*; 4,6-*O*-Isopropylidene, *N*-tosyl, S-61
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N,2,3,4-Tetraacetyl-L-arabinosylamine, A-854
 2,3,4,6-Tetra-*O*-acetyl-*N*-benzyl-D-glucosylamine, G-533
 2,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranosylamine, G-207
 2,3,4,6-Tetra-*O*-acetyl- β -D-glucopyranosylamine, G-533
 1-(2,3,4,6-Tetra-*O*-acetyl-D-glucopyranosyl)piperidine, G-435
 (2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl)(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)amine, D-666
 2,3,4,6-Tetra-*O*-acetyl- β -D-mannopyranosylamine, M-118
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl α -D-glucopyranosylamine, G-533
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl- α -D-galactopyranosylamine, G-207
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl- β -D-galactopyranosylamine, G-207
 2,3,4,6-Tetra-*O*-acetyl-*N*-phenyl- β -D-glucopyranosylamine, G-533
 1*N*,2,3,4-Tetra-*O*-acetyl- β -L-rhamnopyranosylamine, R-80
 2,3,4-Tri-*O*-acetyl-D-arabinosylamine, A-854
 1-(3,4,6-Tri-*O*-acetyl- β -D-glucopyranosyl)piperidine, G-435
 (2,3,4-Tri-*O*-acetyl- α -D-xylopyranosyl)(2,3,4-tri-*O*-acetyl- β -D-xylopyranosyl)amine, D-770
 2,3,4-Tri-*O*-acetyl-L-xylosylamine, X-88
 1-(Xylopyranosyl)pyridinium(1+); α -*D-form*; Bromide, X-54

1-(Xylopyranosyl)pyridinium(1+); β -*D-form*; Bromide, X-54
 Xylosylamine; *D-form*, X-88
 Xylosylamine; *L-form*, X-88

2-Amino-2-deoxysugars

2-Acetamido-3-*O*-(3-acetamido-3,6-dideoxy- β -D-glucopyranosyl)-2-deoxy-D-galactopyranose, A-121
 2-Acetamido-3-*O*-(2-acetamido-2,3-dideoxy-5,6-*O*-isopropylidene- α -D-erythro-hex-2-enofuranosyl)-1,4-anhydro-2-deoxy-5,6-*O*-isopropylidene-D-arabino-hex-1-enitol, A-6
 2-Acetamido-3-*O*-(2-acetamido-2,3-dideoxy-5,6-*O*-isopropylidene- β -D-erythro-hex-2-enofuranosyl)-1,4-anhydro-2-deoxy-5,6-*O*-isopropylidene-D-arabino-hex-1-enitol, A-6
 2-Acetamido-3-*O*-acetyl-1,6-anhydro-2-deoxy- β -D-glucopyranose, A-132
 2-Acetamido-4-*O*-acetyl-1,6-anhydro-2-deoxy- β -D-glucopyranose, A-132
 2-Acetamido-1-*O*-acetyl-2-deoxy- α -D-glucopyranose, A-13
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 2-Acetamido-1-*O*-acetyl-3,4,6-tri-*O*-benzyl-2-deoxy- α -D-glucopyranose, A-13
 2-Acetamido-1-*O*-acetyl-3,4,6-tri-*O*-benzyl-2-deoxy- β -D-glucopyranose, A-13
 2-Acetamido-5-amino-2,5-dideoxy-L-idopyranose, D-441
 2-Acetamido-4-amino-2,4,6-trideoxy-D-galactose, D-473
 4-Acetamido-2-amino-2,4,6-trideoxy-D-glucose, D-474
 2-Acetamido-1,5-anhydro-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-D-mannitol, A-141
 2-Acetamido-1,6-anhydro-2-deoxy- β -D-galactopyranose, A-127
 2-Acetamido-1,6-anhydro-2-deoxy- β -D-glucopyranose, A-132
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 2-Acetamido-1,5-anhydro-2-deoxy-D-talitol, A-144
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 2-Acetamido-1,5-anhydro-3,4-di-*O*-benzyl-2,6-dideoxy-D-mannitol, A-149
 2-Acetamido-1,5-anhydro-2,6-dideoxy-D-mannitol, A-149
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 2-Acetamido-1-*O*-benzoyl-2-deoxy- β -D-glucopyranose, A-8
 2-Acetamido-3-*O*-benzoyl-2-deoxy-D-glucose, A-8
 2-Acetamido-1-*O*-benzoyl-3,4,6-tri-*O*-benzyl-2-deoxy- α -D-glucopyranose, A-8
 2-Acetamido-1-*O*-benzoyl-3,4,6-tri-*O*-benzyl-2-deoxy- β -D-glucopyranose, A-8
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 2-Acetamido-4,6-*O*-benzylidene-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone, A-387
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 2-Acetamido-2-deoxy-6-*O*-(2-acetamido-2-deoxy- α -D-glucopyranosyl)-D-glucose, A-171
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 4-*O*-(2-Acetamido-2-deoxy- α -D-galactopyranosyl)-D-galactose, A-202
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 2-Acetamido-2-deoxy-6-*O*- α -(D-galactopyranosyl)-D-glucose, A-203
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 2-Acetamido-2-deoxy-β-D-glucopyranosyl-(1 → 6)-β-D-galactopyranosyl-(1 → 3)-2-acetamido-2-deoxy-D-glucose, A-245
 2-Acetamido-2-deoxy-β-D-glucopyranosyl-(1 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose, A-247
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 2-Acetamido-2-deoxyglucose; *D-form*; 3,4-Di-Me, 4,6-*O*-isopropylidene, di-Et dithioacetal, A-8
 2-Acetamido-2-deoxyglucose; *D-form*; 4,6-*O*-Isopropylidene, di-Et dithioacetal, A-8
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 2-Acetamido-2-deoxyglucose; *D-form*; 1,3,4-Tri-Ac, di-Ph ester, 6-phosphate, A-8
 2-Acetamido-2-deoxyglucose; *D-form*; 1,3,4-Tri-Ac, 6-phosphate, A-8
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 2-Acetamido-2-deoxy-4,6-*O*-isopropylidene-D-glucopyranose, A-8
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 2-Acetamido-2-deoxy-D-mannofuranurono-6,3-lactone, A-317
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 2-Acetamido-2-deoxy-3-*O*-methyl-D-glucose, A-8
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 2-Acetamido-2-deoxy-6-*O*-methyl-D-glucose, A-8
 2-Acetamido-2-deoxy-4-*O*-methyl-D-glucuronic acid, A-274
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 2-Acetamido-2-deoxy-1,3,6-tri-*O*-acetyl-α-D-glucopyranose, A-13
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 2-Acetamido-1,3-di-*O*-acetyl-2-deoxy-4,5-*O*-isopropylidene-D-mannitol, A-174
 2-Acetamido-5,6-di-*O*-acetyl-2,3-dideoxy-D-erythro-hex-2-enono-1,4-lactone, A-386
 2-Acetamido-4,6-di-*O*-acetyl-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-1,3-di-*O*-acetyl-2,4-dideoxy-α,β-L-threo-pentopyranose, A-412
 2-Acetamido-2,6-dideoxy-D-allose, A-364
 2-Acetamido-2,6-dideoxy-3,4-di-*O*-methyl-L-glucose, A-380
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 2-Acetamido-3,4,6-tri-*O*-acetyl-2-deoxy-1-thio-β-D-glucopyranose, A-347
 2-Acetamido-1,3,6-tri-*O*-acetyl-2,4-dideoxy-4-fluoro-D-galactopyranose, A-372
 2-Acetamido-1,3,6-tri-*O*-acetyl-2,4-dideoxy-4-fluoro-β-D-glucopyranose, A-373
 2-Acetamido-1,3,4-tri-*O*-acetyl-2,6-dideoxy-α-D-glucopyranose, A-380
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 2-Acetamido-1,3,4-tri-*O*-acetyl-2,6-dideoxy-β-L-glucopyranose, A-380
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- 2-Acetamido-3,4,5-tri-*O*-acetyl- β -D-glucopyranosyl fluoride, A-224
- 2-Acetamido-3,4,6-tri-*O*-benzyl-2-deoxy-D-1,5-gluconolactone, A-218
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- 3-*O*-Acetyl-1,6-anhydro-2,4-dibenzamido-2,4-dideoxy-D-talopyranose, D-400
- N*-Acetylgalactosamine 1-phosphate, A-211
- 4-*N*-Acetylglucosaminylribitol, A-264
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- Allyl 2-acetamido-2-deoxyglucopyranoside; β -D-form, A-88
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- Allyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-glucopyranoside, A-88
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- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, 2'*N*,3',3'',4',6''-penta-Ac, A-248
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- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-L-rhamnose; α -Pyranose-form; Benzyl glycoside, 2,3-*O*-isopropylidene, 2',4'-dibenzyl, 2''N,3'',4'',6'',6''-penta-Ac, A-250
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- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 2)-D-glucose; α -Pyranose-form; Me glycoside, deca-Ac, A-254
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- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, *N*-Ac, A-263
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- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)]-D-mannose; α -Pyranose-form; Me glycoside, *N,N'*-di-Ac, A-236
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- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)]-D-mannose; α -Pyranose-form; Me glycoside, 2,4-dibenzyl, *N,N'*-di-Ac, A-238
- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)]-D-mannose; β -Pyranose-form; 1,2''N,2''N',3,3',3'',4,4',4'',6,6''-Undeca-Ac, A-234
- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)]-D-mannose; α -Pyranose-form; 1,2''N,2''N',3,3',3'',4,4',4'',6,6''-Undeca-Ac, A-236
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- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; *N,N'*-Di-Ac, A-243
- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form; 2'',3'',4''-Tribenzyl, 1,2N,2''N',3',4',6,6'-hepta-Ac, A-243
- 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, A-243
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- 2-Amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, 2N-benzoyloxycarbonyl, 2''N-(2,4-dinitrophenyl), A-265
- 2-Amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form, A-265
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- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; Pyranose-form, A-303
- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; β -Pyranose-form, A-303
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- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; Pyranose-form; *N*-Ac, A-304

- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*; Benzyl glycoside, 2',3',4-tribenzyl, 2,2''N,3',4'',6',6''-hexa-Ac, A-307
- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*; 1,2',2''N,3,3',3'',4,4'',6'-Deca-Ac, A-304
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- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*; 2',3',3'',4'',6''-Hexabenzyl, 1,2''N,4,6'-tetra-Ac, A-306
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- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*; 1,2''N,4,6'-Tetra-Ac, A-304
- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; Pyranose-*form*; 2''N,6'',6'-Tri-Ac, A-304
- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*, A-304
- 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; β -Pyranose-*form*, A-304
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 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 4',6'-O-benzylidene, 2'',3,3'',4'',6-pentabenzyl, N-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 4',6'-O-benzylidene, 2'',3,3'',4'',6-pentabenzyl, 3'-benzoyl, N-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 4,6:4',6'-di-O-benzylidene, 2'',3'',4''-tribenzyl, N-Ac, F-123
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 4,6:4',6'-di-O-benzylidene, 2'',3'',4''-tribenzyl, 3'-benzoyl, N-Ac, F-123
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4',4'',6,6'-heptabenzyl, N-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4',4'',6,6'-heptabenzyl, 2N,3-di-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2,3,3',3'',4',4'',6,6'-octabenzyl, N-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2'',3,3'',4'',6,6-pentabenzyl, 2N,2',3',4'-tetra-Ac, F-128
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Deca-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, F-122
 α -L-Fucopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, F-122
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, F-123
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, F-123
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose, F-123
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 6)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Me glycoside, N-Ac, F-103
 α -L-Fucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 6)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Me glycoside, 2',2'',3,3',3'',4',4''-heptabenzyl, N-Ac, F-103
 α -L-Fucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 6)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form, F-103
 α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-galactopyranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose; N-Ac, F-125
 α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; N-Ac, F-126
 α -L-Fucopyranosyl-(1 \rightarrow 6)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; N-Ac, F-127
 α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-galactopyranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2'',3',4'',6-tetrabenzyl, N-Ac, F-125

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- α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',2'',3,3'',4'',6,6',6''-octabenzyl, *N*-Ac, G-78
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',2'',3,3'',4'',6,6',6''-octabenzyl, 2*N*,4'-di-Ac, G-78
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, *N*-Ac, G-78
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 2',3,3'',4'',6,6',6''-hexabenzyl, 2',6'-dibenzoyl, 2*N*,4'-di-Ac, G-78
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Propyl glycoside, *N*-Ac, G-79
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Propyl glycoside, 2',3,3'',4'',6,6',6''-octabenzyl, *N*-Ac, G-79
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Propyl glycoside, 2',3,3'',4'',6,6',6''-octabenzyl, 2'-benzoyl, *N*-Ac, G-79
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, G-78
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, G-78
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, G-79
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, G-78
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N*-Ac, G-125
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, *N*-Ac, G-125
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 3-benzyl, nona-Ac, G-126
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, deca-Ac, G-125
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; (7-Methoxycarbonyl-3,6-dioxahexyl) glycoside, 3-benzyl, 2*N*,2',2'',3,3'',4'',6,6''-octa-Ac, G-126
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, G-126
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, G-125
 β -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose, G-126
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-2-amino-2-deoxy-D-mannose; β -Pyranose-form; *N*-Ac, G-127
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-2-amino-2-deoxy-D-mannose; β -Pyranose-form, G-127
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[β -D-xylopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; *N*-Ac, G-177
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[β -D-xylopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 6-benzoyl, octa-Ac, G-177
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[β -D-xylopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, G-177
6- β -Galactosyl-*N*-acetylglucosamine, G-59
Gentamicin A₁, G-220
Gentamicin A, G-224
Gentamicin C_{2b}; 5-Deoxy, 6'-*N*-Me, G-227
Gentamicin C_{2b}; 2-Hydroxy, 6'-*N*-Me, G-227
Gentamicin C, G-227
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Gentamine C₂, G-231
Gentamine C₁, G-231
Glucallosamidin A, A-85
Glucallosamidin B, A-85
 β -D-Glucopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose, G-49
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N*-Ac, G-327
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, deca-Ac, G-327
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, G-327
4'-*O*- α -D-Glucopyranosylkanamycin B, K-4
 α -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-mannose; β -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, *N*-Ac, G-438
 α -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-mannose; β -Pyranose-form, G-438
Glucosamine, 9Cl, 8Cl, A-266
Glucosamine pentanecotinate, A-266
3- β -Glucosyl-*N*-acetylglucosamine, A-251
Habekacin, D-625
 α -Homogalactostatin, B-34
 β -Homomannojirimycin, B-34
 α -Homomannonojirimycin, B-34
 α -Homonojirimycin, B-34
 β -Homonojirimycin, B-34
Hybrimycin A₁, H-129
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Inosamycin B, I-20
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Istamycin A₂, I-81
Istamycin A₁, I-81
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Istamycin A, I-81
Istamycin B, I-81
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Istamycin B₃, I-82
Istamycin C, I-83
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Kanamycin B, K-4
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Lactosamine; α -Pyranose-form; Octa-Ac, L-11
Lactosamine, L-11
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Lewis x blood group trisaccharide, L-38
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Lysodectose, G-258
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N,N'*-Di-Ac, M-48
 β -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N,N'*-Di-Ac, M-49
 β -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Benzyl glycoside, 3,6-dibenzyl, octa-Ac, M-49
 α -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Benzyl glycoside, *N,N'*-dipthaloyl, 3',6'-diallyl, 2'',3,3'',4'',6,6'-hexabenzyl, M-47
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; 1,2*N*,2'*N*,2'',3,3',3'',4'',6,6''-Deca-Ac, M-48
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Undeca-Ac, M-48
 α -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, M-47
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-48
 β -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-49
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N*-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N*-Ac, M-73
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, nona-Ac, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, nona-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, 3,3',4',6'-tetraabenzyl, 2*N*,2'',3'',4'',6''-penta-Ac, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, 2',3,4',6'-tetraabenzyl, 2*N*,2'',3'',4'',6''-penta-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Undeca-Ac, M-71

- α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-*form*, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-*form*, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Undeca-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Undeca-Ac, M-73
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-73
2-(4-Methoxycarbonylbutanecarboxamido)ethyl 2-acetamido-2-deoxygalactopyranoside; α -D-*form*, M-138
2-(4-Methoxycarbonylbutanecarboxamido)ethyl 2-acetamido-2-deoxygalactopyranoside; β -D-*form*, M-138
2-(4-Methoxycarbonylbutanecarboxamido)ethyl 2-acetamido-2-deoxy-3-O- β -D-galactopyranosyl- α -D-galactopyranoside, M-138
2-(4-Methoxycarbonylbutanecarboxamido)ethyl 2-acetamido-2-deoxy-3-O- β -D-galactopyranosyl- β -D-galactopyranoside, M-138
8-(Methoxycarbonyl)octyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-glucopyranoside, M-139
8-(Methoxycarbonyl)octyl 2-acetamido-4,6-O-benzylidene-2-deoxy- β -D-glucopyranoside, M-139
8-(Methoxycarbonyl)octyl 2-acetamido-2-deoxyglucopyranoside; α -D-*form*; 3,4,6-Tri-Ac, M-139
8-(Methoxycarbonyl)octyl 2-acetamido-2-deoxyglucopyranoside; β -D-*form*; 3,4,6-Tri-Ac, M-139
8-(Methoxycarbonyl)octyl 2-acetamido-2-deoxyglucopyranoside; α -D-*form*, M-139
8-(Methoxycarbonyl)octyl 2-acetamido-2-deoxyglucopyranoside; β -D-*form*, M-139
Methyl 2-acetamido-4-O-acetyl-3,6-anhydro-2-deoxy- α -D-glucopyranoside, M-144
Methyl 2-acetamido-6-O-acetyl-2-deoxy-3,4-di-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-4-O-acetyl-2-deoxy-3,6-di-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-3-O-acetyl-2-deoxy- β -D-glucopyranoside, M-144
Methyl 2-acetamido-3-O-acetyl-2-deoxy- α -D-idopyranoside, A-291
Methyl 2-acetamido-3-O-acetyl-2-deoxy-4,6-O-isopropylidene- β -D-glucopyranoside, M-144
Methyl 2-acetamido-3-O-acetyl-2-deoxy-4,6-O-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- α -DL-*erythro*-pentopyranoside, A-411
Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- β -DL-*erythro*-pentopyranoside, A-411
Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- α -L-*threo*-pentopyranoside, A-412
Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- β -L-*threo*-pentopyranoside, A-412
Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- α -DL-*threo*-pentopyranoside, A-412
Methyl 2-acetamido-3-O-acetyl-2,4-dideoxy- β -DL-*threo*-pentopyranoside, A-412
Methyl 2-acetamido-4-O-acetyl-2,3,6-trideoxy- β -L-*lyxo*-hexopyranoside, A-460
Methyl 2-acetamido-5-amino-3-O-benzyl-2,5-dideoxy- β -D-glucofuranoside, D-431
Methyl 2-acetamido-5-amino-3-O-benzyl-2,5-dideoxy-6-O-trityl- β -D-glucofuranoside, D-431
Methyl 2-acetamido-5-amino-2,5-dideoxy- β -D-glucofuranoside, D-431
Methyl 2-acetamido-6-amino-2,6-dideoxy- β -D-idopyranoside, D-442
Methyl 2-acetamido-3,6-anhydro-2-deoxy- α -D-glucopyranoside, M-144
Methyl 2-acetamido-4-O-benzoyl-2-deoxy-3,6-di-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-4-O-benzoyl-2-deoxy-3-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-4-O-benzyl-2-deoxy-3-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-altropyranoside, A-164
Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-*ribo*-hexopyranosid-3-ulose, A-288
Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- β -D-*ribo*-hexopyranosid-3-ulose, A-288
Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy- α -D-idopyranoside, A-291
Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy-3-O-mesyl- α -D-glucopyranoside, M-144
Methyl 2-acetamido-4,6-O-benzylidene-2-deoxy-3-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-4,6-O-benzylidene-2,3-dideoxy- α -D-*ribo*-hexopyranoside, 8CI, A-395
Methyl 2-acetamido-2-deoxy- α -D-altropyranoside, A-164
Methyl 2-acetamido-2-deoxy-3,4-di-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-2-deoxy-3,6-di-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-2-deoxy-4,6-di-O-methyl- α -D-glucopyranoside, M-146
Methyl 2-acetamido-2-deoxy-4,6-di-O-methyl- β -D-glucopyranoside, M-146
Methyl 2-acetamido-2-deoxy-3,4-di-O-methyl-6-O-trityl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-2-deoxy-D-gluconate, A-218
Methyl 2-acetamido-2-deoxyglucopyranoside; α -D-*form*, M-144
Methyl 2-acetamido-2-deoxyglucopyranoside; β -D-*form*, M-144
Methyl 2-acetamido-2-deoxy- α -D-gulopyranoside, A-279
Methyl 2-acetamido-2-deoxy-5,6-O-isopropylidene- β -D-galactofuranoside, A-206
Methyl 2-acetamido-2-deoxy-5,6-O-isopropylidene-D-gluconate, A-218
Methyl 2-acetamido-2-deoxy-4,6-O-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
Methyl 2-acetamido-2-deoxy- β -D-mannopyranoside, A-312
Methyl 2-acetamido-2-deoxy-6-O-mesyl-3,4-di-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-2-deoxy-6-O-mesyl- α -D-glucopyranoside, M-144
Methyl 2-acetamido-2-deoxy-3-O-methylglucopyranoside; α -D-*form*, M-145
Methyl 2-acetamido-2-deoxy-4-O-methylglucopyranoside; α -D-*form*, M-146
Methyl 2-acetamido-2-deoxy-6-O-methylglucopyranoside; α -D-*form*, M-147
Methyl 2-acetamido-2-deoxy-3-O-methyl-6-O-tosyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-2-deoxy-3-O-methyl-6-O-trityl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-2-deoxy- α -D-talopyranoside, A-340
Methyl 2-acetamido-2-deoxy-5-thio- α -D-altropyranoside, 9CI, A-345
Methyl 2-acetamido-2-deoxy-5-thio- β -D-altropyranoside, 9CI, A-345
Methyl 2-acetamido-2-deoxy-5-thio- α -D-glucopyranoside, A-349
Methyl 2-acetamido-2-deoxy-6-O-tosyl- α -D-altropyranoside, A-164
Methyl 2-acetamido-2-deoxy-6-O-tosyl- α -D-glucopyranoside, M-144
Methyl 2-acetamido-2-deoxy-3-O-tosyl- α -D-idopyranoside, A-291
Methyl 2-acetamido-2-deoxy-3,4,6-tri-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-3,6-di-O-acetyl-5-S-acetyl-2-deoxy-5-thio- β -D-galactofuranoside, A-346
Methyl 2-acetamido-4,6-di-O-acetyl-2-deoxy-3-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-3,4-di-O-acetyl-2-deoxy-6-O-methyl- α -D-glucopyranoside, M-147
Methyl 2-acetamido-3,4-di-O-acetyl-2-deoxy-6-O-tosyl- α -D-glucopyranoside, M-144
Methyl 2-acetamido-3,6-di-O-acetyl-4-(diacetylamino)-2,4-dideoxy- α -D-idopyranoside, D-440
Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372
Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy-4-fluoro- β -D-glucopyranoside, A-373
Methyl 2-acetamido-4,6-di-O-acetyl-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-395
Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
Methyl 2-acetamido-3,6-di-O-acetyl-2,4-dideoxy- β -D-*xylo*-hexopyranoside, A-398
Methyl 2-acetamido-3,6-di-O-benzoyl-2-deoxy- α -D-galactopyranoside, A-206
Methyl 2-acetamido-4,6-di-O-benzoyl-2-deoxy-3-O-methyl- α -D-glucopyranoside, M-145
Methyl 2-acetamido-3,4-di-O-benzoyl-2-deoxy-6-O-methyl- α -D-glucopyranoside, M-147
Methyl 2-acetamido-3,6-di-O-benzoyl-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398

- Methyl 2-acetamido-3,4-di-*O*-benzyl-2-deoxy-6-*O*-methyl- α -D-glucopyranoside, M-147
- Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372
- Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
- Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy- β -D-xylo-hexopyranoside, A-398
- Methyl 2-acetamido-2,3-dideoxy-4,6-di-*O*-mesyl- α -D-ribo-hexopyranoside, A-395
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-galactopyranoside, A-372
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-galactopyranoside, A-372
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- α -D-glucopyranoside, A-373
- Methyl 2-acetamido-2,4-dideoxy-4-fluoro- β -D-glucopyranoside, A-373
- Methyl 2-acetamido-2,6-dideoxy- α -D-galactopyranoside, A-375
- Methyl 2-acetamido-2,6-dideoxy- α -D-glucopyranoside, A-380
- Methyl 2-acetamido-2,3-dideoxy- α -D-ribo-hexopyranoside, 8CI, A-395
- Methyl 2-acetamido-2,4-dideoxy- α -D-xylo-hexopyranoside, A-398
- Methyl 2-acetamido-2,4-dideoxy- β -D-xylo-hexopyranoside, A-398
- Methyl 2-acetamido-2,6-dideoxy-3,4-*O*-isopropylidene- α -D-galactopyranoside, A-375
- Methyl 2-acetamido-2,4-dideoxy- β -DL-erythro-pentapyranoside, A-411
- Methyl 2-acetamido-2,4-dideoxy- α -DL-erythro-pentopyranoside, A-411
- Methyl 2-acetamido-2,4-dideoxy- α -L-threo-pentopyranoside, A-412
- Methyl 2-acetamido-2,4-dideoxy- β -L-threo-pentopyranoside, A-412
- Methyl 2-acetamido-2,4-dideoxy- α -DL-threo-pentopyranoside, A-412
- Methyl 2-acetamido-2,4-dideoxy- β -DL-threo-pentopyranoside, A-412
- Methyl 2-acetamido-3,4,5,6-tetra-*O*-acetyl-2-deoxy-D-gluconate, A-218
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- α -D-glucopyranoside, M-144
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-glucopyranoside, M-144
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- α -D-gulopyranoside, A-279
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-gulopyranoside, A-279
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- β -D-mannopyranoside, A-312
- Methyl 2-acetamido-3,4,6-tri-*O*-acetyl-2-deoxy- α -D-talopyranoside, A-340
- Methyl 2-acetamido-3,4,6-tri-*O*-benzyl-2-deoxy-D-gluconate, A-218
- Methyl 2-acetamido-3,4,6-tri-*O*-benzyl-2-deoxy- β -D-glucopyranoside, M-144
- Methyl 2-acetamido-2,3,6-trideoxy- β -L-lyxo-hexopyranoside, A-460
- Methyl 3-*O*-acetyl-2-benzamido-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 3-*O*-acetyl-2-benzamido-2-deoxy-4,6-di-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 4-*O*-acetyl-2-benzamido-2-deoxy-3,6-di-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 3-*O*-acetyl-2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside, D-480
- Methyl 3-*O*-acetyl-2,4-dideoxy-2-dibenzylamino- α -DL-threo-pentopyranoside, A-412
- Methyl 3-*O*-acetyl-2,4-dideoxy-2-dibenzylamino- β -DL-threo-pentopyranoside, A-412
- Methyl 6-amino-2-acetamido-3,4-di-*O*-acetyl- β -D-idopyranoside, D-442
- Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
- Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
- Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-altropyranoside, A-164
- Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- β -D-altropyranoside, A-164
- Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-150
- Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- β -D-glucopyranoside, M-150
- Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- α -D-idopyranoside, A-291
- Methyl 2-amino-4,6-*O*-benzylidene-2-deoxy- β -D-idopyranoside, A-291
- Methyl 2-amino-2-deoxy- α -D-arabinopyranoside, A-178
- Methyl 2-amino-2-deoxy- β -D-arabinopyranoside, A-178
- Methyl 2-amino-2-deoxy-4,6-*O*-ethylidene-3-*O*-methyl- α -D-glucopyranoside, M-150
- Methyl 2-amino-2-deoxy-4,6-*O*-ethylidene-3-*O*-methyl- β -D-glucopyranoside, M-150
- Methyl 2-amino-2-deoxy- α -D-glucufuranoside, A-266
- Methyl 2-amino-2-deoxyglucopyranoside; α -D-form; 3-Benzyl, 6-benzoyl, *N*-benzyloxycarbonyl, M-150
- Methyl 2-amino-2-deoxyglucopyranoside; α -D-form; 3-Benzyl, *N*-benzyloxycarbonyl, M-150
- Methyl 2-amino-2-deoxyglucopyranoside; α -D-form; 4,6-*O*-Benzylidene, 2*N*,3-dimesyl, M-150
- Methyl 2-amino-2-deoxyglucopyranoside; α -D-form; 4,6-*O*-Benzylidene, *N*-Et, M-150
- Methyl 2-amino-2-deoxyglucopyranoside; α -D-form; 3-Me, *N*-benzyloxycarbonyl, M-150
- Methyl 2-amino-2-deoxyglucopyranoside; α -D-form; 3,4,6-Tri-Me, *N*-benzyloxycarbonyl, M-150
- Methyl 2-amino-2-deoxyglucopyranoside; α -D-form, M-150
- Methyl 2-amino-2-deoxyglucopyranoside; β -D-form, M-150
- Methyl 2-amino-2-deoxy-4,6-*O*-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
- Methyl 2-amino-2-deoxy- α -D-lyxofuranoside, A-296
- Methyl 2-amino-2-deoxy- β -D-ribopyranoside, A-329
- Methyl 2-amino-2-deoxy- β -L-ribopyranoside, A-329
- Methyl 2-amino-2-deoxy-5-thio- α -D-altropyranoside, 9CI, A-345
- Methyl 2-amino-2-deoxy-3,4,6-tri-*O*-methyl- α -D-glucopyranoside, M-150
- Methyl 2-amino-2-deoxy-3,5,6-tri-*O*-methyl- β -D-mannofuranoside, A-312
- Methyl 2-amino-3,6-di-*O*-benzyl-2-deoxy- β -D-glucopyranoside, M-150
- Methyl 2-amino-2,3-dideoxy- α -D-ribo-hexopyranoside, 9CI, A-395
- Methyl 2-amino-2,4-dideoxy- α -DL-erythro-pentopyranoside, A-411
- Methyl 2-amino-2,4-dideoxy- α -DL-threo-pentopyranoside, A-412
- Methyl 2-amino-3,4,6-tri-*O*-benzyl-2-deoxy- α -D-glucopyranoside, M-150
- Methyl 2-amino-2,3,6-trideoxy-3-methylamino- α -L-idopyranoside, D-479
- Methyl 2-benzamido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-3-*O*-benzoyl-2-deoxy-4,6-di-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-3-*O*-benzoyl-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4-*O*-benzyl-2-deoxy-3-*O*-methyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy- α -D-ribo-hexopyranoside-3-ulose, A-288
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-3-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-3-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-3-*O*-tosyl- α -D-idopyranoside, A-291
- Methyl 2-benzamido-4,6-*O*-benzylidene-2,3-dideoxy- β -D-ribo-hexopyranoside, A-395
- Methyl 2-benzamido-2-deoxy-4,6-di-*O*-mesyl-3-*O*-methyl- β -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-4,6-di-*O*-tosyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxyglucopyranoside; α -D-form, M-154
- Methyl 2-benzamido-2-deoxyglucopyranoside; β -D-form, M-154
- Methyl 2-benzamido-2-deoxy-3-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3-*O*-methyl- β -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3,4,6-tri-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3,4,6-tri-*O*-methyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2-deoxy-3,4,6-tri-*O*-methyl- β -D-glucopyranoside, M-154
- Methyl 2-benzamido-3,4-di-*O*-benzoyl- β -D-arabinopyranoside, A-178
- Methyl 2-benzamido-3,6-di-*O*-benzoyl-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-3,6-di-*O*-benzoyl-2-deoxy-4-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-4,6-di-*O*-benzoyl-2-deoxy-3-*O*-mesyl- α -D-glucopyranoside, M-154
- Methyl 2-benzamido-2,3-dideoxy- β -D-ribo-hexopyranoside, A-395
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-(benzyloxycarbonyl)amino-2-deoxy- α -D-glucopyranoside, M-150
- Methyl 4,6-*O*-cyclohexylidene-2,3-dideoxy-2-*N*-tosyl- α -D-ribo-hexopyranoside, A-395
- Methyl 2-deoxy-2-(*N*-dimethylamino)-3,4,6-tri-*O*-methyl- α -D-glucopyranoside, M-150
- Methyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -D-idopyranoside, D-480
- Methyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -L-idopyranoside, D-480
- Methyl 2,3-diacetamido-4,6-*O*-benzylidene-2,3-dideoxy- α -D-gulopyranoside, D-435
- Methyl 2,3-diacetamido-4,6-*O*-benzylidene-2,3-dideoxy- α -D-mannopyranoside, D-449
- Methyl 2,4-diacetamido-3,6-di-*O*-acetyl-2,4-dideoxy- α -D-idopyranoside, D-440
- Methyl 2,3-diacetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-mannopyranoside, D-449
- Methyl 2,3-diacetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-talopyranoside, D-457
- Methyl 2,4-diacetamido-3,6-di-*O*-benzoyl-2,4-dideoxy- α -D-idopyranoside, D-440
- Methyl 2,4-diacetamido-2,4-dideoxy-3,6-di-*O*-methyl- α -D-idopyranoside, D-440
- Methyl 2,3-diacetamido-2,3-dideoxy- α -D-gulopyranoside, D-435
- Methyl 2,4-diacetamido-2,4-dideoxy- α -D-idopyranoside, D-440
- Methyl 2,3-diacetamido-2,3-dideoxy- α -D-mannopyranoside, D-449
- Methyl 2,3-diacetamido-2,3-dideoxy- β -D-mannopyranoside, D-449
- Methyl 2,3-diacetamido-2,3-dideoxy- α -D-talopyranoside, D-457

- Methyl 2,6-diacetamido-2,3,4,6,7-pentadeoxy- α -D-L-ribo-heptopyranoside, P-20
- Methyl 2,4-diacetamido-2,3,4,6-tetradecy- α -D-arabino-hexopyranoside, 8CI, D-470
- Methyl 2,4-diacetamido-2,3,4,6-tetradecy- β -D-arabino-hexopyranoside, 8CI, D-470
- Methyl 2,6-diacetamido-2,3,4,6-tetradecy- α -D-erythro-hexopyranoside, D-471
- Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-ribo-hexofuranoside, D-478
- Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-ribo-hexopyranoside, D-478
- Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-idopyranoside, D-480
- Methyl 2,6-diacetamido-2,3,6-trideoxy-4-O-mesyl- α -D-ribo-hexopyranoside, D-478
- Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-talopyranoside, D-484
- Methyl 3,5-di-O-acetyl-2-benzamido-2-deoxy- β -D-ribofuranoside, A-329
- Methyl 3,4-di-O-acetyl-2-benzamido-2-deoxy-6-O-tosyl- α -D-glucopyranoside, M-154
- Methyl 3,5-di-O-acetyl-2-benzamido-2-deoxy- α -D-xylofuranoside, A-356
- Methyl 4,6-di-O-acetyl-2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside, D-421
- Methyl 2,6-diamino-2,6-dideoxy- α -D-glucopyranoside, D-432
- Methyl 2,4-diamino-2,4-dideoxy- α -D-idopyranoside, D-440
- Methyl 2,6-diamino-2,6-dideoxy- α -L-idopyranoside, D-442
- Methyl 2,3-diamino-2,3-dideoxy- β -D-mannopyranoside, D-449
- Methyl 2,6-diamino-2,3,4,6-tetradecy- α -D-erythro-hexopyranoside, 9CI, D-471
- Methyl 2,3-diamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
- Methyl 2,3-diamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
- Methyl 2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside, D-480
- Methyl 2,6-dibenzamido-2,6-dideoxy- α -D-allopyranoside, D-410
- Methyl 2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside, D-421
- Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-O-tosyl- α -D-galactopyranoside, D-542
- Methyl 4,6-dichloro-4,6-dideoxy-2,3-di-O-tosyl- β -D-galactopyranoside, D-542
- Methyl 4,6-dichloro-4,6-dideoxy- β -D-galactopyranoside, D-542
- Methyl 2,3,4,6-tetraacetamido-2,3,4,6-tetradecy- α -D-idopyranoside, T-20
- Methyl 2,3,4-triacetamido-2,3,4,6-tetradecy- α -L-mannopyranoside, T-131
- Methyl 2,3,5-triacetamido-2,3,5-trideoxy- β -D-arabinofuranoside, T-134
- Methyl 3,4,6-tri-O-acetyl-2-amino-2-deoxy- β -D-glucopyranoside, M-150
- Methyl 3,4,6-tri-O-acetyl-2-benzamido-2-deoxy- α -D-glucopyranoside, M-154
- Methyl 3,4,6-tri-O-acetyl-2-benzamido-2-deoxy- β -D-glucopyranoside, M-154
- Methyl 3,4,6-tri-O-acetyl-2-deoxy-2-phthalimido-1-thio- β -D-glucopyranoside, D-353
- Methyl 2,3,5-triamino-2,3,5-trideoxy- β -D-arabinofuranoside, T-134
- Methylallosamidin, A-85
- Methyl-N-demethylallosamidin, A-85
- 2-Methyl-4,5-dihydro-4-O-acetyl-6-O-benzyl-3-O-(2-butenyl)-1,2-dideoxyglucopyranosyl[2,1-d]-1,3-oxazole, M-242
- 2-Methyl-4,5-dihydro(3,4,6-tri-O-acetyl-1,2-dideoxyglucopyranosyl)[2,1-d]-1,3-oxazole; α -D-form, M-243
- 6'-Methylgentamicin A₁, G-220
- 6'-Methylgentamicin A, G-224
- 3''-N-Methylkanamycin B, K-4
- 3-N-Methylparomomycin I, P-13
- Metrizamide, M-308
- N-Caffeoylglucosamine, A-266
- Nebmycin T, N-8
- Nebramycin IV, K-4
- Neomycin B glucoside, N-23
- Neomycin B, N-23
- Neosamine B, D-442
- Neosamine C, D-432
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',3,3',6-tetrabenzyl, 2N,5'N-di-Ac, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',3,3',6-tetrabenzyl, hepta-Ac, Me ester, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-form; N,N'-Di-Ac, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; 2N-Phthaloyl, undeca-Ac, Me ester, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-form, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, N-37
- 2-Nitrophenyl 2-amino-2-deoxyglucoside; α -D-Pyranose-form; N-Ac, N-60
- 2-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; N-Ac, N-60
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; α -D-Pyranose-form; N-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; N-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; 3,4-Dibenzoyl, N-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; 3,4-Dibenzyl, N-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; 3,6-Dibenzyl, N-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; 4-Me, N-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; 6-Me, N-Ac, N-62
- 2-Nitrophenyl 2-amino-2-deoxyglucoside; α -D-Pyranose-form; N,3,4,6-Tetra-Ac, N-60
- 2-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; N,3,4,6-Tetra-Ac, N-60
- 3-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; N,3,4,6-Tetra-Ac, N-61
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; α -D-Pyranose-form; N,3,4,6-Tetra-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; N,3,4,6-Tetra-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; N,3,4-Tri-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; N,3,6-Tri-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; 3,4,6-Tri-O-Ac, N-62
- 4-Nitrophenyl 2-amino-2-deoxyglucoside; β -D-Pyranose-form; 6-Trityl, N,3,4-tri-Ac, N-62
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- Paromomycin II, P-13
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- α -L-Rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, N-Ac, R-14
- α -L-Rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 4',6'-O-benzylidene, 3,4-dibenzyl, 2'N,2'',3'',4''-tetra-Ac, R-14
- α -L-Rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose, R-14
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- Sannamycin E, S-10
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- Streptobiosamine; Tetra-Ac, S-80
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- 1,3,4,6-Tetra-O-acetyl-2-(N-acetylbenzamido)-2-deoxy- β -D-glucopyranose, B-7
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- 2,3,4,6-Tetraamino-2,3,4,6-tetradecygalactose; D-Pyranose-form; 2N,3N,4N,6N-Tetra-Ac, T-18
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 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside,
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 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside,
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 1,4-Di-*O*-acetyl-2,3,6-trideoxy-3-(dimethylamino)- β -*L*-*lyxo*-hexopyranose, D-727
 2',3'-Diamino-2',3'-dideoxyadenosine, D-407
 2,3-Diamino-2,3-dideoxyallose; *D*-form, D-409
 3,4-Diamino-3,4-dideoxyarabinose; *L*-form, D-414
 2,3-Diamino-2,3-dideoxyascorbic acid; *L*-form; *N*²-Ac, D-415
 2,3-Diamino-2,3-dideoxyascorbic acid; *L*-form; *N,N'*-Diformyl, D-415
 2,3-Diamino-2,3-dideoxyascorbic acid; *L*-form, D-415
 2,3-Diamino-2,3-dideoxygalactose, D-421
 2,3-Diamino-2,3-dideoxyglucose; α -*D*-Pyranose-form; Benzyl glycoside, 2,3-bis-*N*-(2,4-dinitrophenyl), D-429
 2,3-Diamino-2,3-dideoxyglucose; β -*D*-Pyranose-form; Me glycoside, 2,3-bis-*N*-(2,4-dinitrophenyl), D-429
 2,3-Diamino-2,3-dideoxyglucose; α -*D*-Pyranose-form, D-429
 2,3-Diamino-2,3-dideoxyglucose; β -*D*-Pyranose-form, D-429
 3,6-Diamino-3,6-dideoxyglucose; *D*-Pyranose-form, D-433
 2,3-Diamino-2,3-dideoxyidose; α -*D*-Pyranose-form; Me glycoside, 4,6-*O*-benzylidene, 2*N*,3*N*-di-Ac, D-439
 2,3-Diamino-2,3-dideoxyidose; α -*D*-Pyranose-form; Me glycoside, 2*N*,3*N*-di-Ac, D-439
 3,6-Diamino-3,6-dideoxy-1,2-*O*-isopropylidene- α -*D*-glucofuranose, D-433
 3,6-Diamino-3,6-dideoxy-1,2-*O*-isopropylidene- β -*L*-talofuranose, D-458
 3,4-Diamino-3,4-dideoxyxylose; α -*D*-Furanose-form; 1,2-*O*-Isopropylidene, 5-benzoyl, 3*N*,4*N*-di-Ac, D-464
 3,4-Diamino-3,4-dideoxyxylose; β -*L*-Pyranose-form; Me glycoside, 2,3*N*,4*N*-tribenzoyl, D-464
 3,4-Diamino-3,4-dideoxyxylose; *L*-form, D-464
 3,6-Diamino-5-hydroxyhexanoic acid; (3*R*,5*R*)-form, D-468
 3,6-Dibenzamido-3,6-dideoxy-1,2-*O*-isopropylidene- α -*D*-glucofuranose, D-433
 3,6-Dideoxy-3-dimethylamino-*D*-glucose, A-381
 3,6-Dideoxy-3-dimethylamino-*D*-idose, A-402
 3',4'-Dideoxy-3'',6'-di-*N*-methylkanamycin B, D-625
 3,6-Dideoxy-3-formamido-*D*-glucose, A-381
 3,6-Dideoxy-3-(*L*-glyceroylamino)-*D*-glucose, A-381
 3',4'-Dideoxykanamycin B, D-625
 3',4'-Dideoxy-3''-*N*-methylkanamycin B, D-625
 3-(Dimethylamino)-2,3,6-trideoxy-*arabino*-hexose; *D*-form, D-726
 3-(Dimethylamino)-2,3,6-trideoxy-*lyxo*-hexose; *L*-form, D-727
 Ethyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*lyxo*-hexopyranoside, A-464
 Ethyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -*L*-*lyxo*-hexopyranoside, A-464
 Ethyl 3-benzamido-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*lyxo*-hexopyranoside, A-464
 Ethyl 3,4,6-trideoxy-3-dimethylamino- α -*D*-*xylo*-hexopyranoside, T-151
 Ethyl 3,4,6-trideoxy-3-dimethylamino- β -*D*-*xylo*-hexopyranoside, T-151
 Garamine, G-216
 Garosamine; β -*L*-Pyranose-form; Me glycoside, *N*-Ac, G-217
 Garosamine; β -*L*-Pyranose-form; Me glycoside, *N*-benzoyl, G-217
 Garosamine; *L*-form, G-217
 Gentamicin A₁, G-220
 Gentamicin A, G-224
 Gentamicin B, G-226
 Gentamicin C_{2b}; 5-Deoxy, 6'-*N*-Me, G-227
 Gentamicin C_{2b}; 2-Hydroxy, 6'-*N*-Me, G-227
 Gentamicin C, G-227
 Gentamicin C_{2b}, G-227
 4'-*O*- α -*D*-Glucopyranosylkanamycin B, K-4
 Habekacin, D-625
 Hedamycin, H-2
 2-Hydroxysagamicin, G-227
 Isepamicin, BAN, INN, USAN, G-226
 Isorhodomyacin A, I-80
 Kanamycin A, K-3
 Kanamycin B, K-4
 Kanamycin C, K-5
 Methyl 3-acetamido-2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy- α -*D*-allopyranoside, A-157
 Methyl 3-acetamido-2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy- β -*D*-glucopyranoside, A-267
 Methyl 3-acetamido-2-*O*-acetyl-3-deoxy-4-*O*-mesyl- β -*L*-lyxopyranoside, A-297
 Methyl 3-acetamido-2-*O*-acetyl-3,6-dideoxy- β -*D*-galactopyranoside, A-376
 Methyl 3-acetamido-4-*O*-acetyl-3,6-dideoxy- β -*D*-galactopyranoside, A-376
 Methyl 3-acetamido-2-*O*-acetyl-3,6-dideoxy- β -*D*-glucopyranoside, A-381
 Methyl 3-acetamido-2-*O*-acetyl-3,6-dideoxy- α -*L*-glucopyranoside, A-381
 Methyl 3-acetamido-4-*O*-acetyl-3,6-dideoxy- α -*L*-glucopyranoside, A-381
 Methyl 3-acetamido-4-*O*-acetyl-3,6-dideoxy-2-*O*-mesyl- β -*D*-galactopyranoside, A-376

- Methyl 3-acetamido-4-*O*-acetyl-2,3,6-trideoxy- α -L-*arabino*-hexopyranoside, A-458
- Methyl 3-acetamido-4-*O*-acetyl-2,3,6-trideoxy- α -D-*lyxo*-hexopyranoside, A-461
- Methyl 3-acetamido-4-*O*-acetyl-2,3,6-trideoxy- α -L-*lyxo*-hexopyranoside, A-461
- Methyl 3-acetamido-6-*O*-benzyl-3,4-dideoxy- β -D-*xylo*-hexopyranoside, A-400
- Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- α -D-allopyranoside, A-157
- Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- α -D-glucopyranoside, A-267
- Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- β -D-glucopyranoside, A-267
- Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- α -D-idopyranoside, A-292
- Methyl 3-acetamido-4,6-*O*-benzylidene-3-deoxy- β -D-idopyranoside, A-292
- Methyl 3-acetamido-3-deoxy- α -D-allofuranoside, A-157
- Methyl 3-acetamido-3-deoxy- β -D-allofuranoside, A-157
- Methyl 3-acetamido-3-deoxy-4,6-*O*-ethylidene- α -D-glucopyranoside, A-267
- Methyl 3-acetamido-3-deoxy- β -D-glucopyranoside, A-267
- Methyl 3-acetamido-3-deoxy- α -D-idopyranoside, A-292
- Methyl 3-acetamido-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 3-acetamido-3-deoxy- α -D-talopyranoside, A-341
- Methyl 3-acetamido-4,6-di-*O*-acetyl-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 3-acetamido-2,5-di-*O*-acetyl-3-deoxy- α -D-ribofuranoside, A-330
- Methyl 3-acetamido-2,5-di-*O*-acetyl-3-deoxy- β -D-ribofuranoside, A-330
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3-deoxy- α -D-ribofuranoside, A-330
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3-deoxy-5-thio- α -D-xylopyranoside, A-352
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-altropyranoside, A-369
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-2,4-di-*O*-acetyl-2,6-dideoxy- β -D-glucopyranoside, A-381
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -L-glucopyranoside, A-381
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-glucopyranoside, A-381
- Methyl 3-acetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-*xylo*-hexopyranoside, A-399
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-idopyranoside, A-402
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-idopyranoside, A-402
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-mannopyranoside, A-407
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-mannopyranoside, A-407
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -L-mannopyranoside, A-407
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-talopyranoside, A-416
- Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -L-talopyranoside, A-416
- Methyl 3-acetamido-2,4-di-*O*-acetyl- α -L-idopyranoside, A-402
- Methyl 3-acetamido-3,6-dideoxy- α -D-altropyranoside, A-369
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-*O*-mesyl- α -D-altropyranoside, A-369
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-*O*-mesyl- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-*O*-mesyl- α -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- α -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- β -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- β -D-glucopyranoside, A-381
- Methyl 3-acetamido-3,6-dideoxy- α -L-glucopyranoside, A-381
- Methyl 3-acetamido-3,6-dideoxy- β -L-glucopyranoside, A-381
- Methyl 3-acetamido-3,6-dideoxy- β -L-gulopyranoside, A-384
- Methyl 3-acetamido-3,6-dideoxy- β -L-gulopyranoside, A-384
- Methyl 3-acetamido-2,3-dideoxy- α -D-*arabino*-hexopyranoside, A-392
- Methyl 3-acetamido-2,3-dideoxy- β -D-*arabino*-hexopyranoside, A-392
- Methyl 3-acetamido-3,6-dideoxy- α -D-idopyranoside, A-402
- Methyl 3-acetamido-3,6-dideoxy- β -D-idopyranoside, A-402
- Methyl 3-acetamido-3,6-dideoxy- α -L-idopyranoside, A-402
- Methyl 3-acetamido-3,6-dideoxy- α -D-mannopyranoside, A-407
- Methyl 3-acetamido-3,6-dideoxy- β -D-mannopyranoside, A-407
- Methyl 3-acetamido-3,6-dideoxy- β -L-mannopyranoside, A-407
- Methyl 3-acetamido-3,6-dideoxy-4-*O*-mesyl- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-2-*O*-mesyl- α -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- α -D-talopyranoside, A-416
- Methyl 3-acetamido-3,6-dideoxy- β -D-talopyranoside, A-416
- Methyl 3-acetamido-3,6-dideoxy- α -L-talopyranoside, A-416
- Methyl 3-acetamido-2,5,6-tri-*O*-acetyl-3-deoxy- β -D-allofuranoside, A-157
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-allopyranoside, A-157
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- β -D-allopyranoside, A-157
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-altropyranoside, A-165
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-glucopyranoside, A-267
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- β -D-glucopyranoside, A-267
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-idopyranoside, A-292
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl-3-deoxy- α -D-talopyranoside, A-341
- Methyl 3-acetamido-2,4,6-tri-*O*-acetyl- α -D-galactopyranoside, A-207
- Methyl 3-acetamido-2,3,6-trideoxy- α -D-*arabino*-hexopyranoside, A-458
- Methyl 3-acetamido-2,3,6-trideoxy- β -D-*arabino*-hexopyranoside, A-458
- Methyl 3-acetamido-2,3,6-trideoxy- α -L-*arabino*-hexopyranoside, A-458
- Methyl 3-acetamido-2,3,6-trideoxy-4-*O*-methyl- α -L-*arabino*-hexopyranoside, A-458
- Methyl 3-acetamido-2,3,6-trideoxy-3-*C*-methyl- α -D-*lyxo*-hexopyranoside, A-464
- Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
- Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
- Methyl 3-amino-4,6-*O*-benzylidene-3-deoxy- α -D-glucopyranoside, A-267
- Methyl 3-amino-4,6-*O*-benzylidene-3-deoxy- α -D-idopyranoside, A-292
- Methyl 3-amino-3-deoxy- β -D-allofuranoside, A-157
- Methyl 3-amino-3-deoxy- α -D-allopyranoside, A-157
- Methyl 3-amino-3-deoxy- β -D-allopyranoside, A-157
- Methyl 3-amino-3-deoxy- α -D-alluronate, A-160
- Methyl 3-amino-3-deoxy- α -D-altropyranoside, A-165
- Methyl 3-amino-3-deoxy- α -D-galactopyranoside, A-207
- Methyl 3-amino-3-deoxy- β -D-glucopyranoside, A-267
- Methyl 3-amino-3-deoxy- β -D-gulopyranoside, A-280
- Methyl 3-amino-3-deoxy- α -D-lyxopyranoside, A-297
- Methyl 3-amino-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 3-amino-3-deoxy- β -D-mannopyranoside, A-313
- Methyl 3-amino-3-deoxy- β -D-ribofuranoside, 8CI, A-330
- Methyl 3-amino-3-deoxy- α -D-talopyranoside, A-341
- Methyl 3-amino-3-deoxy-5-thio- α -D-xylopyranoside, A-352
- Methyl 3-amino-3,6-dideoxy- β -D-galactopyranoside, 9CI, A-376
- Methyl 3-amino-3,6-dideoxy- α -D-glucopyranoside, A-381
- Methyl 3-amino-3,6-dideoxy- β -D-glucopyranoside, A-381
- Methyl 3-amino-3,6-dideoxy- α -L-glucopyranoside, A-381
- Methyl 3-amino-3,6-dideoxy- β -L-glucopyranoside, A-381
- Methyl 3-amino-2,3-dideoxy- α -D-*arabino*-hexopyranoside, A-392
- Methyl 3-amino-2,3-dideoxy- β -D-*arabino*-hexopyranoside, A-392
- Methyl 3-amino-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-397
- Methyl 3-amino-3,4-dideoxy- α -D-*xylo*-hexopyranoside, A-400
- Methyl 3-amino-3,4-dideoxy- β -D-*xylo*-hexopyranoside, A-400
- Methyl 3-amino-3,6-dideoxy- α -D-idopyranoside, A-402
- Methyl 3-amino-3,6-dideoxy- β -D-idopyranoside, A-402
- Methyl 3-amino-3,6-dideoxy- α -L-idopyranoside, A-402
- Methyl 3-amino-3,6-dideoxy- β -L-idopyranoside, A-402
- Methyl 3-amino-3,6-dideoxy- α -D-mannopyranoside, A-407
- Methyl 3-amino-3,6-dideoxy- β -D-mannopyranoside, A-407
- Methyl 3-amino-2,3,6-trideoxy- α -D-*arabino*-hexopyranoside, A-458
- Methyl 3-amino-2,3,6-trideoxy- α -L-*arabino*-hexopyranoside, A-458
- Methyl 3-amino-2,3,6-trideoxy- α -L-*lyxo*-hexopyranoside, A-461
- Methyl 2-amino-2,3,6-trideoxy-3-methylamino- α -L-idopyranoside, D-479
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, 9CI, A-466
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, A-464
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- β -L-*lyxo*-hexopyranoside, A-464
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -L-*ribo*-hexopyranoside, A-465
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy- α -L-*lyxo*-hexopyranoside, A-461
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -L-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, A-466
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -L-*xylo*-hexopyranoside, A-466
- Methyl 3-benzamido-4,6-*O*-benzylidene-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 3-benzamido-3-deoxy- α -D-mannopyranoside, A-313

- Methyl 3-benzamido-2,4-di-*O*-benzoyl-3-deoxy- α -D-L-xylopyranoside, A-297
- Methyl 3-benzamido-2,4-di-*O*-benzoyl-3,6-dideoxy- α -D-idopyranoside, A-402
- Methyl 3-benzamido-2,3,6-trideoxy- α -L-*arabino*-hexopyranoside, A-458
- Methyl 3-benzamido-2,3,6-trideoxy- α -L-*lyxo*-hexopyranoside, A-461
- Methyl 3-benzamido-2,3,6-trideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, A-466
- Methyl 5-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- α -D-xylofuranoside, D-294
- Methyl 5-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- β -D-xylofuranoside, D-294
- Methyl 5-*O*-benzyl-3-deoxy-3-(methylamino)- α -D-xylofuranoside, D-294
- Methyl 5-*O*-benzyl-3-deoxy-3-(methylamino)- β -D-xylofuranoside, D-294
- Methyl 3-deoxy-3-(*N*-methylacetamido)- α -D-arabinofuranoside, D-293
- Methyl 3-deoxy-3-(*N*-methylacetamido)- β -D-xylopyranoside, 8CI, D-294
- Methyl 3-deoxy-3-(methylamino)- α -D-arabinofuranoside, D-293
- Methyl 3-deoxy-3-(methylamino)- β -L-arabinopyranoside, 9CI, D-293
- Methyl 3-deoxy-3-(methylamino)- α -D-arabinopyranoside, D-293
- Methyl 3-deoxy-3-(methylamino)- α -L-arabinopyranoside, D-293
- Methyl 3-deoxy-3-(methylamino)- α -D-xylopyranoside, 9CI, 8CI, D-294
- Methyl 3-deoxy-3-(methylamino)- β -D-xylopyranoside, 8CI, D-294
- Methyl 3-deoxy-3-(methylamino)- β -L-xylopyranoside, D-294
- Methyl 3-deoxy-4-*C*-methyl-3-(methylamino)- β -L-arabinopyranoside, G-217
- Methyl 2,3-diacetamido-4,6-*O*-benzylidene-2,3-dideoxy- α -D-gulopyranoside, D-435
- Methyl 2,3-diacetamido-4,6-*O*-benzylidene-2,3-dideoxy- α -D-mannopyranoside, D-449
- Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-glucopyranoside, D-433
- Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-glucopyranoside, D-433
- Methyl 2,3-diacetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-mannopyranoside, D-449
- Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-mannopyranoside, D-451
- Methyl 3,6-diacetamido-2,5-di-*O*-acetyl-3,6-dideoxy-L-talofuranoside, D-458
- Methyl 2,3-diacetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-talopyranoside, D-457
- Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -L-talopyranoside, D-458
- Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -L-talopyranoside, D-458
- Methyl 2,3-diacetamido-2,3-dideoxy- α -D-gulopyranoside, D-435
- Methyl 2,3-diacetamido-2,3-dideoxy- α -D-mannopyranoside, D-449
- Methyl 2,3-diacetamido-2,3-dideoxy- β -D-mannopyranoside, D-449
- Methyl 3,6-diacetamido-3,6-dideoxy- α -D-mannopyranoside, D-451
- Methyl 2,3-diacetamido-2,3-dideoxy- α -D-talopyranoside, D-457
- Methyl 3,6-diacetamido-3,6-dideoxy- α -L-talopyranoside, D-458
- Methyl 3,4-diacetamido-3,4,6-trideoxy- α -D-glucopyranoside, D-475
- Methyl 3,4-diacetamido-3,4,6-trideoxy-2-*O*-methyl- α -L-glucopyranoside, D-475
- Methyl 2,4-di-*O*-acetyl-3-amino-3,6-dideoxy- α -L-glucopyranoside, A-381
- Methyl 2,5-di-*O*-acetyl-3-deoxy-3-(*N*-methylacetamido)- α -D-arabinofuranoside, D-293
- Methyl 4,6-di-*O*-acetyl-2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside, D-421
- Methyl 3,6-diamino-3,6-dideoxy- α -D-glucopyranoside, D-433
- Methyl 3,6-diamino-3,6-dideoxy- β -D-glucopyranoside, D-433
- Methyl 2,3-diamino-2,3-dideoxy- β -D-mannopyranoside, D-449
- Methyl 3,6-diamino-3,6-dideoxy- α -D-mannopyranoside, D-451
- Methyl 3,6-diamino-3,6-dideoxy- α -L-talopyranoside, D-458
- Methyl 3,6-diamino-3,6-dideoxy- β -L-talopyranoside, D-458
- Methyl 3,4-diamino-3,4-dideoxy- β -L-xylopyranoside, D-464
- Methyl 2,3-diamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
- Methyl 2,3-diamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
- Methyl 3,4-diamino-3,4,6-trideoxy-2-*O*-methyl- α -L-glucopyranoside, D-475
- Methyl 2,3-dibenzamido-2,3-dideoxy- β -D-galactopyranoside, D-421
- Methyl 2,5-di-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- α -D-xylofuranoside, D-294
- Methyl 2,5-di-*O*-benzyl-3-deoxy-3-(*N*-methylacetamido)- β -D-xylofuranoside, D-294
- Methyl 3,6-dideoxy-3-dimethylamino- α -D-altropyranoside, A-369
- Methyl 3,6-dideoxy-3-dimethylamino- α -D-glucopyranoside, A-381
- Methyl 3,6-dideoxy-3-dimethylamino- α -L-glucopyranoside, A-381
- Methyl 3,6-dideoxy-3-dimethylamino- α -D-idopyranoside, A-402
- Methyl 3,6-dideoxy-3-dimethylamino- α -L-idopyranoside, A-402
- Methyl 3,6-dideoxy-3-ethylamino- α -D-mannopyranoside, A-407
- Methyl 3-(dimethylamino)-2,3,6-trideoxy- α -D-*arabino*-hexopyranoside, D-726
- Methyl 3-(dimethylamino)-2,3,6-trideoxy- β -D-*arabino*-hexopyranoside, D-726
- Methyl (methyl 3-benzamido-2-*O*-benzoyl-3,4-dideoxy- α -D-*xylo*-hexopyranosid)uronate, A-401
- Methyl (methyl 3-benzamido-2-*O*-benzoyl-3,4-dideoxy- β -D-*xylo*-hexopyranosid)uronate, A-401
- Methyl 2,3,4,6-tetraacetamido-2,3,4,6-tetradeoxy- α -D-idopyranoside, T-20
- Methyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy- α -L-mannopyranoside, T-131
- Methyl 2,3,5-triacetamido-2,3,5-trideoxy- β -D-arabinofuranoside, T-134
- Methyl 2,4,6-tri-*O*-acetyl-3-benzamido-3-deoxy- α -D-mannopyranoside, A-313
- Methyl 2,4,6-tri-*O*-acetyl-3-deoxy-3-dimethylamino- α -D-L-talopyranoside, A-341
- Methyl 2,3,5-triamino-2,3,5-trideoxy- β -D-arabinofuranoside, T-134
- Methyl 3-trichloroacetamido-2,3,6-trideoxy- α -L-*ribo*-hexopyranoside, A-462
- Methyl 2,3,6-trideoxy-3-dimethylamino- β -L-*xylo*-hexopyranoside, A-463
- Methyl 2,3,6-trideoxy-3-dimethylamino- α -D-*lyxo*-hexopyranoside, D-727
- Methyl 2,3,6-trideoxy-3-dimethylamino- β -D-*lyxo*-hexopyranoside, D-727
- Methyl 2,3,6-trideoxy-3-dimethylamino- α -L-*ribo*-hexopyranoside, T-150
- Methyl 2,3,6-trideoxy-3-dimethylamino- β -L-*ribo*-hexopyranoside, T-150
- 6'-Methylgentamicin A₁, G-220
- 6'-Methylgentamicin A, G-224
- 3''-*N*-Methylkanamycin B, K-4
- L-Mycaminose, A-381
- Mycosamine, A-407
- Nebmycin T, N-8
- Nebramycin IV, K-4
- Puromycin aminonucleoside, A-154
- Sisomicin, S-45
- 2,3,4,6-Tetraacetamido-2,3,4,6-tetradeoxy- α -D-glucopyranose, T-19
- 1,2,4,6-Tetra-*O*-acetyl-3-amino-3-deoxy- α -D-mannopyranose, A-313
- 1,2,4,6-Tetra-*O*-acetyl-3-benzamido-3-deoxy- α -D-mannopyranose, A-313
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*; Benzyl glycoside, 2N,3N,4N,6N-tetra-Ac, T-18
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*; Benzyl glycoside, T-18
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*; Me glycoside, 2N,3N,4N,6N-tetra-Ac, T-18
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; D-Pyranose-*form*; 2N,3N,4N,6N-Tetra-Ac, T-18
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; D-Pyranose-*form*, T-18
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*, T-18
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxyglucose; α -D-Pyranose-*form*; *N*-Tetrabenzoyl, T-19
- 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxyglucose; D-*form*, T-19
- 3-Trehalosamine, T-121
- 2,3,5-Triacetamido-1-*O*-acetyl-2,3,5-trideoxy- α -D-xylofuranose, T-141
- 2,3,4-Triacetamido-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
- 2,3,5-Triacetamido-1,4-di-*O*-acetyl-2,3,5-trideoxy- β -D-ribofuranose, T-139
- 2,3,5-Triacetamido-2,3,5-trideoxy-D-arabinofuranose, T-134
- 2,3,5-Triacetamido-2,3,5-trideoxy-D-arabinono-1,4-lactone, T-133
- 2,3,5-Triacetamido-2,3,5-trideoxy- β -D-ribofuranose, T-139
- 2,3,5-Triacetamido-2,3,5-trideoxy- β -D-ribofuranose, T-139
- 2,3,4-Triamino-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
- 2,3,5-Triamino-2,3,5-trideoxyarabinonic acid; D-*form*, T-133
- 2,3,5-Triamino-2,3,5-trideoxy-D-arabinono-1,4-lactone, T-133
- 3,4,6-Triamino-3,4,6-trideoxygalactose; α -D-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3N,4N,6N-tri-Ac, T-135
- 3,4,6-Triamino-3,4,6-trideoxygalactose; α -D-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3N,4N,6N-tribenzoyl, T-135
- 3,4,6-Triamino-3,4,6-trideoxygalactose; α -D-Pyranose-*form*, T-135
- 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*; Benzyl glycoside, 3N,4N,5N-tri-Ac, T-140
- 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3N,4N,5N-tri-Ac, T-140
- 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*, T-140
- 2,3,5-Tribenzamido-2,3,5-trideoxy-D-arabinofuranose, T-134
- 2,3,5-Tribenzamido-2,3,5-trideoxy-D-arabinono-1,4-lactone, T-133
- 3,4,6-Trideoxy-3-dimethylamino-*xylo*-hexose; D-*form*; Di-Ac, T-151
- 2,3,6-Trideoxy-3-dimethylamino-*ribo*-hexose; L-*form*, T-150
- 3,4,6-Trideoxy-3-dimethylamino-*xylo*-hexose; D-*form*, T-151
- 3,4,6-Trideoxy-3-dimethylamino-*xylo*-hexose; L-*form*, T-151
- Vancosamine, A-464
- Verdamycin, V-14

4-Amino-4-deoxysugars

- 5-Acetamidino-7-acetamido-3,5,7,9-tetradeoxy-L-*glycero*-D-*galacto*-non-2-ulonic acid, D-485
- 2-Acetamido-4-amino-2,4,6-trideoxy-D-galactose, D-473
- 4-Acetamido-2-amino-2,4,6-trideoxy-D-glucose, D-474

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- 3,4-Diamino-3,4-dideoxyarabinose; *L-form*, D-414
 2,4-Diamino-2,4-dideoxygalactose; *D-form*, D-422
 2,4-Diamino-2,4-dideoxyglucose, D-430
 2,4-Diamino-2,4-dideoxyidose; α -D-Pyranose-*form*; Me glycoside, 2*N*,3,4*N*,6-tetrabenzoyl, 2*N*,4*N*-di-Ac, D-440
 3,4-Diamino-3,4-dideoxyxylose; α -D-Furanose-*form*; 1,2-*O*-Isopropylidene, 5-benzoyl, 3*N*,4*N*-di-Ac, D-464
 3,4-Diamino-3,4-dideoxyxylose; β -D-Pyranose-*form*; Me glycoside, 2,3*N*,4*N*-tribenzoyl, D-464
 3,4-Diamino-3,4-dideoxyxylose; *L-form*, D-464
 2,4-Diamino-2,3,4,6-tetradeoxy-*arabino*-hexose; *D-form*, D-470
 2,4-Diamino-2,4,6-trideoxyglucose; *D-form*, D-474
 2,4-Diamino-2,4,6-trideoxytalose; α -D-Pyranose-*form*, D-484
 4,6-Dideoxy-4-(*N*-dimethylamino)- β -D-allose, A-365
 4,6-Dideoxy-4-(*N*-dimethylamino)- α -D-altrose, A-370
 4,6-Dideoxy-4-dimethylamino- α -D-talopyranose, A-417
 4,6-Dideoxy-4-dimethylamino- β -D-talopyranose, A-417
 1,4-Dideoxy-1,4-imino-D-arabinitol, D-697
 1,4-Dideoxy-1,4-imino-L-arabinitol, D-697
 1,4-Dideoxy-1,4-imino-D-lyxitol, D-697
 1,4-Dideoxy-1,4-imino-L-lyxitol, D-697
 1,4-Dideoxy-1,4-imino-D-ribitol, D-697
 1,4-Dideoxy-1,4-imino-L-ribitol, D-697
 1,4-Dideoxy-1,4-imino-D-xytilol, D-697
 1,4-Dideoxy-1,4-imino-L-xytilol, D-697
 4,6-Dideoxy-4-(*N*-methylamino)- α -D-glucose, A-382
 4,6-Dideoxy-3-*C*-methyl-4-(methylamino)- α -D-mannose, A-409
 4,6-Dideoxy-3-*C*-methyl-2-*O*-methyl-L-mannose, A-409
 3,4-Dihydroxy-2-(hydroxymethyl)pyrrolidine; (2*R*,3*R*,4*R*)-*form*; 4-*O*- β -D-Glucopyranoside, D-697
 4-(Dimethylamino)-2,3,4,6-tetradeoxy-*threo*-hexose; *D-form*, D-725
 Ethyl 2,4-diacetamido-2,3,4,6-tetradeoxy- β -D-*arabino*-hexopyranoside, D-470
 Gougerotin, G-563
 Kasugamycin, K-6
 Kasuganobiosamine, K-7
 Kijanose; *D-form*, K-16
 Methyl 4-acetamido-2,3-anhydro-4,6-dideoxy- α -D-allopyranoside, A-365
 Methyl 4-acetamido-4-deoxy- α -D-arabinofuranoside, A-179
 Methyl 4-acetamido-4-deoxy- β -D-arabinofuranoside, A-179
 Methyl 4-acetamido-4-deoxy- α -D-arabinopyranoside, A-179
 Methyl 4-acetamido-4-deoxy- α -L-arabinopyranoside, A-179
 Methyl 4-acetamido-4-deoxy-2,3-di-*O*-mesyl- β -L-arabinopyranoside, A-179
 Methyl 4-acetamido-4-deoxy- α -D-galactopyranoside, A-208
 Methyl 4-acetamido-4-deoxy- α -D-glucopyranosiduronic acid, 8CI, A-276
 Methyl 4-acetamido-4-deoxy- α -L-sorbopyranoside, A-335
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4-deoxy- α -L-arabinopyranoside, A-179
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4-deoxy- β -L-arabinopyranoside, A-179
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4-deoxy-5-thio- β -L-lyxopyranoside, A-350
 Methyl 2-acetamido-3,6-di-*O*-acetyl-4-(diacetylamino)-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-altropyranoside, A-370
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-mannopyranoside, A-408
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -L-mannopyranoside, A-408
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-talopyranoside, A-417
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -L-talopyranoside, A-417
 Methyl 4-acetamido-2,3-di-*O*-benzyl-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 4-acetamido-4,6-dideoxy- α -D-allopyranoside, A-365
 Methyl 4-acetamido-4,6-dideoxy- β -D-allopyranoside, A-365
 Methyl 4-acetamido-4,6-dideoxy- α -D-altropyranoside, A-370
 Methyl 4-acetamido-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 4-acetamido-4,6-dideoxy-2,3-*O*-isopropylidene- α -D-talopyranoside, A-417
 Methyl 4-acetamido-4,6-dideoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, A-417
 Methyl 4-acetamido-4,6-dideoxy- α -D-mannopyranoside, A-408
 Methyl 4-acetamido-4,6-dideoxy- α -D-talopyranoside, A-417
 Methyl 4-acetamido-4,6-dideoxy- α -L-talopyranoside, A-417
 Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- α -D-galactopyranoside, A-208
 Methyl 4-acetamido-1,3,5-tri-*O*-acetyl-4-deoxy- α -L-sorbopyranoside, A-335
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -D-*ribo*-hexopyranoside, 8CI, A-467
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -D-*xylo*-hexopyranoside, 9CI, A-468
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -L-*arabino*-hexopyranoside, A-459
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -L-*arabino*-hexopyranoside, A-459
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -D-*ribo*-hexopyranoside, A-467
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -D-*xylo*-hexopyranoside, A-468
 Methyl 3-*O*-acetyl-2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside, A-382
 Methyl 4-amino-4-deoxy- α -D-arabinopyranoside, A-179
 Methyl 4-amino-4-deoxy- α -L-arabinopyranoside, A-179
 Methyl 4-amino-4-deoxy- β -L-arabinopyranoside, A-179
 Methyl 4-amino-4-deoxy- α -D-glucopyranosiduronic acid, 8CI, A-276
 Methyl 4-amino-4-deoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, A-342
 Methyl 4-amino-4-deoxy-2-*O*-mesyl- α -L-lyxopyranoside, A-298
 Methyl 4-amino-4-deoxy- α -L-sorbopyranoside, A-335
 Methyl 4-amino-4-deoxy-5-thio- β -L-lyxopyranoside, A-350
 Methyl 4-amino-4-deoxy- α -D-xylopyranoside, A-357
 Methyl 4-amino-4,6-dideoxy- α -D-allopyranoside, A-365
 Methyl 4-amino-4,6-dideoxy- β -D-allopyranoside, A-365
 Methyl 4-amino-4,6-dideoxy- α -D-altropyranoside, A-370
 Methyl 4-amino-4,6-dideoxy- α -D-galactopyranoside, A-377
 Methyl 4-amino-4,6-dideoxy- α -D-glucopyranoside, A-382
 Methyl 4-amino-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 4-amino-6-dideoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, A-417
 Methyl 4-amino-4,6-dideoxy- α -D-mannopyranoside, A-408
 Methyl 4-amino-4,6-dideoxy- α -L-mannopyranoside, A-408
 Methyl 4-amino-4,6-dideoxy- α -D-talopyranoside, A-417
 Methyl 4-amino-2,3,4-trideoxy- α -D-*erythro*-hex-2-enopyranosiduronic acid, 8CI, A-454
 Methyl 4-amino-2,4,6-trideoxy-3-*O*-methyl- α -D-*xylo*-hexopyranoside, 9CI, A-468
 Methyl 4-deoxy-2,3-di-*O*-mesyl-4-(*N*-dimethylamino)- α -L-lyxopyranoside, A-298
 Methyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -L-idopyranoside, D-480
 Methyl 4,6-diacetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 2,4-diacetamido-3,6-di-*O*-acetyl-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 2,4-diacetamido-3,6-di-*O*-benzoyl-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 4,6-diacetamido-2,3-di-*O*-benzyl-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 2,4-diacetamido-2,4-dideoxy-3,6-di-*O*-methyl- α -D-idopyranoside, D-440
 Methyl 4,6-diacetamido-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 2,4-diacetamido-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 2,4-diacetamido-2,3,4,6-tetradeoxy- α -D-*arabino*-hexopyranoside, 8CI, D-470
 Methyl 2,4-diacetamido-2,3,4,6-tetradeoxy- β -D-*arabino*-hexopyranoside, 8CI, D-470
 Methyl 3,4-diacetamido-3,4,6-trideoxy- α -D-glucopyranoside, D-475
 Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 3,4-diacetamido-3,4,6-trideoxy-2-*O*-methyl- α -L-glucopyranoside, D-475
 Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-talopyranoside, D-484
 Methyl 2,3-di-*O*-acetyl-4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside, A-382
 Methyl 2,3-di-*O*-acetyl-4,6-diamino-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 2,3-di-*O*-acetyl-4,6-dideoxy-4-dimethylamino- α -D-talopyranoside, A-417
 Methyl 2,4-diamino-2,4-dideoxy- α -D-idopyranoside, D-440
 Methyl 3,4-diamino-3,4-dideoxy- β -L-xylopyranoside, D-464
 Methyl 2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 3,4-diamino-3,4,6-trideoxy-2-*O*-methyl- α -L-glucopyranoside, D-475
 Methyl 4,6-dibenzamido-2,3-di-*O*-benzoyl-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-altropyranoside, A-370
 Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-idopyranoside, A-403
 Methyl 4,6-dideoxy-4-dimethylamino- α -D-talopyranoside, A-417

Methyl 4,6-dideoxy-2,3-*O*-isopropylidene-4-methylamino- α -D-talopyranoside, A-417
 Methyl 4,6-dideoxy-4-methylamino- α -D-glucopyranoside, A-382
 Methyl 4,6-dideoxy-3-*C*-methyl-4-(methylamino)- α -D-mannopyranoside, A-409
 Methyl 4,6-dideoxy-3-*C*-methyl-4-(methylamino)- β -D-mannopyranoside, A-409
 Methyl 4-(dimethylamino)-2,3,4,6-tetradeoxy- α -D-*threo*-hexopyranoside, 8CI, D-725
 Methyl 2,3,4,6-tetraacetamido-2,3,4,6-tetradeoxy- α -D-idopyranoside, T-20
 Methyl 2,3,4,6-tetradeoxy-(4-dimethylamino)- α -D-*erythro*-hexopyranoside, A-449
 Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- α -D-xylo-hexopyranoside, K-16
 Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- β -D-xylo-hexopyranoside, K-16
 Methyl 2,3,4,6-tetradeoxy-4-(methylamino)- α -D-*erythro*-hexopyranoside, A-449
 Methyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy- α -L-mannopyranoside, T-131
 Sorbistin A, S-49
 2,3,4,6-Tetraacetamido-2,3,4,6-tetradeoxy- α -D-glucopyranose, T-19
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*; Benzyl glycoside, 2*N*,3*N*,4*N*,6*N*-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*; Benzyl glycoside, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*; Me glycoside, 2*N*,3*N*,4*N*,6*N*-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; D-Pyranose-*form*; 2*N*,3*N*,4*N*,6*N*-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; D-Pyranose-*form*, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; α -D-Pyranose-*form*, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxyglucose; α -D-Pyranose-*form*; *N*-Tetrabenzoyl, T-19
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxyglucose; D-*form*, T-19
 2,3,4,6-Tetradeoxy-4-(dimethylamino)-D-*erythro*-hexose, 8CI, A-449
 4-Trehalosamine; *N*,*O*,*O*,*O*,*O*,*O*,*O*,*O*-Octa-Ac, T-122
 4-Trehalosamine, T-122
 2,3,4-Triacetamido-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
 1,3,5-Tri-*O*-acetyl-4-amino-4-deoxy- β -D-tagatopyranose, A-339
 2,3,4-Triamino-1,6-anhydro-2,3,4-trideoxy- β -D-idopyranose, T-137
 3,4,6-Triamino-3,4,6-trideoxygalactose; α -D-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3*N*,4*N*,6*N*-tri-Ac, T-135
 3,4,6-Triamino-3,4,6-trideoxygalactose; α -D-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3*N*,4*N*,6*N*-tribenzoyl, T-135
 3,4,6-Triamino-3,4,6-trideoxygalactose; α -D-Pyranose-*form*, T-135
 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*; Benzyl glycoside, 3*N*,4*N*,5*N*-tri-Ac, T-140
 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3*N*,4*N*,5*N*-tri-Ac, T-140
 3,4,5-Triamino-3,4,5-trideoxysorbose; α -L-Pyranose-*form*, T-140
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 5-Acetamido-3-*O*-benzyl-5-deoxy-1,2-*O*-isopropylidene- β -L-idofuranose, A-293
 5-Acetamido-3-*O*-benzyl-5,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose, A-418
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 5-Acetamido-5-deoxy-L-arabinopyranose, A-180
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 5-Acetamido-5-deoxy-1,2-*O*-isopropylidene- β -L-arabinofuranose, A-180
 5-Acetamido-5-deoxy-2,3-*O*-isopropylidene- α -D-lyxofuranose, A-299
 5-Acetamido-5-deoxy-1,2-*O*-isopropylidene-3-*O*-mesyl- β -D-arabinofuranose, A-180
 5-Acetamido-5-deoxy-1,2-*O*-isopropylidene- α -D-xylofuranose, A-358
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 5-Acetamido-5-deoxy-D-xylofuranose, A-358
 5-Acetamido-2,3-di-*O*-acetyl-1,6-anhydro-5-deoxy- β -L-altrofuranose, A-124
 5-Acetamido-3,6-di-*O*-acetyl-5-deoxy-1,2-*O*-isopropylidene- β -L-idofuranose, A-293
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 5-Acetamido-5,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose, A-418
 5-Acetamido-5,6-dideoxy-L-talofuranose, A-418
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 5-Acetamido-2,3,4-tri-*O*-acetyl-1,6-anhydro-5-deoxy- β -L-idopyranose, A-293

5-Acetamido-1,2,3-tri-*O*-acetyl-5-deoxy-L-arabinofuranose, A-180
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 β-D-Neuraminopyranosyl-(2 → 3)-β-D-galactopyranosyl-(1 → 4)-D-glucose; β-Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, *N*-Ac, Me ester, N-40
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 1,2,5-Trideoxy-4-*O*-(β -D-glucopyranosyl)-1,5-imino-D-*arabino*-hexitol, T-152

6-Amino-6-deoxysugars

1-Acetamido-1-deoxy-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, A-334
 6-Acetamido-6-deoxy- α -D-glucopyranosyl fluoride, A-225
 6-Acetamido-6-deoxy-D-glucose, A-270
 6-Acetamido-6-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, A-337
 6-Acetamido-6-deoxy-L-sorbofuranose, A-337
 6-Acetamido-3,4-di-*O*-acetyl-1,5-anhydro-6-deoxy-D-*arabino*-hex-1-enitol, A-213
 6-Acetamido-6,8-dideoxy-1,2,3,4-di-*O*-isopropylidene-D-*erythro*- α -D-galacto-octopyranose, 8CI, L-43
 6-Acetamido-1,2,3,4,7-penta-*O*-acetyl-6,8-dideoxy-D-*erythro*- α -D-galacto-octopyranose, L-43
 6-Acetamido-1,2,3,4,7-penta-*O*-acetyl-6,8-dideoxy-D-*erythro*- β -D-galacto-octopyranose, L-43
 6-Acetamido-1,2,3,4-tetra-*O*-acetyl-6-deoxy- α -D-glucopyranose, A-270
 6-Acetamido-1,2,3,4-tetra-*O*-acetyl-6-deoxy- β -D-glucopyranose, A-270
 1-Acetamido-3,4,5,6-tetra-*O*-acetyl-1-deoxy-D-psicose, A-323
 2-Acetamido-1,3,4,5-tetra-*O*-acetyl-2,6-dideoxy-D-altritol, A-367
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*N*¹-Acetylparomomycin I, P-13
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 6-Amino-5-acetamido-1,2-*O*-cyclohexylidene-5,6-dideoxy- β -L-idofuranose, D-444
 6-Amino-2,5-anhydro-6-deoxyglucitol; *D-form*, A-131
 6-Amino-6-deoxyallose; *D-form*; Diethyl dithioacetal, A-159
 6-Amino-6-deoxyallose; *D-form*, A-159
 6-Amino-6-deoxyaltrose; *L-form*; 1-Dibenzyl dithioacetal, *N*-benzoyl, A-168
 1-Amino-1-deoxy-2,3,4,5-di-*O*-isopropylidene- β -D-fructopyranose, A-184
 6-Amino-6-deoxy-1,2,3,4-di-*O*-isopropylidene- α -D-galactopyranose, A-210
 1-Amino-1-deoxy-2,3,4,6-di-*O*-isopropylidene- α -L-sorbofuranose, A-334
 6-Amino-6-deoxyfructose; *D-form*; *N*-Trifluoroacetyl, A-186
 1-Amino-1-deoxyfructose; α -D-Furanose-*form*, A-184
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 6-Amino-6-deoxygalactose; *D-form*, A-210
 6-Amino-6-deoxygluconic acid; *D-form*, A-220
 6-Amino-6-deoxyglucopyranosyl fluoride; α -D-*form*, A-225
 6-Amino-6-deoxyglucose; *D-form*; Di-Et dithioacetal, A-270
 6-Amino-6-deoxyglucose; *D-form*, A-270
 6-Amino-6-deoxy-1,2-*O*-isopropylidene- α -D-allofuranose, A-159
 6-Amino-6-deoxy-2,3-*O*-isopropylidene-1-*O*-methyl- α -L-sorbofuranose, A-337
 6-Amino-6-deoxy-2,3-*O*-isopropylidene- α -L-sorbofuranose, A-337
 6-Amino-6-deoxy-1,2-*O*-isopropylidene-3-*O*-tosyl- α -D-allofuranose, A-159
 6-Amino-6-deoxymannose; *D*-Pyranose-*form*, A-316
 6-Amino-6-deoxysorbose; α -L-Furanose-*form*; *N*-Benzyloxycarbonyl, A-337
 6-Amino-6-deoxysorbose; α -L-Furanose-*form*; 2,3-Isopropylidene, *N*-benzyloxycarbonyl, A-337
 6-Amino-6-deoxysorbose; α -L-Furanose-*form*; 2,3-Isopropylidene, *N*-tosyl, A-337
 6-Amino-6-deoxysorbose; *L*-Furanose-*form*, A-337
 6-Amino-6-deoxysorbose; α -L-Furanose-*form*, A-337
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 1-Amino-1-deoxytagatose; *D-form*; *N,N*-Dibenzyl, A-338
 1-Amino-1-deoxytagatose; *D-form*; *N*-Hexyl, A-338
 1-Amino-1-deoxytagatose; *D-form*, A-338
 6-Amino-6-deoxy-2,3,4,5-tetra-*O*-methyl-D-galactonic acid, A-190
 6-Amino-2,5,3,4-dianhydro-1,6-dideoxygalactitol; *D-form*; *N,N*-Di-Me, A-361
 6-Amino-2,5,3,4-dianhydro-1,6-dideoxygalactitol; *D-form*; *N,N,N*-Tri-Me, A-361
 6-Amino-2,5,3,4-dianhydro-1,6-dideoxygalactitol; *D-form*, A-361
 2-Amino-2,6-dideoxyaltritol; *D-form*, A-367
 6-Amino-6,8-dideoxy-7-*O*-methyl-D-*erythro*-D-galacto-octose, 9CI, L-43
 2-Amino-2,3,4,6-tetra-deoxy-6-methylamino-D-*ribo*-heptose, P-20
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 Benzyl 2,6-diacetamido-2,6-dideoxy- α -D-glucopyranoside, D-432
 Benzyl 2,6-diamino-2,6-dideoxy- α -D-glucopyranoside, D-432
 Benzyl 2,3,4,6-tetraacetamido-2,3,4,6-tetra-deoxy- α -D-glucopyranoside, T-19
 Benzyl 2,3,4,6-tetraamino-2,3,4,6-tetra-deoxy- α -D-glucopyranoside, T-19
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 6-Deoxy-1,2,3,5-di-*O*-isopropylidene-6-tosylamino- β -D-idofuranose, A-294
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 3,6-Diacetamido-5-*O*-acetyl-3,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose, D-458
 5,6-Diacetamido-1,2-*O*-cyclohexylidene-5,6-dideoxy- β -L-idofuranose, D-444
 2,6-Diacetamido-2,6-dideoxy- α -D-allopyranoside, D-410

- 2,6-Diacetamido-2,6-dideoxy- α -D-galactopyranose, D-423
 5,6-Diacetamido-5,6-dideoxy-L-idofuranose, D-444
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 3,6-Diacetamido-3,6-dideoxy-1,2-*O*-isopropylidene- α -D-glucofuranose, D-433
 2,6-Diacetamido-2,6-dideoxy- α -D-mannopyranose, D-450
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 3,6-Diacetamido-1,2,4-tri-*O*-acetyl-3,6-dideoxy- α -D-glucopyranose, D-433
 3,6-Diacetamido-1,2,4-tri-*O*-acetyl-3,6-dideoxy- β -D-glucopyranose, D-433
 3,4-Di-*O*-acetyl-6-amino-1,5-anhydro-6-deoxy-D-*arabino*-hex-1-enitol, A-213
 2,6-Diamino-2,6-dideoxyallose, D-410
 2,6-Diamino-2,6-dideoxygalactose, D-423
 2,6-Diamino-2,6-dideoxyglucose; α -D-Pyranose-*form*, D-432
 2,6-Diamino-2,6-dideoxyglucose; β -D-Pyranose-*form*, D-432
 3,6-Diamino-3,6-dideoxyglucose; D-Pyranose-*form*, D-433
 2,6-Diamino-2,6-dideoxyidose; L-*form*; Dibenzyl dithioacetal, 2,6-di-*N*-Ac, D-442
 2,6-Diamino-2,6-dideoxyidose; L-*form*; Dibenzyl dithioacetal, D-442
 5,6-Diamino-5,6-dideoxyidose; β -L-Furanose-*form*; 1,2-Isopropylidene, 5*N*-benzyl, D-444
 2,6-Diamino-2,6-dideoxyidose; D-*form*, D-442
 1,6-Diamino-1,6-dideoxy-2,3-*O*-isopropylidene- β -D-fructofuranose, D-416
 3,6-Diamino-3,6-dideoxy-1,2-*O*-isopropylidene- α -D-glucofuranose, D-433
 3,6-Diamino-3,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose, D-458
 2,6-Diamino-2,6-dideoxymannose, D-450
 6,6'-Diamino-6,6'-dideoxysucrose; *N,N'*-Di-Ac, D-455
 6,6'-Diamino-6,6'-dideoxysucrose; 1',2,2',3,3',4,6*N*,6'*N*-Octa-Ac, D-455
 6,6'-Diamino-6,6'-dideoxysucrose, D-455
 3,6-Diamino-5-hydroxyhexanoic acid; (3*R*,5*R*)-*form*, D-468
 2,6-Diamino-2,4,5,6-tetradeoxy-*xylo*-heptaric acid, D-467
 2,6-Diamino-2,4,5,6-tetradeoxy-*lyxo*-heptaric acid, D-467
 2,6-Diamino-2,3,4,6-tetradeoxy-*glycero*-hex-4-enopyranose; D-*form*, D-469
 2,6-Diamino-2,3,4,6-tetradeoxy-*erythro*-hexose; α -D-Pyranose-*form*; Me glycoside, 6-*N*-Me, 2,6-di-*N*-Ac, D-471
 2,6-Diamino-2,3,4,6-tetradeoxy-*erythro*-hexose; D-*form*, D-471
 2,6-Diamino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; α -D-*form*; Me glycoside, 2*N*,6*N*-di-Ac, D-477
 2,6-Diamino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; α -D-*form*, D-477
 2,6-Diamino-2,3,6-trideoxy-*ribo*-hexose; D-*form*, D-478
 3,6-Dibenzamido-3,6-dideoxy-1,2-*O*-isopropylidene- α -D-glucofuranose, D-433
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 3',4'-Dideoxykanamycin B, D-625
 3',4'-Dideoxy-6'-*N*-methylbutirosin A, B-138
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 3',4'-Dideoxy-3''-*N*-methylkanamycin B, D-625
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 Istamycin A₀, I-81
 Istamycin A₃, I-82
 Istamycin B, I-81
 Istamycin B₁, I-81
 Istamycin B₀, I-81
 Istamycin B₃, I-82
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 Lincosamine; Di-Me dithioacetal, 6-*N*-benzoyl, L-43
 Lincosamine; Di-Me dithioacetal, L-43
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 Methyl 2-acetamido-6-amino-2,6-dideoxy- β -D-idopyranoside, D-442
 Methyl 6-acetamido-6-deoxy- α -D-mannopyranoside, A-316
 Methyl 6-acetamido-2,3-di-*O*-benzyl-6-deoxy- α -L-altrofuranside, A-168
 Methyl 6-acetamido-6,8-dideoxy-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, 8CI, L-43
 Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-6,8-dideoxy-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, L-43
 Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-6,8-dideoxy-1-thio-D-*erythro*- β -D-*galacto*-octopyranoside, L-43
 Methyl 1-acetamido-3,4,6-tri-*O*-acetyl-1-deoxy- β -D-fructofuranoside, A-184
 Methyl 1-acetamido-3,4,6-tri-*O*-benzoyl-1-deoxy- β -D-psicofuranoside, A-323
 Methyl 6-amino-2-acetamido-3,4-di-*O*-acetyl- β -D-idopyranoside, D-442
 Methyl 1-amino-1-deoxy- α -D-fructofuranoside, A-184
 Methyl 1-amino-1-deoxy- β -D-fructofuranoside, A-184
 Methyl 6-amino-6-deoxy- α -D-glucopyranoside, A-270
 Methyl 6-amino-6-deoxy- α -L-idopyranoside, A-294
 Methyl 6-amino-6-deoxy- β -L-idopyranoside, A-294
 Methyl 6-amino-6-deoxy-3,4-*O*-isopropylidene- α -D-galactopyranoside, A-210
 Methyl 6-amino-6-deoxy- α -D-mannopyranoside, A-316
 Methyl 6-amino-6,8-dideoxy-3,4-*O*-isopropylidene-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, 8CI, L-43
 Methyl 6-amino-6,8-dideoxy-7-*O*-methyl-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, 9CI, L-43
 Methyl 6-amino-6,8-dideoxy-7-*O*-methyl-1-thio-D-*erythro*- β -D-*galacto*-octopyranoside, 9CI, L-43
 Methyl 6-amino-6,8-dideoxy-1-thio-D-*erythro*- α -D-*galacto*-octopyranoside, 9CI, 8CI, L-43
 Methyl 6-deoxy-2,3-di-*O*-methyl-6-methylaminoglucofuranoside 4,6-cyclic thiophosphonamide; α -D-(*R*)_P-*form*; P-Chloro, M-170
 Methyl 6-deoxy-2,3-di-*O*-methyl-6-methylaminoglucofuranoside 4,6-cyclic thiophosphonamide; α -D-(*S*)_P-*form*; P-Methoxy, M-170
 Methyl 6-deoxy-2,3-di-*O*-methyl-6-methylaminoglucofuranoside 4,6-cyclic thiophosphonamide; α -D-(*R*)_P-*form*; P-Me, M-170
 Methyl 4,6-diacetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-glucopyranoside, D-433
 Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-glucopyranoside, D-433
 Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-mannopyranoside, D-451
 Methyl 3,6-diacetamido-2,5-di-*O*-acetyl-3,6-dideoxy-L-talofuranoside, D-458

Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -L-talopyranoside, D-458
 Methyl 3,6-diacetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -L-talopyranoside, D-458
 Methyl 5,6-diacetamido-2,3-di-*O*-benzyl-5,6-dideoxy- α -L-altrofuranside, D-411
 Methyl 4,6-diacetamido-2,3-di-*O*-benzyl-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 4,6-diacetamido-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 3,6-diacetamido-3,6-dideoxy- α -D-mannopyranoside, D-451
 Methyl 3,6-diacetamido-3,6-dideoxy- α -L-talopyranoside, D-458
 Methyl 2,6-diacetamido-2,3,4,6,7-pentadeoxy- α -DL-*ribo*-heptopyranoside, P-20
 Methyl 2,6-diacetamido-2,3,4,6-tetradideoxy- α -D-*erythro*-hexopyranoside, D-471
 Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-*ribo*-hexofuranside, D-478
 Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-*ribo*-hexopyranoside, D-478
 Methyl 2,6-diacetamido-2,3,6-trideoxy-4-*O*-mesyl- α -D-*ribo*-hexopyranoside, D-478
 Methyl 2,3-di-*O*-acetyl-4,6-diamino-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 2,6-diamino-2,6-dideoxy- α -D-glucopyranoside, D-432
 Methyl 3,6-diamino-3,6-dideoxy- α -D-glucopyranoside, D-433
 Methyl 3,6-diamino-3,6-dideoxy- β -D-glucopyranoside, D-433
 Methyl 2,6-diamino-2,6-dideoxy- α -L-idopyranoside, D-442
 Methyl 3,6-diamino-3,6-dideoxy- α -D-mannopyranoside, D-451
 Methyl 3,6-diamino-3,6-dideoxy- α -L-talopyranoside, D-458
 Methyl 3,6-diamino-3,6-dideoxy- β -L-talopyranoside, D-458
 Methyl 2,6-diamino-2,3,4,6-tetradideoxy- α -D-*erythro*-hexopyranoside, 9CI, D-471
 Methyl 4,6-dibenzamido-2,3-di-*O*-benzoyl-4,6-dideoxy- α -D-galactopyranoside, D-424
 Methyl 2,6-dibenzamido-2,6-dideoxy- α -D-allopyranoside, D-410
 Methyl 2,3,4,6-tetraacetamido-2,3,4,6-tetradideoxy- α -D-idopyranoside, T-20
 Methyl 2,3,4-tri-*O*-acetyl-6-amino-6-deoxy- α -D-galactopyranoside, A-210
 Methyl 2,3,4-tri-*O*-acetyl-6-amino-6-deoxy- α -D-glucopyranoside, A-270
 Methyl 2,3,4-tri-*O*-acetyl-6-amino-6-deoxy- α -D-mannopyranoside, A-316
 Methyl 2,3,4-tri-*O*-benzyl-6-amino-6-deoxy- α -D-glucopyranoside, A-270
 3'-*N*-Methylkanamycin B, K-4
 3-*N*-Methylparomomycin I, P-13
 Miharamycin A, M-311
 Miharamycin B, M-311
 Nebmycin T, N-8
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 2,3,4,6-Tetraamino-2,3,4,6-tetradideoxygalactose; D-Pyranose-*form*; 2*N*,3*N*,4*N*,6*N*-Tetra-Ac, T-18
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 Methyl 2-azido-4,6-*O*-benzylidene-2-deoxy- β -*D*-galactopyranoside, A-903
 Methyl 2-azido-2-deoxy- α -*D*-galactopyranoside, A-903
 Methyl 2-azido-2-deoxy- β -*D*-galactopyranoside, A-903
 Methyl 3-azido-3-deoxy- β -*D*-glucopyranoside, A-909
 Methyl 6-azido-6-deoxy- α -*D*-glucopyranoside, A-910
 Methyl 2-azido-2-deoxy-4,6-*O*-isopropylidene- β -*D*-galactopyranoside, A-903
 Methyl 6-azido-6-deoxy-2,3-*O*-isopropylidene- α -*D*-mannofuranoside, A-913
 Methyl 6-azido-6-deoxy-2,3-*O*-isopropylidene- α -*D*-mannopyranoside, A-913
 Methyl 6-azido-6-deoxy- α -*D*-mannopyranoside, A-913
 Methyl 3-azido-2,3-dideoxy- α -*D*-arabino-hexopyranoside, A-918
 Methyl 4,6-di-*O*-acetyl-3-azido-2,3-dideoxy- α -*D*-arabino-hexopyranoside, A-918
 Methyl 3,4,6-tri-*O*-acetyl-2-azido-2-deoxy- β -*D*-galactopyranoside, A-903
 Methyl 2,4,6-tri-*O*-acetyl-3-azido-3-deoxy- β -*D*-glucopyranoside, A-909
 Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -*D*-glucopyranoside, A-910
 Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -*D*-mannopyranoside, A-913
 1,3,4,6-Tetra-*O*-acetyl-2-azido-2-deoxy- α -*D*-galactopyranoside, A-903
 1,2,3,4-Tetra-*O*-acetyl-6-azido-6-deoxy- α -*D*-mannopyranoside, A-913
 2,3,4,6-Tetra-*O*-acetyl- α -*D*-galactopyranosyl azide, G-26
 2,3,4,6-Tetra-*O*-acetyl- β -*D*-galactopyranosyl azide, G-26
 2,3,4,6-Tetra-*O*-acetyl- α -*D*-glucopyranosyl azide, G-259
 2,3,4,6-Tetra-*O*-acetyl- β -*D*-glucopyranosyl azide, G-259
 2,3,4,6-Tetra-*O*-methyl- β -*D*-glucopyranosyl azide, G-259
 3,4,6-Tri-*O*-acetyl-2-azido-2-deoxy- α -*D*-glucopyranosyl bromide, A-905
 2,4,6-Tri-*O*-acetyl-3-azido-3-deoxy- α -*D*-glucopyranosyl bromide, A-906
 2,3,4-Tri-*O*-acetyl-6-deoxy- β -*L*-galactopyranosyl azide, F-94
 2,3,4-Tri-*O*-acetyl- α -*D*-xylopyranosyl azide, X-13
 2,3,4-Tri-*O*-acetyl- β -*D*-xylopyranosyl azide, X-13
 2,3,4-Tri-*O*-benzyl- α -*D*-glucopyranosylazide, G-259
 Xylopyranosyl azide; α -*D*-form, X-13
 Xylopyranosyl azide; β -*D*-form, X-13
 Zidovudine; 5'-Triphosphate, Z-4
 Zidovudine, Z-4

Thioglycosides and 1-thiosugars

2-Acetamido-3,4,6-tri-*O*-acetyl-1-*S*-acetyl-2-deoxy-1-thio- β -*D*-glucopyranose, A-347
 2-Acetamido-3,4,6-tri-*O*-acetyl-2-deoxy-1-thio- β -*D*-glucopyranose, A-347
p-Aminobenzyl 1-thio- β -*D*-cellobioside, T-60
p-Aminophenyl 1-thio- β -*D*-cellobioside, T-60
 4-Aminophenyl 1-thio- β -*D*-fucopyranoside, A-439
 4-Aminophenyl 1-thio- α -*L*-fucopyranoside, A-439
 4-Aminophenyl 1-thio- β -*L*-fucopyranoside, A-439
 4-Aminophenyl 1-thiogalactopyranoside; β -*D*-form, A-440
 4-Aminophenyl 1-thioglucofuranoside; β -*D*-form, A-441
 4-Aminophenyl 1-thiomannopyranoside; α -*D*-form, A-442
 4-Aminophenyl 1-thioxypyranside; β -*D*-form, A-443
 Benzyl 2-*S*- α -*D*-glucopyranosyl-2-thio- β -*D*-glucopyranoside, T-78
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*D*-glucopyranoside, T-70
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -*D*-glucopyranoside, T-70
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*D*-mannopyranoside, T-82
 Benzyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*L*-mannopyranoside, T-82
 Benzyl 2,3,4,6-tetra-*O*-benzyl-1-thio- α -*D*-glucopyranoside, T-70
 Benzyl 2,3,4,6-tetra-*O*-benzyl-1-thio- β -*D*-glucopyranoside, T-70
 Benzyl 1-thio- β -*D*-cellobiose, T-60
 Benzyl 1-thio- α -*D*-glucopyranoside, T-70
 Benzyl 1-thio- α -*D*-mannopyranoside, T-82
 Benzyl 1-thio- β -*D*-mannopyranoside, T-82
 Benzyl 1-thio- α -*L*-mannopyranoside, T-82
 Benzyl 2,3,4-tri-*O*-acetyl-1-thio- α -*L*-arabinopyranoside, T-57
tert-Butyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*D*-glucopyranoside, T-70
tert-Butyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -*D*-glucopyranoside, T-70
tert-Butyl 2,3,4-tri-*O*-acetyl-1-thio- α -*D*-xylopyranoside, T-98

tert-Butyl 2,3,4-tri-*O*-acetyl-1-thio- β -*D*-xylopyranoside, T-98
 Celesticetin C, C-35
 Celesticetin, C-35
N-Demethylcelesticetin, C-35
O-Demethylcelesticetin, C-35
 2-Deoxy-*arabino*-hexose; β -*form*; Dibenzyl dithioacetal, 3,4,5,6-tetra-Ac, D-199
 2-Deoxy-*arabino*-hexose; β -*form*; Dibenzyl dithioacetal, D-199
 2-Deoxy-*lyxo*-hexose; β -*form*; Dibenzyl dithioacetal, D-202
 2-Deoxy-*arabino*-hexose; β -*form*; Di-Et dithioacetal, 3,4,5,6-tetra-Ac, D-199
 2-Deoxy-*arabino*-hexose; β -*form*; Di-Et dithioacetal, D-199
 2-Deoxy-*lyxo*-hexose; β -*form*; Di-Et dithioacetal, D-202
 2-Deoxy-*erythro*-pentose; β -*form*; 3,5-*O*-Benzylidene, di-Et dithioacetal, D-345
 2-Deoxy-*erythro*-pentose; β -*form*; Di-Et dithioacetal, D-345
N,*O*-Didemethylcelesticetin, C-35
 1,6-Dithioglucose; β -*D*-Pyranose-form; 6-Tosyl, tetra-Ac, D-765
 1,6-Dithioglucose; β -*form*, D-765
 Ethyl 2-*O*-acetyl-1-thio- α -*L*-rhamnopyranoside, T-86
 Ethyl 2-*O*-acetyl-1-thio- β -*L*-rhamnopyranoside, T-86
 Ethyl 2-*O*-benzoyl-3-*O*-benzyl-1-thio- α -*D*-arabinofuranoside, T-57
 Ethyl 4-*O*-benzoyl-2,3-*O*-isopropylidene-1-thio- α -*L*-rhamnopyranoside, T-86
 Ethyl 2-*O*-benzoyl-1-thio- α -*L*-rhamnopyranoside, T-86
 Ethyl 4-*O*-benzoyl-1-thio- α -*L*-rhamnopyranoside, T-86
 Ethyl 4,6-*O*-benzylidene-1-thio- β -*D*-glucopyranoside, T-70
 Ethyl 4-*O*-benzyl-2-*O*-methyl-1-thio- α -*D*-rhamnopyranoside, T-86
 Ethyl 3-*O*-benzyl-1-thio- α -*D*-arabinofuranoside, T-57
 Ethyl 4-*O*-benzyl-1-thio- α -*D*-rhamnopyranoside, T-86
 Ethyl 2,4-di-*O*-benzoyl-1-thio- α -*L*-rhamnopyranoside, T-86
 Ethyl 2-*S*-ethyl-1,2-dithio- α -*D*-mannofuranoside, D-766
 Ethyl 2,3-*O*-isopropylidene-1-thio- α -*D*-rhamnopyranoside, T-86
 Ethyl 2,3-*O*-isopropylidene-1-thio-6-*O*-tosyl- α -*D*-mannopyranoside, T-82
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*D*-galactofuranoside, T-65
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*D*-galactopyranoside, T-65
 Ethyl 2,3,5,6-tetra-*O*-acetyl-1-thio- α -*D*-glucofuranoside, T-70
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*D*-glucopyranoside, T-70
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -*D*-glucopyranoside, T-70
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- α -*D*-mannopyranoside, T-82
 Ethyl 2,3,4,6-tetra-*O*-acetyl-1-thio- β -*D*-mannopyranoside, T-82
 Ethyl 2,3,4,6-tetra-*O*-benzoyl-1-thio- α -*D*-galactofuranoside, T-65
 Ethyl 1-thio- β -*D*-cellobioside, T-60
 Ethyl 1-thio- α -*D*-galactofuranoside, T-65
 Ethyl 1-thio- α -*D*-galactopyranoside, T-65
 Ethyl 1-thio- β -*D*-galactopyranoside, T-65
 Ethyl 1-thio- α -*D*-glucofuranoside, T-70
 Ethyl 1-thio- β -*D*-glucofuranoside, T-70
 Ethyl 1-thio- α -*D*-glucopyranoside, T-70
 Ethyl 1-thio- β -*D*-glucopyranoside, T-70
 Ethyl 1-thio- β -*D*-mannopyranoside, T-82
 Ethyl 1-thio- α -*L*-rhamnopyranoside, T-86
 Ethyl 1-thio- β -*L*-rhamnopyranoside, T-86
 Ethyl 1-thio- α -*D*-ribofuranoside, T-89
 Ethyl 1-thio-6-*O*-tosyl- α -*D*-mannopyranoside, T-82
 Ethyl 2,3,4-tri-*O*-acetyl-1-thio- α -*L*-arabinopyranoside, T-57
 Ethyl 2,3,4-tri-*O*-acetyl-1-thio- α -*L*-rhamnopyranoside, T-86
 Ethyl 2,3,4-tri-*O*-acetyl-1-thio- β -*L*-rhamnopyranoside, T-86
 Ethyl 2,3,5-tri-*O*-acetyl-1-thio- α -*D*-ribofuranoside, T-89
 Ethyl 2,3,4-tri-*O*-benzoyl-1-thio- α -*L*-arabinopyranoside, T-57
 β -*D*-Galactopyranosyl 1-thio- β -*D*-galactopyranoside, G-34
 β -*D*-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -*D*-glucopyranosyl-(1 \rightarrow 2)-*D*-mannose; α -Pyranose-form; Ethylthio glycoside, deca-Ac, G-54
 2,2',3,3',4',6,6'-Hepta-*O*-acetyl-1-thio- β -*D*-cellobiose, T-60
 Isopropyl 1-thio- β -*D*-galactopyranoside, T-65
 Isopropyl 1-thio- α -*D*-glucopyranoside, T-65
 Lincomycin, L-41
 Methyl 6-acetamido-6,8-dideoxy-1-thio-*D*-*erythro*- α -*D*-galactooctopyranoside, 8CI, L-43
 Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-6,8-dideoxy-1-thio-*D*-*erythro*- α -*D*-galactooctopyranoside, L-43
 Methyl 6-acetamido-2,3,4,7-tetra-*O*-acetyl-6,8-dideoxy-1-thio-*D*-*erythro*- β -*D*-galactooctopyranoside, L-43
 Methyl 4-*O*-acetyl-2,3-*O*-isopropylidene-1-thio- β -*D*-xylopyranoside, T-98
 Methyl 6-amino-6,8-dideoxy-3,4-*O*-isopropylidene-1-thio-*D*-*erythro*- α -*D*-galactooctopyranoside, 8CI, L-43
 Methyl 6-amino-6,8-dideoxy-7-*O*-methyl-1-thio-*D*-*erythro*- β -*D*-galactooctopyranoside, 9CI, L-43
 Methyl 6-amino-6,8-dideoxy-1-thio-*D*-*erythro*- α -*D*-galactooctopyranoside, 9CI, 8CI, L-43
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-1-thio- β -*D*-glucopyranoside, T-70

Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene-1-thio-β-D-glucopyranoside, T-70
 Methyl 3,4-*O*-benzylidene-2-*O*-methyl-1-thio-β-L-fucopyranoside, T-63
 Methyl 4,6-*O*-benzylidene-1-thio-β-D-glucopyranoside, T-70
 Methyl 2,3-di-*O*-benzoyl-1-thio-β-L-fucopyranoside, T-63
 Methyl 2,3-di-*O*-benzoyl-1-thio-α-L-rhamnopyranoside, T-86
 Methyl (ethyl 2,3,4-tri-*O*-benzyl-1-thio-β-D-glucopyranosid)uronate, T-75
 Methyl 4-*S*-α-D-glucopyranosyl-4-thio-α-D-glucopyranoside, T-81
 Methyl 4-*S*-α-D-glucopyranosyl-4-thio-β-D-glucopyranoside, T-81
 Methyl 3,4-*O*-isopropylidene-2-*O*-methyl-1-thio-β-L-fucopyranoside, T-63
 Methyl 3,4-*O*-isopropylidene-1-thio-β-L-fucopyranoside, T-63
 Methyl 2,3-*O*-isopropylidene-1-thio-α-L-rhamnopyranoside, T-86
 Methyl 2,3-*O*-isopropylidene-1-thio-β-L-rhamnopyranoside, T-86
 Methyl 2,3-*O*-isopropylidene-1-thio-β-D-xylopyranoside, T-98
 Methyl 2-*O*-methyl-1-thio-β-L-fucopyranoside, T-63
 Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-galactopyranoside, T-65
 Methyl 2,3,4,5-tetra-*O*-acetyl-6-thio-β-D-galactoseptanoside, T-67
 Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio-α-D-glucopyranoside, T-70
 Methyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-glucopyranoside, T-70
 Methyl 2,3,4,6-tetra-*O*-benzyl-1-thio-α-D-glucopyranoside, T-70
 Methyl 2,3,4,6-tetra-*O*-benzyl-1-thio-β-D-glucopyranoside, T-70
 Methyl 1-thio-β-D-cellobioside, T-60
 Methyl 1-thio-β-L-fucopyranoside, T-63
 Methyl 1-thio-β-D-galactopyranoside, T-65
 Methyl 6-thio-β-D-galactoseptanoside, T-67
 Methyl 1-thio-β-D-glucopyranoside, T-70
 Methyl 1-thio-α-D-glucopyranoside, T-70
 Methyl 1-thio-α-L-rhamnopyranoside, T-86
 Methyl 1-thio-β-L-rhamnopyranoside, T-86
 Methyl 1-thio-β-D-xylopyranoside, T-98
 Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-2-phthalimido-1-thio-β-D-glucopyranoside, D-353
 Methyl 3,4,6-tri-*O*-acetyl-2-*S*-(2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranosyl)-2-thio-β-D-glucopyranose, T-78
 Methyl 2,3,4-tri-*O*-acetyl-1-thio-β-D-xylopyranoside, T-98
 4-Nitrophenyl 1,5-dithio-β-D-glucopyranoside, D-764
 Octa-*O*-acetyl-1-thio-β-D-cellobiose, T-60
 Octyl 1-thio-β-D-glucopyranoside, T-70
 1,2,3,4,6-Pentaacetyl-6-thio-α-D-galactopyranose, T-67
 1,2,3,4,5-Penta-*O*-acetyl-6-thio-α-D-galactoseptanose, T-67
 1,2,3,4,5-Penta-*O*-acetyl-6-thio-β-D-galactoseptanose, T-67
 1,2,3,4,6-Pentaacetyl-1-thio-α-D-glucopyranose, T-70
 Penta-*O*-acetyl-1-thio-β-D-glucopyranoside, T-70
 Phenyl 4-*O*-benzoyl-2,3-*O*-isopropylidene-1-thio-α-L-rhamnopyranoside, T-86
 Phenyl 4-*O*-benzoyl-1-thio-α-L-rhamnopyranoside, T-86
 Phenyl 4-*O*-benzyl-2,3-*O*-isopropylidene-1-thio-α-D-rhamnopyranoside, T-86
 Phenyl 4-*O*-benzyl-1-thio-α-D-rhamnopyranoside, T-86
 Phenyl 4,6-di-*O*-acetyl-1-thio-β-D-mannopyranoside, T-82
 Phenyl 2,3,4,6-di-*O*-isopropylidene-1-thio-β-D-mannopyranoside, T-82
 Phenyl 3,4-*O*-isopropylidene-1-thio-β-D-galactopyranoside, T-65
 Phenyl 2,3-*O*-isopropylidene-1-thio-α-D-rhamnopyranoside, T-86
 Phenyl 2,3-*O*-isopropylidene-1-thio-α-L-rhamnopyranoside, T-86
 Phenyl 2,3-*O*-isopropylidene-1-thio-6-*O*-tosyl-α-D-mannopyranoside, T-82
 Phenyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-galactopyranoside, T-65
 Phenyl 2,3,4,6-tetraacetyl-6-thio-α-D-galactopyranoside, T-67
 Phenyl 2,3,4,6-tetraacetyl-6-thio-β-D-galactopyranoside, T-67
 Phenyl 2,3,4,6-tetra-*O*-acetyl-1-thio-α-D-glucopyranoside, T-70
 Phenyl 2,3,4,6-tetra-*O*-acetyl-1-thio-β-D-glucopyranoside, T-70
 Phenyl 2,3,4,6-tetra-*O*-benzoyl-1-thio-β-D-galactopyranoside, T-65
 Phenyl 2,3,4,6-tetra-*O*-pivaloyl-β-D-galactopyranosyl sulphoxide, T-65
 Phenyl 1-thio-α-D-galactofuranoside, T-65
 Phenyl 1-thio-β-D-galactopyranoside, T-65
 Phenyl 1-thio-α-D-glucofuranoside, T-70
 Phenyl 1-thio-α-D-glucopyranoside, T-70
 Phenyl 1-thio-β-D-glucopyranoside, T-70
 Phenyl 1-thio-β-D-mannopyranoside, T-82
 Phenyl 1-thio-α-L-rhamnopyranoside, T-86
 Phenyl 1-thio-6-*O*-tosyl-α-D-mannopyranoside, T-82
 Phenyl 2,3,4-tri-*O*-benzoyl-1-thio-β-D-galactopyranoside, T-65
 Phenyl 2,3,4-tri-*O*-benzyl-α-L-fucopyranosyl sulfoxide, T-63
 Phenyl 3,4,6-tri-*O*-benzyl-α-D-mannopyranosyl sulfoxide, T-82
 Phenyl 3,4,6-tri-*O*-benzyl-2-*O*-pivaloyl-β-D-galactopyranosyl sulfoxide, T-65
 Phenyl 2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside, T-65
 Pirlimycin, P-76
 2-Propenyl glucosinolate, P-95
 1-Selenoglucose, S-26
 2,3,4,6-Tetra-*O*-acetyl-1-*S*-acetyl-1-thio-β-D-mannopyranoside, T-82
 1,2,3,6-Tetraacetyl-4-benzoyl-6-thio-α-D-galactopyranose, T-67
 2,3,4,6-Tetra-*O*-acetyl-1-*O*-benzoyl-1-thio-β-D-glucopyranoside, T-70
 2,3,4,6-Tetra-*O*-acetyl-1,5-dithio-β-D-glucopyranose, D-764

2,3,4,6-Tetra-*O*-acetyl-β-D-glucopyranosyl methanethiosulfonate, G-269
 1,3,4,6-Tetra-*O*-acetyl-2-*S*-(2,3,4,6-tetra-*O*-acetyl-α-D-glucopyranosyl)-2-thio-β-D-glucopyranose, T-78
 2,3,4,6-Tetra-*O*-acetyl-1-thio-β-D-glucopyranose, T-70
 2,3,4,6-Tetra-*O*-acetyl-1-thio-α-D-mannopyranose, T-82
 1-Thioarabinose; α-L-Furanose-*form*; Et glycoside, tribenzoyl, T-57
 1-Thioarabinose; L-*form*, T-57
 1-Thiocollobiose; β-D-Pyranose-*form*; Benzyl glycoside, hepta-Ac, T-60
 1-Thiocollobiose; β-D-Pyranose-*form*; Et glycoside, hepta-Ac, T-60
 1-Thiocollobiose; β-D-Pyranose-*form*; Me glycoside, hepta-Ac, T-60
 1-Thiocollobiose; β-D-Pyranose-*form*, T-60
 1-Thiogluucose; β-D-Pyranose-*form*; Ph glycoside, tetra-Ac, S-oxide, T-70
 1-Thiogluucose; D-*form*, T-70
 1-Thiogluucose, T-70
 2-Thiokojibiose, T-78
 Thiolaactose, T-79
 Thiomaltose; α-Pyranose-*form*; Me glycoside, hepta-Ac, T-81
 Thiomaltose; β-Pyranose-*form*; Me glycoside, hepta-Ac, T-81
 Thiomaltose; β-Pyranose-*form*; Octa-Ac, T-81
 Thiomaltose, T-81
 1-Thiomannose; β-D-Pyranose-*form*, T-82
 1-Thioribose; D-*form*; Tetra-Ac, T-89
 1-Thioribose; D-*form*, T-89
 1-Thioxyllose; D-*form*; Tetra-Ac, T-98
 1-Thioxyllose; β-D-Pyranose-*form*; Tri-Ac, T-98
 1-Thioxyllose; D-*form*, T-98
 2,3,4-Tri-*O*-acetyl-1-*S*-acetyl-1-thio-L-arabinose, T-57
 2,3,4-Tri-*O*-acetyl-1,6-di-*S*-benzoyl-1,6-dithio-β-D-glucopyranose, D-765
 2,3,4-Tri-*O*-acetyl-α-D-xylopyranosyl phenyl sulfoxide, T-98
 2,3,5-Tri-*O*-benzoyl-β-D-ribofuranosyl phenyl sulfoxide, T-89

Other thiosugars

2-Acetamido-2-deoxy-5-thio-β-D-altropyranoside, 9CI, A-345
 2-Acetamido-2-deoxy-5-thio-α-D-galactopyranose, A-346
 2-Acetamido-2-deoxy-5-thio-D-glucopyranose, A-349
 2-Acetamido-2-deoxy-5-thio-α-D-glucopyranose, A-349
 4-Acetamido-4-deoxy-5-thio-L-lyxopyranose, A-350
 2-Acetamido-2-deoxy-5-thio-α-D-mannopyranose, A-351
 3-Acetamido-3-deoxy-5-thio-D-xylose, A-352
 3-Acetamido-1,2,4,6-tetra-*O*-acetyl-3-deoxy-5-thio-β-D-allopyranose, A-344
 2-Acetamido-1,3,4,6-tetra-*O*-acetyl-2-deoxy-5-thio-β-D-altropyranoside, 9CI, A-345
 2-Acetamido-1,3,4,6-tetra-*O*-acetyl-2-deoxy-5-thio-α-D-glucopyranose, A-349
 2-Acetamido-1,3,4,6-tetra-*O*-acetyl-2-deoxy-5-thio-α-D-mannopyranose, A-351
 2-Acetamido-1,3,6-tri-*O*-acetyl-2-deoxy-5-thio-β-D-galactofuranose, A-346
 4-Acetamido-1,2,3-tri-*O*-acetyl-4-deoxy-5-thio-α-L-lyxopyranose, A-350
 3-Acetamido-1,2,4-tri-*O*-acetyl-3-deoxy-5-thio-α-D-xylopyranose, A-352
 3-*O*-Acetyl-5-*S*-acetyl-1,2-*O*-isopropylidene-5-thio-β-L-arabinofuranoside, T-58
 4-*O*-Acetyl-2,3,5,6-di-*O*-isopropylidene-D-glucose diethyl dithioacetal, G-516
 3-*S*-Acetyl-1,2,5,6-di-*O*-isopropylidene-3-thio-α-D-allofuranose, T-53
 3-*O*-Acetyl-1,2-*O*:5,6-*S*,*O*-diisopropylidene-5-thio-α-D-allofuranose, T-54
 3-*S*-Acetyl-1,2,5,6-di-*O*-isopropylidene-3-thio-α-D-glucofuranose, T-72
 3-*S*-Acetyl-1,2-*O*-isopropylidene-3-thio-α-D-allofuranose, T-53
 2-Amino-2-deoxy-5-thioallose; D-*form*; N-Ac, A-343
 3-Amino-3-deoxy-5-thioallose; D-*form*, A-344
 2-Amino-2-deoxy-3-thiogluucose; D-*form*, A-348
 1,5-Anhydro-2-deoxy-5-thio-*arabino*-hex-1-enitol; D-*form*, A-574
 1,6-Anhydro-5-thioaltrose; β-L-*form*, A-712
 1,4-Anhydro-4-thioribitol; D-*form*, A-713
 1,4-Anhydro-4-thioribitol; L-*form*, A-713
 1,4-Anhydro-2,3,4-tri-*O*-benzyl-4-thioribitol, A-713
 6-*O*-Benzoyl-2,3,4,5-di-*O*-isopropylidene-D-glucose diethyl dithioacetal, G-516
 3-*O*-Benzoyl-1,2-*O*:5,6-*S*,*O*-diisopropylidene-5-thio-α-D-allofuranose, T-54
 6-*O*-Benzoyl-D-glucose diethyl dithioacetal, G-516
 4-*O*-Benzoyl-2,3-*O*-isopropylidene-5-thio-L-arabinopyranose, T-58
 Benzyl 2-*S*-α-D-glucopyranosyl-2-thio-β-D-glucopyranoside, T-78
 4,6-*O*-Benzylidene-D-glucose diethyl dithioacetal, G-516
 5,6(*R*)-*O*-Benzylidene-D-glucose diethyl dithioacetal, G-516
 5,6(*S*)-*O*-Benzylidene-D-glucose diethyl dithioacetal, G-516
 5-*S*-Benzyl-1,2-*O*-isopropylidene-5-thio-β-L-arabinopyranoside, T-58
 2-Deoxy-*ribo*-hexose; D-*form*; Di-Et dithioacetal, D-205
 6-Deoxy-6-*C*-sulfoluucose; D-*form*, D-369
 2'-Deoxy-4'-thiocytidine, D-376
 6-Deoxy-5-thiogluucose; D-*form*, D-373

- 1-(2-Deoxy-4-thiopentofuranosyl)cytosine; α -L-erythro-form, D-376
 1-(2-Deoxy-4-thiopentofuranosyl)cytosine; β -L-erythro-form, D-376
 1-(2-Deoxy-4-thiopentofuranosyl)cytosine; α -L-threo-form, D-376
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; β -D-erythro-form; 5'-Ac, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; α -D-erythro-form, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; α -L-threo-form, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; β -L-threo-form, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -D-erythro-form; 5'-Ac, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -D-erythro-form, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -L-erythro-form, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; β -L-erythro-form, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -L-threo-form, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; β -L-threo-form, D-378
 6-Deoxy-5-thiotalose; L-Pyranose-form, D-379
 2'-Deoxy-4'-thiouridine, D-378
 5,6-Di-O-acetyl-3-S-acetyl-1,2-O-isopropylidene-3-thio- α -D-allofuranose, T-53
 3,4-Di-O-acetyl-5-S-acetyl-5-thio- β -D-fructopyranose, T-61
 4,6-Di-O-acetyl-S-tert-butyl-2-deoxy-3-thio-D-arabino-hexopyranose, D-375
 4,6-Di-O-acetyl-2-deoxy-3-S-ethyl-3-thio-D-arabino-hexopyranose, D-375
 1,4-Di-O-acetyl-2,3-isopropylidene-5-thio- β -D-ribofuranose, T-91
 2,6-Dideoxy-4-thio-ribo-hexose; D-form, D-656
 2,6-Dideoxy-4-thio-ribo-hexose, D-656
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 2,3,5,6-Di-O-isopropylidene-D-glucose diethyl dithioacetal, G-516
 3,4,5,6-Di-O-isopropylidene-D-glucose diethyl dithioacetal, G-516
 1,2O:5S,6O-Diisopropylidene-3-O-mesyl-5-thio- β -L-idofuranose, T-76
 1,2,5,6-Di-O-isopropylidene-3-thio- α -D-allofuranose, T-53
 1,2-O:5,6-S,O-Diisopropylidene-5-thio- α -D-allofuranose, T-54
 1,2,5,6-Di-O-isopropylidene-3-thio- α -D-glucopyranose, T-72
 1,2-O:5S,6O-Diisopropylidene-5-thio- β -L-idofuranose, T-76
 2,3,5,6-Di-O-isopropylidene-4-thio-D-mannofuranose, T-84
 1,6-Dithioglucose; β -D-Pyranose-form; 6-Tosyl, tetra-Ac, D-765
 1,6-Dithioglucose; D-form, D-765
 3',5'-Dithiothymidine; 3',5'-S-Isopropylidene, D-767
 3',5'-Dithiothymidine, D-767
 2',3'-Dithiouridine; S,S'-Di-Me, D-768
 2',3'-Dithiouridine; S,S'-Isopropylidene, D-768
 2',3'-Dithiouridine, D-768
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 Ethyl 2,3,6-tri-O-acetyl-5-S-acetyl-5-thio- β -D-galactofuranoside, T-66
 2-S-Ethyl-2-thio-D-glucopyranose, T-71
 2-S-Ethyl-2-thio-D-mannopyranose, T-83
 2-S- β -D-Glucopyranosyl-2-thio-D-mannose, T-92
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 2,3-O-Isopropylidene-D-glucose diethyl dithioacetal, G-516
 3,4-O-Isopropylidene-D-glucose diethyl dithioacetal, G-516
 5,6-O-Isopropylidene-D-glucose diethyl dithioacetal, G-516
 2,3-O-Isopropylidene-5-thio-L-arabinopyranose, T-58
 1,2-O-Isopropylidene-5-thio- α -L-fucopyranose, T-64
 1,2-O-Isopropylidene-6-thio- α -D-glucopyranose, T-74
 2,3-O-Isopropylidene-4-thio-D-mannofuranose, T-84
 2,3-O-Isopropylidene-5-thio- β -D-ribofuranose, T-91
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 Methyl 2-acetamido-2-deoxy-4,6-O-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
 Methyl 2-acetamido-2-deoxy-5-thio- α -D-altropyranoside, 9CI, A-345
 Methyl 2-acetamido-2-deoxy-5-thio- α -D-glucopyranoside, A-349
 Methyl 2-acetamido-3,6-di-O-acetyl-5-S-acetyl-2-deoxy-5-thio- β -D-galactofuranoside, A-346
 Methyl 4-acetamido-2,3-di-O-acetyl-4-deoxy-5-thio- β -L-lyxopyranoside, A-350
 Methyl 3-acetamido-2,4-di-O-acetyl-3-deoxy-5-thio- α -D-xylopyranoside, A-352
 Methyl 4-O-acetyl-5-S-acetyl-1,3-O-benzylidene-5-thio- β -D-fructopyranoside, T-61
 Methyl 4-O-acetyl-5-S-acetyl-5-thio- β -D-fructopyranoside, T-61
 Methyl 5-S-acetyl-2,3-O-isopropylidene-5-thio- α -D-lyxofuranoside, T-80
 Methyl 5-S-acetyl-2,3-O-isopropylidene-5-thio- α -L-rhamnofuranoside, T-88
 Methyl 2-amino-2-deoxy-4,6-O-isopropylidene-5-thio- α -D-altropyranoside, 9CI, A-345
 Methyl 2-amino-2-deoxy-5-thio- α -D-altropyranoside, 9CI, A-345
 Methyl 4-amino-4-deoxy-5-thio- β -L-lyxopyranoside, A-350
 Methyl 3-amino-3-deoxy-5-thio- α -D-xylopyranoside, A-352
 Methyl 5-S-benzoyl-2,3-O-isopropylidene-5-thio- α -D-lyxofuranoside, T-80
 Methyl 6-deoxy-2,3-O-isopropylidene-5-thiobenzoyl- α -L-talofuranoside, D-379
 Methyl 2,3-di-O-acetyl-4-thio- α -L-rhamnopyranoside, T-87
 Methyl 2,6-dideoxy-4-thio- α -D-ribo-hexopyranoside, 9CI, D-656
 Methyl 2,3,4,6-di-O-isopropylidene-5-thio- α -L-idopyranoside, T-76
 Methyl 2,3,4,6-di-O-isopropylidene-5-thio- β -L-idopyranoside, T-76
 Methyl 2,3-di-O-methyl-4-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(R)_p-form; P-Chloro, M-177
 Methyl 2,3-di-O-methyl-6-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(R)_p-form; P-Chloro, M-178
 Methyl 2,3-di-O-methyl-4-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(S)_p-form; P-Ethoxy, M-177
 Methyl 2,3-di-O-methyl-6-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(S)_p-form; P-Ethoxy, M-178
 Methyl 2,3-di-O-methyl-4-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(R)_p-form; P-Me, M-177
 Methyl 2,3-di-O-methyl-6-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(R)_p-form; P-Me, M-178
 Methyl 2,3-di-O-methyl-4-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(S)_p-form; P-Chloro, M-179
 Methyl 2,3-di-O-methyl-4-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(R)_p-form; P-Ethoxy, M-179
 Methyl 2,3-di-O-methyl-4-thioglucofuranoside 4,6-cyclic phosphonate; α -D-(S)_p-form; P-Ethoxy, M-179
 Methyl 4-S- α -D-glucopyranosyl-4-thio- α -D-glucopyranoside, T-81
 Methyl 4-S- α -D-glucopyranosyl-4-thio- β -D-glucopyranoside, T-81
 Methyl 2,3-O-isopropylidene-5-S-methyl-5-thio- β -D-ribofuranoside, T-91
 Methyl 3,4-O-isopropylidene-5-thio- α -D-altropyranoside, T-55
 Methyl 3,4-O-isopropylidene-5-thio- β -D-arabinopyranoside, T-58
 Methyl 2,3-O-isopropylidene-5-thio- β -D-ribofuranoside, T-91
 Methyl 2,3-O-isopropylidene-5-thio- β -D-ribofuranoside, T-91
 Methyl 3,4-O-isopropylidene-5-thio- β -D-ribofuranoside, T-91
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -D-altropyranoside, T-54
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -D-altropyranoside, T-55
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- β -D-altropyranoside, T-55
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -D-galactopyranoside, T-66
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- β -D-galactopyranoside, T-66
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -D-glucopyranoside, T-73
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- β -D-glucopyranoside, T-73
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- α -L-idopyranoside, T-76
 Methyl 2,3,4,6-tetra-O-acetyl-5-thio- β -L-idopyranoside, T-76
 Methyl 2,3,5,6-tetra-O-acetyl-4-thio- α -D-talofuranoside, T-93
 Methyl 2,3,5,6-tetra-O-benzyl-4-thio- α -D-talofuranoside, T-93
 Methyl 5-thio- α -D-allopyranoside, T-54
 Methyl 5-thio- β -D-allopyranoside, T-54
 Methyl 5-thio- α -D-altropyranoside, T-55
 Methyl 5-thio- β -D-altropyranoside, T-55
 Methyl 5-thio- α -D-arabinopyranoside, T-58
 Methyl 5-thio- β -D-arabinopyranoside, T-58
 Methyl 5-thio- β -L-arabinopyranoside, T-58
 Methyl 5-thio- α -D-galactopyranoside, T-66
 Methyl 5-thio- β -D-galactopyranoside, T-66
 Methyl 5-thio- α -D-glucopyranoside, T-73
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 Methyl 5-thio- α -L-idopyranoside, T-76
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 Methyl 5-thio- α -D-lyxopyranoside, T-80
 Methyl 5-thio- β -D-lyxopyranoside, T-80
 Methyl 5-thio- α -D-ribofuranoside, T-91
 Methyl 5-thio- β -D-ribofuranoside, T-91
 Methyl 4-thio- α -D-talofuranoside, T-93
 Methyl 1,3,4-tri-O-acetyl-5-S-acetyl-5-thio- β -D-fructopyranoside, T-61
 Methyl 2,3,4-tri-O-acetyl-6-deoxy-5-thio- α -D-glucopyranoside, D-373
 Methyl 3,4,6-tri-O-acetyl-2-S-(2,3,4,6-tetra-O-acetyl- α -D-glucopyranosyl)-2-thio- β -D-glucopyranose, T-78
 Methyl 2,3,4-tri-O-acetyl-5-thio- β -D-arabinopyranoside, T-58
 Methyl 2,3,4-tri-O-acetyl-5-thio- β -D-lyxopyranoside, T-80
 Methyl 2,3,4-tri-O-acetyl-5-thio- β -D-fructofuranoside, T-91
 3-O-Methylgalactose; D-form; Di-Et dithioacetal, 2,4,5,6-tetra-Ac, M-250
 3-O-Methylgalactose; D-form; Di-Et dithioacetal, M-250
 5'-S-Methyl-5'-thioadenosine, 9CI, 8CI, T-52
 4-Nitrophenyl 1,5-dithio- β -D-glucopyranoside, D-764
 1,2,3,4,6-Penta-O-acetyl-5-deoxy-5-thio-L-idopyranose, T-76
 2,3,4,5,6-Penta-O-acetyl-D-glucose diethyl dithioacetal, G-516
 1,2,3,4,6-Penta-O-acetyl-5-thio- β -D-altropyranose, T-55
 1,2,3,4,6-Penta-O-acetyl-5-thio- α -D-fructofuranose, T-61
 1,2,3,4,6-Penta-O-acetyl-5-thio- β -D-fructofuranose, T-61
 1,2,3,4,6-Penta-O-acetyl-5-thio- α -D-glucopyranose, T-73
 1,2,3,4,6-Penta-O-acetyl-5-thio- β -D-glucopyranose, T-73

1,2,3,5,6-Penta-*O*-acetyl-4-thio- α -D-mannofuranose, T-84
 1,2,3,5,6-Penta-*O*-acetyl-5-thio- β -D-mannofuranose, T-84
 1,2,3,4,6-Penta-*O*-acetyl-5-thio- α -D-mannopyranose, T-85
 Phenyl 2,3,4,6-tetraacetyl-6-thio- α -D-glucopyranoside, T-74
 Phenyl 2,3,4,6-tetraacetyl-6-thio- β -D-glucopyranoside, T-74
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 1,2,3,6-Tetra-*O*-acetyl-5-*S*-acetyl-5-thio-L-altrofuranose, T-55
 1,2,3,4-Tetra-*O*-acetyl-5-*S*-acetyl-5-thio- β -D-fructopyranose, T-61
 1,3,4,6-Tetra-*O*-acetyl-5-*S*-acetyl-5-thio-D-fructose, T-61
 1,3,4,5-Tetra-*O*-acetyl-6-*S*-acetyl-6-thio-D-fructose, T-62
 1,2,3,6-Tetra-*O*-acetyl-5-*S*-acetyl-5-thio- β -D-galactofuranose, T-66
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-5-thio-D-glucopyranose, D-373
 2,3,4,6-Tetra-*O*-acetyl-1,5-dithio- β -D-glucopyranose, D-764
 1,3,4,6-Tetra-*O*-acetyl-2-*S*-ethyl-2-thio- α -D-mannopyranose, T-83
 1,3,4,6-Tetra-*O*-acetyl-2-*S*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)-2-thio- β -D-glucopyranose, T-78
 1,2,3,4-Tetra-*O*-acetyl-5-thio- β -L-arabinopyranose, T-58
 1,2,3,4-Tetra-*O*-acetyl-5-thio- β -L-arabinopyranose, T-58
 1,3,4,5-Tetra-*O*-acetyl-6-thio- β -D-fructopyranose, T-62
 1,2,3,4-Tetra-*O*-acetyl-4-thio- α -L-fucopyranose, T-64
 2,3,4,6-Tetra-*O*-acetyl-5-thio- α -D-glucopyranosyl bromide, T-73
 2,3,4,6-Tetra-*O*-acetyl-5-thio- β -D-glucopyranosyl bromide, T-73
 1,2,3,5-Tetra-*O*-acetyl-5-thio- α -L-rhamnofuranose, T-87
 1,2,3,5-Tetra-*O*-acetyl-4-thio- β -L-rhamnofuranose, T-87
 1,2,3,4-Tetra-*O*-acetyl-5-thio-L-rhamnopyranose, T-88
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 1,2,3,4-Tetra-*O*-acetyl-5-thio- α -D-xylopyranose, T-99
 1,2,3,4-Tetra-*O*-acetyl-5-thio- β -D-xylopyranose, T-99
 3,4,5,6-Tetra-*O*-benzoyl-D-glucose diethyl dithioacetal, G-516
 2,3,4,5-Tetra-*O*-methyl-6-*O*-trityl-D-glucose dimethyl dithioacetal, G-516
 2'-Thioadenosine; 2',5,3'-*O*-Isopropylidene, T-50
 5'-Thioadenosine; *S*-Me, 2',3'-*O*-isopropylidene, T-52
 5'-Thioadenosine; *S*-Me, tritosyl, T-52
 2'-Thioadenosine, T-50
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 5-Thioallose; L-*form*, T-54
 5-Thioaltrose; D-*form*, T-55
 5-Thioaltrose; L-*form*, T-55
 9-(4-Thioarabinofuranosyl)adenine; β -D-*form*, T-56
 5-Thioarabinose; β -L-Furanose-*form*; Me glycoside, disulfide, T-58
 5-Thioarabinose; β -D-Pyranose-*form*, T-58
 5-Thioarabinose; L-*form*, T-58
 1-Thio-5a-carba- β -D-allopyranose, H-170
 1-Thio-5a-carba- β -D-gulopyranose, H-170
 Thiocellobiose; α -Pyranose-*form*; Me glycoside, 2,3,6-tribenzoyl, tetra-Ac, T-59
 Thiocellobiose; α -Pyranose-*form*; Octa-Ac, T-59
 Thiocellobiose; 2,3,6-Tribenzoyl, 1,2',3',4',6'-penta-Ac, T-59
 Thiocellobiose, T-59
 6-Thiofructose; β -D-Pyranose-*form*, T-62
 6-Thiofructose; D-*form*, T-62
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 5-Thioglucose; α -D-Pyranose-*form*; Me glycoside, 6-phosphate, T-73
 6-Thioglucose; β -D-Pyranose-*form*; 1,2,3,4,6-Penta-*O*(*S*)-Ac, T-74
 5-Thioglucose; D-*form*, T-73
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 Thiolactose, T-79
 5-Thiolyxose; α -D-Pyranose-*form*, T-80
 Thiomaltose; α -Pyranose-*form*; Me glycoside, hepta-Ac, T-81
 Thiomaltose; β -Pyranose-*form*; Me glycoside, hepta-Ac, T-81
 Thiomaltose; β -Pyranose-*form*; Octa-Ac, T-81
 Thiomaltose, T-81
 5-Thiomannose; D-Pyranose-*form*, T-85
 4-Thiomannose; D-*form*, T-84
 5-Thiomethylribose, T-91
 5-Thiorhamnose; L-Pyranose-*form*, T-88
 5-Thioribose; β -D-Pyranose-*form*; Tetra-Ac, T-91
 5-Thioribose; α -D-Pyranose-*form*, T-91
 5-Thioribose; β -D-Pyranose-*form*, T-91
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 2-Thiosphorose, T-92
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 4-Thiouridine; 5'-Benzoyl, T-95
 4-Thiouridine; 2',3'-Di-Ac, T-95
 4-Thiouridine; 2',5'-Di-*O*-trityl, T-95
 4-Thiouridine; 2',3'-*O*-Isopropylidene, 5'-Ac, T-95
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 4-Thiouridine; 2',3'-*O*-Isopropylidene, T-95
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 2-Thiouridine, T-94
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 9-(4-Thioxylofuranosyl)adenine; α -D-*form*, T-97
 9-(4-Thioxylofuranosyl)adenine; β -D-*form*, T-97
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 1,2,3-Tri-*O*-acetyl-5-*S*-acetyl-5-thio- β -L-rhamnofuranoside, T-88
 1,2,3-Tri-*O*-acetyl-4-*S*-acetylthio- α -L-rhamnopyranose, T-87
 3,4,6-Tri-*O*-acetyl-1,5-anhydro-2-deoxy-5-thio-D-*arabino*-hex-1-enitol, A-574
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-4-thioribitol, A-713
 2,3,4-Tri-*O*-acetyl-1,6-di-*S*-benzoyl-1,6-dithio- β -D-glucopyranose, D-765
 3,5,6-Tri-*O*-benzoyl-D-glucose diethyl dithioacetal, G-516
 6-*O*-Trityl-D-glucose diethyl dithioacetal, G-516

1-Deoxy sugars

2-Acetamido-1,3,4,5-tetra-*O*-acetyl-2,6-dideoxy-D-altritol, A-367
 6-*O*-Acetyl-1-deoxy-D-galactitol, D-123
 6-*O*-Acetyl-1-deoxy-3,4-*O*-isopropylidene-D-*lyxo*-2-hexulofuranose, D-221
 1-Amino-2,5-anhydro-1-deoxyarabinitol; D-*form*, A-125
 1-Amino-3,6-anhydro-1-deoxygalactitol; D-*form*, A-126
 1-Amino-3,6-anhydro-1-deoxymannitol; D-*form*, A-140
 1-Amino-2,5-anhydro-1-deoxyribitol; D-*form*, A-142
 1-Amino-2,5-anhydro-1-deoxyxylitol; D-*form*, A-146
 6-Amino-2,5-anhydro-1,6-dideoxyglucitol; D-*form*, A-148
 6-Amino-2,5-anhydro-1,6-dideoxyglucitol; L-*form*, A-148
 2-Amino-2,6-dideoxyaltritol; D-*form*, A-367
 2-Amino-1,2-dideoxygalactitol; D-*form*, A-374
 2,5-Anhydro-3-*O*-benzoyl-1,4-dideoxy-L-*arabino*-hexitol, A-587
 2,7-Anhydro-1-deoxy-4,5-*O*-isopropylidene- β -D-*ribo*-hepto-2,3-diulose-2,6-pyranose, A-642
 2,5-Anhydro-1-deoxyxylitol; D-*form*, A-564
 2,5-Anhydro-1-deoxymannitol; D-*form*, A-565
 2,5-Anhydro-1-deoxytalitol; D-*form*, A-573
 2,5-Anhydro-1,6-dideoxy-1-dimethylamino-D-gulitol, A-148
 2,5-Anhydro-1,4-dideoxy-xylo-hexitol; D-*form*, A-588
 1,4-Anhydrofucitol; L-*form*, A-608
 4-*O*-Benzoyl-3,5-*O*-benzylidene-1-deoxy-D-*erythro*-2-pentulose, T-176
 6-*O*-Benzoyl-1-deoxy-D-galactitol, D-123
 6-*O*-Benzoyl-1-deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -D-psicofuranose, D-311
 4-*O*-Benzyl-1-deoxy-3,5-*O*-ethylidene-D-*erythro*-2-pentulose, T-176
 5-*O*-Benzyl-1-deoxy-3,4-*O*-isopropylidene-L-*erythro*-2-pentulose, T-176
 3,5-*O*-Benzylidene-1-deoxy-D-*erythro*-2-pentulose, T-176
 2,3-*O*-Butylidene-1-deoxy-D-galactitol, D-123
 4,6-*O*-Butylidene-1-deoxy-D-galactitol, D-123
 1-Deoxyallitol; D-*form*; 3,4-*O*-Isopropylidene, D-32
 1-Deoxyallitol; L-*form*; Penta-Ac, D-32
 1-Deoxyallitol; D-*form*, D-32
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 1-Deoxyarabinitol; L-*form*, D-39
 5-Deoxyarabinitol; D-*form*, D-40
 5-Deoxyarabinitol; DL-*form*, D-40
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 1-Deoxy-2,3,4,5-di-*O*-isopropylidene-3-*C*-methyl- β -D-*arabino*-hexulopyranose, D-299
 1-Deoxy-3,4,5,6-di-*O*-isopropylidene-3-*C*-methyl-D-*arabino*-hex-2-ulose, D-299
 1-Deoxy-2,3,4,6-di-*O*-isopropylidene-3-*C*-methyl- α -D-sorbofuranose, D-313
 1-Deoxygalactitol; D-*form*, D-123
 1-Deoxygalactitol; L-*form*, D-123
 1-Deoxyglucitol; D-*form*, D-126
 1-Deoxy-*lyxo*-2-hexulose; D-*form*, D-221
 1-Deoxy-*ribo*-2-hexulose; D-*form*, D-222
 1-Deoxy-*ribo*-2-hexulose; L-*form*, D-222
 1-Deoxy-5,6-*O*-isopropylidene-D-*lyxo*-hexose, D-221
 1-Deoxy-3,4-*O*-isopropylidene-D-*lyxo*-2-hexulofuranose, D-221
 1-Deoxy-5,6-*O*-isopropylidene-D-*ribo*-2-hexulose, D-222
 1-Deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -D-psicofuranose, D-311
 5-Deoxy-2,3-*O*-isopropylidene-D-ribitol, D-356
 1-Deoxy-2,4-methylene-D-xylitol, D-385
 1-Deoxy-3-*C*-methylfructose; D-*form*, D-299
 1-Deoxy-3-*C*-methylpsicose; D-*form*, D-311
 1-Deoxy-3-*C*-methylsorbose; D-*form*, D-313
 1-Deoxyribitol; D-*form*, D-356
 1-Deoxyribitol; L-*form*, D-356
 1-Deoxyxylitol; D-*form*, D-385
 1-Deoxy-D-xylulose, T-176
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2,5:3,6-Dianhydro-1-deoxy-4-*O*-mesyl-D-glucitol, D-492
 2,5:3,6-Dianhydro-1-deoxy-4-*O*-tosyl-D-glucitol, D-492
 1,2:3,4-Di-*O*-benzylidene-5-deoxy-D-arabinitol, D-40
 1,2-Dideoxy-*arabino*-hexitol; *D*-form, D-595
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 2,3,4,5,6-Penta-*O*-benzoyl-1-deoxy-D-galactitol, D-123
 2,3,4,5-Tetra-*O*-acetyl-1-deoxy-D-arabinitol, D-39
 2,3,4,5-Tetra-*O*-acetyl-1-deoxy-L-arabinitol, D-39
 1,2,3,4-Tetra-*O*-acetyl-5-deoxy-D-arabinitol, D-40
 1,2,3,4-Tetra-*O*-acetyl-5-deoxy-DL-arabinitol, D-40
 2,3,4,5-Tetra-*O*-acetyl-1-deoxy-D-*ribo*-2-hexulopyranoside, D-222
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 1,2,3,4-Tetra-*O*-benzoyl-5-deoxy-D-arabinitol, D-40
 1,2,3,4-Tetra-*O*-benzoyl-5-deoxy-DL-arabinitol, D-40
 2,3,4,5-Tetra-*O*-benzoyl-1-deoxy-D-galactitol, D-123
 2,3,5-Tri-*O*-acetyl-4,6-*O*-butylidene-1-deoxy-D-galactitol, D-123

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 3-Acetamido-1,4,6-tri-*O*-acetyl-2,3-dideoxy-β-D-*ribo*-hexopyranose, A-397
 3-Acetamido-1,4,6-tri-*O*-acetyl-2,3-dideoxy-β-D-*xylo*-hexopyranose, A-399
 3-Acetamido-1,4,6-tri-*O*-acetyl-2,3-dideoxy-α-D-*lyxo*-hexopyranose, A-394
 3-Acetamido-2,3,6-trideoxy-D-*arabino*-hexopyranose, A-458
 3-Acetamido-2,3,6-trideoxy-L-*arabino*-hexose, A-458
 3-Acetamido-2,3,6-trideoxy-4-*O*-methyl-L-*arabino*-hexose, A-458
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 2-*C*-Acetyl-2,3-dideoxy-*erythro*-hexopyranos-4-ulose; α-D-form; Et glycoside, 6-trityl, A-16
 2-*C*-Acetyl-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-D-form; Et glycoside, 6-trityl, A-17
 2-*C*-Acetyl-2,3-dideoxy-*erythro*-hexopyranos-4-ulose; α-D-form, A-16
 2-*C*-Acetyl-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-D-form, A-17
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 5'-Amino-2',5'-dideoxyuridine; 5'-*N*-Ac, A-419
 5'-Amino-2',5'-dideoxyuridine, A-419
 3-Amino-2,3,6-trideoxy-*arabino*-hexose; *D*-form, A-458
 3-Amino-2,3,6-trideoxy-*arabino*-hexose; *L*-form, A-458
 3-Amino-2,3,6-trideoxy-4-*O*-methyl-L-*arabino*-hexose, 9CI, A-458
 3-Amino-2,3,6-trideoxy-3-*C*-methyl-*xylo*-hexose; *L*-Pyranose-form, A-466
 4-Amino-2,4,6-trideoxy-3-*O*-methyl-*xylo*-hexose; *D*-form, A-468
 3,6-Anhydro-2-deoxyglucose; *D*-form, A-526
 1,5-Anhydro-2-deoxy-*threo*-hex-1-ene-3-ulose; *D*-form, A-535
 1,5-Anhydro-2-deoxy-*arabino*-hexitol; *D*-form, A-546
 1,5-Anhydro-2-deoxy-*lyxo*-hexitol; *D*-form, A-547
 1,6-Anhydro-2-deoxy-*arabino*-hexose; β-D-Pyranose-form, A-551
 1,6-Anhydro-2-deoxy-*lyxo*-hexose; β-D-Pyranose-form, A-552
 1,6-Anhydro-2-deoxy-*xylo*-hexose; β-D-Pyranose-form, A-559
 1,6-Anhydro-2-deoxy-*ribo*-hexose, A-556
 3,6-Anhydro-2-deoxy-4,5-*O*-isopropylidene-D-glucose, A-526
 1,6-Anhydro-2-deoxy-3,4-*O*-isopropylidene-β-D-*lyxo*-hexopyranose, A-552
 1,6-Anhydro-2-deoxy-3,4-*O*-isopropylidene-β-D-*ribo*-hexopyranose, A-556
 1,6-Anhydro-2-deoxy-2-*C*-methyl-*ribo*-hexopyranos-4-ulose; *D*-form; 3-Benzyl, A-568
 1,6-Anhydro-2-deoxy-2-*C*-methyl-*ribo*-hexopyranos-4-ulose; *D*-form, A-568
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 1,6-Anhydro-2,3-dideoxy-β-D-*glycero*-hexopyranos-4-ulose, A-651
 3,4-Anhydro-2,6-dideoxy-β-D-*ribo*-hexopyranosyl 6-deoxy-3-*O*-methyl-β-D-allopyranoside, S-14
 1,6-Anhydro-2,4-dideoxy-*threo*-hexose; β-D-Pyranose-form, A-592
 3,7-Anhydro-4,6,8-tri-*O*-benzoyl-2-deoxy-1-*C*-phenyl-D-*allo*-octos-5-ulose, A-572
 3-Benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl-α-L-*xylo*-hexopyranose, A-466
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 6-*O*-Benzyl-2,3-dideoxy-1,4-hexonolactone, T-167
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5-Bromo-2'-deoxyuridine; 5'-Trityl, B-101
 5-Bromo-2'-deoxyuridine, B-101
 6-Bromo-2,6-dideoxy-D-*arabino*-hexono-1,4-lactone, B-109
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*R*)-form, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*S*)-form, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*R*)-form, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*S*)-form, B-120
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 2'-Deoxyadenosine; 5'-Ac, D-28
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 2'-Deoxyadenosine; 3',5'-Dibenzoyl, D-28
 2'-Deoxyadenosine; 5'-(4,4'-Dimethoxytrityl), 6*N*-benzoyl, D-28
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 2'-Deoxyadenosine; 5'-Trityl, D-28
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 2'-Deoxycytidine; β-D-form; 3',4*N*-Dibenzoyl, D-43
 2'-Deoxycytidine; β-D-form; 4*N*,5'-Dibenzoyl, D-43
 2'-Deoxycytidine; β-D-form; 5'-(4,4'-Dimethoxytrityl), 4*N*-benzoyl, D-43
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 2-Deoxy-3,5-di-*O*-toluoyl-β-D-*erythro*-pentofuranosyl chloride, D-357
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 2-Deoxy-2-fluoroarabinose; β-D-Pyranose-form, D-68
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 2-Deoxy-*lyxo*-hexopyranosyl fluoride; α-D-form; 4,6-Dibenzoyl, D-197
 2-Deoxy-*ribo*-hexopyranosyl fluoride; α-D-form; 3,6-Dibenzoyl, D-198
 2-Deoxy-*arabino*-hexopyranosyl fluoride; α-D-form; Tri-Ac, D-196
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 2-Deoxy-*lyxo*-hexopyranosyl fluoride; α-D-form; Tribenzoyl, D-197
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 2-Deoxy-*arabino*-hexopyranosyl fluoride; α-D-form, D-196
 2-Deoxy-*lyxo*-hexopyranosyl fluoride; α-D-form, D-197
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 2-Deoxy-*arabino*-hexose; *D*-form; Dibenzyl dithioacetal, D-199
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 2-Deoxy-*arabino*-hexose; *D*-form; Di-Et dithioacetal, 3,4,5,6-tetra-Ac, D-199
 2-Deoxy-*arabino*-hexose; *D*-form; Di-Et dithioacetal, D-199
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 2-Deoxy-*arabino*-hexose; *D*-form, D-199
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 2-Deoxy-*ribo*-hexose; *D*-form, D-205
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 2'-Deoxy-5-iodouridine; 3',5'-Di-Ac, D-278
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 9-(2-Deoxy-*erythro*-pentofuranosyl)adenine; α -*L-form*, D-339
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 2-Deoxy-*erythro*-pentose; *D-form*; Di-Et dithioacetal, D-345
 2-Deoxy-*erythro*-pentose; *D-form*; 5-Phosphate, D-345
 2-Deoxy-*erythro*-pentose; α -*D-Furanose-form*; Me glycoside, 3,5-bis(4-methylbenzoyl), D-345
 2-Deoxy-*erythro*-pentose; β -*D-Furanose-form*; Me glycoside, 3,5-bis(4-methylbenzoyl), D-345
 2-Deoxy-*erythro*-pentose; α -*D-Furanose-form*; Me glycoside, 5-(4-nitrophenyl), D-345
 2-Deoxy-*erythro*-pentose; α -*D-Pyranose-form*; Me glycoside, 3,4-bis(4-nitrobenzoyl), D-345
 2-Deoxy-*erythro*-pentose; β -*D-Pyranose-form*; Me glycoside, 3,4-bis(4-nitrobenzoyl), D-345
 2-Deoxy-*erythro*-pentose; *D-form*, D-345
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 2'-Deoxyribofuranosylguanine; β -*D-form*; 3',5'-Di-Ac, D-360
 2'-Deoxyribofuranosylguanine; β -*D-form*; 2*N*,3'-Di-Ac, D-360
 2'-Deoxyribofuranosylguanine; β -*D-form*; 2*N*-(2-Methylpropanoyl), 5'-(4,4'-dimethoxytrityl), D-360
 2'-Deoxyribofuranosylguanine; β -*D-form*; 2*N*-Me, D-360
 2'-Deoxyribofuranosylguanine; α -*D-form*, D-360
 2'-Deoxyribofuranosylguanine; α -*L-form*, D-360
 2-Deoxyribofuranosylguanine; β -*L-form*, D-360
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 2-Deoxy-*D-ribo*-1,4-lactone, D-674
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 1-(2-Deoxy-4-thiopentofuranosyl)cytosine; β -*L-erythro-form*, D-376
 1-(2-Deoxy-4-thiopentofuranosyl)cytosine; α -*L-threo-form*, D-376
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; β -*D-erythro-form*; 5'-Ac, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; α -*D-erythro-form*, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; α -*L-threo-form*, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)thymine; β -*L-threo-form*, D-377
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -*D-erythro-form*; 5'-Ac, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -*D-erythro-form*, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -*L-erythro-form*, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; β -*L-erythro-form*, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; α -*L-threo-form*, D-378
 1-(2-Deoxy-4-thiopentofuranosyl)uracil; β -*L-threo-form*, D-378
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 3,5-Di-*O*-acetyl-6-bromo-2,6-dideoxy-*D-arabino*-hexono-1,4-lactone, B-109
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 5,6-Di-*O*-acetyl-2,3-dideoxy-*L-threo*-1,4-hexonolactone, T-167
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 1,4-Di-*O*-acetyl-2,3,6-trideoxy-3-(dimethylamino)- β -*L-lyxo*-hexopyranose, D-727
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 1,6,3,4-Dianhydro-2-deoxy-*ribo*-hexose; β -*D-Pyranose-form*, D-497
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 1,6-Di-*O*-benzoyl-2-deoxy- β -*D-arabino*-hexopyranose, D-199
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 2',3'-Dideoxy-3'-fluorouridine, D-571
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 2,7-Dideoxy-*D-gluco*-heptono-1,4-lactone, D-575
 1,2-Dideoxy-*arabino*-hexitol; *D-form*, D-595
 2,3-Dideoxy-*L-erythro*-1,4-hexonolactone, T-167
 2,3-Dideoxy-*L-threo*-1,4-hexonolactone, T-167
 2,3-Dideoxy-*glycero*-hexopyranos-4-ulose, D-602
 2,4-Dideoxy-*erythro*-hexose; *D-form*, D-609
 2,4-Dideoxy-*threo*-hexose; *D-form*, D-615
 2',3'-Dideoxy-5-iodouridine; 5'-Ac, D-624
 2',3'-Dideoxy-5-iodouridine, D-624
 2,3-Dideoxy-3-*C*-methylene-*glycero*-pentose; *D-form*, D-629
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -*D-form*; Et glycoside, D-632
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -*D-form*; Me glycoside, 6-Ac, D-632
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -*D-form*; Me glycoside, 6-trityl, D-632
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -*D-form*; Me glycoside, D-632
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose, D-632
 2,3-Dideoxy-3-*C*-methyl-5-*O*-trityl-*D-erythro*-1,4-pentonolactone, D-642
 2,5-Dideoxy-*D-threo*-1,4-pentonolactone, D-707
 2,5-Dideoxy-*L-erythro*-1,4-pentonolactone, D-707
 2,5-Dideoxy-*D-erythro*-1,4-pentonolactone, D-707
 2,5-Dideoxy-*L-threo*-1,4-pentonolactone, D-707
 2',3'-Dideoxyuridine; 5'-Ac, D-658
 2',3'-Dideoxyuridine; 5'-Benzoyl, D-658
 2',3'-Dideoxyuridine, D-658
 2,3-Dideoxy-3-[tris(methylthio)methyl]-5-*O-tert*-butyldiphenylsilyl-*erythro*-pentono-1,4-lactone; *D-form*, D-657
 5,5-Diethoxy-1,2-pentanediol, 9CI, D-705
 3,4-Dihydroxypentanoic acid; (4*R*,5*R*)-*form*, D-707
 3-(Dimethylamino)-2,3,6-trideoxy-*lyxo*-hexose; *L-form*, D-727
 Ethyl 3,6-anhydro-7-*O*-benzoyl-2-deoxy-4,5-*O*-isopropylidene-*D-allo*-heptonate, A-532
 Ethyl 3,6-anhydro-2-deoxy-4,5-*O*-isopropylidene-*D-allo*-heptonate, A-532
 Ethyl 3,6-anhydro-4,5,7-tri-*O*-benzyl-2-deoxy-*D-allo*-heptonate, A-532
 Ethyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -*L-lyxo*-hexopyranoside, A-464
 Ethyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -*L-lyxo*-hexopyranoside, A-464
 Ethyl 3-benzamido-2,3,6-trideoxy-3-*C*-methyl- α -*L-lyxo*-hexopyranoside, A-464
 Ethyl 6-*O*-benzoyl-2,3-dideoxy- α -*D-glycero*-hexopyranosid-4-ulose, D-602
 Ethyl 6-*O*-benzyl-2,3-dideoxy-3-*C*-(hydroxymethyl)- α -*D-ribo*-hexopyranoside, D-620
 Ethyl 2,3-dideoxy- α -*D-glycero*-hexopyranosid-4-ulose, D-602
 Ethyl 2,3-dideoxy-2-*C*-methyl-6-*O*-trityl- α -*D-threo*-hexopyranosid-4-ulose, D-639
 Ethyl 2,3-dideoxy- α -*D-pentofuranoside*, D-705
 Ethyl 2,3-dideoxy- β -*D-pentofuranoside*, D-705
 Galantinic acid, G-212
 Isoinosine; 2-Deoxy, I-52
 Methyl 3-acetamido-4-*O*-acetyl-2,3,6-trideoxy- α -*L-arabino*-hexopyranoside, A-458
 Methyl 3-acetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -*D-xylo*-hexopyranoside, A-399
 Methyl 3-acetamido-2,3-dideoxy- α -*D-arabino*-hexopyranoside, A-392
 Methyl 3-acetamido-2,3-dideoxy- β -*D-arabino*-hexopyranoside, A-392
 Methyl 3-acetamido-2,3,6-trideoxy- α -*D-arabino*-hexopyranoside, A-458
 Methyl 3-acetamido-2,3,6-trideoxy- β -*D-arabino*-hexopyranoside, A-458
 Methyl 3-acetamido-2,3,6-trideoxy- α -*L-arabino*-hexopyranoside, A-458
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -*D-xylo*-hexopyranoside, 9CI, A-468
 Methyl 3-acetamido-2,3,6-trideoxy-4-*O*-methyl- α -*L-arabino*-hexopyranoside, A-458
 Methyl 3-acetamido-2,3,6-trideoxy-3-*C*-methyl- α -*D-lyxo*-hexopyranoside, A-464
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -*D-xylo*-hexopyranoside, A-468

- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-2-deoxy-β-*D*-*arabino*-hexopyranoside, M-171
- Methyl 3-amino-2,3-dideoxy-α-*D*-*ribo*-hexopyranoside, A-397
- Methyl 3-amino-2,3-dideoxy-α-*D*-*arabino*-hexopyranoside, A-392
- Methyl 3-amino-2,3-dideoxy-β-*D*-*arabino*-hexopyranoside, A-392
- Methyl 3-amino-2,3,6-trideoxy-α-*D*-*arabino*-hexopyranoside, A-458
- Methyl 3-amino-2,3,6-trideoxy-α-*L*-*arabino*-hexopyranoside, A-458
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl-α-*L*-*xylo*-hexopyranoside, 9CI, A-466
- Methyl 4-amino-2,4,6-trideoxy-3-*O*-methyl-α-*D*-*xylo*-hexopyranoside, 9CI, A-468
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl-α-*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl-β-*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3,6-anhydro-2-deoxy-4,5-*O*-isopropylidene-*D*-*allo*-heptonate, A-532
- Methyl 3,6-anhydro-4,5,7-tri-*O*-benzyl-2-deoxy-*D*-*allo*-heptonate, A-532
- Methyl 3-azido-2,3-dideoxy-α-*D*-*arabino*-hexopyranoside, A-918
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl-α-*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl-β-*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl-α-*L*-*xylo*-hexopyranoside, A-466
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl-β-*L*-*xylo*-hexopyranoside, A-466
- Methyl 3-benzamido-2,3,6-trideoxy-α-*L*-*arabino*-hexopyranoside, A-458
- Methyl 3-benzamido-2,3,6-trideoxy-3-*C*-methyl-α-*L*-*xylo*-hexopyranoside, A-466
- Methyl 6-*O*-benzoyl-2-deoxy-β-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 6-*O*-benzoyl-2-deoxy-3,4-*O*-isopropylidene-β-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 4-*O*-benzoyl-2-deoxy-3-*O*-methyl-β-*D*-*erythro*-pentopyranoside, D-345
- Methyl 3-*O*-benzyl-2-deoxy-α-*D*-*arabino*-hexofuranoside, D-199
- Methyl 4,6-*O*-benzylidene-2-deoxy-α-*D*-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-2-deoxy-β-*D*-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-2-deoxy-α-*D*-*threo*-hexopyranosid-3-ulose, D-192
- Methyl 4,6-*O*-benzylidene-2-deoxy-β-*D*-*threo*-hexopyranosid-3-ulose, D-192
- Methyl 4,6-*O*-benzylidene-2-deoxy-α-*D*-*erythro*-hexopyranosid-3-ulose, D-213
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-mesyl-α-*D*-*ribo*-hexopyranoside, D-205
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-mesyl-α-*D*-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-methyl-α-*D*-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-2-deoxy-3-*O*-tosyl-α-*D*-*arabino*-hexopyranoside, M-171
- Methyl 4,6-*O*-benzylidene-α-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 4,6-*O*-benzylidene-β-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 3,4-*O*-cyclohexylidene-2-deoxy-β-*D*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-3,4-di-*O*-mesyl-α-*L*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-3,4-di-*O*-tosyl-β-*L*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-2-fluoro-α-*D*-*arabinofuranoside*, D-68
- Methyl 2-deoxy-*D*-manno-heptonate, D-153
- Methyl 2-deoxy-α-*D*-*arabino*-hexofuranoside, D-199
- Methyl 2-deoxy-α-*D*-*ribo*-hexofuranoside, D-205
- Methyl 2-deoxy-β-*D*-*ribo*-hexofuranoside, D-205
- Methyl 2-deoxy-*arabino*-hexopyranoside; α-*D*-form, M-171
- Methyl 2-deoxy-*arabino*-hexopyranoside; β-*D*-form, M-171
- Methyl 2-deoxy-α-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 2-deoxy-β-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 2-deoxy-α-*D*-*ribo*-hexopyranoside, D-205
- Methyl 2-deoxy-β-*D*-*ribo*-hexopyranoside, D-205
- Methyl 2-deoxy-3,4-*O*-isopropylidene-α-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 2-deoxy-3,4-*O*-isopropylidene-β-*D*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-4,5-*O*-isopropylidene-7-*O*-trityl-*D*-*allo*-heptonate, A-532
- Methyl 6-deoxy-3-*O*-methyl-β-*D*-allopyranosyl-(1 → 4)-2-deoxy-α-*D*-*arabino*-hexopyranoside, D-774
- Methyl 2-deoxy-α-*D*-*erythro*-pentofuranoside, D-345
- Methyl 2-deoxy-*L*-*erythro*-pentofuranoside, D-345
- Methyl 2-deoxy-α-*D*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-β-*D*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-α-*L*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-β-*L*-*erythro*-pentopyranoside, D-345
- Methyl 2-deoxy-5-*O*-tosyl-α-*D*-*erythro*-pentofuranoside, D-345
- Methyl 2-deoxy-6-*O*-trityl-α-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 2-deoxy-5-*O*-trityl-α-*D*-*erythro*-pentofuranoside, D-345
- Methyl 2-deoxy-5-*O*-trityl-β-*D*-*erythro*-pentofuranoside, D-345
- Methyl 2-deoxy-5-*O*-trityl-α-*D*-*glycero*-pentofuranosid-3-ulose, P-43
- Methyl 2-deoxy-5-*O*-trityl-β-*D*-*glycero*-pentofuranosid-3-ulose, P-43
- Methyl 4,6-di-*O*-acetyl-3-azido-2,3-dideoxy-α-*D*-*arabino*-hexopyranoside, A-918
- Methyl 3,5-di-*O*-acetyl-2-deoxy-α-*D*-*erythro*-pentofuranoside, D-345
- Methyl 3,4-di-*O*-acetyl-2-deoxy-α-*L*-*erythro*-pentopyranoside, D-345
- Methyl 3,6-di-*O*-benzoyl-2,4-dideoxy-*D*-*erythro*-hexopyranoside, D-609
- Methyl 3,5-di-*O*-benzyl-2-deoxy-α-*L*-*erythro*-pentofuranoside, D-345
- Methyl 3,5-di-*O*-benzyl-2-deoxy-β-*L*-*erythro*-pentofuranoside, D-345
- Methyl 2,3-dideoxy-β-*D*-*glycero*-hexopyranosid-4-ulose, 8CI, D-602
- Methyl 2,2-dimethyl-β-oxo-1,3-dioxolane-4-propanoic acid, 9CI, D-704
- Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-α-*D*-*lyxo*-hexopyranoside, D-202
- Methyl 3,4,6-tri-*O*-acetyl-2-deoxy-β-*D*-*arabino*-hexopyranoside, M-171
- Methyl 2,3,6-trideoxy-3-dimethylamino-α-*D*-*lyxo*-hexopyranoside, D-727
- Methyl 2,3,6-trideoxy-3-dimethylamino-β-*D*-*lyxo*-hexopyranoside, D-727
- 4-Pentenyl 2-deoxy-α-*D*-*arabino*-hexopyranoside, D-199
- Sarcobiose, S-14
- 1,3,5,6-Tetra-*O*-acetyl-2-deoxy-α-*D*-*arabino*-hexofuranose, D-199
- 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-α-*D*-*arabino*-hexopyranose, D-199
- 1,3,4,6-Tetra-*O*-acetyl-2-deoxy-β-*D*-*arabino*-hexopyranose, D-199
- 1,3,4,6-Tetra-*O*-benzoyl-2-deoxy-β-*D*-*arabino*-hexopyranose, D-199
- 4'-Thiothymidine, 9CI, D-377
- Thymidine cyclic 3',5'-(methylphosphate), C-165
- Thymidyl(5' → 3')-5'-thymidylic acid, T-112
- 1,3,4-Tri-*O*-acetyl-2-deoxy-2-fluoro-β-*D*-*arabinopyranose*, D-68
- 3,5,6-Tri-*O*-acetyl-2-deoxy-*D*-*lyxo*-hexono-1,4-lactone, D-188
- 3,5,6-Tri-*O*-acetyl-2-deoxy-*L*-*ribo*-hexono-1,4-lactone, D-189
- 3,4,6-Tri-*O*-acetyl-2-deoxy-*D*-*arabino*-hexose, D-199
- 1,3,4-Tri-*O*-acetyl-2-deoxy-*D*-*erythro*-pentose, D-345
- 3,4,5-Tri-*O*-acetyl-2-deoxy-*D*-*erythro*-pentose, D-345
- 3,4,6-Tri-*O*-acetyl-*D*-*lyxo*-hexose, D-202
- 1,3,6-Tri-*O*-benzoyl-2-deoxy-β-*D*-*arabino*-hexopyranose, D-199
- 1,4,6-Tri-*O*-benzoyl-2-deoxy-β-*D*-*arabino*-hexopyranose, D-199
- 1,3,5-Tri-*O*-benzoyl-2-deoxy-α-*D*-*erythro*-pentofuranose, D-345
- 1,3,5-Tri-*O*-benzoyl-2-deoxy-β-*D*-*erythro*-pentofuranose, D-345
- 1,3,4-Tri-*O*-benzoyl-2-deoxy-α-*D*-*erythro*-pentopyranose, D-345
- 1,3,4-Tri-*O*-benzoyl-2-deoxy-β-*D*-*erythro*-pentopyranose, D-345
- 1,3,4-Tri-*O*-benzoyl-2-deoxy-*D*-*ribo*-pentose, D-345
- 3,4,5-Tri-*O*-benzoyl-2-deoxy-*D*-*erythro*-pentose, D-345
- 1,3,6-Tri-*O*-benzoyl-2,4-dideoxy-β-*D*-*threo*-hexopyranose, D-615
- 3,4,6-Tri-*O*-benzyl-2-deoxy-*D*-*arabino*-hexose, D-199
- 3,4,6-Tri-*O*-benzyl-2-deoxy-*D*-*lyxo*-hexose, D-202
- 4,5,6-Trihydroxyhexanoic acid; (4*S*,5*S*)-form; 1,4-Lactone, 6-benzyl, T-167
- Vancosamine, A-464

3-Deoxy sugars

- 2-Acetamido-2,3-dideoxy-*D*-*ribo*-hexopyranose, A-395
- 2-Acetamido-1,4,6-tri-*O*-acetyl-2,3-dideoxy-α-*D*-*ribo*-hexopyranose, A-395
- 5'-Acetyl-3'-deoxyadenosine, C-152
- 5-*O*-Acetyl-3-deoxy-*L*-*threo*-pentofuranose, D-349
- 2-*C*-Acetyl-2,3-dideoxy-*erythro*-hexopyranos-4-ulose; α-*D*-form; Et glycoside, 6-trityl, A-16
- 2-*C*-Acetyl-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-*D*-form; Et glycoside, 6-trityl, A-17
- 2-*C*-Acetyl-2,3-dideoxy-*erythro*-hexopyranos-4-ulose; α-*D*-form, A-16
- 2-*C*-Acetyl-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-*D*-form, A-17
- N*-Acetyl-β-neuraminic acid 2-(hydrogen 5'-cytidylate), A-21
- 5'-Amino-3',5'-dideoxyadenosine, A-362
- 2-Amino-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-*D*-form; Me glycoside, 6-benzoyl, *N*-Ac, A-390
- 2-Amino-2,3-dideoxy-*ribo*-hexose; *D*-form, A-395
- 5'-Amino-3',5'-dideoxyuridine; *tert*-Butyldimethylsilyl ether, A-420
- 5'-Amino-3',5'-dideoxyuridine, A-420
- 2-Amino-2,3,4,6-tetra-deoxy-6-methylamino-*D*-*erythro*-hexose, D-471
- 2,6-Anhydro-3-deoxy-*lyxo*-hept-2-enitol; *D*-form, A-530
- 2,6-Anhydro-3-deoxy-*lyxo*-hept-2-enose; *D*-form, A-531
- 1,6-Anhydro-3-deoxy-β-*D*-*threo*-hexopyranos-4-ulose, A-649
- 1,6-Anhydro-3-deoxy-β-*D*-*erythro*-hexopyranos-4-ulose, A-651
- 1,6-Anhydro-3-deoxy-*ribo*-hexose; β-*D*-Pyranose-form, A-557
- 1,6-Anhydro-3,4-dideoxy-*glycero*-hexopyranos-2-ulose; β-*D*-form, A-590
- 1,6-Anhydro-2,3-dideoxy-β-*D*-*glycero*-hexopyranos-4-ulose, A-651
- 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-*erythro*-hexopyranos-2-ulose; β-*D*-form, A-597
- 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-4-*C*-vinyl-*glycero*-hexopyranos-2-ulose; β-*D*-form, A-598
- Antibiotic G 367S₂, S-45
- Antibiotic G 52, S-45
- Antibiotic KA 6606XV, A-756
- 3'-Azido-3'-deoxy-5'-thymidylic acid, 9CI, Z-4

- 6-*O*-Benzoyl-3-deoxy-1,2-*O*-isopropylidene- α -D-ribo-hexofuranose, D-206
- 5-*O*-Benzoyl-3-deoxy-1,2-*O*-isopropylidene- α -L-erythro-pentofuranose, D-346
- Benzyl 2-*O*-benzyl-3-deoxy- β -L-threo-pentopyranoside, D-349
- Benzyl 4,6-*O*-benzylidene-3-deoxy- α -D-erythro-hexopyranosid-2-ulose, D-214
- Benzyl 3-deoxy- β -D-erythro-pentofuranoside, D-346
- Benzyl 3-deoxy- β -D-threo-pentofuranoside, D-349
- Benzyl 3-deoxy- β -D-glycero-pentofuranos-2-uloside, D-351
- 6-*O*-Benzyl-2,3-dideoxy-1,4-hexonolactone, T-167
- 4,6-*O*-Benzylidene-3-deoxy-D-erythro-hexos-2-ulose, D-214
- 3'-Bromo-3'-deoxythymidine; 5'-Trityl, B-99
- 3'-Bromo-3'-deoxythymidine, B-99
- 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*R*)-form, B-120
- 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*S*)-form, B-120
- 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*R*)-form, B-120
- 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*S*)-form, B-120
- tert-Butyl 6-*O*-acetyl-3,4-dideoxy-4-*C*-methyl- α -D-threo-hexopyranosid-2-ulose, D-640
- 3'-Chloro-3'-deoxythymidine, C-107
- Cordycepin; 2-Deoxy, 2-fluoro, C-152
- Cordycepin; 5'-Triphosphate, C-152
- Cordycepin, C-152
- 3''-*N*-Demethylisomicin, S-45
- 3-Deoxy-1,2:5,6-di-*O*-isopropylidene- α -D-ribo-hexofuranose, D-206
- 3-Deoxy-1,2:5,6-di-*O*-isopropylidene- α -D-xylo-hexofuranose, D-209
- 3-Deoxy-3-fluoro-1,2:4,6-di-*O*-isopropylidene- α -D-galactofuranose, D-81
- 3-Deoxy-3-fluorogalactose; D-form, D-81
- 3-Deoxy-D-xylo-hexono-1,4-lactone, T-34
- 3-Deoxy-L-arabino-hexono-1,4-lactone, T-34
- 3-Deoxy-D-ribo-hexono-1,4-lactone, T-34
- 3-Deoxy-D-lyxo-hexono-1,4-lactone, T-34
- 3-Deoxy-L-ribo-hexono-1,4-lactone, T-34
- 3-Deoxy-D-arabino-hexono-1,4-lactone, T-34
- 3-Deoxy-L-xylo-hexono-1,4-lactone, T-34
- 3-Deoxy-lyxo-hexose; L-form; Dimethyl dithioacetal, D-203
- 3-Deoxy-xylo-hexose; D-form; 1,1,2,4,5,6-Hexa-Ac, D-209
- 3-Deoxy-ribo-hexose; α -D-Pyranose-form, D-206
- 3-Deoxy-ribo-hexose; β -D-Pyranose-form, D-206
- 3-Deoxy-arabino-hexose; D-form, D-200
- 3-Deoxy-lyxo-hexose; D-form, D-203
- 3-Deoxy-xylo-hexose; D-form, D-209
- 3-Deoxy-erythro-hexos-2-ulose; D-form, D-214
- 3-Deoxy-erythro-2-hexulose; D-form, D-219
- 3-Deoxy-erythro-2-hexulosonic acid; D-form, D-225
- 3-Deoxy-2-*C*-(hydroxymethyl)-2,2':4,5-di-*O*-isopropylidene-D-erythro-pentose, D-233
- 3-Deoxy-4-*C*-hydroxymethyl-1,2-*O*-isopropylidene- β -L-glycero-pentofuranose, D-232
- 3-Deoxy-4-hydroxymethyl-1,2-*O*-isopropylidene- α -D-glycero-pentose, D-234
- 3-Deoxy-3-iodoaltrose, D-247
- 3'-Deoxy-3'-iodothymidine; 5'-Trityl, D-277
- 3'-Deoxy-3'-iodothymidine, D-277
- 3-Deoxy-1,2-*O*-isopropylidene- α -D-ribo-hexofuranose, D-206
- 3-Deoxy-5,6-*O*-isopropylidene-1-*O*-methyl-D-erythro-2-hexulose, D-219
- 3-Deoxy-1,2-*O*-isopropylidene- α -D-erythro-pentofuranoside, D-346
- 3-Deoxy-1,2-*O*-isopropylidene-5-tosyl- β -L-threo-pentofuranose, D-349
- 3-Deoxy-1,2-*O*-isopropylidene-5-*O*-tosyl-4-*C*-(tosyloxymethyl)- α -L-glycero-pentofuranose, D-232
- 3-Deoxy-1,2-*O*-isopropylidene-6-*O*-trityl- α -D-ribo-hexofuranose, D-206
- 3'-Deoxy-3'-isothiocyanatothymidine, D-284
- 3'-Deoxykanamycin C, K-5
- 3-Deoxy-2-*O*-methyl-D-arabino-hexono-1,4-lactone, T-34
- 3-Deoxy-2-*C*-methyl-erythro-1,4-pentonolactone; D-form, D-310
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; *N,N'*-Di-Ac, D-322
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, D-322
- 3-Deoxy- β -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose, D-323
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 4)-3-deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 6)-2-amino-2-deoxy-D-glucose, D-324
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose; β -Furanose-form; Me glycoside, 3-benzyl, 5,5'-dibenzoyl, 4'',5'',7'',8''-tetra-Ac, Me ester, D-326
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose; β -Furanose-form; Me glycoside, 5,5'-dibenzoyl, 3',4'',5'',7'',8''-penta-Ac, Me ester, D-326
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose; β -Furanose-form; Me glycoside, D-326
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-D-ribose; β -Pyranose-form; Me glycoside, 5-benzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-328
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-D-ribose; β -Pyranose-form; Me glycoside, 2-benzyl, 5-benzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-328
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-D-ribose; β -Pyranose-form; Me glycoside, D-328
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[α -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-325
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-327
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, D-327
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[α -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form, D-325
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose, D-327
- 3-Deoxy-erythro-pentose; D-form, D-346
- 3-Deoxy-erythro-pentose; L-form, D-346
- 3-Deoxy-threo-pentose; D-form, D-349
- 3-Deoxy-threo-pentose; L-form, D-349
- 3-Deoxy-threo-pentose; DL-form, D-349
- 3-Deoxysucrose, D-364
- 3'-Deoxythymidine; 5'-Triphosphate, D-380
- 3'-Deoxythymidine, D-380
- 3'-Deoxy-5'-thymidylic acid, 9CI, D-380
- 2,6-Diacetamido-2,3,4,6-tetradeoxy-D-erythro-hexose diethyl dithioacetal, D-471
- 2,4-Di-*O*-acetyl-1,6-anhydro-3-deoxy- β -D-lyxo-hexopyranose, A-553
- 2,4-Di-*O*-acetyl-1,6-anhydro-3-deoxy- β -D-ribo-hexopyranose, A-557
- 1,2-Di-*O*-acetyl-5-*O*-benzoyl-3-deoxy-L-erythro-pentofuranose, D-346
- 2,5-Di-*O*-acetyl-3-deoxy-2-*C*-methyl-D-erythro-1,4-pentonolactone, D-310
- 5,6-Di-*O*-acetyl-2,3-dideoxy-L-threo-1,4-hexonolactone, T-167
- 2,6-Diamino-2,3,4,6-tetradeoxy-erythro-hexose; α -D-Pyranose-form; Me glycoside, 6-*N*-Me, 2,6-di-*N*-Ac, D-471
- 2,4-Diamino-2,3,4,6-tetradeoxy-arabino-hexose; D-form, D-470
- 2,6-Diamino-2,3,4,6-tetradeoxy-erythro-hexose; D-form, D-471
- 2,6-Diamino-2,3,6-trideoxy-ribo-hexose; D-form, D-478
- 5,6-Di-*O*-benzoyl-3-deoxy-1,2-*O*-isopropylidene- α -D-ribo-hexofuranose, D-206
- 2',3'-Dideoxyadenosine, D-556
- 2,3-Dideoxy-2,2-bis(hydroxymethyl)-glycero-hexopyranos-4-ulose; α -D-form, D-558
- 2',3'-Dideoxy-2'-fluorocytidine; 2'-Epimer, di-Ac, D-564
- 2',3'-Dideoxy-2'-fluorocytidine, D-564
- 1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)-4-thiouracil, D-567
- 1-(2,3-Dideoxy-2-fluoro- β -D-threo-pentofuranosyl)thymine, D-568
- 2',3'-Dideoxy-2'-fluorouridine, D-570
- 2',3'-Dideoxy-3'-fluorouridine, D-571
- 2,3-Dideoxy-L-erythro-1,4-hexonolactone, T-167
- 2,3-Dideoxy-L-threo-1,4-hexonolactone, T-167
- 2,3-Dideoxy-glycero-hexopyranos-4-ulose, D-602
- 2',3'-Dideoxy-5-iodouridine; 5'-Ac, D-624
- 2',3'-Dideoxy-5-iodouridine, D-624
- 2,3-Dideoxy-2-*C*-methyl-threo-hexopyranos-4-ulose; α -D-form; Et glycoside, D-632
- 2,3-Dideoxy-2-*C*-methyl-threo-hexopyranos-4-ulose; α -D-form; Me glycoside, 6-Ac, D-632
- 2,3-Dideoxy-2-*C*-methyl-threo-hexopyranos-4-ulose; α -D-form; Me glycoside, 6-trityl, D-632
- 2,3-Dideoxy-2-*C*-methyl-threo-hexopyranos-4-ulose; α -D-form; Me glycoside, D-632
- 2,3-Dideoxy-2-*C*-methyl-threo-hexopyranos-4-ulose, D-632
- 2',3'-Dideoxyuridine; 5'-Ac, D-658
- 2',3'-Dideoxyuridine; 5'-Benzoyl, D-658
- 2',3'-Dideoxyuridine, D-658
- 5,5-Diethoxy-1,2-pentanediol, 9CI, D-705
- 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*R*,5*R*)-form, D-673
- 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*R*,5*S*)-form, D-673

- 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*S*,5*R*)-*form*, D-673
- 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*S*,5*S*)-*form*, D-673
- 4,5-Dihydroxy-2-oxopentanal; (*R*)-*form*, D-702
- 4,5-Dihydroxy-2-oxopentanoic acid; (*R*)-*form*; 2,4-Dinitrophenylhydrazone, D-703
- 4,5-Dihydroxy-2-oxopentanoic acid; (\pm)-*form*; 2,4-Dinitrophenylhydrazone, D-703
- 4,5-Dihydroxy-2-oxopentanoic acid; (*S*)-*form*, D-703
- Ethyl 2-acetamido-4,6-di-*O*-benzoyl-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-395
- Ethyl 2-acetamido-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-395
- Ethyl 6-*O*-benzoyl-2,3-dideoxy- α -D-*glycero*-hexopyranosid-4-ulose, D-602
- Ethyl 2,4-diacetamido-2,3,4,6-tetradeoxy- β -D-*arabino*-hexopyranoside, D-470
- Ethyl 2,6-diacetamido-2,3,4,6-tetradeoxy- α -D-*erythro*-hexopyranoside, D-471
- Ethyl 2,6-diacetamido-2,3,6-trideoxy- α -D-*ribo*-hexopyranoside, D-478
- Ethyl 2,3-dideoxy- α -D-*glycero*-hexopyranosid-4-ulose, D-602
- Ethyl 2,3-dideoxy-2-*C*-(hydroxymethyl)- α -D-*threo*-hexopyranos-4-ulose, D-621
- Ethyl 2,3-dideoxy-2-*C*-methyl-6-*O*-trityl- α -D-*threo*-hexopyranosid-4-ulose, D-639
- Ethyl 2,3-dideoxy- α -D-pentofuranoside, D-705
- Ethyl 2,3-dideoxy- β -D-pentofuranoside, D-705
- F-DDC, D-564
- α -D-Galactometasaccharinic acid, T-34
- α -L-Galactometasaccharinic acid, T-34
- β -L-Glucometasaccharinic acid, T-34
- α -D-Glucometasaccharinic acid, T-34
- α -L-Glucometasaccharinic acid, T-34
- β -D-Glucometasaccharinic acid, T-34
- 1,2-*O*-Isopropylidene-3-deoxy- β -L-*threo*-pentofuranose, D-349
- Lysinomycin, L-60
- Methyl 2-acetamido-4,6-*O*-benzylidene-2,3-dideoxy- α -D-*ribo*-hexopyranoside, 8CI, A-395
- Methyl 2-acetamido-4,6-di-*O*-acetyl-2,3-dideoxy- α -D-*ribo*-hexopyranoside, A-395
- Methyl 2-acetamido-2,3-dideoxy-4,6-di-*O*-mesyl- α -D-*ribo*-hexopyranoside, A-395
- Methyl 2-acetamido-2,3-dideoxy- α -D-*ribo*-hexopyranoside, 8CI, A-395
- Methyl 2-amino-2,3-dideoxy- α -D-*ribo*-hexopyranoside, 9CI, A-395
- Methyl 2-benzamido-4,6-*O*-benzylidene-2,3-dideoxy- β -D-*ribo*-hexopyranoside, A-395
- Methyl 2-benzamido-2,3-dideoxy- β -D-*ribo*-hexopyranoside, A-395
- Methyl 4,6-*O*-benzylidene-3-deoxy- α -D-*arabino*-hexopyranoside, D-200
- Methyl 4,6-*O*-benzylidene-3-deoxy- α -D-*ribo*-hexopyranoside, D-206
- Methyl 4,6-*O*-benzylidene-3-deoxy- β -D-*ribo*-hexopyranoside, D-206
- Methyl 4,6-*O*-benzylidene-3-deoxy- α -D-*threo*-hexopyranosid-2-ulose, 8CI, D-216
- Methyl 4,6-*O*-benzylidene-3-deoxy-*erythro*-hexopyranosid-2-ulose; α -D-*form*, M-160
- Methyl 4,6-*O*-benzylidene-3-deoxy-*erythro*-hexopyranosid-2-ulose; β -D-*form*, M-160
- Methyl 4,6-*O*-benzylidene-3-deoxy- β -D-*threo*-hexopyranosid-2-ulose, D-216
- Methyl 4,6-*O*-benzylidene-2-*O*-tosyl- α -D-*ribo*-hexopyranoside, D-206
- Methyl 3-bromo-3-deoxy- β -D-allopyranoside, B-56
- Methyl 4,6-*O*-cyclohexylidene-2,3-dideoxy-2-*N*-tosyl- α -D-*ribo*-hexopyranoside, A-395
- Methyl 3-deoxy-3-fluoro- β -D-galactofuranoside, D-81
- Methyl 3-deoxy-3-fluoro- α -D-galactopyranoside, D-81
- Methyl 3-deoxy- α -D-*arabino*-hexopyranoside, D-200
- Methyl 3-deoxy- α -D-*ribo*-hexopyranoside, D-206
- Methyl 3-deoxy- α -D-*xylo*-hexopyranoside, D-209
- Methyl 3-deoxy- β -D-*xylo*-hexopyranoside, D-209
- Methyl 3-deoxy- α -D-*threo*-hexopyranosid-2-ulose, 8CI, D-193
- Methyl 3-deoxy- β -D-*threo*-hexopyranosid-2-ulose, D-193
- Methyl 3-deoxy- α -D-*erythro*-pentofuranoside, D-346
- Methyl 3-deoxy- α -D-*threo*-pentofuranoside, D-349
- Methyl 3-deoxy- β -D-*threo*-pentofuranoside, D-349
- Methyl 3-deoxy- β -D-*erythro*-pentopyranoside, D-346
- Methyl 3-deoxy- α -L-*erythro*-pentopyranoside, D-346
- Methyl 3-deoxy- β -L-*erythro*-pentopyranoside, D-346
- Methyl 3-deoxy- β -D-*glycero*-pentopyranosid-4-ulose, D-342
- Methyl 3-deoxy- β -L-*glycero*-pentopyranosid-4-ulose, D-342
- Methyl 2,4-diacetamido-2,3,4,6-tetradeoxy- α -D-*arabino*-hexopyranoside, 8CI, D-470
- Methyl 2,4-diacetamido-2,3,4,6-tetradeoxy- β -D-*arabino*-hexopyranoside, 8CI, D-470
- Methyl 2,6-diacetamido-2,3,4,6-tetradeoxy- α -D-*erythro*-hexopyranoside, D-471
- Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-*ribo*-hexofuranoside, D-478
- Methyl 2,6-diacetamido-2,3,6-trideoxy- α -D-*ribo*-hexopyranoside, D-478
- Methyl 2,6-diacetamido-2,3,6-trideoxy-4-*O*-mesyl- α -D-*ribo*-hexopyranoside, D-478
- Methyl 2,4-di-*O*-acetyl-3-deoxy- β -L-*erythro*-pentopyranoside, D-346
- Methyl 2,6-diamino-2,3,4,6-tetradeoxy- α -D-*erythro*-hexopyranoside, 9CI, D-471
- Methyl 2,5-di-*O*-benzoyl-3-deoxy- α -D-*threo*-pentofuranoside, D-349
- Methyl 2,3-dideoxy- β -D-*glycero*-hexopyranosid-4-ulose, 8CI, D-602
- Methyl 3,6-dideoxy- α -L-*threo*-hexopyranosid-2-ulose, 9CI, D-193
- Methyl 3,4-dideoxy-4-*C*-methyl-6-*O*-trityl- α -D-*threo*-hexopyranosid-2-ulose, D-633
- Methyl 3,4-dideoxy- β -D-*glycero*-pentopyranoside, T-28
- Methyl 3,4-dideoxy- α -D-*glycero*-pentopyranoside, T-28
- Methyl 3,4-dideoxy- β -L-*glycero*-pentopyranoside, T-28
- Methyl 2,3,6-tri-*O*-benzoyl-3-deoxy- β -D-*xylo*-hexopyranoside, D-209
- Methyl 2,4,6-tri-*O*-benzoyl-3-deoxy- α -D-*erythro*-hex-2-ulofuranosonate, D-225
- 4-Methylcoumarin-7-yl 5-acetamido-3,5-dideoxy-D-*glycero*- α -D-*galacto*-2-nonulopyranosidonic acid, M-237
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; Benzyl glycoside, 2',3,3',6-tetrabenzyl, 2*N*,5'*N*-di-Ac, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; Benzyl glycoside, 2',3,3',6-tetrabenzyl, hepta-Ac, Me ester, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-*form*; *N,N'*-Di-Ac, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; 2*N*-Phthaloyl, undeca-Ac, Me ester, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-*form*, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*, N-37
- α -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; *N*-Ac, N-39
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; *N*-Ac, N-41
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-*form*; *N*-Ac, N-38
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-*form*; *N*-Ac, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, *N*-Ac, Me ester, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, *N*-Ac, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, 4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-40
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-*form*, N-38
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-*form*, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*, N-40
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; Pyranose-*form*; *N*-Ac, N-42
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; Pyranose-*form*; *N*-Ac, N-43
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 2,6-dibenzyl, *N*-Ac, N-42
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 2,6-dibenzyl, 4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-42
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 2,6-dibenzyl, 4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-43
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-*form*, N-42
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; Pyranose-*form*, N-43
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-*form*, N-43
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose, N-42
- L-Parasaccharinic acid, T-34
- D-Parasaccharinic acid, T-34
- Phenyl 4,6-*O*-benzylidene-3-deoxy- β -D-*threo*-hexopyranosid-2-ulose, 8CI, D-216
- Phenyl 3-deoxy- α -D-*ribo*-hexopyranoside, D-206
- Phenyl 3-deoxy- β -D-*ribo*-hexopyranoside, D-206
- Phenyl 3-deoxy- β -D-*threo*-hexopyranosid-2-ulose, 8CI, D-193
- β -D-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -*form*; Me glycoside, Me ester, R-104
- β -D-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -*form*; Me glycoside, R-104
- β -D-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -*form*, R-104

β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; α -form; Me glycoside, R-117
 β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -form; Me glycoside, R-117
 β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; α -form, R-117
 β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -form, R-117
 Sisomicin, S-45
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- α -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-3-fluoro- β -D-galactopyranose, D-81
 1,2,5,6-Tetra-*O*-acetyl-3-deoxy-D-*xylo*-hexofuranose, D-209
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy-D-*arabino*-hexopyranose, D-200
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy- α -D-*xylo*-hexopyranose, D-209
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy- β -D-*xylo*-hexopyranose, D-209
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy- α -D-*ribo*-hexopyranoside, D-206
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- α -D-galactopyranose, D-81
 1,2,4,6-Tetra-*O*-benzoyl-3-deoxy-3-fluoro- β -D-galactopyranose, D-81
 1,2,4,5-Tetra-*O*-benzoyl-3-deoxy- β -D-*erythro*-hex-2-ulopyranose, D-219
 Tetrahydro-3-hydroxy-5-hydroxymethyl-3-furancarboxylic acid, T-26
 Tetrahydro-2*H*-pyran-2,3-diol; (2*RS*,3*RS*)-form; 2-Me ether, 3-Ac, T-28
 Tetrahydro-2*H*-pyran-2,3-diol; (2*RS*,3*RS*)-form; 2-Me ether, T-28
 2,4,5,6-Tetrahydroxyhexanoic acid; (2*S*,4*S*,5*R*)-form; 1,5-Lactone, tri-Ac, T-34
 2,4,5,6-Tetrahydroxyhexanoic acid; (2*S*,4*S*,5*R*)-form; 2,4,5,6-Tetra-Ac, Me ester, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-D-*xylo*-hexono-1,4-lactone, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-D-*ribo*-hexono-1,4-lactone, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-L-*lyxo*-hexono-1,4-lactone, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-L-*ribo*-hexono-1,4-lactone, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-D-*arabino*-hexono-1,4-lactone, T-34
 2,5,6-Tri-*O*-acetyl-3-deoxy-L-*xylo*-hexono-1,4-lactone, T-34
 1,2,4-Tri-*O*-acetyl-3-deoxy- β -D-*ribo*-hexopyranose, D-206
 1,4,5-Tri-*O*-acetyl-3-deoxy-2-*C*-(hydroxymethyl)-2,2'-*O*-isopropylidene-D-*erythro*-pentitol, D-231
 1,2,5-Tri-*O*-acetyl-3-deoxy-L-*threo*-pentofuranose, D-349
 2,4,6-Tri-*O*-benzoyl-3-deoxy-D-*ribo*-hexono-1,5-lactone, T-34
 2,4,6-Tri-*O*-benzoyl-3-deoxy-D-*arabino*-hexono-1,5-lactone, T-34
 4,5,6-Trihydroxyhexanoic acid; (4*S*,5*S*)-form; 1,4-Lactone, 6-benzyl, T-167
 2,4,5-Trihydroxypentanoic acid; (2*S*,4*S*)-form; 4,5-Isopropylidene, 2-Ac, Me ester, T-174
 2,4,5-Trihydroxypentanoic acid; (2*R*,4*S*)-form; 4,5-Isopropylidene, Me ester, T-174
 2,4,5-Trihydroxypentanoic acid; (2*S*,4*S*)-form; 4,5-Isopropylidene, Me ester, T-174
 2,4,5-Trihydroxypentanoic acid; (2*S*,4*R*)-form, T-174
 2,4,5-Trihydroxypentanoic acid; (2*S*,4*S*)-form, T-174
 Zidovudine; 5'-Triphosphate, Z-4
 Zidovudine, Z-4

4-Deoxy sugars

4-Acetamido-4-deoxy- α -D-glucopyranose, A-268
 2-Acetamido-1,3-di-*O*-acetyl-2,4-dideoxy- α , β -L-*threo*-pentopyranose, A-412
 2-Acetamido-2,4-dideoxy-D-*arabino*-hexopyranose, A-391
 2-Acetamido-2,4-dideoxy-D-*lyxo*-hexopyranose, A-393
 2-Acetamido-2,4-dideoxy-D-*ribo*-hexopyranose, A-396
 2-Acetamido-2,4-dideoxy-D-*xylo*-hexopyranose, A-398
 2-Acetamido-2,4-dideoxy-L-*xylo*-hexopyranose, A-398
 2-Acetamido-2,4-dideoxy-L-*threo*-pentopyranose, A-412
 4-Acetamido-1,2,3,6-tetra-*O*-acetyl-4-deoxy- α -D-glucopyranose, A-268
 4-Acetamido-1,2,3,6-tetra-*O*-acetyl-4-deoxy- β -D-glucopyranose, A-268
 2-Acetamido-1,3,6-tri-*O*-acetyl-2,4-dideoxy-D-*xylo*-hexopyranoside, A-398
 3-*O*-Acetyl-1,6-anhydro-4-deoxy-2-*O*-tosyl- β -D-*xylo*-hexopyranose, A-560
 6-*O*-Acetyl-2,3,4-trideoxy-DL-*glycero*-hex-2-enose, T-154
 Allyl 2-acetamido-2,4-dideoxy- β -L-*xylo*-hexopyranoside, A-398
 4-Amino-4-deoxyglucose; D-form, A-268
 2-Amino-2,4-dideoxy-*lyxo*-hexose; D-form, A-393
 2-Amino-2,4-dideoxy-*threo*-pentose, A-412
 2-Amino-2,3,4,6-tetra-deoxy-6-methylamino-D-*erythro*-hexose, D-471
 2,5-Anhydro-3-*O*-benzoyl-1,4-dideoxy-L-*arabino*-hexitol, A-587
 1,6-Anhydro-4-deoxy-*lyxo*-hexose; β -D-Pyranose-form, A-554
 1,6-Anhydro-4-deoxy-*xylo*-hexose; β -D-form, A-560
 1,6-Anhydro-4-deoxy-2,3-*O*-isopropylidene- β -D-*lyxo*-hexopyranose, A-554
 1,6-Anhydro-4-deoxy-2-*O*-tosyl- β -D-*xylo*-hexopyranose, A-560
 1,6-Anhydro-2,3-di-*O*-benzoyl-4-deoxy- β -D-*lyxo*-hexopyranose, A-554
 2,5-Anhydro-1,4-dideoxy-*xylo*-hexitol; D-form, A-588
 1,6-Anhydro-2,4-dideoxy-*glycero*-hexopyranos-3-ulose; β -D-form, A-589

1,6-Anhydro-3,4-dideoxy-*glycero*-hexopyranos-2-ulose; β -D-form, A-590
 1,6-Anhydro-3,4-dideoxy- β -D-*glycero*-hexopyranos-2-ulose, A-548
 1,6-Anhydro-2,4-dideoxy-*threo*-hexose; β -D-Pyranose-form, A-592
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-*erythro*-hexopyranos-2-ulose; β -D-form, A-597
 4-Benzamido-1,2,3,6-tetra-*O*-benzoyl-4-deoxy- β -D-glucopyranose, A-268
 Benzyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
 Benzyl 2-acetamido-2,4-dideoxy- α -D-*xylo*-hexopyranose, A-398
 Butirosin BU 1975C₁, B-138
 Butirosin BU 1975C₂, B-138
tert-Butyl 2,4-dideoxy-3,5-*O*-isopropylidene-*erythro*-hexonate, D-598
 4-Deoxy-4-fluoroarabinose; α -L-Pyranose-form, D-69
 4-Deoxy-4-fluoroarabinose; β -L-Pyranose-form, D-69
 4-Deoxy-4-fluoromannose; D-form, D-103
 4-Deoxy- α -D-*xylo*-hexopyranosyl 4-deoxy- α -D-*xylo*-hexopyranoside, D-195
 4-Deoxy-*lyxo*-hexose; D-form, D-204
 4-Deoxy-*xylo*-hexose; D-form, D-210
 4-Deoxy-*threo*-2-hexulose; D-form; 6-Phosphate, D-223
 4-Deoxy-*threo*-2-hexulose; D-form, D-223
 4-Deoxy-*threo*-pentose; L-Pyranose-form, D-350
 4-Deoxy-*erythro*-pentose; DL-form, D-347
 4-Deoxy-*erythro*-pentose; D-form, D-347
 4-Deoxy-*erythro*-pentose; L-form, D-347
 4-Deoxysucrose, D-365
 2,6-Diacetamido-2,3,4,6-tetra-deoxy-D-*erythro*-hexose diethyl dithioacetal, D-471
 2,3-Di-*O*-acetyl-1,6-anhydro-4-deoxy- β -D-*lyxo*-hexopyranose, A-554
 2,6-Diamino-2,3,4,6-tetra-deoxy-*erythro*-hexose; α -D-Pyranose-form; Me glycoside, 6-*N*-Me, 2,6-di-*N*-Ac, D-471
 2,6-Diamino-2,3,4,6-tetra-deoxy-*erythro*-hexose; D-form, D-471
 1,6,2,3-Dianhydro-4-deoxy-*lyxo*-hexopyranose; β -D-form, D-494
 1,6,2,3-Dianhydro-4-deoxy-*ribo*-hexopyranose; β -D-form, D-495
 3,6-Di-*O*-benzoyl-2,4-dideoxy-D-*threo*-hexopyranose, D-615
 4,6-Dideoxy-4-dimethylaminoglucose, A-382
 2,4-Dideoxy-*erythro*-hexose; D-form, D-609
 2,4-Dideoxy-*threo*-hexose; D-form, D-615
 Ethyl 4-deoxy- β -L-*erythro*-pentopyranoside, D-347
 Ethyl 2,6-diacetamido-2,3,4,6-tetra-deoxy- α -D-*erythro*-hexopyranoside, D-471
 Ethyl 3,4,6-trideoxy-3-dimethylamino- α -D-*xylo*-hexopyranoside, T-151
 Ethyl 3,4,6-trideoxy-3-dimethylamino- β -D-*xylo*-hexopyranoside, T-151
 Galantinic acid, G-212
 Lyxosylamine; β -D-Pyranose-form; *N*-Ac, L-77
 Lyxosylamine; β -D-Pyranose-form; *N*,2,3,4-Tetra-Ac, L-77
 Menthyl 2,3,6-tri-*O*-acetyl-4-deoxy- β -L-*xylo*-hexopyranoside, D-210
 Methyl 2-acetamido-3-*O*-acetyl-2,4-dideoxy- α -DL-*erythro*-pentopyranoside, A-411
 Methyl 2-acetamido-3-*O*-acetyl-2,4-dideoxy- β -DL-*erythro*-pentopyranoside, A-411
 Methyl 2-acetamido-3-*O*-acetyl-2,4-dideoxy- α -L-*threo*-pentopyranoside, A-412
 Methyl 2-acetamido-3-*O*-acetyl-2,4-dideoxy- β -L-*threo*-pentopyranoside, A-412
 Methyl 2-acetamido-3-*O*-acetyl-2,4-dideoxy- α -DL-*threo*-pentopyranoside, A-412
 Methyl 2-acetamido-3-*O*-acetyl-2,4-dideoxy- β -DL-*threo*-pentopyranoside, A-412
 Methyl 3-acetamido-6-*O*-benzyl-3,4-dideoxy- β -D-*xylo*-hexopyranoside, A-400
 Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
 Methyl 2-acetamido-3,6-di-*O*-acetyl-2,4-dideoxy- β -D-*xylo*-hexopyranoside, A-398
 Methyl 2-acetamido-3,6-di-*O*-benzoyl-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
 Methyl 2-acetamido-3,6-di-*O*-benzyl-2,4-dideoxy- β -D-*xylo*-hexopyranoside, A-398
 Methyl 2-acetamido-2,4-dideoxy- α -D-*xylo*-hexopyranoside, A-398
 Methyl 2-acetamido-2,4-dideoxy- β -D-*xylo*-hexopyranoside, A-398
 Methyl 2-acetamido-2,4-dideoxy- β -DL-*erythro*-pentopyranoside, A-411
 Methyl 2-acetamido-2,4-dideoxy- α -DL-*erythro*-pentopyranoside, A-411
 Methyl 2-acetamido-2,4-dideoxy- α -L-*threo*-pentopyranoside, A-412
 Methyl 2-acetamido-2,4-dideoxy- β -L-*threo*-pentopyranoside, A-412
 Methyl 2-acetamido-2,4-dideoxy- α -DL-*threo*-pentopyranoside, A-412
 Methyl 2-acetamido-2,4-dideoxy- β -DL-*threo*-pentopyranoside, A-412
 Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- α -D-glucopyranoside, A-268
 Methyl 4-acetamido-2,3,6-tri-*O*-acetyl-4-deoxy- β -D-glucopyranoside, A-268
 Methyl 3-*O*-acetyl-2,4-dideoxy-2-dibenzylamino- α -DL-*threo*-pentopyranoside, A-412

Methyl 3-*O*-acetyl-2,4-dideoxy-2-dibenzylamino-β-DL-*threo*-pentopyranoside, A-412
 Methyl 4-amino-4-deoxy-α-D-glucopyranoside, A-268
 Methyl 3-amino-3,4-dideoxy-α-D-*xylo*-hexopyranoside, A-400
 Methyl 3-amino-3,4-dideoxy-β-D-*xylo*-hexopyranoside, A-400
 Methyl 2-amino-2,4-dideoxy-α-DL-*erythro*-pentopyranoside, A-411
 Methyl 2-amino-2,4-dideoxy-α-DL-*threo*-pentopyranoside, A-412
 Methyl 2,3-anhydro-4-deoxy-α-D-*lyxo*-hexopyranoside, A-555
 Methyl 2,3-anhydro-4-deoxy-β-D-*lyxo*-hexopyranoside, A-555
 Methyl 2,3-anhydro-4-deoxy-α-DL-*lyxo*-hexopyranoside, A-555
 Methyl 2,3-anhydro-4-deoxy-α-DL-*ribo*-hexopyranoside, A-558
 Methyl 4-deoxy-2,3-di-*O*-methyl-α-D-*xylo*-hexopyranoside, D-210
 Methyl 4-deoxy-4-fluoro-α-L-arabinopyranoside, D-69
 Methyl 4-deoxy-4-fluoro-β-L-arabinopyranoside, D-69
 Methyl 4-deoxy-α-D-*xylo*-hexopyranoside, D-210
 Methyl 4-deoxy-β-D-*xylo*-hexopyranoside, D-210
 Methyl 4-deoxy-α-D-*threo*-2-hexulofuranoside, D-223
 Methyl 4-deoxy-β-D-*threo*-2-hexulofuranoside, D-223
 Methyl 4-deoxy-β-DL-*erythro*-pentopyranoside, D-347
 Methyl 4-deoxy-β-L-*threo*-pentopyranoside, D-350
 Methyl 4-deoxy-α-D-*erythro*-pentopyranoside, D-347
 Methyl 4-deoxy-β-D-*erythro*-pentopyranoside, D-347
 Methyl 4-deoxy-β-L-*erythro*-pentopyranoside, D-347
 Methyl 2,6-diacetamido-2,3,4,6-tetra-deoxy-α-D-*erythro*-hexopyranoside, D-471
 Methyl 2,3-di-*O*-acetyl-4-deoxy-β-DL-*erythro*-pentopyranoside, D-347
 Methyl 2,3-di-*O*-acetyl-4-deoxy-β-D-*erythro*-pentopyranoside, D-347
 Methyl 2,6-diamino-2,3,4,6-tetra-deoxy-α-D-*erythro*-hexopyranoside, 9CI, D-471
 Methyl 3,6-di-*O*-benzoyl-2,4-dideoxy-D-*erythro*-hexopyranoside, D-609
 Methyl 2,3-di-*O*-benzyl-4-deoxy-β-L-*arabino*-hexodialdopyranoside, D-184
 Methyl 2,3-di-*O*-benzyl-4-deoxy-α-D-*xylo*-hexodialdopyranoside, D-185
 Methyl 2,3-di-*O*-benzyl-4-deoxy-β-L-*arabino*-hexopyranoside, D-201
 Methyl 2,3-di-*O*-benzyl-4-deoxy-α-D-*xylo*-hexopyranoside, D-210
 Methyl 4,6-dideoxy-4-dimethylamino-β-D-glucopyranoside, A-382
 Methyl 4,6-dideoxy-4-dimethylamino-α-D-glucopyranoside, A-382
 Methyl 3,4-dideoxy-4-*C*-methyl-6-*O*-trityl-α-D-*threo*-hexopyranosid-2-ulose, D-633
 Methyl 3,4-dideoxy-β-D-*glycero*-pentopyranoside, T-28
 Methyl 3,4-dideoxy-α-D-*glycero*-pentopyranoside, T-28
 Methyl 3,4-dideoxy-β-L-*glycero*-pentopyranoside, T-28
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-α-D-*xylo*-hexopyranoside, D-210
 Methyl 2,3,6-tri-*O*-acetyl-4-deoxy-β-D-*xylo*-hexopyranoside, D-210
 Methyl 2,3,6-tri-*O*-benzoyl-4-deoxy-β-D-*xylo*-hexopyranoside, D-210
 Phenyl 4-deoxy-β-D-*xylo*-hexopyranoside, D-210
 1,2,3,6-Tetra-*O*-acetyl-4-deoxy-α-L-*threo*-hex-4-enopyranose, H-79
 1,2,3,6-Tetra-*O*-acetyl-4-deoxy-β-D-*xylo*-hexopyranose, D-210
 1,2,3,6-Tetra-*O*-benzoyl-4-deoxy-α-L-*threo*-hex-4-enopyranose, H-79
 Tetrahydro-2*H*-pyran-2,3-diol; (2*RS*,3*RS*)-*form*; 2-Me ether, 3-Ac, T-28
 Tetrahydro-2*H*-pyran-2,3-diol; (2*RS*,3*RS*)-*form*; 2-Me ether, T-28
 1,3,6-Tri-*O*-benzoyl-2,4-dideoxy-β-D-*threo*-hexopyranose, D-615
 3,4,6-Trideoxy-3-dimethylamino-*xylo*-hexose; D-*form*; Di-Ac, T-151
 3,4,6-Trideoxy-3-dimethylamino-*xylo*-hexose; D-*form*, T-151
 3,4,6-Trideoxy-3-dimethylamino-*xylo*-hexose; L-*form*, T-151
 1,3,5-Trihydroxy-2-pentanone; (S)-*form*, T-175

5-Deoxy sugars

3-Acetamido-3,5-dideoxy-1,2-*O*-isopropylidene-α-D-ribofuranose, A-414
 5'-(9-Adenynyl)-2',5'-dideoxyribofuranosyladenine; β-D-*form*, A-29
 3-Amino-3,5-dideoxy-1,2-*O*-isopropylidene-α-D-lyxofuranose, A-404
 3-Amino-3,5-dideoxy-1,2-*O*-isopropylidene-α-D-ribofuranose, A-414
 3-Amino-3,5-dideoxylyxose; β-D-Furanose-*form*; N-(3,5-Dinitrobenzoyl), A-404
 3-Amino-3,5-dideoxylyxose; β-D-Furanose-*form*; 1,2-*O*-Isopropylidene, N-(3,5-dinitrobenzoyl), A-404
 3-Amino-3,5-dideoxylyxose; β-D-Furanose-*form*; 1,2-*O*-Isopropylidene, N-trifluoroacetyl, A-404
 3-Amino-3,5-dideoxyribose; α-D-Furanose-*form*; N-Trifluoroacetyl, 1,2-di-Ac, A-414
 3,6-Anhydro-5-deoxy-5-fluoro-1,2-*O*-isopropylidene-α-L-idofuranose, A-519
 Antibiotic AC4437, A-740
 Ashimycin A, A-869
 5'-Azido-5'-deoxythymidine; 3'-Ac, A-915
 5'-Azido-5'-deoxythymidine, A-915
 1-*O*-Benzoyl-2,3-*O*-isopropylidene-β-DL-*erythro*-pentopyranos-4-ulose, P-44
 Benzyl 2-benzamido-2,5-dideoxy-α-D-ribofuranoside, A-413
 Benzyl 2-*O*-benzyl-3-*C*-benzyloxymethyl-3,5-dideoxy-α-L-lyxofuranoside, D-622
 5'-Bromo-5'-deoxythymidine; 3'-Ac, B-100

5'-Bromo-5'-deoxythymidine, B-100
 5-Bromo-5'-deoxyuridine, B-125
 5-Bromouridine; 5'-Deoxy, 2',3'-*O*-isopropylidene, B-125
 5'-Chloro-5'-deoxyadenosine, C-69
 N-Demethylstreptomycin, S-83
 5'-Deoxyadenosine, D-29
 5-Deoxy-L-arabinose diethyl dithioacetal, D-41
 5-Deoxyarabinose; β-D-Furanose-*form*; 1,2-Isopropylidene, 3-Ac, D-41
 5-Deoxyarabinose; L-*form*, D-41
 5'-Deoxy-2-fluoroadenosine; 2',3'-Di-Ac, D-64
 5'-Deoxy-2-fluoroadenosine, D-64
 5-Deoxy-3-*C*-formyl-1,2-*O*-isopropylidene-β-L-lyxofuranose, S-85
 5-Deoxy-*ribo*-hexose; D-*form*, D-207
 5-Deoxy-*xylo*-hexose; D-*form*, D-211
 5-Deoxy-*erythro*-2-hexulose; D-Pyranose-*form*, D-220
 5-Deoxy-*threo*-2-hexulose; D-*form*, D-224
 5-Deoxy-1,2-*O*-isopropylidene-β-D-arabinofuranoside, D-41
 5-Deoxy-1,2-*O*-isopropylidene-β-L-arabinofuranoside, D-41
 5-Deoxy-2,3-*O*-isopropylidene-D-arabinose diethyl acetal, D-41
 5-Deoxy-2,3-*O*-isopropylidene-D-arabinose diethyl dithioacetal, D-41
 5-Deoxy-1,2-*O*-isopropylidene-α-D-*xylo*-hexofuranoside, D-211
 5-Deoxy-1,2-*O*-isopropylidene-3-*O*-mesyl-β-L-arabinofuranoside, D-41
 5-Deoxy-1,2-*O*-isopropylidene-3-*O*-mesyl-α-D-xylofuranose, D-386
 5-Deoxy-1,2-*O*-isopropylidene-β-D-*threo*-pentofuranos-3-ulose, D-337
 5-Deoxy-1,2-*O*-isopropylidene-β-L-*threo*-pentofuranos-3-ulose, D-337
 5-Deoxy-1,2-*O*-isopropylidene-α-D-*erythro*-pentofuranos-3-ulose, P-43
 5-Deoxy-2,3-*O*-isopropylidene-4-*O*-tosyl-D-arabinose diethyl acetal, D-41
 5-Deoxy-1,2-*O*-isopropylidene-α-D-xylofuranose, D-386
 5-Deoxy-1,4-lyxonolactone; L-*form*, D-285
 5-Deoxyribose; D-*form*, D-362
 5-Deoxyribose; L-*form*, D-362
 2-Deoxystreptomycin, S-83
 5-Deoxyxylose; D-*form*, D-386
 3,6-Di-*O*-benzoyl-5-deoxy-1,2-*O*-isopropylidene-α-D-*ribo*-hexofuranose, D-207
 2',5'-Dideoxyadenosine, D-557
 2',5'-Dideoxy-5'-fluorouridine; 3'-Ac, D-572
 2',5'-Dideoxy-5'-fluorouridine, D-572
 2',5'-Dideoxy-5-fluorouridine, D-573
 2,5-Dideoxy-D-*threo*-1,4-pentonolactone, D-707
 2,5-Dideoxy-L-*erythro*-1,4-pentonolactone, D-707
 2,5-Dideoxy-D-*erythro*-1,4-pentonolactone, D-707
 2,5-Dideoxy-L-*threo*-1,4-pentonolactone, D-707
 Dihydro-3,4-dihydroxy-5-methyl-2(3*H*)-furanone; (3*R*,4*R*,5*S*)-*form*, D-672
 Dihydro-3,4-dihydroxy-5-methyl-2(3*H*)-furanone; (3*R*,4*S*,5*R*)-*form*, D-672
 Dihydro-3,4-dihydroxy-5-methyl-2(3*H*)-furanone; (3*S*,4*S*,5*R*)-*form*, D-672
 3,4-Dihydroxypentanoic acid; (4*R*,5*R*)-*form*, D-707
 Ethyl 1,3,4-tri-*O*-acetyl-5-deoxy-β-D-*threo*-hex-2-ulopyranoside, D-224
 Methyl 2,3-anhydro-5-deoxy-α-D-ribofuranoside, 9CI, A-690
 Methyl 2,3-anhydro-5-deoxy-β-D-ribofuranoside, 9CI, A-690
 Methyl 5-chloro-5-deoxy-α-D-ribofuranoside, C-100
 Methyl 5-deoxy-2,3-*O*-isopropylidene-β-D-*ribo*-hexofuranoside, D-207
 Methyl 5-deoxy-2,3-*O*-isopropylidene-β-D-ribofuranoside, D-362
 Methyl 5-deoxy-D-ribofuranoside, D-362
 Methyl 2,3-*O*-isopropylidene-β-L-*erythro*-pentopyranosid-4-ulose, 8CI, P-44
 Methyl 2,3-*O*-isopropylidene-β-DL-*erythro*-pentopyranosid-4-ulose, P-44
 Streptomycin, S-83
 Streptose; L-*form*, S-85
 1,2,3-Tri-*O*-acetyl-5-deoxy-β-D-ribofuranose, D-362

2,6-Dideoxy sugars

2-Acetamido-2,6-dideoxy-L-galactose, A-375
 2-Acetamido-2,6-dideoxy-D-galactose, A-375
 3-Acetamido-2,3,6-trideoxy-L-*xylo*-hexopyranose, A-463
 3-Acetamido-2,3,6-trideoxy-D-*lyxo*-hexose, A-461
 4-*O*-Acetyl-6-deoxy-3-*O*-methyl-D-glucal, D-679
 4-*C*-Acetyl-2,6-dideoxy-*xylo*-hexose; L-*form*, A-18
 3-*O*-Acetyl-2,6-dideoxy-*lyxo*-hexose, D-610
 4-*O*-Acetyl-2,6-dideoxy-3-*C*-methyl-L-*ribo*-hexopyranose, D-636
 4-*O*-Acetyl-3-*C*-methyl-3-*O*-methyl-L-*xylo*-hexose, D-637
 4-*O*-Acetyl-3-*O*-methyl-L-rhamnal, D-679
 3-*O*-Acetyl-L-rhamnal, D-679
 4-*O*-Acetyl-L-rhamnal, D-679
 Adriamycin, A-58
 2-Amino-2,6-dideoxyallitol; D-*form*; 1,2*N*,3,4,5-Penta-Ac, A-363
 2-Amino-2,6-dideoxyallitol; D-*form*, A-363
 2-Amino-2,6-dideoxygalactose; L-*form*, A-375
 2-Amino-2,6-dideoxygalactose; DL-*form*, A-375

- 2-Amino-2,6-dideoxygalactose; *D-form*, A-375
 3-Amino-2,3,6-trideoxy-*lyxo*-hexose; *D-form*, A-461
 3-Amino-2,3,6-trideoxy-*lyxo*-hexose; *L-form*, A-461
 3-Amino-2,3,6-trideoxy-*ribo*-hexose; *L-form*, A-462
 3-Amino-2,3,6-trideoxy-3-*C*-methyl-*ribo*-hexose; α -*L*-Pyranose-*form*; Me glycoside, *N-Ac*, A-465
 4-Amino-2,4,6-trideoxy-3-*O*-methyl-*ribo*-hexose; α -*D*-Pyranose-*form*; Me glycoside, *N-Me*, *N-Ac*, A-467
 3-Amino-2,3,6-trideoxy-3-*C*-methyl-*ribo*-hexose; *L-form*, A-465
 4-Amino-2,4,6-trideoxy-3-*O*-methyl-*ribo*-hexose; *D-form*, A-467
 4-Amino-2,4,6-trideoxy-3-*O*-methyl-*arabino*-hexose, A-459
 1,5-Anhydro-4-*O*-benzoyl-2,6-dideoxy-3-*O*-methyl-*L-arabino*-hex-1-enitol, D-679
 1,5-Anhydro-3,4-di-*O*-benzoyl-2,6-dideoxy-*D-threo*-hexa-1,5-dienitol, A-579
 1,5-Anhydro-2,6-dideoxy-*threo*-hexa-1,5-dienitol; *D-form*, A-579
 1,5-Anhydro-2,6-dideoxy-*D-arabino*-hex-1-enitol, D-679
 Avobiose, A-882
 3-Benzamido-2,3,6-trideoxy-*D-lyxo*-hexose, A-461
 3-Benzamido-2,3,6-trideoxy-*L-lyxo*-hexose, A-461
 3-Benzamido-2,3,6-trideoxy-*L-ribo*-hexose, A-462
 3-*O*-Benzoyl-*L-rhamnal*, D-679
 4-*O*-Benzoyl-*L-rhamnal*, D-679
 Benzyl 4-*O*-acetyl-3-*O*-benzyl-2,6-dideoxy- α -*L-lyxo*-hexopyranoside, D-610
 Benzyl 3,4-anhydro-2,6-dideoxy- α -*L-ribo*-hexopyranoside, A-591
 Benzyl 3,4-di-*O*-acetyl-2,6-dideoxy- α -*L-lyxo*-hexopyranoside, D-610
 Brevobiose, B-51
 Butyl 2,6-dideoxy- β -*DL-arabino*-hexopyranoside, D-607
 Butyl 2,6-dideoxy-3-*O*-methyl- β -*DL-arabino*-hexopyranoside, D-607
 Cytosaminomycin A, C-220
 3,4-Di-*O*-acetyl-1,5-anhydro-2,6-dideoxy-*D-threo*-hexa-1,5-dienitol, A-579
 3,5-Di-*O*-acetyl-2,6-dideoxy-*D-arabino*-hexono-1,4-lactone, D-596
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl- α -*L-ribo*-hexose, D-636
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -*D-ribo*-hexopyranose, D-636
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -*L-ribo*-hexopyranose, D-636
 1,4-Di-*O*-acetyl-3-(dimethylamino)-2,3,6-trideoxy-*D-arabino*-hexose, D-726
 3,4-Di-*O*-acetyl-*D-rhamnal*, D-679
 3,4-Di-*O*-acetyl-*L-rhamnal*, D-679
 1,4-Di-*O*-benzoyl-2,6-dideoxy-3-*O*-methyl-*arabino*- α -*L*-hexopyranose, D-607
 3,4-Di-*O*-benzoyl-*L-rhamnal*, D-679
 2,6-Dideoxy-3-*O*-ethyl-*L-arabino*-hexopyranose, D-607
 2,6-Dideoxy-*D-ribo*-hexono-1,4-lactone, T-166
 2,6-Dideoxy-*D-arabino*-1,4-hexonolactone, D-596
 2,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -*L-form*; Me glycoside, 3-(*tert*-butyldimethylsilyl), D-600
 2,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -*L-form*; Me glycoside, 3-(2-methoxyethoxymethyl), D-600
 2,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -*L-form*, D-600
 2,6-Dideoxy-*threo*-hexopyranos-4-ulose; α -*L-form*, D-603
 2,6-Dideoxy- α -*D-ribo*-hexopyranosyl 2,6-dideoxy- α -*D-ribo*-hexopyranoside, D-604
 2,6-Dideoxy-*xylo*-hexose; *D-form*, D-616
 2,6-Dideoxy-*arabino*-hexose; *D-form*, D-607
 2,6-Dideoxy-*arabino*-hexose; *L-form*, D-607
 2,6-Dideoxy-*lyxo*-hexose; *D-form*, D-610
 2,6-Dideoxy-*lyxo*-hexose; *L-form*, D-610
 2,6-Dideoxy-*ribo*-hexose; *D-form*, D-612
 2,6-Dideoxy-*ribo*-hexose; *L-form*, D-612
 2,6-Dideoxy-3-*O*-methyl-*ribo*-hexonic acid, T-166
 2,6-Dideoxy-3-*O*-methyl-*D-ribo*-hexono-1,4-lactone, T-166
 2,6-Dideoxy-3-*O*-methyl-*D-ribo*-hexono-1,5-lactone, T-166
 2,6-Dideoxy-3-*O*-methyl-*D-xylo*-hexose, 9CI, 8CI, D-616
 2,6-Dideoxy-3-*C*-methyl-*arabino*-hexose; *D-form*, D-634
 2,6-Dideoxy-3-*C*-methyl-*arabino*-hexose; *L-form*, D-634
 2,6-Dideoxy-3-*C*-methyl-*ribo*-hexose; *D-form*, D-636
 2,6-Dideoxy-3-*C*-methyl-*ribo*-hexose; *DL-form*, D-636
 2,6-Dideoxy-3-*C*-methyl-*xylo*-hexose; *L-form*, D-637
 2,6-Dideoxy-3-*O*-methyl-*lyxo*-hexose; *D-form*, D-638
 2,6-Dideoxy-3-*O*-methyl-*lyxo*-hexose; *L-form*, D-638
 2,6-Dideoxy-3-*O*-methyl-*D-arabino*-hexose, D-607
 2,6-Dideoxy-3-*O*-methyl-*L-arabino*-hexose, D-607
 2,6-Dideoxy-4-*O*-methyl-*D-lyxo*-hexose, D-610
 2,6-Dideoxy-3-*O*-methyl-*D-ribo*-hexose, D-612
 2,6-Dideoxy-3-*O*-methyl-*L-ribo*-hexose, D-612
 2,6-Dideoxy-4-*O*-methyl-*L-ribo*-hexose, D-612
 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*D-ribo*-hexose, 9CI, D-636
 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*D-xylo*-hexose, 9CI, D-637
 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*L-ribo*-hexose, D-636
 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*L-xylo*-hexose, D-637
 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*L-xylo*-hexose, D-637
 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*D-xylo*-hexose, D-637
 2,6-Dideoxy-4-*O*-methyl- α -*D-arabino*-hexopyranoside, D-607
 2,6-Dideoxy-4-*O*-methyl- α -*L-arabino*-hexopyranoside, D-607
 2,6-Dideoxy-4-*O*-methyl- α -*D-lyxo*-hexopyranoside, D-610
 2,6-Dideoxy-4-*O*-methyl- β -*D-lyxo*-hexopyranoside, D-610
 2,6-Dideoxy-4-thio-*ribo*-hexose; *D-form*, D-656
 2,6-Dideoxy-4-thio-*ribo*-hexose; D-656
 Digilanidobiose, D-664
 Digoxose, D-669
 3,4-Dihydro-2-methyl-2*H*-pyran-3,4-diol; (2*S*,3*R*,4*S*)-*form*, D-679
 4-(Dimethylamino)-2,3,4,6-tetradeoxy-*threo*-hexose; *D-form*, D-725
 3-(Dimethylamino)-2,3,6-trideoxy-*arabino*-hexose; *D-form*, D-726
 Dresitetraoside, G-331
 Dresitrioxide, G-290
 Guanosine diphosphate colitose, G-573
 4-*O*-Isobutyryl-*L-olivomycose*, D-634
 Isorhodomycin A, I-80
 4-*O*-Isovaleroylmucarose, D-636
 Kijanose; *D-form*, K-16
 Leptatriose, L-31
 Methyl 3-acetamido-4-*O*-acetyl-2,3,6-trideoxy- α -*D-lyxo*-hexopyranoside, A-461
 Methyl 3-acetamido-4-*O*-acetyl-2,3,6-trideoxy- α -*L-lyxo*-hexopyranoside, A-461
 Methyl 2-acetamido-2,6-dideoxy- α -*D*-galactopyranoside, A-375
 Methyl 2-acetamido-2,6-dideoxy-3,4-*O*-isopropylidene- α -*D*-galactopyranoside, A-375
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -*D-ribo*-hexopyranoside, 8CI, A-467
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- α -*L-arabino*-hexopyranoside, A-459
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -*L-arabino*-hexopyranoside, A-459
 Methyl 4-acetamido-2,4,6-trideoxy-3-*O*-methyl- β -*D-ribo*-hexopyranoside, A-467
 Methyl 4-*C*-acetyl-2,6-dideoxy- α -*L-xylo*-hexopyranoside, A-18
 Methyl 4-*C*-acetyl-2,6-dideoxy- β -*L-xylo*-hexopyranoside, A-18
 Methyl 3-*O*-acetyl-2,6-dideoxy- α -*D-lyxo*-hexopyranoside, D-610
 Methyl 4-*O*-acetyl-2,6-dideoxy-3-*O*-methyl-*DL-arabino*-hexose, D-607
 Methyl 3-amino-2,3,6-trideoxy- α -*L-lyxo*-hexopyranoside, A-461
 Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -*L-ribo*-hexopyranoside, A-465
 Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy- α -*L-lyxo*-hexopyranoside, A-461
 Methyl 3-benzamido-2,3,6-trideoxy- α -*L-lyxo*-hexopyranoside, A-461
 Methyl 4-*C*-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -*D-threo*-hexopyranoside, P-73
 Methyl 4-*C*-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -*L-threo*-hexopyranoside, P-73
 Methyl 6-deoxy-3-*O*-methyl- β -*D*-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-3-*O*-methyl- β -*D-ribo*-hexopyranoside, D-132
 Methyl 3,4-di-*O*-acetyl-2,6-dideoxy- α -*L-lyxo*-hexopyranoside, D-610
 Methyl 3,5-di-*O*-acetyl- β -*L-lyxo*-hexofuranoside, D-610
 Methyl 3,4-di-*O*-benzoyl-2,6-dideoxy- β -*L-lyxo*-hexopyranoside, D-610
 Methyl 3,4-di-*O*-benzoyl-2,6-dideoxy- α -*D-ribo*-hexopyranoside, D-612
 Methyl 2,6-dideoxy-3,4-di-*O*-tosyl- α -*D-xylo*-hexopyranoside, D-616
 Methyl 2,6-dideoxy- β -*L-lyxo*-hexofuranoside, D-610
 Methyl 2,6-dideoxy- α -*L-ribo*-hexofuranoside, D-612
 Methyl 2,6-dideoxy- β -*L-ribo*-hexofuranoside, D-612
 Methyl 2,6-dideoxy- α -*D-xylo*-hexopyranoside, D-616
 Methyl 2,6-dideoxy- α -*D-arabino*-hexopyranoside, D-607
 Methyl 2,6-dideoxy- β -*D-arabino*-hexopyranoside, D-607
 Methyl 2,6-dideoxy- α -*L-arabino*-hexopyranoside, D-607
 Methyl 2,6-dideoxy- β -*L-arabino*-hexopyranoside, D-607
 Methyl 2,6-dideoxy- α -*DL-arabino*-hexopyranoside, D-607
 Methyl 2,6-dideoxy- α -*L-lyxo*-hexopyranoside, D-610
 Methyl 2,6-dideoxy- β -*L-lyxo*-hexopyranoside, D-610
 Methyl 2,6-dideoxy- α -*D-ribo*-hexopyranoside, D-612
 Methyl 2,6-dideoxy- α -*L-ribo*-hexopyranoside, D-612
 Methyl 2,6-dideoxy- β -*L-ribo*-hexopyranoside, D-612
 Methyl 2,6-dideoxy- α -*L-erythro*-hexopyranosid-3-ulose, D-619
 Methyl 2,6-dideoxy-4-*O*-methoxymethyl- α -*L-erythro*-hexopyranosid-3-ulose, D-619
 Methyl 2,6-dideoxy-3-*O*-methyl- α -*D-ribo*-hexofuranoside, D-612
 Methyl 2,6-dideoxy-3-*C*-methyl- α -*D-ribo*-hexopyranoside, 9CI, 8CI, D-636
 Methyl 2,6-dideoxy-3-*C*-methyl- α -*L-ribo*-hexopyranoside, 8CI, D-636
 Methyl 2,6-dideoxy-3-*O*-methyl- α -*D-xylo*-hexopyranoside, D-616
 Methyl 2,6-dideoxy-3-*O*-methyl- β -*D-xylo*-hexopyranoside, D-616
 Methyl 2,6-dideoxy-3-*C*-methyl- α -*L-arabino*-hexopyranoside, D-634
 Methyl 2,6-dideoxy-3-*C*-methyl- β -*L-arabino*-hexopyranoside, D-634
 Methyl 2,6-dideoxy-3-*C*-methyl- α -*L-xylo*-hexopyranoside, D-637
 Methyl 2,6-dideoxy-3-*C*-methyl- β -*L-xylo*-hexopyranoside, D-637
 Methyl 2,6-dideoxy-3-*O*-methyl-*D-lyxo*-hexopyranoside, D-638
 Methyl 2,6-dideoxy-4-*O*-methyl- α -*D-arabino*-hexopyranoside, D-607
 Methyl 2,6-dideoxy-4-*O*-methyl- α -*L-arabino*-hexopyranoside, D-607
 Methyl 2,6-dideoxy-4-*O*-methyl- α -*D-lyxo*-hexopyranoside, D-610
 Methyl 2,6-dideoxy-4-*O*-methyl- β -*D-lyxo*-hexopyranoside, D-610

Methyl 2,6-dideoxy-3-*O*-methyl- α -D-*ribo*-hexopyranoside, D-612
 Methyl 2,6-dideoxy-4-*O*-methyl- α -L-*ribo*-hexopyranoside, D-612
 Methyl 2,6-dideoxy-4-*O*-methyl- α -L-*erythro*-hexopyranosid-3-ulose, 9CI, D-619
 Methyl 2,6-dideoxy-4-*O*-methyl- β -L-*erythro*-hexopyranosid-3-ulose, 9CI, D-619
 Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -D-*ribo*-hexopyranoside, D-636
 Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -L-*ribo*-hexopyranoside, D-636
 Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -D-*xylo*-hexopyranoside, D-637
 Methyl 2,6-dideoxy-3-*O*-methyl-4-*O*-tosyl- α -D-*ribo*-hexopyranoside, D-612
 Methyl 2,6-dideoxy-4-*O*-(tetrahydro-2*H*-pyran-2-yl)- α -L-*erythro*-hexopyranosid-3-ulose, 9CI, D-619
 Methyl 2,6-dideoxy-4-thio- α -D-*ribo*-hexopyranoside, 9CI, D-656
 Methyl 4-(dimethylamino)-2,3,4,6-tetradeoxy- α -D-*threo*-hexopyranoside, 8CI, D-725
 Methyl 3-(dimethylamino)-2,3,6-trideoxy- α -D-*arabino*-hexopyranoside, D-726
 Methyl 3-(dimethylamino)-2,3,6-trideoxy- β -D-*arabino*-hexopyranoside, D-726
 Methyl α -pachybioside, P-1
 Methyl β -pachybioside, P-1
 Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- α -D-*xylo*-hexopyranoside, K-16
 Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- β -D-*xylo*-hexopyranoside, K-16
 Methyl 3-trichloroacetamido-2,3,6-trideoxy- α -L-*ribo*-hexopyranoside, A-462
 Methyl 2,3,6-trideoxy-3-dimethylamino- β -L-*xylo*-hexopyranoside, A-463
 3-*O*-Methyl-D-rhamnal, D-679
 3-*O*-Methyl-L-rhamnal, D-679
 Mycarose, D-636
 Neocondurangotriose, N-18
 v-Octose; 1,1'-Anhydro, O-17
 v-Octose, O-17
 Ornose, O-37
 Pachybiose, P-1
 Pillarose; L-*form*, P-73
 Tigmbiose, T-115
 1,3,4-Tri-*O*-acetyl-2,6-dideoxy- α -L-*lyxo*-hexopyranose, D-610
 3,4,5-Trihydroxyhexanoic acid; (3*S*,4*R*,5*R*)-*form*; *O*³,*O*⁴-Di-Me, 1,5-lactone, T-166
 3,4,5-Trihydroxyhexanoic acid; (3*S*,4*R*,5*R*)-*form*; *O*³,*O*⁵-Di-Me, 1,4-lactone, T-166
 Viminose, V-18

3,6-Dideoxy sugars

1-*O*-Acetyl-2,5-di-*O*-benzoyl-3,6-dideoxy- α -L-*arabino*-hexofuranose, D-608
 1-*O*-Acetyl-2,5-di-*O*-benzoyl-3,6-dideoxy- β -D-*xylo*-hexofuranose, D-617
 2,5-Di-*O*-benzoyl-3,6-dideoxy- α -L-*arabino*-hexofuranose, D-608
 2,5-Di-*O*-benzoyl-3,6-dideoxy-D-*xylo*-hexofuranose, D-617
 2,4-Di-*O*-benzoyl-3,6-dideoxy-L-*arabino*-hexono-1,5-lactone, D-597
 3,6-Dideoxy-L-*arabino*-hexono-1,5-lactone, D-597
 3,6-Dideoxy-D-*xylo*-hexono-1,4-lactone, D-599
 3,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -D-*form*, D-601
 3,6-Dideoxy-*erythro*-hexopyranos-4-ulose; L-*form*, D-601
 3,6-Dideoxy-*erythro*-hexopyranos-4-ulose, D-601
 3,6-Dideoxy-*arabino*-hexose; D-*form*, D-608
 3,6-Dideoxy-*arabino*-hexose; L-*form*, D-608
 3,6-Dideoxy-*ribo*-hexose; D-*form*, D-613
 3,6-Dideoxy-*ribo*-hexose; L-*form*, D-613
 3,6-Dideoxy-*xylo*-hexose; D-*form*, D-617
 3,6-Dideoxy-*xylo*-hexose; L-*form*, D-617
 3,6-Dideoxy-1,2-*O*-isopropylidene- α -D-*ribo*-hexofuranose, D-613
 3,6-Dideoxy-1,2-*O*-isopropylidene-D-*xylo*-hexofuranose, D-617
 3,6-Dideoxy-1,2-*O*-isopropylidene- α -D-*erythro*-hexopyranos-4-ulose, D-601
 4-(Dimethylamino)-2,3,4,6-tetradeoxy-*threo*-hexose; D-*form*, D-725
 Kasugamycin, K-6
 Methyl 2-acetamido-4-*O*-acetyl-2,3,6-trideoxy- β -L-*lyxo*-hexopyranoside, A-460
 Methyl 2-acetamido-2,3,6-trideoxy- β -L-*lyxo*-hexopyranoside, A-460
 Methyl 2,4-di-*O*-acetyl-3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, D-532
 Methyl 2,5-di-*O*-benzoyl-3,6-dideoxy- β -D-*xylo*-hexofuranoside, D-617
 Methyl 3,6-dibromo-3,6-dideoxy- β -D-allopyranoside, 9CI, D-523
 Methyl 3,6-dibromo-3,6-dideoxy- β -D-glucopyranoside, 9CI, D-532
 Methyl 3,6-dideoxy- α -D-*arabino*-hexopyranoside, D-608

Methyl 3,6-dideoxy- β -D-*arabino*-hexopyranoside, D-608
 Methyl 3,6-dideoxy- α -L-*arabino*-hexopyranoside, D-608
 Methyl 3,6-dideoxy- α -D-*ribo*-hexopyranoside, D-613
 Methyl 3,6-dideoxy- β -D-*ribo*-hexopyranoside, D-613
 Methyl 3,6-dideoxy- α -D-*xylo*-hexopyranoside, D-617
 Methyl 3,6-dideoxy- β -L-*xylo*-hexopyranoside, D-617
 Methyl 3,6-dideoxy- α -L-*threo*-hexopyranosid-2-ulose, 9CI, D-193
 Methyl 3,6-dideoxy- α -L-*erythro*-hexopyranosid-4-ulose, D-601
 Methyl 4-(dimethylamino)-2,3,4,6-tetradeoxy- α -D-*threo*-hexopyranoside, 8CI, D-725
 1,2,4-Tri-*O*-acetyl-3,6-dideoxy- α -L-*arabino*-hexopyranose, D-608
 Yersiniose B, Y-2
 Yersiniose; α -Pyranose-*form*; Me glycoside, Y-2
 Yersiniose; β -Pyranose-*form*; Me glycoside, Y-2
 Yersiniose; Tetra-Ac, Y-2
 Yersiniose, Y-2

4,6-Dideoxy sugars

3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside, N-phthalimide, A-457
 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside, N-(trifluoroacetyl), A-457
 Benzyl 2-*O*-benzyl-4,6-dideoxy- α -L-*lyxo*-hexopyranoside, D-611
 Benzyl 2-*O*-benzyl-4,6-dideoxy- β -L-*lyxo*-hexopyranoside, D-611
 2-*O*-Benzyl-4,6-dideoxy-L-*lyxo*-hexose, D-611
 4,6-Dideoxy-2,3-di-*O*-methyl-L-*ribo*-hexose, D-614
 4,6-Dideoxy-2,3-di-*O*-methyl-L-*lyxo*-hexose, D-611
 4,6-Dideoxy-*ribo*-hexose; α -L-Pyranose-*form*; Me glycoside, 2,3-di-Ac, D-614
 4,6-Dideoxy-*xylo*-hexose; L-Pyranose-*form*, D-618
 4,6-Dideoxy-*ribo*-hexose; L-*form*, D-614
 4,6-Dideoxy-*lyxo*-hexose; L-*form*, D-611
 4,6-Dideoxy-*xylo*-hexose; D-*form*, D-618
 4,6-Dideoxy-2,3-*O*-isopropylidene-D-*ribo*-hexopyranose, D-614
 4,6-Dideoxy-3-*O*-methyl-D-*xylo*-hexose, 9CI, 8CI, D-618
 4,6-Dideoxy-2-*O*-methyl-L-*lyxo*-hexose, D-611
 4,6-Dideoxy-3-*O*-methyl-L-*xylo*-hexose, D-618
 4,6-Dideoxy-3-*O*-methyl-L-*lyxo*-hexose, D-611
 4,6-Dideoxysucrose, D-651
 Methyl 2-*O*-benzoyl-4,6-dideoxy- β -L-*ribo*-hexopyranoside, D-614
 Methyl 2-*O*-benzoyl-4,6-dideoxy-3-*O*-methyl- β -L-*ribo*-hexopyranoside, D-614
 Methyl 2-*O*-benzyl 4,6-dideoxy- α -D-*ribo*-hexopyranoside, D-614
 Methyl 2,3-di-*O*-acetyl-4,6-dideoxy- β -L-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy-2,3-di-*O*-methyl- α -L-*lyxo*-hexopyranoside, D-611
 Methyl 4,6-dideoxy-2,3-di-*O*-methyl- α -L-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy-2,3-di-*O*-methyl- β -L-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy- α -L-*ribo*-hexopyranoside, 9CI, D-614
 Methyl 4,6-dideoxy- α -D-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy- β -L-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy- α -L-*xylo*-hexopyranoside, D-618
 Methyl 4,6-dideoxy- α -L-*lyxo*-hexopyranoside, D-611
 Methyl 4,6-dideoxy-2-*O*-methyl- α -D-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy-2-*O*-methyl- α -L-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy-2-*O*-methyl- β -L-*ribo*-hexopyranoside, D-614
 Methyl 4,6-dideoxy-3-*O*-methyl- β -D-*xylo*-hexopyranoside, D-618
 Methyl 4,6-dideoxy-2-*O*-methyl- α -L-*lyxo*-hexopyranoside, D-611
 Methyl 4,6-dideoxy-3-*O*-methyl- α -L-*lyxo*-hexopyranoside, D-611
 Methyl 4,6-dideoxy-2-*O*-tosyl- α -D-*ribo*-hexopyranoside, D-614
 1,2,3-Tri-*O*-acetyl-4,6-dideoxy- β -D-*ribo*-hexopyranose, D-614

Polydeoxy sugars

1-*O*-Acetyl-2,3,6-trideoxy-3-*C*-methyl-4-*O*-methyl-3-nitro-L-*arabino*-hexopyranose, E-37
 Amicetose, D-692
 3-Amino-2,3,4,6-tetradeoxy-*threo*-hexose; α -L-Pyranose-*form*; Me glycoside, N-(trifluoroacetyl), A-450
 4-Amino-2,3,4,6-tetradeoxy-*erythro*-hexose; α -L-Pyranose-*form*; N-(Trifluoroacetyl), A-449
 3-Amino-2,3,4,6-tetradeoxy-*threo*-hexose; α -L-Pyranose-*form*; N-(Trifluoroacetyl), A-450
 2-Amino-2,3,4,6-tetradeoxy-6-methylamino-D-*ribo*-heptose, P-20
 2-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; α -D-*form*; Me glycoside, N-Ac, A-456
 2-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; α -L-*form*; Me glycoside, N-Ac, A-456
 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside, N-benzoyloxycarbonyl, A-457
 3-Amino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; α -L-*form*; Me glycoside, N-(trifluoroacetyl), A-455

3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; *D*-form, A-457
 3-Amino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose, A-455
 2-Amino-2,3,5-trideoxy-3-methyl-L-arabinonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-D-arabinonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-D-lyxonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-L-ribonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-D-xylic acid, A-427
 Antibiotic KA 6606IX, A-755
 Antibiotic KA 6606VIII, A-755
 Antibiotic KA 6606VII, A-755
 Antibiotic KA 6606V, A-755
 Antibiotic KA 6606XIII, A-770
 Antibiotic KA 6606XI, S-68
 Antibiotic KA 6606X, A-755
 Antibiotic SEN 366D₁, A-770
 Antibiotic SEN 366F, A-771
 Antibiotic SF 1854, F-26
 Antibiotic Y 02077Hy, A-780
 Antibiotic Y 02077Hδ, A-780
 Dactimicin, D-1
 1,2,5,6,9,10-Decanehexaol; (2*S*,5*R*,6*R*,9*S*)-form; 1,2:9,10-Di-*O*-isopropylidene, D-16
 1,2,5,6,9,10-Decanehexaol; (2*S*,5*S*,6*S*,9*S*)-form; 1,2:9,10-Di-*O*-isopropylidene, D-16
 Decilonitrose, D-17
 3-*O*-Demethylfortimicin A, F-26
 4''-Demethylgentamicin C₁, G-227
 4''-Demethylgentamicin C₂, G-227
 2,6-Diamino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; *α*-*D*-form; Me glycoside, 2*N*,6*N*-di-Ac, D-477
 2,6-Diamino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; *α*-*D*-form, D-477
 2,3-Dideoxy-*glycero*-hexopyranos-4-ulose; *α*-*D*-form; 6-Deoxy, Me glycoside, oxime, D-602
 4,5-Dihydroxyhexanal; (4*R*,5*R*)-form, D-692
 5,6-Dihydroxyhexanal; (*R*)-form, D-693
 5,6-Dihydroxyhexanal; (*S*)-form, D-693
 2,2-Dimethyl-1,3-dioxolane-4-butanal, D-693
 1-Epidactimicin, D-1
 Ethyl 2,3,6-trideoxy-*α*-*D*-*erythro*-hexopyranose, D-692
 Ethyl 2,3,6-trideoxy-2-*C*-hydroxyacetyl-*α*-*D*-*threo*-hexopyranos-4-uloside, T-157
 Evernitrose; *L*-form, E-37
 2''-Formimidoylspararicin A, S-67
 Fortimicin AE, F-35
 Fortimicin AL, F-31
 Fortimicin AM, F-31
 Fortimicin AP, F-31
 Fortimicin A, F-26
 Fortimicin B, F-32
 Fortimicin E, F-35
 Fortimicin KO₁, F-39
 Fortimicin KO, F-39
 Gentamicin C, G-227
 Gentamine C₂, G-231
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 1,4,5-Hexanetriol; (4*S*,5*R*)-form, H-76
 2-Hydroxy-6-(hydroxymethyl)-1,4-dioxan; (2*R*,6*S*)-form; 2-Me ether, H-149
 2-Hydroxy-6-(hydroxymethyl)-1,4-dioxan; (2*S*,6*R*)-form; 2-Me ether, H-149
 2-Hydroxy-6-(hydroxymethyl)-1,4-dioxan; (2*S*,5*S*)-form; 2-Me ether, H-149
 5-Hydroxy-4-oxohexanal; (*S*)-form, H-188
 6-Methoxy-1,4-dioxan-2-methanol, H-149
 Methyl 2,6-diacetamido-2,3,4,6,7-pentadeoxy-*α*-*D*-*ribo*-heptopyranoside, P-20
 Methyl 2,3,4,6-tetradeoxy-(4-dimethylamino)-*α*-*D*-*erythro*-hexopyranoside, A-449
 Methyl 2,3,4,6-tetradeoxy-4-(methylamino)-*α*-*D*-*erythro*-hexopyranoside, A-449
 Methyl 2,3,6-trideoxy-*α*-*D*-*erythro*-hexopyranoside, D-692
 Methyl 2,3,6-trideoxy-*α*-*D*-*glycero*-hexopyranosid-4-ulose, D-602
 Methyl 2,3,6-trideoxy-*α*-*L*-*glycero*-hexopyranosid-4-ulose, D-602
 Methyl 2,3,6-trideoxy-*α*-*D*-*glycero*-hexos-1,4-diulopyranoside, H-188
 Methyl 2,3,6-trideoxy-2-*C*-hydroxyacetyl-*β*-*L*-*erythro*-hexopyranos-4-uloside, T-156
 Methyl 3,4,6-trideoxy-4-*C*-methyl-*α*-*L*-*threo*-hexopyranosid-2-ulose, D-633
 Methyl 2,3,6-trideoxy-3-*C*-methyl-3-nitro-*α*-*L*-*ribo*-hexopyranoside, D-17
 Methyl 2,3,6-trideoxy-3-*C*-methyl-3-nitro-*β*-*L*-*ribo*-hexopyranoside, D-17
 Narbosine E, H-76
 Purpurosamine B, P-20
 Rhodiose, D-692

Sporaricin A, S-67
 Sporaricin B, S-68
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; *α*-*D*-Pyranose-form; Benzyl glycoside, 2*N*,3*N*,4*N*,6*N*-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; *α*-*D*-Pyranose-form; Benzyl glycoside, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; *α*-*D*-Pyranose-form; Me glycoside, 2*N*,3*N*,4*N*,6*N*-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; *D*-Pyranose-form; 2*N*,3*N*,4*N*,6*N*-Tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; *D*-Pyranose-form, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetradeoxygalactose; *α*-*D*-Pyranose-form, T-18
 2,3,4,6-Tetradeoxy-4-(dimethylamino)-*D*-*erythro*-hexose, 8CI, A-449
 3,4,6-Triamino-3,4,6-trideoxygalactose; *α*-*D*-Pyranose-form; 1,2-*O*-Isopropylidene, 3*N*,4*N*,6*N*-tri-Ac, T-135
 3,4,6-Triamino-3,4,6-trideoxygalactose; *α*-*D*-Pyranose-form; 1,2-*O*-Isopropylidene, 3*N*,4*N*,6*N*-tribenzoyl, T-135
 3,4,6-Triamino-3,4,6-trideoxygalactose; *α*-*D*-Pyranose-form, T-135
 1,3,6-Triamino-1,3,6-trideoxyglucitol; *D**L*-form, T-136
 3,4,5-Triamino-3,4,5-trideoxysorbse; *α*-*L*-Pyranose-form; Benzyl glycoside, 3*N*,4*N*,5*N*-tri-Ac, T-140
 3,4,5-Triamino-3,4,5-trideoxysorbse; *α*-*L*-Pyranose-form; 1,2-*O*-Isopropylidene, 3*N*,4*N*,5*N*-tri-Ac, T-140
 3,4,5-Triamino-3,4,5-trideoxysorbse; *α*-*L*-Pyranose-form, T-140
 2',3',5'-Trideoxyadenosine, T-149
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-*erythro*-hexopyranos-4-ulose; *α*-*D*-form; Et glycoside, 2'-benzoyl, T-156
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-*threo*-hexopyranos-4-ulose; *α*-*D*-form; Et glycoside, 2'-benzoyl, T-157
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-*threo*-hexopyranos-4-ulose; *α*-*D*-form; Et glycoside, 2'-trityl, T-157
 3,4,6-Trideoxy-3,4,6-trifluorogalactopyranosyl fluoride; *α*-*D*-form; Ac, T-159
 3,4,6-Trideoxy-3,4,6-trifluorogalactopyranosyl fluoride; *α*-*D*-form, T-159

6-Deoxyalloses

2-Acetamido-2,6-dideoxy-D-allose, A-364
 5-Acetamido-2,3,4-tri-*O*-acetyl-5,6-dideoxy-*β*-D-allopyranose, A-366
 5-Amino-5,6-dideoxyallose; *D**L*-form; 1,1-Di-Me acetal, 2,3,4,5*N*-tetra-Ac, A-366
 2-Amino-2,6-dideoxyallose; *D*-form, A-364
 Brevobiose, B-51
 6-Deoxyallofuranosyl bromide; *β*-*D*-form; Tris(4-nitrobenzoyl), D-33
 6-Deoxyallose; *D*-form, D-34
 6-Deoxy-2,3-di-*O*-methylallose; *D*-form, D-57
 6-Deoxy-2-*O*-methylallose, 8CI, D-34
 6-Deoxy-3-*O*-methyl-D-allose, D-34
 1,4-Di-*O*-acetyl-6-deoxy-2,3-di-*O*-methyl-D-allose, D-57
 4,6-Dideoxy-4-(*N*-dimethylamino)-D-allose, A-365
 Methyl 4-acetamido-2,3-anhydro-4,6-dideoxy-*α*-D-allopyranoside, A-365
 Methyl 4-acetamido-4,6-dideoxy-*α*-D-allopyranoside, A-365
 Methyl 4-acetamido-4,6-dideoxy-*β*-D-allopyranoside, A-365
 Methyl 4-amino-4,6-dideoxy-*α*-D-allopyranoside, A-365
 Methyl 4-amino-4,6-dideoxy-*β*-D-allopyranoside, A-365
 Methyl 5-amino-5,6-dideoxy-2,3-*O*-isopropylidene-*β*-D-allofuranoside, A-366
 Methyl 2,3-anhydro-5-*O*-benzyl-6-deoxy-*α*-D-allofuranoside, 9CI, A-484
 Methyl 2,3-anhydro-6-deoxy-*α*-D-allopyranoside, A-516
 Methyl 2,3-anhydro-6-deoxy-*α*-L-allopyranoside, A-516
 Methyl 2,3-anhydro-6-deoxy-4-*O*-methyl-*α*-D-allopyranoside, A-516
 Methyl 6-deoxy-2,3-di-*O*-methyl-*β*-D-allopyranoside, D-57
 Methyl 6-deoxy-2-*O*-methyl-*α*-D-allopyranoside, D-34
 Methyl 6-deoxy-3-*O*-methyl-*α*-D-allopyranoside, D-34
 Methyl 6-deoxy-2-*O*-methyl-*β*-D-allopyranoside, D-34
 Methyl 6-deoxy-3-*O*-methyl-*β*-D-allopyranosyl-(1→4)-2-deoxy-*α*-D-*arabino*-hexopyranoside, D-774
 Methyl 6-deoxy-3-*O*-methyl-2-*O*-tosyl-*α*-D-allopyranoside, D-34
 Methyl *α*-pachybioside, P-1
 Methyl *β*-pachybioside, P-1
 Neocondurangotriose, N-18
 Pachybiose, P-1

6-Deoxyaltroses

3-Amino-3,6-dideoxyaltrose; *D*-form, A-369
 3-Amino-3,6-dideoxyaltrose; *L*-form, A-369
 6-Deoxy-*β*-L-altropyranosyl-(1→2)-6-deoxy-*β*-L-altropyranosyl-(1→3)-6-deoxy-L-altrose; *β*-Pyranose-form, D-36
 6-Deoxy-*β*-L-altropyranosyl-(1→2)-6-deoxy-*β*-L-altropyranosyl-(1→3)-6-deoxy-L-altrose, D-36
 6-Deoxyaltrose; *D*-form, D-37

6-Deoxyaltrose; *L-form*, D-37
 6-Deoxy-3-*O*-methylaltrose; *L-form*, D-292
 6-Deoxy-4-*O*-methyl-D-altrose, D-37
 4,6-Dideoxy-4-(*N*-dimethylamino)-D-altrose, A-370
 Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-altropyranoside, A-369
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-altropyranoside, A-370
 Methyl 3-acetamido-3,6-dideoxy- α -D-altropyranoside, A-369
 Methyl 4-acetamido-4,6-dideoxy- α -D-altropyranoside, A-370
 Methyl 3-acetamido-3,6-dideoxy-2,4-di-*O*-mesyl- α -D-altropyranoside, A-369
 Methyl 4-amino-4,6-dideoxy- α -D-altropyranoside, A-370
 Methyl 2-*O*-benzoyl-3-bromo-2,6-dideoxy- α -L-altropyranoside, B-106
 Methyl 6-deoxy- α -L-altrofuranoside, D-37
 Methyl 6-deoxy-4-*O*-methyl- α -D-altropyranoside, D-37
 Methyl 6-deoxy-4-*O*-methyl- β -D-altropyranoside, D-37
 Methyl 2,3-di-*O*-acetyl-6-deoxy-4-*O*-methyl- α -D-altropyranoside, D-37
 Methyl 2,3-di-*O*-acetyl-4-*O*-methyl- β -D-altropyranoside, D-37
 Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-altropyranoside, A-370
 Methyl 3,6-dideoxy-3-dimethylamino- α -D-altropyranoside, A-369
 1,2,4-Tri-*O*-acetyl-6-deoxy-3-*O*-methyl- α -L-altropyranoside, D-292

6-Deoxygalactoses

2-Acetamido-4-amino-2,4,6-trideoxy-D-galactose, D-473
 4-Acetamido-4,6-dideoxy-D-galactopyranose, A-377
 3-Acetamido-3,6-dideoxy-D-galactose, A-376
 4-Acetamido-1,2,3-tri-*O*-acetyl-4,6-dideoxy- α -D-galactopyranose, A-377
 4-Acetamido-1,2,3-tri-*O*-acetyl-4,6-dideoxy- β -D-galactopyranose, A-377
 2-*O*-Acetyl-3,4-di-*O*-benzyl- α -D-fucopyranosyl chloride, F-96
 2-*O*-Acetyl-3,4-di-*O*-benzyl- β -D-fucopyranosyl fluoride, F-97
 1-*O*-Acetyl-2,3,5-tri-*O*-benzyl- β -D-fucufuranose, F-163
 1-*O*-Acetyl-2,3,4-tri-*O*-benzyl- α -D-fucopyranose, F-163
 Allyl fucopyranoside; α -*L-form*, A-92
 Allyl 3,4-*O*-isopropylidene- α -L-fucopyranoside, A-92
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 4,6-*O*-benzylidene, 3'',4'',6''-tribenzyl, 2*N*,2'*N*,2''*N*,4'-tetra-Ac, A-303
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; Pyranose-*form*; *N,N',N''*-Tri-Ac, A-303
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; Pyranose-*form*, A-303
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; β -Pyranose-*form*, A-303
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose, A-303
 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-L-fucose; β -Pyranose-*form*; *N,N',N''*-Tri-Ac, A-308
 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-L-fucose, A-308
 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -L-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-L-fucose, A-309
 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-fucose; α -Pyranose-*form*; Me glycoside, 2,2'*N*,2''*N*,3',3'',4*N*,4',4''-octa-Ac, Me ester, A-310
 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-fucose; α -Pyranose-*form*; Me glycoside, 2'*N*,2''*N*,4*N*-tri-Ac, A-310
 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-fucose, A-310
 4-Amino-4,6-dideoxygalactose; D-Pyranose-*form*, A-377
 4-Aminophenyl fucopyranoside; α -*L-form*, A-434
 4-Aminophenyl 1-thio- β -D-fucopyranoside, A-439
 4-Aminophenyl 1-thio- α -L-fucopyranoside, A-439
 4-Aminophenyl 1-thio- β -L-fucopyranoside, A-439
 1,2-Anhydro-3,4-di-*O*-benzyl- α -D-fucopyranose, A-610
 1,4-Anhydrofucitol; *L-form*, A-608
 1,6-Anhydro-2-*O*- α -L-fucopyranosyl- β -D-galactopyranose, F-137
 4-*O*-Benzoyl-2,3-di-*O*-benzyl- α -L-fucopyranosyl fluoride, F-97
 4-*O*-Benzoyl-2,3-di-*O*-benzyl- β -L-fucopyranosyl fluoride, F-97
 Benzyl 2-acetamido-4-amino-3-*O*-benzyl-2,4,6-trideoxy- α -D-galactopyranoside, D-473
 Benzyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -D-galactopyranoside, D-473
 Benzyl 2,4-diacetamido-3-*O*-benzyl-2,4,6-trideoxy- α -D-galactopyranoside, D-473
 Benzyl 2,4-diacetamido-2,4,6-trideoxy- α -D-galactopyranoside, D-473

Benzyl 2,4-diacetamido-2,4,6-trideoxy-3-*O*-mesyl- α -D-galactopyranoside, D-473
 Benzyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy- α -D-galactopyranoside, T-130
 2-*O*-Benzyl- α -D-fucopyranose, F-163
 2-*O*-Benzyl- α -L-fucopyranose, F-163
 6-Deoxy-3-*O*-methyl-D-galactose, 9CI, F-163
 6-Deoxy-3-*O*-methyl-L-galactose, F-163
 2,4-Diacetamido-2,4,6-trideoxy-D-galactose, D-473
 1,2-Di-*O*-acetyl-3,4-di-*O*-methyl- β -D-fucopyranose, F-163
 2,4-Di-*O*-benzyl- α -L-fucopyranose, F-163
 2,3-Di-*O*-benzyl-L-fucose, F-163
 3,4-Di-*O*-benzyl-L-fucose, F-163
 1,2,3,4-Di-*O*-isopropylidene- α -D-fucopyranose, F-163
 2,4-Di-*O*-methyl-D-fucose, F-163
 2,4-Di-*O*-methyl-L-fucose, F-163
 Fuconic acid; D-*form*, F-93
 Fuconic acid; L-*form*, F-93
 Fucopyranosyl azide; β -*L-form*, F-94
 Fucopyranosyl chloride; α -*L-form*, F-96
 Fucopyranosyl fluoride; α -*L-form*, F-97
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose; α -Pyranose-*form*; Benzyl glycoside, 2'',3'',4''-tribenzyl, *N,N'*-di-Ac, F-100
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose; α -Pyranose-*form*; Benzyl glycoside, 2'',3'',4''-tribenzyl, 3,4:4',6'-di-*O*-isopropylidene, *N,N'*-di-Ac, F-100
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose; α -Pyranose-*form*; *N,N'*-Di-Ac, F-100
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; α -Pyranose-*form*; 1,2,2'*N*,2'',3'',4,4',4'',6,6'-Deca-Ac, F-101
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Me glycoside, nona-Ac, F-101
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; α -Pyranose-*form*, F-101
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*, F-101
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose, F-102
 α -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Furanose-*form*; 1,2:5,6-Di-*O*-isopropylidene, 2',3'-dibenzyl, F-108
 β -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Furanose-*form*; 1,2:5,6-Di-*O*-isopropylidene, 2',3'-dibenzyl, F-109
 α -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Furanose-*form*, F-108
 β -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Furanose-*form*, F-109
 α -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Pyranose-*form*; Me glycoside, 2,2',3',4,6-pentabenzyl, F-108
 β -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Pyranose-*form*; Me glycoside, 2,2',3',4,6-pentabenzyl, F-109
 β -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Pyranose-*form*; Me glycoside, F-109
 α -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose; α -Pyranose-*form*, F-108
 β -L-Fucopyranosyl-(1 \rightarrow 4)- α -L-fucopyranosyl-(1 \rightarrow 3)-D-glucose, F-109
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; 2'',4'-Di-Me, *N*-Ac, F-119
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; 2''-Me, *N*-Ac, F-119
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; α -Pyranose-*form*; *N*-Ac, F-119
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; α -Pyranose-*form*, F-119
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-galactose; α -Pyranose-*form*, F-119
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N*-Ac, F-123
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N*-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; Benzyl glycoside, 4',6'-*O*-benzylidene, 2'',3'',4'',6-pentabenzyl, *N*-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; Benzyl glycoside, 4',6'-*O*-benzylidene, 2'',3'',4'',6-pentabenzyl, 3'-benzoyl, *N*-Ac, F-124
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; Benzyl glycoside, 4,6:4',6'-di-*O*-benzylidene, 2'',3'',4''-tribenzyl, *N*-Ac, F-123
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; Benzyl glycoside, 4,6:4',6'-di-*O*-benzylidene, 2'',3'',4''-tribenzyl, 3'-benzoyl, *N*-Ac, F-123

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- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 8-Ethoxycarbonyloctyl glycoside, 2',3',4'-tribenzyl, 2N,2'',3'',4'',6,6''-hexa-Ac, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Me glycoside, N-Ac, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Me glycoside, 2',3',4',6-tetrabenzyl, N-Ac, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Me glycoside, 2',3',4',6-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Ph glycoside, N-Ac, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Ph glycoside, 2',3',4'-tribenzyl, 2N,2'',3'',4'',6,6''-hexa-Ac, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; β -Pyranose-form, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-galactopyranosyl-(1 \rightarrow 4)]-2-amino-2-deoxy-D-glucose, F-125
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, F-126
- α -L-Fucopyranosyl-(1 \rightarrow 6)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, F-127
- β -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, 2,6-dibenzyl, 2',2'',3'',3'',4'',4'',6''-heptabenzoyl, F-151
- β -L-Fucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, 2,2'',3'',4'',6,6''-hexabenzyl, 2',3',4'-tri-Ac, F-149
- β -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, 2,2'',3'',4'',6,6''-hexabenzyl, F-148
- β -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, 2,2'',3'',4'',6,6''-hexabenzyl, F-150
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, 2,2',2'',3'',3'',4'',4'',6,6''-nonabenzyl, F-144
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, 2,2',2'',3'',3'',4'',4'',6,6''-nonabenzyl, F-145
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, 2,2',3',4',6-pentabenzyl, 2'',3'',4'',6''-tetrabenzoyl, F-146
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, 2,2',3',4',6-pentabenzyl, 2'',3'',4'',6''-tetrabenzoyl, F-147
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, F-144
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, F-145
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, F-146
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, F-147
- β -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, F-148
- β -L-Fucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, F-149
- β -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form; Me glycoside, F-150
- β -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, F-151
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form, F-144
- α -L-Fucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form, F-145
- α -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form, F-146
- β -L-Fucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form, F-148
- β -L-Fucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form, F-149
- β -L-Fucopyranosyl-(1 \rightarrow 3)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose; α -Pyranose-form, F-150
- β -L-Fucopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form, F-151
- Fucose 1-dihydrogen phosphate; β -L-Pyranose-form; 2,3,4-Tribenzoyl, F-164
- Fucose 1-dihydrogen phosphate; β -L-Pyranose-form, F-164
- Fucose; α -D-Pyranose-form, F-163
- Fucose; D-form, F-163
- Fucose; L-form, F-163
- β -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose; α -Pyranose-form; Me glycoside, 2',2'',3'',3'',4'',4'',6''-octa-Me, G-439
- β -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose; α -Pyranose-form, G-439
- 3,4-O-Isopropylidene- α -D-fucopyranose, F-163
- 1,2-O-Isopropylidene-3-O-methyl- α -D-fucopyranose, F-163
- 1,2-O-Isopropylidene-5-thio- α -L-fucopyranose, T-64
- Methyl 3-acetamido-2-O-acetyl-3,6-dideoxy- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-4-O-acetyl-3,6-dideoxy- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-4-O-acetyl-3,6-dideoxy-2-O-mesyl- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-2,4-di-O-acetyl-3,6-dideoxy- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-O-mesyl- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-2,4-di-O-mesyl- α -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- α -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy- β -L-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-4-O-mesyl- β -D-galactopyranoside, A-376
- Methyl 3-acetamido-3,6-dideoxy-2-O-mesyl- α -L-galactopyranoside, A-376
- Methyl 4-O-acetyl-2,3-di-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 3-O-acetyl-2,4-di-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 2-O-acetyl-3,4-di-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 2-O-acetyl- α -L-fucopyranoside, M-183
- Methyl 2-O-acetyl-3,4-O-isopropylidene- α -L-fucopyranoside, M-198
- Methyl 2-O-acetyl-3-O-trityl- α -L-fucopyranoside, M-183
- Methyl 3-amino-3,6-dideoxy- β -D-galactopyranoside, 9CI, A-376
- Methyl 4-amino-4,6-dideoxy- α -D-galactopyranoside, A-377
- Methyl 2-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 3-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 3,4-O-benzylidene-2-O-methyl-1-thio- β -L-fucopyranoside, T-63
- Methyl 2-O-benzyl-3,4-O-isopropylidene- α -L-fucopyranoside, M-198
- Methyl 3,4-di-O-acetyl-2-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 2,4-di-O-acetyl- α -L-fucopyranoside, M-183
- Methyl 3,4-di-O-acetyl- α -L-fucopyranoside, M-183
- Methyl 3,4-di-O-acetyl-2-O-methyl- α -L-fucopyranoside, M-183
- Methyl 2,4-di-O-acetyl-3-O-methyl- α -L-fucopyranoside, M-183
- Methyl 2,3-di-O-benzoyl- α -L-fucopyranoside, M-183
- Methyl 2,3-di-O-benzoyl-1-thio- β -L-fucopyranoside, T-63
- Methyl 2,3-di-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 2,4-di-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 3,4-di-O-benzyl- α -L-fucopyranoside, M-183
- Methyl 2,4-di-O-benzyl-3-O-methyl- α -L-fucopyranoside, M-183
- Methyl 3,4-di-O-benzyl-2-O-methyl- α -L-fucopyranoside, M-183
- Methyl 3,4-di-O-methyl- α -L-fucopyranoside, M-183
- Methyl α -D-fucufuranoside, F-163
- Methyl β -D-fucufuranoside, F-163
- Methyl α -L-fucufuranoside, F-163
- Methyl fucopyranoside; α -D-form, M-183
- Methyl fucopyranoside; β -D-form, M-183
- Methyl fucopyranoside; α -L-form, M-183
- Methyl fucopyranoside; β -L-form, M-183
- Methyl 2-O- α -L-fucopyranosyl- α -D-galactopyranoside, F-137
- Methyl 2-O- α -L-fucopyranosyl- β -D-galactopyranoside, F-137
- Methyl 3,4-O-isopropylidene-fucopyranoside; α -L-form, M-198
- Methyl 3,4-O-isopropylidene-fucopyranoside; β -D-form, M-198
- Methyl 3,4-O-isopropylidene-2-O-methyl-1-thio- β -L-fucopyranoside, T-63
- Methyl 3,4-O-isopropylidene-1-thio- β -L-fucopyranoside, T-63
- Methyl 3,4-O-isopropylidene-2-O-tosyl- α -L-fucopyranoside, M-198
- Methyl 3-O-methyl- α -D-fucopyranoside, M-183
- Methyl 2-O-methyl- α -L-fucopyranoside, M-183
- Methyl 3-O-methyl- α -L-fucopyranoside, M-183
- Methyl 4-O-methyl- α -L-fucopyranoside, M-183
- Methyl 3-O-methyl- β -L-fucopyranoside, M-183
- Methyl 2-O-methyl-1-thio- β -L-fucopyranoside, T-63
- Methyl 1-thio- β -L-fucopyranoside, T-63
- Methyl 2-O-tosyl- α -L-fucopyranoside, M-183
- Methyl 2,3,5-tri-O-acetyl- β -D-fucufuranoside, F-163
- Methyl 2,3,4-tri-O-acetyl- α -D-fucopyranoside, M-183
- Methyl 2,3,4-tri-O-acetyl- β -D-fucopyranoside, M-183
- Methyl 2,3,4-tri-O-acetyl- α -L-fucopyranoside, M-183
- Methyl 2,3,4-tri-O-acetyl- β -L-fucopyranoside, M-183
- Methyl 2,3,4-tri-O-benzoyl- β -D-fucopyranoside, M-183
- Methyl 2,3,4-tri-O-benzoyl- α -L-fucopyranoside, M-183

Methyl 2,3,5-tri-*O*-benzyl- α -D-fucofuranoside, F-163
 Methyl 2,3,5-tri-*O*-benzyl- β -D-fucofuranoside, F-163
 Methyl 2,3,4-tri-*O*-benzyl- α -D-fucopyranoside, M-183
 Methyl 2,3,4-tri-*O*-benzyl- α -L-fucopyranoside, M-183
 Methyl 2,3,5-tri-*O*-methyl- β -D-fucofuranoside, F-163
 Methyl 3-*O*-trityl- α -L-fucopyranoside, M-183
 Methyl 2-*O*-trityl- α -L-fucopyranoside, M-183
 1-*O*-*N*-Methylacetimidyl-2,3,4-tri-*O*-benzylfucopyranose; β -L-*form*, M-218
 2-*O*-Methyl-D-fucose, F-163
 4-*O*-Methyl-D-fucose, F-163
 2-*O*-Methyl-L-fucose, F-163
 4-*O*-Methyl-L-fucose, F-163
 4-Nitrophenyl fucoside; α -L-Pyranose-*form*; Tri-Ac, N-63
 4-Nitrophenyl fucoside; β -L-Pyranose-*form*; Tri-Ac, N-63
 4-Nitrophenyl fucoside; α -D-Pyranose-*form*, N-63
 4-Nitrophenyl fucoside; β -D-Pyranose-*form*, N-63
 4-Nitrophenyl fucoside; α -L-Pyranose-*form*, N-63
 4-Nitrophenyl fucoside; β -L-Pyranose-*form*, N-63
 Phenyl 2,3,4-tri-*O*-benzyl- α -L-fucopyranosyl sulfoxide, T-63
 2-Propenyl 6-deoxy-2-*O*-methyl- α -L-galactopyranoside, A-92
 2-Propenyl 2,3-di-*O*-benzyl-6-deoxy- α -D-galactopyranoside, A-92
 2-Propenyl 2,4-di-*O*-benzyl-6-deoxy- α -L-galactopyranoside, A-92
 2-Propenyl 3,4-di-*O*-benzyl-6-deoxy- α -L-galactopyranoside, A-92
 3-*O*-Sulfo- β -D-galactopyranosyl(1 \rightarrow 3)-[α -L-fucopyranosyl](1 \rightarrow 4)]-2-acetamido-2-deoxy-D-glucopyranose, S-97
 1,2,3,4-Tetra-*O*-acetyl- α -D-fucopyranose, F-163
 1,2,3,4-Tetra-*O*-acetyl- β -D-fucopyranose, F-163
 1,2,3,4-Tetra-*O*-acetyl- α -L-fucopyranose, F-163
 1,2,3,4-Tetra-*O*-acetyl- β -L-fucopyranose, F-163
 1,2,3,4-Tetra-*O*-acetyl-5-thio- α -L-fucopyranose, T-64
 2,3,4,6-Tetraamino-2,3,4,6-tetra-deoxygalactose; α -D-Pyranose-*form*; Benzyl glycoside, 2N,3N,4N,6N-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetra-deoxygalactose; α -D-Pyranose-*form*; Benzyl glycoside, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetra-deoxygalactose; α -D-Pyranose-*form*; Me glycoside, 2N,3N,4N,6N-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetra-deoxygalactose; D-Pyranose-*form*; 2N,3N,4N,6N-tetra-Ac, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetra-deoxygalactose; D-Pyranose-*form*, T-18
 2,3,4,6-Tetraamino-2,3,4,6-tetra-deoxygalactose; α -D-Pyranose-*form*, T-18
 5-Thiofucose; α -L-Pyranose-*form*, T-64
 2,3,4-Tri-*O*-acetyl-6-deoxy- β -L-galactopyranosyl azide, F-94
 2,3,4-Tri-*O*-acetyl- α -L-fucopyranose, F-163
 2,3,4-Tri-*O*-acetyl- β -L-fucopyranose, F-163
 2,3,4-Tri-*O*-acetyl- α -L-fucopyranosyl chloride, F-96
 2,3,4-Tri-*O*-acetyl- α -L-fucopyranosyl fluoride, F-97
 1,2,4-Tri-*O*-acetyl-3-*O*-methyl- α -D-fucopyranoside, F-163
 1,2,4-Tri-*O*-acetyl-3-*O*-methyl- β -D-fucopyranoside, F-163
 3,4,6-Triamino-3,4,6-tri-deoxygalactose; α -D-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3N,4N,6N-tri-Ac, T-135
 3,4,6-Triamino-3,4,6-tri-deoxygalactose; α -D-Pyranose-*form*; 1,2-*O*-Isopropylidene, 3N,4N,6N-tribenzoyl, T-135
 3,4,6-Triamino-3,4,6-tri-deoxygalactose; α -D-Pyranose-*form*, T-135
 2,3,4-Tri-*O*-benzoyl- α -D-fucopyranosyl fluoride, F-97
 2,3,4-Tri-*O*-benzyl- α -D-fucopyranose, F-163
 2,3,4-Tri-*O*-benzyl- α -L-fucopyranose, F-163
 2,3,4-Tri-*O*-benzyl-L-fucose, F-163
 2,3,4-Tri-*O*-chlorosulfonyl- α -L-fucopyranosyl chloride, F-96
 2,3,4-Tri-*O*-chlorosulfonyl- β -L-fucopyranosyl chloride, F-96
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose; α -Pyranose-*form*; Me glycoside, X-56
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose, X-56

6-Deoxyglucoses

4-Acetamido-2-amino-2,4,6-trideoxy-D-glucose, D-474
 2-Acetamido-1,4-anhydro-2-deoxy-5,6-*O*-isopropylidene-arabino-hex-1-enitol; D-*form*, A-6
 2-Acetamido-2,6-dideoxy-3,4-di-*O*-methyl-L-glucose, A-380
 2-Acetamido-2,6-dideoxy-L-glucose, A-380
 3-Acetamido-3,6-dideoxy-L-glucose, A-381
 2-Acetamido-4,6-dideoxy-D-glucose, A-382
 2-Acetamido-2,6-dideoxy-D-glucose, A-380
 2-Acetamido-1,3,4-tri-*O*-acetyl-2,6-dideoxy- β -D-glucopyranose, A-380
 2-Acetamido-1,3,4-tri-*O*-acetyl-2,6-dideoxy- β -L-glucopyranose, A-380
 3-Acetamido-1,2,4-tri-*O*-acetyl-3,6-dideoxy- α -L-glucopyranose, A-381
 3-Acetamido-1,2,4-tri-*O*-acetyl-3,6-dideoxy- β -L-glucopyranose, A-381
 2-Acetamido-1,3,4-tri-*O*-acetyl-2,6-dideoxy- α -D-glucopyranose, A-380
 2-*O*-Acetyl-3,5-di-*O*-benzoyl-6-deoxy- β -D-glucopyranosyl fluoride, D-128
 4-*O*-Acetyl-3,6-di-*O*-benzyl-D-galactal, G-1

2-Amino-2-deoxy- α -L-galactopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -D-quinovosyl-(1 \rightarrow 3)-D-rhamnose; α -Pyranose-*form*; 2'-N,2''-N-Di-Ac, A-205
 2-Amino-2-deoxy- α -L-galactopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -D-quinovosyl-(1 \rightarrow 3)-D-rhamnose; α -Pyranose-*form*, A-205
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; N,N'-Di-Ac, A-243
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-*form*; 2'',3'',4''-Tribenzyl, 1,2N,2'N,3',4',6,6'-hepta-Ac, A-243
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-[α -L-fucopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, A-243
 3-Amino-3,6-dideoxyglucose; β -D-Pyranose-*form*; N,N-Di-Me, A-381
 2-Amino-2,6-dideoxyglucose; L-*form*, A-380
 3-Amino-3,6-dideoxyglucose; D-*form*, A-381
 3-Amino-3,6-dideoxyglucose; L-*form*, A-381
 4-Amino-4,6-dideoxyglucose; D-*form*, A-382
 2-Amino-2,6-dideoxyglucose; D-*form*, A-380
 5-Amino-5,6-dideoxy-1,2-*O*-isopropylidene- α -D-glucufuranose, A-383
 4-Aminophenyl fucopyranoside; α -D-*form*, A-434
 1,2-Anhydro-3,4-di-*O*-benzyl-6-deoxy- α -D-glucopyranose, A-524
 1,2-Anhydro-3,4-di-*O*-benzyl-6-deoxy- α -L-glucopyranose, A-524
 1,3-Anhydro-2,4-di-*O*-benzyl- β -D-glucopyranose, A-525
 6-(4-Azido-2-hydroxy-3,5-diiodobenzamido)-6-deoxyglucose; D-*form*, A-925
 5-*O*-Benzoyl-3-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-glucufuranose, D-283
 Benzyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -D-glucopyranoside, D-474
 Benzyl 2,4-diacetamido-3-*O*-benzyl-2,4,6-trideoxy- α -D-glucopyranoside, D-474
 Benzyl 2,4-diacetamido-2,4,6-trideoxy- α -D-glucopyranoside, D-474
 Benzyl 2,4-diacetamido-2,4,6-trideoxy-3-*O*-mesyl- α -D-glucopyranoside, D-474
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-glucufuranose, D-283
 5-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene-3-*O*-mesyl- α -D-glucufuranose, D-283
 2-Bromo-2,6-dideoxy-L-glucono-1,4-lactone, B-107
 Cerberose, D-142
 6-Deoxy-1,2,3,5-di-*O*-isopropylidene- α -D-glucufuranose, D-283
 6-Deoxy-2,4,3,5-di-*O*-methylene-L-glucitol, D-127
 6-Deoxyglucitol; D-*form*, D-127
 6-Deoxyglucitol; L-*form*, D-127
 6-Deoxyglucopyranosyl fluoride; α -D-*form*, D-130
 2-*O*-(6-Deoxy- α -L-glucopyranosyl)-D-galactose, D-133
 2-*O*-(6-Deoxy- β -L-glucopyranosyl)-D-galactose, D-134
 6-Deoxyglucose; α -D-Pyranose-*form*, D-142
 6-Deoxyglucose; L-*form*, D-142
 6-Deoxyglucose; D-*form*, D-142
 6-Deoxyglucose, D-142
 6-Deoxy-1,2-*O*-isopropylidene-3,5-di-*O*-mesyl- α -D-glucufuranose, D-283
 6-Deoxy-1,2-*O*-isopropylidene-glucufuranose; α -D-*form*, D-283
 6-Deoxy-2,4-*O*-methylene-D-glucitol, D-127
 6-Deoxy-2,4-*O*-methylene-L-glucitol, D-127
 6-Deoxy-3-*O*-methyl-D-glucose, D-142
 1-*O*-(6-Deoxy-6-sulfoglucopyranosyl)glycerol; α -D-*form*, D-368
 6-Deoxy-5-thioglucofuranose; D-*form*, D-373
 2,4-Diacetamido-1,3-di-*O*-acetyl-2,4,6-trideoxy-D-glucopyranose, D-474
 2,4-Diacetamido-2,4,6-trideoxy-D-glucose, D-474
 2,4-Diamino-2,4,6-trideoxyglucose; D-*form*, D-474
 3,5-Di-*O*-benzoyl-6-deoxy- β -D-glucufuranosyl fluoride, D-128
 2,3-Di-*O*-benzoyl-6-deoxy-4-*O*-tosyl- α -D-glucopyranose, D-142
 2,3-Di-*O*-benzoyl-6-deoxy-4-*O*-tosyl- β -D-glucopyranose, D-142
 3,5-Di-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-glucufuranose, D-283
 3,6-Dideoxy-3-dimethylamino-D-glucose, A-381
 3,6-Dideoxy-3-formamido-D-glucose, A-381
 3,6-Dideoxy-3-(L-glyceroylamino)-D-glucose, A-381
 3,6-Dideoxy-1,2-*O*-isopropylidene-3-C-methyl- α -D-glucufuranose, D-630
 3,6-Dideoxy-1,2-*O*-isopropylidene-3-C-methyl- α -D-glucopyranose, D-630
 2,6-Dideoxy-2-(N-methylamino)-L-glucose, A-380
 4,6-Dideoxy-4-(N-methylamino)-D-glucose, A-382
 Dresitetraxide, G-331
 Dresitrioxide, G-290
 Ethyl 6-deoxy-3-*O*-methyl- β -L-glucopyranoside, D-142
 Methyl 3-acetamido-2-*O*-acetyl-3,6-dideoxy- β -D-glucopyranoside, A-381
 Methyl 3-acetamido-2-*O*-acetyl-3,6-dideoxy- α -L-glucopyranoside, A-381
 Methyl 3-acetamido-4-*O*-acetyl-3,6-dideoxy- α -L-glucopyranoside, A-381
 Methyl 3-acetamido-2,4-di-*O*-acetyl-2,6-dideoxy- β -D-glucopyranoside, A-381
 Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -L-glucopyranoside, A-381
 Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-glucopyranoside, A-381

Methyl 3-acetamido-3,6-dideoxy- β -D-glucopyranoside, A-381
 Methyl 3-acetamido-3,6-dideoxy- α -L-glucopyranoside, A-381
 Methyl 3-acetamido-3,6-dideoxy- β -L-glucopyranoside, A-381
 Methyl 2-acetamido-2,6-dideoxy- α -D-glucopyranoside, A-380
 Methyl 3-acetamido-3,6-dideoxy- α -L-gulopyranoside, A-384
 Methyl 3-acetamido-3,6-dideoxy- β -L-gulopyranoside, A-384
 Methyl 4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside, A-382
 Methyl 3-amino-3,6-dideoxy- α -D-glucopyranoside, A-381
 Methyl 3-amino-3,6-dideoxy- β -D-glucopyranoside, A-381
 Methyl 3-amino-3,6-dideoxy- α -L-glucopyranoside, A-381
 Methyl 3-amino-3,6-dideoxy- β -L-glucopyranoside, A-381
 Methyl 4-amino-4,6-dideoxy- α -D-glucopyranoside, A-382
 Methyl 6-azido-6-deoxy- α -D-glucopyranoside, A-910
 Methyl 6-deoxy-2,3-di-*O*-methyl- α -D-glucopyranoside, D-142
 Methyl 6-deoxy-3,4-di-*O*-tosyl- β -D-glucopyranoside, D-142
 Methyl 6-deoxy- α -D-glucopyranoside, D-142
 Methyl 6-deoxy- β -D-glucopyranoside, D-142
 Methyl 6-deoxy-4-*O*-methyl- α -D-glucopyranoside, D-142
 Methyl 6-deoxy-3-*O*-methyl- α -D-glucopyranoside, D-142
 Methyl 6-deoxy-3-*O*-methyl- β -D-glucopyranoside, D-142
 Methyl 6-deoxy-3-*O*-methyl- β -D-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-3-*O*-methyl- β -D-*ribo*-hexopyranoside, D-132
 Methyl 6-deoxy-2,3,4-tri-*O*-tosyl- β -D-glucopyranoside, D-142
 Methyl 3,4-diacetamido-3,4,6-trideoxy- α -D-glucopyranoside, D-475
 Methyl 3,4-diacetamido-3,4,6-trideoxy-2-*O*-methyl- α -L-glucopyranoside, D-475
 Methyl 2,3-di-*O*-acetyl-4-(acetylmethylamino)-4,6-dideoxy- α -D-glucopyranoside, A-382
 Methyl 2,4-di-*O*-acetyl-3-amino-3,6-dideoxy- α -L-glucopyranoside, A-381
 Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-deoxy- α -D-glucopyranoside, D-142
 Methyl 2,4-di-*O*-acetyl-6-deoxy-3-*O*-methyl- α -D-glucopyranoside, D-142
 Methyl 2,4-di-*O*-acetyl-6-deoxy-3-*O*-methyl- β -D-glucopyranoside, D-142
 Methyl 3,4-diamino-3,4,6-trideoxy-2-*O*-methyl- α -L-glucopyranoside, D-475
 Methyl 2,3-di-*O*-benzyl-6-deoxy- α -D-glucopyranoside, D-142
 Methyl 3,6-dideoxy-3-dimethylamino- α -D-glucopyranoside, A-381
 Methyl 3,6-dideoxy-3-dimethylamino- α -L-glucopyranoside, A-381
 Methyl 4,6-dideoxy-4-methylamino- α -D-glucopyranoside, A-382
 Methyl 3,6-dideoxy-3-*C*-methyl- α -D-glucopyranoside, D-630
 Methyl 2,3,4-tri-*O*-acetyl-6-azido-6-deoxy- α -D-glucopyranoside, A-910
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-5-thio- α -D-glucopyranoside, D-373
 Methyl 2,3,4-tri-*O*-benzoyl-6-deoxy- α -D-glucopyranoside, D-142
 L-Mycaminose, A-381
 1,2,3,4,5-Penta-*O*-acetyl-6-deoxy-D-glucitol, D-127
 1,2,3,4,5-Penta-*O*-acetyl-6-deoxy-L-glucitol, D-127
 Phenyl 2-*O*-acetyl-3,5-di-*O*-benzoyl-6-deoxy- α -D-glucofuranoside, P-55
 Phenyl 2-*O*-acetyl-3,5-di-*O*-benzoyl-6-deoxy- β -D-glucofuranoside, P-55
 Phenyl 6-deoxyglucofuranoside; β -D-*form*, P-55
 Phenyl 3,5-di-*O*-benzoyl-6-deoxy- β -D-glucofuranoside, P-55
 Phyllanthose, P-71
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-6-deoxy-D-glucose; α -Pyranose-*form*; Me glycoside, R-49
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-6-deoxy-D-glucose, R-49
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- α -L-glucopyranose, D-142
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- β -L-glucopyranose, D-142
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- α -D-glucopyranose, D-142
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- β -D-glucopyranose, D-142
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-5-thio-D-glucopyranose, D-373
 2,3,4-Tri-*O*-acetyl-6-deoxy- α -D-glucopyranosyl bromide, D-129
 2,3,4-Tri-*O*-acetyl-6-deoxy- α -L-glucopyranosyl bromide, D-129
 1,2,4-Tri-*O*-acetyl-6-deoxy-3-*O*-methyl- α -L-glucopyranose, D-142
 1,2,4-Tri-*O*-acetyl-6-deoxy-3-*O*-methyl- β -L-glucopyranose, D-142
 1,2,4-Tri-*O*-acetyl-6-deoxy-3-*O*-methyl- α -D-glucopyranose, D-142
 1,2,4-Tri-*O*-acetyl-6-deoxy-3-*O*-methyl- β -D-glucopyranose, D-142
 2,3,4-Tri-*O*-benzoyl-6-deoxy- α -D-glucopyranosyl bromide, D-129
 2,3,4-Tri-*O*-benzoyl-6-deoxy- α -L-glucopyranosyl bromide, D-129
 Viminose, V-18

6-Deoxyguloses

6-Amino-2,5-anhydro-1,6-dideoxyglucitol; D-*form*, A-148
 6-Amino-2,5-anhydro-1,6-dideoxyglucitol; L-*form*, A-148
 2,5-Anhydro-1,6-dideoxy-1-dimethylamino-D-gulitol, A-148
 Benzyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -L-gulopyranoside, D-146
 6-Deoxy-3-*O*- β -D-galactopyranosyl-D-gulose, D-124
 6-Deoxygulose; α -D-Pyranose-*form*; Me glycoside, 2,3-*O*-isopropylidene, 4-mesyl, D-146
 6-Deoxygulose; D-*form*, D-146
 6-Deoxy-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-gulofuranose, D-146
 6-Deoxy-2,3-*O*-isopropylidene-4-*O*-methyl- β -L-gulopyranosyl chloride, D-145
 6-Deoxy-3-*O*-methylgulose, 8CI, D-146

6-Deoxy-3-*C*-methylgulose; L-*form*, D-302
 6-Deoxy-3-*C*-methylgulose, D-302
 Erycordinobiose, E-12
 Methyl 4-*O*-acetyl-2,3-anhydro-6-deoxy- α -D-gulopyranoside, A-527
 Methyl 4-*O*-acetyl-2,3-anhydro-6-deoxy- β -D-gulopyranoside, A-527
 Methyl 3-*O*-acetyl-6-deoxy- α -D-gulopyranoside, D-146
 Methyl 4-*O*-acetyl-6-deoxy-2,3-*O*-isopropylidene- α -D-gulopyranoside, D-146
 Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
 Methyl 2,3-anhydro-6-deoxy- α -D-gulopyranoside, 9CI, 8CI, A-527
 Methyl 2,3-anhydro-6-deoxy- β -D-gulopyranoside, 9CI, A-527
 Methyl 6-deoxy-2,3-*O*-isopropylidene- α -D-gulopyranoside, D-146
 Methyl 6-deoxy-3-*C*-methyl- α -D-gulopyranoside, D-302
 Methyl 6-deoxy-3-*C*-methyl- β -D-gulopyranoside, D-302
 Methyl 2,3-diamino-2,3,6-trideoxy- α -L-gulopyranoside, D-476
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -D-gulopyranoside, D-146
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- β -D-gulopyranose, D-146

6-Deoxyidoses

Benzyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- β -L-idopyranoside, D-480
 Benzyl 2,4-diacetamido-2,4,6-trideoxy- β -L-idopyranoside, D-480
 Benzyl 2,4-diacetamido-2,4,6-trideoxy-3-*O*-mesyl- β -L-idopyranoside, D-480
 6-Deoxy-4-*O*- β -D-galactopyranosyl-L-idose, D-125
 6-Deoxy-4-*O*- α -D-glucopyranosyl-L-idose, D-140
 6-Deoxy-4-*O*- β -D-glucopyranosyl-L-idose, D-141
 6-Deoxyidose; D-*form*, D-238
 6-Deoxyidose; L-*form*, D-238
 6-Deoxy-1,2-*O*-isopropylidene- β -L-idofuranose, D-238
 2,4-Diacetamido-2,4,6-trideoxy-L-idopyranose, D-480
 3,4-Di-*O*-acetyl-6-deoxy-1,2-*O*-isopropylidene- β -L-idofuranose, D-238
 3,6-Dideoxy-3-dimethylamino-D-idose, A-402
 β -D-Fructofuranosyl 6-deoxy- β -L-idopyranoside, F-54
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-idopyranoside, A-402
 Methyl 3-acetamido-2,4-di-*O*-acetyl- α -L-idopyranoside, A-402
 Methyl 4-acetamido-2,3-di-*O*-benzyl-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 3-acetamido-3,6-dideoxy- α -L-idopyranoside, A-402
 Methyl 4-acetamido-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 3-acetamido-3,6-dideoxy- α -D-idopyranoside, A-402
 Methyl 3-acetamido-3,6-dideoxy- β -D-idopyranoside, A-402
 Methyl 3-*O*-acetyl-2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 2-amino-3-benzylamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
 Methyl 3-amino-3,6-dideoxy- α -D-idopyranoside, A-402
 Methyl 3-amino-3,6-dideoxy- β -L-idopyranoside, A-402
 Methyl 4-amino-4,6-dideoxy- α -D-idopyranoside, A-403
 Methyl 3-amino-3,6-dideoxy- β -D-idopyranoside, A-402
 Methyl 3-amino-3,6-dideoxy- α -L-idopyranoside, A-402
 Methyl 2-amino-2,3,6-trideoxy-3-methylamino- α -L-idopyranoside, D-479
 Methyl 3-benzamido-2,4-di-*O*-benzoyl-3,6-dideoxy- α -D-idopyranoside, A-402
 Methyl 6-deoxy- β -L-idopyranoside, 9CI, D-238
 Methyl 6-deoxy- α -D-idopyranoside, D-238
 Methyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- α -L-idopyranoside, D-480
 Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 2,3-diamino-2,3,6-trideoxy- α -L-idopyranoside, D-479
 Methyl 2,4-diamino-2,4,6-trideoxy- α -D-idopyranoside, D-480
 Methyl 3,6-dideoxy-3-dimethylamino- α -L-idopyranoside, A-402
 Methyl 4,6-dideoxy-4-(*N*-dimethylamino)- α -D-idopyranoside, A-403
 Methyl 3,6-dideoxy-3-dimethylamino- α -D-idopyranoside, A-402
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-1,2-*O*-isopropylidene- β -L-idopyranoside, D-238

6-Deoxymannoses

3-Acetamido-3,6-dideoxy-D-mannose, A-407
 4-Acetamido-4,6-dideoxy-D-mannose, A-408
 2-Acetamido-2,3,6-trideoxy-3-formamido-D-mannose, D-482
 Allyl 4-*O*-acetyl- α -L-rhamnopyranoside, A-95
 Allyl 4-*O*-benzyl- α -D-rhamnopyranoside, A-95
 Allyl 4-*O*-benzyl- α -L-rhamnopyranoside, A-95
 Allyl 3,4-di-*O*-benzyl- α -L-rhamnopyranoside, A-95
 Allyl 2,4-di-*O*-benzyl- α -D-rhamnopyranoside, A-95

- Allyl 3,4-di-*O*-benzyl- α -D-rhamnopyranoside, A-95
 Allyl 2,4-di-*O*-methyl- α -L-rhamnopyranoside, A-95
 Allyl 2,3-*O*-isopropylidene- α -D-rhamnopyranoside, A-95
 Allyl 2,3-*O*-isopropylidene- α -L-rhamnopyranoside, A-95
 Allyl 4-*O*-methyl- α -L-rhamnopyranoside, A-95
 Allyl rhamnopyranoside; α -L-*form*, A-95
 Allyl 2,3,4-tri-*O*-acetyl- α -L-rhamnopyranoside, A-95
 Allyl 2,3,4-tri-*O*-benzyl- α -D-rhamnopyranoside, A-95
 Allyl 2,3,4-tri-*O*-methyl- α -L-rhamnopyranoside, A-95
 2-Amino-2-deoxy- α -L-galactopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -D-quinovosyl-(1 \rightarrow 3)-D-rhamnose; α -Pyranose-*form*; 2',2''*N*-Di-Ac, A-205
 2-Amino-2-deoxy- α -L-galactopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -D-quinovosyl-(1 \rightarrow 3)-D-rhamnose; α -Pyranose-*form*, A-205
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; Pyranose-*form*; *N*-Ac, A-304
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; Pyranose-*form*; *N*-Ac, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*; Benzyl glycoside, 2,2'',3'',4,4''-pentabenzyl, 2*N*'',3'',6'',6''-tetra-Ac, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*; Benzyl glycoside, 2',3',4-tribenzyl, *N*-Ac, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*; Benzyl glycoside, 2',3',4-tribenzyl, 2,2''*N*,3'',4'',6'',6''-hexa-Ac, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*; Benzyl glycoside, 2',3',4-tribenzyl, 2,2''*N*,3'',4'',6'',6''-hexa-Ac, A-307
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*; 1,2',2''*N*,3,3',3'',4,4'',6'-Deca-Ac, A-304
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; Pyranose-*form*; 1,2,2',2''*N*,3,3',3'',4,4'',6',6''-Deca-Ac, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; Pyranose-*form*; 2',3',3'',4,6'-Hexabenzyl, *N*-Ac, A-304
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*; 1,2''*N*,4,6'-Tetra-Ac, A-304
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; Pyranose-*form*; 2*N*'',3'',6'',6''-Tetra-Ac, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; Pyranose-*form*; 2''*N*,6'',6'-Tri-Ac, A-304
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*, A-304
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; β -Pyranose-*form*, A-304
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; Pyranose-*form*, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*, A-305
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-*form*, A-306
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*, A-307
 2-Amino-2-deoxy- β -D-mannopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose, A-304
 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-*form*; Me glycoside, 3,3',3''-tribenzyl, *N,N',N''*-triformyl, A-324
 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-*form*; Me glycoside, 2,3',3''-tribenzyl, *N,N',N''*-triformyl, A-325
 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-*form*; Me glycoside, *N,N',N''*-triformyl, A-324
 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-*form*; Me glycoside, *N,N',N''*-triformyl, A-325
 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy-D-rhamnose, A-324
 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-rhamnose, A-325
 2-Amino-2,6-dideoxymannose; D-*form*, A-406
 2-Amino-2,6-dideoxymannose; L-*form*, A-406
 4-Amino-4,6-dideoxymannose; D-*form*, A-408
 2,3-Anhydro-6-deoxy-1,4-mannonolactone; L-*form*, A-566
 1,3-Anhydro-2,4-di-*O*-benzyl- β -D-rhamnopyranose, A-686
 1,3-Anhydro-2,4-di-*O*-benzyl- β -L-rhamnopyranose, A-686
 1,2-Anhydro-3,4-di-*O*-benzyl- β -D-rhamnopyranoside, A-685
 Benzyl 4-*O*-benzyl-2,3-*O*-*exo*-benzylidene- α -L-rhamnopyranoside, B-20
 Benzyl 4-*O*-benzyl-2,3-*O*-*endo*-benzylidene- α -L-rhamnopyranoside, B-20
 Benzyl 4-*O*-benzyl-6-deoxy- β -L-mannopyranoside cyclic thiocarbonate, 8CI, B-20
 Benzyl 5-*O*-benzyl-2,3-di-*O*-methyl- α -L-rhamnofuranoside, B-20
 Benzyl 2,3-*O*-*exo*-benzylidene- α -L-rhamnopyranoside, B-20
 Benzyl 2,3-*O*-*endo*-benzylidene- α -L-rhamnopyranoside, B-20
 Benzyl 5-*O*-benzyl-2,3-*O*-isopropylidene- α -L-rhamnofuranoside, B-20
 Benzyl 4-*O*-benzyl-2,3-*O*-isopropylidene- α -L-rhamnopyranoside, B-20
 Benzyl 4-*O*-benzyl-2,3-*O*-isopropylidene- β -L-rhamnopyranoside, B-20
 Benzyl 5-*O*-benzyl- α -L-rhamnofuranoside, B-20
 Benzyl 4-*O*-benzyl- β -L-rhamnopyranoside 2,3-carbonate, B-20
 Benzyl 2-*O*-benzyl- α -L-rhamnopyranoside, B-20
 Benzyl 3-*O*-benzyl- α -L-rhamnopyranoside, B-20
 Benzyl 4-*O*-benzyl- α -L-rhamnopyranoside, B-20
 Benzyl 4-*O*-benzyl- β -L-rhamnopyranoside, B-20
 Benzyl 2,4-di-*O*-benzyl- α -D-rhamnopyranoside, B-20
 Benzyl 3,4-di-*O*-benzyl- α -D-rhamnopyranoside, B-20
 Benzyl 2,4-di-*O*-benzyl- α -L-rhamnopyranoside, B-20
 Benzyl 3,4-di-*O*-benzyl- α -L-rhamnopyranoside, B-20
 Benzyl 2,3-*O*-isopropylidene-4-*O*-mesyl- α -L-rhamnopyranoside, B-20
 Benzyl 2,3-*O*-isopropylidene- α -L-rhamnopyranoside, B-20
 Benzyl rhamnoside; α -L-Pyranose-*form*, B-20
 Benzyl 2,3,4-tri-*O*-acetyl- α -L-rhamnopyranoside, B-20
 6-Deoxy-3,4-di-*O*-methyl-L-mannose, 9CI, 8CI, R-79
 6-Deoxy-2,3-di-*O*-methyl-L-mannose, 9CI, R-79
 6-Deoxy-2,4-di-*O*-methyl-L-mannose, R-79
 6-Deoxymannonic acid; L-*form*, D-286
 6-Deoxy-D-mannono-1,4-lactone, D-286
 6-Deoxy-2-*O*-methyl-L-mannose, 8CI, R-79
 6-Deoxy-3-*O*-methyl-L-mannose, 9CI, R-79
 6-Deoxy-3-*C*-methylmannose; D-*form*, D-308
 6-Deoxy-4-*O*-methyl-L-mannose, R-79
 6-Deoxy-5-*O*-methyl-L-mannose, R-79
 6-Deoxy-2-*O*- α -L-rhamnopyranosyl-L-talose, D-355
 6-Deoxy-2,3,4-tri-*O*-methyl-L-mannose, 9CI, R-79
 2,3-Diacetamido-2,3,6-trideoxy- β -L-mannopyranose, D-482
 1,5-Di-*O*-acetyl-2,3-*O*-isopropylidene-L-rhamnose, I-72
 2,5-Di-*O*-benzoyl-L-rhamnono-1,4-lactone, D-286
 1,5-Di-*O*-benzyl-2,3-*O*-isopropylidene-L-rhamnose, I-72
 2,6-Dideoxy-*threo*-hexopyranos-4-ulose; α -L-*form*; Me glycoside, 3-Me, D-603
 1,2,3,5-Di-*O*-methylenetherhamnofuranose; β -L-*form*, D-731
 Ethyl 2-*O*-acetyl-1-thio- α -L-rhamnopyranoside, T-86
 Ethyl 2-*O*-acetyl-1-thio- β -L-rhamnopyranoside, T-86
 Ethyl 4-*O*-benzoyl-2,3-*O*-isopropylidene-1-thio- α -L-rhamnopyranoside, T-86
 Ethyl 1-thio- α -L-rhamnopyranoside, T-86
 Ethyl 1-thio- β -L-rhamnopyranoside, T-86
 Ethyl 2,3,4-tri-*O*-acetyl-1-thio- α -L-rhamnopyranoside, T-86
 Ethyl 2,3,4-tri-*O*-acetyl-1-thio- β -L-rhamnopyranoside, T-86
 α -D-Fucopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-mannose, F-159
 α -L-Fucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*; Me glycoside, 2,2'',3'',4''-tetra-Me, F-160
 α -L-Fucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*; Me glycoside, 2',4,4'-tribenzyl, 2,2'',3'',4''-tetra-Me, F-160
 α -L-Fucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-*form*, F-160
 α -L-Fucopyranosyl-(1 \rightarrow 2)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-*form*; Me glycoside, heptabenzoyl, F-110
 β -L-Fucopyranosyl-(1 \rightarrow 2)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-*form*; Me glycoside, heptabenzoyl, F-111
 β -L-Fucopyranosyl-(1 \rightarrow 2)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-*form*; Me glycoside, F-111
 α -L-Fucopyranosyl-(1 \rightarrow 2)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-*form*, F-110
 β -L-Fucopyranosyl-(1 \rightarrow 2)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-*form*, F-111
 α -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-L-rhamnose; *N*-Ac, G-58
 α -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-L-rhamnose; α -Pyranose-*form*; Me glycoside, *N*-Ac, G-58

β -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose, G-447
2-*O*- α -D-Glucopyranosyl-L-rhamnose, G-450
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, nonabenzoyl, G-396
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',2'',3',3'',4,4',4'',6'-octabenzyl, 6'-Ac, G-395
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',2'',3',3'',4,4',4'',6'-octabenzyl, G-395
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-395
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-396
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form, G-396
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-rhamnose, G-395
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 2)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',3',4,4',4'',6'-hexabenzyl, 2'',3'',di-Ac, G-442
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',3',4',6'-tetrabenzyl, 2'',3'',4,4''-tetra-Ac, G-441
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',3',4',6'-tetrabenzyl, 2'',3'',4,4''-tetra-Ac, G-445
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-441
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 2)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-442
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-445
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form, G-445
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose, G-441
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 2)]-L-rhamnose, G-442
 β -D-Glucuronopyranosyl-(1 \rightarrow 3)- α -D-galacturonopyranosyl-(1 \rightarrow 2)-L-rhamnose, G-540
Isodulcitol, R-79
2,3-*O*-Isopropylidenerhamnose; α -L-Furanose-form, I-72
2,3-*O*-Isopropylidenerhamnose; β -L-Furanose-form, I-72
2,3-*O*-Isopropylidenerhamnose; L-form, I-72
2,3-*O*-Isopropylidene-5-*O*-tosyl- α -L-rhamnopyranosyl chloride, R-8
2,3-*O*-Isopropylidene-5-*O*-tosyl-L-rhamnose, I-72
 β -D-Mannopyranosyl-(1 \rightarrow 4)- α -D-mannopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-form; 3'-Ac, M-91
 β -D-Mannopyranosyl-(1 \rightarrow 4)- α -D-mannopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-form, M-91
 α -D-Mannopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-galactose, M-101
 β -D-Mannopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-galactose, M-102
 α -L-Mannopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; Me glycoside, 3,3',4,4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac, M-103
 α -L-Mannopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; Me glycoside, M-103
 α -L-Mannopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose, M-103
 β -D-Mannopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose, M-104
 α -D-Mannopyranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, nonabenzoyl, M-90
 α -D-Mannopyranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, M-90
 α -D-Mannopyranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form, M-90
Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -D-mannopyranoside, A-407
Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-mannopyranoside, A-407
Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -L-mannopyranoside, A-407
Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-mannopyranoside, A-408
Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -L-mannopyranoside, A-408
Methyl 3-acetamido-3,6-dideoxy- α -D-mannopyranoside, A-407
Methyl 3-acetamido-3,6-dideoxy- β -D-mannopyranoside, A-407

- Methyl 3-acetamido-3,6-dideoxy- β -L-mannopyranoside, A-407
Methyl 4-acetamido-4,6-dideoxy- α -D-mannopyranoside, A-408
Methyl 4-*O*-acetyl-2,3-anhydro- α -D-rhamnopyranoside, A-687
Methyl 4-*O*-acetyl-2,3-di-*O*-benzoyl- α -L-rhamnopyranoside, M-207
Methyl 4-*O*-acetyl-2,3-*O*-isopropylidene- α -L-rhamnopyranoside, M-207
Methyl 4-*O*-acetyl- α -L-rhamnopyranoside, M-207
Methyl 3-amino-3,6-dideoxy- α -D-mannopyranoside, A-407
Methyl 3-amino-3,6-dideoxy- β -D-mannopyranoside, A-407
Methyl 4-amino-4,6-dideoxy- α -L-mannopyranoside, A-408
Methyl 4-amino-4,6-dideoxy- α -L-mannopyranoside, A-408
Methyl 2,3-anhydro- α -D-rhamnopyranoside, A-687
Methyl 5-*O*-benzoyl-2,3-*O*-isopropylidene- α -D-rhamnofuranoside, M-206
Methyl 5-*O*-benzoyl-2,3-*O*-isopropylidene- α -L-rhamnofuranoside, M-206
Methyl 4-*O*-benzoyl-2,3-*O*-isopropylidene- α -L-rhamnopyranoside, M-207
Methyl 4-*O*-benzyl-2,3-*O*-isopropylidene- α -L-rhamnopyranoside, M-207
Methyl 3-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 4-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 6-deoxy-3-*C*-methyl- α -D-mannopyranoside, D-308
Methyl 6-deoxy-3-*C*-methyl- α -L-mannopyranoside, D-308
Methyl 2,4-di-*O*-acetyl-3-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-acetyl-4-thio- α -L-rhamnopyranoside, T-87
Methyl 2,3-di-*O*-benzoyl- α -L-rhamnopyranoside, M-207
Methyl 2,4-di-*O*-benzoyl- α -L-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-benzoyl-1-thio- α -L-rhamnopyranoside, T-86
Methyl 2,3-di-*O*-benzoyl-4-*O*-tosyl- α -L-rhamnopyranoside, M-207
Methyl 3,4-di-*O*-benzyl-2-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 3,4-di-*O*-benzyl- α -D-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 2,4-di-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 3,4-di-*O*-benzyl- α -L-rhamnopyranoside, M-207
Methyl 3,6-dideoxy-3-ethylamino- α -D-mannopyranoside, A-407
Methyl 2,3-di-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 2,4-di-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 3,4-di-*O*-methyl- β -L-rhamnopyranoside, M-207
Methyl 2,3-di-*O*-methyl-4-*O*-tosyl- α -L-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene-5-*O*-mesyl- α -D-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-4-*O*-mesyl- α -D-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene-4-*O*-mesyl- α -L-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene-5-*O*-methyl- α -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-5-*O*-methyl- β -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-4-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene- α -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene- α -D-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene- α -L-rhamnopyranoside, M-207
Methyl 2,3-*O*-isopropylidene-1-thio- α -L-rhamnopyranoside, T-86
Methyl 2,3-*O*-isopropylidene-1-thio- β -L-rhamnopyranoside, T-86
Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl- α -D-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-5-*O*-tosyl- α -L-rhamnofuranoside, M-206
Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl- β -L-rhamnofuranoside, M-207
Methyl 2,3-*O*-isopropylidene-4-*O*-tosyl- α -D-rhamnopyranoside, M-207
Methyl 5-*O*-methyl- α -L-rhamnofuranoside, M-206
Methyl 2-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 4-*O*-methyl- α -D-rhamnopyranoside, M-207
Methyl 2-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 3-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 4-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 4-*O*-methyl- β -L-rhamnopyranoside, M-207
Methyl rhamnofuranoside; α -L-form, M-206
Methyl rhamnopyranoside; α -L-form; 2,3-Carbonate, M-207
Methyl rhamnopyranoside; α -L-form; 2,3-Thionocarbonate, 4-benzyl, M-207
Methyl rhamnopyranoside; α -D-form, M-207
Methyl rhamnopyranoside; α -L-form, M-207
Methyl rhamnopyranoside; β -L-form, M-207
Methyl 3-*O*- α -L-rhamnopyranosyl- β -D-galactopyranoside, 9CI, R-27
Methyl 1-thio- α -L-rhamnopyranoside, T-86
Methyl 1-thio- β -L-rhamnopyranoside, T-86
Methyl 2,3,4-triacetamido-2,3,4,6-tetradeoxy- α -L-mannopyranoside, T-131
Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-mannopyranoside, D-308
Methyl 2,3,4-tri-*O*-acetyl- α -L-rhamnopyranoside, M-207
Methyl 2,3,4-tri-*O*-acetyl- β -L-rhamnopyranoside, M-207
Methyl 2,3,4-tri-*O*-methyl- α -L-rhamnopyranoside, M-207
Methyl 2,3,4-tri-*O*-methyl- β -L-rhamnopyranoside, M-207
2-*O*-Methyl-D-rhamnose, R-79
Mycosamine, A-407
Phenyl 4-*O*-benzoyl-2,3-*O*-isopropylidene-1-thio- α -L-rhamnopyranoside, T-86
Phenyl 4-*O*-benzoyl-1-thio- α -L-rhamnopyranoside, T-86
Phenyl 4-*O*-benzyl-2,3-*O*-isopropylidene-1-thio- α -D-rhamnopyranoside, T-86
Phenyl 4-*O*-benzyl-1-thio- α -D-rhamnopyranoside, T-86
Phenyl 6-deoxy- α -L-mannopyranoside, R-79
Phenyl 6-deoxy- β -L-mannopyranoside, R-79
Phenyl 2,3-*O*-isopropylidene-1-thio- α -D-rhamnopyranoside, T-86
Phenyl 2,3-*O*-isopropylidene-1-thio- α -L-rhamnopyranoside, T-86
Phenyl 1-thio- α -L-rhamnopyranoside, T-86
Phenyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -L-mannopyranoside, R-79
L-Rhamnonamide, D-286
L-Rhamnono-1,4-lactone, D-286
L-Rhamnono-1,5-lactone, D-286
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, *N*-Ac, R-14
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 4',6'-*O*-benzylidene, 3,4-dibenzyl, 2',2'',3'',4''-tetra-Ac, R-14
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-L-rhamnose, R-14
2-*O*- α -L-Rhamnopyranosyl-D-arabinose, R-15
2-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-16
3-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-17
4-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-18
5-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-19
2-*O*- β -L-Rhamnopyranosyl-L-arabinose, R-20
3-*O*- α -L-Rhamnopyranosyl-D-galactose; 2-Ac, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; 6-Ac, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-form; Benzyl glycoside, 2-Ac, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-form; Benzyl glycoside, 4,6-*O*-benzylidene, 2-Ac, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-form; Benzyl glycoside, 4,6-*O*-benzylidene, tetraabenzyl, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-form; Benzyl glycoside, 2,2',3',4,4'-pentabenzyl, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-form; Hepta-Ac, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-form; Me glycoside, 4,6-*O*-benzylidene, 2-benzyl, 2',3',4'-tri-Ac, R-27
3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-form; Me glycoside, 4,6-*O*-benzylidene, tetraabenzyl, R-27
2-*O*- α -D-Rhamnopyranosyl-D-galactose, R-25
2-*O*- α -L-Rhamnopyranosyl-D-galactose, R-26
3-*O*- α -L-Rhamnopyranosyl-D-galactose, R-27
2-*O*- β -L-Rhamnopyranosyl-D-galactose, R-29
3-*O*- β -L-Rhamnopyranosyl-D-galactose, R-30
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 6)-D-galactose, R-50
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4,4''-hexabenzyl, 2'-Ac, R-67
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4,4''-hexabenzyl, R-67
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose; α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4''-tetraabenzyl, 2,3-*O*-isopropylidene, R-68
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose; α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4''-tetraabenzyl, R-68
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- β -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose; β -Pyranose-form; 1,2-*O*-(1-Cyanoethylidene), 2'',3',4,4''-pentabenzoyl, 3''-Ac, R-65
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form; 1,4-Dibenzyl, 3,3'-dibenzoyl, 2'',3',4,4''-tetra-Ac, R-55
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose; α -Pyranose-form; Me glycoside, 2,3:2',3'-di-*O*-isopropylidene, 2'',3'',4''-tri-Ac, R-64
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-form; Me glycoside, 2',3'-*O*-isopropylidene, 2,4-dibenzyl, 2'',3'',4''-tri-Ac, R-63
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-form; Me glycoside, R-63
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose; α -Pyranose-form; Me glycoside, R-64
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose; α -Pyranose-form; 4-Methylphenyl glycoside, 2,2'',3,3',3''-penta-Me, R-59
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose; α -Pyranose-form, R-55
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-form, R-63

α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose;
 α -Pyranose-*form*, R-64
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose;
 α -Pyranose-*form*, R-68
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose,
 R-52
 α -D-Rhamnopyranosyl-(1 \rightarrow 3)- α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose,
 R-54
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose,
 R-59
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- β -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose,
 R-65
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose,
 R-66
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose,
 R-67
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose,
 R-68
 3-*O*- α -L-Rhamnopyranosyl-D-xylose, R-77
 4-*O*- α -L-Rhamnopyranosyl-D-xylose, R-78
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-arabinose;
 β -Pyranose-*form*; Benzyl glycoside, 2',3',4,4'-tetrabenzyl, 2'',3'',4'',6''-
 tetra-Ac, R-32
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose;
 β -Pyranose-*form*; Benzyl glycoside, 2',3',3',4'-tetrabenzyl, 2'',3'',4'',6''-
 tetra-Ac, R-33
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-arabinose,
 R-32
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose,
 R-33
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose,
 R-34
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-
 mannose; α -Pyranose-*form*; Me glycoside, 2',3',4,4',6-pentabenzyl,
 6''-Me, 2'',3'',4'',tri-Ac, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-
 mannose; α -Pyranose-*form*; Me glycoside, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-
 mannose, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-6-deoxy-D-
 glucose; α -Pyranose-*form*; Me glycoside, R-49
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-6-deoxy-D-
 glucose, R-49
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 4)]-L-rhamnose;
 α -Pyranose-*form*; 1,2-*O*-(1-Cyanoethylidene), 3',3'',4',4''-benzoyl,
 2',2''-di-Ac, R-62
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose;
 α -Pyranose-*form*; Me glycoside, 2',2'',3',3'',4,4',4''-heptabenzoyl, R-57
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose;
 α -Pyranose-*form*; Me glycoside, R-57
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose;
 α -Pyranose-*form*, R-57
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 4)]-L-rhamnose,
 R-62
 Rhamnose; D-*form*, R-79
 Rhamnosylamine; L-Pyranose-*form*, R-80
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- α -L-mannopyranose, R-79
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- β -L-mannopyranose, R-79
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-mannopyranoside, D-308
 1*N*,2,3,4-Tetra-*O*-acetyl- β -L-rhamnopyranosylamine, R-80
 1,2,3,5-Tetra-*O*-acetyl-4-thio- α -L-rhamnofuranose, T-87
 1,2,3,5-Tetra-*O*-acetyl-4-thio- β -L-rhamnofuranose, T-87
 2-*O*-Tosyl-L-1,4-rhamnonolactone, D-286
 1,2,3-Tri-*O*-acetyl-4-*S*-acetylthio- α -L-rhamnopyranose, T-87
 1,2,4-Tri-*O*-acetyl-6-deoxy- α -L-mannopyranose, R-79
 1,2,3-Tri-*O*-acetyl-6-deoxy- β -L-mannopyranose, R-79
 2,3,4-Tri-*O*-acetyl-6-deoxy- α -L-mannopyranosyl chloride, M-42
 2,3,4-Tri-*O*-benzoyl-L-rhamnono-1,5-lactone, D-286
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 α -Pyranose-*form*; Me glycoside, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 β -Pyranose-*form*; Me glycoside, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 α -Pyranose-*form*, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 β -Pyranose-*form*, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose,
 X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose;
 α -Pyranose-*form*; Me glycoside, X-56
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose,
 X-56

6-Deoxytaloses

5-Acetamido-3-*O*-benzyl-5,6-dideoxy-1,2-*O*-isopropylidene- β -L-
 talofuranose, A-418
 5-Acetamido-5,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose, A-418
 5-Acetamido-5,6-dideoxy-L-talofuranose, A-418
 2-Acetamido-2,6-dideoxy-L-talose, A-415
 5-Amino-3-*O*-benzyl-5,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose,
 A-418
 5-Amino-5,6-dideoxy-1,2-*O*-isopropylidene- β -L-talofuranose, A-418
 5-Amino-5,6-dideoxytalose; α -D-Furanose-*form*, A-418
 5-Amino-5,6-dideoxytalose; L-Furanose-*form*, A-418
 5-Amino-5,6-dideoxytalose; α -L-Furanose-*form*, A-418
 5-Amino-5,6-dideoxytalose; β -L-Furanose-*form*, A-418
 4-Amino-4,6-dideoxytalose; α -D-Pyranose-*form*, A-417
 2-Amino-2,6-dideoxytalose; D-*form*, A-415
 3-Amino-3,6-dideoxytalose; D-*form*, A-416
 3-Amino-3,6-dideoxytalose; L-*form*, A-416
 Benzyl 6-deoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, D-372
 Benzyl 6-deoxy-3,4-*O*-isopropylidene- α -L-talopyranoside, D-372
 Benzyl 6-deoxy- α -L-talopyranoside, D-372
 Benzyl 2,4-diacetamido-3-*O*-acetyl-2,4,6-trideoxy- β -L-talopyranoside,
 D-484
 Benzyl 2,4-diacetamido-2,4,6-trideoxy- β -L-talopyranoside, D-484
 Benzyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -L-talopyranoside, D-372
 6-Deoxy-3-*C*-methyl-2-*O*-methyltalose; L-*form*, D-309
 6-Deoxy-3-*O*-methyl-D-talose, D-372
 6-Deoxy-2-*O*-methyl-L-talose, D-372
 6-Deoxy-3-*O*-methyl-L-talose, D-372
 6-Deoxytalofuranosyl bromide; α -L-*form*; Tris(4-nitrobenzoyl), D-371
 6-Deoxytalose; D-*form*, D-372
 6-Deoxytalose; L-*form*, D-372
 6-Deoxy-5-thiotalose; L-Pyranose-*form*, D-379
 2,4-Diacetamido-2,4,6-trideoxy-L-talose, D-484
 3,4-Di-*O*-acetyl-2-bromo-2,6-dideoxy- α -L-talopyranosyl bromide, B-110
 3,4-Di-*O*-acetyl-2-chloro-2,6-dideoxy- β -L-talopyranosyl chloride, C-116
 1,5-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- α -L-talofuranose, D-309
 1,4-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- α -L-talopyranose, D-309
 1,4-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- β -L-talopyranose, D-309
 2,4-Diamino-2,4,6-trideoxytalose; α -D-Pyranose-*form*, D-484
 4,6-Dideoxy-4-dimethylamino- α -D-talopyranose, A-417
 4,6-Dideoxy-4-dimethylamino- β -D-talopyranose, A-417
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -D-talopyranoside,
 A-417
 Methyl 4-acetamido-2,3-di-*O*-acetyl-4,6-dideoxy- α -L-talopyranoside,
 A-417
 Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- β -D-talopyranoside,
 A-416
 Methyl 3-acetamido-2,4-di-*O*-acetyl-3,6-dideoxy- α -L-talopyranoside,
 A-416
 Methyl 5-acetamido-5,6-dideoxy-2,3-*O*-isopropylidene- α -L-talofuranoside,
 A-418
 Methyl 4-acetamido-4,6-dideoxy-2,3-*O*-isopropylidene- α -D-
 talopyranoside, A-417
 Methyl 4-acetamido-4,6-dideoxy-2,3-*O*-isopropylidene- α -L-
 talopyranoside, A-417
 Methyl 4-acetamido-4,6-dideoxy- α -D-talopyranoside, A-417
 Methyl 4-acetamido-4,6-dideoxy- α -L-talopyranoside, A-417
 Methyl 3-acetamido-3,6-dideoxy- α -D-talopyranoside, A-416
 Methyl 3-acetamido-3,6-dideoxy- β -D-talopyranoside, A-416
 Methyl 3-acetamido-3,6-dideoxy- α -L-talopyranoside, A-416
 Methyl 4-*O*-acetyl-6-deoxy-2,3-*O*-isopropylidene- α -L-talopyranoside,
 D-372
 Methyl 5-amino-5,6-dideoxy-2,3-*O*-isopropylidene- α -D-talofuranoside,
 A-418
 Methyl 5-amino-5,6-dideoxy-2,3-*O*-isopropylidene- α -L-talofuranoside,
 A-418
 Methyl 4-amino-6-dideoxy-2,3-*O*-isopropylidene- α -L-talopyranoside,
 A-417
 Methyl 4-amino-4,6-dideoxy- α -D-talopyranoside, A-417
 Methyl 6-deoxy-2,3-*O*-isopropylidene-4-*O*-mesyl- α -D-talopyranoside,
 D-372
 Methyl 6-deoxy-2,3-*O*-isopropylidene-4-*O*-mesyl- α -L-talopyranoside,
 D-372
 Methyl 6-deoxy-2,3-*O*-isopropylidene- α -L-talofuranoside, D-372
 Methyl 6-deoxy-2,3-*O*-isopropylidene- α -D-talopyranoside, D-372
 Methyl 6-deoxy-2,3-*O*-isopropylidene- α -L-talopyranoside, D-372
 Methyl 6-deoxy-2,3-*O*-isopropylidene-5-thiobenzoyl- α -L-talofuranoside,
 D-379
 Methyl 6-deoxy-4-*O*-mesyl- α -D-talopyranoside, D-372
 Methyl 6-deoxy-3-*C*-methyl-2-*O*-methyl- α -L-talofuranoside, D-309
 Methyl 6-deoxy-3-*C*-methyl-2-*O*-methyl- β -L-talopyranoside, D-309
 Methyl 6-deoxy- α -L-talopyranoside, D-372

Methyl 6-deoxy- β -L-talopyranoside, D-372
 Methyl 2,4-diacetamido-2,4,6-trideoxy- α -D-talopyranoside, D-484
 Methyl 2,3-di-*O*-acetyl-4,6-dideoxy-4-dimethylamino- α -D-talopyranoside, A-417
 Methyl 3,5-di-*O*-benzyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- α -L-talofuranoside, D-309
 Methyl 3,5-di-*O*-benzyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- β -L-talofuranoside, D-309
 Methyl 4,6-dideoxy-4-dimethylamino- α -D-talopyranoside, A-417
 Methyl 2,6-dideoxy-2-fluoro- β -L-talopyranoside, D-569
 Methyl 4,6-dideoxy-2,3-*O*-isopropylidene-4-methylamino- α -D-talopyranoside, A-417
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -D-talopyranoside, D-372
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -L-talopyranoside, D-372
 Pneumosamine, A-415
 1,2,3,4-Tetra-*O*-acetyl-5-thio-L-talopyranose, D-379

Other deoxy sugars

2-Acetamido-1,5-anhydro-3,4-di-*O*-benzyl-2,6-dideoxy-D-mannitol, A-149
 2-Acetamido-1,5-anhydro-2,6-dideoxy-D-mannitol, A-149
 5-Acetamido-2,3,4,6-tetra-*O*-acetyl-1,5-dideoxy-L-altritol, A-368
 5-Amino-2,3-di-*O*-benzyl-4,6-*O*-benzylidene-1,5-dideoxy-L-altritol, A-368
 Amphoterin B, A-473
 2,5-Anhydro-6-deoxygluconic acid; *D*-form; Me ester, A-523
 2,5-Anhydro-6-deoxygluconic acid; *L*-form; Me ester, A-523
 2,6-Anhydro-1-deoxy-L-mannitol, 9CI, A-684
 2,6-Anhydro-1,5-dideoxy-D-xylo-hex-5-enitol, 9CI, D-679
 1,5-Anhydro-2,6-dideoxy-D-ribo-hex-1-enitol, D-679
 1,5-Anhydro-2,6-dideoxy-4-*O*-methyl-L-xylo-hex-1-enitol, D-679
 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-D-rhamnitrol, A-684
 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-L-rhamnitrol, A-684
 Benzyl 6-deoxy-2,3-*O*-isopropylidene- α -L-lyxo-hexopyranosid-4-ulose, H-99
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-*gluco*-heptofuranose, D-158
 3-*O*-Benzyl-5,6-dideoxy-1,2-*O*-isopropylidene- α -D-xylo-hex-5-enofuranose, D-593
 3,5-*O*-Benzylidene-6-deoxy-1,2-*O*-isopropylidene- α -D-*gluco*-heptofuranose, D-158
 6-Deoxy-1,2:3,4-di-*O*-isopropylidene-3-*C*-methyl- β -D-psicofuranose, M-284
 6-Deoxy-*gluco*-heptose; α -D-Furanose-form; 1,2-Isopropylidene, 3,5-benzylidene(*R*-), 7-tosyl, D-158
 6-Deoxy-*gluco*-heptose; α -D-Pyranose-form; Me glycoside, 2,3,4-tribenzyl, 7-methanesulfonyl, D-158
 6-Deoxy-*gluco*-heptose; *D*-form, D-158
 6-Deoxy-*manno*-heptose; *D*-form, D-164
 6-Deoxy-*gluco*-heptose, D-158
 6-Deoxy-xylo-hexopyranos-4-ulose, D-194
 6-Deoxy-*arabino*-hexos-5-ulose; *D*-form, D-212
 6-Deoxy-*lyxo*-hexos-2-ulose; *L*-form, D-215
 6-Deoxy-*arabino*-2-hexulose; *D*-form, D-218
 6-Deoxy-*arabino*-2-hexulose; *L*-form, D-218
 1-Deoxyiditol; *D*-form; Penta-Ac, D-237
 1-Deoxyiditol; *L*-form; Penta-Ac, D-237
 6-Deoxy-2,3-*O*-isopropylidene-1,6-di-*O*-tosyl- β -D-*arabino*-2-hexulofuranose, D-218
 6-Deoxy-1,2-*O*-isopropylidene- β -D-*arabino*-hexofuranos-5-ulose, D-212
 6-Deoxy-2,3-*O*-isopropylidene- β -D-*arabino*-2-hexulofuranose, D-218
 6-Deoxy-5-*C*-methyl-4-*O*-methyl-D-lyxo-hexose, D-304
 6-Deoxy-5-*C*-methyl-4-*O*-methyl-L-lyxo-hexose, D-304
 6-Deoxy-3-*C*-methyl-D-psicose, M-284
 6-Deoxyparomomycin II, P-13
 6-Deoxyparomomycin I, P-13
 6-Deoxysorbose; *L*-form, D-363
 6-Deoxysucrose, D-366
 6'-Deoxysucrose, D-367
 3,4-Di-*O*-acetyl-1,5-anhydro-1,6-dideoxy-D-ribo-hex-1-enitol, D-679
 3,4-Di-*O*-acetyl-1,5-anhydro-2,6-dideoxy-L-xylo-hex-1-enitol, D-679
 4,7-Di-*O*-acetyl-3-*O*-benzyl-6-deoxy-1,2-*O*-isopropylidene- α -D-*gluco*-heptofuranose, D-158
 5,7-Di-*O*-acetyl-6-deoxy-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-*gluco*-heptofuranose, D-158
 5,6-Dideoxy-xylo-hex-5-enose; *D*-form, D-593
 5,6-Dideoxy-2,3-*O*-isopropylidene-D-lyxo-hex-5-enofuranose, D-592
 5,6-Dideoxy-1,2-*O*-isopropylidene- α -D-xylo-hex-5-enofuranose, D-593
 5,6-Dideoxy-1,2-*O*-isopropylidene-3-*O*-methyl- α -D-xylo-hex-5-enofuranose, D-593
 6,6'-Dideoxysucrose, D-652
 Methyl 4-*C*-acetyl-5-*O*-acetyl-2,3-*O*-methylene-D-galactonate, A-15
 Methyl 4-*C*-acetyl-6-deoxy-2,3-*O*-methylene-D-galactonate, A-15
 Methyl 4-*O*-acetyl-2,3,6-trideoxy- α -L-*threo*-hex-2-enopyranoside, T-155

Methyl 2,5-anhydro-4-*O*-benzyl-6-deoxy-L-gluconate, A-523
 Methyl 2,5-anhydro-3-*O*-benzyl-6-deoxy-D-gluconate, A-523
 Methyl 2,3-anhydro-6-deoxy- α -D-ribo-hexopyranosid-4-ulose, 9CI, D-191
 Methyl 2,3-anhydro-6-deoxy- α -D-lyxo-hexopyranosid-4-ulose, A-549
 Methyl 2,3-anhydro-6-deoxy- α -L-ribo-hexopyranosid-4-ulose, D-191
 Methyl 4,7-*O*-benzylidene-2,3-di-*O*-benzyl-6-deoxy- α -D-*gluco*-heptopyranoside, D-158
 Methyl 3-bromo-3,6-dideoxy- α -D-xylo-hexopyranosid-4-ulose, D-194
 Methyl 6-deoxy-2,3-di-*O*-methyl- α -D-ribo-hexopyranosid-4-ulose, D-191
 Methyl 6-deoxy-2,3-di-*O*-methyl- α -D-xylo-hexopyranosid-4-ulose, D-194
 Methyl 6-deoxy- α -D-*manno*-heptopyranoside, D-164
 Methyl 6-deoxy-4-*C*-hydroxymethyl-5-*O*-methyl-2,3-*O*-methylene-L-idonate, D-229
 Methyl 6-deoxy-2,3-*O*-isopropylidene- α -D-ribo-hexopyranosid-4-ulose, D-191
 Methyl 6-deoxy-2,3-*O*-isopropylidene- β -D-ribo-hexopyranosid-4-ulose, D-191
 Methyl 6-deoxy-5-*C*-methyl-4-*O*-methyl- α -L-lyxo-hexopyranoside, D-304
 Methyl 6-deoxy-5-*C*-methyl-4-*O*-methyl- β -L-lyxo-hexopyranoside, D-304
 Methyl 6-deoxy-5-*C*-methyl-4-*O*-methyl- β -DL-lyxo-hexopyranoside, D-304
 Methyl 2,3-di-*O*-acetyl-6-deoxy-5-*C*-methyl-4-*O*-methyl- β -DL-lyxo-hexopyranoside, D-304
 Methyl 2,3-di-*O*-benzyl-6-deoxy- β -D-*gluco*-heptopyranoside, D-158
 Methyl 2,3-di-*O*-benzyl-6-deoxy-4-*O*-methoxymethyl- α -D-*gluco*-heptopyranoside, D-158
 Methyl 5,6-dideoxy-2,3-*O*-isopropylidene-D-lyxo-hex-5-enofuranoside, D-592
 Methyl 5,6-dideoxy-2,3-*O*-isopropylidene- α -L-lyxo-hex-5-enofuranoside, D-592
 Methyl 2,3,4-tri-*O*-benzyl-6-deoxy- α -D-*gluco*-heptopyranoside, D-158
 Methyl 2,3,6-trideoxy- α -L-*threo*-hex-2-enopyranoside, T-155
 3-*C*-Methyl-6-deoxy-ribo-hexopyranos-4-ulose; α -D-form; Me glycoside, M-241
 Novobiose, D-304
 Spenolimycin, S-63
 1,3,4,5-Tetra-*O*-acetyl-6-deoxy-L-sorbose, D-363
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-L-rhamnitrol, A-684
 2,3,4-Tri-*O*-acetyl-5,6-dideoxy-D-xylo-hex-5-enose, D-593
 2,3,4-Tribenzyl-5,6-dideoxy-D-xylo-hex-5-enose, D-593

Unsaturated sugars; 1-enes

2-Acetamido-3-*O*-(2-acetamido-2,3-dideoxy-5,6-*O*-isopropylidene- α -D-erythro-hex-2-enofuranosyl)-1,4-anhydro-2-deoxy-5,6-*O*-isopropylidene-D-*arabino*-hex-1-enitol, A-6
 2-Acetamido-3-*O*-(2-acetamido-2,3-dideoxy-5,6-*O*-isopropylidene- β -D-erythro-hex-2-enofuranosyl)-1,4-anhydro-2-deoxy-5,6-*O*-isopropylidene-D-*arabino*-hex-1-enitol, A-6
 6-Acetamido-3,4-di-*O*-acetyl-1,5-anhydro-6-deoxy-D-*arabino*-hex-1-enitol, A-213
 2-Acetamido-1,2-dideoxy-D-*arabino*-hex-1-enopyranose, 8CI, A-137
 2-Acetamido-3,4,6-tri-*O*-acetyl-1,2-dideoxy-D-*arabino*-hex-1-enopyranose, A-137
 3-*O*-Acetyl-1,5-anhydro-4,6-*O*-benzylidene-2-deoxy-D-ribo-hex-1-enitol, A-72
 6-*O*-Acetyl-1,5-anhydro-2-deoxy-3,4-*O*-isopropylidene-D-lyxo-hex-1-enitol, G-1
 4-*O*-Acetyl-1,5-anhydro-2-deoxy-D-*threo*-pent-1-enitol, D-680
 4-*O*-Acetyl-1,5-anhydro-2,6-dideoxy-L-erythro-hex-1-en-3-ulose, A-586
 4-*O*-Acetyl-1,5-anhydro-2,6-dideoxy-3-*C*-methyl-D-ribo-hex-1-enitol, A-595
 4-*O*-Acetyl-6-deoxy-3-*O*-methyl-D-glucal, D-679
 6-*O*-Acetyl-3,4-di-*O*-benzyl-D-galactal, G-1
 3-*O*-Acetyl-4,6-di-*O*-benzyl-D-galactal, G-1
 4-*O*-Acetyl-3-*O*-methyl-L-rhamnal, D-679
 3-*O*-Acetyl-L-rhamnal, D-679
 4-*O*-Acetyl-L-rhamnal, D-679
 Allal; *D*-form, A-72
 1,5-Anhydro-4-*O*-benzoyl-2,6-dideoxy-L-erythro-hex-1-en-3-ulose, A-586
 1,5-Anhydro-4-*O*-benzoyl-2,6-dideoxy-3-*O*-methyl-L-*arabino*-hex-1-enitol, D-679
 1,5-Anhydro-6-*O*-benzyl-2-deoxy-3,4-*O*-isopropylidene-D-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-D-lyxo-hex-1-enitol, G-1
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-D-ribo-hex-1-enitol, A-72
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-D-erythro-hex-1-en-3-ulose, A-544
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-3-*O*-methyl-D-ribo-hex-1-enitol, A-72
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-2-*C*-vinyl-D-ribo-hex-1-enitol, A-576
 1,5-Anhydro-4,6-*O*-benzylidene-2,3-dideoxy-D-erythro-hex-1-enitol, A-580

- 1,5-Anhydro-4,6-*O*-benzylidene-2,3-dideoxy-3-(iodomethyl)-*D*-ribo-hex-1-enitol, A-593
- 2,6-Anhydro-1-deoxy-*gluco*-hept-1-enitol; *D*-form; Tetrakis(*tert*-butyldimethylsilyl), A-529
- 2,6-Anhydro-1-deoxy-*galacto*-hept-1-enitol; *D*-form, A-528
- 2,6-Anhydro-1-deoxy-*gluco*-hept-1-enitol; *D*-form, A-529
- 1,5-Anhydro-2-deoxy-*threo*-hex-1-ene-3-ulose; *D*-form, A-535
- 1,5-Anhydro-2-deoxy-*erythro*-hex-1-en-3-ulose; *D*-form, A-544
- 1,5-Anhydro-4-deoxy-*glycero*-hex-1-en-3-ulose; *D*-form, A-545
- 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-*D*-lyxo-hex-1-enitol, G-1
- 1,5-Anhydro-2-deoxy-4,6-*O*-isopropylidene-*D*-lyxo-hex-1-enitol, G-1
- 1,4-Anhydro-2-deoxy-5,6-*O*-isopropylidene-*D*-arabino-hex-1-enitol, A-536
- 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-6-*O*-mesyl-*D*-lyxo-hex-1-enitol, G-1
- 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-6-*O*-methyl-*D*-lyxo-hex-1-enitol, G-1
- 1,4-Anhydro-2-deoxy-5,6-*O*-isopropylidene-3-*O*-methyl-*D*-arabino-hex-1-enitol, A-536
- 1,5-Anhydro-2-deoxy-3,4-*O*-isopropylidene-6-*O*-tosyl-*D*-lyxo-hex-1-enitol, G-1
- 1,4-Anhydro-2-deoxy-5-*O*-(methoxymethyl)-2-*C*-methyl-*D*-erythro-pent-1-enitol, A-569
- 1,4-Anhydro-2-deoxy-5-*O*-methoxymethyl-*D*-erythro-pent-1-enitol, A-571
- 1,4-Anhydro-2-deoxy-*erythro*-pent-1-enitol; *D*-form; Dibenzoyl, A-571
- 1,5-Anhydro-2-deoxy-*D*-erythro-pent-1-enitol, 9CI, A-790
- 1,5-Anhydro-4-deoxy-*D*-erythro-pent-4-enitol, 9CI, A-790
- 1,5-Anhydro-2-deoxy-4,6-*O*-(phenylmethylene)-*D*-threo-hex-1-en-3-ulose, 9CI, A-535
- 2,6-Anhydro-1-deoxy-3,4,5,7-tetra-*O*-methyl-*D*-gluco-hept-1-enitol, A-529
- 1,5-Anhydro-2-deoxy-5-thio-*arabino*-hex-1-enitol; *D*-form, A-574
- 1,5-Anhydro-2-deoxy-3,4,6-tri-*O*-methyl-*D*-lyxo-hex-1-enitol, G-1
- 1,5-Anhydro-3,6-di-*O*-benzoyl-2-deoxy-*D*-lyxo-hex-1-enitol, G-1
- 1,5-Anhydro-3,4-di-*O*-benzoyl-2,6-dideoxy-*D*-threo-hexa-1,5-dienitol, A-579
- 1,5-Anhydro-2,6-dideoxy-*threo*-hexa-1,5-dienitol; *D*-form, A-579
- 2,6-Anhydro-1,5-dideoxy-*D*-xylo-hex-5-enitol, 9CI, D-679
- 1,5-Anhydro-2,6-dideoxy-*D*-arabino-hex-1-enitol, D-679
- 1,5-Anhydro-2,6-dideoxy-*D*-ribo-hex-1-enitol, D-679
- 1,5-Anhydro-2,6-dideoxy-*erythro*-hex-1-en-3-ulose; *L*-form, A-586
- 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-*D*-arabino-hex-1-enitol, D-576
- 1,5-Anhydro-2,6-dideoxy-3-*C*-methyl-*ribo*-hex-1-enitol; *D*-form, A-595
- 1,5-Anhydro-2,6-dideoxy-3-*C*-methyl-*ribo*-hex-1-enitol; *L*-form, A-595
- 1,5-Anhydro-2,6-dideoxy-4-*O*-methyl-*L*-xylo-hex-1-enitol, D-679
- 3,7-Anhydro-1,2-dideoxy-*D*-glycero-*D*-gulo-oct-1-enitol; Tetra-Ac, A-599
- 3,7-Anhydro-1,2-dideoxy-*D*-glycero-*D*-gulo-oct-1-enitol, A-599
- 1,4-Anhydro-*erythro*-pent-1-enitol; *D*-form; Tribenzoyl, A-680
- 2,6-Anhydro-3,4,5,7-tetra-*O*-benzyl-1-deoxy-*D*-gluco-hept-1-enitol, A-529
- 1,5-Anhydro-3,4,6-tri-*O*-benzoyl-2-deoxy-*D*-lyxo-hex-1-enitol, G-1
- 1,5-Anhydro-2,4,6-tri-*O*-benzoyl-3-deoxy-3-methylene-*D*-erythro-hex-1-enitol, A-567
- 1,5-Anhydro-2,4,6-tri-*O*-benzoyl-*D*-erythro-hex-1-en-3-ulose, A-645
- 1,5-Anhydro-2,3,4-tri-*O*-benzoyl-*D*-erythro-pent-1-enitol, 9CI, A-681
- 2,6-Anhydro-1,3,4-tri-*O*-benzyl-5-deoxy-*D*-arabino-hex-5-enitol, G-1
- 1,5-Anhydro-3,4,6-tri-*O*-benzyl-2-deoxy-2-nitro-*D*-lyxo-hex-1-enitol, A-570
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-galacto-non-1-enitol; Tetra-Ac, A-716
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*L*-gluco-non-1-enitol; Tetra-Ac, A-717
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-gulo-non-1-enitol; Tetra-Ac, A-718
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-ido-non-1-enitol; Tetra-Ac, A-719
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*L*-manno-non-1-enitol; Tetra-Ac, A-720
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-talo-non-1-enitol; Tetra-Ac, A-721
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-gulo-non-1-enitol; Tetrabenzoyl, A-718
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-ido-non-1-enitol; Tetrabenzoyl, A-719
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-gulo-non-1-enitol; Tetrabenzyl, A-718
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-ido-non-1-enitol; Tetrabenzyl, A-719
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-galacto-non-1-enitol; 6,7,9-Tribenzyl, A-716
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*L*-gluco-non-1-enitol; 1,3,4-Tribenzyl, A-717
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*L*-manno-non-1-enitol; 1,3,4-Tribenzyl, A-720
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-galacto-non-1-enitol, A-716
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*L*-gluco-non-1-enitol, A-717
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-gulo-non-1-enitol, A-718
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-ido-non-1-enitol, A-719
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*L*-manno-non-1-enitol, A-720
- 4,8-Anhydro-1,2,3-trideoxy-*D*-glycero-*D*-talo-non-1-enitol, A-721
- 3-*O*-Benzoyl-*L*-rhamnal, D-679
- 4-*O*-Benzoyl-*L*-rhamnal, D-679
- 4,6-*O*-Benzylidene-1,2-dideoxy-*D*-xylo-hex-1-enopyranose, G-581
- 5,5-Bis(phenylthio)-4-pentene-1,2,3-triol; (2*R*,3*R*)-form; 1,2-Isopropylidene, 3-(4-nitrobenzoyl), B-37
- 5,5-Bis(phenylthio)-4-pentene-1,2,3-triol; (2*R*,3*S*)-form; 1,2-Isopropylidene, 3-*O*-(4-nitrobenzoyl), B-37
- Cellobial, C-37
- Daucic acid, D-6
- 2-Deoxy-4,5-*O*-isopropylidene-*D*-threo-pent-1-enose diphenyl dithioacetal, B-37
- 1-Deoxy-*threo*-pent-1-enopyranose, D-335
- 3,4-Di-*O*-acetyl-6-amino-1,5-anhydro-6-deoxy-*D*-arabino-hex-1-enitol, A-213
- 4,6-Di-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-threo-hex-1-en-3-ulose, A-535
- 4,6-Di-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-erythro-hex-1-en-3-ulose, A-544
- 3,4-Di-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-threo-pent-1-enitol, D-680
- 3,4-Di-*O*-acetyl-1,5-anhydro-2,6-dideoxy-*D*-threo-hexa-1,5-dienitol, A-579
- 3,4-Di-*O*-acetyl-1,5-anhydro-1,6-dideoxy-*D*-ribo-hex-1-enitol, D-679
- 3,4-Di-*O*-acetyl-1,5-anhydro-2,6-dideoxy-*L*-xylo-hex-1-enitol, D-679
- 4,6-Di-*O*-acetyl-1,5-anhydro-2,3-dideoxy-*D*-erythro-hex-1-enitol, A-580
- 3,4-Di-*O*-acetyl-*D*-arabinal, A-790
- 3,4-Di-*O*-acetyl-*L*-arabinal, A-790
- 3,4-Di-*O*-acetyl-*L*-fucal, D-679
- 4,6-Di-*O*-acetyl-3-*O*-methyl-*D*-glucal, G-237
- 3,4-Di-*O*-acetyl-*D*-rhamnal, D-679
- 3,4-Di-*O*-acetyl-*L*-rhamnal, D-679
- 2,6,3,4-Dianhydro-1-deoxy-*talo*-hept-1-enitol; *D*-form, D-493
- 3,4-Di-*O*-benzoyl-*D*-arabinal, A-790
- 3,4-Di-*O*-benzoyl-*L*-rhamnal, D-679
- 4,6-Di-*O*-benzyl-*D*-galactal, G-1
- 3,5,4,6-Di-*O*-benzylidene-1,2-dideoxy-*L*-xylo-hex-1-enitol, D-579
- 1,2-Dideoxy-3,5,4,6-di-*O*-ethylidene-*L*-xylo-hex-1-enitol, D-579
- 1,2-Dideoxy-3,4,5,6-di-*O*-isopropylidene-*D*-arabino-hex-1-enitol, D-576
- 1,2-Dideoxy-*ribo*-hex-1-enitol; *L*-form, D-578
- 1,2-Dideoxy-*xylo*-hex-1-enitol; *L*-form, D-579
- 1,2-Dideoxy-*arabino*-hex-1-enitol; *D*-form, D-576
- 1,2-Dideoxy-4,5-*O*-isopropylidene-1,1-bis(phenylthio)-*D*-erythro-pent-1-enitol, B-37
- 1,2-Dideoxy-4,5-*O*-isopropylidene-*D*-ribo-hex-1-enitol, D-578
- 1,2-Dideoxy-5,6-*O*-isopropylidene-*D*-ribo-hex-1-enitol, D-578
- 1,2-Dideoxy-3,4-*O*-isopropylidene-*L*-lyxo-hex-1-enitol, D-577
- 1,2-Dideoxy-4,6-*O*-isopropylidene-*D*-erythro-hex-1-enopyranos-3-ulose, A-544
- 1,2-Dideoxy-3,4,5-tri-*O*-benzyl-*D*-ribo-hex-5-enitol, D-578
- 3,4-Dihydro-3,4-dimethoxy-2*H*-pyran, D-680
- 3,4-Dihydro-2-methyl-2*H*-pyran-3,4-diol; (2*S*,3*R*,4*S*)-form, D-679
- 1,2,4,5-Di-*O*-isopropylidene-3-*O*-methyl-*arabino*-hex-1-enitol; *D*-form, D-719
- L*-Fucal, D-679
- Galactal; *D*-form, G-1
- Glucal; *L*-form; 3,6-Dibenzyl, G-237
- Glucal; *D*-form, G-237
- 1,5-Hexadiene-3,4-diol, H-67
- Lactal; Hexa-Ac, L-3
- Lactal, L-3
- 3-*O*-Methyl-*D*-glucal, G-237
- 3-*O*-Methyl-*D*-rhamnal, D-679
- 3-*O*-Methyl-*L*-rhamnal, D-679
- 3,4,5,7-Tetra-*O*-acetyl-2,6-anhydro-1-deoxy-*D*-gluco-hept-1-enitol, A-529
- 3,4,5,6-Tetra-*O*-acetyl-1,2-dideoxy-*L*-xylo-hex-1-enitol, D-579
- 3,4,5,6-Tetra-*O*-acetyl-1,2-dideoxy-*D*-arabino-hex-1-enitol, D-576
- 3,4,5,6-Tetra-*O*-acetyl-1,2-dideoxy-1-nitro-*D*-arabino-hex-1-enitol, D-643
- 3,4,5,6-Tetra-*O*-acetyl-1,2-dideoxy-1-nitro-*D*-ribo-hex-1-enitol, D-644
- 3,4,5,6-Tetra-*O*-acetyl-1,2-dideoxy-1-nitro-*D*-xylo-hex-1-enitol, D-645
- 2,3,4,6-Tetra-*O*-acetyl-β-*D*-galactopyranosylethene, A-600
- Tetra-*O*-acetyl-2-hydroxy-*D*-glucal, A-643
- Tetra-*O*-benzoyl-2-hydroxy-*D*-glucal, A-643
- 3,4,6-Tri-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-lyxo-hex-1-enitol, G-1
- 3,4,6-Tri-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-ribo-hex-1-enitol, A-72
- 3,4,6-Tri-*O*-acetyl-1,5-anhydro-2-deoxy-2-nitro-*D*-lyxo-hex-1-enitol, A-570
- 3,4,6-Tri-*O*-acetyl-1,5-anhydro-2-deoxy-5-thio-*D*-arabino-hex-1-enitol, A-574
- 2,3,6-Tri-*O*-acetyl-1,5-anhydro-4-*O*-(2,3,4,6-tetra-*O*-acetyl-β-*D*-glucopyranosyl)-*D*-arabino-hex-1-enitol, A-631
- 2,3,4-Tri-*O*-acetyl-1-deoxy-2-hydroxy-*D*-threo-pent-1-enopyranose, D-335
- 3,4,6-Tri-*O*-acetyl-2-(diacetyl-amino)-1,2-dideoxy-*D*-arabino-hex-1-enopyranose, A-137
- 3,4,6-Tri-*O*-acetyl-*D*-glucal, G-237

3,4,6-Tri-*O*-acetyl-*D*-gulal, G-581
 2,3,4-Tri-*O*-benzoyl-1-deoxy-2-hydroxy-*D*-*threo*-pent-1-enopyranose, D-335
 3,4,6-Tri-*O*-benzoyl-*D*-glucal, G-237
 2,3,4-Tri-*O*-benzyl-5,6-dideoxy-*D*-*xylo*-hex-5-enitol, D-579
 3,4,5-Tri-*O*-benzyl-1,2-dideoxy-*D*-*arabino*-hex-1-enitol, D-576
 3,4,5-Tri-*O*-benzyl-1,2-dideoxy-*L*-*xylo*-hex-1-enitol, D-577
 3,4,6-Tri-*O*-benzyl- β -*D*-galactopyranosylethene, A-600
 3,4,6-Tri-*O*-methyl-*D*-glucal, G-237
D-Xylal, D-680

Unsaturated sugars; 2-enes

2-Acetamido-4,6-*O*-benzylidene-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-5,6-di-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,4-lactone, A-386
 2-Acetamido-4,6-di-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-2,3-dideoxy-*D*-*threo*-hex-2-enonic acid γ -lactone, 8CI, A-388
 2-Acetamido-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,4-lactone, A-386
 2-Acetamido-2,3-dideoxy-*D*-*threo*-hex-2-enono-1,5-lactone, A-389
 2-Acetamido-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-2,3-dideoxy-5,6-*O*-isopropylidene-*D*-*threo*-hex-2-enonic acid γ -lactone, 8CI, A-388
 2-Acetamido-2,3-dideoxy-4,6-*O*-isopropylidene-*D*-*threo*-hex-2-enono-1,5-lactone, A-389
 2-Acetamido-2,3-dideoxy-5,6-*O*-isopropylidene-*D*-*erythro*-hex-2-enono-1,4-lactone, A-386
 2-Acetamido-2,3-dideoxy-4,6-*O*-isopropylidene-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-2,3-dideoxy-4-*O*-methyl-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 4-*O*-Acetyl-1,6-anhydro-2,3-dideoxy- β -*D*-*erythro*-hex-2-enopyranose, A-584
 4-*O*-Acetyl-1,6-anhydro-2,3-dideoxy- β -*D*-*threo*-hex-2-enopyranose, A-585
 4-*O*-Acetyl-2,6-anhydro-1,5-di-*O*-methyl-*L*-*threo*-hex-2-enitol, A-539
 4-*O*-Acetyl-2,3-dideoxy-6-*O*-tosyl-*D*-*erythro*-hex-2-enono-1,5-lactone, D-580
 6-*O*-Acetyl-2,3,4-trideoxy-*D*-*glycero*-hex-2-enose, T-154
 4-Amino-2,3,4-trideoxy-*erythro*-hex-2-enuronic acid; *D*-form, A-454
 1,6-Anhydro-4-*O*-benzoyl-2,3-dideoxy- β -*D*-*erythro*-hex-2-enopyranose, A-584
 1,6-Anhydro-4-*O*-benzoyl-2,3-dideoxy- β -*D*-*threo*-hex-2-enopyranose, A-585
 1,6-Anhydro-4-*O*-benzyl-2,3-dideoxy- β -*D*-*erythro*-hex-2-enopyranose, A-584
 1,6-Anhydro-4-*O*-benzyl-2,3-dideoxy- β -*D*-*threo*-hex-2-enopyranose, A-585
 2,6-Anhydro-3-deoxy-1,5-di-*O*-methyl-*L*-*threo*-hex-2-enitol, A-539
 2,6-Anhydro-3-deoxy-*lyxo*-hept-2-enitol; *D*-form, A-530
 2,6-Anhydro-3-deoxy-*lyxo*-hept-2-enose; *D*-form, A-531
 2,6-Anhydro-3-deoxy-*threo*-hex-2-enitol; *L*-form; Tri-Ac, A-539
 2,6-Anhydro-3-deoxy-*threo*-hex-2-enitol; *L*-form, A-539
 2,6-Anhydro-1,5-di-*O*-benzyl-3-deoxy-*L*-*threo*-hex-2-enitol, A-539
 1,6-Anhydro-2,3-dideoxy- β -*D*-*glycero*-hex-2-enopyranos-4-ulose, D-589
 1,6-Anhydro-2,3-dideoxy-*threo*-hex-2-enose; β -*D*-Pyranose-form, A-585
 Antibiotic SEN 366D1, A-770
 Antibiotic SEN 366F, A-771
 2-Benzamido-4,6-*O*-benzylidene-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 Benzyl 4,6-di-*O*-benzyl-2,3-dideoxy-2-*C*-methyl- α -*D*-*threo*-hex-2-enopyranoside, D-631
 4,6-*O*-Benzylidene-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, D-580
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*R*,5*S*)-form, B-121
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*S*,5*R*)-form, B-121
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*S*,5*S*)-form, B-121
tert-Butyl 2,4,6-tri-*O*-acetyl- α -*D*-*erythro*-hex-2-enopyranoside, H-81
 2-Deoxyascorbic acid; *L*-form, D-42
 3-Deoxy-*arabino*-hept-2-enono-1,4-lactone; *D*-form, D-149
 3-Deoxy-*erythro*-hex-2-enopyranosyl fluoride; α -*D*-form; Tri-Ac, D-180
 3-Deoxy-*erythro*-hex-2-enopyranosyl fluoride; α -*D*-form; Tribenzoyl, D-180
 4,6-Di-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enose, D-591
 4,6-Di-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, D-580
 2,4-Di-*O*-acetyl-3,6-dideoxy-*L*-*erythro*-hex-2-enono-1,5-lactone, D-581
 4,6-Di-*O*-acetyl-*D*-*threo*-hex-2-enono-1,5-lactone, D-582
 2,3-Diamino-2,3-dideoxyascorbic acid; *L*-form; *N*²-Ac, D-415
 2,3-Diamino-2,3-dideoxyascorbic acid; *L*-form; *N*,*N'*-Diformyl, D-415
 2,3-Diamino-2,3-dideoxyascorbic acid; *L*-form, D-415
 4,6-Di-*O*-benzoyl-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, D-580
 2,4-Di-*O*-benzoyl-3,6-dideoxy-*L*-*erythro*-hex-2-enono-1,5-lactone, D-581
 2,4-Di-*O*-benzoylpent-2-enono-1,5-lactone, D-334
 3,4-Dichloro-2,3,4-trideoxy-*glycero*-pent-2-enopyranose; β -*D*-form, D-547

2',3'-Didehydro-2',3'-dideoxyadenosine, D-550
 2',3'-Didehydro-2',3'-dideoxycytidine, D-551
 2',3'-Didehydro-2',3'-dideoxy-2'-fluorothymidine, D-553
 2',3'-Didehydro-2',3',5'-trideoxyadenosine, D-550
 2,3-Dideoxy-*D*-ascorbic acid, D-583
 2,3-Dideoxy-*L*-ascorbic acid, D-583
 2,3-Dideoxy-*erythro*-hex-2-enono-1,5-lactone; *D*-form; 2-Benzoyloxy, 4,6-dibenzoyl, D-580
 2,3-Dideoxyhex-2-enono-1,4-lactone; *D*-*threo*-form, D-583
 2,3-Dideoxyhex-2-enono-1,4-lactone; *L*-*erythro*-form, D-583
 Ethyl 6-*O*-acetyl-2,3-dideoxy- α -*D*-*glycero*-hex-2-enopyranosid-4-ulose, D-589
 Ethyl 6-*O*-benzoyl-2,3-dideoxy- α -*D*-*glycero*-hex-2-enopyranosid-4-ulose, D-589
 Ethyl 6-*O*-benzyl-2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-591
 Ethyl 4,6-di-*O*-acetyl-2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Ethyl 4,6-di-*O*-acetyl-2,3-dideoxy- α -*D*-*threo*-hex-2-enopyranoside, D-587
 Ethyl 4,6-di-*O*-benzyl-2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Ethyl 2,3-dideoxy-4,6-di-*O*-mesyl- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Ethyl 2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Ethyl 2,3-dideoxy- α -*D*-*glycero*-hex-2-enopyranosid-4-ulose, D-589
 Ethyl 2,3-dideoxy-6-*O*-tosyl- α -*D*-*glycero*-hex-2-enopyranosid-4-ulose, D-589
 Maltal, M-7
 Methyl 4-*O*-acetyl-2,3-dideoxy- α -*D*-*glycero*-pent-2-enopyranoside, D-650
 Methyl 4-*O*-acetyl-2,3,6-trideoxy- α -*L*-*threo*-hex-2-enopyranoside, T-155
 Methyl 4-amino-2,3,4-trideoxy- α -*D*-*erythro*-hex-2-enopyranosiduronic acid, 8CI, A-454
 Methyl 4-*O*-benzyl-2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy- β -*D*-*erythro*-hex-2-enopyranoside, D-584
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy- α -*D*-*threo*-hex-2-enopyranoside, D-587
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy- β -*D*-*threo*-hex-2-enopyranoside, D-587
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-2-*C*-methyl-3-nitro- α -*D*-*threo*-hex-2-enopyranoside, M-161
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-nitro-*threo*-hex-2-enopyranoside; α -*D*-form, M-161
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-nitro-*threo*-hex-2-enopyranoside; β -*D*-form, M-161
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-nitro- α -*D*-*erythro*-hex-2-enopyranoside, D-646
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-nitro- β -*D*-*erythro*-hex-2-enopyranoside, D-646
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-2-*C*-vinyl- α -*D*-*erythro*-hex-2-enopyranoside, D-659
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-*C*-vinyl- α -*D*-*erythro*-hex-2-enopyranoside, D-660
 Methyl 4,6-di-*O*-acetyl-2,3-dideoxy- α -*D*-*threo*-hex-2-enopyranoside, D-587
 Methyl 3,6-di-*O*-benzoyl-2-deoxy- α -*D*-*glycero*-hex-2-enopyranosid-4-ulose, D-178
 Methyl 4,6-di-*O*-benzoyl-2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Methyl 4,6-di-*O*-benzyl-2,3-dideoxy- α -*D*-*erythro*-hex-2-enopyranoside, D-584
 Methyl 3,4-dichloro-2,3,4-trideoxy- β -*D*-*glycero*-pent-2-enopyranoside, 8CI, D-547
 Methyl 3,4-dichloro-2,3,4-trideoxy- α -*D*-*glycero*-pent-2-enopyranoside, D-547
 Methyl 2,3-dideoxy- α -*D*-*threo*-hex-2-enopyranoside, D-587
 Methyl 2,3-dideoxy-5-*O*-trityl- α -*D*-*glycero*-pent-2-enofuranoside, D-650
 Methyl 2,3-dideoxy-5-*O*-trityl- β -*D*-*glycero*-pent-2-enofuranoside, D-650
 Methyl 2,3,6-trideoxy- α -*L*-*threo*-hex-2-enopyranoside, T-155
 Stavudine, S-76
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy- α -*D*-*erythro*-hex-2-enopyranose, D-175
 1,2,4,6-Tetra-*O*-acetyl-3-deoxy- β -*D*-*erythro*-hex-2-enopyranose, D-175
 4,5,6,7-Tetra-*O*-acetyl-2,3-dideoxy-*D*-*arabino*-hept-2-enonic acid, T-33
 2,3,4,6-Tetra-*O*-acetyl-*D*-*erythro*-hex-2-enono-1,5-lactone, H-78
 2,5,6,7-Tetra-*O*-benzoyl-3-deoxy-*D*-*arabino*-hept-2-enono-1,4-lactone, D-149
 2,5,6,7-Tetra-*O*-benzoyl-3-deoxy-*D*-*lyxo*-hept-2-enono-1,4-lactone, D-150
 4,5,6,7-Tetrahydroxy-2-heptenoic acid; (2*E*,4*S*,5*R*,6*S*)-form; Me ester, 4,5,6,7-tetra-Ac, T-33
 4,5,6,7-Tetrahydroxy-2-heptenoic acid; (2*E*,4*R*,5*S*,6*R*)-form, T-33
 2,4,6-Tri-*O*-acetyl-3-deoxy-*erythro*-hex-2-enono-1,5-lactone, D-172
 1,4,6-Tri-*O*-acetyl-2,3-dideoxy- α -*D*-*threo*-hex-2-enopyranose, D-587

4,5,6-Tri-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enose, D-591
 2,4,6-Tri-*O*-benzoyl-3-deoxy-*erythro*-hex-2-enono-1,5-lactone, D-172
 2,4,6-Tri-*O*-benzyl-3-deoxy-*threo*-hex-2-enono-1,5-lactone, D-173

Unsaturated sugars; 3-enes

2-*O*-Acetyl-1,6-anhydro-3,4-dideoxy- β -*DL*-*erythro*-hex-3-enopyranose, A-581
 3-*O*-Acetyl-1,2:5,6-di-*O*-isopropylidene- α -*D*-*erythro*-hex-3-enofuranose, 9CI, 8CI, D-171
 1,6-Anhydro-3-bromo-3,4-dideoxy-*glycero*-hex-3-enopyranos-2-ulose; *D*-form, A-508
 1,6-Anhydro-3,4-dideoxy-*erythro*-hex-3-enopyranose; β -*D*-form, A-581
 1,6-Anhydro-3,4-dideoxy-*threo*-hex-3-enopyranose; β -*D*-form, A-582
 1,6-Anhydro-3,4-dideoxy-*glycero*-hex-3-enopyranos-2-ulose; *D*-form, A-583
 1,6-Anhydro-3,4-dideoxy-2-*O*-methyl- β -*DL*-*erythro*-hex-3-enopyranose, A-581
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-*glycero*-hex-3-enopyranos-2-ulose; β -*D*-form, A-596
 1,6-Anhydro-3,4-dideoxy-2-*O*-tosyl- β -*D*-*erythro*-hex-3-enopyranose, A-581
 Benzyl 2-benzoyloxycarbonylamino-2,3,4,6-tetradeoxy-6-iodo- α -*D*-*erythro*-hex-3-enopyranoside, A-451
tert-Butyl 6-*O*-acetyl-3,4-dideoxy- α -*D*-*glycero*-hex-3-enopyranosid-2-ulose, D-594
tert-Butyl 6-*O*-acetyl-2,3,4-trideoxy-2-methylene- α -*D*-*glycero*-hex-3-enopyranoside, T-158
 3-Deoxy-1,2:5,6-di-*O*-isopropylidene-*erythro*-hex-3-enofuranose, 9CI, 8CI, D-171
 1,6-Di-*O*-acetyl-3,4-dideoxy- α -*D*-*glycero*-hex-3-enopyranos-2-ulose, D-594
 1,6-Di-*O*-acetyl-3,4-dideoxy- β -*D*-*glycero*-hex-3-enopyranos-2-ulose, D-594
 4,7-Di-*O*-benzoyl-5-deoxy-*D*-*glycero*-hept-4-ene-2,3-diulo-2,6-pyranose, D-148
 2,6-Di-*O*-benzoyl-3,4-dideoxy- α -*D*-*erythro*-hex-3-enopyranoside, D-585
 3,4-Dideoxy-1,2:5,6-di-*O*-isopropylidene-*D*-*threo*-hex-3-*E*-enitol, H-77
 3,4-Dideoxy-1,2:5,6-di-*O*-isopropylidene-*D*-*threo*-hex-3-*Z*-enitol, H-77
 3,4-Dideoxy-1,2:5,6-di-*O*-isopropylidene-*DL*-*erythro*-hex-3-*E*-enitol, H-77
 3,4-Dideoxy-1,2:5,6-di-*O*-isopropylidene-*DL*-*erythro*-hex-3-*Z*-enitol, H-77
 3,4-Dideoxy-*glycero*-hex-3-enopyranosulos-1-yl fluoride; α -*D*-form; Ac, D-590
 3,4-Dideoxy-*glycero*-hex-3-enopyranosulos-1-yl fluoride; α -*D*-form; Benzoyl, D-590
 6-Hydroxy-2-methyl-2*H*-pyran-3(6*H*)-one; (2*R*)-form, H-179
 6-Hydroxy-2-methyl-2*H*-pyran-3(6*H*)-one; (2*S*)-form, H-179
 6-Methoxy-2-methyl-2*H*-pyran-3(6*H*)-one, H-179
 Methyl 2-*O*-acetyl-3-*C*-allyl-4,6-*O*-benzylidene-3-deoxy- α -*D*-*erythro*-hex-3-enopyranoside, M-159
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy- β -*D*-*erythro*-hex-3-enopyranoside, M-159
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -*D*-*erythro*-hex-3-enopyranoside, M-159
 Methyl α -*L*-aculoside, H-179
 Methyl β -*L*-aculoside, H-179
 Methyl 6-*O*-benzoyl-3,4-dideoxy- α -*D*-*glycero*-hex-3-enopyranosid-2-ulose, D-594
 Methyl 2-*O*-benzoyl-3,4-dideoxy-6-*O*-trityl- α -*D*-*erythro*-hex-3-enopyranoside, D-585
 Methyl 4,6-*O*-benzylidene-2-bromo-2,3-dideoxy-*threo*-hex-3-enopyranoside; α -*D*-form, M-158
 Methyl 4,6-*O*-benzylidene-3-deoxy-*erythro*-hex-3-enopyranoside; β -*D*-form, M-159
 Methyl 2,6-di-*O*-benzoyl-3,4-dideoxy- α -*D*-*erythro*-hex-3-enopyranoside, D-585
 Methyl 3,4-dideoxy-2,6-di-*O*-mesyl- α -*D*-*erythro*-hex-3-enopyranoside, D-585
 Methyl 3,4-dideoxy- α -*D*-*erythro*-hex-3-enopyranoside, D-585
 Methyl 3,4-dideoxy- α -*D*-*glycero*-hex-3-enopyranosid-2-ulose, D-594
 Methyl 3,4-dideoxy-6-*O*-trityl- α -*D*-*erythro*-hex-3-enopyranoside, D-585
 Methyl 3,4-dideoxy-6-*O*-trityl- α -*D*-*glycero*-hex-3-enopyranosid-2-ulose, D-594
 Methyl-2-*O*-acetyl-3-*C*-benzyl-4,6-*O*-benzylidene-3-deoxy- α -*D*-*erythro*-hex-3-enopyranoside, M-159
 Spenolimycin, S-63

Unsaturated sugars; 4-enes

3-*O*-Acetyl-5-deoxy-1,2-*O*-isopropylidene- β -*L*-*threo*-pent-4-enofuranose, D-332
 1,5-Anhydro-2,3,6-tri-*O*-benzoyl-4-deoxy-*L*-*erythro*-hex-4-enitol, A-537
 Antibiotic G 367S₂, S-45
 Antibiotic G 52, S-45
 Antibiotic KA 6606XV, A-756

3-*O*-Benzoyl-5-deoxy-1,2-*O*-isopropylidene- β -*L*-*threo*-pent-4-enofuranose, D-332
 Capuramycin, C-7
 3'-*N*-Demethylsisomicin, S-45
 6-Deoxy-*threo*-hex-5-enulofuranose; β -*D*-form; 2,3-*O*-Isopropylidene, D-182
 5-Deoxy-1,2-*O*-isopropylidene-3-*O*-tetrahydropyran- β -*L*-*threo*-pent-4-enofuranose, D-332
 1-(5-Deoxy-*erythro*-pent-4-enofuranosyl)cytosine; β -*D*-form, D-333
 4-Deoxy-*threo*-pent-4-enopyranose; β -*D*-form; 1,2-*O*-Isopropylidene, D-336
 4-Deoxy-*threo*-pent-4-enopyranose; β -*L*-form; 1,2-*O*-Isopropylidene, D-336
 2,6-Diamino-2,3,4,6-tetradeoxy-*glycero*-hex-4-enopyranose; *D*-form, D-469
 4',5'-Didehydro-5'-deoxyuridine; β -*D*-form; 2',3'-Di-Ac, D-549
 4',5'-Didehydro-5'-deoxyuridine; β -*D*-form; 2',3'-*O*-Isopropylidene, D-549
 4',5'-Didehydro-5'-deoxyuridine; β -*D*-form, D-549
 2,3-Dihydroxy-2-methyl-4-pentenoic acid; (2*R*,3*R*)-form; 2,3-Isopropylidene, Me ester, D-699
 2,3-Dihydroxy-2-methyl-4-pentenoic acid; (2*R*,3*R*)-form; 2,3-Isopropylidene, D-699
 Ethyl 2,6-diacetamido-2,3,4,6-tetradeoxy- α -*D*-*glycero*-hex-4-enopyranoside, D-469
 Fortimicin AL, F-31
 Fortimicin KG₂, F-32
 α -*L*-*threo*-4-Hex-4-enopyranuronosyl-D-galacturonic acid, H-80
 Lysinomycin, L-60
 Methyl 4-deoxy-2,6-di-*O*-methyl- α -*L*-*threo*-hex-4-enopyranoside, D-181
 Methyl 5-deoxy-2,3-*O*-isopropylidene- β -*D*-*erythro*-pent-4-enofuranoside, 8CI, D-331
 Methyl 2,3-di-*O*-acetyl-4-deoxy- β -*L*-*erythro*-hex-4-enodialdo-1,5-pyranose, D-169
 Methyl 2,3-di-*O*-acetyl-4-deoxy- α -*D*-*threo*-hex-4-enopyranoside, D-181
 Methyl 2,3-di-*O*-benzyl-4-deoxy- β -*L*-*threo*-hex-4-enodialdo-1,4-pyranose, D-170
 Methyl 2,3-di-*O*-benzyl-4-deoxy- β -*L*-*threo*-hex-4-enopyranoside, D-181
 Methyl 2,3-di-*O*-benzyl-4,6-dideoxy- α -*D*-*threo*-hex-4-enopyranoside, 9CI, D-588
 Methyl 4,6-dideoxy-2,3-di-*O*-methyl- β -*D*-*erythro*-hex-4-enopyranoside, 9CI, D-586
 Methyl 4,6-dideoxy-2,3-*O*-isopropylidene- β -*D*-*erythro*-hex-4-enopyranoside, 8CI, D-586
 Methyl 4,6-dideoxy-2,3-*O*-isopropylidene- β -*L*-*erythro*-hex-4-enopyranoside, D-586
 Methyl (methyl 4-deoxy-2,3-di-*O*-methyl- α -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy-2,3-di-*O*-methyl- β -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy- β -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy- α -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy-2-*O*-methyl- β -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-acetyl-4-deoxy- β -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-acetyl-4-deoxy- α -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-benzyl-4-deoxy- β -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-benzyl-4-deoxy- α -*L*-*threo*-hex-4-enopyranosid)uronate, D-179
 1,2,3,4,6-Penta-*O*-acetyl- α -*L*-*threo*-hex-4-enopyranose, H-79
 1,2,3,4,6-Penta-*O*-benzoyl- α -*L*-*threo*-hex-4-enopyranose, H-79
 Sisomicin B, S-46
 Sisomicin, S-45
 1,2,3,6-Tetra-*O*-acetyl-4-deoxy- α -*L*-*threo*-hex-4-enopyranose, H-79
 1,2,3,6-Tetra-*O*-benzoyl-4-deoxy- α -*L*-*threo*-hex-4-enopyranose, H-79
 1,2,3-Tri-*O*-acetyl-4-deoxy- α -*L*-*erythro*-hex-4-enodialdo-1,5-pyranose, D-169
 1,2,3-Tri-*O*-acetyl-4-deoxy- β -*L*-*erythro*-hex-4-enodialdo-1,5-pyranose, D-169
 Verdamicin, V-14

Unsaturated sugars; 5-enes

4-*O*-Acetyl-1,5-anhydro-2,6-dideoxy-3-*C*-methyl-*D*-*ribo*-hex-1-enitol, A-595
 1-*O*-Acetyl-2,6-anhydro-1,4,5-trideoxy-4-(trifluoroacetamido)-*L*-*arabino*-hex-5-enitol, A-150
 Angustmycin A, A-478
 1,5-Anhydro-6-deoxy-*lyxo*-hex-5-enitol; *D*-form, A-538
 1,5-Anhydro-2,6-dideoxy-3-*C*-methyl-*ribo*-hex-1-enitol; *L*-form, A-595
 1,5-Anhydro-2,6-dideoxy-3-*C*-methyl-*ribo*-hex-1-enitol; *D*-form, A-595

1,5-Anhydro-2,3,4-tri-*O*-benzoyl-6-deoxy-*D*-lyxo-hex-5-enitol, A-538
 2,6-Anhydro-1,4,5-trideoxy-4-(trifluoroacetamido)-*L*-arabino-hex-5-enitol, A-150
 3-*O*-Benzyl-5,6-dideoxy-1,2-*O*-isopropylidene- α -*D*-xylo-hex-5-enofuranose, D-593
 Chaetiacandin, C-54
 6-Deoxy-1,2,3,4-di-*O*-isopropylidene-*arabino*-hex-5-enopyranose, 9CI, 8CI, D-174
 5,6-Dideoxy-xylo-hex-5-enose; *D*-form, D-593
 5,6-Dideoxy-2,3-*O*-isopropylidene-*D*-lyxo-hex-5-enofuranose, D-592
 5,6-Dideoxy-1,2-*O*-isopropylidene- α -*D*-xylo-hex-5-enofuranose, D-593
 5,6-Dideoxy-1,2-*O*-isopropylidene-3-*O*-methyl- α -*D*-xylo-hex-5-enofuranose, D-593
 1,5-Hexadiene-3,4-diol, H-67
 Lecythophorin, C-54
 Lepidimic acid, L-30
 Methyl 4-*O*-acetyl-6-deoxy-2,3-di-*O*-tosyl- β -*D*-xylo-hex-5-enopyranoside, D-177
 Methyl 3,4-anhydro-6-deoxy- α -*L*-arabino-hex-5-enopyranoside, A-542
 Methyl 3,4-anhydro-6-deoxy- β -*L*-arabino-hex-5-enopyranoside, A-542
 Methyl 3,4-anhydro-6-deoxy-*ribo*-hex-5-enopyranoside, A-543
 Methyl 6-deoxy- β -*D*-xylo-hex-5-enopyranoside, D-177
 Methyl 6-deoxy-2,3-*O*-isopropylidene- α -*D*-lyxo-hex-5-enopyranoside, D-176
 Methyl 2,3-di-*O*-acetyl-4-*O*-benzoyl-6-deoxy- α -*D*-arabino-hex-5-enopyranose, D-174
 Methyl 2,4-di-*O*-acetyl-6-deoxy-3-*O*-methyl- β -*D*-xylo-hex-5-enopyranoside, D-177
 Methyl 5,6-dideoxy-2,3-*O*-isopropylidene-*D*-lyxo-hex-5-enofuranoside, D-592
 Methyl 5,6-dideoxy-2,3-*O*-isopropylidene- α -*L*-lyxo-hex-5-enofuranoside, D-592
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -*D*-lyxo-hex-5-enopyranoside, D-176
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- α -*D*-xylo-hex-5-enopyranoside, D-177
 Methyl 2,3,4-tri-*O*-acetyl-6-deoxy- β -*D*-xylo-hex-5-enopyranoside, D-177
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- α -*D*-xylo-hex-5-enopyranose, D-177
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy- β -*D*-xylo-hex-5-enopyranose, D-177
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-deoxy-*D*-xylo-hex-5-enitol, A-540
 2,3,4-Tri-*O*-acetyl-5,6-dideoxy-*D*-xylo-hex-5-enose, D-593
 2,3,4-Tribenzyl-5,6-dideoxy-*D*-xylo-hex-5-enose, D-593

Other unsaturated sugars

Allyl arabinofuranoside; *L*-form, A-89
 Allyl arabinopyranoside; β -*L*-form, A-90
 Allyl arabinopyranoside; β -*D*-form, A-90
 Allyl 2,3-di-*O*-benzoyl-5-*O*-trityl- α -*D*-arabinofuranoside, A-89
 Allyl fructopyranoside; β -*D*-form, A-91
 Allyl 3,4-*O*-isopropylidene- β -*L*-arabinopyranoside, A-90
 Allyl 3,4-*O*-isopropylidene- β -*D*-arabinopyranoside, A-90
 Allyl 3,4-*O*-isopropylidene-2-*O*-tosyl- β -*D*-arabinopyranoside, A-90
 Allyl ribofuranoside; *D*-form, A-96
 Allyl 1,3,4,5-tetra-*O*-benzoyl- β -*D*-fructopyranoside, A-91
 Allyl 2-*O*-tosyl- β -*D*-arabinopyranoside, A-90
 Allyl 2,3,5-tri-*O*-acetyl- β -*D*-arabinofuranoside, A-89
 Allyl 2,4,5-tri-*O*-acetyl- α -*D*-arabinopyranoside, A-90
 Allyl 2,4,5-tri-*O*-acetyl- β -*D*-arabinopyranoside, A-90
 Allyl 2,3,5-tri-*O*-benzoyl- α -*D*-arabinofuranoside, A-89
 Allyl 2,3,5-tri-*O*-benzyl- β -*L*-arabinofuranoside, A-89
 Allyl 2,3,4-tri-*O*-benzyl- β -*L*-arabinopyranoside, A-90
 Allyl 2,3,5-tri-*O*-benzyl-*D*-ribofuranoside, A-96
 4-*C*-Allyl-1,6-anhydro-4-deoxy-2-*O*-tosyl- β -*D*-glucopyranose, A-98
 1,6-Anhydro-4-*O*-benzyl-2-deoxy-2-*C*-vinyl- β -*D*-glucopyranose, A-575
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-2-*C*-vinyl-*D*-ribo-hex-1-enitol, A-576
 2,6-Anhydro-1,3,4,5-tetra-*O*-benzoyl-*D*-arabino-hex-1-enitol, A-644
 1,5-Anhydro-2,4,6-tri-*O*-benzoyl-3-deoxy-3-methylene-*D*-erythro-hex-1-enitol, A-567
 tert-Butyl 6-*O*-acetyl-2,3,4-trideoxy-2-methylene- α -*D*-glycero-hex-3-enopyranoside, T-158
 5-Chloro-2',3'-didehydro-2',3'-dideoxycytidine, C-112
 5-Chloro-2',3'-didehydro-2',3'-dideoxyuridine, C-113
 3-Deoxy-1,2,5,6-di-*O*-isopropylidene-3-*C*-methylene- α -*D*-ribo-hexofuranose, D-297
 3-Deoxy-1,2,5,6-di-*O*-isopropylidene-3-*C*-methylene- α -*D*-ribo-hexofuranose, D-297
 2',3'-Didehydro-2',3'-dideoxy-2'-fluorocytidine, D-552
 2',3'-Didehydro-2',3'-dideoxy-2'-fluorouridine, D-554
 2,3-Dideoxy-3-*C*-methylene-glycero-pentose; *D*-form, D-629
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methylene- α -*D*-ribo-hexopyranoside, D-297
 Methyl 4,6-*O*-benzylidene-2,3-dideoxy-2-*C*-vinyl- α -*D*-erythro-hex-2-enopyranoside, D-659

Methyl 5,6-dideoxy-2,3,8,9:10,11-tri-*O*-isopropylidene-*L*-lyxo- α -*L*-talodec-5-enodialdo-1,4-furanoside-11,7-pyranose; (*E*)-form, M-173
 Methyl 5,6-dideoxy-2,3,8,9:10,11-tri-*O*-isopropylidene-*L*-lyxo- α -*L*-talodec-5-enodialdo-1,4-furanoside-11,7-pyranose; (*Z*)-form, M-173
 Methyl 2,3,6-tri-*O*-benzyl-4-deoxy-4-*C*-methylene- α -*D*-xylo-hexopyranoside, D-298
 Mycalisine A, M-336
 Mycalisine B, M-337
 4-Pentenyl 4,6-*O*-benzylidene- α -*D*-glucopyranoside, P-32
 4-Pentenyl 4,6-*O*-benzylidene- β -*D*-glucopyranoside, P-32
 4-Pentenyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside, P-32
 4-Pentenyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- β -*D*-glucopyranoside, P-32
 4-Pentenyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -*D*-glucopyranoside, P-32
 4-Pentenyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- β -*D*-glucopyranoside, P-32
 4-Pentenyl mannopyranoside; α -*D*-form, P-34
 4-Pentenyl mannopyranoside; β -*D*-form, P-34
 4-Pentenyl 2,3,4,6-tetra-*O*-acetyl- α -*D*-glucopyranoside, P-32
 4-Pentenyl 2,3,4,6-tetra-*O*-acetyl- β -*D*-glucopyranoside, P-32

Sugar alkynes

3,6-Anhydro-1,2-dideoxy-*D*-allo-hept-1-ynitol, R-105
 3,6-Anhydro-1,2-dideoxy-*D*-altro-hept-1-ynitol, R-105
 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-*D*-allo-hept-1-ynitol, R-105
 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-*D*-altro-hept-1-ynitol, R-105
 3,6-Anhydro-1,2-dideoxy-4,5-*O*-isopropylidene-7-*O*-trityl-*D*-altro-hept-1-ynitol, R-105
 3,6-Anhydro-4,5,7-tri-*O*-benzyl-1,2-dideoxy-*D*-altro-hept-1-ynitol, R-105
 3,6-Anhydro-4,5,7-tri-*O*-benzyl-1,2-dideoxy-*D*-allo-hept-1-ynitol, R-105
 1,2-Dideoxy-*D*-arabino-hex-1-ynitol, H-120
 7,8-Dideoxy-galacto-oct-7-ynopyranos-6-ulose; α -*D*-form; 1,2:3,4-Di-*O*-isopropylidene, D-649
 7,8-Dideoxy-galacto-oct-7-ynopyranos-6-ulose; α -*D*-form, D-649
 5-Hexyne-1,2,3,4-tetrol; (2*R*,3*S*,4*R*)-form; Tetra-Ac, H-120
 Methyl 4,7-anhydro-5,6,8-tri-*O*-benzyl-2,3-dideoxy-2,2,3,3-tetradehydro-*D*-allo-octonoate, M-212
 Methyl 4,7-anhydro-5,6,8-tri-*O*-benzyl-2,3-dideoxy-2,2,3,3-tetradehydro-*D*-altro-octonoate, M-212
 4,5,7-Tri-*O*-acetyl-3,6-anhydro-1,2-dideoxy-*D*-altro-hept-1-ynitol, R-105

Branched chain sugars

Aceric acid; *L*-form, A-5
 4-Acetamido-3,5-di-*O*-acetyl-4-deoxy-1,2-*O*-isopropylidene-4-*C*-methyl- β -*D*-psicopyranose, A-321
 4-*O*-Acetyl-2-*C*-allyl-1,6-anhydro-2-deoxy- β -*D*-glucopyranose, A-97
 4-*O*-Acetyl-1,5-anhydro-2,6-dideoxy-3-*C*-methyl-*D*-ribo-hex-1-enitol, A-595
 2-*C*-Acetyl-2,3-dideoxy-erythro-hexopyranos-4-ulose; α -*D*-form; Et glycoside, 6-trityl, A-16
 2-*C*-Acetyl-2,3-dideoxy-threo-hexopyranos-4-ulose; α -*D*-form; Et glycoside, 6-trityl, A-17
 2-*C*-Acetyl-2,3-dideoxy-erythro-hexopyranos-4-ulose; α -*D*-form, A-16
 2-*C*-Acetyl-2,3-dideoxy-threo-hexopyranos-4-ulose; α -*D*-form, A-17
 4-*C*-Acetyl-2,6-dideoxy-xylo-hexose; *L*-form, A-18
 4-*O*-Acetyl-2,6-dideoxy-3-*C*-methyl-*L*-arabino-hexopyranose, 9CI, D-634
 4-*O*-Acetyl-2,6-dideoxy-3-*C*-methyl-*L*-ribo-hexopyranose, D-636
 5-*O*-Acetyl-2,3-dideoxy-2-*C*-methyl-threo-pentono-1,4-lactone, D-641
 2-*O*-Acetyl-3,5-*O*-isopropylidene-2-*C*-methyl-*D*-xylono-1,4-lactone, M-304
 4-*O*-Acetyl-3-*C*-methyl-3-*O*-methyl-*L*-xylo-hexose, D-637
 1-*O*-Acetyl-2,3,6-trideoxy-3-*C*-methyl-4-*O*-methyl-3-nitro-*L*-arabino-hexopyranose, E-37
N-Acylkansosamine, A-409
 Aldgarose; α -*D*-Pyranose-form; 1,2-*O*-Isopropylidene, A-69
 Aldgarose; β -*D*-Pyranose-form; Me glycoside, 2-benzyl, A-69
 Aldgarose; α -*D*-Pyranose-form; Me glycoside, A-69
 Aldgarose; β -*D*-Pyranose-form; Me glycoside, A-69
 Aldgarose; *D*-form, A-69
 Allyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-methyl- α -*D*-mannopyranoside, D-307
 2-*C*-Allyl-1,6-anhydro-2-deoxyglucose; β -*D*-Pyranose-form, A-97
 3-*C*-Allyl-1,6-anhydro-4-deoxy-2-*O*-tosyl- β -*D*-glucopyranose, A-98
 2-Amino-2,3,5-trideoxy-3-methyl-*L*-arabinonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-*D*-arabinonic acid, A-427
 3-Amino-2,3,6-trideoxy-3-*C*-methyl-ribo-hexose; α -*L*-Pyranose-form; Me glycoside, *N*-Ac, A-465
 3-Amino-2,3,6-trideoxy-3-*C*-methyl-xylo-hexose; *L*-Pyranose-form, A-466
 3-Amino-2,3,6-trideoxy-3-*C*-methyl-ribo-hexose; *L*-form, A-465
 2-Amino-2,3,5-trideoxy-3-methyl-*D*-lyxonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-*L*-ribonic acid, A-427

- 2-Amino-2,3,5-trideoxy-3-methyl-D-xylonic acid, A-427
 1,6-Anhydro-4-*O*-benzyl-2-deoxy-2-*C*-vinyl-β-D-glucopyranose, A-575
 1,6-Anhydro-2-*O*-benzyl-β-D-glucopyranose, A-634
 1,5-Anhydro-4,6-*O*-benzylidene-2,3-dideoxy-3-(iodomethyl)-D-*ribo*-hex-1-enitol, A-593
 1,6-Anhydro-3,4-(2-butene-1,4-diyl)-3,4-dideoxy-β-D-*ribo*-hexopyranos-2-ulose; (5*aR*,9*aS*)-*form*, A-514
 1,4-Anhydro-2-deoxy-5-*O*-(methoxymethyl)-2-*C*-methyl-D-*erythro*-pent-1-enitol, A-569
 1,5-Anhydro-2,6-dideoxy-3-*C*-methyl-*ribo*-hex-1-enitol; D-*form*, A-595
 1,5-Anhydro-2,6-dideoxy-3-*C*-methyl-*ribo*-hex-1-enitol; L-*form*, A-595
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-*glycero*-hex-3-enopyranos-2-ulose; β-D-*form*, A-596
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-*erythro*-hexopyranos-2-ulose; β-D-*form*, A-597
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-4-*C*-vinyl-*glycero*-hexopyranos-2-ulose; β-D-*form*, A-598
 1,3'-Anhydro-3-*C*-hydroxymethyl-α-D-glucopyranose, H-165
 Antibiotic AC4437, A-740
 Antibiotic G 367S₂, S-45
 Antibiotic G 52, S-45
 Antibiotic SU1, A-777
 Antibiotic SU2, A-777
 Antibiotic SU3, A-777
 Antibiotic SU4, A-777
 Antibiotic XK 62-4, A-778
 Antibiotic XK 62-3, A-778
 Antibiotic XK 62-6, A-779
 Antibiotic XK 62-7, A-779
 Antibiotic Y 02077H₇, A-780
 Antibiotic Y 02077H₈, A-780
 D-Apio-β-D-furanose, 9CI, A-785
 Apiose; D-*form*, A-785
 Apiose; L-*form*, A-785
 Apiose; DL-*form*, A-785
 Ashimycin A, A-869
 Ashimycin B, A-870
 Avileurekanose A, A-881
 3-Benzamido-4-*O*-benzyl-2,3,6-trideoxy-3-*C*-methyl-α-L-*xyl*-hexopyranose, A-466
 6-*O*-Benzoyl-1-deoxy-2,3-*O*-isopropylidene-3-*C*-methyl-α-D-psicofuranose, D-311
 2-*C*-(Benzoyloxymethyl)-5-*O*-benzoyl-2,3-*O*-isopropylidene-D-ribofuranose, H-181
 Benzyl 2-*O*-benzyl-3-*C*-benzyloxymethyl-3,5-dideoxy-α-L-lyxofuranoside, D-622
 Benzyl 5-deoxy-3-*C*-(hydroxymethyl)-α-L-lyxofuranoside, D-230
 Benzyl 4,6-di-*O*-benzyl-2,3-dideoxy-2-*C*-methyl-α-D-*threo*-hex-2-enopyranoside, D-631
 Benzyl 3,4-*O*-isopropylidene-2-*C*-methyl-β-L-arabinopyranoside, M-229
 Benzyl 3,4-*O*-isopropylidene-2-*C*-methyl-β-L-ribofuranoside, M-286
 Benzyl 2-*C*-methyl-β-D-ribofuranoside, M-286
 2-*O*-Benzyl-2-*C*-methyl-D-1,4-erythronolactone, M-246
tert-Butyl 6-*O*-acetyl-3,4-dideoxy-4-*C*-methyl-α-D-*threo*-hexopyranosid-2-ulose, D-640
tert-Butyl 6-*O*-acetyl-2,3,4-trideoxy-2-methylene-α-D-*glycero*-hex-3-enopyranoside, T-158
 3-*C*-Carboxy-5-deoxyxylono-1,4-lactone, A-5
 3-*C*-Carboxymethyl-3-deoxyallose; β-D-Furanose-*form*; 3²,5-Lactone, 1,5,6-tri-Ac, C-24
 Caryophyllose, C-31
 2-Chloro-5'-deoxy-2'-*C*-methyladenosine, 9CI, M-219
 Clusianose, C-142
 Conocarpic acid, C-150
 Daviesine, A-783
 Decilnitrore, D-17
 3''-N-Demethylsagamicin, G-227
 3''-N-Demethylisomicin, S-45
 N-Demethylstreptomycin, S-83
 3-Deoxy-1,2,5,6-di-*O*-isopropylidene-3-*C*-(methoxycarbonylmethyl)-α-D-allofuranose, C-24
 3-Deoxy-1,2,5,6-di-*O*-isopropylidene-3-*C*-methyl-α-D-allofuranose, D-289
 1-Deoxy-2,3,4,5-di-*O*-isopropylidene-3-*C*-methyl-β-D-*arabino*-hexulopyranose, D-299
 1-Deoxy-3,4,5,6-di-*O*-isopropylidene-3-*C*-methyl-D-*arabino*-hex-2-ulose, D-299
 6-Deoxy-1,2,3,4-di-*O*-isopropylidene-3-*C*-methyl-β-D-psicofuranose, M-284
 1-Deoxy-2,3,4,6-di-*O*-isopropylidene-3-*C*-methyl-α-D-sorbofuranose, D-313
 3-Deoxy-3-*C*-(ethoxycarbonylmethyl)-1,2,5,6-di-*O*-isopropylidene-α-D-allofuranose, C-24
 5-Deoxy-3-*C*-formyl-1,2-*O*-isopropylidene-β-L-lyxofuranose, S-85
 5-Deoxygentamicin C_{2b}, G-227
 3-Deoxy-3-*C*-hydroxymethyl-1,2,5,6-di-*O*-isopropylidene-α-D-allofuranose, D-228
 3-Deoxy-2-*C*-(hydroxymethyl)-2,2',4,5-di-*O*-isopropylidene-D-*erythro*-pentose, D-233
 3-Deoxy-2-*C*-hydroxymethyl-2',5-di-*O*-tosyl-D-*erythro*-pentono-1,4-lactone, T-170
 3-Deoxy-3-*C*-hydroxymethyl-1,2-*O*-isopropylidene-α-D-allofuranose, D-228
 3-Deoxy-4-*C*-hydroxymethyl-1,2-*O*-isopropylidene-β-L-*glycero*-pentofuranose, D-232
 3-Deoxy-2-*C*-hydroxymethyl-2,1'-*O*-isopropylidene-D-*erythro*-pentonolactone, T-170
 3-Deoxy-4-hydroxymethyl-1,2-*O*-isopropylidene-α-D-*glycero*-pentose, D-234
 3-Deoxy-2-*C*-(hydroxymethyl)-2,2'-*O*-isopropylidene-5-*O*-tosyl-D-*erythro*-1,4-pentonolactone, T-170
 5-Deoxy-3-*C*-hydroxymethyllyxose; β-L-Furanose-*form*; 1,2-*O*-Isopropylidene, D-230
 5-Deoxy-3-*C*-hydroxymethyllyxose, D-230
 3-Deoxy-2-*C*-hydroxymethyl-D-*threo*-pentono-1,4-lactone, T-170
 3-Deoxy-2-*C*-hydroxymethyl-D-*erythro*-pentono-1,4-lactone, T-170
 9-(3-Deoxy-3-*C*-hydroxymethylthreofuranosyl)adenine; α-L-*form*, D-235
 9-(3-Deoxy-3-*C*-hydroxymethylthreofuranosyl)adenine; β-L-*form*, D-235
 3-Deoxy-1,2-*O*-isopropylidene-3-*C*-(methoxycarbonylmethyl)-α-D-allofuranose, C-24
 3-Deoxy-1,2-*O*-isopropylidene-3-*C*-methyl-α-D-glucufuranose, D-301
 1-Deoxy-2,3-*O*-isopropylidene-3-*C*-methyl-α-D-psicofuranose, D-311
 3-Deoxy-1,2-*O*-isopropylidene-5-*O*-tosyl-4-*C*-(tosyloxymethyl)-α-L-*glycero*-pentofuranose, D-232
 9-(3'-Deoxy-3'-*C*-methylallofuranosyl)adenine; β-D-*form*, D-288
 1-Deoxy-3-*C*-methylfructose; D-*form*, D-299
 2-Deoxy-2-*C*-methylglucose; D-*form*, D-300
 3-Deoxy-3-*C*-methylglucose; D-*form*, D-301
 6-Deoxy-3-*C*-methylglucose; L-*form*, D-302
 6-Deoxy-3-*C*-methylglucose, D-302
 6-Deoxy-3-*C*-methylmannose; D-*form*, D-308
 6-Deoxy-5-*C*-methyl-4-*O*-methyl-D-*lyxo*-hexose, D-304
 6-Deoxy-5-*C*-methyl-4-*O*-methyl-L-*lyxo*-hexose, D-304
 6-Deoxy-3-*C*-methyl-2-*O*-methyltalose; L-*form*, D-309
 3-Deoxy-2-*C*-methyl-*erythro*-1,4-pentonolactone; D-*form*, D-310
 1-Deoxy-3-*C*-methylpsicose; D-*form*, D-311
 6-Deoxy-3-*C*-methyl-D-psicose, M-284
 9-(3-Deoxy-3-*C*-methylribofuranosyl)adenine; β-D-*form*, D-312
 1-Deoxy-3-*C*-methylsorbitose; D-*form*, D-313
 6-Deoxy-3-*C*-methyl-2,3,4-tri-*O*-methyl-D-mannose, D-308
 6-Deoxy-3-*C*-methyl-2,3,4-tri-*O*-methyl-L-mannose, D-308
 2-Deoxystreptomycin, S-83
 3,4-Di-*O*-acetyl-2-*C*-allyl-1,6-anhydro-2-deoxy-β-D-glucopyranose, A-97
 2,5-Di-*O*-acetyl-2-*C*-(bromomethyl)-3-deoxy-D-*erythro*-1,4-pentonolactone, B-123
 1,5-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl-α-L-talofuranose, D-309
 1,4-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl-α-L-talopyranose, D-309
 1,4-Di-*O*-acetyl-6-deoxy-3-*C*-methyl-2-*O*-methyl-β-L-talopyranose, D-309
 2,5-Di-*O*-acetyl-3-deoxy-2-*C*-methyl-D-*erythro*-1,4-pentonolactone, D-310
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-α-L-*ribo*-hexose, D-636
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-3-*O*-methyl-α-D-*ribo*-hexopyranose, D-636
 1,4-Di-*O*-acetyl-2,6-dideoxy-3-*C*-methyl-3-*O*-methyl-α-L-*ribo*-hexopyranose, D-636
 1',3-Di-*O*-acetyl-1,2-*O*-isopropylidene-D-apio-β-L-furanose, A-785
 1',3-Di-*O*-acetyl-1,2-*O*-isopropylidene-D-apio-α-D-furanoside, A-785
 2,3-Di-*O*-acetyl-2-*C*-methyl-D-1,4-erythronolactone, M-246
 4,5-Di-*O*-benzyl-2-deoxy-2-*C*-methyl-L-lyxose, D-306
 1',3-Di-*O*-benzyl-1,2-*O*-isopropylidene-L-apio-β-L-furanose, A-785
 1',3-Di-*O*-benzyl-1,2-*O*-isopropylidene-L-apio-α-L-furanose, A-785
 1,2,5,6-Di-*O*-cyclohexylidene-3-*C*-ethyl-α-D-allofuranose, C-189
 1,2,5,6-Di-*O*-cyclohexylidene-3-*C*-methyl-α-D-allofuranose, C-189
 1,2,5,6-Di-*O*-cyclohexylidene-3-*C*-vinyl-α-D-allofuranose, C-189
 2,3-Dideoxy-2,2-bis(hydroxymethyl)-*glycero*-hexopyranos-4-ulose; α-D-*form*, D-558
 3,6-Dideoxy-1,2-*O*-isopropylidene-3-*C*-methyl-α-D-glucufuranose, D-630
 3,6-Dideoxy-1,2-*O*-isopropylidene-3-*C*-methyl-α-D-glucopyranose, D-630
 2,3-Dideoxy-2,3-*C*-methylene-*ribo*-hexopyranos-4-ulose; α-D-*form*; Et glycoside, 6-trityl, D-628
 2,3-Dideoxy-2,3-*C*-methylene-*lyxo*-hexopyranos-4-ulose; α-D-*form*, D-627
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α-D-*form*; Et glycoside, D-632
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α-D-*form*; Me glycoside, 6-Ac, D-632
 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α-D-*form*; Me glycoside, 6-trityl, D-632

- 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -*D*-form; Me glycoside, D-632
- 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose, D-632
- 2,6-Dideoxy-3-*C*-methyl-*arabino*-hexose; *D*-form, D-634
- 2,6-Dideoxy-3-*C*-methyl-*arabino*-hexose; *L*-form, D-634
- 2,6-Dideoxy-3-*C*-methyl-*ribo*-hexose; *D*-form, D-636
- 2,6-Dideoxy-3-*C*-methyl-*ribo*-hexose; *D*_L-form, D-636
- 2,6-Dideoxy-3-*C*-methyl-*xylo*-hexose; *L*-form, D-637
- 4,6-Dideoxy-3-*C*-methyl-4-(methylamino)-*D*-mannose, A-409
- 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*D*-*ribo*-hexose, 9CI, D-636
- 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*D*-*xylo*-hexose, 9CI, D-637
- 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*D*-*ribo*-hexose, D-636
- 2,6-Dideoxy-3-*C*-methyl-3-*O*-methyl-*L*-*xylo*-hexose, D-637
- 4,6-Dideoxy-3-*C*-methyl-2-*O*-methyl-*L*-mannose, A-409
- 2,3-Dideoxy-3-*C*-methyl-5-*O*-trityl-*D*-*erythro*-1,4-pentonolactone, D-642
- 2,3-Dideoxy-3-[tris(methylthio)methyl]-5-*O*-*tert*-butyldiphenylsilyl-*erythro*-pentono-1,4-lactone; *D*-form, D-657
- 2,4-Dihydroxy-2-(hydroxymethyl)butanoic acid, D-696
- 2,3-Dihydroxy-2-methyl-4-pentenoic acid; (2*R*,3*R*)-form; 2,3-Isopropylidene, Me ester, D-699
- 2,3-Dihydroxy-2-methyl-4-pentenoic acid; (2*R*,3*R*)-form; 2,3-Isopropylidene, D-699
- 2,3-Dihydroxy-2-methylpropanal; (*S*)-form; 2-Benzyl, 3-benzoyl, D-700
- 2,3-Dihydroxy-2-methylpropanal; (*R*)-form; 2,3-*O*-Isopropylidene, D-700
- 2,3-Dihydroxy-2-methylpropanal; (*S*)-form; 2,3-*O*-Isopropylidene, D-700
- 2,3-Dihydroxy-2-methylpropanal; (\pm)-form; 2,3-*O*-Isopropylidene, D-700
- 1,2:1',3-Di-*O*-isopropylidene-*D*-apio- β -*L*-furanose, A-785
- 1,2:1',3-Di-*O*-isopropylidene-*D*-apio- α -*D*-furanoside, A-785
- 1,2,3,4-Di-*O*-isopropylidene-2-*C*-methyl- β -*D*-arabinopyranose, M-229
- 1,2,4,5-Di-*O*-isopropylidene-3-*C*-methyl- β -*D*-fructopyranose, M-248
- 1,2,5,6-Di-*O*-isopropylidene-3-*C*-methyl- α -*D*-glucofuranose, M-254
- 1,2,5,6-Di-*O*-isopropylidene-3-*C*-methyl-3-*O*-methyl- α -*D*-glucofuranose, M-254
- 1,2,3,4-Di-*O*-isopropylidene-3-*C*-methyl- β -*D*-psicofuranose, M-284
- 1,2,4,5-Di-*O*-isopropylidene-3-*C*-methyl- β -*D*-psicopyranose, M-284
- 1,2,3,4-Di-*O*-isopropylidene-3-*C*-methyl-6-*O*-tosyl- β -*D*-psicofuranose, M-284
- 1,2,3,5-Di-*O*-isopropylidene-2-*C*-methyl- α -*D*-xylofuranose, M-305
- 1,2,5,6-Di-*O*-isopropylidene-3-*C*-(nitromethyl)- α -*D*-allofuranose, N-59
- Ethyl 6-*O*-acetyl-2,3-dideoxy-2,3-*C*-methylene- α -*D*-*lyxo*-hexopyranosid-4-ulose, D-627
- Ethyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*lyxo*-hexopyranoside, A-464
- Ethyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -*L*-*lyxo*-hexopyranoside, A-464
- Ethyl 3-benzamido-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*lyxo*-hexopyranoside, A-464
- Ethyl 6-*O*-benzyl-2,3-dideoxy-3-*C*-(hydroxymethyl)- α -*D*-*ribo*-hexopyranoside, D-620
- Ethyl 2,3-dideoxy-2-*C*-(hydroxymethyl)- α -*D*-*threo*-hexopyranos-4-ulose, D-621
- Ethyl 2,3-dideoxy-2,3-*C*-methylene- α -*D*-allopyranoside, D-626
- Ethyl 2,3-dideoxy-2,3-*C*-methylene- α -*D*-*lyxo*-hexopyranosid-4-ulose, D-627
- Ethyl 2,3-dideoxy-2-*C*-methyl-6-*O*-trityl- α -*D*-*threo*-hexopyranosid-4-ulose, D-639
- Ethyl (methyl 2,3-di-*O*-acetyl- α -*D*-glucopyranosid)uronate, M-260
- Ethyl 2,3,6-trideoxy-2-*C*-hydroxyacetyl- α -*D*-*threo*-hexopyranos-4-ulose, T-157
- 2,3-*O*-Ethylidene-2-*C*-(hydroxymethyl)-*D*-erythrofuranose, H-162
- Everninonitrose, E-35
- Evernitrose; *L*-form, E-37
- Evertetrose, E-38
- Flambeurekanose, F-9
- 3-*C*-Formyllyxose; *L*-form, F-22
- β -*D*-Galactopyranosylmethyl-(1 \rightarrow 4)-4-deoxy-*D*-glucose, G-167
- Garamine, G-216
- Garosamine; β -*L*-Pyranose-form; Me glycoside, *N*-Ac, G-217
- Garosamine; β -*L*-Pyranose-form; Me glycoside, *N*-benzoyl, G-217
- Garosamine; *L*-form, G-217
- Gentamicin B, G-226
- Gentamicin C_{2b}; 5-Deoxy, 6'-*N*-Me, G-227
- Gentamicin C_{2b}; 2-Hydroxy, 6'-*N*-Me, G-227
- Gentamicin C, G-227
- Gentamicin C_{2b}, G-227
- β -*D*-Glucosaisaccharinic acid, T-170
- α -*D*-Glucosaisaccharinic acid, T-170
- Hamamelitol; *D*-form, H-1
- Hedamycin, H-2
- Hexabenzoyl-*D*-hamamelitol, H-1
- 3-*C*-(Hydroxymethyl)-1,2:5,6-di-*O*-isopropylidene- α -*D*-allofuranose, H-155
- 3-*C*-(Hydroxymethyl)-1,2:5,6-di-*O*-isopropylidene- α -*D*-glucofuranose, H-165
- 2-*C*-(Hydroxymethyl)-2,3:5,6-di-*O*-isopropylidene-*D*-mannofuranose, H-169
- 2-*C*-(Hydroxymethyl)-2,3:5,6-di-*O*-isopropylidene-*D*-mannono-1,4-lactone, H-168
- 4-*C*-(Hydroxymethyl)-1,2:3,4-di-*O*-isopropylidene-*D*-*erythro*-pentitol, H-171
- 4-*C*-Hydroxymethyl-1,2:3,4-di-*O*-isopropylidene-*D*-*glycero*-pentose, D-26
- 4-*C*-Hydroxymethyl-2,3:4,4'-di-*O*-isopropylidene-*D*-*glycero*-pentose, D-26
- 4-*C*-Hydroxymethyl-1,2:3,4-di-*O*-isopropylidene-*L*-*glycero*-pentose, D-26
- 4-*C*-Hydroxymethyl-2,3:4,4'-di-*O*-isopropylidene-*L*-*glycero*-pentose, D-26
- 3-*C*-(Hydroxymethyl)glucose; *D*-form, H-165
- 4-*C*-(Hydroxymethyl)-1,2-*O*-isopropylidene- α -*D*-*erythro*-pentofuranose, H-172
- 4-*C*-(Hydroxymethyl)-1,2-*O*-isopropylidene- β -*L*-*threo*-pentofuranose, H-173
- 4-*C*-Hydroxymethyl-2,3-*O*-isopropylidene-*L*-*glycero*-pentose, D-26
- 2-*C*-(Hydroxymethyl)-2,3-*O*-isopropylidene-*D*-ribofuranose, H-181
- 2-*C*-(Hydroxymethyl)lyxose; *L*-form, H-166
- 3-*C*-(Hydroxymethyl)lyxose; *L*-form, H-167
- 2-*C*-(Hydroxymethyl)lyxose, H-166
- 2-*C*-Hydroxymethylribose; *D*-form, H-181
- 2-*C*-Hydroxymethylribose; *L*-form, H-181
- 3-*C*-Hydroxymethylriburonic acid; *D*-form, H-182
- 2-*C*-(Hydroxymethyl)threose; *D*-form, H-185
- 2-*C*-(Hydroxymethyl)xylose; *D*-form; 2,5-Dichlorophenylhydrazone, H-187
- 2-*C*-(Hydroxymethyl)xylose; *D*-form, H-187
- 2-Hydroxysagamicin, G-227
- Isepamicin, BAN, INN, USAN, G-226
- 4-*O*-Isobutyryl-*L*-olivomycose, D-634
- 1,2-*O*-Isopropylidene-*D*-apio- α -*D*-furanose, A-785
- 2,3-*O*-Isopropylidene-*D*-apio- β -*D*-furanose, A-785
- 1,2-*O*-Isopropylidene-*L*-apio- β -*L*-furanose, A-785
- 1,2-*O*-Isopropylidene-*L*-apio- α -*L*-furanose, A-785
- 2,3-*O*-Isopropylidene-*D*-apiose, A-785
- 1,2-*O*-Isopropylidene-3-deoxy-3-*C*-methyl- α -*D*-allofuranose, D-289
- 1,2-*O*-Isopropylidene-1',3'-di-*O*-methyl-*D*-apio- β -*L*-furanose, A-785
- 2,3-*O*-Isopropylidene-3-*C*-methyl- α -*L*-erythrofuranose, M-247
- 2,3-*O*-Isopropylidene-2-*C*-methyl-*D*-1,4-erythronolactone, M-246
- 2,3-*O*-Isopropylidene-2-*C*-methyl-*D*_L-*lyxono*-1,4-lactone, M-268
- 2,3-*O*-Isopropylidene-2-*C*-methyl-5-*O*-tosyl-*D*-*ribo*-1,4-pentonolactone, M-276
- 3,5-*O*-Isopropylidene-2-*C*-methyl-*D*-*xylono*-1,4-lactone, M-304
- 1,2-*O*-Isopropylidene-1'-*O*-tosyl- β -*D*-apio- β -*L*-furanose, A-785
- 2,3-Isopropylidene-5-*O*-tosyl-2-*C*-[(tosyloxy)methyl]-*D*-ribofuranose, H-181
- 4-*O*-Isovaleroylmycarose, D-636
- Kijanose; *D*-form, K-16
- Methyl 3-acetamido-2,3,6-trideoxy-3-*C*-methyl- α -*D*-*lyxo*-hexopyranoside, A-464
- Methyl 2-*O*-acetyl-3-*C*-allyl-4,6-*O*-benzylidene-3-deoxy- α -*D*-*erythro*-hex-3-enopyranoside, M-159
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -*D*-*erythro*-hex-3-enopyranoside, M-159
- Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl- α -*D*-allopyranoside, M-224
- Methyl 3-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-tosyl- α -*D*-allopyranoside, M-224
- Methyl 4-*C*-acetyl-2,6-dideoxy- α -*L*-*xylo*-hexopyranoside, A-18
- Methyl 4-*C*-acetyl-2,6-dideoxy- β -*L*-*xylo*-hexopyranoside, A-18
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*xylo*-hexopyranoside, 9CI, A-466
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- β -*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3-amino-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*ribo*-hexopyranoside, A-465
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -*L*-*lyxo*-hexopyranoside, A-464
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*xylo*-hexopyranoside, A-466
- Methyl 3-benzamido-4-*O*-benzoyl-2,3,6-trideoxy-3-*C*-methyl- β -*L*-*xylo*-hexopyranoside, A-466
- Methyl 3-benzamido-2,3,6-trideoxy-3-*C*-methyl- α -*L*-*xylo*-hexopyranoside, A-466
- Methyl 4-*C*-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -*D*-*threo*-hexopyranoside, P-73
- Methyl 4-*C*-benzoyloxymethylcarbonyl-2,3,6-trideoxy- α -*L*-*threo*-hexopyranoside, P-73
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-3-*C*-methyl- α -*D*-allopyranoside, M-224

- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-methyl- α -D-allopyranoside, M-224
- Methyl 3-*O*-benzyl-4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-tosyl- α -D-allopyranoside, M-224
- Methyl 6-*O*-benzyl-2-deoxy-2-*C*-methyl- α -D-altropyranoside, D-290
- Methyl 4-*O*-benzyl-2,6-dideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, D-635
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-ethyl- α -D-*arabino*-hexopyranosid-2-ulose, M-166
- Methyl 4,6-*O*-benzylidene-2-deoxy-2-*C*-methyl- α -D-altropyranoside, D-290
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -D-altropyranoside, D-291
- Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -D-*arabino*-hexopyranosid-2-ulose, M-166
- Methyl 4,6-*O*-benzylidene-2,3-dideoxy-2-*C*-methyl-3-nitro- α -D-*threo*-hex-2-enopyranoside, M-161
- Methyl 4,6-*O*-benzylidene-2,3-dideoxy-3-*C*-vinyl- α -D-*erythro*-hex-2-enopyranoside, D-660
- Methyl 4,6-*O*-benzylidene-3-*C*-methyl α -D-allopyranoside, M-224
- Methyl 4,6-*O*-benzylidene-3-*C*-methyl- α -D-glucopyranoside, M-254
- Methyl 4,6-*O*-benzylidene-3-*C*-methyl-2-*O*-tosyl- α -D-allopyranoside, M-224
- Methyl 3-deoxy-3-formyl- α -D-lyxofuranoside hemiacetal, D-121
- Methyl 3-deoxy-3-formyl- α -D-xylofuranoside hemiacetal, D-122
- Methyl 5-deoxy-3-*C*-(hydroxymethyl)- α -L-lyxofuranoside, 9CI, D-230
- Methyl 5-deoxy-3-*C*-(hydroxymethyl)- β -L-lyxofuranoside, D-230
- Methyl 6-deoxy-4-*C*-hydroxymethyl-5-*O*-methyl-2,3-*O*-methylene-1-idonate, D-229
- Methyl 6-deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -D-*lyxo*-hexopyranosid-4-ulose, D-303
- Methyl 6-deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -L-*lyxo*-hexopyranosid-4-ulose, D-303
- Methyl 3-deoxy-3-*C*-methyl- α -D-glucopyranoside, D-301
- Methyl 6-deoxy-3-*C*-methyl- α -D-gulopyranoside, D-302
- Methyl 6-deoxy-3-*C*-methyl- β -D-gulopyranoside, D-302
- Methyl 6-deoxy-3-*C*-methyl- α -D-*lyxo*-hexopyranosid-4-ulose, D-303
- Methyl 6-deoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranosid-4-ulose, D-303
- Methyl 6-deoxy-3-*C*-methyl- α -L-mannofuranoside, D-308
- Methyl 6-deoxy-3-*C*-methyl- α -D-mannopyranoside, D-308
- Methyl 6-deoxy-3-*C*-methyl- α -L-mannopyranoside, D-308
- Methyl 3-deoxy-4-*C*-methyl-3-(methylamino)- β -L-arabinopyranoside, G-217
- Methyl 6-deoxy-5-*C*-methyl-4-*O*-methyl- α -L-*lyxo*-hexopyranoside, D-304
- Methyl 6-deoxy-5-*C*-methyl-4-*O*-methyl- β -L-*lyxo*-hexopyranoside, D-304
- Methyl 6-deoxy-5-*C*-methyl-4-*O*-methyl- β -DL-*lyxo*-hexopyranoside, D-304
- Methyl 6-deoxy-3-*C*-methyl-2-*O*-methyl- α -L-talofuranoside, D-309
- Methyl 6-deoxy-3-*C*-methyl-2-*O*-methyl- β -L-talopyranoside, D-309
- Methyl 6-deoxy-3-*C*-methyl-2,3,4-tri-*O*-methyl-L-mannopyranoside, D-308
- Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl- α -D-allopyranoside, M-224
- Methyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene-3-*C*-methyl- α -D-glucopyranoside, M-254
- Methyl 2,3-di-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-*lyxo*-hexopyranosid-4-ulose, D-303
- Methyl 2,3-di-*O*-acetyl-6-deoxy-5-*C*-methyl-4-*O*-methyl- β -DL-*lyxo*-hexopyranoside, D-304
- Methyl 3,5-di-*O*-benzyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- α -L-talofuranoside, D-309
- Methyl 3,5-di-*O*-benzyl-6-deoxy-3-*C*-methyl-2-*O*-methyl- β -L-talofuranoside, D-309
- Methyl 3,4-di-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbamoyl)- α -L-arabinopyranoside, C-8
- Methyl 3,6-dideoxy-3-*C*-methyl- α -D-glucopyranoside, D-630
- Methyl 2,6-dideoxy-3-*C*-methyl- α -D-*ribo*-hexopyranoside, 9CI, 8CI, D-636
- Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*ribo*-hexopyranoside, 8CI, D-636
- Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*arabino*-hexopyranoside, D-634
- Methyl 2,6-dideoxy-3-*C*-methyl- β -L-*arabino*-hexopyranoside, D-634
- Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranoside, D-635
- Methyl 2,6-dideoxy-3-*C*-methyl- α -L-*xylo*-hexopyranoside, D-637
- Methyl 2,6-dideoxy-3-*C*-methyl- β -L-*xylo*-hexopyranoside, D-637
- Methyl 4,6-dideoxy-3-*C*-methyl-4-(methylamino)- α -D-mannopyranoside, A-409
- Methyl 4,6-dideoxy-3-*C*-methyl-4-(methylamino)- β -D-mannopyranoside, A-409
- Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -D-*ribo*-hexopyranoside, D-636
- Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -L-*ribo*-hexopyranoside, D-636
- Methyl 2,6-dideoxy-3-*C*-methyl-3-*O*-methyl- α -D-*xylo*-hexopyranoside, D-637
- Methyl 3,4-dideoxy-4-*C*-methyl-6-*O*-trityl- α -D-*threo*-hexopyranosid-2-ulose, D-633
- Methyl 2-*C*-formyl-3,4-*O*-isopropylidene- β -D-ribose, F-23
- Methyl 4-*C*-(hydroxymethyl)-2,3-*O*-isopropylidene- β -D-*erythro*-pentofuranoside, H-172
- Methyl 2-*C*-hydroxymethyl-3,4-*O*-isopropylidene- β -D-ribose, H-181
- Methyl 2-*C*-hydroxymethyl- β -D-ribose, H-181
- Methyl 2,3-*O*-isopropylidene-3'-methyl-D-apio- β -D-furanoside, A-785
- Methyl 2,3-*O*-isopropylidene-1'-tosyl-D-apio- β -D-furanoside, A-785
- Methyl 2-*C*-methyl-D-arabinopyranoside, M-229
- Methyl 2-*C*-methyl- β -L-arabinopyranoside, M-229
- Methyl 4-*C*-methyl- α -D-glucopyranosiduronic acid, M-260
- Methyl 3-*C*-methyl-2-*O*-methyl- α -D-allopyranoside, M-224
- Methyl 3-*C*-methyl-2-*O*-methyl-4,6-di-*O*-tosyl- α -D-allopyranoside, M-224
- Methyl 3-*C*-methyl-2-*O*-methyl-6-*O*-tosyl- α -D-allopyranoside, M-224
- Methyl 2-*C*-methyl- β -D-ribofuranoside, M-286
- Methyl 2-*C*-methyl- β -L-ribose, M-286
- Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- α -D-*xylo*-hexopyranoside, K-16
- Methyl 2,3,4,6-tetradeoxy-4-(methoxycarbonylamino)-3-*C*-methyl-3-nitro- β -D-*xylo*-hexopyranoside, K-16
- Methyl 2,3,4-tri-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-mannopyranoside, D-308
- Methyl 2,3,6-tri-*O*-benzyl-4-cyano-4-deoxy- α -D-galactopyranoside, C-158
- Methyl 2,3,6-tri-*O*-benzyl-4-cyano-4-deoxy- α -D-glucopyranoside, C-159
- Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-methyl- α -D-talopyranoside, D-314
- Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbamoyl)- β -D-galactopyranoside, C-9
- Methyl 3,4,6-tri-*O*-benzyl-2-deoxy-2-*C*-(tosylcarbamoyl)- β -D-glucopyranoside, C-10
- Methyl 2,3,6-trideoxy-2-*C*-hydroxyacetyl- β -L-*erythro*-hexopyranos-4-ulose, T-156
- Methyl 3,4,6-trideoxy-4-*C*-methyl- α -L-*threo*-hexopyranosid-2-ulose, D-633
- Methyl 2,3,6-trideoxy-3-*C*-methyl-3-nitro- α -L-*ribo*-hexopyranoside, D-17
- Methyl 2,3,6-trideoxy-3-*C*-methyl-3-nitro- β -L-*ribo*-hexopyranoside, D-17
- Methyl 1',2,3-tri-*O*-methyl-D-apio- β -D-furanoside, A-785
- Methyl 1',2,3-tri-*O*-methyl-D-apio- α -D-furanoside, A-785
- Methyl-2-*O*-acetyl-3-*C*-benzyl-4,6-*O*-benzylidene-3-deoxy- α -D-*erythro*-hex-3-enopyranoside, M-159
- 2'-*C*-Methyladenosine, M-219
- 2-*C*-Methyl-D-arabinono-1,4-lactone, M-228
- 2-*C*-Methyl-L-arabinono-1,4-lactone, M-228
- 2-*C*-Methylarabinose; D-*form*, M-229
- 2-*C*-Methylarabinose; L-*form*, M-229
- 3-*C*-Methyl-6-deoxy-*ribo*-hexopyranos-4-ulose; α -D-*form*; Me glycoside, M-241
- 2-*C*-Methyl-D-erythritol, M-231
- 3-*C*-Methyl-D-erythritol, M-231
- 2-*C*-Methyl-1,4-erythrionolactone; D-*form*, M-246
- 4-*C*-Methylglucuronic acid; D-*form*, M-260
- 2-*C*-Methyl-DL-lyxono-1,4-lactone, M-268
- 2-*C*-Methyllyxose; D-*form*, M-269
- 2-*C*-Methyl-D-ribofuranose 2,3-*O*-carbonate, M-286
- 2-*C*-Methylribonic acid; DL-*form*; Et ester, M-285
- 2-*C*-Methylribonic acid; D-*form*; 1,4-Lactone, 2,3-*O*-isopropylidene, M-285
- 2-*C*-Methylribonic acid; D-*form*; 1,4-Lactone, 2,3,5-tri-Ac, M-285
- 2-*C*-Methylribonic acid; D-*form*; 1,4-Lactone, 2,3,5-tribenzoyl, M-285
- 2-*C*-Methylribonic acid; D-*form*, M-285
- 2-*C*-Methyl-D-ribono-1,4-lactone, M-285
- 2-*C*-Methyl-L-ribono-1,4-lactone, M-285
- 2-*C*-Methyl-DL-ribono-1,4-lactone, M-285
- 2-*C*-Methylribose; D-Furanose-*form*, M-286
- 2-*C*-Methylribose; D-*form*, M-286
- 2-*C*-Methylribose; L-*form*, M-286
- 3-*C*-Methyl-L-threitol, M-231
- 2-*C*-Methyl-DL-threitol, M-231
- 2'-*C*-Methyluridine, M-301
- 2-*C*-Methyl-D-xylo-1,4-lactone, M-304
- 2-*C*-Methylxylose; D-*form*, M-305
- Miharamycin A, M-311
- Miharamycin B, M-311
- Mycarose, D-636
- Novobiose, D-304
- v-Octose; 1,1'-Anhydro, O-17
- v-Octose, O-17
- Olgose, O-30
- Paldimycin A, P-3
- Paldimycin A₂, P-3
- Paldimycin B, P-3
- Paldimycin B₂, P-3
- Paldimycin, P-3

Pillarose; L-form, P-73
 Reflexin, C-150
 Rubranitrose; D-form, R-154
 Rubranitrose; L-form, R-154
 Shewanellose; D-form, S-33
 Sisomicin, S-45
 Streptobiosamine; Hepta-Ac, S-80
 Streptobiosamine; Tetra-Ac, S-80
 Streptobiosamine, S-80
 Streptomycin, S-83
 Streptose; L-form, S-85
 2,3,5,6-Tetra-*O*-acetyl-1,3¹-anhydro-3-*C*-hydroxymethyl- α -D-glucopyranose, H-165
 2,2',4,5-Tetra-*O*-acetyl-3-deoxy-2-*C*-hydroxymethyl-D-erythro-pentonic acid, T-170
 1,2,3,4-Tetra-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-mannopyranoside, D-308
 1,2,4,6-Tetra-*O*-acetyl-3-*C*-methyl- β -D-glucopyranose, M-254
 1,2,3,4-Tetra-*O*-benzoyl-3-*C*-methyl-D-erythritol, M-231
 1,2,3,5-Tetra-*O*-benzoyl-2-*C*-methyl- β -D-ribofuranose, M-286
 1,2,3,4-Tetra-*O*-benzoyl-3-*C*-methyl-L-threitol, M-231
 Tetrahydro-3-hydroxy-5-hydroxymethyl-3-furancarboxylic acid, T-26
 3a,7,8,8a-Tetrahydro-3-phenyl-5,8-epoxyoxepino[4,5-*d*]isoxazol-4(5*H*)-one; (3*R*,4*S*)-form, T-27
 3a,7,8,8a-Tetrahydro-3-phenyl-5,8-epoxyoxepino[4,5-*d*]isoxazol-4(5*H*)-one; (3*S*,4*R*)-form, T-27
 1,2,4,5-Tetrahydroxy-2,5-bis(hydroxymethyl)-3-pentanone, T-31
 1,2,4,5-Tetrahydroxy-2-hydroxymethyl-3-pentanone, T-35
 1,4,5-Tri-*O*-acetyl-3-deoxy-2-*C*-(hydroxymethyl)-2,2'-*O*-isopropylidene-D-erythro-pentitol, D-231
 2,3,5-Tri-*O*-acetyl-2-*C*-methyl-D-arabinono-1,4-lactone, M-228
 1,3,4-Tri-*O*-acetyl-2-*C*-methyl-D-erythritol, M-231
 3,4,6-Tri-*O*-benzoyl- α -D-arabino-hexopyranos-2-ulosyl bromide, H-116
 2,3,5-Tri-*O*-benzoyl-DL-lyxono-1,4-lactone, M-268
 2,3,5-Tri-*O*-benzoyl-2-*C*-methyl-L-lyxono-1,4-lactone, M-268
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-erythro-hexopyranos-4-ulose; α -D-form; Et glycoside, 2'-benzoyl, T-156
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-threo-hexopyranos-4-ulose; α -D-form; Et glycoside, 2'-benzoyl, T-157
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-threo-hexopyranos-4-ulose; α -D-form; Et glycoside, 2'-trityl, T-157
 2,4,5-Trihydroxy-2-(hydroxymethyl)pentanoic acid; (2*R*,4*S*)-form; 1,4-Lactone, tribenzoyl, T-170
 2,4,5-Trihydroxy-2-(hydroxymethyl)pentanoic acid; (2*S*,4*R*)-form; 1,4-Lactone, tribenzoyl, T-170
 Vancosamine, A-464
 Verdamicin, V-14
 Yersiniose B, Y-2
 Yersiniose; α -Pyranose-form; Me glycoside, Y-2
 Yersiniose; β -Pyranose-form; Me glycoside, Y-2
 Yersiniose; Tetra-Ac, Y-2
 Yersiniose, Y-2

Dicarbonyl sugars; glycos-2-uloses

1,6-Anhydro-3,4-*O*-exo-benzylidene- β -D-lyxo-hexopyranos-2-ulose, A-648
 1,6-Anhydro-3,4-*O*-endo-benzylidene- β -D-ribo-hexopyranos-2-ulose, A-650
 1,6-Anhydro-3,4-*O*-exo-benzylidene- β -D-ribo-hexopyranos-2-ulose, A-650
 1,6-Anhydro-3-bromo-3,4-dideoxy-glycero-hex-3-enopyranos-2-ulose; D-form, A-508
 1,6-Anhydro-3-deoxy-erythro-hexopyranos-2-ulose; β -D-form, A-548
 1,6-Anhydro-3-deoxy-4-*O*-methyl- β -D-erythro-hexopyranos-2-ulose, 9CI, A-548
 1,6-Anhydro-3,4-dideoxy-glycero-hex-3-enopyranos-2-ulose; D-form, A-583
 1,6-Anhydro-3,4-dideoxy-glycero-hexopyranos-2-ulose; β -D-form, A-590
 1,6-Anhydro-3,4-dideoxy- β -D-glycero-hexopyranos-2-ulose, A-548
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-glycero-hex-3-enopyranos-2-ulose; β -D-form, A-596
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-erythro-hexopyranos-2-ulose; β -D-form, A-597
 1,6-Anhydro-3,4-dideoxy-4-*C*-methyl-4-*C*-vinyl-glycero-hexopyranos-2-ulose; β -D-form, A-598
 1,6-Anhydro-ribo-hexopyranos-2-ulose; β -D-form, A-650
 1,6-Anhydro-lyxo-hexopyranos-2-ulose; β -D-form, A-648
 1,6-Anhydro-3,4-*O*-isopropylidene- β -D-lyxo-hexopyranos-2-ulose, A-648
 1,6-Anhydro-3,4-*O*-isopropylidene- β -D-ribo-hexopyranos-2-ulose, A-650
 Benzyl 4,6-*O*-benzylidene-3-deoxy- α -D-erythro-hexopyranosid-2-ulose, D-214
 Benzyl 3-deoxy- β -D-glycero-pentofuranos-2-uloside, D-351
 Benzyl 3,4-*O*-isopropylidene- β -D-erythro-pentopyranosid-2-ulose, P-42
 4,6-*O*-Benzylidene-3-deoxy-D-erythro-hexos-2-ulose, D-214

5a-Bromo-1,2,5a,6,9,9a-hexahydro-1,4-epoxy-3-benzoxepin-5(4*H*)-one; D-form, B-119
 tert-Butyl 6-*O*-acetyl-3,4-dideoxy- α -D-glycero-hex-3-enopyranosid-2-ulose, D-594
 tert-Butyl 6-*O*-acetyl-3,4-dideoxy-4-*C*-methyl- α -D-threo-hexopyranosid-2-ulose, D-640
 tert-Butyl 3,4-*O*-isopropylidene- α -L-erythro-pentopyranosid-2-ulose, P-42
 tert-Butyl 3,4-*O*-isopropylidene- β -L-erythro-pentopyranosid-2-ulose, P-42
 3-Deoxy-erythro-hexos-2-ulose; D-form, D-214
 6-Deoxy-lyxo-hexos-2-ulose; L-form, D-215
 3-Deoxy-erythro-2-hexulosonic acid; D-form, D-225
 1,6-Di-*O*-acetyl-3,4-dideoxy- α -D-glycero-hex-3-enopyranos-2-ulose, D-594
 1,6-Di-*O*-acetyl-3,4-dideoxy- β -D-glycero-hex-3-enopyranos-2-ulose, D-594
 1,3-Di-*O*-acetyl-4,6-di-*O*-methyl- α -D-arabino-hexopyranos-2-ulose, H-94
 1,6,3,4-Dianhydro- β -D-lyxo-hexopyranos-2-ulose, 9CI, A-648
 1,6,3,4-Dianhydro- β -D-ribo-hexopyranos-2-ulose, 9CI, A-650
 4,7-Di-*O*-benzoyl-5-deoxy-D-glycero-hept-4-ene-2,3-diulo-2,6-pyranose, D-148
 3,4-Dideoxy-glycero-hex-3-enopyranosulos-1-yl fluoride; α -D-form; Ac, D-590
 3,4-Dideoxy-glycero-hex-3-enopyranosulos-1-yl fluoride; α -D-form; Benzoyl, D-590
 4,5-Dihydroxy-2-oxopentanal; (R)-form, D-702
 2,3,4,5-Di-*O*-isopropylidene- β -D-arabino-hexos-2-ulo-2,6-pyranose, H-94
 β -D-Fructofuranosyl α -D-arabino-hexopyranosid-2-ulose, F-63
 erythro-Hexopyranose-2,3-diulose, 9CI, H-91
 threo-2,3-Hexosediulose; D-form, H-92
 arabino-Hexos-2-ulose; D-form, H-94
 lyxo-Hexos-2-ulose; D-form, H-97
 arabino-2-Hexulosuronic acid; D-form; Nitrile, H-114
 arabino-2-Hexulosuronic acid, H-114
 Isogulamide, I-45
 Isopropyl 3,4-*O*-isopropylidene- α -L-erythro-pentopyranosid-2-ulose, P-42
 Methyl 3-*O*-acetyl-4,6-*O*-benzylidene- α -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- α -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 3-*O*-benzoyl-4,6-*O*-benzylidene- β -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 6-*O*-benzoyl-3,4-dideoxy- α -D-glycero-hex-3-enopyranosid-2-ulose, D-594
 Methyl 3-*O*-benzoyl- α -D-arabino-hexopyranosid-2-ulose, H-94
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-ethyl- α -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 4,6-*O*-benzylidene-3-deoxy- α -D-threo-hexopyranosid-2-ulose, 8CI, D-216
 Methyl 4,6-*O*-benzylidene-3-deoxy-erythro-hexopyranosid-2-ulose; α -D-form, M-160
 Methyl 4,6-*O*-benzylidene-3-deoxy-erythro-hexopyranosid-2-ulose; β -D-form, M-160
 Methyl 4,6-*O*-benzylidene-3-deoxy- β -D-threo-hexopyranosid-2-ulose, D-216
 Methyl 4,6-*O*-benzylidene-3-deoxy-3-*C*-methyl- α -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 4,6-*O*-benzylidene-arabino-hexopyranosid-2-ulose, M-166
 Methyl 4,6-*O*-benzylidene-3-*O*-methyl- α -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 4,6-*O*-benzylidene-3-*O*-methyl- β -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- α -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 4,6-*O*-benzylidene-3-*O*-tosyl- β -D-arabino-hexopyranosid-2-ulose, M-166
 Methyl 3-deoxy- α -D-threo-hexopyranosid-2-ulose, 8CI, D-193
 Methyl 3-deoxy- β -D-threo-hexopyranosid-2-ulose, D-193
 Methyl 3,5-di-*O*-benzoyl- β -D-threo-pentofuranosid-2-ulose, P-45
 Methyl 3,4-dideoxy- α -D-glycero-hex-3-enopyranosid-2-ulose, D-594
 Methyl 3,4-dideoxy-4-*C*-methyl-6-*O*-trityl- α -D-threo-hexopyranosid-2-ulose, D-633
 Methyl 3,4-dideoxy-6-*O*-trityl- α -D-glycero-hex-3-enopyranosid-2-ulose, D-594
 Methyl α -D-arabino-hexopyranosid-2-ulose, 9CI, H-94
 Methyl 3,5-*O*-isopropylidene- β -D-threo-pentofuranoside, P-45
 Methyl 3,5-*O*-isopropylidene- α -D-threo-pentofuranosid-2-ulose, P-45
 Methyl 3,4-*O*-isopropylidene- β -D-erythro-pentopyranosid-2-ulose, P-42
 Methyl 3,4-*O*-isopropylidene- α -L-erythro-pentopyranosid-2-ulose, P-42
 Methyl 3,4-*O*-isopropylidene- β -L-erythro-pentopyranosid-2-ulose, P-42
 Methyl 3,4,6-tri-*O*-acetyl- β -D-arabino-hexopyranosid-2-ulose, H-94
 Methyl 2,4,6-tri-*O*-benzoyl-3-deoxy- α -D-erythro-hex-2-ulofuranosonate, D-225
 Methyl 3,4,6-tri-*O*-benzoyl- α -D-arabino-hexopyranosid-2-ulose, H-94
 Methyl 3,4,6-trideoxy-4-*C*-methyl- α -L-threo-hexopyranosid-2-ulose, D-633
 glycero-Pentos-2,3-diulose; D-form; Bis(diphenylhydrazone), P-39

Phenyl 4,6-*O*-benzylidene-3-deoxy-β-*D*-*threo*-hexopyranosid-2-ulose, 8CI, D-216
 Phenyl 3-deoxy-β-*D*-*threo*-hexopyranosid-2-ulose, 8CI, D-193
 Phenyl 3,4-*O*-isopropylidene-β-*L*-*erythro*-pentopyranosid-2-ulose, P-42
 Spenolimycin, S-63
 1,3,4,6-Tetra-*O*-benzoyl-β-*D*-*arabino*-hexopyranos-2-ulose, H-94
 3a,7,8,8a-Tetrahydro-3-phenyl-5,8-epoxyoxepino[4,5-*d*]isoxazol-4(5*H*)-one; (3*R*,4*S*)-*form*, T-27
 3a,7,8,8a-Tetrahydro-3-phenyl-5,8-epoxyoxepino[4,5-*d*]isoxazol-4(5*H*)-one; (3*S*,4*R*)-*form*, T-27
 3,4,6-Tri-*O*-acetyl-α-*D*-*arabino*-hexopyranos-2-ulosyl chloride, H-117

Dicarbonyl sugars; glycos-3-uloses

4-*O*-Acetyl-1,5-anhydro-2,6-dideoxy-*L*-*erythro*-hex-1-en-3-ulose, A-586
 1-*O*-Acetyl-2,7-anhydro-4,5-*O*-isopropylidene-β-*D*-*ribo*-hepto-2,3-diulo-2,6-pyranose, A-642
 5-*O*-Acetyl-1,2-*O*-isopropylidene-α-*D*-*erythro*-pentofuranos-3-ulose tosylhydrazone, P-43
 1,5-Anhydro-4-*O*-benzoyl-2,6-dideoxy-*L*-*erythro*-hex-1-en-3-ulose, A-586
 1,5-Anhydro-4,6-*O*-benzylidene-2-deoxy-*D*-*erythro*-hex-1-en-3-ulose, A-544
 2,7-Anhydro-4,5-*O*-*exo*-benzylidene-1-*O*-trityl-β-*D*-*ribo*-hepto-2,3-diulo-2,6-pyranose, A-642
 1,6-Anhydro-4-*O*-benzyl-2-*O*-tosyl-β-*D*-*arabino*-hexopyranos-3-ulose, H-95
 1,6-Anhydro-3,4-(2-butene-1,4-diyl)-3,4-dideoxy-β-*D*-*ribo*-hexopyranos-2-ulose; (5*aR*,9*aS*)-*form*, A-514
 1,5-Anhydro-2-deoxy-*threo*-hex-1-ene-3-ulose; *D*-*form*, A-535
 1,5-Anhydro-4-deoxy-*glycero*-hex-1-en-3-ulose; *D*-*form*, A-545
 1,5-Anhydro-2-deoxy-*erythro*-hex-1-en-3-ulose; *D*-*form*, A-544
 2,7-Anhydro-1-deoxy-4,5-*O*-isopropylidene-β-*D*-*ribo*-hepto-2,3-diulo-2,6-pyranose, A-642
 1,5-Anhydro-2-deoxy-4,6-*O*-(phenylmethylene)-*D*-*threo*-hex-1-en-3-ulose, 9CI, A-535
 1,6-Anhydro-2,4-di-*O*-benzoyl-β-*D*-*lyxo*-hexopyranos-3-ulose, H-98
 1,6-Anhydro-2,4-di-*O*-benzyl-β-*D*-*lyxo*-hexopyranos-3-ulose, H-98
 1,5-Anhydro-2,6-dideoxy-*erythro*-hex-1-en-3-ulose; *L*-*form*, A-586
 1,6-Anhydro-2,4-dideoxy-*glycero*-hexopyranos-3-ulose; β-*D*-*form*, A-589
 1,6-Anhydro-2,4-di-*O*-tosyl-β-*D*-*arabino*-hexopyranos-3-ulose, H-95
 1,6-Anhydro-2,4-di-*O*-tosyl-β-*D*-*lyxo*-hexopyranos-3-ulose, H-98
 2,7-Anhydro-*ribo*-hepto-2,3-diulo-2,6-pyranose; β-*D*-*form*, A-642
 1,6-Anhydro-β-*D*-*arabino*-hexopyranos-3-ulose, H-95
 1,6-Anhydro-β-*D*-*lyxo*-hexopyranos-3-ulose, H-98
 2,7-Anhydro-4,5-*O*-isopropylidene-β-*D*-*ribo*-hepto-2,3-diulo-2,6-pyranose, A-642
 2,7-Anhydro-4,5-*O*-isopropylidene-1-*O*-tosyl-β-*D*-*ribo*-hepto-2,3-diulo-2,6-pyranose, A-642
 2,7-Anhydro-4,5-*O*-isopropylidene-1-*O*-trityl-β-*D*-*ribo*-hepto-2,3-diulo-2,6-pyranose, A-642
 1,5-Anhydro-2,4,6-tri-*O*-benzoyl-*D*-*erythro*-hex-1-en-3-ulose, A-645
 5-*O*-Benzoyl-1,2-*O*-isopropylidene-α-*D*-*erythro*-pentofuranos-3-ulose, P-43
 Benzyl 4,6-*O*-benzylidene-β-*D*-*arabino*-hexopyranosid-3-ulose, H-95
 Benzyl 4,6-*O*-benzylidene-β-*D*-*xylo*-hexopyranosid-3-ulose, H-103
 4,6-*O*-Benzylidene-1,2-*O*-isopropylidene-α-*D*-*ribo*-hexopyranos-3-ulose, H-101
 4,6-*O*-Benzylidene-1,2-*O*-propylidene-α-*D*-*ribo*-hexopyranos-3-ulose, H-101
 1,2-*O*-Cyclohexylidene-α-*D*-*ribo*-hexofuranos-3-ulose, H-101
 2-Deoxy-*erythro*-hexos-3-ulose; *D*-*form*, D-213
 5-Deoxy-1,2-*O*-isopropylidene-β-*D*-*threo*-pentofuranos-3-ulose, D-337
 5-Deoxy-1,2-*O*-isopropylidene-β-*L*-*threo*-pentofuranos-3-ulose, D-337
 5-Deoxy-1,2-*O*-isopropylidene-α-*D*-*erythro*-pentofuranos-3-ulose, P-43
 4,6-Di-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-*threo*-hex-1-en-3-ulose, A-535
 4,6-Di-*O*-acetyl-1,5-anhydro-2-deoxy-*D*-*erythro*-hex-1-en-3-ulose, A-544
 2,4-Di-*O*-acetyl-1,6-anhydro-β-*D*-*lyxo*-hexopyranos-3-ulose, H-98
 1,2,5,6-Di-*O*-cyclohexylidene-α-*D*-*ribo*-hexofuranos-3-ulose, H-101
 1,2-Dideoxy-4,6-*O*-isopropylidene-*D*-*erythro*-hex-1-enopyranos-3-ulose, A-544
 1,2,5,6-Di-*O*-isopropylidene-β-*D*-*arabino*-hexofuranos-3-ulose, H-95
 1,2,5,6-Di-*O*-isopropylidene-β-*D*-*lyxo*-hexofuranos-3-ulose, H-98
 1,2,5,6-Di-*O*-isopropylidene-α-*D*-*ribo*-hexofuranos-3-ulose, H-101
 1,2,5,6-Di-*O*-isopropylidene-α-*D*-*xylo*-hexofuranos-3-ulose, H-103
 1,2,4,6-Di-*O*-isopropylidene-α-*D*-*xylo*-hexopyranos-3-ulose, H-103
 4,6-*O*-Ethylidene-1,2-*O*-isopropylidene-α-*D*-*ribo*-hexopyranos-3-ulose, H-101
 4,6-*O*-Ethylidene-1,2-*O*-isopropylidene-α-*D*-*xylo*-hexopyranos-3-ulose, H-103
 β-*D*-Fructofuranosyl α-*D*-*ribo*-hexopyranosid-3-ulose, F-64
erythro-Hexopyranose-2,3-diulose, 9CI, H-91
ribo-Hexos-3-ulose; *D*-*form*, H-101
ribo-3-Hexulosuronic acid; α-*D*-Furanose-*form*; 1,2-*O*-Isopropylidene, 5-Ac, Me ester, H-115

ribo-3-Hexulosuronic acid; *D*-Pyranose-*form*, H-115
 4-Hydroxy-6-hydroxymethyl-2*H*-pyran-3(6*H*)-one; (*S*)-*form*; Di-Ac, H-150
 4-Hydroxy-6-hydroxymethyl-2*H*-pyran-3(6*H*)-one; (*S*)-*form*; Dibenzoyl, H-150
 1,2-*O*-Isopropylidene-α-*D*-*ribo*-hexofuranos-3-ulose, H-101
 1,2-*O*-Isopropylidene-α-*D*-*ribo*-hexulosofuranuronic acid, H-115
 1,2-*O*-Isopropylidene-α-*D*-*erythro*-pentofuranos-3-ulose oxime, P-43
 1,2-*O*-Isopropylidene-α-*L*-*glycero*-tetraofuranos-3-ulose, 8CI, T-47
 1,2-*O*-Isopropylidene-α-*D*-*glycero*-tetraofuranos-3-ulose, T-47
 1,2-*O*-Isopropylidene-5-*O*-tosyl-α-*D*-*erythro*-pentofuranos-3-ulose, P-43
 1,2-*O*-Isopropylidene-5-*O*-trityl-α-*D*-*erythro*-pentofuranos-3-ulose, 8CI, P-43
 Methyl 2-acetamido-4,6-*O*-benzylidene-2-deoxy-α-*D*-*ribo*-hexopyranosid-3-ulose, A-288
 Methyl 2-acetamido-4,6-*O*-benzylidene-2-deoxy-β-*D*-*ribo*-hexopyranosid-3-ulose, A-288
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-α-*D*-*xylo*-hexopyranosid-3-ulose, H-103
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-α-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 2-*O*-acetyl-4,6-*O*-benzylidene-β-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-α-*D*-*ribo*-hexopyranosid-3-ulose, A-288
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-*arabino*-hexopyranosid-3-ulose oxime, H-95
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-α-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 2-*O*-benzoyl-4,6-*O*-benzylidene-β-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 4,6-*O*-benzylidene-2-deoxy-α-*D*-*threo*-hexopyranosid-3-ulose, D-192
 Methyl 4,6-*O*-benzylidene-2-deoxy-β-*D*-*threo*-hexopyranosid-3-ulose, D-192
 Methyl 4,6-*O*-benzylidene-2-deoxy-α-*D*-*erythro*-hexopyranosid-3-ulose, D-213
 Methyl 4,6-*O*-benzylidene-*ribo*-hexopyranosid-3-ulose; β-*D*-*form*, M-167
 Methyl 4,6-*O*-benzylidene-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 4,6-*O*-benzylidene-2-*O*-mesyl-α-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 4,6-*O*-benzylidene-2-*O*-methyl β-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 4,6-*O*-benzylidene-2-*O*-methyl-α-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-α-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 4,6-*O*-benzylidene-2-*O*-tosyl-β-*D*-*ribo*-hexopyranosid-3-ulose, M-167
 Methyl 2-deoxy-5-*O*-trityl-α-*D*-*glycero*-pentofuranosid-3-ulose, P-43
 Methyl 2-deoxy-5-*O*-trityl-β-*D*-*glycero*-pentofuranosid-3-ulose, P-43
 Methyl 2,6-dideoxy-α-*L*-*erythro*-hexopyranosid-3-ulose, D-619
 Methyl 2,6-dideoxy-4-*O*-methoxymethyl-α-*L*-*erythro*-hexopyranosid-3-ulose, D-619
 Methyl 2,6-dideoxy-4-*O*-methyl-α-*L*-*erythro*-hexopyranosid-3-ulose, 9CI, D-619
 Methyl 2,6-dideoxy-4-*O*-methyl-β-*L*-*erythro*-hexopyranosid-3-ulose, 9CI, D-619
 Methyl 2,6-dideoxy-4-*O*-(tetrahydro-2*H*-pyran-2-yl)-α-*L*-*erythro*-hexopyranosid-3-ulose, 9CI, D-619
 Methyl 4,6-*O*-ethylidene-2-*O*-methyl-α-*D*-*arabino*-hexopyranosid-3-ulose, H-95
 Methyl α-*D*-*ribo*-hexopyranos-3-uloside, H-101
 Methyl (methyl *D*-*ribo*-hexofuranosid)uronate, H-115
 Methyl α-*D*-*erythro*-pentopyranosid-3-uloside, P-43
 Methyl β-*D*-*erythro*-pentopyranosid-3-uloside, P-43
glycero-Pentos-2,3-diulose; *D*-*form*; Bis(diphenylhydrazone), P-39
 Varianose, V-10

Dicarbonyl sugars; glycos-4-uloses

3-*O*-Acetyl-5-deoxy-1,2-*O*-isopropylidene-α-*D*-*erythro*-hexoseptanos-4-ulose, 9CI, H-93
 2-*C*-Acetyl-2,3-dideoxy-*erythro*-hexopyranos-4-ulose; α-*D*-*form*; Et glycoside, 6-trityl, A-16
 2-*C*-Acetyl-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-*D*-*form*; Et glycoside, 6-trityl, A-17
 2-*C*-Acetyl-2,3-dideoxy-*erythro*-hexopyranos-4-ulose; α-*D*-*form*, A-16
 2-*C*-Acetyl-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-*D*-*form*, A-17
 2-Amino-2,3-dideoxy-*threo*-hexopyranos-4-ulose; α-*D*-*form*; Me glycoside, 6-benzoyl, *N*-Ac, A-390
 2-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; α-*D*-*form*; Me glycoside, *N*-Ac, A-456

- 2-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; α -L-*form*;
Me glycoside, *N*-Ac, A-456
- 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside,
N-benzyloxycarbonyl, A-457
- 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside,
N-phthalimide, A-457
- 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*; Me glycoside,
N-(trifluoroacetyl), A-457
- 3-Amino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; α -L-*form*;
Me glycoside, *N*-(trifluoroacetyl), A-455
- 3-Amino-2,3,6-trideoxy-*threo*-hexopyranos-4-ulose; D-*form*, A-457
- 3-Amino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose, A-455
- 1,6-Anhydro-2,3-*O*-benzylidene- β -D-*lyxo*-hexopyranos-4-ulose, A-649
- 1,6-Anhydro-2,3-*O*-benzylidene- β -D-*ribo*-hexopyranos-4-ulose, A-651
- 2,6-Anhydro-3-deoxy-*threo*-hexopyranos-4-ulose; β -D-*form*; Me glycoside,
A-550
- 2,6-Anhydro-3-deoxy-*threo*-hexopyranos-4-ulose; β -D-*form*, A-550
- 1,6-Anhydro-3-deoxy- β -D-*threo*-hexopyranos-4-ulose, A-649
- 1,6-Anhydro-3-deoxy- β -D-*erythro*-hexopyranos-4-ulose, A-651
- 1,6-Anhydro-2-deoxy-2-*C*-methyl-*ribo*-hexopyranos-4-ulose; D-*form*;
3-Benzyl, A-568
- 1,6-Anhydro-2-deoxy-2-*C*-methyl-*ribo*-hexopyranos-4-ulose; D-*form*,
A-568
- 1,6-Anhydro-2,3-di-*O*-benzyl- β -D-*xylo*-hexopyranos-4-ulose, A-652
- 1,6-Anhydro-2,3-dideoxy- β -D-*glycero*-hex-2-enopyranos-4-ulose, D-589
- 1,6-Anhydro-2,3-dideoxy- β -D-*glycero*-hexopyranos-4-ulose, A-651
- 1,6-Anhydro-*arabino*-hexopyranos-4-ulose; β -D-*form*, A-647
- 1,6-Anhydro-*lyxo*-hexopyranos-4-ulose; β -D-*form*, A-649
- 1,6-Anhydro-*ribo*-hexopyranos-4-ulose; β -D-*form*, A-651
- 1,6-Anhydro-2,3-*O*-isopropylidene- β -D-*lyxo*-hexopyranos-4-ulose, 8CI,
A-649
- 1,6-Anhydro-2,3-*O*-isopropylidene- β -D-*ribo*-hexopyranos-4-ulose, A-651
- Antibiotic SEN 366D₁, A-770
- Antibiotic SEN 366F, A-771
- 1-*O*-Benzoyl-2,3-*O*-isopropylidene- β -DL-*erythro*-pentopyranos-4-ulose,
P-44
- Benzyl 2,3-anhydro- β -D-*erythro*-pentopyranosid-4-ulose, A-682
- Benzyl 2,3-anhydro- β -L-*erythro*-pentopyranosid-4-ulose, A-682
- Benzyl 6-deoxy-2,3-*O*-isopropylidene- α -L-*lyxo*-hexopyranosid-4-ulose,
H-99
- Benzyl 2,3-di-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
- Benzyl 2,6-di-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
- Benzyl 2,3-di-*O*-benzyl- β -L-*threo*-pentopyranosid-4-ulose, P-46
- Benzyl 2,3-di-*O*-benzyl-6-*O*-trityl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
- Benzyl α -L-*threo*-pentopyranosid-4-ulose, P-46
- Benzyl β -L-*threo*-pentopyranosid-4-ulose, P-46
- 6-Deoxy-*xylo*-hexopyranos-4-ulose, D-194
- 2,6-Diamino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; α -D-*form*;
Me glycoside, 2*N*,6*N*-di-Ac, D-477
- 2,6-Diamino-2,3,6-trideoxy-*erythro*-hexopyranos-4-ulose; α -D-*form*,
D-477
- 1,6,2,3-Dianhydro- β -D-*lyxo*-hexopyranos-4-ulose, 9CI, A-649
- 1,6,2,3-Dianhydro- β -D-*ribo*-hexopyranos-4-ulose, 9CI, A-651
- 2,3-Dideoxy-*glycero*-hexopyranos-4-ulose; α -D-*form*; 6-Deoxy,
Me glycoside, oxime, D-602
- 2,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -L-*form*; Me glycoside,
3-(*tert*-butyldimethylsilyl), D-600
- 2,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -L-*form*; Me glycoside,
3-(2-methoxyethoxymethyl), D-600
- 2,6-Dideoxy-*threo*-hexopyranos-4-ulose; α -L-*form*; Me glycoside, 3-Me,
D-603
- 2,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -L-*form*, D-600
- 3,6-Dideoxy-*erythro*-hexopyranos-4-ulose; α -D-*form*, D-601
- 3,6-Dideoxy-*erythro*-hexopyranos-4-ulose; L-*form*, D-601
- 2,6-Dideoxy-*threo*-hexopyranos-4-ulose; α -L-*form*, D-603
- 3,6-Dideoxy-*erythro*-hexopyranos-4-ulose, D-601
- 2,3-Dideoxy-*glycero*-hexopyranos-4-ulose, D-602
- 3,6-Dideoxy-1,2-*O*-isopropylidene- α -D-*erythro*-hexopyranos-4-ulose,
D-601
- 2,3-Dideoxy-2,3-*C*-methylene-*ribo*-hexopyranos-4-ulose; α -D-*form*;
Et glycoside, 6-trityl, D-628
- 2,3-Dideoxy-2,3-*C*-methylene-*lyxo*-hexopyranos-4-ulose; α -D-*form*, D-627
- 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -D-*form*;
Et glycoside, D-632
- 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -D-*form*;
Me glycoside, 6-Ac, D-632
- 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -D-*form*;
Me glycoside, 6-trityl, D-632
- 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose; α -D-*form*;
Me glycoside, D-632
- 2,3-Dideoxy-2-*C*-methyl-*threo*-hexopyranos-4-ulose, D-632
- Ethyl 6-*O*-acetyl-2,3-dideoxy- α -D-*glycero*-hex-2-enopyranosid-4-ulose,
D-589
- Ethyl 6-*O*-acetyl-2,3-dideoxy-2,3-*C*-methylene- α -D-*lyxo*-hexopyranosid-4-
ulose, D-627
- Ethyl 6-*O*-benzoyl-2,3-dideoxy- α -D-*glycero*-hex-2-enopyranosid-4-ulose,
D-589
- Ethyl 6-*O*-benzoyl-2,3-dideoxy- α -D-*glycero*-hexopyranosid-4-ulose,
D-602
- Ethyl 2,3-dideoxy- α -D-*glycero*-hex-2-enopyranosid-4-ulose, D-589
- Ethyl 2,3-dideoxy- α -D-*glycero*-hexopyranosid-4-ulose, D-602
- Ethyl 2,3-dideoxy-2-*C*-(hydroxymethyl)- α -D-*threo*-hexopyranos-4-ulose,
D-621
- Ethyl 2,3-dideoxy-2,3-*C*-methylene- α -D-*lyxo*-hexopyranosid-4-ulose,
D-627
- Ethyl 2,3-dideoxy-2-*C*-methyl-6-*O*-trityl- α -D-*threo*-hexopyranosid-4-
ulose, D-639
- Ethyl 2,3-dideoxy-6-*O*-tosyl- α -D-*glycero*-hex-2-enopyranosid-4-ulose,
D-589
- Ethyl 2,3,6-trideoxy-2-*C*-hydroxyacetyl- α -D-*threo*-hexopyranos-4-ulose,
T-157
- 6-Hydroxy-2-methyl-2*H*-pyran-3(6*H*)-one; (2*R*)-*form*, H-179
- 6-Hydroxy-2-methyl-2*H*-pyran-3(6*H*)-one; (2*S*)-*form*, H-179
- 5-Hydroxy-4-oxohexanal; (S)-*form*, H-188
- 6-Methoxy-2-methyl-2*H*-pyran-3(6*H*)-one, H-179
- Methyl α -L-*aculoside*, H-179
- Methyl β -L-*aculoside*, H-179
- Methyl 2,3-anhydro-6-deoxy- α -D-*ribo*-hexopyranosid-4-ulose, 9CI, D-191
- Methyl 2,3-anhydro-6-deoxy- α -D-*lyxo*-hexopyranosid-4-ulose, A-549
- Methyl 2,3-anhydro-6-deoxy- α -L-*ribo*-hexopyranosid-4-ulose, D-191
- Methyl 2,3-anhydro- β -D-*erythro*-pentopyranosid-4-ulose, 9CI, A-682
- Methyl 2,3-anhydro- β -L-*erythro*-pentopyranosid-4-ulose, A-682
- Methyl 3-bromo-3,6-dideoxy- α -D-*xylo*-hexopyranosid-4-ulose, D-194
- Methyl 6-deoxy-2,3-di-*O*-methyl- α -D-*lyxo*-hexopyranosid-4-ulose, D-190
- Methyl 6-deoxy-2,3-di-*O*-methyl- α -D-*ribo*-hexopyranosid-4-ulose, D-191
- Methyl 6-deoxy-2,3-di-*O*-methyl- α -D-*xylo*-hexopyranosid-4-ulose, D-194
- Methyl 6-deoxy-2,3-*O*-isopropylidene- α -D-*lyxo*-hexopyranosid-4-ulose,
D-190
- Methyl 6-deoxy-2,3-*O*-isopropylidene- α -L-*lyxo*-hexopyranosid-4-ulose,
D-190
- Methyl 6-deoxy-2,3-*O*-isopropylidene- β -L-*lyxo*-hexopyranosid-4-ulose,
D-190
- Methyl 6-deoxy-2,3-*O*-isopropylidene- α -D-*ribo*-hexopyranosid-4-ulose,
D-191
- Methyl 6-deoxy-2,3-*O*-isopropylidene- β -D-*ribo*-hexopyranosid-4-ulose,
D-191
- Methyl 6-deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -D-*lyxo*-
hexopyranosid-4-ulose, D-303
- Methyl 6-deoxy-2,3-*O*-isopropylidene-3-*C*-methyl- α -L-*lyxo*-
hexopyranosid-4-ulose, D-303
- Methyl 6-deoxy-3-*C*-methyl- α -D-*lyxo*-hexopyranosid-4-ulose, D-303
- Methyl 6-deoxy-3-*C*-methyl- α -L-*lyxo*-hexopyranosid-4-ulose, D-303
- Methyl 3-deoxy- β -D-*glycero*-pentopyranosid-4-ulose, D-342
- Methyl 3-deoxy- β -L-*glycero*-pentopyranosid-4-ulose, D-342
- Methyl 2,3-di-*O*-acetyl-6-deoxy-3-*C*-methyl- α -D-*lyxo*-hexopyranosid-4-
ulose, D-303
- Methyl 3,6-di-*O*-benzoyl-2-deoxy- α -D-*glycero*-hex-2-enopyranosid-4-
ulose, D-178
- Methyl 2,6-di-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
- Methyl 2,3-di-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
- Methyl 2,3-di-*O*-benzyl-6-*O*-trityl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
- Methyl 2,3-dideoxy- β -D-*glycero*-hexopyranosid-4-ulose, 8CI, D-602
- Methyl 3,6-dideoxy- α -L-*erythro*-hexopyranosid-4-ulose, D-601
- Methyl 2,3,6,7-di-*O*-isopropylidene- β -D-*allo*-heptopyranos-4-ulose,
H-54
- Methyl 2,3-di-*O*-methyl-6-*O*-trityl- α -D-*xylo*-hexopyranosid-4-ulose,
H-104
- Methyl 2,3-di-*O*-methyl-6-*O*-trityl- β -D-*xylo*-hexopyranosid-4-ulose,
H-104
- Methyl β -D-*xylo*-hexopyranosid-4-ulose, H-104
- Methyl 2,3-*O*-isopropylidene-6-*O*-mesyl- α -D-*lyxo*-hexopyranosid-4-ulose,
H-99
- Methyl 2,3-*O*-isopropylidene-6-*O*-methyl- α -D-*lyxo*-hexopyranosid-4-
ulose, H-99
- Methyl 2,3-*O*-isopropylidene- β -L-*erythro*-pentopyranosid-4-ulose, 8CI,
P-44
- Methyl 2,3-*O*-isopropylidene- β -DL-*erythro*-pentopyranosid-4-ulose, P-44
- Methyl α -L-*threo*-pentopyranosid-4-ulose O-methylloxime, P-46
- Methyl β -L-*threo*-pentopyranosid-4-ulose, P-46
- Methyl 2,3,6-tri-*O*-benzoyl- α -D-*xylo*-hexopyranosid-4-ulose, H-104
- Methyl 2,3,6-tri-*O*-benzyl- α -D-*xylo*-hexopyranosid-4-ulose, 9CI, H-104
- Methyl 2,3,6-trideoxy- α -D-*glycero*-hexopyranosid-4-ulose, D-602
- Methyl 2,3,6-trideoxy- α -L-*glycero*-hexopyranosid-4-ulose, D-602
- Methyl 2,3,6-trideoxy- α -D-*glycero*-hexos-1,4-diolopyranoside, H-188
- Methyl 2,3,6-trideoxy-2-*C*-hydroxyacetyl- β -L-*erythro*-hexopyranos-4-
ulose, T-156

3-*C*-Methyl-6-deoxy-*ribo*-hexopyranos-4-ulose; α -*D*-form; Me glycoside, M-241
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-*erythro*-hexopyranos-4-ulose; α -*D*-form; Et glycoside, 2'-benzoyl, T-156
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-*threo*-hexopyranos-4-ulose; α -*D*-form; Et glycoside, 2'-benzoyl, T-157
 2,3,6-Trideoxy-2-*C*-hydroxyacetyl-*threo*-hexopyranos-4-ulose; α -*D*-form; Et glycoside, 2'-trityl, T-157

Dicarbonyl sugars; glycos-5-uloses

2-*O*-Acetyl-1,6-anhydro-3-*O*-benzyl- β -*D*-xylo-hexofuranos-5-ulose, A-646
 1,6-Anhydro-3-*O*-benzyl-2-*O*-tosyl- β -*D*-xylo-hexofuranos-5-ulose, A-646
 1,6-Anhydro-2,3-di-*O*-benzyl- β -*D*-xylo-hexofuranos-5-ulose, A-646
 3,7-Anhydro-4,6,8-tri-*O*-benzyl-2-deoxy-1-*C*-phenyl-*D*-allo-octos-5-ulose, A-572
 3-*O*-Benzyl-6-deoxy-1,2-*O*-isopropylidene- α -*D*-xylo-hexofuranos-5-ulose, D-217
 3-*O*-Benzyl-1,2-*O*-isopropylidene- α -*D*-xylo-hexofuranos-5-ulose, 8CI, H-105
 3-*O*-Benzyl-1,2-*O*-isopropylidene-6-*O*-trityl- α -*D*-xylo-hexofuranos-5-ulose, H-105
 6-Deoxy-*arabino*-hexos-5-ulose; *D*-form, D-212
 6-Deoxy-*xylo*-hexos-5-ulose; *D*-form, D-217
 6-Deoxy-1,2-*O*-isopropylidene- β -*D*-*arabino*-hexofuranos-5-ulose, D-212
 6-Deoxy-1,2-*O*-isopropylidene- α -*D*-xylo-hexofuranos-5-ulose, D-217
 6-Deoxy-1,2-*O*-methylene- α -*D*-xylo-hexofuranos-5-ulose, D-217
 6-Deoxy-1,2-*O*-methylene-3-*O*-tosyl- α -*D*-xylo-hexofuranos-5-ulose, D-217
 1,3-Di-*O*-acetyl-2,6-di-*O*-methyl-*L*-*arabino*-hexofuranos-5-ulose, H-96
 2,6-Di-*O*-benzyl-*L*-*lyxo*-hexos-5-ulose, H-100
 2,6-Di-*O*-benzyl-*L*-*ribo*-hexos-5-ulose, H-102
 3,6-Di-*O*-benzyl-1,2-*O*-isopropylidene- α -*D*-xylo-hexofuranos-5-ulose, H-105
 2,6-Di-*O*-methyl-*L*-*arabino*-hexofuranos-5-ulose, H-96
xylo-Hexos-5-ulose; α -*D*-Furanose-form; 3-Benzyl, 1,2-*O*-isopropylidene, di-Me acetal, H-105
xylo-Hexos-5-ulose; α -*D*-Furanose-form; 1,2-*O*-Isopropylidene, di-Me acetal, 6-phosphate, H-105
xylo-Hexos-5-ulose; α -*D*-Furanose-form; 3-Me, 1,2-*O*-isopropylidene, 6-tosyl, H-105
lyxo-Hexos-5-ulose; *D*-form, H-100
lyxo-Hexos-5-ulose; *L*-form, H-100
ribo-Hexos-5-ulose; *L*-form, H-102
xylo-Hexos-5-ulose; *D*-form, H-105
 1,2-*O*-Isopropylidene- α -*D*-xylo-hexofuranos-5-ulose, H-105
 5,6-*O*-Isopropylidene- β -*D*-*lyxo*-hexos-5-ulo-5,2-furanose, H-100
 1,2-*O*-Isopropylidene-*xylo*-hex-5-ulofuranurono-6,3-lactone, H-106
 Methyl 6-deoxy-2,3-di-*O*-tosyl- β -*D*-xylo-hexofuranosid-5-ulose, D-217

Diuloses

Benzyl 1-deoxy-4,5-*O*-isopropylidene-*D*-*erythro*-hexo-2,3-diulo-3,6-furanoside, D-186
 Dehydroisoascorbic acid, D-22
 1-Deoxy-*erythro*-hexo-2,3-diulose; *D*-form, D-186
 1-Deoxy-4,5-*O*-isopropylidene-*D*-*erythro*-hexo-2,3-diulo-3,6-furanose, D-186
 1,3,5,6-Di-*O*-benzylidene-*threo*-hexo-2,5-diulose, H-88
 1,2,4,5-Di-*O*-cyclohexylidene- β -*D*-*erythro*-hexo-2,3-diulose-2,6-pyranose, H-86
 1,2,4,5-Di-*O*-isopropylidene- β -*D*-*erythro*-hexo-2,3-diulose-2,6-pyranose, H-86
 1,2,5,6-Di-*O*-isopropylidene-*D*-*threo*-3,4-hexodiulose, H-89
 2,5-Diketo-*D*-gluconic acid, D-757
threo-2,5-Hexodiulose; *D*-form, H-88
threo-2,4-Hexodiulose; *D*-form, H-87
threo-3,4-Hexodiulose, H-89
 2,3-*O*-Isopropylidene- β -*D*-*threo*-2,4-hexodiulopyranose, H-87
 1,2-*O*-Isopropylidene- β -*D*-*threo*-2,5-hexodiulopyranose, H-88
 1,2-*O*-Isopropylidene- β -*D*-*threo*-2,4-hexodiulo-2,6-pyranose, H-87
 1,2-*O*-Isopropylidene- β -*D*-*erythro*-hexo-2,3-diulose-2,6-pyranose, H-86

Dialdoses

3-*O*-(*R*)-Benzoyl-1,2-*O*-benzylidene-5-*O*-tosyl- α -*D*-gluco-hexodialdo-1,4-furanose, H-85
 3-*O*-(*S*)-Benzoyl-1,2-*O*-benzylidene-5-*O*-tosyl- α -*D*-gluco-hexodialdo-1,4-furanose, H-85
 3-*O*-Benzoyl-1,2-*O*-cyclohexylidene- α -*D*-xylo-pentodialdo-1,4-furanose, P-36
 3-*O*-(*R*)-Benzoyl-1,2-*O*-isopropylidene-5-*O*-tosyl- α -*D*-gluco-hexodialdo-1,4-furanose, H-85

3-*O*-(*S*)-Benzoyl-1,2-*O*-isopropylidene-5-*O*-tosyl- α -*D*-gluco-hexodialdo-1,4-furanose, H-85
 3-*O*-Benzyl-1,2-*O*-isopropylidene- α -*D*-xylo-pentodialdo-1,4-furanose, P-36
 1,2-*O*-Cyclohexylidene- α -*D*-xylo-pentodialdo-1,4-furanose, 8CI, P-36
 2,4-Di-*O*-acetyl-1,6,3,6-dianhydro-*D*-galactohexodialdopyranose, D-500
 1,2,3,4-Di-*O*-isopropylidene- β -*D*-*altro*-hexodialdopyranose, H-83
 1,2,3,4-Di-*O*-isopropylidene- α -*D*-*galacto*-hexodialdo-1,5-pyranose, H-84
gluco-Hexodialdose; *D*-form; Bis(di-Et mercaptal), H-85
gluco-Hexodialdose; *D*-form; Tetra-Ac, bis(di-Et mercaptal), H-85
altro-Hexodialdose; α -*L*-Furanose-form; Me glycoside, 2,3-*O*-isopropylidene, 1',3'-propanediyl dithioacetal, H-83
gluco-Hexodialdose; α -*D*-Pyranose-form; Me glycoside, 6-di-Me acetal, H-85
gluco-Hexodialdose; *D*-form, H-85
 1,2-*O*-Isopropylidene- α -*D*-*gluco*-hexodialdo-1,4-furanose, H-85
 1,2-*O*-Isopropylidene- α -*D*-xylo-pentodialdo-1,4-furanose, P-36
 1,2-*O*-Isopropylidene-5-*O*-tosyl- α -*D*-gluco-hexodialdo-1,4-furanose, H-85
 Methyl 2,3-di-*O*-acetyl-4-deoxy- β -*L*-*erythro*-hex-4-enodialdo-1,5-pyranose, D-169
 Methyl 2,3-di-*O*-benzyl-4-deoxy- β -*L*-*threo*-hex-4-enodialdo-1,4-pyranose, D-170
 Methyl 2,3-di-*O*-benzyl-4-deoxy- β -*L*-*arabino*-hexodialdopyranoside, D-184
 Methyl 2,3-di-*O*-benzyl-4-deoxy- α -*D*-xylo-hexodialdopyranoside, D-185
 Methyl α -*D*-*galacto*-hexodialdo-1,5-pyranoside, H-84
 Methyl β -*D*-*galacto*-hexodialdo-1,5-pyranoside, H-84
 Methyl α -*D*-*gluco*-hexodialdopyranoside, H-85
 Methyl β -*D*-*gluco*-hexodialdopyranoside, H-85
 Methyl α -*L*-*gluco*-hexodialdopyranoside, H-85
 Methyl β -*L*-*gluco*-hexodialdopyranoside, H-85
 Methyl 2,3-*O*-isopropylidene- β -*D*-*ribo*-pentodialdo-1,4-furanoside, P-35
 Methyl 3-*O*-methyl- β -*D*-*gluco*-hexodialdopyranoside, H-85
 Methyl 2,3,4-tri-*O*-benzyl- β -*D*-*gluco*-hexodialdopyranoside 6-dimethyl acetal, H-85
xylo-Pentodialdo-1,4-furanose; α -*D*-form; 1,2-*O*-Isopropylidene, 3-benzyl, oxime, P-36
 1,2,3-Tri-*O*-acetyl-4-deoxy- α -*L*-*erythro*-hex-4-enodialdo-1,5-pyranose, D-169
 1,2,3-Tri-*O*-acetyl-4-deoxy- β -*L*-*erythro*-hex-4-enodialdo-1,5-pyranose, D-169
 Tunicamine, T-200

Aldonic acids and lactones

2-Acetamido-4,6-*O*-benzylidene-2-deoxy-*D*-1,5-gluconolactone, A-218
 2-Acetamido-2-deoxy-3,4,5,6-di-*O*-isopropylidene-*D*-gluconic acid, A-218
 2-Acetamido-2-deoxy-3,4-di-*O*-methyl-*D*-1,5-gluconolactone, A-218
 2-Acetamido-2-deoxy-*D*-galactono-1,4-lactone, A-189
 2-Acetamido-2-deoxy-*D*-gluconic acid, A-218
 2-Acetamido-2-deoxy-*D*-1,4-gluconolactone, A-218
 2-Acetamido-2-deoxy-*D*-1,5-gluconolactone, A-218
 2-Acetamido-2-deoxy-4,6-*O*-isopropylidene-*D*-gluconic acid, A-218
 2-Acetamido-2-deoxy-5,6-*O*-isopropylidene-*D*-1,4-gluconolactone, A-218
 2-Acetamido-2-deoxy-4,6-*O*-isopropylidene-*D*-1,5-gluconolactone, A-218
 2-Acetamido-2-deoxy-5,6-*O*-isopropylidene-*D*-1,4-mannonolactone, A-302
 2-Acetamido-2-deoxy-*D*-mannonic acid, A-302
 2-Acetamido-2-deoxy-*D*-1,4-mannonolactone, A-302
 2-Acetamido-3,4,6-tri-*O*-benzyl-2-deoxy-*D*-1,5-gluconolactone, A-218
 3-*O*-Acetyl-2,4-*O*-benzylidene-*D*-ribono-1,5-lactone, R-129
 3-*O*-Acetyl-5-bromo-2,5-dideoxy-*D*-*erythro*-pentono-1,4-lactone, B-112
 3-*O*-Acetyl-1,2-*O*-cyclohexylidene- α -*D*-xylofuranouronic acid, X-91
 5-*O*-Acetyl-2,3-dideoxy-2-*C*-methyl-*threo*-pentono-1,4-lactone, D-641
 4-*O*-Acetyl-2,3-dideoxy-6-*O*-tosyl-*D*-*erythro*-hex-2-enono-1,5-lactone, D-580
 2-*O*-Acetyl-3,5-*O*-isopropylidene-2-*C*-methyl-*D*-xylono-1,4-lactone, M-304
 5-*O*-Acetyl-2,3-*O*-isopropylidene-*D*-ribono-1,4-lactone, R-128
 Allonic acid; *D*-form, A-78
 Allonic acid; *L*-form, A-78
D-Allono-1,4-lactone, A-78
L-Allono-1,4-lactone, A-78
 Altronic acid, A-102
 2-Amino-5-*O*-carbamoyl-2-deoxy-*L*-xylonic acid, A-469
 5-Amino-5-deoxy-*D*-*arabino*-1,5-lactam, T-177
 2-Amino-2-deoxy-*D*-*arabinonic* acid, A-469
 2-Amino-2-deoxy-*L*-*arabinonic* acid, A-469
 2-Amino-2-deoxy-1,4-*arabinonolactone*; *D*-form, A-177
 2-Amino-2-deoxygluconic acid; *D*-form; Me ester, A-218
 5-Amino-5-deoxygluconic acid; *D*-form; 3,4,6-Tri-*O*-benzyl, lactam, A-219
 2-Amino-2-deoxygluconic acid; *D*-form, A-218
 6-Amino-6-deoxygluconic acid; *D*-form, A-220
 5-Amino-5-deoxy-*D*-*lyxono*-1,5-lactam, T-177

- 2-Amino-2-deoxy-3-*O*-methyl-D-gluconic acid, A-218
 2-Amino-2-deoxy-D-ribonic acid, A-469
 5-Amino-5-deoxy-D-ribo-1,5-lactam, T-177
 3-Amino-3-deoxy-2,4,5,6-tetra-*O*-methyl-D-altronic acid, A-163
 6-Amino-6-deoxy-2,3,4,5-tetra-*O*-methyl-D-galactonic acid, A-190
 2-Amino-2-deoxy-3,4,5,6-tetra-*O*-methyl-D-gluconic acid, A-218
 2-Amino-2-deoxy-3,4,6-tri-*O*-methyl-D-gluconic acid, A-218
 2-Amino-2-deoxy-L-xylonic acid, 9CI, 8CI, A-469
 2-Amino-2-deoxy-D-xylonic acid, A-469
 5-Amino-5-deoxy-D-xylono-1,5-lactam, T-177
 2-Amino-2,3,5-trideoxy-3-methyl-L-arabinonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-D-arabinonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-D-lyxonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-L-ribonic acid, A-427
 2-Amino-2,3,5-trideoxy-3-methyl-D-xylonic acid, A-427
 2-Amino-3,4,5-trihydroxypentanoic acid; (2*R*,3*R*,4*R*)-*form*;
 4,5-*O*-Isopropylidene, A-469
 2,5-Anhydroallonic acid; D-*form*; Tribenzoyl, Me ester, A-481
 2,5-Anhydroallonic acid; L-*form*, A-481
 2,5-Anhydro-6-*O*-benzoyl-D-allonitrile, A-481
 2,5-Anhydro-6-*O*-benzoyl-3,4-*O*-isopropylidene-D-allonitrile, 9CI, 8CI, A-481
 2,3-Anhydro-5-bromo-5-deoxy-1,4-lyxonolactone; D-*form*, A-507
 2,5-Anhydro-6-deoxygluconic acid; D-*form*; Me ester, A-523
 2,5-Anhydro-6-deoxygluconic acid; L-*form*; Me ester, A-523
 2,3-Anhydro-6-deoxy-1,4-mannonolactone; L-*form*, A-566
 3,6-Anhydro-2,5-di-*O*-methyl-D-mannono-1,4-lactone, A-672
 2,3-Anhydro-L-erythrono-1,4-lactone, D-755
 3,6-Anhydro-1,4-gluconolactone; D-*form*, A-629
 2,5-Anhydro-3,4-*O*-isopropylidene-D-allonitrile, A-481
 2,5-Anhydro-3,4-*O*-isopropylidene-6-*O*-(4-nitrobenzoyl)-DL-allonitrile, A-481
 3,6-Anhydro-1,4-mannonolactone; D-*form*, A-672
 3,6-Anhydro-2-*O*-tosyl-D-mannono-1,4-lactone, A-672
 2,5-Anhydro-3,4,5-tri-*O*-benzoyl-D-allonic acid, A-481
 2,5-Anhydro-3,4,6-tri-*O*-benzoyl-D-allonitrile, 9CI, 8CI, A-481
 2,5-Anhydro-3,4,6-tri-*O*-benzoyl-D-altronic acid, A-102
 2,5-Anhydro-3,4,6-tri-*O*-benzyl-D-allonic acid, A-481
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 L-Arabinonamide, A-825
 Arabinonic acid; D-*form*, A-825
 Arabinonic acid; L-*form*, A-825
 1,4-Arabinonolactone; D-*form*; 5-Phosphate, A-826
 1,4-Arabinonolactone; D-*form*; Tris(methoxymethyl), A-826
 1,4-Arabinonolactone; L-*form*, A-826
 1,5-Arabinonolactone; L-*form*, A-827
 1,4-Arabinonolactone; D-*form*, A-826
 3-*O*-Benzoyl-2,4-*O*-benzylidene-D-ribo-1,5-lactone, R-129
 3-*O*-Benzoyl-2,5-dibromo-2,5-dideoxy-D-arabinono-1,4-lactone, D-526
 4-*O*-Benzoyl-2,3,5,6-di-*O*-isopropylidene-D-mannonitrile, M-36
 2-*O*-Benzyl-D-arabinono-1,4-lactone, A-826
 6-*O*-Benzyl-2,3-dideoxy-1,4-hexonolactone, T-167
 3-*O*-Benzyl-D-glucono-1,4-lactone, G-251
 2,3-*O*-Benzylidene-5-bromo-5-deoxy-D-1,4-ribonolactone, B-91
 4,6-*O*-Benzylidene-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone, D-580
 4,6-*O*-Benzylidene-D-glucono-1,5-lactone, G-252
 3,5-*O*-Benzylidene-L-gulono-1,4-lactone, G-584
 3,5-*O*-Benzylidene-D-lyxono-1,4-lactone, L-65
 3,5-*O*-Benzylidene-L-lyxono-1,4-lactone, L-65
 2,4-*O*-Benzylidene-D-ribo-1,5-lactone, R-129
 3,4-*O*-(*R*)-Benzylidene-D-ribo-1,5-lactone, R-129
 3,4-*O*-Benzylidene-L-ribo-1,5-lactone, R-129
 2-Bromo-2-deoxy-D-arabinono-1,4-lactone, B-61
 2-Bromo-2-deoxy-L-erythrono-1,4-lactone, B-111
 6-Bromo-6-deoxygalactonic acid; D-*form*, B-69
 6-Bromo-6-deoxy-1,4-galactonolactone, B-69
 6-Bromo-6-deoxy-D-idono-1,4-lactone, B-79
 5-Bromo-5-deoxy-2,3-*O*-isopropylidene-D-ribo-1,4-lactone, B-91
 5-Bromo-5-deoxy-D-1,4-ribonolactone, B-91
 2-Bromo-2-deoxy-L-threono-1,4-lactone, B-111
 2-Bromo-2,6-dideoxy-L-glucono-1,4-lactone, B-107
 7-Bromo-3,7-dideoxy-D-gluc-*heptono*-1,4-lactone, B-108
 6-Bromo-2,6-dideoxy-D-arabino-hexono-1,4-lactone, B-109
 5-Bromo-2,5-dideoxy-D-threo-pentono-1,4-lactone, B-112
 5-Bromo-2,5-dideoxy-D-erythro-pentono-1,4-lactone, B-112
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*S*)-*form*, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*R*,5*S*)-*form*, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*R*)-*form*, B-120
 5-(2-Bromo-1-hydroxyethyl)dihydro-2(3*H*)-furanone; (1'*S*,5*S*)-*form*, B-120
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*R*,5*S*)-*form*, B-121
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*S*,5*R*)-*form*, B-121
 5-(2-Bromo-1-hydroxyethyl)-2(5*H*)-furanone; (1'*S*,5*S*)-*form*, B-121
 2-*C*-Bromo-2,3,4,6-tetra-*O*-benzoyl-D-glucono-1,5-lactone, B-116
 Butyl D-arabinonate, A-825
tert-Butyl 2,4-dideoxy-3,5-*O*-isopropylidene-erythro-hexonate, D-598
 Butyl DL-erythronate, T-161
 Butyl 2,3,4,5-tetra-*O*-acetyl-D-arabinonate, A-825
 6-*O*-(*tert*-Butyldimethylsilyl)-3,4-*O*-cyclohexylidene-2-*O*-triflyl-D-altrono-1,5-lactone, A-103
 4-Caffeoyl-2,3-digalloyl-L-threonic acid, T-161
 4-Caffeoyl-2-galloyl-L-threonic acid, T-161
 4-*O*-Caffeoyl-L-threonic acid, T-161
 2-*O*-Caffeoyl-L-threonolactone, T-161
 Colominic acid, A-20
 Conocarpic acid, C-150
 3,4-*O*-Cyclohexylidene-D-allono-1,5-lactone, A-79
 3,4-*O*-Cyclohexylidene-D-altrono-1,5-lactone, A-103
 2,3-*O*-Cyclohexylidene-D-ribo-1,4-lactone, R-128
 3,4-*O*-Cyclohexylidene-D-ribo-1,5-lactone, R-129
 Dehydroisoascorbic acid, D-22
 3-Deoxy-3-fluorogluconic acid; D-*form*, D-84
 1-Deoxy- α -D-glucopyranosyl iodide uronic acid; α -D-Pyranose-*form*, D-131
 3-Deoxy-arabino-hept-2-enono-1,4-lactone; D-*form*, D-149
 2-Deoxy-arabino-hexonic acid; D-*form*, D-187
 2-Deoxy-D-arabino-hexono-1,4-lactone, D-187
 2-Deoxy-ribo-hexono-1,4-lactone, D-189
 3-Deoxy-D-xylo-hexono-1,4-lactone, T-34
 3-Deoxy-L-arabino-hexono-1,4-lactone, T-34
 3-Deoxy-D-ribo-hexono-1,4-lactone, T-34
 3-Deoxy-D-lyxo-hexono-1,4-lactone, T-34
 3-Deoxy-L-ribo-hexono-1,4-lactone, T-34
 3-Deoxy-D-arabino-hexono-1,4-lactone, T-34
 3-Deoxy-L-xylo-hexono-1,4-lactone, T-34
 3-Deoxy-2-*C*-hydroxymethyl-2,1'-*O*-isopropylidene-D-erythro-pentonolactone, T-170
 3-Deoxy-2-*C*-(hydroxymethyl)-2,2'-*O*-isopropylidene-5-*O*-tosyl-D-erythro-1,4-pentonolactone, T-170
 3-Deoxy-2-*C*-hydroxymethyl-D-threo-pentono-1,4-lactone, T-170
 5-Deoxy-1,4-lyxonolactone; L-*form*, D-285
 6-Deoxymannonic acid; L-*form*, D-286
 6-Deoxy-D-mannono-1,4-lactone, D-286
 2-Deoxy-2-methylamino-D-gluconic acid, A-218
 3-Deoxy-2-*O*-methyl-D-arabino-hexono-1,4-lactone, T-34
 2-Deoxy-L-ribo-1,4-lactone, D-674
 2-Deoxy-D-ribo-1,4-lactone, D-674
 2-Deoxy-3,5,6-tri-*O*-methyl-D-arabino-hexono-1,4-lactone, D-187
 2-Deoxy-3,4,6-tri-*O*-methyl-D-arabino-hexono-1,5-lactone, D-187
 2-Deoxy-D-xylo-1,4-lactone, D-674
 3,5-Di-*O*-acetyl-6-bromo-2,6-dideoxy-D-arabino-hexono-1,4-lactone, B-109
 2,5-Di-*O*-acetyl-2-*C*-(bromomethyl)-3-deoxy-D-erythro-1,4-pentonolactone, B-123
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-D-glucono-1,4-lactone, D-531
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-D-idono-1,4-lactone, D-535
 3,5-Di-*O*-acetyl-2,6-dibromo-2,6-dideoxy-D-mannono-1,4-lactone, D-539
 4,6-Di-*O*-acetyl-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone, D-580
 2,4-Di-*O*-acetyl-3,6-dideoxy-L-erythro-hex-2-enono-1,5-lactone, D-581
 3,5-Di-*O*-acetyl-2,6-dideoxy-D-arabino-hexono-1,4-lactone, D-596
 5,6-Di-*O*-acetyl-2,3-dideoxy-L-threo-1,4-hexonolactone, T-167
 2,3-Di-*O*-acetyl-DL-erythrono-1,4-lactone, T-161
 4,6-Di-*O*-acetyl-D-threo-hex-2-enono-1,5-lactone, D-582
 2,5-Diamino-2,5-dideoxy-xylono-1,5-lactam; D-*form*, D-445
 3,6-Diamino-5-hydroxyhexanoic acid; (3*R*,5*R*)-*form*, D-468
 3,5-Di-*O*-benzoyl-2-deoxy-2,2-difluoro-D-erythro-1,4-pentonolactone, D-56
 4,6-Di-*O*-benzoyl-2,3-dideoxy-D-erythro-hex-2-enono-1,5-lactone, D-580
 2,4-Di-*O*-benzoyl-3,6-dideoxy-L-erythro-hex-2-enono-1,5-lactone, D-581
 2,4-Di-*O*-benzoyl-3,6-dideoxy-L-arabino-hexono-1,5-lactone, D-597
 2,3-Di-*O*-benzoyl-D-erythrono-1,4-lactone, T-161
 2,3-Di-*O*-Benzoyl-L-erythrono-1,4-lactone, T-161
 2,6-Di-*O*-benzoyl-D-galactono-1,4-lactone, G-24
 3,6-Di-*O*-benzoyl-D-mannono-1,4-lactone, M-37
 2,4-Di-*O*-benzoylpent-2-enono-1,5-lactone, D-334
 2,5-Di-*O*-benzoyl-L-rhamnono-1,4-lactone, D-286
 2,4:3,4-Di-*O*-benzylidene-D-ribonic acid, R-128
 2,4:3,5-Di-*O*-benzylidene-D-xylonic acid, X-9
 2,6-Dibromo-2,6-dideoxy-D-altrono-1,4-lactam, D-524
 2,5-Dibromo-2,5-dideoxy-D-arabino-1,4-lactone, D-526
 2,6-Dibromo-2,6-dideoxy-D-glucono-1,4-lactone, D-531

- 2,6-Dibromo-2,6-dideoxy-L-glucono-1,4-lactone, D-531
 2,6-Dibromo-2,6-dideoxy-D-idono-1,4-lactone, D-535
 2,6-Dibromo-2,6-dideoxy-L-idono-1,4-lactone, D-535
 2,5-Dibromo-2,5-dideoxy-D-lyxono-1,4-lactone, D-536
 2,6-Dibromo-2,6-dideoxy-D-mannono-1,4-lactone, D-539
 2,6-Dibromo-2,6-dideoxy-L-mannono-1,4-lactone, D-539
 2,5-Dibromo-2,5-dideoxy-D-xylo-1,4-lactone, D-540
 2,3-Dideoxy-D-ascorbic acid, D-583
 2,3-Dideoxy-L-ascorbic acid, D-583
 2,3-Dideoxyhex-2-enono-1,4-lactone; *D-threo-form*, D-583
 2,3-Dideoxyhex-2-enono-1,4-lactone; *L-erythro-form*, D-583
 2,6-Dideoxy-D-arabino-1,4-hexonolactone, D-596
 3,6-Dideoxy-L-arabino-hexono-1,5-lactone, D-597
 3,6-Dideoxy-D-xylo-hexono-1,4-lactone, D-599
 2,6-Dideoxy-D-ribo-hexono-1,4-lactone, T-166
 2,3-Dideoxy-L-erythro-1,4-hexonolactone, T-167
 2,3-Dideoxy-L-threo-1,4-hexonolactone, T-167
 2,6-Dideoxy-3-*O*-methyl-ribo-hexonic acid, T-166
 2,6-Dideoxy-3-*O*-methyl-D-ribo-hexono-1,4-lactone, T-166
 2,6-Dideoxy-3-*O*-methyl-D-ribo-hexono-1,5-lactone, T-166
 2,3-Dideoxy-3-*C*-methyl-5-*O*-trityl-D-erythro-1,4-pentonolactone, D-642
 2,5-Dideoxy-D-threo-1,4-pentonolactone, D-707
 2,5-Dideoxy-L-erythro-1,4-pentonolactone, D-707
 2,5-Dideoxy-D-erythro-1,4-pentonolactone, D-707
 2,5-Dideoxy-L-threo-1,4-pentonolactone, D-707
 2,3-Dideoxy-3-[tris(methylthio)methyl]-5-*O*-*tert*-butyldiphenylsilyl-erythro-pentono-1,4-lactone; *D-form*, D-657
 Dihydro-3,4-dihydroxy-5-methyl-2(3*H*)-furanone; (3*R*,4*R*,5*S*)-*form*, D-672
 Dihydro-3,4-dihydroxy-5-methyl-2(3*H*)-furanone; (3*R*,4*S*,5*R*)-*form*, D-672
 Dihydro-3,4-dihydroxy-5-methyl-2(3*H*)-furanone; (3*S*,4*S*,5*R*)-*form*, D-672
 Dihydro-2,2-dimethylfuro[3,4-*d*]-1,3-dioxol-4(3*aH*)-one, 9CI, T-161
 2,3-Dihydroxybutanoic acid, D-688
 3,4-Dihydroxydihydro-2(3*H*)-furanone, 9CI, 8CI, T-161
 2,4-Dihydroxy-2-(hydroxymethyl)butanoic acid, D-696
 2,3-Dihydroxy-2-methyl-4-pentenoic acid; (2*R*,3*R*)-*form*; 2,3-Isopropylidene, Me ester, D-699
 2,3-Dihydroxy-2-methyl-4-pentenoic acid; (2*R*,3*R*)-*form*; 2,3-Isopropylidene, D-699
 3,4-Dihydroxypentanoic acid; (4*R*,5*R*)-*form*, D-707
 3,4:5,6-Di-*O*-isopropylidene-D-gluconic acid, G-250
 2,3:5,6-Di-*O*-isopropylidene-D-gulono-1,4-lactone, G-584
 2,3:5,6-Di-*O*-isopropylidene-L-gulono-1,4-lactone, G-584
 2,3:4,5-Di-*O*-isopropylidene-D-mannono-1,6-lactone, M-36
 2,3:5,6-Di-*O*-isopropylidene-D-mannono-1,4-lactone, M-37
 2,3:5,6-Di-*O*-isopropylidene-D-mannononitrile, M-36
 2,5-Diketo-D-gluconic acid, D-757
 3,5-Di-*O*-methyl-D-ribono-1,4-lactone, R-128
 2,3-Di-*O*-methyl-L-xylo-1,4-lactone, X-10
 3,5-Di-*O*-methyl-L-xylo-1,4-lactone, X-10
 2,5-Di-*O*-tosyl-D-lyxono-1,4-lactone, L-65
 2,6-Di-*O*-tosyl-D-mannono-1,4-lactone, M-37
 Eritadenine; (2*R*,3*R*)-*form*, E-11
 D-Erythronamide, T-161
 L-Erythronamide, T-161
 D-Erythronic acid, T-161
 L-Erythronic acid, T-161
 DL-Erythronic acid, T-161
 L-Erythrono-1,4-lactone, T-161
 DL-Erythrono-1,4-lactone, T-161
 Ethyl D-arabinonate, A-825
 Ethyl 2-benzamido-4,6-*O*-benzylidene-2-deoxy-D-gluconate, A-218
 Ethyl 2-benzamido-2-deoxy-D-gluconate, A-218
 Ethyl 3,4:5,6-di-*O*-benzylidene-L-gluconate, G-584
 Ethyl D-gluconate, G-250
 Ethyl D-mannonate, M-36
 Ethyl 2,3,4,5,6-penta-*O*-acetyl-D-galactonate, G-23
 Ethyl 2,3,4,5-tetra-*O*-acetyl-D-arabinonate, A-825
 Ethyl 3,4,5,6-tetra-*O*-acetyl-2-deoxy-D-arabino-hexonate, D-187
 Ethyl 2,3,4,6-tetra-*O*-benzoyl-D-gluconate, G-250
 Ethyl 2,3,5,6-tetra-*O*-benzoyl-D-gluconate, G-250
 4,6-*O*-Ethylidene-D-glucono-1,5-lactone, G-252
 Fuconic acid; *D-form*, F-93
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 α -D-Galactometasaccharinic acid, T-34
 α -L-Galactometasaccharinic acid, T-34
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L-Galactonamide, G-23
Galactonic acid; *D-form*; Anilide, G-23
D-Galactonic acid δ -lactone, 9CI, G-25
- Galactonic acid; *D-form*, G-23
D-Galactono-1,5-lactam, T-172
1,4-Galactonolactone; *D-form*, G-24
1,4-Galactonolactone; *L-form*, G-24
D-Galactonothiono-1,5-lactam, T-171
 β -D-Glucoisaccharinic acid, T-170
 α -D-Glucoisaccharinic acid, T-170
 β -L-Glucometasaccharinic acid, T-34
 α -D-Glucometasaccharinic acid, T-34
 α -L-Glucometasaccharinic acid, T-34
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2,3-*O*-Isopropylidene-L-erythronamide, T-161
2,3-*O*-Isopropylidene-L-erythrono-1,4-lactone, T-161
5,6-*O*-Isopropylidene-D-galactono-1,4-lactone, G-24
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3,5-*O*-Isopropylidene-2-*C*-methyl-D-xylo-1,4-lactone, M-304
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 Acaciabiuronic acid, A-1
 Acaciabiuronic acid, A-1
 2-Acetamido-4,6-*O*-benzylidene-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-2-deoxy-*D*-galacturonamide, A-212
 2-Acetamido-2-deoxy-*D*-galacturonic acid, A-212
 2-Acetamido-2-deoxy-*L*-galacturonic acid, A-212
 2-Acetamido-2-deoxy-4-*O*- α -*D*-glucopyranosyl-*D*-mannopyranuronic acid, A-262
 2-Acetamido-2-deoxy-*D*-mannofuranurono-6,3-lactone, A-274
 2-Acetamido-2-deoxy-*D*-mannofuranurono-6,3-lactone, A-317
 6-(2-Acetamido-2-deoxy- β -*D*-mannopyranuronosyl)-*D*-glucose, A-311
 2-Acetamido-2-deoxy-4-*O*-methyl-*D*-glucuronic acid, A-274
 2-Acetamido-5,6-di-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,4-lactone, A-386
 2-Acetamido-4,6-di-*O*-acetyl-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-2,3-dideoxy-*D*-*threo*-hex-2-enonic acid γ -lactone, 8CI, A-388
 2-Acetamido-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,4-lactone, A-386
 2-Acetamido-2,3-dideoxy-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-2,3-dideoxy-*D*-*threo*-hex-2-enono-1,5-lactone, A-389
 2-Acetamido-2,3-dideoxy-5,6-*O*-isopropylidene-*D*-*threo*-hex-2-enonic acid γ -lactone, 8CI, A-388
 2-Acetamido-2,3-dideoxy-5,6-*O*-isopropylidene-*D*-*erythro*-hex-2-enono-1,4-lactone, A-386
 2-Acetamido-2,3-dideoxy-4,6-*O*-isopropylidene-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
 2-Acetamido-2,3-dideoxy-4,6-*O*-isopropylidene-*D*-*threo*-hex-2-enono-1,5-lactone, A-389
 2-Acetamido-2,3-dideoxy-4-*O*-methyl-*D*-*erythro*-hex-2-enono-1,5-lactone, A-387
N-[2-[[6-*O*-[2-(Acetylamino)-2-deoxy- β -*D*-mannopyranuronosyl]-*D*-glucopyranosyl]oxy]ethyl]octadecanamide, A-311
 1-*O*-Acetyl-*D*-glucuronic acid, G-538
 3-*O*-Acetyl-1,2-*O*-isopropylidene- α -*D*-glucofuranuronamide, G-537
 2-Amino-2-deoxyaltruronic acid; *L*-form, A-169
 2-Amino-2-deoxy- α -*L*-galactopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -*D*-quinovosyl-(1 \rightarrow 3)-*D*-rhamnose; α -Pyranose-form; 2'*N*,2''*N*-Di-Ac, A-205
 2-Amino-2-deoxy- α -*L*-galactopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -*D*-quinovosyl-(1 \rightarrow 3)-*D*-rhamnose; α -Pyranose-form, A-205
 2-Amino-2-deoxygalacturonic acid; *D*-form, A-212
 2-Amino-2-deoxy- α -*D*-glucopyranosyl-(1 \rightarrow 4)- β -*D*-glucopyranosyluronic acid-(1 \rightarrow 4)-2-amino-2-deoxy- α -*D*-glucopyranosyl-(1 \rightarrow 4)- α -*L*-idopyranosyluronic acid-(1 \rightarrow 4)-2-amino-2-deoxy-*D*-glucopyranose, A-255
 2-Amino-2-deoxy- α -*D*-glucopyranosyl-(1 \rightarrow 4)- β -*D*-glucopyranuronosyl-(1 \rightarrow 4)-*D*-mannose; β -Pyranose-form; 1,6:2,3-Dianhydro, 2',3',3'',4''-tetraethyl, 6'-Me, 2''*N*,6''-di-Ac, A-256
 2-Amino-2-deoxy- α -*D*-glucopyranosyl-(1 \rightarrow 4)- β -*D*-glucopyranuronosyl-(1 \rightarrow 4)-*D*-mannose; β -Pyranose-form, A-256
 4-Amino-4-deoxyglucuronic acid; α -*D*-Pyranose-form; Me glycoside, *N*-Ac, Me ester, A-276
 4-Amino-4-deoxyglucuronic acid; α -*D*-Pyranose-form; Me glycoside, *N*,2,3-tri-Ac, Me ester, A-276
 2-Amino-2-deoxyglucuronic acid; *D*-form, A-274
 3-Amino-3-deoxyglucuronic acid; *D*-form, A-275
 4-Amino-4-deoxyglucuronic acid; *D*-form, A-276
 2-Amino-2-deoxyglucuronic acid; *L*-form, A-281
 3-Amino-3-deoxy-1,2-*O*-isopropylidene- α -*D*-glucofuranuronic acid, A-275
 2-Amino-2-deoxy- β -*D*-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -*L*-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-*L*-fucose; β -Pyranose-form; *N*,*N*',*N*''-Tri-Ac, A-308
 2-Amino-2-deoxy- β -*D*-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -*L*-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-*L*-fucose, A-308
 2-Amino-2-deoxy- β -*D*-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -*L*-fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-*L*-fucose, A-309
 2-Amino-2-deoxy- β -*D*-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -*D*-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-*D*-fucose; α -Pyranose-form; Me glycoside, 2,2'*N*,2''*N*,3',3'',4*N*,4',4''-octa-Ac, Me ester, A-310
 2-Amino-2-deoxy- β -*D*-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -*D*-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-*D*-fucose; α -Pyranose-form; Me glycoside, 2'*N*,2''*N*,4*N*-tri-Ac, A-310
 2-Amino-2-deoxy- β -*D*-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -*D*-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-*D*-fucose, A-310
 2-Amino-2-deoxymannuronic acid; *D*-form; *N*-Ac, A-317
 2-Amino-2-deoxymannuronic acid; α -*D*-Pyranose-form; Benzyl glycoside, *O*,*O*,*N*-tri-Ac, Me ester, A-317
 2-Amino-2-deoxymannuronic acid; *D*-form, A-317
 3-Amino-3,4-dideoxy-*xylo*-hexuronic acid; *D*-form, A-401
 4-Amino-2,3,4-trideoxy-*erythro*-hex-2-enuronic acid; *D*-form, A-454
 Antibiotic SF 2140, A-773

- Arabinuronic acid; *D*-form, A-855
 2-Benzamido-4,6-*O*-benzylidene-2,3-dideoxy-*D*-erythro-hex-2-enono-1,5-lactone, A-387
 Benzyl 2-acetamido-2-deoxy- α -*D*-mannopyranosiduronic acid, A-317
 Benzyl 2-acetamido-3,4-di-*O*-benzyl-2-deoxy- α -*D*-glucopyranosiduronic acid, A-274
 Benzyl 3,5-*O*-benzylidene-1,2-*O*-isopropylidene- α -*D*-gluconate, G-538
 Benzyl *N*-benzyloxycarbonyl-2-deoxy- α -*D*-glucopyranosiduronic acid, A-274
 Benzyl 2,3-di-*O*-benzyl- β -*D*-galactopyranosiduronic acid, G-210
 Benzyl β -*D*-galactopyranosuronic acid, G-210
 Benzyl glucopyranosiduronic acid; β -*D*-form, B-17
 Benzyl 2,3-*O*-isopropylidene- β -*D*-ribofuranuronoside, R-146
 Benzyl β -*D*-ribofuranosiduronic acid, R-146
 Benzyl 2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- α -*D*-galactopyranuronate, G-176
 Benzyl 2,3,4-tri-*O*-benzyl- β -*D*-glucopyranosiduronic acid, B-17
 Benzyl 2,3,4-tri-*O*-benzyl-*D*-glucuronate, G-538
 5-*O*-Benzyl-1,2-*O*-cyclohexylidene- α -*D*-glucurono-1,5-lactone, G-539
 5-*O*-Benzyl-*D*-glucurono-6,3-lactone, G-539
 Capuramycin, C-7
 3-*O*-(1-Carboxyethyl)glucuronic acid; *D*-(1'*R*)-form, C-18
 4-*O*-(1-Carboxyethyl)glucuronic acid; *D*-(1'*S*)-form, C-19
 5-Chloro-5-deoxydifuranurono-6,3-lactone; β -*L*-form; 1,2-Isopropylidene, C-90
 Chondrosine, C-126
 1,2-*O*-Cyclohexylidene-3,5-di-*O*-mesyl- α -*D*-glucofuranuronamide, G-537
 1,2-*O*-Cyclohexylidene- α -*D*-glucofuranuronamide, G-537
 1,2-*O*-Cyclohexylidene- α -*D*-glucurono-6,3-lactone, G-539
 1,2-*O*-Cyclohexylidene-5-*O*-mesyl- α -*D*-glucofuranuronamide, G-537
 1,2-*O*-Cyclohexylidene-5-*O*-mesyl- α -*D*-glucurono-1,5-lactone, G-539
 1-Deoxyallitol; *D*-form; 3,4-*O*-Isopropylidene, D-32
 1-Deoxyallitol; *L*-form, D-32
 2-Deoxy-2-formamido-*D*-galacturonic acid, A-212
 3-Deoxy-*threo*-penturono-5,2-lactone; *L*-form, D-352
 2,3-Diacetamido-2,3-dideoxy-*D*-glucuronic acid, D-434
 2,3-Diacetamido-2,3-dideoxy-*L*-guluronic acid, D-436
 2,3-Diacetamido-2,3-dideoxy-*D*-mannuronic acid, D-452
 2,3-Diamino-2,3-dideoxyglucuronic acid; *D*-form, D-434
 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*R*,5*R*)-form, D-673
 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*R*,5*S*)-form, D-673
 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*S*,5*R*)-form, D-673
 4,5-Dihydro-3-hydroxy-5-(hydroxymethyl)-2(3*H*)-furanone; (3*S*,5*S*)-form, D-673
 2,3-Di-*O*-methyl-*D*-galacturonic acid, G-210
 2,4-Di-*O*-methyl-*D*-galacturonic acid, G-210
 3,4-Di-*O*-methyl-*D*-galacturonic acid, G-210
 3,4-Di-*O*-methyl-*D*-glucuronic acid, G-538
 2,3-Dioxopropanoic acid, D-759
 Ethyl (methyl 2,3-di-*O*-acetyl- α -*D*-glucopyranosid)uronate, M-260
 β -*D*-Fructofuranosyl-(2 \rightarrow 3)- β -*D*-glucopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy-*D*-galactose; β -Pyranose-form; *N*-Ac, F-73
 β -*D*-Fructofuranosyl-(2 \rightarrow 3)- β -*D*-glucopyranuronosyl-(1 \rightarrow 3)-2-amino-2-deoxy-*D*-galactose, F-73
 4-*O*- β -*D*-Galactopyranosyl-*D*-glucuronic acid, G-148
 α -*D*-Galactopyranosyl-(1 \rightarrow 3)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 2)]-*D*-mannose; α -Pyranose-form; Me glycoside, 2',3',4,4',6,6'-hexabenzyl, 6'-Me, 2'',3'',4''-tri-Ac, G-140
 α -*D*-Galactopyranosyl-(1 \rightarrow 3)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 2)]-*D*-mannose; α -Pyranose-form; Me glycoside, G-140
 α -*D*-Galactopyranosyl-(1 \rightarrow 3)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 2)]-*D*-mannose, G-140
 β -*D*-Galactopyranosyl-(1 \rightarrow 4)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 3)]-*L*-rhamnose; α -Pyranose-form; Me glycoside, 2,2',3',4',6'-pentabenzyl, 6''-Me, 2'',3'',4''-tri-Ac, G-141
 β -*D*-Galactopyranosyl-(1 \rightarrow 4)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 3)]-*L*-rhamnose; α -Pyranose-form; Me glycoside, G-141
 β -*D*-Galactopyranosyl-(1 \rightarrow 4)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 3)]-*L*-rhamnose, G-141
 β -*D*-Galactopyranuronosyl-(1 \rightarrow 4)- α -*D*-galactopyranuronosyl-(1 \rightarrow 4)-*D*-galactouronic acid; Pyranose-form, G-182
 β -*D*-Galactopyranuronosyl-(1 \rightarrow 4)- α -*D*-galactopyranuronosyl-(1 \rightarrow 4)-*D*-galactouronic acid; β -Pyranose-form, G-182
 α -*D*-Galactopyranuronosyl-(1 \rightarrow 4)- α -*D*-galactopyranuronosyl-(1 \rightarrow 4)-*D*-galactouronic acid, G-183
 4-*O*- α -*D*-Galactopyranuronosyl-*D*-galactose, G-185
 3-*O*- β -*D*-Galactopyranuronosyl-*D*-galactose, G-186
 4-*O*- α -*D*-Galactopyranuronosyl-*D*-galacturonic acid, G-187
 4-*O*- α -*D*-Galactopyranuronosyl-*D*-xylose, G-192
 Galacturonic acid; α -*D*-Pyranose-form; 1,2,3,4-Di-*O*-benzylidene, G-210
 Galacturonic acid; β -*D*-Pyranose-form, G-210
 Galacturonic acid; *D*-form, G-210
 β -*D*-Glucopyranosyl-(1 \rightarrow 3)-4-*O*-acetyl- α -*D*-galactopyranosyl-(1 \rightarrow 3)-*D*-mannose, 9CI, G-308
 β -*D*-Glucopyranosyl-(1 \rightarrow 3)- α -*D*-galactopyranuronosyl-(1 \rightarrow 3)-*D*-mannose, G-308
 α -*D*-Glucopyranosyl-(1 \rightarrow 2)- α -*D*-glucopyranuronosyl-(1 \rightarrow 3)-*D*-mannose, G-403
 2-*O*- α -*D*-Glucopyranosyl-*D*-glucuronic acid, G-412
 4-*O*- α -*D*-Glucopyranosyl-*D*-glucuronic acid, G-413
 β -*D*-Glucopyranosyl-(1 \rightarrow 4)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 2)]-*D*-glucose; α -Pyranose-form; Deca-Ac, Me ester, G-401
 β -*D*-Glucopyranosyl-(1 \rightarrow 4)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 2)]-*D*-glucose; α -Pyranose-form, G-401
 β -*D*-Glucopyranosyl-(1 \rightarrow 4)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 6)]-*D*-glucose, G-402
 2-*O*- β -*D*-Glucopyranuronosyl-*D*-arabinose; β -Pyranose-form; NH₄ salt, G-480
 5-*O*- β -*D*-Glucopyranuronosyl-*L*-arabinose, G-481
 4-*O*- β -*D*-Glucopyranuronosyl-*L*-fucose, G-482
 β -*D*-Glucopyranuronosyl-(1 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 6)-*D*-galactose, G-483
 β -*D*-Glucopyranuronosyl-(1 \rightarrow 3)- α -*D*-galactopyranuronosyl-(1 \rightarrow 2)- α -*L*-rhamnopyranosyl-(1 \rightarrow 4)-[β -*D*-glucopyranuronosyl-(1 \rightarrow 3)]- α -*D*-galactopyranuronosyl-(1 \rightarrow 2)-*L*-rhamnopyranose, G-484
 3-*O*- α -*D*-Glucopyranuronosyl-*D*-galactose, G-486
 4-*O*- α -*D*-Glucopyranuronosyl-*D*-galactose, G-487
 3-*O*- α -*D*-Glucopyranuronosyl-*L*-galactose, G-488
 4-*O*- α -*D*-Glucopyranuronosyl-*L*-galactose, G-489
 3-*O*- β -*D*-Glucopyranuronosyl-*D*-galactose, G-490
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-galactose, G-491
 β -*D*-Glucopyranuronosyl-(1 \rightarrow 4)- β -*D*-glucopyranosyl-(1 \rightarrow 4)- α -*D*-glucopyranosyl-(1 \rightarrow 4)-*D*-galactose, G-492
 4-*O*- α -*D*-Glucopyranuronosyl-*D*-glucose; β -form; Benzyl glycoside, hexa-Ac, Me ester, G-495
 4-*O*- α -*D*-Glucopyranuronosyl-*D*-glucose; Hepta-Ac, Me ester, G-495
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose; Hepta-Ac, Me ester, G-499
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose; Hepta-Ac, G-499
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose; 2,2',3,3',4',6'-Hexa-Me, Me ester, G-499
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose; α -Pyranose-form; Me glycoside, 2,3,6,2',3',4'-hexa-Me, Me ester, G-499
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose; β -Pyranose-form; Me glycoside, hexa-Me, Me ester, G-499
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose; β -Pyranose-form; Me glycoside, hexa-Me, G-499
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose; α -Pyranose-form; Me glycoside, 2,3,6-tri-Me, 2',3',4'-tri-Ac, Me ester, G-499
 2-*O*- α -*D*-Glucopyranuronosyl-*D*-glucose, G-494
 4-*O*- α -*D*-Glucopyranuronosyl-*D*-glucose, G-495
 2-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose, G-497
 3-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose, G-498
 4-*O*- β -*D*-Glucopyranuronosyl-*D*-glucose, G-499
 4-*O*- α -*D*-Glucopyranuronosyl-*D*-glucuronic acid, G-501
 2-*O*- β -*D*-Glucopyranuronosyl-*D*-glucuronic acid, G-502
 2-*O*- β -*D*-Glucopyranuronosyl-*D*-mannose, G-504
 2-*O*- α -*D*-Glucopyranuronosyl-*L*-rhamnose, G-505
 3-*O*- β -*D*-Glucopyranuronosyl-*L*-rhamnose, G-506
 4-*O*- β -*D*-Glucopyranuronosyl-*L*-rhamnose, G-507
 α -*D*-Glucopyranuronosyl-(1 \rightarrow 4)- β -*D*-xylopyranosyl-(1 \rightarrow 4)-*D*-xylose, G-509
 2-*O*- α -*D*-Glucopyranuronosyl-*D*-xylose; Me glycoside, Me ester, G-510
 2-*O*- α -*D*-Glucopyranuronosyl-*D*-xylose; Me glycoside, 4'-Me, Me ester, G-510
 2-*O*- α -*D*-Glucopyranuronosyl-*D*-xylose; Me glycoside, penta-Ac, Me ester, G-510
 2-*O*- α -*D*-Glucopyranuronosyl-*D*-xylose; 4'-Me, Me ester, G-510
 2-*O*- α -*D*-Glucopyranuronosyl-*D*-xylose, G-510
 3-*O*- α -*D*-Glucopyranuronosyl-*D*-xylose, G-511
 Glucuronic acid, G-538
 Glucurono-6,3-lactone; *D*-form, G-539
 β -*D*-Glucuronopyranosyl-(1 \rightarrow 3)- α -*D*-galacturonopyranosyl-(1 \rightarrow 2)-*L*-rhamnose, G-540
 Guluronic acid; *D*-form, G-589
 Guluronic acid; *L*-form, G-589
 α -*L*-*threo*-4-Hex-4-enopyranuronosyl-*D*-galacturonic acid, H-80
 arabino-2-Hexulosuronic acid; *D*-form; Nitrile, H-114
 ribo-3-Hexulosuronic acid; α -*D*-Furanose-form; 1,2-*O*-Isopropylidene, 5-Ac, Me ester, H-115
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- Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, *N*-Ac, Me ester, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, *N*-Ac, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, hexa-Ac, Me ester, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, 4,6,2',3',6'-penta-Me, 4-Ac, Me ester, H-127
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 Isopropyl (methyl 2,3-*O*-isopropylidene- β -D-ribofuranosid)uronate, R-146
 1,2-*O*-Isopropylidene-3,4-di-*O*-mesyl- α -D-glucuronic acid, G-538
 1,2-*O*-Isopropylidene- α -D-glucofuranuronic acid, G-538
 1,2-*O*-Isopropylidene-D-glucofuranurono-6,3-lactone, G-539
 1,2-*O*-Isopropylidene-xylo-hex-5-ulofuranurono-6,3-lactone, H-106
 1,2-*O*-Isopropylidene- α -D-ribo-hexulosofuranuronic acid, H-115
 1,2-*O*-Isopropylidene-L-idurono-1,4-lactone, I-12
 1,2-*O*-Isopropylidene-5-*O*-pivaloyl- α -D-glucofuranurono-6,3-lactone, G-539
 2,3-*O*-Isopropylidene- β -D-riburonofurano-1,5-lactone, R-146
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 Laetrile, L-19
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 Lyxuronic acid; *L*-*form*, L-78
 α -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranuronosyl-(1 \rightarrow 2)-D-mannose, M-60
 β -D-Mannopyranuronosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-galactose, M-111
 4-*O*- β -D-Mannopyranuronosyl-D-glucose, M-112
 4-*O*- β -D-Mannopyranuronosyl-D-mannuronic acid, M-113
 Mannourono-6,3-lactone; α -D-Pyranose-*form*; Me glycoside, M-122
 Mannourono-6,3-lactone; β -D-Pyranose-*form*; Me glycoside, M-122
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 Mannuronic acid; *L*-*form*, M-123
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 Methyl 4-acetamido-4-deoxy- α -D-glucopyranosiduronic acid, 8CI, A-276
 Methyl 2-*O*-acetyl-5-*O*-benzyl- β -D-glucopyranosiduronamide, G-537
 Methyl 4-*O*-acetyl-2,3-di-*O*-methyl- β -D-glucopyranosiduronic acid, M-192
 Methyl 2-*O*-acetyl-3,4-*O*-isopropylidene- α -D-galactopyranosiduronamide, M-188
 Methyl 3-amino-3-deoxy-D-alluronate, A-160
 Methyl 4-amino-4-deoxy- α -D-glucopyranosiduronic acid, 8CI, A-276
 Methyl 4-amino-2,3,4-trideoxy- α -D-erythro-hex-2-enopyranosiduronic acid, 8CI, A-454
 Methyl (benzyl 2,3-di-*O*-benzyl- α -D-glucopyranosid)uronate, B-17
 Methyl (benzyl 2,3-di-*O*-benzyl- β -D-glucopyranosid)uronate, B-17
 Methyl (benzyl 2,3-di-*O*-benzyl-4-*O*-mesyl- α -D-glucopyranosid)uronate, B-17
 Methyl (benzyl β -D-glucopyranosid)uronate, B-17
 Methyl (benzyl 2,3-*O*-isopropylidene- β -D-ribofuranosid)uronate, R-146
 Methyl (benzyl 2,3,4-tri-*O*-acetyl- β -D-glucopyranosid)uronate, B-17
 Methyl (benzyl 2,3,4-tri-*O*-benzyl- β -D-glucopyranosid)uronate, B-17
 Methyl 5-*O*-benzyl- β -D-glucopyranosiduronamide, G-537
 Methyl 3-*O*-benzyl-L-idopyranuronate, I-12
 Methyl 3-*O*-benzyl-1,2-*O*-isopropylidene- β -L-idofuranuronate, I-12
 Methyl 5-*O*-benzyl-2-*O*-methyl- α -D-glucopyranosidurono-6,3-lactone, G-539
 Methyl 5-*O*-benzyl-2-*O*-methyl- β -D-glucopyranosidurono-6,3-lactone, G-539
 Methyl 5-chloro-5-deoxy- α -L-idofuranosidurono-6,3-lactone, C-90
 Methyl 2,3-di-*O*-acetyl-5-*O*-benzyl- β -D-glucopyranosiduronamide, G-537
 Methyl 1,2,3,4-di-*O*-benzylidene- α -D-galactopyranosuronate, G-210
 Methyl 1,2,3,4-di-*O*-isopropylidene- α -D-galactopyranosuronate, G-210
 Methyl 2,3,4,5-di-*O*-isopropylidene-L-guluronate, G-589
 Methyl 2,3-di-*O*-methyl- β -D-galactofuranosiduronamide, M-188
 Methyl 3,4-di-*O*-methyl- α -D-galactopyranosiduronamide, M-188
 Methyl 3,4-di-*O*-methyl- α -D-galactopyranosiduronic acid, M-187
 Methyl 2,5-di-*O*-methyl- α -D-glucopyranosiduronamide, G-537
 Methyl 2,5-di-*O*-methyl- β -D-glucopyranosiduronamide, G-537
 Methyl 2,5-di-*O*-methyl- α -D-glucopyranosidurono-6,3-lactone, G-539
 Methyl 2,5-di-*O*-methyl- β -D-glucopyranosidurono-6,3-lactone, G-539
 Methyl 3,4-di-*O*-methyl- α -D-glucopyranosiduronamide, G-537
 Methyl (ethyl 2,3,4-tri-*O*-benzyl-1-thio- β -D-glucopyranosid)uronate, T-75
 Methyl α -D-galactopyranosiduronamide, 8CI, M-188
 Methyl galactopyranosiduronic acid; α -D-*form*, M-187
 Methyl galactopyranosiduronic acid; β -D-*form*, M-187
 Methyl D-galactopyranosuronate, G-210
 Methyl α -D-glucopyranosidurono-6,3-lactone, G-539
 Methyl β -D-glucopyranosidurono-6,3-lactone, G-539
 Methyl β -D-glucopyranosiduronamide, G-537
 Methyl glucopyranosiduronic acid; α -D-*form*, M-192
 Methyl glucuronate, G-538
 Methyl α -L-gulofuranosiduronic acid γ -lactone, G-590
 Methyl β -L-gulofuranosiduronic acid γ -lactone, G-590
 Methyl gulopyranosiduronic acid, M-195
 Methyl (β -L-idopyranosid)uronate, I-12
 Methyl 1,2-*O*-isopropylidene-D-arabinofuranuronate, A-855
 Methyl 3,4-*O*-isopropylidene- α -D-galactopyranosiduronamide, M-188
 Methyl 1,2-*O*-isopropylidene- α -D-ribofuranuronate, R-146
 Methyl 2,3-*O*-isopropylidene- β -D-ribofuranuronate, R-146
 Methyl 2,3-*O*-isopropylidene- β -D-ribofuranuronoside, R-146
 Methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-galactopyranosiduronamide, M-188
 Methyl L-lyxuronate, L-78
 Methyl α -D-mannopyranosiduronamide, M-123
 Methyl α -D-mannopyranosiduronic acid, M-123
 Methyl α -D-mannopyranosidurono-6,3-lactone, M-123
 Methyl 4-*O*-mesyl-2,3-di-*O*-methyl- β -D-glucopyranosiduronic acid, M-192
 Methyl 2-*O*-mesyl- β -D-glucopyranosiduronamide, G-537
 Methyl (methyl 4-*O*-acetyl-2,3-di-*O*-methyl- β -D-glucopyranosid)uronate, M-192
 Methyl (methyl 3-benzamido-2-*O*-benzoyl-3,4-dideoxy- α -D-xylo-hexopyranosid)uronate, A-401
 Methyl (methyl 3-benzamido-2-*O*-benzoyl-3,4-dideoxy- β -D-xylo-hexopyranosid)uronate, A-401
 Methyl (methyl 4-deoxy-2,3-di-*O*-methyl- α -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy-2,3-di-*O*-methyl- β -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy- α -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy- β -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 4-deoxy-2-*O*-methyl- β -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-acetyl-4-deoxy- α -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-acetyl-4-deoxy- β -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-acetyl-4-*O*-mesyl- α -D-glucopyranosid)uronate, M-192
 Methyl (methyl 2,3-di-*O*-benzoyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3-di-*O*-benzoyl-4-*O*-mesyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3-di-*O*-benzyl-4-deoxy- α -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-benzyl-4-deoxy- β -L-threo-hex-4-enopyranosid)uronate, D-179
 Methyl (methyl 2,3-di-*O*-benzyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3-di-*O*-benzyl- β -L-idopyranosid)uronate, I-12
 Methyl (methyl 2,3-di-*O*-benzyl-4-*O*-mesyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3-di-*O*-benzyl-4-*O*-mesyl- α -D-glucopyranosid)uronate, M-192
 Methyl (methyl 2,3-di-*O*-methyl- β -D-galactofuranosid)uronate, G-210
 Methyl (methyl 3,4-di-*O*-methyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3-di-*O*-methyl- β -D-galactopyranosid)uronate, M-187
 Methyl (methyl α -D-galactopyranosid)uronate, M-187
 Methyl (methyl β -D-galactopyranosid)uronate, M-187
 Methyl (methyl α -L-glucopyranosid)uronate, M-192
 Methyl (methyl D-ribo-hexofuranosid)uronate, H-115
 Methyl (methyl α -D-idopyranosid)uronate, I-12
 Methyl (methyl β -D-idopyranosid)uronate, I-12
 Methyl (methyl α -L-idopyranosid)uronate, I-12
 Methyl (methyl 3,4-*O*-isopropylidene- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 3,4-*O*-isopropylidene- β -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3-*O*-isopropylidene- β -D-ribofuranosid)uronate, R-146
 Methyl (methyl 3,4-*O*-isopropylidene-2-*O*-tosyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl α -D-lyxofuranosid)uronate, L-78
 Methyl (methyl α -L-lyxofuranosid)uronate, L-78
 Methyl (methyl α -D-mannopyranosid)uronate, M-123
 Methyl (methyl 2-*O*-methyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 4-*O*-methyl- α -D-glucopyranosid)uronate, M-192
 Methyl (methyl 2-*O*-tosyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3,4-tri-*O*-acetyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3,4-tri-*O*-acetyl- β -D-glucopyranosid)uronate, M-192
 Methyl (methyl 2,3,4-tri-*O*-acetyl- α -L-idopyranosid)uronate, I-12
 Methyl (methyl 2,3,4-tri-*O*-acetyl- β -L-idopyranosid)uronate, I-12
 Methyl (methyl 2,3,4-tri-*O*-benzoyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3,5-tri-*O*-methyl- β -D-galactofuranosid)uronate, G-210

Methyl (methyl 2,3,4-tri-*O*-methyl- α -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3,4-tri-*O*-methyl- β -D-galactopyranosid)uronate, M-187
 Methyl (methyl 2,3,4-tri-*O*-methyl- α -D-glucopyranosid)uronate, M-192
 Methyl (methyl 2,3,4-tri-*O*-methyl- β -D-glucopyranosid)uronate, M-192
 Methyl (methyl 2,3,4-tri-*O*-methyl- α -L-idopyranosid)uronate, I-12
 Methyl (methyl 2,3,4-tri-*O*-methyl- α -D-mannopyranosid)uronate, M-123
 Methyl (methyl-D-arabinofuranosid)uronate, A-855
 Methyl 2-*O*-methyl- α -D-galactopyranosiduronamide, M-188
 Methyl 4-*O*-methyl- α -D-glucopyranosiduronamide, G-537
 Methyl 4-*O*-methyl- β -D-glucopyranosiduronamide, G-537
 Methyl 4-*O*-methyl- α -D-glucopyranosiduronic acid, M-192
 Methyl 4-*C*-methyl- α -D-glucopyranosiduronic acid, M-260
 Methyl (methyl-4-*O*-mesyl-2,3-di-*O*-methyl- β -D-glucopyranosid)uronate, M-192
 Methyl (methyl- β -D-ribofuranosid)uronate, R-146
 Methyl (phenyl β -D-glucopyranosid)uronate, P-59
 Methyl (phenyl 2,3,4-tri-*O*-acetyl- α -D-glucopyranosid)uronate, P-59
 Methyl (phenyl 2,3,4-tri-*O*-acetyl- β -D-glucopyranosid)uronate, P-59
 Methyl 1,2,3,4-tetra-*O*-acetyl-5-bromo- β -D-glucopyranuronate, B-117
 Methyl 1,2,3,4-tetra-*O*-acetyl- α -D-glucopyranuronate, G-538
 Methyl 1,2,3,4-tetra-*O*-acetyl- β -D-glucopyranuronate, G-538
 Methyl 1,2,3,4-tetra-*O*-acetyl- α -L-idopyranuronate, I-12
 Methyl 1,2,3,4-tetra-*O*-acetyl- β -L-idopyranuronate, I-12
 Methyl 2-*O*-tosyl- α -D-galactopyranosiduronamide, M-188
 Methyl 1,2,5-tri-*O*-acetyl-3-*O*-benzyl- α -L-idofuranuronate, I-12
 Methyl 1,2,5-tri-*O*-acetyl-3-*O*-benzyl- β -L-idofuranuronate, I-12
 Methyl 2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- α -D-glucopyranuronate, 8CI, G-469
 Methyl 2,3,4-tri-*O*-acetyl-1-bromo-1-deoxy- β -D-glucopyranuronate, G-469
 Methyl (2,3,4-tri-*O*-acetyl- α -D-glucopyranosid)uronate, G-538
 Methyl 2,3,4-tri-*O*-acetyl- α -D-mannopyranosiduronic acid, M-123
 Methyl 2,3,5-tri-*O*-methyl- β -D-galactofuranosiduronamide, M-188
 Methyl 2,3,4-tri-*O*-methyl- α -D-galactopyranosiduronamide, M-188
 Methyl 2,3,4-tri-*O*-methyl- β -D-galactopyranosiduronic acid, M-187
 Methyl 2,3,4-tri-*O*-methyl- α -D-glucopyranosiduronamide, G-537
 Methyl 2,3,4-tri-*O*-methyl- β -D-glucopyranosiduronamide, G-537
 Methyl 2,3,4-tri-*O*-methyl- β -D-glucopyranosiduronic acid, M-192
 4-Methylcoumarin-7-yl 5-acetamido-3,5-dideoxy- α -D-galacto-2-nonulopyranosidonic acid, M-237
 4-*O*-Methyl- α -D-glucopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, G-508
 3-*O*-(4-*O*-Methyl- α -D-glucopyranuronosyl)-L-arabinose, G-478
 4-*O*-(4-*O*-Methyl- α -D-glucopyranuronosyl)-L-arabinose, G-479
 2-*O*-(4-*O*-Methyl- α -D-glucopyranuronosyl)-D-xylose, 9CI, 8CI, G-510
 3-*O*-(4-*O*-Methyl- α -D-glucopyranuronosyl)-D-xylose, 9CI, G-511
 4-*C*-Methylglucuronic acid; *D-form*, M-260
 2-*O*-Methyl-D-glucuronic acid, G-538
 3-*O*-Methyl-D-glucuronic acid, G-538
 4-*O*-Methyl-D-glucuronic acid, G-538
 6-*O*-(4-*O*-Methyl- β -D-glucuronopyranuronosyl)-D-galactose, 9CI, 8CI, A-1
 6-*O*-(4-*O*-Methyl- β -D-glucuronopyranuronosyl)-D-galactose, 9CI, 8CI, A-1
 1-Naphthalenyl glucopyranosiduronic acid; β -*D-form*, N-2
 2-Nitrophenyl glucopyranosiduronic acid; β -*D-form*; 2,3,4-Tri-Ac, Me ester, N-67
 4-Nitrophenyl glucopyranosiduronic acid; β -*D-form*; Tri-Ac, Me ester, N-68
 4-Nitrophenyl glucopyranosiduronic acid; α -*D-form*, N-68
 4-Nitrophenyl glucopyranosiduronic acid; β -*D-form*, N-68
 Phenolphthalein glucuronide; β -*D-form*, P-53
 Phenyl glucopyranosiduronic acid; α -*D-form*, P-59
 Phenyl glucopyranosiduronic acid; β -*D-form*, P-59
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)-D-glucuronic acid, R-46
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-mannose; α -Pyranose-*form*; Me glycoside, 2',3',4,4',6-pentabenzyl, 6''-Me, 2'',3'',4''-tri-Ac, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-mannose; α -Pyranose-*form*; Me glycoside, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-mannose, R-47
 Riburonic acid; *D-form*, R-146
 Riburonic acid; *L-form*, R-146
 Sucrosetricarboxylic acid, S-93
 1,2,3,4-Tetra-*O*-acetyl- α -D-galactopyranuronic acid, G-210
 2,3,4-Tri-*O*-acetyl- β -D-galactopyranurono-1,4-lactone, G-210
 2,3,4-Tri-*O*-acetyl- β -D-glucopyranurono-6,1-lactone, G-538
 1,2,5-Tri-*O*-acetyl- α -D-glucurono-6,3-lactone, G-539
 1,2,5-Tri-*O*-acetyl- β -D-glucurono-6,3-lactone, G-539
 2,3,4-Tri-*O*-acetyl- β -D-mannopyranurono-6,1-lactone, M-123
 2,3,4-Tri-*O*-methyl-D-galacturonic acid, G-210
 2,3,4-Tri-*O*-methyl-D-glucuronic acid, G-538

Aldaric acids and lactones

2-*O*-Acetyl-*trans*-coularic acid, T-12
 Allaric acid; *D-form*; 1,4-Lactone, 3-benzyl, 5-benzoyl, 6-Me ester, A-74
 Allaric acid; *D-form*; 1,4-Lactone, 3,5-dibenzoyl, 6-Me ester, A-74
 Allaric acid; *D-form*; 1,4-Lactone, 2,3,5-tribenzoyl, 6-Me ester, A-74
 D-Allaric acid diamide, A-74
 Allaric acid; *D-form*, A-74
 D-Arabinaric acid, 9CI, T-173
 L-Arabinaric acid, 9CI, T-173
 DL-Arabinaric acid, 9CI, T-173
 Benzoyl *meso*-tartaric acid, T-12
 Benzoylmalic acid, M-6
 2,4-*O*-Benzylidene-D-glucaric diamide, G-241
 Caffeyol-*p*-coumaroyltartaric acid, T-12
trans-Coularic acid, T-12
cis-Coularic acid, T-12
 3-Deoxy-*manno*-heptaric acid, D-147
 3-Deoxy-2-heptulosaric acid; (4*R*,5*R*,6*S*)-*form*; Me β -pyranoside, di-Ac, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*R*,5*S*,6*S*)-*form*; Me α -pyranoside, di-Ac, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*R*,5*S*,6*S*)-*form*; Me β -pyranoside, di-Ac, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*R*,6*S*)-*form*; Me α -pyranoside, di-Ac, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*R*,6*S*)-*form*; Me β -pyranoside, di-Ac, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*S*,6*S*)-*form*; Me α -pyranoside, di-Ac, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*S*,6*S*)-*form*; Me β -pyranoside, di-Ac, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*R*,5*R*,6*S*)-*form*; Me β -pyranoside, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*R*,5*S*,6*S*)-*form*; Me α -pyranoside, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*R*,5*S*,6*S*)-*form*; Me β -pyranoside, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*R*,6*S*)-*form*; Me α -pyranoside, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*R*,6*S*)-*form*; Me β -pyranoside, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*S*,6*S*)-*form*; Me α -pyranoside, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*S*,5*S*,6*S*)-*form*; Me β -pyranoside, di-Me ester, D-166
 3-Deoxy-2-heptulosaric acid; (4*R*,5*R*,6*S*)-*form*; Me α -pyranoside, 1-Me ester, D-166
 Dha, D-166
 2,3-Di-*O*-acetyltartaric acid, T-12
N,N'-Diacetyl-tri-*O*-acetylxyllaramide, T-173
 2,6-Diamino-2,4,5,6-tetra-deoxy-*xylo*-heptaric acid, D-467
 2,6-Diamino-2,4,5,6-tetra-deoxy-*lyxo*-heptaric acid, D-467
 Dibenzoyltartaric acid, T-12
 2,4:3,5-Di-*O*-benzylidene-D-idaric acid, I-1
 Diethyl D-allarate, A-74
 Diethyl galactarate, G-2
 Diethyl tartrate, T-12
 2,3-Dihydroxy-2,3-dimethylbutanedioic acid, D-690
 2,5-Dihydroxyhexanedioic acid; (2*S*,5*S*)-*form*, D-694
 2,5-Dihydroxyhexanedioic acid; (2*R*S,5*R*S)-*form*, D-694
 2,5-Dihydroxyhexanedioic acid; (2*R*S,5*S*R)-*form*, D-694
 2,4-Dihydroxypentanedioic acid; (2*R*,4*R*)-*form*, D-706
 2,4-Dihydroxypentanedioic acid; (2*S*,4*S*)-*form*, D-706
 2,4-Dihydroxypentanedioic acid; (2*R*S,4*R*S)-*form*, D-706
 2,4-Dihydroxypentanedioic acid; (2*R*S,4*S*R)-*form*, D-706
 2,3-Dimethoxybutanedioic acid, D-722
 Dimethyl 3-*O*-acetyl-5-*O*-benzoyl-2,4-*O*-benzylidene-D-glucarate, G-241
 Dimethyl 5-*O*-acetyl-2,4-*O*-benzylidene-D-glucarate, G-241
 Dimethyl 3,4-*O*-benzylidene-2,5-di-*O*-methyl-D-glucarate, G-241
 Dimethyl 2,4-*O*-benzylidene-D-glucarate, G-241
 Dimethyl 3,5-di-*O*-acetyl-2,4-*O*-benzylidene-D-glucarate, G-241
 Dimethyl 2,3,4,5-di-*O*-benzylidene-D-glucarate, G-241
 Dimethyl 2,4:3,5-di-*O*-benzylidene-D-idarate, I-1
 Dimethyl galactarate, G-2
 Dimethyl D-glucarate, G-241
 Dimethyl 3,4-*O*-isopropylidene-2,5-di-*O*-methyl-D-glucarate, G-241
 Dimethyl 3,4-*O*-isopropylidene-D-glucarate, G-241
 Dimethyl tartrate, T-12
 Dimethyl 2,3,4,5-tetra-*O*-acetyl-D-glucarate, G-241
 Dimethyl 2,3,4,5-tetra-*O*-methyl-D-glucarate, G-241

2,4:3,5-Di-*O*-methylene-L-idaric acid, I-1
N,N'-Dimethyl-D-glucaranide, G-241
 2,5-Di-*O*-methyl-D-1,4:6,3-glucarodilactone, G-242
 Diphenyl tartrate, T-12
 FEMA 2655, M-6
 Feruloyltartaric acid, T-12
 Galactaric acid; Di-*O*-isopropylidene, di-Et ester, G-2
 Galactaric acid; 2,3,4,5-Di-*O*-methylene, di-Et ester, G-2
 Galactaric acid; 2,5:3,4-Di-*O*-methylene, di-Et ester, G-2
 Galactaric acid; 1,4-Lactone, Et ester((±)-), G-2
 Galactaric acid; Mono-Et ester((±)-), G-2
 Galactaric acid; 2,3,4,5-Tetra-Ac, dichloride, G-2
 Galactaric acid; 2,3,4,5-Tetra-Ac, di-Et ester, G-2
 Galactaric acid; 2,3,4,5-Tetra-Ac, di-Me ester, G-2
 Galactaric acid, G-2
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 Glucaric acid; *D*-form, G-241
 Glucaric diamide, G-241
 1,4:6,3-Glucarodilactone; *D*-form, G-242
 1,5:6,3-Glucarodilactone; *D*-form, G-243
 6,3-Glucarolactone; *D*-form; 1-Amide, 2,4-*O*-benzylidene, G-246
 1,5-Glucarolactone; *D*-form; 6-Benzyl ester, 2,3,4-tribenzyl, G-245
 6,3-Glucarolactone; *D*-form; 1-Et ester, 2,4-*O*-benzylidene, 5-Ac, G-246
 6,3-Glucarolactone; *D*-form; 1-Et ester, 2,4-*O*-benzylidene, 5-benzoyl, G-246
 6,3-Glucarolactone; *D*-form; 1-Et ester, 2,4-*O*-benzylidene, G-246
 6,3-Glucarolactone; *D*-form; 1-Et ester, 2,4-*O*-methylene, G-246
 6,3-Glucarolactone; *D*-form; 1-Me ester, 2,4-*O*-benzylidene, 5-Ac, G-246
 6,3-Glucarolactone; *D*-form; 1-Me ester, 2,4-*O*-benzylidene, 5-tosyl, G-246
 6,3-Glucarolactone; *D*-form; 1-Me ester, 2,4-*O*-benzylidene, G-246
 6,3-Glucarolactone; *D*-form; 1-Me ester, 2,4-*O*-methylene, G-246
 1,5-Glucarolactone; *D*-form; 6-Me ester, 2,3,4-tri-Me, G-245
 1,4-Glucarolactone; *D*-form; 2,3,5-Tri-Me, Me ester, G-244
 1,5-Glucarolactone; *D*-form; 2,3,4-Tri-Me, G-245
 1,4-Glucarolactone; *D*-form, G-244
 1,5-Glucarolactone; *D*-form, G-245
 6,3-Glucarolactone; *D*-form, G-246
 Idaric acid; *D*-form, I-1
 Idaric acid; *L*-form, I-1
 I-Idaro-1,4-lactone, I-1
 3,4-*O*-Isopropylidene-2,5-di-*O*-methyl-D-glucaric diamide, G-241
 3,4-*O*-Isopropylidene-D-glucaric diamide, G-241
 Malic acid; (*R*)-form, M-6
 Mannaric acid; *D*-form; 1,4-Lactone, phenylhydrazide, M-23
 L-Mannaric acid diamide, M-23
 D-Mannaric acid diamide, M-23
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 D-Mannaro-1,4:6,3-dilactone, M-23
 L-Mannaro-1,4:6,3-dilactone, M-23
 Monocaffeoyltartaric acid, T-12
 Monocaffeoyl(-)-tartaric acid, T-12
 Mono-*trans*-*p*-coumaroylmesotartaric acid, T-12
 Paratartaric acid, T-12
 (*S*)-Phaselic acid, M-6
 Racemic acid, T-12
 Ribaramide, T-173
 Ribaric acid, 9CI, 8CI, T-173
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 Tartaric acid; (2*RS*,3*SR*)-form; Di-Et ester, T-12
 Tartaric acid; (2*RS*,3*RS*)-form; Di-Me ester, T-12
 Tartaric acid; (2*RS*,3*SR*)-form; Di-Me ester, T-12
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 2,3,4,5-Tetra-*O*-acetylglactaric acid, G-2
 2,3,4,5-Tetra-*O*-acetylglactaric diamide, G-2
 2,3,4,5-Tetra-*O*-methylglactaric acid, G-2
 2,3,4,5-Tetra-*O*-methyl-D-mannaric acid, M-23
 L-Threarc acid, T-12
 D-Threarc acid, T-12
 Tri-*O*-acetylribaramide, T-173
 Tri-*O*-acetylxlaramide, T-173
 2,3,4-Trihydroxypentanedioic acid; *meso* (*ribo*)-form; 1,4-Lactone, T-173
 2,3,4-Tri-*O*-methyl-L-arabinaric acid, T-173
 2,3,5-Tri-*O*-methylgalactaric acid, G-2
 2,3,4-Tri-*O*-methylxylaric acid, T-173
 Xylaric acid, 9CI, T-173

Ketoacid sugars and lactones

5-Acetamido-3,5,7,9-tetra-deoxy-7-formamido-L-glycero-L-manno-nonulosonic acid, D-485
N-Acetylneuraminic acid; 4-Ac, A-20
N-Acetyl-β-neuraminic acid 2-(hydrogen 5'-cytidylate), A-21

N-Acetylneuraminic acid; α-Pyranose-form; Benzyl glycoside, 4,7,8,9-tetra-Ac, Me ester, A-20
N-Acetylneuraminic acid; α-Pyranose-form; Benzyl glycoside, 4,7,8,9-tetra-Ac, A-20
N-Acetylneuraminic acid; β-Pyranose-form; Me glycoside, Me ester, A-20
N-Acetylneuraminic acid; α-Pyranose-form; Me glycoside, Me ester, A-20
N-Acetylneuraminic acid; β-Pyranose-form; Me glycoside, 4,7,8,9-tetra-Ac, Me ester, A-20
N-Acetylneuraminic acid; α-Pyranose-form; Me glycoside, 4,7,8,9-tetra-Ac, A-20
N-Acetylneuraminic acid; 4,7,8,9-Tetra-Ac, Me ester, A-20
N-Acetylneuraminic acid; 4,7,8,9-Tetrabenzoyl, Me ester, A-20
N-Acetylneuraminic acid, A-20
 6-*O*-(*N*-Acetyl-α-D-neuraminyl)-D-galactose, A-22
 4-Amino-3,4-dideoxy-arabino-2-heptulosonic acid; *D*-form; 6-Phosphate, A-385
 Ascorbalamic acid, A-867
 Ascorbic acid 2-phosphate, A-868
 Ascorbic acid; *D*-form, A-868
 Ascorbyl palmitate, USAN, A-868
 Benzyl 2,3,4,5,7,8-hexa-*O*-acetyl-D-glycero-α-D-talo-oct-2-ulopyranosonate, O-27
 5,6-*O*-Benzylidene-L-threo-hex-2-enono-1,4-lactone, A-868
 2-Bromo-2-deoxyascorbic acid; *L*-form, B-64
 6-Bromo-6-deoxyascorbic acid; *L*-form, B-65
 2-Chloro-2-deoxyascorbic acid; *L*-form, C-78
 5,6-*O*-Cyclohexylidene-D-erythro-hex-2-enono-1,4-lactone, I-49
 5,6-*O*-Cyclohexylidene-L-threo-hex-2-enono-1,4-lactone, A-868
 Dehydroascorbic acid; *L*-form, D-21
 2-Deoxyascorbic acid; *L*-form, D-42
 2-Deoxy-2-fluoroascorbic acid; *L*-form, D-71
 3-Deoxy-D-arabino-heptulosonic acid 7-phosphate, D-168
 3-Deoxy-threo-2-hexulosonic acid; *D*-form, D-226
 3-Deoxy-threo-hex-2-ulosono-1,4-lactone, D-226
 2-Deoxy-2-iodoascorbic acid; *L*-form, D-252
 3-Deoxy-4-*O*-methyl-arabino-heptulosonic acid, D-168
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; 2,4,5,7,8,9-Hexa-Ac, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; 2,4,5,7,8,9-Hexa-Ac, Me ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; α-Pyranose-form; Me glycoside, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; Me glycoside, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; Me glycoside, Me ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; α-Pyranose-form; Me glycoside, 4,5,7,8,9-penta-Ac, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid, D-321
 3-Deoxy-D-manno-oct-2-enono-1,4-lactone, D-329
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→6)-2-amino-2-deoxy-D-glucose; α-Pyranose-form; *N,N'*-Di-Ac, D-322
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→6)-2-amino-2-deoxy-D-glucose; α-Pyranose-form, D-322
 3-Deoxy-β-D-manno-2-octulopyranosonosyl-(2→3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1→6)-2-amino-2-deoxy-D-glucose, D-323
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→4)-3-deoxy-α-D-manno-2-octulopyranosonosyl-(2→6)-2-amino-2-deoxy-D-glucose, D-324
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→2)-β-D-ribofuranosyl-(1→2)-D-ribose; β-Furanose-form; Me glycoside, 3-benzyl, 5,5'-dibenzoyl, 4',5'',7'',8''-tetra-Ac, Me ester, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→2)-β-D-ribofuranosyl-(1→2)-D-ribose; β-Furanose-form; Me glycoside, 5,5'-dibenzoyl, 3',4',5'',7'',8''-penta-Ac, Me ester, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→2)-β-D-ribofuranosyl-(1→2)-D-ribose; β-Furanose-form; Me glycoside, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→2)-β-D-ribofuranosyl-(1→2)-D-ribose, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→3)-D-ribose; β-Pyranose-form; Me glycoside, 5-benzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-328
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→3)-D-ribose; β-Pyranose-form; Me glycoside, 2-benzyl, 5-benzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-328
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→3)-D-ribose; β-Pyranose-form; Me glycoside, D-328
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2→3)-[α-D-ribofuranosyl-(1→2)]-D-ribose; β-Furanose-form; Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-325

- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, 2'',3'',5,5''-tetraabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-327
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, D-327
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[α -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form, D-325
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose, D-327
- 3-Deoxy-manno-oct-2-ulosonic acid; D-form, D-329
- 5,7-Diamino-5,7,9-trideoxynon-2-ulosonic acid, D-483
- 5,7-Diamino-4,6,8-trihydroxy-2-oxononanoic acid; (4S,5S,6S,7S,8S)-form; N⁵,N⁷-Di-Ac, D-485
- 5,7-Diamino-4,6,8-trihydroxy-2-oxononanoic acid; (4S,5S,6S,7S,8S)-form; N⁷-(3-Hydroxybutanoyl), N⁵-Ac, D-485
- 4,5-Dihydroxy-2-oxopentanoic acid; (R)-form; 2,4-Dinitrophenylhydrazon, D-703
- 4,5-Dihydroxy-2-oxopentanoic acid; (\pm)-form; 2,4-Dinitrophenylhydrazon, D-703
- 4,5-Dihydroxy-2-oxopentanoic acid; (S)-form, D-703
- 3,4,5,6-Di-O-isopropylidene-D-arabino-hex-2-ulosonic acid, H-111
- 2,3,4,6-Di-O-isopropylidene- α -L-xylo-2-hexulosonic acid, H-112
- 2,3-Di-O-methyl-D-arabino-hept-2-enono-1,4-lactone, G-248
- 2,3-Di-O-methyl-L-threo-hex-2-enono-1,4-lactone, A-868
- 4-Epilegionamic acid, D-485
- 8-Epilegionamic acid, D-485
- Ethyl D-arabino-hex-2-ulosonate, H-111
- E315, I-49
- Glucoscorbic acid; D-form, G-248
- Glucoscorbic acid; L-form, G-248
- arabino-2-Hexulosonic acid; D-form; 3,4:5,6-Di-O-isopropylidene, amide, H-111
- arabino-2-Hexulosonic acid; D-form; 3,4:5,6-Di-O-isopropylidene, Me ester, H-111
- xylo-5-Hexulosonic acid; D-form, H-113
- arabino-2-Hexulosonic acid; D-form, H-111
- ribo-3-Hexulosuronic acid; α -D-Furanose-form; 1,2-O-Isopropylidene, 5-Ac, Me ester, H-115
- ribo-3-Hexulosuronic acid; D-Pyranose-form, H-115
- Isoascorbic acid; L-form, I-49
- 5,6-O-Isopropylidene-D-erythro-hex-2-enono-1,4-lactone, I-49
- 5,6-O-Isopropylidene-L-threo-hex-2-enono-1,4-lactone, A-868
- 1,2-O-Isopropylidene- α -D-ribo-hexulosofuranuronic acid, H-115
- Legionamic acid, D-485
- Methyl N-acetylneuraminic acid, A-20
- Methyl N-acetyl- β -D-neuraminic acid, A-20
- Methyl 5-N-acetyl-2,4,7,8,9-penta-O-acetylneuraminic acid, A-20
- Methyl (allyl 5-acetamido-3,5-dideoxy-D-glycero- α -D-galacto-2-nulopyranosid)onate, A-20
- Methyl (allyl 4,5:7,8-di-O-isopropylidene-D-glycero- α -D-talo-oct-2-ulopyranosid)onate, O-27
- Methyl 3-deoxy-arabino-heptulosonic acid, D-168
- Methyl 3-deoxy- α -D-manno-oct-2-ulopyranosidonic acid, D-329
- Methyl 3-deoxy- β -D-arabino-oct-2-ulopyranosidonic acid, D-329
- Methyl 2,2-dimethyl- β -oxo-1,3-dioxolane-4-propanoic acid, 9CI, D-704
- Methyl 2,3,4,6,7,8-hexa-O-acetyl-D-glycero- α -D-talo-oct-2-ulofuranosonate, O-27
- Methyl 2,3,4,6,7,8-hexa-O-acetyl-D-glycero- β -D-talo-oct-2-ulofuranosonate, O-27
- Methyl 2,3,4,5,7,8-hexa-O-acetyl-D-glycero- α -D-talo-oct-2-ulopyranosonate, O-27
- Methyl D-arabino-hex-2-ulosonate, H-111
- Methyl (methyl 5-acetamido-4,7,8,9-tetra-O-acetyl-3,5-dideoxy- α -D-glycero-D-galacto-2-nulopyranosid)onate, A-20
- Methyl (methyl 3-deoxy- β -D-arabino-heptulofuranosonate), D-168
- Methyl (methyl 3-deoxy-4,6,7-tri-O-methyl- β -D-arabino-heptulopyranosonate), D-168
- Methyl (methyl 4,5:7,8-di-O-isopropylidene-D-glycero- β -D-talo-oct-2-ulopyranosid)onate, O-27
- Methyl (methyl D-ribo-hexofuranosid)uronate, H-115
- Methyl (methyl β -D-arabino-hex-2-ulopyranosid)onate, H-111
- Methyl (methyl β -L-xylo-2-hexulopyranosid)onate, H-112
- Methyl (methyl 3,4,5,7,8-penta-O-acetyl-D-glycero- β -D-talo-oct-2-ulopyranosid)onate, O-27
- Methyl (methyl 4,5,7,8-tetra-O-acetyl-3-deoxy- α -D-manno-oct-2-ulopyranosid)onate, D-329
- Methyl (methyl 4,5,7,8-tetra-O-acetyl-3-deoxy- β -D-manno-oct-2-ulopyranosid)onate, D-329
- Methyl (methyl 4,6,7,8-tetra-O-benzoyl-3-deoxy-D-manno-oct-2-ulofuranosid)onate, D-329
- Methyl (methyl 4,5,7,8-tetra-O-benzoyl-3-deoxy-D-manno-oct-2-ulopyranosid)onate, D-329
- Methyl (methyl 4,6,7-tri-O-benzyl-3-deoxy- β -D-arabino-heptulopyranosonate), D-168
- Methyl (2,4,6,7,8-penta-O-acetyl-3-deoxy-D-manno-oct-2-ulofuranosid)onate, D-329
- Methyl 2,4,5,7,8-penta-O-acetyl-3-deoxy- α -D-manno-oct-2-ulopyranosonate, D-329
- Methyl 3,4,5,6,7-tetra-O-acetyl-D-arabino-hex-2-ulosonate, H-111
- Methyl 2,3,4,6-tetra-O-acetyl-D-xylo-hex-5-ulosonate, H-113
- Methyl 4,5,7,8-tetra-O-acetyl-D-glycero- α -D-talo-oct-2-ulopyranosonate, O-27
- 3-O-Methyl-D-arabino-hept-2-enono-1,4-lactone, G-248
- 3-O-Methyl-L-erythro-hex-2-enono-1,4-lactone, I-49
- Neuraminic acid; N-Benzoyl, N-35
- Neuraminic acid; N-Benzoyloxycarbonyl, N-35
- Neuraminic acid; N-Ethoxycarbonyl, N-35
- Neuraminic acid, N-35
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',3,3',6-tetraabenzyl, 2N,5''N-di-Ac, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',3,3',6-tetraabenzyl, hepta-Ac, Me ester, N-37
- α -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-form; N,N'-Di-Ac, N-36
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-form; N,N'-Di-Ac, N-37
- α -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 2N-Phthaloyl, undeca-Ac, Me ester, N-36
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; 2N-Phthaloyl, undeca-Ac, Me ester, N-37
- α -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-form, N-36
- α -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, N-36
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Pyranose-form, N-37
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, N-37
- α -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; N-Ac, N-39
- β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; N-Ac, N-41
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-form; N-Ac, N-38
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-form; N-Ac, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, N-Ac, Me ester, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, N-Ac, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, 4'',5''N,7'',8'',9''-penta-Ac, Me ester, N-40
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-form, N-38
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-form, N-40
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form, N-40
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; Pyranose-form; N-Ac, N-42
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; Pyranose-form; N-Ac, N-43
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-form; Benzyl glycoside, 2,6-dibenzyl, N-Ac, N-42
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-form; Benzyl glycoside, 2,6-dibenzyl, 4'',5''N,7'',8'',9''-penta-Ac, Me ester, N-42
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-form; Benzyl glycoside, 2,6-dibenzyl, 4'',5''N,7'',8'',9''-penta-Ac, Me ester, N-43
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-form, N-42
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; Pyranose-form, N-43
- β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-form, N-43
- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose, N-42
- D-Octadecylascorbic acid, 9CI, A-868
- D-glycero-D-talo-2-Octulosonic acid, O-27
- 2,4,5,7,8-Penta-O-acetyl-3-deoxy- α -D-manno-oct-2-ulosonic acid, D-329
- 2,3,5,6,7-Penta-O-methyl-D-arabino-hept-2-enono-1,4-lactone, G-248
- Pseudaminic acid, D-485
- β -D-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-manno-2-octulopyranosonic acid; β -form; Me glycoside, Me ester, R-104

β-D-Ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid; β-form; Me glycoside, R-104
 β-D-Ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid; β-form, R-104
 β-D-Ribofuranosyl-(1 → 2)-β-D-ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid; α-form; Me glycoside, R-117
 β-D-Ribofuranosyl-(1 → 2)-β-D-ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid; β-form; Me glycoside, R-117
 β-D-Ribofuranosyl-(1 → 2)-β-D-ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid; α-form, R-117
 β-D-Ribofuranosyl-(1 → 2)-β-D-ribofuranosyl-(1 → 7)-3-deoxy-D-manno-2-octulopyranosonic acid; β-form, R-117
 Sialic acids, S-37
 B-Sialic acid, A-20
 4,5,6-Trihydroxy-2,3-dioxohexanoic acid; (4R,5S)-form, T-165
 4,5,6-Trihydroxy-2,3-dioxohexanoic acid; (4S,5S)-form, T-165
 Vitamin C, A-868

Higher sugar acids and lactones

5-Acetamidino-7-acetamido-3,5,7,9-tetra-deoxy-L-glycero-D-galacto-non-2-ulonic acid, D-485
 5-Acetamido-3,5,7,9-tetra-deoxy-7-formamidino-L-glycero-L-manno-nonulosonic acid, D-485
 2-Amino-2-deoxy-D-glycero-L-manno-heptonic acid; N-Benzyl, A-286
 2-Amino-2-deoxy-D-glycero-D-talo-heptonic acid; N-Benzyl, A-287
 2-Amino-2-deoxy-D-glycero-D-galacto-heptonic acid; N-Benzyl, A-282
 2-Amino-2-deoxy-D-glycero-L-gluco-heptonic acid; N-Benzyl, A-283
 2-Amino-2-deoxy-D-glycero-D-gulo-heptonic acid; N-Benzyl, A-284
 2-Amino-2-deoxy-D-glycero-D-ido-heptonic acid; N-Benzyl, A-285
 2-Amino-2-deoxy-D-glycero-D-galacto-heptonic acid, A-282
 2-Amino-2-deoxy-D-glycero-D-talo-heptonic acid, A-287
 2-Amino-2-deoxy-D-glycero-L-gluco-heptonic acid, A-283
 2-Amino-2-deoxy-D-glycero-D-gulo-heptonic acid, A-284
 2-Amino-2-deoxy-D-glycero-D-ido-heptonic acid, A-285
 2-Amino-2-deoxy-D-glycero-L-manno-heptonic acid, A-286
 Ascorbalamic acid, A-867
 Benzyl 2,3,4,5,7,8-hexa-O-acetyl-D-glycero-α-D-talo-oct-2-ulopyranosonate, O-27
 7-Bromo-3,7-dideoxy-D-gluco-heptono-1,4-lactone, B-108
 Colominic acid, A-20
 3-Deoxy-manno-heptaric acid, D-147
 3-Deoxy-arabino-hept-2-enono-1,4-lactone; D-form, D-149
 3-Deoxy-gluco-heptonic acid; D-form; Me ester, D-152
 3-Deoxy-D-arabino-heptulosonic acid 7-phosphate, D-168
 3-Deoxy-4-O-methyl-arabino-heptulosonic acid, D-168
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; 2,4,5,7,8,9-Hexa-Ac, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; 2,4,5,7,8,9-Hexa-Ac, Me ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; α-Pyranose-form; Me glycoside, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; Me glycoside, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form; Me glycoside, Me ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; α-Pyranose-form; Me glycoside, 4,5,7,8,9-penta-Ac, benzyl ester, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid; β-Pyranose-form, D-321
 3-Deoxy-D-glycero-D-galacto-2-nonulosonic acid, D-321
 3-Deoxy-D-manno-oct-2-enono-1,4-lactone, D-329
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-D-glucose; α-Pyranose-form; N,N'-Di-Ac, D-322
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-D-glucose; α-Pyranose-form, D-322
 3-Deoxy-β-D-manno-2-octulopyranosonosyl-(2 → 3)-2-amino-2-deoxy-β-D-glucopyranosyl-(1 → 6)-2-amino-2-deoxy-D-glucose, D-323
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 4)-3-deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 6)-2-amino-2-deoxy-D-glucose, D-324
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 2)-β-D-ribofuranosyl-(1 → 2)-D-ribose; β-Furanose-form; Me glycoside, 3-benzyl, 5,5'-dibenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 2)-β-D-ribofuranosyl-(1 → 2)-D-ribose; β-Furanose-form; Me glycoside, 5,5'-dibenzoyl, 3',4',5',7',8''-penta-Ac, Me ester, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 2)-β-D-ribofuranosyl-(1 → 2)-D-ribose; β-Furanose-form; Me glycoside, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 2)-β-D-ribofuranosyl-(1 → 2)-D-ribose, D-326
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-D-ribose; β-Pyranose-form; Me glycoside, 5-benzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-328

3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-D-ribose; β-Pyranose-form; Me glycoside, 2-benzyl, 5-benzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-328
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-D-ribose; β-Pyranose-form; Me glycoside, D-328
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-D-ribose; β-Pyranose-form, D-328
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-[α-D-ribofuranosyl-(1 → 2)]-D-ribose; β-Furanose-form; Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-325
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-[β-D-ribofuranosyl-(1 → 2)]-D-ribose; β-Furanose-form; Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-327
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-[β-D-ribofuranosyl-(1 → 2)]-D-ribose; β-Furanose-form; Me glycoside, D-327
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-[α-D-ribofuranosyl-(1 → 2)]-D-ribose; β-Furanose-form, D-325
 3-Deoxy-α-D-manno-2-octulopyranosonosyl-(2 → 3)-[β-D-ribofuranosyl-(1 → 2)]-D-ribose, D-327
 3-Deoxy-manno-oct-2-ulonic acid; D-form, D-329
 5,7-Diamino-5,7,9-trideoxynon-2-ulonic acid, D-483
 5,7-Diamino-4,6,8-trihydroxy-2-oxononanoic acid; (4S,5S,6S,7S,8S)-form; N⁵,N⁷-Di-Ac, D-485
 5,7-Diamino-4,6,8-trihydroxy-2-oxononanoic acid; (4S,5S,6S,7S,8S)-form; N⁷-(3-Hydroxybutanoyl), N⁵-Ac, D-485
 2,7-Dibromo-2,7-dideoxy-D-glycero-D-ido-heptono-1,4-lactone, D-533
 2,7-Dideoxy-D-gluco-heptono-1,4-lactone, D-575
 3,4-Dihydroxy-5-(1,2,3,4-tetrahydroxybutyl)dihydro-2(3H)-furanone, O-13
 3,4,6,7-Di-O-isopropylidene-D-glycero-L-talo-heptono-1,5-lactone, H-29
 3,4,6,7-Di-O-isopropylidene-D-glycero-L-galacto-heptono-1,5-lactone, H-24
 2,3-Di-O-methyl-D-arabino-hept-2-enono-1,4-lactone, G-248
 2,7-Di-O-tosyl-D-glycero-D-gulo-1,4-heptonolactone, H-25
 Epidestomic acid, D-389
 4-Epilegionamic acid, D-485
 8-Epilegionamic acid, D-485
 Glucoascorbic acid; D-form, G-248
 Glucoascorbic acid; L-form, G-248
 N-Glycolylneuraminic acid, G-557
 2,3,4,5,6,7,8-Hepta-O-acetyl-D-erythro-L-gluco-octonic acid, O-11
 2,3,4,5,6,7,8-Hepta-O-acetyl-D-erythro-L-manno-octonic acid, O-12
 D-glycero-D-galacto-Heptonamide, H-23
 D-glycero-L-manno-Heptonamide, H-27
 D-glycero-L-galacto-Heptonic acid; tert-Butyl ester, H-24
 D-glycero-L-talo-Heptonic acid, H-29
 D-glycero-D-galacto-Heptonic acid, H-23
 D-glycero-L-galacto-Heptonic acid, H-24
 D-glycero-D-gulo-Heptonic acid, H-25
 D-glycero-D-ido-Heptonic acid, H-26
 D-glycero-L-manno-Heptonic acid, H-27
 D-glycero-D-talo-Heptonic acid, H-28
 D-glycero-D-talo-Heptono-1,4-lactone, H-28
 D-glycero-L-talo-Heptono-1,4-lactone, H-29
 D-glycero-D-galacto-Heptono-1,4-lactone, H-23
 D-glycero-D-gulo-Heptono-1,4-lactone, H-25
 D-glycero-D-ido-Heptono-1,4-lactone, H-26
 D-glycero-L-manno-Heptono-1,4-lactone, H-27
 α-D-gluco-2-Heptulopyranosonic acid, 9CI, H-64
 2,3,4,5,6,7-Hexa-O-acetyl-D-glycero-D-gulo-heptononitrile, H-25
 5,6-O-Isopropylidene-D-glycero-L-galacto-heptono-1,4-lactone, H-24
 Legionamic acid, D-485
 Methyl (allyl 4,5,7,8-di-O-isopropylidene-D-glycero-α-D-talo-oct-2-ulopyranoside)onate, O-27
 Methyl 3,6-anhydro-2-deoxy-4,5,7,8-di-O-isopropylidene-D-glycero-D-talo-octonate, 9CI, M-174
 Methyl 3,6-anhydro-2-deoxy-4,5,7,8-di-O-isopropylidene-D-glycero-D-galacto-octonate, 9CI, M-174
 Methyl 4,7-anhydro-5,6,8-tri-O-benzyl-2,3-dideoxy-2,2,3,3-tetrahydro-D-allo-octonate, M-212
 Methyl 4,7-anhydro-5,6,8-tri-O-benzyl-2,3-dideoxy-2,2,3,3-tetrahydro-D-altro-octonate, M-212
 Methyl (benzyl 4,5,7-tri-O-benzyl-α-D-gluco-2-heptulopyranosid)onate, H-64
 Methyl 3-deoxy-arabino-heptulosonic acid, D-168
 Methyl 3-deoxy-α-D-manno-oct-2-ulopyranosidonic acid, D-329
 Methyl 3-deoxy-β-D-manno-oct-2-ulopyranosidonic acid, D-329
 Methyl 2,3,4,5,6,7,8-hepta-O-acetyl-D-erythro-L-manno-octonate, O-11
 Methyl 2,3,4,5,6,7,8-hepta-O-acetyl-D-erythro-L-manno-octonate, O-12
 Methyl 2,3,4,6,7,8-hexa-O-acetyl-D-glycero-α-D-talo-oct-2-ulofuranosonate, O-27
 Methyl 2,3,4,6,7,8-hexa-O-acetyl-D-glycero-β-D-talo-oct-2-ulofuranosonate, O-27

Methyl 2,3,4,5,7,8-hexa-*O*-acetyl-*D*-glycero- α -*D*-talo-oct-2-
ulopyranosonate, O-27

Methyl (methyl 3-deoxy- β -*D*-arabino-heptulofuranosonate), D-168

Methyl (methyl 3-deoxy-4,6,7-tri-*O*-methyl- β -*D*-arabino-
heptulopyranosonate), D-168

Methyl (methyl 4,5,7,8-di-*O*-isopropylidene-*D*-glycero- β -*D*-talo-oct-2-
ulopyranosid)onate, O-27

Methyl (methyl 3,4,5,7,8-penta-*O*-acetyl-*D*-glycero- β -*D*-talo-oct-2-
ulopyranosid)onate, O-27

Methyl (methyl 4,5,7,8-tetra-*O*-acetyl-3-deoxy- α -*D*-manno-oct-2-
ulopyranosid)onate, D-329

Methyl (methyl 4,5,7,8-tetra-*O*-acetyl-3-deoxy- β -*D*-manno-oct-2-
ulopyranosid)onate, D-329

Methyl (methyl 4,6,7,8-tetra-*O*-benzoyl-3-deoxy-*D*-manno-oct-2-
ulofuranosid)onate, D-329

Methyl (methyl 4,5,7,8-tetra-*O*-benzoyl-3-deoxy-*D*-manno-oct-2-
ulopyranosid)onate, D-329

Methyl (methyl 4,6,7-tri-*O*-benzyl-3-deoxy- β -*D*-arabino-
heptulopyranosonate), D-168

Methyl (2,4,6,7,8-penta-*O*-acetyl-3-deoxy-*D*-manno-oct-2-ulofuranosid)-
onate, D-329

Methyl 4,5,6,7,8-penta-*O*-acetyl-3-deoxy-*D*-manno-oct-2-ulopyranosonate,
D-329

Methyl 2,4,5,7,8-penta-*O*-acetyl-3-deoxy- α -*D*-manno-2-octulopyranoso-
nate, D-329

Methyl 2,3,4,5,7-penta-*O*-acetyl- α -*D*-gluco-2-heptulopyranosonate, H-64

Methyl 4,5,7,8-tetra-*O*-acetyl-*D*-glycero- α -*D*-talo-oct-2-
ulopyranosonate, O-27

Methyl 4,5,7-tri-*O*-benzyl- α -*D*-gluco-2-heptulopyranosonate, H-64

3-*O*-Methyl-*D*-arabino-hept-2-enono-1,4-lactone, G-248

Neuraminic acid; *N*-Benzoyl, N-35

Neuraminic acid; *N*-Benzoyloxycarbonyl, N-35

Neuraminic acid; *N*-Ethoxycarbonyl, N-35

Neuraminic acid, N-35

β -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; α -Pyranose-*form*; Benzyl glycoside, 2',3,3',6-
tetrabenzyl, 2*N*,5''*N*-di-Ac, N-37

β -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; α -Pyranose-*form*; Benzyl glycoside, 2',3,3',6-
tetrabenzyl, hepta-Ac, Me ester, N-37

α -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; Pyranose-*form*; *N,N'*-Di-Ac, N-36

β -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; Pyranose-*form*; *N,N'*-Di-Ac, N-37

α -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; β -Pyranose-*form*; 2*N*-Phthaloyl, undeca-Ac,
Me ester, N-36

β -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; α -Pyranose-*form*; 2*N*-Phthaloyl, undeca-Ac,
Me ester, N-37

α -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; Pyranose-*form*, N-36

α -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; β -Pyranose-*form*, N-36

β -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; Pyranose-*form*, N-37

β -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-2-amino-
2-deoxy-*D*-glucose; α -Pyranose-*form*, N-37

α -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
N-Ac, N-39

β -*D*-Neuraminopyranosyl-(2 \rightarrow 6)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
N-Ac, N-41

α -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
Pyranose-*form*; *N*-Ac, N-38

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
Pyranose-*form*; *N*-Ac, N-40

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
 β -Pyranose-*form*; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, *N*-Ac,
Me ester, N-40

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
 β -Pyranose-*form*; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, *N*-Ac,
N-40

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
 β -Pyranose-*form*; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl,
4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-40

α -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
Pyranose-*form*, N-38

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
Pyranose-*form*, N-40

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)- β -*D*-galactopyranosyl-(1 \rightarrow 4)-*D*-glucose;
 β -Pyranose-*form*, N-40

α -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; Pyranose-*form*; *N*-Ac,
N-42

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; Pyranose-*form*; *N*-Ac, N-43

α -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; β -Pyranose-*form*;
Benzyl glycoside, 2,6-dibenzyl, *N*-Ac, N-42

α -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; β -Pyranose-*form*; Benzyl
glycoside, 2,6-dibenzyl, 4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-42

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; β -Pyranose-*form*; Benzyl
glycoside, 2,6-dibenzyl, 4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-43

α -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; β -Pyranose-*form*, N-42

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; Pyranose-*form*, N-43

β -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose; β -Pyranose-*form*, N-43

α -*D*-Neuraminopyranosyl-(2 \rightarrow 3)-*D*-galactose, N-42

D-erythro-*L*-galacto-Octonic acid, O-10

D-erythro-*L*-gluco-Octonic acid, O-11

D-erythro-*L*-manno-Octonic acid, O-12

D-threo-*L*-galacto-Octonic acid, O-13

D-glycero-*D*-talo-2-Octulosonic acid, O-27

2,4,5,7,8-Penta-*O*-acetyl-3-deoxy- α -*D*-manno-oct-2-ulosonic acid, D-329

2,3,5,6,7-Penta-*O*-benzoyl-*D*-glycero-*D*-gulo-1,4-heptonolactone, H-25

2,3,5,6,7-Penta-*O*-methyl-*D*-arabino-hept-2-enono-1,4-lactone, G-248

2,3,5,6,7-Penta-*O*-methyl-*D*-glycero-*D*-gulo-1,4-heptonolactone, H-25

Pseudaminic acid, D-485

β -*D*-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-*D*-manno-2-octulopyranosonic acid;
 β -*form*; Me glycoside, Me ester, R-104

β -*D*-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-*D*-manno-2-octulopyranosonic acid;
 β -*form*; Me glycoside, R-104

β -*D*-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-*D*-manno-2-octulopyranosonic acid;
 β -*form*, R-104

β -*D*-Ribofuranosyl-(1 \rightarrow 2)- β -*D*-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-*D*-manno-2-
octulopyranosonic acid; α -*form*; Me glycoside, R-117

β -*D*-Ribofuranosyl-(1 \rightarrow 2)- β -*D*-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-*D*-manno-2-
octulopyranosonic acid; β -*form*; Me glycoside, R-117

β -*D*-Ribofuranosyl-(1 \rightarrow 2)- β -*D*-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-*D*-manno-2-
octulopyranosonic acid; α -*form*, R-117

β -*D*-Ribofuranosyl-(1 \rightarrow 2)- β -*D*-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-*D*-manno-2-
octulopyranosonic acid; β -*form*, R-117

Shewanellase; *D*-*form*, S-33

2,5,6,7-Tetra-*O*-benzoyl-3-deoxy-*D*-arabino-hept-2-enono-1,4-lactone,
D-149

5,6,7-Tri-*O*-acetyl-2,3-dideoxy-*L*-arabino-heptono-1,4-lactone, D-574

2,3,7-Trideoxy-*D*-arabino-heptono-1,4-lactone, T-153

2,3,4-Trihydroxy-7-hydroxymethyl-6,8-dioxabicyclo[3.2.1]octane-5-
carboxylic acid; (1*R*,2*S*,3*R*,4*S*,5*S*,7*R*)-*form*, T-169

Other sugar acids and lactones

Aceric acid; *L*-*form*, A-5

N-Acetylismuramic acid, M-324

Acetylmuramic acid, M-324

Ashimycin A, A-869

Benzyl 2-acetamido-4,6-*O*-benzylidene-3-*O*-(1-carboxyethyl)-2-deoxy- α -*D*-
glucopyranoside, M-324

Benzyl 2-acetamido-3-*O*-(1-carboxyethyl)-2-deoxy- α -*D*-glucopyranoside,
M-324

2-*O*-Benzyl-2-*C*-methyl-*D*-1,4-erythrionolactone, M-246

3-*C*-Carboxy-5-deoxyxylono-1,4-lactone, A-5

3-Deoxy-2-*C*-hydroxymethyl-2',5-di-*O*-tosyl-*D*-erythro-pentono-1,4-
lactone, T-170

3-Deoxy-2-*C*-hydroxymethyl-*D*-erythro-pentono-1,4-lactone, T-170

2,3-Di-*O*-acetyl-2-*C*-methyl-*D*-1,4-erythrionolactone, M-246

Galantinic acid, G-212

α -*D*-Glucoisosccharinic acid, T-170

2,3-*O*-Isopropylidene-2-*C*-methyl-*D*-1,4-erythrionolactone, M-246

Methyl 2-acetamido-4,6-*O*-benzylidene-3-*O*-(1-carboxyethyl)-2-deoxy-
 α -*D*-glucopyranoside, 9CI, M-324

Methyl 2-acetamido-3-*O*-(1-carboxyethyl)-2-deoxy- α -*D*-glucopyranoside,
M-324

Methyl (2,3,4-tri-*O*-acetyl- α -*D*-glucopyranosyltrichloroacetimidate)-
uronate, G-467

2-*C*-Methyl-1,4-erythrionolactone; *D*-*form*, M-246

Muramic acid; α -*D*-Pyranose-*form*; Benzyl glycoside, *N*-Ac, Me ester,
6-mesyl, M-324

Muramic acid; α -*D*-Pyranose-*form*; Benzyl glycoside, *N*-Ac, Me ester,
M-324

Muramic acid; α -*D*-Pyranose-*form*; Benzyl glycoside, 4,6-*O*-benzylidene,
N-Ac, Me ester, M-324

Muramic acid; *D*-*form*, M-324

Quinic acid; (-)-*form*, Q-10

Quinic acid; (-)-*form*, Q-10

Sialyl-Lewis x tetrasaccharide, S-38

2,2',4,5-Tetra-*O*-acetyl-3-deoxy-2-*C*-hydroxymethyl-*D*-erythro-pentonic
acid, T-170

2,4,5-Trihydroxy-2-(hydroxymethyl)pentanoic acid; (2*S*,4*R*)-*form*;
1,4-Lactone, tribenzoyl, T-170

Glycerol derivatives

Cytidine diphosphate glycerol, C-209
 Erythroflavin, E-15
 1-*O*-β-D-Galactofuranosyl-D-glycerol, G-17
O-α-D-Galactopyranosyl-(1 → 2)-*O*-α-D-glucopyranosyl-(1 → 1)-D-glycerol, G-138
 1-*O*-Galactopyranosylglycerol; β-D-(2*R*)-form, G-150
 1-*O*-Galactopyranosylglycerol; α-D-(2*S*)-form, G-150
 2-*O*-α-D-Galactopyranosylglycerol, G-149
 Glycerol 2-acetate, G-548
 Glycerol 1-acetate, G-547
 Glycerol 1-monophosphate, G-550
 Glycerol 2-monophosphate, G-551
 Glycerol, G-546
 Isofloridolide, G-150
 2-Methyl-1,2,3-butanetriol, M-232
 2-Methyl-1,3-dioxolane-4-methanol, M-244
 Parishin, P-10
 1,2,3-Pentanetriol, P-28
 1,2,5-Pentanetriol, P-29
 1,3,4-Pentanetriol, P-30
 1,3,5-Pentanetriol, P-31

Tetritols

3-*O*-β-L-Arabinopyranosyl-D-erythritol, A-841
 1,3-*O*-Benzylidene-L-erythritol, H-193
 2,3-*O*-Benzylidene-D-threitol, T-100
 1,3-*O*-Benzylidene-L-threitol, T-100
 2,3-*O*-Benzylidene-L-threitol, T-100
 1-*O*-Benzyl-2,3-*O*-isopropylidene-L-threitol, T-100
 3,4-Bis(phenylmethoxy)-1,2-butanediol, 9CI, T-100
 2,3-Di-*O*-benzoylerythritol, E-14
 1,3:2,4-Di-*O*-benzylideneerythritol, E-14
 1,2:3,4-Di-*O*-benzylidene-D-threitol, T-100
 1,2:3,4-Di-*O*-benzylidene-L-threitol, T-100
 1,2:3,4-Di-*O*-benzylidene-DL-threitol, T-100
 1,4-Di-*O*-benzyl-D-threitol, T-100
 1,2-Di-*O*-benzyl-L-threitol, T-100
 1,4-Di-*O*-benzyl-L-threitol, T-100
 1,4:2,3-Di-*O*-isopropylideneerythritol, E-14
 1,2:3,4-Di-*O*-isopropylideneerythritol, E-14
 1,3:2,4-Di-*O*-isopropylideneerythritol, E-14
 2,3-Dimethoxy-1,4-butanediol, T-100
 2,2-Dimethyl-1,3-dioxolane-4,5-dimethanol, 9CI, T-100
 2,2-Dimethyl-5-[(phenylmethoxy)methyl]-1,3-dioxolane-4-methanol, 9CI, T-100
 1,4-Di-*O*-tosyl-L-threitol, T-100
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 3-*O*-α-D-Galactopyranosyl-D-erythritol, G-69
 2-*O*-β-D-Galactopyranosyl-D-erythritol, G-70
 2-*O*-α-D-Glucopyranosyl-D-erythritol, G-292
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 1,3,4,6-Hexanetetrol, H-73
 2,3,4,5-Hexanetetrol, H-74
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 2-(Hydroxymethyl)-1,2,3,4-butanetetrol; (*S*)-form; 2,3-Isopropylidene, H-156
 2-(Hydroxymethyl)-1,2,3,4-butanetetrol; (*S*)-form, H-156
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 2,3-*O*-Isopropylidene-1,4-di-*O*-tosyl-L-threitol, T-100
 2,3-*O*-Isopropylideneerythritol, E-14
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 2-*O*-β-D-Mannopyranosyl-D-erythritol, M-50
 2-*C*-Methyl-D-erythritol, M-231
 3-*C*-Methyl-D-erythritol, M-231
 3-*C*-Methyl-L-threitol, M-231
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 1,2,3,4-Tetra-*O*-acetyl-L-threitol, T-100
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 1,2,3,4-Tetra-*O*-benzoylerythritol, E-14
 1,2,3,4-Tetra-*O*-benzoyl-3-*C*-methyl-D-erythritol, M-231
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 1,2,3,4-Tetra-*O*-benzoyl-D-threitol, T-100
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 1,2,3-Tri-*O*-benzoylerythritol, E-14
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 2-Acetamido-1,3-di-*O*-acetyl-2-deoxy-4,5-*O*-isopropylidene-D-mannitol, A-174
 2-Acetamido-1,3-di-*O*-acetyl-2-deoxy-4,5-*O*-isopropylidene-D-xylitol, A-355
 2-Acetamido-3,4-di-*O*-benzyl-2-deoxy-D-xylitol, A-355
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 1-*O*-Acetyl-2,3,4,5-di-*O*-benzylideneribitol, R-94
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 1-Amino-2,5-anhydro-1-deoxyribitol; D-form, A-142
 1-Amino-2,5-anhydro-1-deoxyxylitol; D-form, A-146
 5-Amino-5-deoxyarabinitol; D-form; *N*-Ac, A-176
 1-Amino-1-deoxyarabinitol; D-form; *N*-Ac, A-173
 4-Amino-4-deoxyarabinitol; D-form; 5-*tert*-Butyl, 1,2,3,4*N*-tetra-Ac, A-175
 5-Amino-5-deoxyarabinitol; D-form; 1,3:2,4-Di-*O*-benzylidene, *N*-Ac, A-176
 1-Amino-1-deoxyarabinitol; D-form; 2,3,4,5-Di-*O*-benzylidene, *N*-Ac, A-173
 1-Amino-1-deoxyarabinitol; D-form; 2,3,4,5-Di-*O*-isopropylidene, A-173
 1-Amino-1-deoxyarabinitol; D-form; *N*-Ph, *N*-Me, A-173
 1-Amino-1-deoxyarabinitol; L-form; *N*-Ph, *N*-Me, A-173
 5-Amino-5-deoxyarabinitol; D-form, A-176
 1-Amino-1-deoxyarabinitol; D-form, A-173
 1-Amino-1-deoxyarabinitol; L-form, A-173
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 4-Amino-4-deoxyribitol; D-form; 2-Benzyl, 5-trityl, *N*-(*tert*-butyloxycarbonyl), A-327
 4-Amino-4-deoxyribitol; D-form, A-327
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 1-Amino-1-deoxyxylitol; D-form; 2,4:3,5-Di-*O*-benzylidene, *N*-Ac, A-354
 1-Amino-1-deoxyxylitol; DL-form; *N,N*-Di-Me, 2,4:3,5-di-*O*-benzylidene, A-354
 1-Amino-1-deoxyxylitol; DL-form; *N,N*-Di-Me, 2,4:3,5-di-*O*-methylenene, A-354
 1-Amino-1-deoxyxylitol; D-form; *N*,2,3,4-Tetrabenzyl, A-354
 1-Amino-1-deoxyxylitol; D-form, A-354
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 1,5-Anhydroarabinitol; L-form, A-497
 2,5-Anhydroarabinitol; D-form, A-498
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 2,5-Anhydro-3,4-di-*O*-tosyl-D-xylitol, A-723
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 1,4-Anhydro-2,3-*O*-isopropylidene-5-*O*-trityl-D-ribitol, A-688
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 1,4-Anhydro-4-thioribitol; L-form, A-713
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 1,4-Anhydro-2,3,5-tri-*O*-benzoyl-DL-xylitol, A-723
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 1,4-Anhydro-5-*O*-trityl-D-ribitol, A-688
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 1,5-Anhydroxylitol, A-724
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 1-*O*-Benzoyl-2,5,3,4-di-*O*-isopropylidene-*D*-ribitol, R-94
 1-*O*-Benzyl-*D*-arabinitol, A-792
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 2,3-*O*-Benzylidene-*D*-arabinitol, A-792
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 5-Deoxyarabinitol; *D-form*, D-40
 5-Deoxyarabinitol; *DL-form*, D-40
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 1,5-Diamino-1,5-dideoxy-2,3,4-tri-*O*-methylxylitol, D-460
 2,3-Diamino-2,3-dideoxyxylitol; *D-form*; 1,4,5-Tri-Me, D-461
 2,3-Diamino-2,3-dideoxyxylitol; *D-form*, D-461
 1,5-Diamino-1,5-dideoxyxylitol, D-460
 1,5-Di-*O*-benzoyl-*D*-arabinitol, A-792
 1,5-Di-*O*-benzoyl-2,4-*O*-benzylidene-3-*O*-mesylribitol, R-94
 1,5-Di-*O*-benzoyl-2,4-*O*-benzylideneribitol, R-94
 1,5-Di-*O*-benzoyl-3-*O*-mesyl-2,4-*O*-methylenribitol, R-94
 1,5-Di-*O*-benzoyl-2,4-*O*-methylenribitol, R-94
 2,3,4,5-Di-*O*-benzylidene-*D*-arabinitol, A-792
 1,2,3,4-Di-*O*-benzylidene-5-deoxy-*D*-arabinitol, D-40
 2,3,4,5-Di-*O*-benzylidene-1-deoxy-*D*-xylitol, D-385
 2,3,4,5-Di-*O*-benzylidene-1-deoxy-*DL*-xylitol, D-385
 2,3,4,5-Di-*O*-benzylideneribitol, R-94
 1,4-Dideoxy-1,4-imino-*D*-arabinitol, D-697
 1,4-Dideoxy-1,4-imino-*L*-arabinitol, D-697
 1,5-Dideoxy-1,5-imino-*D*-arabinitol, P-74
 1,5-Dideoxy-1,5-imino-*L*-arabinitol, P-74
 1,4-Dideoxy-1,4-imino-*D*-ribitol, D-697
 1,4-Dideoxy-1,4-imino-*L*-ribitol, D-697
 1,4-Dideoxy-1,4-imino-*L*-xylitol, D-697
 1,4-Dideoxy-1,4-imino-*D*-ribitol, D-697
 1,4-Dideoxy-1,4-imino-*L*-ribitol, D-697
 1,5-Dideoxy-1,5-iminoribitol, P-74
 1,4-Dideoxy-1,4-imino-*D*-xylitol, D-697
 1,4-Dideoxy-1,4-imino-*L*-xylitol, D-697
 1,5-Dideoxy-1,5-iminoxylitol, P-74
 1,2-Dideoxy-3,4-*O*-isopropylidene-*L*-lyxo-hex-1-enitol, D-577
 1,2-Dideoxy-4,5-*O*-isopropylidene-*D*-ribo-hex-1-enitol, D-578
 1,2-Dideoxy-5,6-*O*-isopropylidene-*D*-ribo-hex-1-enitol, D-578
 3,4-Dihydroxy-2-(hydroxymethyl)pyrrolidine; (2*R*,3*R*,4*R*)-*form*; 4-*O*-β-*D*-Glucopyranoside, D-697
 2,3,4,5-Di-*O*-isopropylidene-*D*-arabinitol, A-792
 2,3,4,5-Di-*O*-isopropylidene-*L*-arabinitol, A-792
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 1,2,4,5-Di-*O*-isopropylideneribitol, R-94
 1,3,2,5-Di-*O*-isopropylideneribitol, R-94
 1,4,2,3-Di-*O*-isopropylideneribitol, R-94
 2,3,4,5-Di-*O*-isopropylidene-*D*-ribitol, R-94
 2,5,3,4-Di-*O*-isopropylidene-*D*-ribitol, R-94
 1,5-Dimethoxy-2,4-pentanediol, P-27
 1,3,2,4-Di-*O*-methylene-*D*-arabinitol, A-792
 1,5-Di-*O*-trityl-*L*-arabinitol, A-792
 2-*O*-β-*D*-Galactopyranosyl-*D*-arabinitol, G-61
 4-*O*-β-*D*-Glucopyranosyl-*L*-arabinitol; Octa-Ac, G-281
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 4-*O*-β-*D*-Glucopyranosyl-*D*-ribitol, G-457
 4-*C*-(Hydroxymethyl)-1,2,3,4-di-*O*-isopropylidene-*D*-erythro-pentitol, H-171
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 2-*C*-Methyl-1,2,5-trideoxy-1,5-imino-*L*-ribitol, M-279
 1,2,3,4,5-Penta-*O*-acetyl-*D*-arabinitol, A-792
 1,2,3,4,5-Penta-*O*-acetyl-*L*-arabinitol, A-792
 1,2,3,4,5-Penta-*O*-acetyl-*DL*-arabinitol, A-792
 1,2,4,5-Pentanetetrol; (2*R*,4*R*)-*form*; 1,5-Bis(4-methylbenzenesulfonyl), P-27
 1,2,4,5-Pentanetetrol; (2*R*,4*R*)-*form*; 1,5-Di-Me ether, 2,4-di-Ac, P-27
 1,2,4,5-Pentanetetrol; (2*R*,4*S*)-*form*; 2,4-Isopropylidene, 1-Ac, P-27
 1,2,4,5-Pentanetetrol; (2*S*,4*R*)-*form*; 2,4-Isopropylidene, 1-Ac, P-27
 1,2,4,5-Pentanetetrol; (2*R*,4*R*)-*form*; Tetra-Ac, P-27
 1,2,4,5-Pentanetetrol; (2*RS*,4*SR*)-*form*; Tetra-Ac, P-27
 1,2,4,5-Pentanetetrol; (2*S*,4*S*)-*form*; Tetrabenzoyl, P-27
 1,2,4,5-Pentanetetrol; (2*RS*,4*SR*)-*form*; Tetrabenzoyl, P-27
 1,2,4,5-Pentanetetrol; (2*R*,4*R*)-*form*; 1-Triphenylmethyl ether, 2,4-isopropylidene, P-27
 1,2,4,5-Pentanetetrol; (2*R*,4*R*)-*form*, P-27
 1,2,4,5-Pentanetetrol; (2*RS*,4*RS*)-*form*, P-27
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 3,4,5-Piperidinetriol; [(±)-(3α,4α,5β)]-*form*; *N*-Me, P-74
 3,4,5-Piperidinetriol; [(±)-(3α,4α,5β)]-*form*; Tetra-Ac, P-74
 3,4,5-Piperidinetriol; [(±)-(3α,4α,5β)]-*form*, P-74
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 Ribitol; 2,3,4,5-Diisopropylidene, 1-tosyl, R-94
 Ribitol; 2,3,4-Tribenzoyl, 1,5-diphosphate, R-94
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 Riboflavine 5'-(dihydrogen phosphate), 9CI, R-95
 Riboflavine 2',3'-di-3-pyridinecarboxylate monodihydrogen phosphate (ester), 9CI, R-95
 Riboflavine; 3*N*-Me, tetra-Ac, R-95
 Riboflavine; 2',3',4',5'-Tetra-Ac, R-95
 Riboflavine 2',3',4',5'-tetraabutoate, 9CI, R-95
 Riboflavine 2',3',4',5'-tetra-3-pyridinecarboxylate, 9CI, R-95
 Riboflavine, R-95
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 2,3,4,5-Tetra-*O*-acetyl-1-deoxy-*D*-arabinitol, D-39
 2,3,4,5-Tetra-*O*-acetyl-1-deoxy-*L*-arabinitol, D-39
 1,2,3,4-Tetra-*O*-acetyl-5-deoxy-*D*-arabinitol, D-40
 1,2,3,4-Tetra-*O*-acetyl-5-deoxy-*DL*-arabinitol, D-40
 Tetra-*O*-acetyl-1-deoxy-*D*-ribitol, D-356
 Tetra-*O*-acetyl-1-deoxy-*D*-xylitol, D-385
 1,2,3,4-Tetra-*O*-benzoyl-5-deoxy-*D*-arabinitol, D-40
 1,2,3,4-Tetra-*O*-benzoyl-5-deoxy-*DL*-arabinitol, D-40
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 2,3,5-Tri-*O*-acetyl-1,4-anhydro-*D*-ribitol, A-688
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-4-thioribitol, A-713
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-*D*-xylitol, A-723
 2,3,4-Tri-*O*-acetyl-1,5-anhydroxylitol, A-724
 2,3,4-Tri-*O*-acetyl-*D*-arabinitol, A-497
 1,4,5-Tri-*O*-acetyl-3-deoxy-2-*C*-(hydroxymethyl)-2,2'-*O*-isopropylidene-*D*-erythro-pentitol, D-231
 2,3,4-Tri-*O*-benzoyl-1,5-di-*O*-tosyl-*L*-arabinitol, A-792
 2,3,4-Tri-*O*-benzoyl-1,5-di-*O*-tosylribitol, R-94
 2,3,4-Tri-*O*-benzoyl-1,5-di-*O*-trityl-*L*-arabinitol, A-792
 2,3,4-Tri-*O*-benzoyl-1,5-di-*O*-tritylribitol, R-94
 2,3,4-Tri-*O*-benzoylribitol, R-94
 2,3,5-Tri-*O*-benzyl-*D*-arabinitol, A-792
 2,3,4-Tri-*O*-benzyl-*L*-arabinitol, A-792
 3,4,5-Tri-*O*-benzyl-1,2-dideoxy-*L*-lyxo-hex-1-enitol, D-577
 2,3,4-Tri-*O*-benzyl-1,5-ditosyl-*L*-arabinitol, A-792
 2,3,4-Tri-*O*-benzyl-1,5-ditrityl-*L*-arabinitol, A-792
 2,3,4-Tri-*O*-benzyl-1,5-di-*O*-tritylribitol, R-94
 2,3,5-Tri-*O*-benzyl-1-*O*-trityl-*D*-arabinitol, A-792
 2,3,4-Tri-*O*-methyl-*L*-arabinitol, A-792
 2,3,4-Tri-*O*-methyl-1,5-di-*O*-tosyl-*L*-arabinitol, A-792
 2,3,4-Tri-*O*-methyl-1,5-ditosylxylitol, X-4
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 2-Acetamido-2-deoxy-*D*-glucitol, A-215
 2-Acetamido-2-deoxy-*D*-mannitol, A-301
 1-Acetamido-1-deoxy-*D*-ribitol, A-326
 1-Acetamido-2,3,4,5-tetra-*O*-acetyl-1-deoxy-*D*-ribitol, A-326
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 1-*O*-Acetyl-2,5-anhydro-3,4,6-tri-*O*-methyl-*D*-glucitol, A-627
 6-*O*-Acetyl-1-deoxy-*D*-galactitol, D-123
 4-*O*-Acetyl-6-deoxy-3-*O*-methyl-*D*-glucal, D-679
 2-*O*-Acetyl-1,4:3,6-dianhydro-*D*-glucitol, D-503
 5-*O*-Acetyl-1,4:3,6-dianhydro-*D*-glucitol, D-503
 4-*O*-Acetyl-1,3:2,5-dianhydro-6-*O*-tosyl-*L*-iditol, D-506
 3-*O*-Acetyl-1,2:4,5-dianhydroxylytol, D-516
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 3-*O*-Acetyl-*L*-rhamnal, D-679
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 1,4,3,6-Dianhydroglucitol; *D*-form; 2-Tosyl, 5-Ac, D-503
 1,4,3,6-Dianhydroglucitol; *D*-form; 5-Tosyl, 2-Ac, D-503
 1,3,2,5-Dianhydroglucitol; *D*-form, D-502
 1,4,3,6-Dianhydroglucitol; *D*-form, D-503
 1,4,3,6-Dianhydroglucitol; *L*-form, D-503
 1,3,2,5-Dianhydroiditol; *L*-form, D-506
 1,4,3,6-Dianhydroiditol; *L*-form, D-507
 1,4,3,6-Dianhydroiditol; *DL*-form, D-507
 1,2,5,6-Dianhydro-*L*-iditol, D-661
 2,3,4,5-Dianhydro-*L*-iditol, D-662
 1,4,2,3-Dianhydro-5,6-*O*-isopropylidene-*D*-mannitol, D-508
 1,2,5,6-Dianhydro-3,4-*O*-isopropylidene-*D*-mannitol, D-661
 1,4,2,3-Dianhydromannitol; *D*-form, D-508
 1,4,3,6-Dianhydromannitol; *D*-form, D-509
 1,2,5,6-Dianhydro-*D*-mannitol, D-661
 1,2,4,5-Dianhydro-3-*O*-methylxylitol, D-516
 2,5,4,6-Dianhydro-1-*O*-tosyl-*D*-galactitol, D-499
 1,3,2,5-Dianhydro-6-*O*-tosyl-*L*-iditol, D-506
 1,2,4,5-Dianhydroxylitol, D-516
 1,4-Di-*O*-benzoyl-2,3-dideoxy-5,6-*O*-isopropylidene-*D*-*erythro*-hexitol, H-70
 1,6-Di-*O*-benzoyl-2,3,4,5-di-*O*-methylene-*D*-mannitol, M-25
 1,6-Di-*O*-benzoyl-*D*-mannitol, G-4
 1,6-Di-*O*-benzoyl-*D*-mannitol, M-25

- 4,5-Di-*O*-benzoyl-*D*-mannitol, M-25
 3,4-Di-*O*-benzoyl-*L*-rhamnal, D-679
 3,4-Di-*O*-benzyl-1,2,5,6-di-*O*-isopropylidene-*D*-mannitol, M-25
 2,3,4,5-Di-*O*-benzylidene-*D*-allitol, A-75
 1,3,4,6-Di-*O*-benzylidene-2,5-di-*O*-mesyl-*D*-mannitol, M-25
 1,3,4,6-Di-*O*-benzylidenegallactitol, G-4
 2,4,3,5-Di-*O*-benzylidene-*D*-glucitol, G-247
 1,3,2,4-Di-*O*-benzylidene-*D*-glucitol, G-247
 2,3,4,5-Di-*O*-benzylidene-*L*-iditol, I-3
 1,3,4,6-Di-*O*-benzylidene-*D*-mannitol, M-25
 2,3,4,5-Di-*O*-benzylidene-*D*-mannitol, M-25
 2,4-Di-*O*-benzyl-3,5-*O*-isopropylidene-*D*-glucitol, G-247
 1,5-Dibromo-1,5-dideoxygalactitol; *D*-form, D-527
 1,5-Dibromo-1,5-dideoxygalactitol; *L*-form, D-527
 1,6-Dibromo-1,6-dideoxygalactitol, D-528
 1,6-Dibromo-1,6-dideoxyglucitol; *D*-form, D-529
 2,6-Dibromo-2,6-dideoxyglucitol; *L*-form, D-530
 1,5-Dibromo-1,5-dideoxyiditol; *D*-form, D-534
 1,5-Dibromo-1,5-dideoxyiditol; *L*-form, D-534
 1,6-Dibromo-1,6-dideoxy-3,4-*O*-isopropylidene-*D*-mannitol, D-538
 1,6-Dibromo-1,6-dideoxymannitol; *D*-form; 3,4-*O*-Isopropylidene, 2,5-di-Ac, D-538
 1,5-Dibromo-1,5-dideoxymannitol; *D*-form, D-537
 1,5-Dibromo-1,5-dideoxymannitol; *L*-form, D-537
 1,6-Dibromo-1,6-dideoxymannitol; *D*-form, D-538
 1,2,5,6-Di-*O*-cyclohexylidene-*D*-mannitol, M-25
 3,4-Dideoxy-1,2,5,6-di-*O*-isopropylidene-*D*-threo-hex-3*E*-enitol, H-77
 3,4-Dideoxy-1,2,5,6-di-*O*-isopropylidene-*D*-threo-hex-3*Z*-enitol, H-77
 3,4-Dideoxy-1,2,5,6-di-*O*-isopropylidene-*DL*-erythro-hex-3*E*-enitol, H-77
 3,4-Dideoxy-1,2,5,6-di-*O*-isopropylidene-*DL*-erythro-hex-3*Z*-enitol, H-77
 1,2-Dideoxy-2-fluoro-1,5-iminomannitol; *D*-form, D-566
 1,2-Dideoxy-*arabino*-hexitol; *D*-form, D-595
 2,5-Dideoxy-2,5-iminogallactitol, D-686
 2,5-Dideoxy-2,5-imino-*D*-glucitol, D-686
 2,5-Dideoxy-2,5-imino-*D*-mannitol, D-686
 2,3-Dideoxy-5,6-*O*-isopropylidene-*D*-erythro-hexitol, H-70
 1,3,2,4-Di-*O*-ethylidene-*D*-glucitol, G-247
 1,6-Di-*O*-β-*D*-glucopyranosyl-*D*-mannitol, D-667
 3,4-Dihydro-2-methyl-2*H*-pyran-3,4-diol; (2*S*,3*R*,4*S*)-form, D-679
 1,2,4,5-Di-*O*-isopropylidenegallactitol, G-4
 1,2,5,6-Di-*O*-isopropylidene-*D*-glucitol, G-247
 2,3,5,6-Di-*O*-isopropylidene-*D*-glucitol, G-247
 3,4,5,6-Di-*O*-isopropylidene-*D*-glucitol, G-247
 3,4,5,6-Di-*O*-isopropylidene-*D*-*arabino*-hexitol, D-183
 1,2,3,4-Di-*O*-isopropylidene-*D*-mannitol, M-25
 1,2,3,6-Di-*O*-isopropylidene-*D*-mannitol, M-25
 1,2,4,5-Di-*O*-isopropylidene-*D*-mannitol, M-25
 1,2,4,6-Di-*O*-isopropylidene-*D*-mannitol, M-25
 1,2,5,6-Di-*O*-isopropylidene-*D*-mannitol, M-25
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 2,4,3,5-Di-*O*-isopropylidene-*D*-mannitol, M-25
 1,2,5,6-Di-*O*-isopropylidene-*L*-mannitol, M-25
 3,4,5,6-Di-*O*-isopropylidene-*L*-rhamnitol, R-7
 1,2,5,6-Di-*O*-isopropylidene-*D*-talitol, T-3
 3,4,5,6-Di-*O*-isopropylidene-1-*O*-tosyl-*D*-glucitol, G-247
 3,4,5,6-Di-*O*-isopropylidene-2-*O*-tosyl-*D*-glucitol, G-247
 3,4,5,6-Di-*O*-isopropylidene-2-*O*-tosyl-*L*-rhamnitol, R-7
 1,3,4,6-Di-*O*-methylenegallactitol, G-4
 2,3,4,5-Di-*O*-methylene-*D*-mannitol, M-25
 1,3,4,6-Di-*O*-methylene-*D*-talitol, T-3
 2,3,4,5-Di-*O*-methylene-*D*-talitol, T-3
 2,5,4,6-Di-*O*-methylene-3-*O*-tosyl-*L*-rhamnitol, R-7
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 2,5-Di-*O*-methyl-*L*-rhamnitol, R-7
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 1,6-Di-*O*-trityl-*D*-mannitol, M-25
 4-Epifagomine, H-174
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 3-*O*-β-*D*-Galactofuranosyl-*D*-mannitol, G-18
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 6-*O*-α-*D*-Glucopyranosyl-*D*-glucitol; Nona-Ac, G-318
 6-*O*-β-*D*-Glucopyranosyl-*D*-glucitol; Nona-Ac, G-322
 4-*O*-α-*D*-Glucopyranosyl-*D*-glucitol, G-317
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 6-*O*-β-*D*-Glucopyranosyl-*D*-glucitol, G-322
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 1,2,3,4,5,6-Hexa-*O*-acetyl-*D*-iditol, I-3
 1,2,3,4,5,6-Hexa-*O*-acetyl-*L*-iditol, I-3
 1,2,3,4,5,6-Hexa-*O*-acetyl-*D*-mannitol, M-25
 1,2,3,4,5,6-Hexa-*O*-acetyl-*L*-mannitol, M-25
 1,2,3,4,5,6-Hexa-*O*-acetyl-*DL*-mannitol, M-25
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 1,2,3,4,5,6-Hexa-*O*-benzoyl-*L*-iditol, I-3
 1,2,3,4,5,6-Hexa-*O*-benzoyl-*D*-mannitol, M-25
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 1,2,3,4,5,6-Hexa-*O*-methyl-*D*-mannitol, M-25
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 1,2,3,6-Hexanetetrol; (2*R*,3*S*)-form, H-70
 1,2,4,5-Hexanetetrol; (2*R*,4*S*,5*R*)-form, H-71
 1,2,6-Hexanetriol; (*S*)-form, H-75
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 6-(1*H*-Indol-3-yl)-8-(2,3,4,5-tetrahydroxypentyl)-2,4,7-(1*H*,3*H*,8*H*)-pteridinetriene; *D*-ribo-form, I-18
 3,4-*O*-Isopropylidene-*D*-glucitol, G-247
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 3,4-*O*-Isopropylidene-*L*-iditol, I-3
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 3,4-*O*-Isopropylidene-*D*-mannitol, M-25
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 3,4-*O*-Isopropylidene-*L*-rhamnitol, R-7
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 Mannitol; *D*-form; 3,6-Dibenzyl, 1,2,4,5-di-*O*-isopropylidene, M-25
 Mannitol; *D*-form; 1,2,5,6-Di-*O*-isopropylidene, cyclic sulfate, M-25
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 3-*O*-Methyl-*D*-rhamnal, D-679
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 2,3,4,5,6-Penta-*O*-acetyl-1-amino-1-deoxy-*D*-glucitol, A-214
 1,2,3,4,5-Penta-*O*-acetyl-6-bromo-6-deoxy-*D*-gallactitol, B-68
 2,3,4,5,6-Penta-*O*-acetyl-1-deoxy-*D*-gallactitol, D-123
 1,2,3,4,5-Penta-*O*-acetyl-6-deoxy-*D*-glucitol, D-127
 1,2,3,4,5-Penta-*O*-acetyl-6-deoxy-*L*-glucitol, D-127
 2,3,4,5,6-Penta-*O*-benzoyl-1-deoxy-*D*-gallactitol, D-123
 1,2,3,4,6-Penta-*O*-methyl-*D*-allitol, A-75
 1,2,4,5,6-Penta-*O*-methylallitol, A-75
N-Phenyl-*D*-ribitylamine, A-326
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 2,3,4,6-Tetra-*O*-acetyl-1,5-anhydro-*D*-allitol, A-480
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-*D*-altritol, A-490
 2,3,4,6-Tetra-*O*-acetyl-1,5-anhydro-*D*-gallactitol, A-613
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-*D*-glucitol, A-627
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-*L*-iditol, A-654
 2,3,4,6-Tetra-*O*-acetyl-1,5-anhydro-*D*-mannitol, A-669
 1,3,4,6-Tetra-*O*-acetyl-2,5-anhydro-*D*-mannitol, A-670
 1,2,5,6-Tetra-*O*-acetyl-3,4-di-*O*-benzyl-*D*-mannitol, M-25
 1,3,4,5-Tetra-*O*-acetyl-2,6-dibromo-2,6-dideoxy-*L*-glucitol, D-530
 3,4,5,6-Tetra-*O*-acetyl-1,2-dideoxy-1-nitro-*D*-*arabino*-hex-1-enitol, D-643
 2,3,4,5-Tetra-*O*-acetyl-1,6-di-*O*-tosyl-*D*-mannitol, M-25
 1,2,5,6-Tetra-*O*-acetyl-3,4-di-*O*-tosyl-*D*-mannitol, M-25
 1,2,5,6-Tetra-*O*-acetyl-*D*-mannitol, M-25
 1,3,5,6-Tetra-*O*-acetyl-2,4-*O*-methylene-*D*-talitol, T-3
 2,3,4,5-Tetra-*O*-benzoyl-1-deoxy-*D*-gallactitol, D-123

2,3,4,5-Tetra-*O*-benzoyl-1,6-di-*O*-tosyl-D-mannitol, M-25
 1,2,5,6-Tetra-*O*-benzoyl-3,4-di-*O*-tosyl-D-mannitol, M-25
 2,3,5,6-Tetra-*O*-benzoyl-D-galactitol, A-612
 2,3,5,6-Tetra-*O*-benzoyl-L-galactitol, A-612
 1,2,4,6-Tetra-*O*-benzoyl-D-glucitol, G-247
 1,2,5,6-Tetra-*O*-benzoyl-D-glucitol, G-247
 1,2,4,6-Tetra-*O*-benzoyl-3,5-*O*-isopropylidene-D-glucitol, G-247
 2,3,4,6-Tetra-*O*-benzyl-D-glucitol, G-247
 2,3,4,5-Tetra-*O*-methyl-1,6-di-*O*-tritylgalactitol, G-4
 2,3,4,5-Tetra-*O*-methyl-1,6-ditrityl-D-mannitol, M-25
 2,3,4,5-Tetra-*O*-methylgalactitol, G-4
 2,3,4,5-Tetra-*O*-methyl-D-mannitol, M-25
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-D-mannitol, A-670
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-*O*-mesyl-D-glucitol, A-626
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-1-*O*-methyl-D-mannitol, A-670
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-L-rhamnitol, A-684
 2,3,5-Tri-*O*-acetyl-1,4-anhydro-6-*O*-tosyl-DL-allitol, A-479
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-*O*-tosyl-D-glucitol, A-626
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-1-*O*-tosyl-D-mannitol, A-670
 2,3,4-Tri-*O*-acetyl-1,5-anhydro-6-*O*-trityl-D-glucitol, A-626
 3,4,6-Tri-*O*-acetyl-2,5-anhydro-1-*O*-trityl-D-mannitol, A-670
 2,3,5-Tri-*O*-acetyl-4,6-*O*-butylidene-1-deoxy-D-galactitol, D-123
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 1,3,6-Triamino-1,3,6-trideoxyglucitol; *DL*-form, T-136
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 (±)-Trianhydroaltritol, T-160
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 1,3:2,5:4,6-Trianhydroiditol; *D*-form, T-142
 1,3:2,5:4,6-Trianhydroiditol; *L*-form, T-142
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 1,3:2,4:5,6-Tri-*O*-benzylidene-D-glucitol, G-247
 1,3:2,5:4,6-Tri-*O*-benzylidene-D-mannitol, M-25
 1,2:3,4:5,6-Tri-*O*-isopropylidene-D-glucitol, G-247
 1,2:3,4:5,6-Tri-*O*-isopropylidene-L-iditol, I-3
 1,2:3,4:5,6-Tri-*O*-isopropylidene-D-mannitol, M-25
 1,2:3,4:5,6-Tri-*O*-isopropylidene-L-mannitol, M-25
 1,3:2,4:5,6-Tri-*O*-methylene-D-glucitol, G-247
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2,6-Anhydro-D-*glycero*-D-*gulo*-heptitol; Penta-Ac, A-641
 2,6-Anhydro-D-*glycero*-D-*gulo*-heptitol, A-641
 1,2,5,6,9,10-Decanehexaol; (2*S*,5*R*,6*R*,9*S*)-form; 1,2:9,10-Di-*O*-isopropylidene, D-16
 1,2,5,6,9,10-Decanehexaol; (2*S*,5*S*,6*S*,9*S*)-form; 1,2:9,10-Di-*O*-isopropylidene, D-16
 7-Deoxy-D-*glycero*-D-*manno*-heptitol; Tri-*O*-benzylidene, D-151
 7-Deoxy-D-*glycero*-D-*manno*-heptitol, D-151
 1-Deoxy-1-nitro-D-*glycero*-L-*galacto*-heptitol, H-14
 6-Epi- α -homomannojirimycin, B-34
 1''-*O*- β -D-Glucopyranosyl- α -homomannojirimycin, B-34
 Hepta-*O*-acetyl-D-*glycero*-L-*galacto*-heptitol, H-14
 1,2,3,4,5,6,7-Hepta-*O*-acetyl-D-*glycero*-D-*manno*-heptitol, H-20
 D-*glycero*-L-*gulo*-Heptitol; 2,6-Anhydro, penta-Ac, H-17
 D-*glycero*-L-*gulo*-Heptitol; 2,6-Anhydro, pentabenzyl, H-17
 D-*glycero*-L-*altro*-Heptitol; Hepta-Ac, H-12
 D-*glycero*-D-*galacto*-Heptitol; Hepta-Ac, H-13
 D-*glycero*-D-*gulo*-Heptitol; Hepta-Ac, H-16
 D-*glycero*-L-*ido*-Heptitol; Hepta-Ac, H-19
 D-*glycero*-L-*manno*-Heptitol; Hepta-Ac, H-21
 D-*glycero*-L-*gulo*-Heptitol; Heptabenzoyl, H-17
 D-*glycero*-D-*gulo*-Heptitol; Heptabenzyl, H-16
 D-*glycero*-L-*gulo*-Heptitol; Hepta-*O*-benzyl, H-17
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 D-*glycero*-L-*gulo*-Heptitol; 1,3,4,5-Tetra-*O*-benzyl, H-17
 D-*glycero*-D-*manno*-Heptitol; Tri-*O*-benzylidene, H-20
 D-*glycero*-D-*galacto*-Heptitol; 1,2:4,5:6,7-Tri-*O*-isopropylidene, H-13
 D-*glycero*-D-*gulo*-Heptitol; 1,2:4,5:6,7-Tri-*O*-isopropylidene, H-16
 D-*glycero*-L-*gulo*-Heptitol; 1,2:4,5:6,7-Tri-*O*-isopropylidene, H-17
 D-*glycero*-L-*gulo*-Heptitol; 2,3:4,5:6,7-Tri-*O*-isopropylidene, H-17
 D-*glycero*-D-*allo*-Heptitol, H-9
 D-*glycero*-L-*allo*-Heptitol, H-10
 D-*glycero*-D-*altro*-Heptitol, H-11
 D-*glycero*-L-*altro*-Heptitol, H-12
 D-*glycero*-D-*galacto*-Heptitol, H-13
 D-*glycero*-L-*galacto*-Heptitol, H-14
 D-*glycero*-D-*gluco*-Heptitol, H-15
 D-*glycero*-D-*gulo*-Heptitol, H-16
 D-*glycero*-L-*gulo*-Heptitol, H-17
 D-*glycero*-L-*ido*-Heptitol, H-18
 D-*glycero*-L-*ido*-Heptitol, H-19

D-*glycero*-D-*manno*-Heptitol, H-20
 D-*glycero*-L-*manno*-Heptitol, H-21
 D-*glycero*-L-*talo*-Heptitol, H-22
 α -Homogalactostatin, B-34
 β -Homomannojirimycin, B-34
 α -Homomannonojirimycin, B-34
 β -Homonojirimycin, B-34
 α -Homonojirimycin, B-34
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D-*arabino*-L-*galacto*-Nonitol, N-77
L-*lyxo*-L-*altro*-Nonitol, N-78
D-*erythro*-D-*galacto*-Octitol; Octa-Ac, O-3
L-*threo*-L-*altro*-Octitol; Octa-Ac, O-6
L-*threo*-D-*galacto*-Octitol; Octa-Ac, O-9
D-*erythro*-L-*altro*-Octitol, O-2
D-*erythro*-D-*galacto*-Octitol, O-3
D-*erythro*-L-*galacto*-Octitol, O-4
L-*erythro*-D-*galacto*-Octitol, O-5
L-*threo*-L-*altro*-Octitol, O-6
D-*threo*-D-*galacto*-Octitol, O-7
D-*threo*-L-*galacto*-Octitol, O-8
L-*threo*-D-*galacto*-Octitol, O-9
2,3,4,6-Tetra-*O*-acetyl- β -D-galactopyranosylethene, A-600
3,4,6-Tri-*O*-benzyl- β -D-galactopyranosylethene, A-600

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 2-*O*-Acetyl-*myo*-inositol, I-32
 N¹-Acetylparomomycin I, P-13
 Acorn sugar, Q-6
 Adiposin 1, A-55
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 1-*N*-Amidino-1-*N*-demethyl-2-hydroxydestomycin A, D-390
 Amikacin, A-120
 4-*O*-(6-Amino-6-deoxyglucopyranosyl)-2,5-dideoxystreptamine, A-242
 5''-Amino-4',5''-dideoxybutirosin A, A-371
 1-Amino-1,6-dideoxy-5-*C*-(hydroxymethyl)-D-*chiro*-inositol, 9CI, V-6
 2-Amino-2,6-dideoxy-6-*C*-(hydroxymethyl)-D-*myo*-inositol, A-425
 5''-Amino-3',4,5''-trideoxybutirosin A, A-453
 1-Amino-1,5,6-trideoxy-5-(hydroxymethyl)-D-*chiro*-inositol, 9CI, A-426
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 1,2-Anhydro-*epi*-inositol, 9CI, E-10
 1,2-Anhydro-*neo*-inositol, 9CI, E-10
 1,2-Anhydro-*allo*-inositol, 9CI, E-10
 1,2-Anhydro-DL-*myo*-inositol, 9CI, E-10
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 α -D-Mannopyranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 6)-D-mannose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 6'-diphenyl phosphate, nona-Ac, M-80
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 2)-D-mannose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 6'-diphenyl phosphate, 3,3',4,4'-tetraabenzyl, 2'',3'',4'',6''-tetra-Ac, M-85
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 α -D-Mannopyranosyloxyphosphinico-(1 \rightarrow 6)- α -D-mannopyranosyloxyphosphinico-(1 \rightarrow 6)-D-mannose; α -Pyranose-form; 1-Dihydrogen phosphate, 2,2'',2'',3,3',3'',4,4',4''-nonabenzoyl, M-100
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 α -D-Mannopyranosyloxyphosphinico-(1 \rightarrow 6)- α -D-mannopyranosyloxyphosphinico-(1 \rightarrow 6)-D-mannose; α -Pyranose-form; Me glycoside, 2'',2'',3,3',3'',4,4''-hexabenzoyl, 2,3,4-tri-Ac, M-100
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8-Mercaptocyclic AMP, M-136
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Methyl 6-deoxy-2,3-di-*O*-methyl-6-methylaminoglucofuranoside 4,6-cyclic thiophosphonamide; α -D-(S)_p-form; P-Methoxy, M-170
Methyl 6-deoxy-2,3-di-*O*-methyl-6-methylaminoglucofuranoside 4,6-cyclic thiophosphonamide; α -D-(R)_p-form; P-Me, M-170
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Methyl 2,3-di-*O*-methylglucopyranoside 4,6-cyclic phosphonate; α -D-(R)_p-form; P-Dimethylamino, M-175
Methyl 2,3-di-*O*-methylglucopyranoside 4,6-cyclic phosphonate; α -D-(S)_p-form; P-Dimethylamino, M-175
Methyl 2,3-di-*O*-methylglucopyranoside 4,6-cyclic phosphonate; α -D-(R)_p-form; P-Ethoxy, M-175
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- 5-*O*-α-D-Glucopyranosyl-D-ribose, G-460
- 4-*O*-β-D-Glucopyranosyl-D-ribose, G-461
- 1-*O*-α-D-Glucopyranosyl-L-sorbose, G-463
- 3-*O*-α-D-Glucopyranosyl-L-sorbose, G-464
- 4-*O*-α-D-Glucopyranosyl-L-sorbose, G-465
- 2-*S*-β-D-Glucopyranosyl-2-thio-D-mannose, T-92
- 2-*O*-α-D-Glucopyranosyl-D-xylose, G-471
- 3-*O*-α-D-Glucopyranosyl-D-xylose, G-472
- 4-*O*-α-D-Glucopyranosyl-D-xylose, G-473
- 2-*O*-β-D-Glucopyranosyl-D-xylose, G-474
- 3-*O*-β-D-Glucopyranosyl-D-xylose, G-475
- 4-*O*-β-D-Glucopyranosyl-D-xylose, G-476
- 2-*O*-β-D-Glucopyranuronosyl-D-arabinose; β-Pyranose-form; NH₄ salt, G-480
- 5-*O*-β-D-Glucopyranuronosyl-L-arabinose, G-481
- 4-*O*-β-D-Glucopyranuronosyl-L-fucose, G-482
- 4-*O*-α-D-Glucopyranuronosyl-D-galactose, G-487
- 3-*O*-α-D-Glucopyranuronosyl-L-galactose, G-488
- 4-*O*-α-D-Glucopyranuronosyl-L-galactose, G-489
- 3-*O*-β-D-Glucopyranuronosyl-D-galactose, G-490
- 4-*O*-β-D-Glucopyranuronosyl-D-galactose, G-491
- 4-*O*-α-D-Glucopyranuronosyl-D-glucose; β-form; Benzyl glycoside, hexa-Ac, Me ester, G-495
- 4-*O*-α-D-Glucopyranuronosyl-D-glucose; Hepta-Ac, Me ester, G-495
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose; Hepta-Ac, Me ester, G-499
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose; Hepta-Ac, G-499
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose; 2,2',3,3',4',6'-Hexa-Me, Me ester, G-499
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose; α-Pyranose-form; Me glycoside, 2,3,6,2',3',4'-hexa-Me, Me ester, G-499
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose; β-Pyranose-form; Me glycoside, hexa-Me, Me ester, G-499
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose; β-Pyranose-form; Me glycoside, hexa-Me, G-499
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose; α-Pyranose-form; Me glycoside, 2,3,6-tri-Me, 2',3',4'-tri-Ac, Me ester, G-499
- 2-*O*-α-D-Glucopyranuronosyl-D-glucose, G-494
- 4-*O*-α-D-Glucopyranuronosyl-D-glucose, G-495
- 6-*O*-α-D-Glucopyranuronosyl-D-glucose, G-496
- 2-*O*-β-D-Glucopyranuronosyl-D-glucose, G-497
- 3-*O*-β-D-Glucopyranuronosyl-D-glucose, G-498
- 4-*O*-β-D-Glucopyranuronosyl-D-glucose, G-499
- 6-*O*-β-D-Glucopyranuronosyl-D-glucose, G-500
- 4-*O*-α-D-Glucopyranuronosyl-D-glucuronic acid, G-501
- 2-*O*-β-D-Glucopyranuronosyl-D-glucuronic acid, G-502
- 2-*O*-α-D-Glucopyranuronosyl-D-lyxose, G-503
- 2-*O*-β-D-Glucopyranuronosyl-D-mannose, G-504
- 2-*O*-α-D-Glucopyranuronosyl-L-rhamnose, G-505
- 3-*O*-β-D-Glucopyranuronosyl-L-rhamnose, G-506
- 4-*O*-β-D-Glucopyranuronosyl-L-rhamnose, G-507
- 2-*O*-α-D-Glucopyranuronosyl-D-xylose; Me glycoside, Me ester, G-510
- 2-*O*-α-D-Glucopyranuronosyl-D-xylose; Me glycoside, 4'-Me, Me ester, G-510
- 2-*O*-α-D-Glucopyranuronosyl-D-xylose; Me glycoside, penta-Ac, Me ester, G-510
- 2-*O*-α-D-Glucopyranuronosyl-D-xylose; 4'-Me, Me ester, G-510
- 2-*O*-α-D-Glucopyranuronosyl-D-xylose, G-510
- 3-*O*-α-D-Glucopyranuronosyl-D-xylose, G-511
- 2-*O*-β-D-Glucopyranuronosyl-D-xylose, G-512
- 3-*O*-β-D-Glucopyranuronosyl-D-xylose, G-513
- 3-β-Glucosyl-*N*-acetylglactosamine, A-251
- Saccharopolyspora* Glycolipid 1, G-556
- 1,2,2',3,3',4',6'-Hepta-*O*-acetyl-6-deoxy-D-lactose, H-6
- Hepta-*O*-acetylgentiobiosyl bromide, G-233
- 1,2,2',3,3',4',6'-Hepta-*O*-acetylactose; D-form, H-6

- Hepta-*O*-acetyl- α -D-lactosyl bromide, H-7
 1,2,2',3,3',4',6'-Hepta-*O*-acetyl- β -maltose, M-15
 1,2,2',3,3',4',6,6'-Hepta-*O*-acetyl- β -maltose, M-15
 1,2',3,3',4',6,6'-Hepta-*O*-acetyl- β -maltose, M-15
 2,2',3,3',4',6,6'-Hepta-*O*-acetyl- β -maltose, M-15
 Hepta-*O*-acetyl- α -primeveropyranose, X-47
 Hepta-*O*-acetyl- β -primeveroside, X-47
 Hepta-*O*-acetyl- β -rutinose, R-44
 2,2',3,3',4',6,6'-Hepta-*O*-acetyl-1-thio- β -D-cellobiose, T-60
 Hepta-*O*-acetyl- β -turanopyranose, T-201
 Hexa-*O*-acetyl-1,6-anhydro-6-bromomaltose, M-15
 Hexa-*O*-acetyl- α -robinobiosyl bromide, R-28
 α -L-threo-4-Hex-4-enopyranuronosyl-D-galacturonic acid, H-80
 Hyalbiuronic acid; *N*-Ac, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Hepta-Ac, Me ester, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, *N*-Ac, Me ester, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, *N*-Ac, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, hexa-Ac, Me ester, H-127
 Hyalbiuronic acid; α -Pyranose-*form*; Me glycoside, 4,6,2',3',6'-penta-Me, 4-Ac, Me ester, H-127
 Hyalbiuronic acid, H-127
 4-*O*- β -D-Idopyranosyl-D-glucose, I-8
 Inulobiose; β -Furanose-*form*; Octa-Ac, I-39
 Inulobiose, I-39
 2,3-*O*-Isopropylidene-5-*O*-(2,3-*O*-isopropylidene- α -D-ribofuranosyl)- β -D-ribofuranose, R-119
 Lacto-*N*-biose I, L-6
 Lactosamine; α -Pyranose-*form*; Octa-Ac, L-11
 Lactosamine, L-11
 Lactose; β -*form*; Benzyl glycoside, 2,3,6-tribenzyl, L-13
 Lactose; β -*form*; Me glycoside, 4',6'-benzylidene, L-13
 Lactose; β -*form*; Me glycoside, 3',4'-isopropylidene, L-13
 Lactose; α -*form*, L-13
 Lactose; β -*form*, L-13
 Lactose, L-13
 Lactosylamine; α -*form*; *N*-Ac, L-14
 Lactosylamine; β -*form*; *N*-Ac, L-14
 Lactosylamine; α -*form*; *N*,2,2',3,3',4',6,6'-Octa-Ac, L-14
 Lactosylamine; β -*form*; *N*,2,2',3,3',4',6,6'-Octa-Ac, L-14
 Lactosylamine; α -*form*, L-14
 Lactosylamine; β -*form*, L-14
 Lactosylamine, L-14
 Lactulose; Octa-Ac, L-16
 Lactulose, L-16
 Lepidimic acid, L-30
 2-*O*- α -L-Lyxopyranosyl-D-galactose, L-67
 2-*O*- β -L-Lyxopyranosyl-D-galactose, L-68
 3-*O*- α -D-Lyxopyranosyl-D-mannose, L-71
 Maltosamine; *N*-Ac, M-14
 Maltosamine, M-14
 Maltose; 4',6'-Isopropylidene, hexa-Ac, M-15
 Maltose; β -Pyranose-*form*; Me glycoside, 4',6'-benzylidene, penta-Ac, M-15
 Maltose; β -Pyranose-*form*; Me glycoside, 6,6'-ditosyl, M-15
 Maltose; β -Pyranose-*form*; Me glycoside, hepta-Ac, M-15
 Maltose; β -Pyranose-*form*; Me glycoside, hepta-Me, M-15
 Maltose; α -Pyranose-*form*; Octa-Ac, M-15
 Maltose; β -Pyranose-*form*; Octa-Ac, M-15
 Maltose; α -Pyranose-*form*; Ph glycoside, hepta-Ac, M-15
 Maltose; β -Pyranose-*form*; Ph glycoside, hepta-Ac, M-15
 Maltose; α -Pyranose-*form*; 6'-Trityl, hepta-Ac, M-15
 Maltose, M-15
 Maltulose, M-21
 5-*O*- α -D-Mannofuranosyl-D-ribose, M-33
 5-*O*- β -D-Mannofuranosyl-D-ribose, M-34
 β -D-Mannopyranosyl α -D-mannopyranoside; Octa-Ac, M-46
 3-*O*- α -D-Mannopyranosyl-D-galactose, M-53
 6-*O*- α -D-Mannopyranosyl-D-galactose, M-54
 3-*O*- β -D-Mannopyranosyl-D-galactose, M-55
 6-*O*- β -D-Mannopyranosyl-D-galactose, M-56
 2-*O*- β -D-Mannopyranosyl-D-glucose; α -Pyranose-*form*, M-65
 2-*O*- α -D-Mannopyranosyl-D-glucose, M-61
 3-*O*- α -D-Mannopyranosyl-D-glucose, M-62
 6-*O*- α -D-Mannopyranosyl-D-glucose, M-63
 2-*O*- α -L-Mannopyranosyl-D-glucose, M-64
 3-*O*- β -D-Mannopyranosyl-D-glucose, M-66
 4-*O*- β -D-Mannopyranosyl-D-glucose, M-67
 6-*O*- β -D-Mannopyranosyl-D-glucose, M-68
 2-*O*- α -D-Mannopyranosyl-L-gulose, M-69
 4-*O*- β -D-Mannopyranosyl-L-gulose, M-70
 3-*O*- α -D-Mannopyranosyl-D-mannose; β -Pyranose-*form*; Hexa-Ac, 1,2-methylorthoacetate, M-93
 2-*O*- α -D-Mannopyranosyl-D-mannose; β -Pyranose-*form*; Me glycoside, 6'-phosphate, M-92
 2-*O*- α -D-Mannopyranosyl-D-mannose; β -Pyranose-*form*; Me glycoside, 3,4,6-tribenzyl, M-92
 2-*O*- α -D-Mannopyranosyl-D-mannose; α -Pyranose-*form*; Octa-Ac, M-92
 2-*O*- α -D-Mannopyranosyl-D-mannose; β -Pyranose-*form*; Octa-Ac, M-92
 4-*O*- β -D-Mannopyranosyl-D-mannose; α -Pyranose-*form*; Ph glycoside, 6,6'-ditosyl, M-98
 2-*O*- α -D-Mannopyranosyl-D-mannose, M-92
 3-*O*- α -D-Mannopyranosyl-D-mannose, M-93
 4-*O*- α -D-Mannopyranosyl-D-mannose, M-94
 6-*O*- α -D-Mannopyranosyl-D-mannose, M-95
 2-*O*- β -D-Mannopyranosyl-D-mannose, M-96
 3-*O*- β -D-Mannopyranosyl-D-mannose, M-97
 4-*O*- β -D-Mannopyranosyl-D-mannose, M-98
 6-*O*- β -D-Mannopyranosyl-D-mannose, M-99
 4-*O*- α -D-Mannopyranosyl-L-rhamnose, M-105
 4-*O*- β -D-Mannopyranosyl-L-rhamnose, M-106
 2-*O*- α -D-Mannopyranosyl-D-ribose, M-107
 3-*O*- α -D-Mannopyranosyl-D-ribose, M-108
 5-*O*- α -D-Mannopyranosyl-D-ribose, M-109
 4-*O*- β -D-Mannopyranuronosyl-D-glucose, M-112
 4-*O*- β -D-Mannopyranuronosyl-D-mannuronic acid, M-113
 Mannosylglucosaminide, M-119
 Marsectobiose, M-125
 2-(4-Methoxycarbonylbutanecarboxamido)ethyl 2-acetamido-2-deoxy-3-*O*- β -D-galactopyranosyl- α -D-galactopyranoside, M-138
 2-(4-Methoxycarbonylbutanecarboxamido)ethyl 2-acetamido-2-deoxy-3-*O*- β -D-galactopyranosyl- β -D-galactopyranoside, M-138
 8-Methoxycarbonyloctyl α -D-cellobiopyranoside, C-25
 8-Methoxycarbonyloctyl β -D-cellobiopyranoside, C-25
 8-Methoxycarbonyloctyl α -D-lactopyranoside, C-25
 8-Methoxycarbonyloctyl β -D-lactopyranoside, C-25
 8-Methoxycarbonyloctyl α -D-maltopyranoside, C-25
 8-Methoxycarbonyloctyl β -D-maltopyranoside, C-25
 Methyl 4-*O*- β -D-allopyranosyl- β -D-allopyranoside, A-84
 Methyl 2,3-anhydro-4-*O*-(2-*O*-benzyl- β -D-xylopyranosyl)- β -D-ribofuranoside, 9CI, X-58
 Methyl 2,3-anhydro-4-*O*-(3,4-di-*O*-acetyl-2-*O*-benzyl- β -D-xylopyranosyl)- β -D-ribofuranoside, 9CI, X-58
 Methyl 2,3-anhydro-4-*O*-(3,4-di-*O*-acetyl- β -D-xylopyranosyl)- β -D-ribofuranoside, 9CI, X-58
 Methyl 2,3-anhydro-4-*O*-(2,3,4-tri-*O*-benzyl- β -D-xylopyranosyl)- β -D-ribofuranoside, 9CI, X-58
 Methyl 3-*O*- α -L-arabinofuranosyl- β -D-xylopyranoside, A-823
 Methyl 2-*O*- α -L-arabinopyranosyl- α -L-arabinopyranoside, 9CI, A-834
 Methyl 2-*O*- α -L-arabinopyranosyl- β -L-arabinopyranoside, 9CI, A-834
 Methyl 4-*O*- β -L-arabinopyranosyl- α -L-arabinopyranoside, 9CI, A-840
 Methyl 4-*O*- β -L-arabinopyranosyl- β -L-arabinopyranoside, 9CI, A-840
 Methyl 4-*O*- α -L-arabinopyranosyl- α -L-arabinopyranoside, A-836
 Methyl 4-*O*- α -L-arabinopyranosyl- β -L-arabinopyranoside, A-836
 Methyl 3-*O*-benzoyl-4,6-benzylidene-2-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-allopyranoside, G-277
 Methyl 4-*O*-(4,6-*O*-benzylidene- β -D-allopyranosyl)- β -D-allopyranoside, A-84
 Methyl 4,6-*O*-benzylidene-2-*O*- β -D-glucopyranosyl- β -D-allopyranoside, G-277
 Methyl 4',6'-*O*-benzylidene- β -maltoside, M-15
 Methyl 3-*O*-benzyl-4-*O*-(2,3,4-tri-*O*-benzyl- β -D-xylopyranosyl)- β -D-xylopyranoside, X-80
 Methyl 4-*O*-(2-*O*-benzyl- β -D-xylopyranosyl)- β -D-xylopyranoside, X-80
 Methyl α -carrabioside, C-27
 Methyl β -carrabioside, C-27
 Methyl 6-deoxy-3-*O*-methyl- β -D-allopyranosyl-(1 \rightarrow 4)-2-deoxy- α -D-arabino-hexopyranoside, D-774
 Methyl 6-deoxy-3-*O*-methyl- β -D-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-3-*O*-methyl- β -D-ribo-hexopyranoside, D-132
 Methyl 2,6-di-*O*-acetyl-3-*O*-benzoyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)- β -D-allopyranoside, G-276
 Methyl 2,3-di-*O*-acetyl-4-*O*-(2,4-di-*O*-acetyl-3-*O*-benzyl- α -D-xylopyranosyl)- β -D-xylopyranoside, X-77
 Methyl 2,3-di-*O*-acetyl-4-*O*-(2,4-di-*O*-acetyl- α -D-xylopyranosyl)- β -D-xylopyranoside, X-77
 Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3-di-*O*-acetyl- β -D-xylopyranosyl)- β -D-xylopyranoside, X-80
 Methyl 3,5-di-*O*-acetyl-2-*O*-(2,3,5-tri-*O*-acetyl- α -L-arabinofuranosyl)- α -L-arabinofuranoside, 9CI, A-801
 Methyl 2,5-di-*O*-acetyl-3-*O*-(2,3,5-tri-*O*-acetyl- α -L-arabinofuranosyl)- α -L-arabinofuranoside, 9CI, A-802
 Methyl 2,3-di-*O*-acetyl-5-*O*-(2,3,5-tri-*O*-acetyl- α -L-arabinofuranosyl)- α -L-arabinofuranoside, 9CI, A-803
 Methyl 2,3-di-*O*-acetyl-5-*O*-(2,3,4-tri-*O*-acetyl- α -L-arabinofuranosyl)- α -L-arabinofuranoside, R-19

- Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-β-*L*-arabinopyranosyl)-β-*L*-arabinopyranoside, 9CI, A-840
- Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-arabinopyranosyl)-α-*L*-arabinopyranoside, A-836
- Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-arabinopyranosyl)-β-*L*-arabinopyranoside, A-836
- Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-β-*L*-arabinopyranosyl)-α-*L*-arabinopyranoside, A-840
- Methyl 3,4-di-*O*-acetyl-2-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*L*-arabinopyranoside, R-16
- Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-β-*L*-arabinopyranoside, R-18
- Methyl 2,4-di-*O*-acetyl-3-*O*-(2,3,4-tri-*O*-acetyl-α-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-76
- Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-77
- Methyl 3,4-di-*O*-acetyl-2-*O*-(2,3,4-tri-*O*-acetyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-78
- Methyl 2,4-di-*O*-acetyl-3-*O*-(2,3,4-tri-*O*-acetyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-79
- Methyl 2,3-di-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-80
- Methyl 2,4-di-*O*-benzoyl-3-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*D*-xylopyranoside, R-77
- Methyl 2,3-dibenzoyl-4-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*D*-xylopyranoside, R-78
- Methyl 2,3-di-*O*-benzoyl-5-*O*-(2,3,5-tri-*O*-benzoyl-α-*L*-arabinofuranosyl)-α-*L*-arabinofuranoside, 9CI, A-803
- Methyl 2,4-di-*O*-benzyl-3-*O*-(2,4-di-*O*-benzyl-α-*D*-mannopyranosyl)-α-*D*-mannopyranoside, M-93
- Methyl 2,4-di-*O*-benzyl-3-*O*-(2,3,5-tri-*O*-benzyl-α-*L*-arabinofuranosyl)-β-*D*-xylopyranoside, A-823
- Methyl 3,6-di-*O*-benzyl-4-*O*-(3,4,6-tri-*O*-benzyl-α-*D*-mannopyranosyl)-α-*D*-mannopyranoside, M-94
- Methyl 5-*O*-(2,3,5,6-di-*O*-isopropylidene-α-*D*-mannofuranosyl)-2,3-*O*-isopropylidene-β-*D*-ribofuranoside, 9CI, M-33
- Methyl 3,4-di-*O*-methyl-2-*O*-(2,3,4-tri-*O*-methyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-78
- Methyl 2,4-di-*O*-methyl-3-*O*-(2,3,4-tri-*O*-methyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-79
- Methyl 2,3-di-*O*-methyl-4-*O*-(2,3,4-tri-*O*-methyl-β-*D*-xylopyranosyl)-β-*D*-xylopyranoside, X-80
- Methyl 2-*O*-α-*L*-fucopyranosyl-α-*D*-galactopyranoside, F-137
- Methyl 2-*O*-α-*L*-fucopyranosyl-β-*D*-galactopyranoside, F-137
- Methyl 3-*O*-β-*D*-galactofuranosyl-α-*D*-mannopyranoside, 9CI, G-20
- Methyl 6-*O*-β-*D*-galactofuranosyl-α-*D*-mannopyranoside, 9CI, G-21
- Methyl 2-*O*-β-*D*-galactopyranosyl-α-*D*-allopyranoside, 9CI, G-39
- Methyl 4-*O*-α-*D*-galactopyranosyl-β-*D*-allopyranoside, G-38
- Methyl 4-*O*-β-*D*-galactopyranosyl-α-*D*-mannopyranoside, G-164
- Methyl α-gentiobioside, G-410
- Methyl β-gentiobioside, G-410
- Methyl α-glucobioside, G-236
- Methyl β-glucobioside, G-236
- Methyl 2-*O*-β-*D*-glucopyranosyl-α-*D*-allopyranoside, G-277
- Methyl 4-*O*-β-*D*-glucopyranosyl-β-*D*-allopyranoside, G-278
- Methyl 5-*O*-β-*D*-glucopyranosyl-α-*L*-arabinofuranoside, 9CI, G-289
- Methyl 5-*O*-β-*D*-glucopyranosyl-β-*L*-arabinofuranoside, G-289
- Methyl 2-*O*-β-*D*-glucopyranosyl-β-*D*-galactopyranoside, 9CI, G-313
- Methyl 4-*O*-β-*D*-glucopyranosyl-α-*D*-glucopyranoside, C-38
- Methyl 4-*O*-β-*D*-glucopyranosyl-β-*D*-glucopyranoside, C-38
- Methyl 2-*O*-β-*D*-glucopyranosyl-α-*D*-glucopyranoside, G-407
- Methyl 3-*O*-β-*D*-glucopyranosyl-β-*D*-glucopyranoside, G-408
- Methyl 5-*O*-β-*D*-glucopyranosyl-2,3-*O*-isopropylidene-β-*D*-ribofuranose, G-462
- Methyl 4-*S*-α-*D*-glucopyranosyl-4-thio-α-*D*-glucopyranoside, T-81
- Methyl 4-*S*-α-*D*-glucopyranosyl-4-thio-β-*D*-glucopyranoside, T-81
- Methyl 2-*O*-β-*D*-glycopyranosyl-*D*-xylopyranoside, G-474
- Methyl hepta-*O*-acetyl-α-*D*-galactopyranosyl-β-*D*-glucopyranoside, G-145
- Methyl hepta-*O*-acetyl-α-gentiobioside, G-410
- Methyl hepta-*O*-acetyl-β-gentiobioside, G-410
- Methyl hepta-*O*-acetyl-β-turanopyranoside, T-201
- Methyl hepta-*O*-benzoyl-α-*D*-galactopyranosyl-β-*D*-glucopyranoside, G-145
- Methyl hepta-*O*-methyl-α-*D*-galactopyranosyl-α-*D*-glucopyranoside, G-145
- Methyl hepta-*O*-methyl-α-*D*-galactopyranosyl-β-*D*-glucopyranoside, G-145
- Methyl β-isomaltoside, G-406
- Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3-*O*-isopropylidene-β-*D*-ribofuranosyl)-β-*D*-ribofuranoside, 9CI, R-121
- Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3-*O*-isopropylidene-α-*D*-ribofuranosyl)-β-*D*-ribofuranoside, R-119
- Methyl 2,3-*O*-isopropylidene-5-*O*-α-*D*-ribofuranosyl-β-*D*-ribofuranoside, R-119
- Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3,4,6-tetra-*O*-acetyl-β-*D*-glucopyranosyl)-β-*D*-ribofuranoside, 9CI, G-462
- Methyl 2,3-*O*-isopropylidene-5-*O*-(2,3,4,6-tetra-*O*-benzyl-β-*D*-glucopyranosyl)-β-*D*-ribofuranoside, 9CI, G-462
- Methyl α-*D*-lactopyranoside, L-13
- Methyl β-*D*-lactopyranoside, L-13
- Methyl 3-*O*-α-*D*-lyxopyranosyl-α-*D*-mannopyranoside, L-71
- Methyl α-maltopyranoside, M-15
- Methyl β-maltopyranoside, M-15
- Methyl α-maltoside, G-406
- Methyl 2-*O*-α-*D*-mannopyranosyl-α-*D*-glucopyranoside, M-61
- Methyl 2-*O*-α-*D*-mannopyranosyl-β-*D*-glucopyranoside, M-61
- Methyl 2-*O*-α-*D*-mannopyranosyl-α-*D*-mannopyranoside, 9CI, 8CI, M-92
- Methyl 4-*O*-α-*D*-mannopyranosyl-α-*D*-mannopyranoside, 9CI, M-94
- Methyl 3-*O*-β-*D*-mannopyranosyl-α-*D*-mannopyranoside, 9CI, M-97
- Methyl 2-*O*-α-*D*-mannopyranosyl-β-*D*-mannopyranoside, M-92
- Methyl 3-*O*-α-*D*-mannopyranosyl-α-*D*-mannopyranoside, M-93
- Methyl β-melibioside, G-145
- Methyl α-pachybioside, P-1
- Methyl β-pachybioside, P-1
- Methyl 5-*O*-α-*L*-rhamnopyranosyl-α-*L*-arabinofuranoside, R-19
- Methyl 4-*O*-α-*L*-rhamnopyranosyl-β-*L*-arabinofuranoside, R-18
- Methyl 3-*O*-α-*L*-rhamnopyranosyl-β-*D*-galactopyranoside, 9CI, R-27
- Methyl 2-*O*-β-*L*-rhamnopyranosyl-β-*D*-galactopyranoside, 9CI, R-29
- Methyl 3-*O*-(α-*L*-rhamnopyranosyl)-2-*O*-methyl-α-*L*-rhamnopyranoside, R-72
- Methyl 3-*O*-α-*L*-rhamnopyranosyl-α-*D*-xylopyranoside, 9CI, R-77
- Methyl 4-*O*-α-*L*-rhamnopyranosyl-α-*D*-xylopyranoside, 9CI, R-78
- Methyl 2-*O*-β-*D*-ribofuranosyl-β-*D*-ribofuranoside, 9CI, R-120
- Methyl 2-*O*-(2,3,4,6-tetra-*O*-acetyl-β-*D*-glucopyranosyl)-3,4,6-tri-*O*-acetyl-α-*D*-allopyranoside, G-277
- Methyl 4-*O*-(2,3,4,6-tetra-*O*-acetyl-β-*D*-glucopyranosyl)-2,3,6-tri-*O*-acetyl-α-*D*-mannopyranoside, G-432
- Methyl 3-*O*-(2,3,4,6-tetra-*O*-acetyl-α-*D*-mannopyranosyl)-α-*D*-mannopyranoside, M-93
- Methyl 1-thio-β-*D*-cellobioside, T-60
- Methyl 2,3,6-tri-*O*-acetyl-4-*O*-(2,3-di-*O*-acetyl-4,6-*O*-benzylidene-β-*D*-allopyranosyl)-β-*D*-allopyranoside, A-84
- Methyl 3-*O*-(2,3,4-tri-*O*-acetyl-α-*L*-rhamnopyranosyl)-α-*D*-xylopyranoside, R-77
- Methyl 3,4,6-tri-*O*-acetyl-2-*O*-(2,3,4,6-tetra-*O*-acetyl-β-*D*-galactopyranosyl)-α-*D*-allopyranoside, G-39
- Methyl 3,4,6-tri-*O*-acetyl-2-*S*-(2,3,4,6-tetra-*O*-acetyl-α-*D*-glucopyranosyl)-2-thio-β-*D*-glucopyranose, T-78
- Methyl 2,4,6-tri-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl-α-*D*-mannopyranosyl)-α-*D*-mannopyranoside, 9CI, X-76
- Methyl 2,3,6-tri-*O*-benzoyl-4-*O*-(2,3,4,6-tetra-*O*-benzoyl-β-*D*-galactopyranosyl)-β-*D*-allopyranoside, G-40
- Methyl 2,4,6-tri-*O*-benzyl-3-*O*-(3,4,6-tri-*O*-benzyl-β-*D*-mannopyranosyl)-α-*D*-mannopyranoside, M-97
- Methyl β-turanopyranoside, T-201
- Methyl 2-*O*-β-*D*-xylopyranosyl-α-*L*-arabinopyranoside, 9CI, X-29
- Methyl 2-*O*-β-*D*-xylopyranosyl-β-*L*-arabinopyranoside, 9CI, X-29
- Methyl 2-*O*-α-*D*-xylopyranosyl-β-*D*-xylopyranoside, 9CI, X-75
- Methyl 3-*O*-α-*D*-xylopyranosyl-β-*D*-xylopyranoside, 9CI, X-76
- Methyl 4-*O*-α-*D*-xylopyranosyl-β-*D*-xylopyranoside, X-77
- Methyl 2-*O*-β-*D*-xylopyranosyl-β-*D*-xylopyranoside, X-78
- Methyl 3-*O*-β-*D*-xylopyranosyl-β-*D*-xylopyranoside, X-79
- Methyl 4-*O*-β-*D*-xylopyranosyl-β-*D*-xylopyranoside, X-80
- 4-*O*-(3-*O*-Methyl-β-*D*-galactopyranosyl)-*L*-rhamnose, G-172
- 2-*O*-(4-*O*-Methyl-α-*D*-glucopyranosyl)-*D*-xylose, G-471
- 3-*O*-(4-*O*-Methyl-α-*D*-glucopyranuronosyl)-*L*-arabinose, G-478
- 4-*O*-(4-*O*-Methyl-α-*D*-glucopyranuronosyl)-*L*-arabinose, G-479
- 2-*O*-(4-*O*-Methyl-α-*D*-glucopyranuronosyl)-*D*-lyxose, G-503
- 2-*O*-(4-*O*-Methyl-α-*D*-glucopyranuronosyl)-*D*-xylose, 9CI, 8CI, G-510
- 3-*O*-(4-*O*-Methyl-α-*D*-glucopyranuronosyl)-*D*-xylose, 9CI, G-511
- 6-*O*-(4-*O*-Methyl-β-*D*-glucuronopyranuronosyl)-*D*-galactose, 9CI, 8CI, A-1
- 6-*O*-(4-*O*-Methyl-β-*D*-glucuronopyranuronosyl)-*D*-galactose, 9CI, 8CI, A-1
- Neogaroibiose; Hexa-Ac, N-15
- Neogaroibiose, N-15
- Neocarrabiose, N-17
- α-*D*-Neuraminopyranosyl-(2 → 3)-*D*-galactose; Pyranose-form; *N*-Ac, N-42
- β-*D*-Neuraminopyranosyl-(2 → 3)-*D*-galactose; Pyranose-form; *N*-Ac, N-43
- α-*D*-Neuraminopyranosyl-(2 → 3)-*D*-galactose; β-Pyranose-form; Benzyl glycoside, 2,6-dibenzyl, *N*-Ac, N-42
- α-*D*-Neuraminopyranosyl-(2 → 3)-*D*-galactose; β-Pyranose-form; Benzyl glycoside, 2,6-dibenzyl, 4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-42
- β-*D*-Neuraminopyranosyl-(2 → 3)-*D*-galactose; β-Pyranose-form; Benzyl glycoside, 2,6-dibenzyl, 4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-43

- α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-*form*, N-42
 β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; Pyranose-*form*, N-43
 β -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose; β -Pyranose-*form*, N-43
 α -D-Neuraminopyranosyl-(2 \rightarrow 3)-D-galactose, N-42
 Octa-*O*-acetyl- α -cellobiose, C-38
 Octa-*O*-acetyl- β -cellobiose, C-38
 Octa-*O*-acetyl- α -gentiobiose, G-410
 Octa-*O*-acetyl- β -gentiobiose, G-410
 Octa-*O*-acetyl- α -D-lactopyranose, L-13
 Octa-*O*-acetyl- β -D-lactopyranose, L-13
 Octa-*O*-acetyl- α -sophoropyranose, G-407
 Octa-*O*-acetyl-1-thio- β -D-cellobiose, T-60
 Octa-*O*-acetyl- α -D-turanofuranose, T-201
 Octa-*O*-acetyl- β -D-turanofuranose, T-201
 Octa-*O*-acetyl- α -turanopyranose, T-201
 Octa-*O*-acetyl- β -turanopyranose, T-201
 6-*O*-Oleuropeoylucrose, O-29
 Pachybiose, P-1
 Pentaacetylstrophanthobiose, S-89
 Phenyl 2,2',3,3',4',6,6'-hepta-*O*-acetyl- α -D-lactoside, H-7
 Phenyl 2,2',3,3',4',6,6'-hepta-*O*-acetyl- β -D-lactoside, H-7
 Phenyl α -D-lactopyranoside, L-13
 Phenyl α -D-maltopyranoside, M-15
 Phenyl β -D-maltopyranoside, M-15
 Phenyl 4-*O*- β -D-mannopyranosyl- α -D-mannopyranoside, M-98
 Phenyl 2,3,6-tri-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-mannopyranosyl)- α -D-mannopyranoside, M-98
 Phyllanthose, P-71
 Plantebiose, P-77
 2-*O*- α -L-Rhamnopyranosyl-L-arabinose; β -Pyranose-*form*; Hexa-Ac, R-16
 2-*O*- α -L-Rhamnopyranosyl-L-arabinose; α -Pyranose-*form*, R-16
 2-*O*- α -L-Rhamnopyranosyl-D-arabinose, R-15
 2-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-16
 3-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-17
 4-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-18
 5-*O*- α -L-Rhamnopyranosyl-L-arabinose, R-19
 2-*O*- β -L-Rhamnopyranosyl-L-arabinose, R-20
 1-*O*- α -L-Rhamnopyranosyl-D-fructose, R-21
 2-*O*- β -L-Rhamnopyranosyl-D-fucose; β -Pyranose-*form*, R-23
 2-*O*- α -L-Rhamnopyranosyl-D-fucose, R-22
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; 2-Ac, R-27
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; 6-Ac, R-27
 6-*O*- α -L-Rhamnopyranosyl-D-galactose; Hepta-Ac, R-28
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 2-Ac, R-27
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 4,6-*O*-benzylidene, 2-Ac, R-27
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 4,6-*O*-benzylidene, tetrabenzyl, R-27
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 2,2',3',4,4'-pentabenzyl, R-27
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-*form*; Hepta-Ac, R-27
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-*form*; Me glycoside, 4,6-*O*-benzylidene, 2-benzyl, 2',3',4'-tri-Ac, R-27
 3-*O*- α -L-Rhamnopyranosyl-D-galactose; β -Pyranose-*form*; Me glycoside, 4,6-*O*-benzylidene, tetrabenzyl, R-27
 2-*O*- α -D-Rhamnopyranosyl-D-galactose, R-25
 2-*O*- α -L-Rhamnopyranosyl-D-galactose, R-26
 3-*O*- α -L-Rhamnopyranosyl-D-galactose, R-27
 6-*O*- α -L-Rhamnopyranosyl-D-galactose, R-28
 2-*O*- β -L-Rhamnopyranosyl-D-galactose, R-29
 3-*O*- β -L-Rhamnopyranosyl-D-galactose, R-30
 2-*O*- α -L-Rhamnopyranosyl-D-glucose; β -Pyranose-*form*; Hepta-Ac, R-40
 2-*O*- α -L-Rhamnopyranosyl-D-glucose, R-40
 4-*O*- α -L-Rhamnopyranosyl-D-glucose, R-42
 5-*O*- α -L-Rhamnopyranosyl-D-glucose, R-43
 6-*O*- α -L-Rhamnopyranosyl-D-glucose, R-44
 6-*O*- β -L-Rhamnopyranosyl-D-glucose, R-45
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)-D-glucuronic acid, R-46
 6-*O*- α -L-Rhamnopyranosyl-D-mannose, R-48
 2-*O*- α -D-Rhamnopyranosyl-L-rhamnose, R-69
 3-*O*- α -D-Rhamnopyranosyl-L-rhamnose, R-70
 2-*O*- α -L-Rhamnopyranosyl-L-rhamnose, R-71
 3-*O*- α -L-Rhamnopyranosyl-L-rhamnose, R-72
 4-*O*- α -L-Rhamnopyranosyl-L-rhamnose, R-73
 2-*O*- β -L-Rhamnopyranosyl-L-rhamnose, R-74
 3-*O*- β -L-Rhamnopyranosyl-L-rhamnose, R-75
 4-*O*- β -L-Rhamnopyranosyl-L-rhamnose, R-76
 3-*O*- α -L-Rhamnopyranosyl-D-xylose, R-77
 4-*O*- α -L-Rhamnopyranosyl-D-xylose, R-78
 β -D-Ribofuranosyl α -D-ribofuranoside; Di-*O*-isopropylidene, R-99
 α -D-Ribofuranosyl α -D-ribofuranoside; Hexabenzyl, R-98
 β -D-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -*form*; Me glycoside, Me ester, R-104
 β -D-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -*form*; Me glycoside, R-104
 β -D-Ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-*manno*-2-octulopyranosonic acid; β -*form*, R-104
 1-*O*- α -D-Ribofuranosyl-D-fructose; β -Pyranose-*form*;
 2,3,4,5-Di-*O*-isopropylidene, tribenzyl, R-106
 6-*O*- α -D-Ribofuranosyl-D-glucose, R-107
 6-*O*- β -D-Ribofuranosyl-D-glucose, R-108
 5-*O*- α -D-Ribofuranosyl-D-ribose, R-119
 2-*O*- β -D-Ribofuranosyl-D-ribose, R-120
 5-*O*- β -D-Ribofuranosyl-D-ribose, R-121
 6-*O*- α -D-Ribopyranosyl-D-galactose, R-134
 4-*O*- β -D-Ribopyranosyl-D-ribose, R-136
 Strophanthobiose; Pyranose-*form*, S-89
 6-*O*- α -D-Talopyranosyl-D-galactose, T-8
 3-*O*-Tetra-*O*-acetyl- β -D-glucopyranosyl tetra-*O*-acetyl- α -D-glucopyranoside, G-408
 3-*O*-Tetra-*O*-acetyl- β -D-glucopyranosyl tetra-*O*-acetyl- β -D-glucopyranoside, G-408
 4-*O*-(2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl)-tri-*O*-acetyl- α -D-glucopyranosyl bromide, M-15
 4-*O*-(2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl)-1,2,3-tri-*O*-acetyl- β -D-xylopyranose, G-473
 1,3,4,6-Tetra-*O*-acetyl-2-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranosyl)- β -D-allopyranose, G-39
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranosyl)- β -D-allopyranose, G-40
 1,2,3,4-Tetra-*O*-acetyl-6-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-galactopyranosyl)- α -D-galactopyranose, G-120
 1,2,3,4-Tetra-*O*-acetyl-6-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranosyl)- β -D-galactopyranose, G-120
 1,2,3,4-Tetra-*O*-acetyl-6-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-galactopyranosyl)- β -D-mannopyranose, G-165
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(tetra-*O*-acetyl- β -D-glucopyranosyl)- α -D-altropyranose, G-41
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-altropyranose, G-41
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- α -D-altropyranoside, G-279
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-altropyranoside, G-279
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- α -D-mannopyranose, G-432
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-mannopyranose, G-432
 1,3,4,6-Tetra-*O*-acetyl-2-*S*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)-2-thio- β -D-glucopyranose, T-78
 1,2,4,6-Tetra-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-mannopyranosyl)- α -D-mannopyranose, M-93
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-mannopyranosyl)- β -D-mannopyranose, M-94
 1,2,3,6-Tetra-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-mannopyranosyl)- α -D-mannopyranose, M-98
 1-Thiocollobiose; β -D-Pyranose-*form*; Benzyl glycoside, hepta-Ac, T-60
 1-Thiocollobiose; β -D-Pyranose-*form*; Et glycoside, hepta-Ac, T-60
 1-Thiocollobiose; β -D-Pyranose-*form*; Me glycoside, hepta-Ac, T-60
 Thiocollobiose; α -Pyranose-*form*; Me glycoside, 2,3,6-tribenzoyl, tetra-Ac, T-59
 Thiocollobiose; α -Pyranose-*form*; Octa-Ac, T-59
 1-Thiocollobiose; β -D-Pyranose-*form*, T-60
 Thiocollobiose; 2,3,6-Tribenzoyl, 1,2',3',4',6'-penta-Ac, T-59
 Thiocollobiose, T-59
 2-Thiokojibiose, T-78
 Thiolactose; α -*form*; Me glycoside, hepta-Ac, T-79
 Thiolactose; α -*form*; Me glycoside, T-79
 Thiolactose; Octa-Ac, T-79
 Thiolactose, T-79
 Thiomaltose; α -Pyranose-*form*; Me glycoside, hepta-Ac, T-81
 Thiomaltose; β -Pyranose-*form*; Me glycoside, hepta-Ac, T-81
 Thiomaltose; β -Pyranose-*form*; Octa-Ac, T-81
 Thiomaltose, T-81
 2-Thiosphorose; β -Pyranose-*form*; Octa-Ac, T-92
 2-Thiosphorose, T-92
 2-Trehalosamine, T-120
 α,α -Trehalose; 4,6:4',6'-Di-*O*-ethylidene, T-123
 α,α -Trehalose; 6,6'-Dimesyl, hexa-Ac, T-123
 α,α -Trehalose; 6,6'-Ditosyl, hexa-Ac, T-123
 α,α -Trehalose; 6,6'-Ditosyl, T-123
 α,α -Trehalose; 6,6'-Ditrityl, hexa-Ac, T-123
 α,α -Trehalose; 2,2',3,3',4,4',6-Hepta-Ac, T-123
 α,α -Trehalose; 2,2',3,3',4,4',6-Hexa-Ac, T-123

α,α -Trehalose; Octa-Ac, T-123
 α,α -Trehalose; Octa-Me, T-123
 α,α -Trehalose; 6-Phosphate, T-123
 α,α -Trehalose; 2-Sulfate, T-123
 α,α -Trehalose; 6-Trityl, hepta-Ac, T-123
 α,α -Trehalose-6,6'-dipalmitate, T-123
2,3,4-Tri-*O*-acetyl- β -D-ribofuranosyl 2,3,4-tri-*O*-acetyl- α -D-ribofuranoside, 9CI, R-133
2,3,6-Tri-*O*-acetyl-4-*O*-(tetra-*O*-acetyl- β -D-glucopyranosyl)- α -D-altropyranose, G-41
2,3,6-Tri-*O*-acetyl-4-*O*-(tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-altropyranose, G-41
1,2,5-Tri-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- α -D-arabinofuranose, 9CI, G-285
1,2,5-Tri-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-arabinofuranose, G-285
1,2,4-Tri-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)- α -D-arabinopyranose, 9CI, 8CI, G-282
1,2,4-Tri-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)- β -D-arabinopyranose, 9CI, 8CI, G-282
1,2,4-Tri-*O*-acetyl-3-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- α -D-arabinopyranose, 9CI, G-285
1,2,3-Tri-*O*-acetyl-5-*O*-(2,3,4,6-tetra-*O*-acetyl- α -D-glucopyranosyl)- β -D-ribofuranose, 9CI, G-460
1,2,3-Tri-*O*-acetyl-5-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)- β -D-ribofuranose, 9CI, G-462
1,2,3-Tri-*O*-acetyl-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)-D-xylopyranose, G-476
1,2,3-Tri-*O*-acetyl-4-*O*-(2,3,4-tri-*O*-acetyl- α -D-xylopyranosyl)- β -D-xylopyranose, X-77
4-*O*-(2,3,4-Tri-*O*-acetyl- β -D-xylopyranosyl)-1,2,3-tri-*O*-acetyl- β -D-xylopyranose, X-80
3,4,6-Tri-*O*-benzyl- β -D-mannopyranosyl 3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, M-46
1,2,5-Trideoxy-4-*O*-(β -D-glucopyranosyl)-1,5-imino-D-*arabino*-hexitol, T-152
Trolox, T-196
Turanose, T-201
Viminose, V-18
Wilforibiose, W-2
4-*O*- β -D-Xylopyranosyl-D-allose; β -Pyranose-form; Hepta-Ac, X-20
4-*O*- β -D-Xylopyranosyl-D-allose, X-20
6-*O*- β -D-Xylopyranosyl-2-amino-2-deoxy-D-glucose; *N*-Ac, X-21
3-*O*- α -D-Xylopyranosyl-L-arabinose, X-27
5-*O*- α -D-Xylopyranosyl-L-arabinose, X-28
2-*O*- β -D-Xylopyranosyl-L-arabinose, X-29
3-*O*- β -D-Xylopyranosyl-L-arabinose, X-30
4-*O*- β -D-Xylopyranosyl-L-arabinose, X-31
5-*O*- β -D-Xylopyranosyl-L-arabinose, X-32
4-*O*- β -D-Xylopyranosyl-D-digitoxose, X-33
2-*O*- β -D-Xylopyranosyl-5-*O*-feruloyl-L-arabinofuranose, X-29
6-*O*- β -D-Xylopyranosyl-D-fructose, X-35
2-*O*- β -D-Xylopyranosyl-D-galactose, X-36
3-*O*- β -D-Xylopyranosyl-D-galactose, X-37
6-*O*- β -D-Xylopyranosyl-D-galactose, X-38
6-*O*- α -D-Xylopyranosyl-D-glucose; β -Pyranose-form; Hepta-Ac, X-45
6-*O*- α -D-Xylopyranosyl-D-glucose; α -Pyranose-form; Me glycoside, hexa-Ac, X-45
2-*O*- α -D-Xylopyranosyl-D-glucose, X-42
3-*O*- α -D-Xylopyranosyl-D-glucose, X-43
4-*O*- α -D-Xylopyranosyl-D-glucose, X-44
6-*O*- α -D-Xylopyranosyl-D-glucose, X-45
2-*O*- β -D-Xylopyranosyl-D-glucose, X-46
6-*O*- β -D-Xylopyranosyl-D-glucose, X-47
2-*O*- β -D-Xylopyranosyl-D-mannose; α -Pyranose-form; Benzyl glycoside, X-50
2-*O*- α -D-Xylopyranosyl-D-mannose, X-48
3-*O*- α -D-Xylopyranosyl-D-mannose, X-49
2-*O*- β -D-Xylopyranosyl-D-mannose, X-50
3-*O*- β -D-Xylopyranosyl-D-mannose, X-51
4-*O*- β -D-Xylopyranosyl-D-mannose, X-52
6-*O*- β -D-Xylopyranosyl-D-mannose, X-53
4-*O*- α -D-Xylopyranosyl-D-ribose, X-57
4-*O*- β -D-Xylopyranosyl-D-ribose, X-58
2-*O*- α -D-Xylopyranosyl-D-xylose; β -Pyranose-form; Benzylglycoside, 2',3',4'-tri-Ac, di-benzyl, X-75
2-*O*- α -D-Xylopyranosyl-D-xylose; β -Pyranose-form; Me glycoside, penta-Ac, X-75
2-*O*- α -D-Xylopyranosyl-D-xylose, X-75
3-*O*- α -D-Xylopyranosyl-D-xylose, X-76
4-*O*- α -D-Xylopyranosyl-D-xylose, X-77

2-*O*- β -D-Xylopyranosyl-D-xylose, X-78
3-*O*- β -D-Xylopyranosyl-D-xylose, X-79
4-*O*- β -D-Xylopyranosyl-D-xylose, X-80

Non-reducing disaccharides

4-*O*-(2-Acetamido-2-deoxy- β -D-glucopyranosyl)-D-ribitol, A-264
Acetobromocellobiose, C-38
4-*N*-Acetylglucosaminylribitol, A-264
Agrocinopin A, A-63
Agrocinopin C, A-64
 α -D-Allopyranosyl α -D-allopyranoside, A-80
 α -D-Allopyranosyl β -D-fructofuranoside; Octa-Ac, A-83
 α -D-Allopyranosyl β -D-fructofuranoside; Octabenzoyl, A-83
 α -D-Allopyranosyl β -D-fructofuranoside, A-83
 α -D-Altropyranosyl- α -D-altropyranoside; 4,6:4',6'-Di-*O*-benzylidene, 2,2'-dibenzyl, 3,3'-ditriflyl, A-107
 α -D-Altropyranosyl- α -D-altropyranoside, A-107
3-Amino-3-deoxy- β -D-glucopyranosyl 3-amino-3-deoxy- α -D-glucopyranoside, A-221
2,3-Anhydro-4,6-*O*-benzylidene- α -D-allopyranosyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-allopyranoside, A-80
2,3-Anhydro-4,6-*O*-benzylidene- α -D-mannopyranosyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-allopyranoside, M-40
3,4-Anhydro-2,6-dideoxy- β -D-*ribo*-hexopyranosyl 6-deoxy-3-*O*-methyl- β -D-allopyranoside, S-14
2,3'-Anhydrosucrose; Hexa-Ac, A-698
2,3'-Anhydrosucrose, A-698
 α -D-Arabinopyranosyl α -D-arabinopyranoside, A-828
 β -L-Arabinopyranosyl β -L-arabinopyranoside, A-829
3-*O*- β -L-Arabinopyranosyl-D-erythritol, A-841
2-*O*-Benzoyl-4,6-*O*-benzylidene- α -D-allopyranosyl 2-*O*-benzoyl-4,6-*O*-benzylidene- α -D-allopyranoside, A-80
1'-*O*-Benzoylsucrose, S-92
2-*O*-Benzyl-4,6-*O*-benzylidene- α -D-altropyranosyl 2-*O*-benzyl-4,6-*O*-benzylidene- α -D-altropyranoside, A-107
4,6-*O*-Benzylidene- α -D-allopyranosyl 4,6-*O*-benzylidene- α -D-allopyranoside, A-80
4,6-*O*-Benzylidene- α -D-glucopyranosyl 2,3-anhydro-4,6-*O*-benzylidene- α -D-mannopyranoside, G-267
Bis(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)amine, D-666
Bis(2,3,4-tri-*O*-acetyl- β -D-xylopyranosyl)amine, D-770
6'-*O*-(*tert*-Butyldiphenylsilyl)sucrose, B-142
Cellobial, C-37
Cellobionic acid, G-324
1'-Chloro-1'-deoxysucrose; Hepta-Ac, C-104
1'-Chloro-1'-deoxysucrose, C-104
6-Deoxy-*N*-(6-deoxy- β -L-mannopyranosyl)- β -L-mannopyranosylamine, 9CI, D-761
1'-Deoxy-1'-fluorosucrose, S-92
4-Deoxy- α -D-*xylo*-hexopyranosyl 4-deoxy- α -D-*xylo*-hexopyranoside, D-195
1,6-Di-*O*-acetyl-3,4-anhydro- β -D-psicofuranosyl 4,6-di-*O*-acetyl-2,3-anhydro- α -D-allopyranoside, P-104
2,3-Di-*O*-acetyl-4,6-*O*-benzylidene- α -D-allopyranosyl 2,3-di-*O*-acetyl-4,6-*O*-benzylidene- α -D-allopyranoside, A-80
3,4-Di-*O*-acetyl-2-*O*-benzyl- β -D-xylopyranosyl 3,4-di-*O*-acetyl-2-*O*-benzyl- α -D-xylopyranoside, X-18
3,4-Di-*O*-acetyl-1,6-di-*O*-trityl- β -D-fructofuranosyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- α -D-allopyranoside, F-51
6,6'-Diamino-6,6'-dideoxysucrose; *N,N'*-Di-Ac, D-455
6,6'-Diamino-6,6'-dideoxysucrose; 1',2',3',4,6*N,N'*-Octa-Ac, D-455
6,6'-Diamino-6,6'-dideoxysucrose, D-455
6,6'-Diazido-6,6'-dideoxysucrose, D-520
2,3-Di-*O*-benzoyl-4,6-*O*-benzylidene- α -D-allopyranosyl 2,3-di-*O*-benzoyl-4,6-*O*-benzylidene- α -D-allopyranoside, A-80
2,3-Di-*O*-benzyl-4,6-di-*O*-benzylidene- α -D-mannopyranosyl 2,3-di-*O*-benzyl-4,6-di-*O*-benzylidene- α -D-mannopyranoside, M-45
2,3-Di-*O*-benzyl- α -D-mannopyranosyl 2,3-di-*O*-benzyl- α -D-mannopyranoside, M-45
6,6'-Dichloro-6,6'-dideoxysucrose; Hexa-Ac, D-546
6,6'-Dichloro-6,6'-dideoxysucrose; Hexabenzoyl, D-546
6,6'-Dichloro-6,6'-dideoxysucrose, D-546
6,6'-Dideoxy-6,6'-difluorosucrose, D-562
2,6-Dideoxy- α -D-*ribo*-hexopyranosyl 2,6-dideoxy- α -D-*ribo*-hexopyranoside, D-604
6,6'-Dideoxysucrose, D-652
Diglucopyranosylamine; D, β , β -form, D-666
1,6-Di-*O*- β -D-glucopyranosyl-D-mannitol, D-667
2,3:5,6-Di-*O*-isopropylidene- α -D-mannofuranosyl 2,3:5,6-di-*O*-isopropylidene- α -D-mannofuranoside, M-30
2,3:5,6-Di-*O*-isopropylidene- β -D-mannofuranosyl 2,3:5,6-di-*O*-isopropylidene- α -D-mannofuranoside, M-31

- 2,3,5,6-Di-*O*-isopropylidene- β -D-mannofuranosyl
2,3,5,6-tetra-*O*-acetyl- α -D-mannofuranoside, M-31
2,3,5,6-Di-*O*-isopropylidene- β -D-mannofuranosyl
2,3,5,6-tetra-*O*-acetyl- β -D-mannofuranoside, M-32
Dimannopyranosylamine; D,D- β , β -form; *O*-Octa-Ac, D-720
Dimannopyranosylamine; D,D- β , β -form, D-720
Dirhamnopyranosylamine; L,L- β , β -form; *O*-Hexa-Ac, D-761
Dixylopyranosylamine; D,D- β , β -form, D-770
 β -D-Erythrofuranosyl β -D-erythrofuranoside; 2,3:2',3'-Diethylidene, E-16
 β -D-Erythrofuranosyl β -D-erythrofuranoside; 2,3-Isopropylidene, dibenzyl, E-16
 β -D-Erythrofuranosyl β -D-erythrofuranoside; 2,3-Isopropylidene, E-16
Everninose; Tetra-Ac, E-36
Everninose, E-36
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 β -D-Fructofuranosyl α -D-allopyranoside; Octa-Ac, F-51
 β -D-Fructofuranosyl α -D-allopyranoside; Octabenzoyl, F-51
 β -D-Fructofuranosyl α -D-allopyranoside, F-51
 β -D-Fructofuranosyl α -D-altropyranoside; Octa-Ac, F-52
 β -D-Fructofuranosyl α -D-altropyranoside, F-52
 β -D-Fructofuranosyl 6-deoxy- β -L-idopyranoside, F-54
 α -D-Fructofuranosyl β -D-glucopyranoside, F-58
 β -D-Fructofuranosyl α -D-*arabino*-hexopyranosid-2-ulose, F-63
 β -D-Fructofuranosyl α -D-*ribo*-hexopyranosid-3-ulose, F-64
 β -D-Fructofuranosyl α -D-mannopyranoside, F-65
 β -D-Fructofuranosyl α -D-xylopyranoside, F-66
 α -L-Fucopyranosyl β -D-galactopyranoside; 2,3,4,6-Tetra-Ac, F-99
 α -L-Fucopyranosyl α -D-galactopyranoside, F-98
 α -L-Fucopyranosyl β -D-galactopyranoside, F-99
Galactinol; Nona-Me, G-3
Galactinol, G-3
1-*O*- β -D-Galactofuranosyl-D-glycerol, G-17
3-*O*- β -D-Galactofuranosyl-D-mannitol, G-18
 α -D-Galactopyranosyl α -D-glucopyranoside, G-32
 β -D-Galactopyranosyl 1-thio- β -D-galactopyranoside, G-34
 α -D-Galactopyranosyl β -D-xylopyranoside, G-35
 β -D-Galactopyranosyl α -D-xylopyranoside, G-36
2-*O*- β -D-Galactopyranosyl-D-arabinitol, G-61
3-*O*- α -D-Galactopyranosyl-D-erythritol, G-69
2-*O*- β -D-Galactopyranosyl-D-erythritol, G-70
2-*O*- α -D-Galactopyranosylglycerol, G-149
 α -D-Glucopyranosyl α -D-allopyranoside, G-256
 α -D-Glucopyranosyl α -D-altropyranoside, G-257
 α -D-Glucopyranosyl α -L-glucopyranoside; Octa-Ac, G-263
 α -D-Glucopyranosyl β -L-glucopyranoside; Octa-Ac, G-264
 α -D-Glucopyranosyl α -L-glucopyranoside, G-263
 α -D-Glucopyranosyl β -L-glucopyranoside, G-264
 α -D-Glucopyranosyl α -D-mannopyranoside; Octa-Ac, G-267
 β -D-Glucopyranosyl β -D-mannopyranoside, G-268
 α -D-Glucopyranosyl α -D-mannopyranoside, G-267
 β -D-Glucopyranosyl α -L-rhamnopyranoside, G-270
 α -D-Glucopyranosyl β -D-sorboxyranoside, G-271
4-*O*- β -D-Glucopyranosyl-L-arabinitol; Octa-Ac, G-281
2-*O*- α -D-Glucopyranosyl-D-erythritol, G-292
2-*O*- β -D-Glucopyranosyl-D-erythritol, G-293
1-*O*- α -D-Glucopyranosyl-D-fructose, G-298
4-*O*- α -D-Glucopyranosyl-D-glucitol, G-317
3-*O*- β -D-Glucopyranosyl-D-glucitol, G-320
4-*O*-Glucopyranosyl-D-gluconic acid; β -D-form; 1,5-Lactone, G-324
4-*O*-Glucopyranosyl-D-gluconic acid; β -D-form; Me ester, G-324
4-*O*-Glucopyranosyl-D-gluconic acid; β -D-form; Na salt (1:1), G-324
4-*O*-Glucopyranosyl-D-gluconic acid; β -D-form; Octa-Ac, Me ester, G-324
4-*O*-Glucopyranosyl-D-gluconic acid; β -D-form; Octa-Ac, G-324
 α -D-Glucopyranosyl- β -D-glucopyranosylamine, D-666
2-*O*- α -D-Glucopyranosyl-D-glucuronic acid, G-412
1''-*O*- β -D-Glucopyranosyl- α -homonijirimycin, B-34
3-*O*- β -D-Glucopyranosyl-D-mannitol, G-418
 β -D-Glucopyranuronosyl β -D-glucopyranoside, G-477
2,3-*O*-Isopropylidene- β -L-erythrofuranosyl 2,3-*O*-isopropylidene- β -L-erythrofuranoside, E-17
Kasuganobiosamine, K-7
Lactal; Hexa-Ac, L-3
Lactalfate, L-4
Lactal, L-3
Lactosan; 4,6-*O*-Benzylidene, tetrabenzoyl, L-12
Lactosan; 4,6-*O*-Benzylidene, L-12
Lactosan; Hexa-Ac, L-12
Lactosan, L-12
Maltal, M-7
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 β -D-Mannofuranosyl α -D-mannofuranoside; Octa-Ac, M-31
 β -D-Mannofuranosyl β -D-mannofuranoside; Octa-Ac, M-32
 α -D-Mannofuranosyl α -D-mannofuranoside, M-30
 β -D-Mannofuranosyl α -D-mannofuranoside, M-31
 β -D-Mannofuranosyl β -D-mannofuranoside, M-32
 α -D-Mannopyranosyl α -D-allopyranoside, M-40
 α -D-Mannopyranosyl α -D-mannopyranoside; Octa-Ac, M-45
 α -D-Mannopyranosyl α -D-mannopyranoside, M-45
 β -D-Mannopyranosyl α -D-mannopyranoside, M-46
2-*O*- β -D-Mannopyranosyl-D-erythritol, M-50
1-*O*- β -D-Mannopyranosyl-L-erythritol, M-51
2-*O*- α -D-Mannopyranosyl-*myo*-inositol, I-32
Melibiitol, M-131
Melibiononic acid, M-132
Methyl octa-*O*-methylmaltobionate, G-324
Methyl octa-*O*-methylmelibionate, M-132
 β -D-Psicofuranosyl α -D-allopyranoside, P-104
 α -L-Rhamnopyranosyl α -L-rhamnopyranoside, R-13
 β -D-Ribofuranosyl α -D-ribofuranoside, R-99
 β -D-Ribofuranosyl β -D-ribofuranoside, R-100
 β -D-Ribopyranosyl α -D-ribofuranoside, R-133
Sarcobiose, S-14
Sucralose, S-91
Sucrose; 4,6-*O*-Benzylidene, hexa-Ac, S-92
Sucrose; 1',6'-Di-Me, S-92
Sucrose; 1',6'-Ditrityl, 2,3,3',4,4',6-hexa-Ac, S-92
Sucrose; 1',6'-Ditrityl, 2,3,3',4',6-penta-Ac, S-92
Sucrose; 1',6'-Ditrityl, S-92
Sucrose; 1',2,3,3',4,4',8-Hepta-*O*-benzoyl, S-92
Sucrose; 1',2,3,3',4',6-Hexa-Ac, S-92
Sucrose; 4,6-*O*-Isopropylidene, hexa-Ac, S-92
Sucrose; 4-Me, S-92
Sucrose; Octabenzoyl, S-92
Sucrose; 2-Tosyl, S-92
Sucrose; 1',6',4-Tri-Me, S-92
Sucrose; 1',6',6-Tri-Me, S-92
Sucrose; 1',6',6-Tritrityl, S-92
Sucrose; 1'-Trityl, S-92
Sucrose; 6-Trityl, S-92
Sucrose; 6'-Trityl, S-92
Sucrosetricarboxylic acid, S-93
Sucrose, S-92
(2,3,4,6-Tetra-*O*-acetyl- α -D-glucopyranosyl)(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)amine, D-666
2,3,4,6-Tetra-*O*-benzyl- α -D-mannopyranosyl 2,3,4,6-tetra-*O*-benzyl- α -D-mannopyranoside, M-45
Tigmobiose, T-115
4-Trehalosamine; *N,O,O,O,O,O,O,O*-Octa-Ac, T-122
3-Trehalosamine, T-121
4-Trehalosamine, T-122
 α,α -Trehalose 6,6'-dimycolate, T-126
 α,β -Trehalose; Octa-Ac, T-124
 β,β -Trehalose; Octa-Ac, T-125
 β,β -Trehalose; Octa-Me, T-125
 α,α -Trehalose, T-123
 α,β -Trehalose, T-124
 β,β -Trehalose, T-125
2,3,6-Tri-*O*-acetyl-1,5-anhydro-4-*O*-(2,3,4,6-tetra-*O*-acetyl- β -D-glucopyranosyl)-D-*arabino*-hex-1-enitol, A-631
2,3,4-Tri-*O*-acetyl- α -D-arabinopyranosyl 2,3,4-tri-*O*-acetyl- α -D-arabinopyranoside, A-828
2,3,4-Tri-*O*-acetyl- β -L-arabinopyranosyl 2,3,4-tri-*O*-acetyl- β -L-arabinopyranoside, A-829
1,3,4-Tri-*O*-acetyl- β -D-fructofuranosyl 2,3,4-tri-*O*-acetyl- α -D-allopyranoside, F-51
2,3,5-Tri-*O*-acetyl- β -D-ribofuranosyl 2,3,5-tri-*O*-acetyl- β -D-ribofuranoside, 9CI, R-100
1,3,4-Tri-*O*-acetyl-6-*O*-trityl- β -D-fructofuranosyl 2,3,4-tri-*O*-acetyl-6-*O*-trityl- α -D-allopyranoside, F-51
(2,3,4-Tri-*O*-acetyl- α -D-xylopyranosyl)(2,3,4-tri-*O*-acetyl- β -D-xylopyranosyl)amine, D-770
2,3,5-Tri-*O*-benzoyl- β -D-ribofuranosyl 2,3,5-tri-*O*-benzoyl- β -D-ribofuranoside, 9CI, R-100
2,3,4-Tri-*O*-benzyl- β -L-arabinopyranosyl 2,3,4-tri-*O*-benzyl- β -L-arabinopyranoside, A-829
3,4,6-Tri-*O*-benzyl- α -D-mannopyranosyl 3,4,6-tri-*O*-benzyl- α -D-mannopyranoside, M-45
2,3,5-Tri-*O*-benzyl- β -D-ribofuranosyl 2,3,5-tri-*O*-benzyl- β -D-ribofuranoside, 9CI, R-100
2,3,4-Tri-*O*-methyl- β -D-xylopyranosyl 2,3,4-tri-*O*-methyl- α -D-xylopyranoside, 9CI, X-18
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 α -D-Xylopyranosyl α -D-xylopyranoside; Hexa-Ac, X-17
 β -D-Xylopyranosyl α -D-xylopyranoside; Hexa-Ac, X-18
 α -D-Xylopyranosyl α -D-xylopyranoside; Hexabenzyl, X-17

α -D-Xylopyranosyl α -D-xylopyranoside, X-17
 β -D-Xylopyranosyl α -D-xylopyranoside, X-18
 β -D-Xylopyranosyl β -D-xylopyranoside, X-19
 3-*O*- α -D-Xylopyranosyl-D-erythritol, X-34

Trisaccharides

2-Acetamido-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy-D-glucose, A-198
 2-Acetamido-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy-D-glucose, A-199
 2-Acetamido-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy-D-glucose, A-200
 2-Acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy-D-glucose, C-64
 2-Acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy-D-glucose, A-244
 2-Acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-acetamido-2-deoxy-D-glucose, A-245
 2-Acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, A-247
 2-Acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-[2-acetamido-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose, A-232
N-Acetylkanamycin B, K-4
 Aculextriase; *N*-Ac, A-25
 Aculextriase; Hepta-Ac, A-25
 Aculextriase, A-25
 Adenylyl-(5' \rightarrow 2')-adenylyl-(5' \rightarrow 2')-5'-adenylic acid, A-51
 2-Amino-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 3)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, *N,N'*-di-Ac, A-195
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-[2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)]-D-mannose, A-235
 4-Amino-4,6-dideoxy- α -D-glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, A-379
 Antibiotic SEN 366D₁, A-770
 α -L-Arabinofuranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose, A-822
 α -L-Arabinofuranosyl-(1 \rightarrow 6)-[β -D-galactopyranosyl-(1 \rightarrow 3)]-D-galactose, A-810
 α -L-Arabinofuranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose, A-817
 α -L-Arabinofuranosyl-(1 \rightarrow 3)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose; β -Pyranose-form; Me glycoside, A-821
 β -D-Arabinopyranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-glucose, A-847
 Cellotriase, C-47
 Chacotriase, C-53
 Dalmaisiase A, G-297
 6-Deoxy- α -D-glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, D-135
 6-Deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-[6-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)]-6-deoxy-D-glucose, V-25
 Dextrantriase, D-393
 Digilanidotriase, D-665
 1,6-Di-*O*- β -D-glucopyranosyl-D-mannitol, D-667
 Digoxose, D-669
 Dresitriase, G-290
 β -D-Fructofuranosyl α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucopyranoside, F-59
 β -D-Fructofuranosyl β -D-glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranoside, F-61
 β -D-Fructofuranosyl-(2 \rightarrow 1)- β -D-fructofuranosyl-(2 \rightarrow 6)-D-fructose, F-71
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose; α -Pyranose-form; Benzyl glycoside, 2'',3'',4''-tribenzyl, *N,N'*-di-Ac, F-100
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose; α -Pyranose-form; Benzyl glycoside, 2'',3'',4''-tribenzyl, 3,4,4',6'-di-*O*-isopropylidene, *N,N'*-di-Ac, F-100
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-galactose; α -Pyranose-form; *N,N'*-Di-Ac, F-100
 α -L-Fucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose, F-102
 α -L-Fucopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2'',3'',4'',6,6-pentabenzyl, 2*N*,2',3',4'-tetra-Ac, F-128
 α -L-Fucopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, F-122
 α -L-Fucopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, F-122
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Benzyl glycoside, 3',4'-isopropylidene, 2,2'',3'',4'',6,6'-hexabenzyl, F-129
 α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-form; 2'',3'',4''-Tribenzyl, F-129

α -L-Fucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, F-129
 α -L-Fucopyranosyl-(1 \rightarrow 4)-[β -L-fucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form; Me glycoside, F-106
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 β -D-Galactofuranosyl-(1 \rightarrow 3)- β -D-galactofuranosyl-(1 \rightarrow 3)-D-galactose; β -Furanose-form; 1,6''-Anhydro, G-8
 β -D-Galactofuranosyl-(1 \rightarrow 3)- β -D-galactofuranosyl-(1 \rightarrow 3)-D-galactose, G-8
 β -D-Galactofuranosyl-(1 \rightarrow 6)- β -D-galactofuranosyl-(1 \rightarrow 6)-D-galactose, G-10
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose; *N*-Ac, G-52
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; α -Furanose-form; 2' *N*-Phthaloyl, 1,2,5,6-di-*O*-isopropylidene, hexa-Ac, G-49
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; α -Pyranose-form; Benzyl glycoside, 6-allyl, 2,4-dibenzyl, hepta-Ac, G-49
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-form; Me glycoside, *N*-Ac, G-49
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, *N*-Ac, G-49
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; G-49
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 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; *N*-Ac, G-80
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',2'',3',3'',4'',6,6',6''-nonabenzyl, *N*-Ac, G-80
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 α -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 6)-D-galactose, G-91
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 α -D-Galactopyranosyl-(1 \rightarrow 6)- α -D-galactopyranosyl-(1 \rightarrow 6)-D-glucose; β -Pyranose-form; Undeca-Ac, G-104
 α -D-Galactopyranosyl-(1 \rightarrow 6)- α -D-galactopyranosyl-(1 \rightarrow 6)-D-glucose, G-104
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- α -D-Galactopyranosyl-(1 \rightarrow 3)- α -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose;
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 G-97
 α -D-Galactopyranosyl-(1 \rightarrow 3)-[α -D-galactopyranosyl-(1 \rightarrow 6)]-D-glucose;
 α -Pyranose-form; Me glycoside, 2,2',2'',3'',3'',4',4'',6',6''-nonabenzyl,
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 α -D-Galactopyranosyl-(1 \rightarrow 3)-[α -D-galactopyranosyl-(1 \rightarrow 6)]-D-glucose;
 α -Pyranose-form; Me glycoside, G-102
 α -D-Galactopyranosyl-(1 \rightarrow 3)-[α -D-galactopyranosyl-(1 \rightarrow 6)]-D-glucose;
 α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, decabenzyl, G-102
 α -D-Galactopyranosyl-(1 \rightarrow 3)-[α -D-galactopyranosyl-(1 \rightarrow 6)]-D-glucose;
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 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-347
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 β -Pyranose-form; Benzyl glycoside, 2,3,4-tribenzyl, hepta-Ac, G-347
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 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 2)-D-glucose, G-353
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 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-glucose,
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 β -D-Pyranose-form; Benzyl glycoside, G-280
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 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-352
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose;
 α -Pyranose-form; Benzyl glycoside, 2,2',2'',3'',3'',4',4'',6',6''-octabenzyl,
 G-352
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose;
 α -Pyranose-form; Me glycoside, G-382
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose;
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 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose,
 G-352
 α -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose,
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 α -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-glucose,
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 β -D-Glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 6)]-D-glucose,
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 α -D-Glucopyranuronosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose,
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 3'-*N*-Methylkanamycin B, K-4
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 α -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; *N*-Ac, N-39
 β -D-Neuraminopyranosyl-(2 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; *N*-Ac, N-41
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 α -L-Rhamnopyranosyl-(1 \rightarrow 3)- α -D-galactopyranosyl-(1 \rightarrow 3)-L-fucose, R-24
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 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-galactose, R-35
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 3)-L-rhamnose, R-39
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 6)-D-galactose, R-50
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 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose; β -*Pyranose-form*; 1,2-*O*-(1-Cyanoethylidene), 2'',3',4,4',4''-pentabenzoyl, 3''-Ac, R-52
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose; β -*Pyranose-form*; 1,2-*O*-(1-Cyanoethylidene), 2'',3',4,4',4''-pentabenzoyl, R-52
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose, R-52
 α -D-Rhamnopyranosyl-(1 \rightarrow 3)- α -D-rhamnopyranosyl-(1 \rightarrow 2)-D-rhamnose, R-53
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 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-D-galactose, R-34
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-D-glucose, R-36
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 β -D-Xylopyranosyl-(1 \rightarrow 3)- α -L-arabinofuranosyl-(1 \rightarrow 3)-L-arabinose, X-23
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 β -D-Xylopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, X-41
 α -D-Xylopyranosyl-(1 \rightarrow 4)- α -D-xylopyranosyl-(1 \rightarrow 6)-D-glucose, X-59
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 β -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose; β -*Pyranose-form*; Me glycoside, hepta-Me, X-71
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 2-Amino-2-deoxy- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose; α -*Pyranose-form*; Me glycoside, 3,3',3'',4,6,6',6''-heptabenzyl, 2'*N*,2''*N*,4''-tri-Ac, A-196
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 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -*Pyranose-form*; *N,N',N''*-Tri-Ac, A-228
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 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose; α -*Pyranose-form*; 1,2,3,4-Di-*O*-isopropylidene, 3',3'',4',4'',6''-pentabenzyl, *N,N'*-bis(benzenesulfonyl), A-233
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 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose; α -*Pyranose-form*; Me glycoside, 3,3',3'',4,6,6',6''-heptabenzyl, *N,N'*-di-Ac, A-239
 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose; α -*Pyranose-form*; Me glycoside, 3,4,6-tribenzyl, *N,N'*-di-Ac, A-239
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 2-Amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; *Pyranose-form*; 2',6'-Dibenzyl, 2,3,6-tribenzoyl, 2''*N*,3',3'',4'',6''-penta-Ac, A-248
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- 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-fucose; α -Pyranose-form; Me glycoside, 2,2',N,2',N',3',3',4N,4',4''-octa-Ac, Me ester, A-310
- 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-fucose; α -Pyranose-form; Me glycoside, 2',N,2',N',4N-tri-Ac, A-310
- 2-Amino-2-deoxy- β -D-mannopyranuronosyl-(1 \rightarrow 4)-2-amino-2-deoxy- α -D-glucopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-fucose, A-310
- 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-form; Me glycoside, 2,3',3''-tribenzyl, *N,N',N''*-triformyl, A-324
- 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 3)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-form; Me glycoside, 2,3',3''-tribenzyl, *N,N',N''*-triformyl, A-325
- 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-form; Me glycoside, *N,N',N''*-triformyl, A-324
- 4-Amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy- α -D-rhamnopyranosyl-(1 \rightarrow 2)-4-amino-4-deoxy-D-rhamnose; α -Pyranose-form; Me glycoside, *N,N',N''*-triformyl, A-325
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- α -L-Arabinofuranosyl-(1 \rightarrow 3)- α -L-arabinofuranosyl-(1 \rightarrow 3)-L-arabinose; α -Furanose-form; Me glycoside, A-798
- α -L-Arabinofuranosyl-(1 \rightarrow 3)- α -L-arabinofuranosyl-(1 \rightarrow 3)-L-arabinose; α -Furanose-form, A-798
- α -D-Arabinofuranosyl-(1 \rightarrow 5)- α -D-arabinofuranosyl-(1 \rightarrow 5)-D-arabinose, A-797
- α -L-Arabinofuranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Me glycoside, 2'',3'',5''-tribenzoyl, 2,2',3,3',6-penta-Ac, A-811
- α -L-Arabinofuranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Me glycoside, A-811
- α -L-Arabinofuranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form, A-811
- α -D-Arabinofuranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-glucose; α -Pyranose-form; Allyl glycoside, 4,6-O-benzylidene(R), 3,3',4',6'-tetrabenzyl, 2'',3'',5''-tribenzoyl, A-816
- α -D-Arabinofuranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-glucose; α -Pyranose-form; Allyl glycoside, 3,3',4',6'-tetrabenzyl, 2'',3'',5''-tribenzoyl, A-816
- α -D-Arabinofuranosyl-(1 \rightarrow 2)- α -D-mannopyranosyl-(1 \rightarrow 2)-D-glucose, A-816
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- α -L-Arabinofuranosyl-(1 \rightarrow 6)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-glucose; β -Pyranose-form; Me glycoside, 2',3',5'-tribenzoyl, 2,2'',3,3',6'-penta-Ac, A-812
- α -L-Arabinofuranosyl-(1 \rightarrow 6)-[α -D-glucopyranosyl-(1 \rightarrow 4)]-D-glucose; β -Pyranose-form; Me glycoside, A-812
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- 6-Deoxy- β -L-altropyranosyl-(1 \rightarrow 2)-6-deoxy- β -L-altropyranosyl-(1 \rightarrow 3)-6-deoxy-L-altrose; β -Pyranose-form, D-36
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- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; *N,N'*-Di-Ac, D-322
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, D-322
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- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose; β -Furanose-form; Me glycoside, 3-benzyl, 5,5'-dibenzoyl, 4'',5'',7'',8''-tetra-Ac, Me ester, D-326
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose; β -Furanose-form; Me glycoside, 5,5'-dibenzoyl, 3',4'',5'',7'',8''-penta-Ac, Me ester, D-326
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 2)-D-ribose; β -Furanose-form; Me glycoside, D-326
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- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[α -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-325
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, 2'',3'',5,5''-tetrabenzoyl, 4',5',7',8'-tetra-Ac, Me ester, D-327
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form; Me glycoside, D-327
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[α -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose; β -Furanose-form, D-325
- 3-Deoxy- α -D-manno-2-octulopyranosonosyl-(2 \rightarrow 3)-[β -D-ribofuranosyl-(1 \rightarrow 2)]-D-ribose, D-327
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- β -D-Fructopyranosyl β -D-glucopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]- β -D-glucopyranoside, F-82
- β -D-Fructopyranosyl-(1 \rightarrow 2)[β -D-fructopyranosyl-(1 \rightarrow 3)]-L-arabinose; α -Furanose-form; Tris-Me glycoside, F-83

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β -L-Fucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-*form*; Me glycoside, F-151
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 β -D-Galactofuranosyl-(1 \rightarrow 5)- β -D-galactofuranosyl-(1 \rightarrow 5)-D-galactose; β -Furanose-*form*; 3-Aminopropyl glycoside, G-9
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 β -D-Galactofuranosyl-(1 \rightarrow 5)- β -D-galactofuranosyl-(1 \rightarrow 5)-D-galactose; β -Furanose-*form*; Me glycoside, 6,6',6''-tripivaloyl, 2,2',2'',3,3',3''-hexabenzoyl, 5'-chloroacetyl, G-9
 β -D-Galactofuranosyl-(1 \rightarrow 5)- β -D-galactofuranosyl-(1 \rightarrow 5)-D-galactose; β -Furanose-*form*; Me glycoside, 6,6',6''-tripivaloyl, 2,2',2'',3,3',3''-hexabenzoyl, G-9
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 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- α -D-galactopyranosyl-(1 \rightarrow 6)-D-galactose; α -Pyranose-*form*, G-42
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 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose; N-Ac, G-50
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; N-Ac, G-51
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 3-allyl, 2,4-dibenzyl, hepta-Ac, G-50
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose; β -Pyranose-*form*; Benzyl glycoside, 2,4-dibenzyl, hepta-Ac, G-50
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose; α -Pyranose-*form*; 1,2,3,4-Di-O-isopropylidene, N-phthaloyl, hexa-Ac, G-50
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Me glycoside, N-Ac, G-51
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Me glycoside, 2'N,2'',3'',4'',6''-hepta-Ac, G-51
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Me glycoside, 2,3',4,6,6'-pentabenzoyl, 6''-tert-butylidiphenylsilyl, N-Ac, G-51
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Me glycoside, 2,4,6-tribenzyl, hepta-Ac, G-51
 β -D-Galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose; β -Pyranose-*form*; 8-Methoxycarbonyloctyl glycoside, N-Ac, G-50
 β -D-Galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; 8-Methoxycarbonyloctyl glycoside, N-Ac, G-51

α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-glucose; β -Pyranose-*form*, G-79
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, G-78
 β -D-Galactopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 6)- β -D-galactopyranosyl-(1 \rightarrow 3)-L-arabinose, G-85
 α -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*; *tert*-Butyldiphenylsilyl glycoside, 2,2',2'',3,3',3'',4'-heptabenzyl, 6,6',6''-tri-Ac, G-88
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*; *tert*-Butyldiphenylsilyl glycoside, 2,2',2'',3,3',3'',4'-heptabenzyl, 6,6',6''-tri-Ac, G-90
 β -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*; *tert*-Butyldiphenylsilyl glycoside, 2,2',2'',3,3',3'',4'-heptabenzyl, 6,6',6''-tri-Ac, G-94
 α -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*; *tert*-Butyldiphenylsilyl glycoside, 2,2',2'',3,3',3'',4'-heptabenzyl, G-88
 β -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*; *tert*-Butyldiphenylsilyl glycoside, 2,2',2'',3,3',3'',4'-heptabenzyl, G-94
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Me glycoside, 3'-benzyl, 2,2',2'',4,4',4'',6,6',6''-nonabenzyl, G-89
 β -D-Galactopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 2)-D-galactose; β -Pyranose-*form*; Me glycoside, nonabenzyl, 2'-benzoyl, G-95
 β -D-Galactopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 2)-D-galactose; β -Pyranose-*form*; Me glycoside, G-95
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Undecabenzoyl, G-89
 β -D-Galactopyranosyl-(1 \rightarrow 3)- α -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*; Undecabenzoyl, G-93
 α -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*, G-88
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*, G-89
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*, G-90
 β -D-Galactopyranosyl-(1 \rightarrow 3)- α -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose; β -Pyranose-*form*, G-93
 β -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-galactose; β -Pyranose-*form*, G-94
 β -D-Galactopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 2)-D-galactose; β -Pyranose-*form*, G-95
 α -D-Galactopyranosyl-(1 \rightarrow 3)- α -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose, G-86
 α -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 3)-D-galactose, G-87
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-D-glucose; β -Pyranose-*form*; 1,6-Anhydro, nona-Ac, G-107
 β -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; Benzyl glycoside, deca-Ac, G-110
 β -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; Benzyl glycoside, 2,2',2'',3,3',4',6,6',6''-nona-Ac, G-110
 β -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; Benzyl glycoside, G-110
 α -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; 2-Bromoethyl glycoside, 2,3,6-tribenzyl, hepta-Ac, G-103
 α -D-Galactopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 2)-D-glucose; α -Pyranose-*form*; 2'',3'',4'',6'',6''-Tetrabenzyl, 1,3,3',4,4',6,6'-hepta-Ac, G-101
 α -D-Galactopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 2)-D-glucose; α -Pyranose-*form*; Undeca-Ac, G-101
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-D-glucose; α -Pyranose-*form*; Undeca-Ac, G-107
 β -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*; Undeca-Ac, G-110
 α -D-Galactopyranosyl-(1 \rightarrow 4)- α -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-*form*, G-103
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-D-glucose; α -Pyranose-*form*, G-107
 α -D-Galactopyranosyl-(1 \rightarrow 4)- β -D-galactopyranosyl-(1 \rightarrow 3)-D-glucose; β -Pyranose-*form*, G-107
 α -D-Galactopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 2)-D-glucose, G-101
 α -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, G-106
 β -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, G-110
 β -D-Galactopyranosyl-(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-mannose; α -D-Pyranose-*form*; 1-Phosphate, G-114

- β -D-Galactopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 6)]-D-galactose;
 β -Pyranose-form, G-168
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[β -D-xylopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; *N*-Ac, G-177
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[β -D-xylopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 6-benzoyl, octa-Ac, G-177
 β -D-Galactopyranosyl-(1 \rightarrow 4)-[β -D-xylopyranosyl-(1 \rightarrow 3)]-2-amino-2-deoxy-D-glucose, G-177
 β -D-Galactopyranuronosyl-(1 \rightarrow 4)- α -D-galactopyranuronosyl-(1 \rightarrow 4)-D-galactouronic acid; Pyranose-form, G-182
 β -D-Galactopyranuronosyl-(1 \rightarrow 4)- α -D-galactopyranuronosyl-(1 \rightarrow 4)-D-galactouronic acid; β -Pyranose-form, G-182
 Gangliosides, G-214
 Gangliotetraose, G-215
 Gentiotetraose, G-234
 β -D-Glucopyranosyl-(1 \rightarrow 3)-4-*O*-acetyl- α -D-galactopyranosyl-(1 \rightarrow 3)-D-mannose, 9CI, G-308
 β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form; 1,2:3,4-Di-*O*-isopropylidene, hepta-Ac, G-305
 β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form, G-305
 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, G-306
 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form, G-306
 β -D-Glucopyranosyl-(1 \rightarrow 3)- α -D-galactopyranuronosyl-(1 \rightarrow 3)-D-mannose, G-308
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; *N*-Ac, G-327
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, deca-Ac, G-327
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, G-327
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-arabinose, G-328
 β -D-Glucopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-D-ribo-hexose, S-89
 β -D-Glucopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 4)-2,6-dideoxy-3-*O*-methyl-D-ribo-hexose, S-89
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form; 1,2:3,4-Di-*O*-isopropylidene, 2',2'',3',3'',4',4'',6',6''-heptabenzyl, G-333
 α -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form; 1,2:3,4-Di-*O*-isopropylidene, heptabenzyl, G-334
 α -D-Glucopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form; 1,2:3,4-Di-*O*-isopropylidene, 2',2'',3',3'',4',4'',6',6''-heptabenzyl, G-337
 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form; 4',6'-*O*-Ethylidene, 1,2:3,4-di-*O*-isopropylidene, 2'-benzoyl, 2'',3'',4'',6''-tetra-Ac, G-339
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form, G-333
 α -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form, G-334
 α -D-Glucopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form, G-337
 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form, G-339
 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, G-343
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, G-344
 α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-362
 α -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-363
 β -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-374
 β -D-Glucopyranosyl-(1 \rightarrow 3)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-376
 β -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-377
 β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-378
 β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-379
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Benzyl glycoside, decabenzyl, G-388
 β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 β -Pyranose-form; 2''-Benzyl, 3'',4'',6''-tris-(*p*-nitrobenzoyl), 1,2,2',3',3',4'-hepta-Ac, G-379
 α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, 4,6-*O*-benzylidene, octabenzyl, G-360
 β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, 4,6-*O*-benzylidene, 2,3',4',6'-tetrabenzyl, tetrabenzoyl, G-380
 β -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, 4,6:4',6'-di-*O*-benzylidene, 2-benzyl, 2'',3'',4'',6''-tetra-Ac, G-371
 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, 4,6:4',6'-di-*O*-benzylidene, 2,2'',3'',4'',6''-pentabenzyl, 3'-Ac, G-345
 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, G-345
 α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, G-360
 β -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, G-371
 β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form; Me glycoside, G-380
 α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-glucose;
 β -Pyranose-form; Undeca-Ac, G-359
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form; Undeca-Ac, G-388
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 β -Pyranose-form; Undeca-Ac, G-388
 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form, G-345
 α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form, G-360
 α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form, G-362
 α -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form, G-363
 β -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form, G-371
 β -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form, G-374
 β -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form, G-377
 β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form, G-379
 β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 β -Pyranose-form, G-379
 β -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 3)-D-glucose;
 α -Pyranose-form, G-380
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 α -Pyranose-form, G-388
 β -D-Glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose;
 β -Pyranose-form, G-388
 α -D-Glucopyranosyl-(1 \rightarrow 2)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-glucose, G-359
 β -D-Glucopyranosyl-(1 \rightarrow 3)- α -D-glucopyranosyl-(1 \rightarrow 6)-D-glucose, G-376
 β -D-Glucopyranosyl-(1 \rightarrow 6)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, G-378
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; Benzyl glycoside, 2',2'',3',3'',4'',6',6''-octabenzyl, G-398
 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-xylose;
 Pyranose-form; Me glycoside, nona-Me, G-399
 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-xylose;
 Pyranose-form; 3''-Me, nona-Ac, G-399
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-xylose;
 Pyranose-form, G-398
 β -D-Glucopyranosyl-(1 \rightarrow 3)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-xylose, G-399
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form; Benzyl glycoside, 2,3-anhydro, heptabenzyl, G-400
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form, G-400
 α -D-Glucopyranosyl-(1 \rightarrow 2)- α -D-glucopyranuronosyl-(1 \rightarrow 3)-D-mannose, G-403
 α -D-Glucopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxyglucose, G-437
 α -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-mannose; β -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, *N*-Ac, G-438
 α -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-2-amino-2-deoxy-D-mannose; β -Pyranose-form, G-438
 β -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose;
 α -Pyranose-form; Me glycoside, 2',2'',3',3'',4',4'',6''-octa-Me, G-439
 β -D-Glucopyranosyl-(1 \rightarrow 3)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose;
 α -Pyranose-form, G-439
 β -D-Glucopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form; 1,2:3,4-Di-*O*-isopropylidene, hexa-Ac, G-440
 β -D-Glucopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 6)-D-galactose;
 α -Pyranose-form; 1,2:2',3':3',4'-Tri-*O*-isopropylidene, tetra-Ac, G-440

[illegible]

- α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-galactose; Pyranose-form, G-420
 α -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form, G-421
 α -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-galactose; β -Pyranose-form, G-421
 β -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-galactose; α -Pyranose-form, G-422
 β -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-galactose; β -Pyranose-form, G-422
 α -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-galactose, G-421
 β -D-Glucopyranosyl-(1 \rightarrow 4)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-galactose, G-422
 α -D-Glucopyranosyl-(1 \rightarrow 6)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-mannose; α -Pyranose-form; Me glycoside, 2,2',3',4',6'-pentabenzyl, 2'',3'',4'',6''-tetrabenzyl, G-425
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose; α -Pyranose-form; Me glycoside, 2',3',4',6'-tetrabenzyl, 2'',3'',4'',6''-tetrabenzyl, 2,4-di-Ac, G-424
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose; α -Pyranose-form; Me glycoside, G-424
 α -D-Glucopyranosyl-(1 \rightarrow 6)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-mannose; α -Pyranose-form; Me glycoside, G-425
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose; α -Pyranose-form, G-424
 α -D-Glucopyranosyl-(1 \rightarrow 6)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-mannose; α -Pyranose-form, G-425
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -D-mannopyranosyl-(1 \rightarrow 6)]-D-mannose; α -Pyranose-form, G-424
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 2)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',3',4',4'',6'-hexabenzyl, 2'',3'',4'',6''-tetra-Ac, G-442
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',3',4',6'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac, G-441
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, 2',3',4',6'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac, G-445
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-441
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 2)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-442
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form; Me glycoside, G-445
 β -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose; α -Pyranose-form, G-445
 α -D-Glucopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose, G-441
 α -D-Glucopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 2)]-L-rhamnose, G-442
 β -D-Glucopyranuronosyl-(1 \rightarrow 3)- α -D-galactopyranuronosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-[β -D-glucopyranuronosyl-(1 \rightarrow 3)]- α -D-galactopyranuronosyl-(1 \rightarrow 2)-L-rhamnopyranose, G-484
 β -D-Glucopyranuronosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-galactose, G-492
 β -D-Glucuronopyranosyl-(1 \rightarrow 3)- α -D-galacturonopyranosyl-(1 \rightarrow 2)-L-rhamnose, G-540
Hybrimycin A₁, H-129
Idraparinux, I-11
Inulotriose; Undeca-Ac, I-40
Inulotriose; Undeca-Me, I-40
Inulotriose, I-40
Isolychnose, I-55
Kefirose, K-9
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Lacto-N-fucopentaose III, F-120
Lacto-N-fucopentaose II, F-121
Lacto-N-fucopentaose I, L-8
Lacto-N-fucopentaose V, L-9
Lacto-N-neotetraose, G-47
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Lactono-1,5-lactone, L-10
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Lantanose A, L-24
Lantanose B, L-24
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Lysodectose, G-258
 α -D-Lyxopyranosyl-(1 \rightarrow 6)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-mannose; α -Pyranose-form; Me glycoside, 2-allyl, 2',2'',3',3'',4',4'',6''-hepta-Ac, L-70
 α -D-Lyxopyranosyl-(1 \rightarrow 6)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-mannose; α -Pyranose-form; Me glycoside, L-70
 α -D-Lyxopyranosyl-(1 \rightarrow 6)-[α -D-mannopyranosyl-(1 \rightarrow 3)]-D-mannose, L-70
Maltoheptaose, M-9
Maltohexaose, M-10
Maltononaose, M-11
Maltooctaose, M-12
Maltopentaose, M-13
Maltotetraitol, M-16
Maltotetraonic acid, M-17
Maltotetraose, M-18
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; N,N'-Di-Ac, M-48
 β -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; N,N'-Di-Ac, M-49
 β -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Benzyl glycoside, 3,6-dibenzyl, octa-Ac, M-49
 α -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; Benzyl glycoside, N,N'-dipthaloyl, 3'',6''-diallyl, 2'',3'',3'',4'',6,6'-hexabenzyl, M-47
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; 1,2N,2'N,2'',3',3'',4'',6,6''-Deca-Ac, M-48
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Undeca-Ac, M-48
 α -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, M-47
 α -D-Mannopyranosyl-(1 \rightarrow 6)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-48
 β -D-Mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy- β -D-glucopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-49
 α -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranosyl-(1 \rightarrow 2)-D-mannose, M-58
 α -D-Mannopyranosyl-(1 \rightarrow 4)- β -D-glucopyranuronosyl-(1 \rightarrow 2)-D-mannose, M-60
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; N-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; N-Ac, M-73
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, nona-Ac, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, nona-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, 3,3',4',6'-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form; 1,6-Anhydro, 2',3,4',6'-tetrabenzyl, 2N,2'',3'',4'',6''-penta-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form; Undeca-Ac, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, M-71
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; α -Pyranose-form, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; β -Pyranose-form, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Undeca-Ac, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose; Undeca-Ac, M-73
 α -D-Mannopyranosyl-(1 \rightarrow 3)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-72
 α -D-Mannopyranosyl-(1 \rightarrow 6)- β -D-mannopyranosyl-(1 \rightarrow 4)-2-amino-2-deoxy-D-glucose, M-73
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 3)-D-galactose; α -Pyranose-form; 1-Dihydrogen phosphate, M-75
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 3)-D-galactose; Pyranose-form; Undeca-Ac, M-75
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 3)-D-galactose; α -Pyranose-form, M-75
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 3)-D-galactose, M-75
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-glucose; β -Pyranose-form; Benzyl glycoside, 2,3,4',6,6'-pentabenzyl, 2'',3'',4'',6''-tetra-Ac, M-76
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-form; 2,2'',3,3',3'',4',4'',6,6',6''-Deca-Ac, M-76
 α -D-Mannopyranosyl-(1 \rightarrow 2)- β -D-mannopyranosyl-(1 \rightarrow 4)-D-glucose; Pyranose-form, M-76

- α -D-Mannopyranosyl-(1→2)- β -D-mannopyranosyl-(1→4)-D-glucose;
 α -Pyranose-form, M-76
 α -D-Mannopyranosyl-(1→2)- β -D-mannopyranosyl-(1→4)-D-glucose;
 β -Pyranose-form, M-76
 β -D-Mannopyranosyl-(1→2)- α -D-mannopyranosyl-(1→2)-D-mannose;
 α -Pyranose-form; Allyl glycoside, 2'',3,3',3'',4,4',4'',6,6',6''-decabenzyl,
M-89
 α -D-Mannopyranosyl-(1→4)- α -D-mannopyranosyl-(1→4)-D-mannose;
 α -Pyranose-form; 3,3',3'',6,6',6''-Hexabenzyl, 2,2',2''-tris(4-methyl-
benzoyl), 4''-chloroacetyl, M-83
 α -D-Mannopyranosyl-(1→4)- α -D-mannopyranosyl-(1→4)-D-mannose;
 α -Pyranose-form; Me 1-thioglycoside, 3,3',3'',6,6',6''-hexabenzyl,
2,2',2''-tris(4-methylbenzoyl), M-83
 α -D-Mannopyranosyl-(1→2)- β -D-mannopyranosyl-(1→6)-D-mannose;
 α -Pyranose-form; 8-Methoxycarbonyl glycoside, 6'-diphenyl phosphate,
nona-Ac, M-87
 α -D-Mannopyranosyl-(1→2)- α -D-mannopyranosyl-(1→6)-D-mannose;
 α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 6'-diphenyl
phosphate, nona-Ac, M-80
 α -D-Mannopyranosyl-(1→2)- β -D-mannopyranosyl-(1→2)-D-mannose;
 α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 6'-diphenyl
phosphate, 3,3',4,4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac, M-85
 α -D-Mannopyranosyl-(1→2)- α -D-mannopyranosyl-(1→6)-D-mannose;
 α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 6'-phosphate,
M-80
 α -D-Mannopyranosyl-(1→2)- β -D-mannopyranosyl-(1→2)-D-mannose;
 α -Pyranose-form; 8-Methoxycarbonyloctyl glycoside, 6'-phosphate,
M-85
 α -D-Mannopyranosyl-(1→2)- α -D-mannopyranosyl-(1→6)-D-mannose;
 α -Pyranose-form; 6'-Phosphate, M-80
 β -D-Mannopyranosyl-(1→2)- α -D-mannopyranosyl-(1→2)-D-mannose;
 α -Pyranose-form; Propyl glycoside, M-89
 α -D-Mannopyranosyl-(1→2)- α -D-mannopyranosyl-(1→6)-D-mannose;
 α -Pyranose-form, M-80
 α -D-Mannopyranosyl-(1→2)- β -D-mannopyranosyl-(1→2)-D-mannose;
 α -Pyranose-form, M-85
 α -D-Mannopyranosyl-(1→2)- β -D-mannopyranosyl-(1→6)-D-mannose;
 α -Pyranose-form, M-87
 α -D-Mannopyranosyl-(1→4)- α -D-mannopyranosyl-(1→4)-D-mannose,
M-83
 β -D-Mannopyranosyl-(1→2)- α -D-mannopyranosyl-(1→2)-D-mannose,
M-89
 β -D-Mannopyranosyl-(1→4)- α -D-mannopyranosyl-(1→3)-L-rhamnose;
 α -Pyranose-form; 3'-Ac, M-91
 β -D-Mannopyranosyl-(1→4)- α -D-mannopyranosyl-(1→3)-L-rhamnose;
 α -Pyranose-form, M-91
 α -D-Mannopyranosyloxylphosphinico-(1→6)- α -D-mannopyranosyloxy-
phosphinico-(1→6)-D-mannose; α -Pyranose-form; 1-Dihydrogen
phosphate, 2,2',2'',3,3',3'',4,4',4''-nonabenzoyl, M-100
 α -D-Mannopyranosyloxylphosphinico-(1→6)- α -D-mannopyranosyloxy-
phosphinico-(1→6)-D-mannose; α -Pyranose-form; 1-Dihydrogen
phosphate, M-100
 α -D-Mannopyranosyloxylphosphinico-(1→6)- α -D-mannopyranosyloxy-
phosphinico-(1→6)-D-mannose; α -Pyranose-form; Me glycoside,
2',2'',3',3'',4',4''-hexabenzoyl, 2,3,4-tri-Ac, M-100
 α -D-Mannopyranosyloxylphosphinico-(1→6)- α -D-mannopyranosyloxy-
phosphinico-(1→6)-D-mannose, M-100
 α -L-Mannopyranosyl-(1→2)- α -L-rhamnopyranosyl-(1→2)-L-rhamnose;
 α -Pyranose-form; Me glycoside, 3,3',4,4'-tetrabenzyl, 2'',3'',4'',6''-tetra-
Ac, M-103
 α -L-Mannopyranosyl-(1→2)- α -L-rhamnopyranosyl-(1→2)-L-rhamnose;
 α -Pyranose-form; Me glycoside, M-103
 α -L-Mannopyranosyl-(1→2)- α -L-rhamnopyranosyl-(1→2)-L-rhamnose,
M-103
 β -D-Mannopyranosyl-(1→2)- α -L-rhamnopyranosyl-(1→4)-L-rhamnose,
M-104
 α -D-Mannopyranosyl-(1→2)-[α -D-mannopyranosyl-(1→4)]-D-mannose;
 α -Pyranose-form; Me glycoside, 3,3',3'',4',4'',6,6',6''-octabenzyl,
2',2''-di-Ac, M-79
 α -D-Mannopyranosyl-(1→2)-[α -D-mannopyranosyl-(1→4)]-D-mannose;
 α -Pyranose-form; Me glycoside, M-79
 α -D-Mannopyranosyl-(1→2)-[α -D-mannopyranosyl-(1→4)]-D-mannose,
M-79
 α -D-Mannopyranosyl-(1→2)-[α -D-mannopyranosyl-(1→6)]-D-mannose,
M-81
 α -D-Mannopyranosyl-(1→3)-[α -D-mannopyranosyl-(1→6)]-D-mannose,
M-82
 α -D-Mannopyranosyl-(1→2)-[α -D-mannopyranosyl-(1→3)]-L-rhamnose;
 α -Pyranose-form; Me glycoside, nonabenzoyl, M-90
 α -D-Mannopyranosyl-(1→2)-[α -D-mannopyranosyl-(1→3)]-L-rhamnose;
 α -Pyranose-form; Me glycoside, M-90
 α -D-Mannopyranosyl-(1→2)-[α -D-mannopyranosyl-(1→3)]-L-rhamnose;
 α -Pyranose-form, M-90
Methyl octa-*O*-methyl-D-lactonate, L-10
3-*O*-Methyl- β -D-galactopyranosyl-(1→4)-3-*O*-methyl- β -D-
galactopyranosyl-(1→4)-L-rhamnose, G-115
Neobifurcose, N-16
Neocondurangerotriose, N-18
 β -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',3,3',6-
tetrabenzyl, 2*N*,5''*N*-di-Ac, N-37
 β -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; α -Pyranose-form; Benzyl glycoside, 2',3,3',6-
tetrabenzyl, hepta-Ac, Me ester, N-37
 α -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; Pyranose-form; *N,N'*-Di-Ac, N-36
 β -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; Pyranose-form; *N,N'*-Di-Ac, N-37
 α -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; β -Pyranose-form; 2*N*-Phthaloyl, undeca-Ac,
Me ester, N-36
 β -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; α -Pyranose-form; 2*N*-Phthaloyl, undeca-Ac,
Me ester, N-37
 α -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; Pyranose-form, N-36
 α -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; β -Pyranose-form, N-36
 β -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; Pyranose-form, N-37
 β -D-Neuraminopyranosyl-(2→6)- β -D-galactopyranosyl-(1→4)-2-amino-
2-deoxy-D-glucose; α -Pyranose-form, N-37
 β -D-Neuraminopyranosyl-(2→3)- β -D-galactopyranosyl-(1→4)-D-glucose;
Pyranose-form; *N*-Ac, N-40
 β -D-Neuraminopyranosyl-(2→3)- β -D-galactopyranosyl-(1→4)-D-glucose;
 β -Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, *N*-Ac,
Me ester, N-40
 β -D-Neuraminopyranosyl-(2→3)- β -D-galactopyranosyl-(1→4)-D-glucose;
 β -Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl, *N*-Ac, N-40
 β -D-Neuraminopyranosyl-(2→3)- β -D-galactopyranosyl-(1→4)-D-glucose;
 β -Pyranose-form; Benzyl glycoside, 2,2',3,6,6'-pentabenzyl,
4'',5''*N*,7'',8'',9''-penta-Ac, Me ester, N-40
 β -D-Neuraminopyranosyl-(2→3)- β -D-galactopyranosyl-(1→4)-D-glucose;
Pyranose-form, N-40
 β -D-Neuraminopyranosyl-(2→3)- β -D-galactopyranosyl-(1→4)-D-glucose;
 β -Pyranose-form, N-40
Nod Rm 1, N-75
Nystose, N-87
Octaacetylstrophanthotriose, S-89
Olgose, O-30
Oligo-*H* tetradecasaccharide, O-31
Ornose, O-37
 α -L-Rhamnopyranosyl-(1→3)-2-amino-2-deoxy- β -D-glucopyranosyl-
(1→2)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl
glycoside, *N*-Ac, R-14
 α -L-Rhamnopyranosyl-(1→3)-2-amino-2-deoxy- β -D-glucopyranosyl-
(1→2)-L-rhamnose; α -Pyranose-form; 8-Methoxycarbonyloctyl glyco-
side, 4',6'-*O*-benzylidene, 3,4-dibenzyl, 2*N*,2'',3'',4''-tetra-Ac, R-14
 α -L-Rhamnopyranosyl-(1→3)-2-amino-2-deoxy- β -D-glucopyranosyl-
(1→2)-L-rhamnose, R-14
 β -L-Rhamnopyranosyl-(1→4)- β -L-rhamnopyranosyl-(1→2)-L-rhamnose;
 α -Pyranose-form; Benzyl glycoside, 2'',3,3',3'',4,4''-hexabenzyl, 2'-Ac,
R-67
 β -L-Rhamnopyranosyl-(1→4)- β -L-rhamnopyranosyl-(1→2)-L-rhamnose;
 α -Pyranose-form; Benzyl glycoside, 2'',3,3',3'',4,4''-hexabenzyl, R-67
 β -L-Rhamnopyranosyl-(1→4)- β -L-rhamnopyranosyl-(1→4)-L-rhamnose;
 α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4''-tetrabenzyl,
2,3-*O*-isopropylidene, R-68
 β -L-Rhamnopyranosyl-(1→4)- β -L-rhamnopyranosyl-(1→4)-L-rhamnose;
 α -Pyranose-form; Benzyl glycoside, 2'',3',3'',4''-tetrabenzyl, R-68
 α -D-Rhamnopyranosyl-(1→2)- β -D-rhamnopyranosyl-(1→3)-D-rhamnose;
 β -Pyranose-form; 1,2-*O*-(1-Cyanoethylidene), 2'',3',4,4',4''-
pentabenzoyl, 3''-Ac, R-65
 α -D-Rhamnopyranosyl-(1→2)- α -L-rhamnopyranosyl-(1→2)-L-rhamnose;
 α -Pyranose-form; 1,4-Dibenzyl, 3,3'-dibenzoyl, 2'',3'',4'',4''-tetra-Ac,
R-55
 α -L-Rhamnopyranosyl-(1→4)- α -L-rhamnopyranosyl-(1→4)-L-rhamnose;
 α -Pyranose-form; Me glycoside, 2,3,2',3'-di-*O*-isopropylidene,
2'',3'',4''-tri-Ac, R-64
 α -L-Rhamnopyranosyl-(1→4)- α -L-rhamnopyranosyl-(1→3)-L-rhamnose;
 α -Pyranose-form; Me glycoside, 2',3'-*O*-isopropylidene, 2,4-dibenzyl,
2'',3'',4''-tri-Ac, R-63
 α -L-Rhamnopyranosyl-(1→4)- α -L-rhamnopyranosyl-(1→3)-L-rhamnose;
 α -Pyranose-form; Me glycoside, R-63
 α -L-Rhamnopyranosyl-(1→4)- α -L-rhamnopyranosyl-(1→4)-L-rhamnose;
 α -Pyranose-form; Me glycoside, R-64

- α -L-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose;
 α -Pyranose-form; 4-Methylphenyl glycoside, 2,2'',3,3',3''-penta-Me, R-59
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose;
 α -Pyranose-form, R-55
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-L-rhamnose;
 α -Pyranose-form, R-63
 α -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose;
 α -Pyranose-form, R-64
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose;
 α -Pyranose-form, R-68
 α -D-Rhamnopyranosyl-(1 \rightarrow 3)- α -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose, R-54
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)- α -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose, R-59
 α -D-Rhamnopyranosyl-(1 \rightarrow 2)- β -D-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose, R-65
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 3)-D-rhamnose, R-66
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 2)-L-rhamnose, R-67
 β -L-Rhamnopyranosyl-(1 \rightarrow 4)- β -L-rhamnopyranosyl-(1 \rightarrow 4)-L-rhamnose, R-68
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-arabinose;
 β -Pyranose-form; Benzyl glycoside, 2',3',4,4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac, R-32
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose;
 β -Pyranose-form; Benzyl glycoside, 2',3',3',4'-tetrabenzyl, 2'',3'',4'',6''-tetra-Ac, R-33
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 3)]-L-arabinose, R-32
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[β -D-glucopyranosyl-(1 \rightarrow 4)]-L-arabinose, R-33
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-mannose; α -Pyranose-form; Me glycoside, 2',3',4,4',6-pentabenzyl, 6''-Me, 2'',3'',4''-tri-Ac, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-mannose; α -Pyranose-form; Me glycoside, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[β -D-glucuronopyranosyl-(1 \rightarrow 2)]-D-mannose, R-47
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-6-deoxy-D-glucose; α -Pyranose-form; Me glycoside, R-49
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-6-deoxy-D-glucose, R-49
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 4)]-L-rhamnose;
 α -Pyranose-form; 1,2-O-(1-Cyanoethylidene), 3',3'',4',4''-benzoyl, 2',2''-di-Ac, R-62
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose;
 α -Pyranose-form; Me glycoside, 2',2'',3',3'',4,4',4''-heptabenzoyl, R-57
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose;
 α -Pyranose-form; Me glycoside, R-57
 α -L-Rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-L-rhamnose;
 α -Pyranose-form, R-57
 α -L-Rhamnopyranosyl-(1 \rightarrow 3)-[α -L-rhamnopyranosyl-(1 \rightarrow 4)]-L-rhamnose, R-62
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 β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-manno-2-octulopyranosonic acid; α -form; Me glycoside, R-117
 β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-manno-2-octulopyranosonic acid; β -form; Me glycoside, R-117
 β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-manno-2-octulopyranosonic acid; α -form, R-117
 β -D-Ribofuranosyl-(1 \rightarrow 2)- β -D-ribofuranosyl-(1 \rightarrow 7)-3-deoxy-D-manno-2-octulopyranosonic acid; β -form, R-117
 α -D-Ribofuranosyl-(1 \rightarrow 5)- α -D-ribofuranosyl-(1 \rightarrow 5)-D-ribose;
 β -Furanose-form; Benzyl glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene, R-118
 α -D-Ribofuranosyl-(1 \rightarrow 5)- α -D-ribofuranosyl-(1 \rightarrow 5)-D-ribose;
 β -Furanose-form; Me glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene, R-118
 α -D-Ribofuranosyl-(1 \rightarrow 5)- α -D-ribofuranosyl-(1 \rightarrow 5)-D-ribose;
 β -Furanose-form; 2,3;2',3';2'',3''-Tri-O-isopropylidene, R-118
 α -D-Ribofuranosyl-(1 \rightarrow 5)- α -D-ribofuranosyl-(1 \rightarrow 5)-D-ribose, R-118
 β -D-Ribofuranuronosyl-(1 \rightarrow 5)- α -D-ribofuranosyl-(1 \rightarrow 5)-D-ribose;
 β -Furanose-form; Benzyl glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene, Me ester, R-127
 β -D-Ribofuranuronosyl-(1 \rightarrow 5)- α -D-ribofuranosyl-(1 \rightarrow 5)-D-ribose;
 β -Furanose-form; Me glycoside, 2,3;2',3';2'',3''-tri-O-isopropylidene, Me ester, R-127
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Streptobiosamine, S-80
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3-O-Sulfo- β -D-galactopyranosyl(1 \rightarrow 3)-[(α -L-fucopyranosyl)(1 \rightarrow 4)]-2-acetamido-2-deoxy- β -D-glucopyranosyl(1 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-D-glucose, S-98
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 β -D-Xylopyranosyl-(1 \rightarrow 3)- α -L-arabinopyranosyl-(1 \rightarrow 4)-[β -D-apiofuranosyl-(1 \rightarrow 3)]- α -L-rhamnopyranosyl-(1 \rightarrow 2)-[α -L-rhamnopyranosyl-(1 \rightarrow 3)]-D-xylopyranose, X-26
 α -D-Xylopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose;
 β -Pyranose-form; Benzyl glycoside, nonabenzyl, X-39
 α -D-Xylopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl-(1 \rightarrow 4)-D-glucose, X-39
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 α -Pyranose-form; Me glycoside, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 β -Pyranose-form; Me glycoside, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 α -Pyranose-form, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose;
 β -Pyranose-form, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-L-arabinose, X-55
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose;
 α -Pyranose-form; Me glycoside, X-56
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -L-rhamnopyranosyl-(1 \rightarrow 2)-D-fucose, X-56
 β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form; Me glycoside, 2,3-anhydro, 2'',3',3'',4',4''-penta-Ac, X-60
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form; Me glycoside, 2,3-anhydro, 2'',2'',3',3'',4',4''-penta-Ac, X-61
 β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form; Me glycoside, 2,3-anhydro, X-60
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form; Me glycoside, 2,3-anhydro, X-61
 β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form, X-60
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-ribose;
 β -Pyranose-form, X-61
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; 4''-Benzyl, hepta-Ac, X-66
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; 1,2,2',2'',3,3',3''-Hepta-Ac, X-66
 β -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose;
 β -Pyranose-form; 1,2,2',2'',4,4',4''-Hepta-Ac, X-70
 α -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Ac, X-63
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 2)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Ac, X-64
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Ac, X-65
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Ac, X-66
 β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Ac, X-69
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 2)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Ac, X-73
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Ac, X-74
 α -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Me, X-63
 β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-form; Me glycoside, hepta-Me, X-69

α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-*form*; Me glycoside, 2,2',2'',3,3',3''-hexa-Ac, X-66
 α -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-*form*; Me glycoside, X-63
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 2)-D-xylose;
 β -Pyranose-*form*; Me glycoside, X-64
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose;
 β -Pyranose-*form*; Me glycoside, X-65
 β -D-Xylopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-*form*; Me glycoside, X-69
 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 2)-D-xylose;
 β -Pyranose-*form*; Me glycoside, X-73
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 β -Pyranose-*form*; Me glycoside, X-74
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-*form*; Octa-Ac, X-66
 β -D-Xylopyranosyl-(1 \rightarrow 4)- α -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
 β -Pyranose-*form*; Octa-Ac, X-67
 α -D-Xylopyranosyl-(1 \rightarrow 3)- β -D-xylopyranosyl-(1 \rightarrow 4)-D-xylose;
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 β -Pyranose-*form*, X-64
 α -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 3)-D-xylose;
 β -Pyranose-*form*, X-65
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 β -Pyranose-*form*, X-66
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 β -D-Xylopyranosyl-(1 \rightarrow 4)- β -D-xylopyranosyl-(1 \rightarrow 2)-D-xylose, X-73
 α -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
 β -Pyranose-*form*; Benzyl glycoside, 2'',3,3'',4''-tetrabenzyl, tri-Ac, X-62
 α -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
 β -Pyranose-*form*; Benzyl glycoside, 2'',3,3'',4''-tetrabenzyl, X-62
 β -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
 β -Pyranose-*form*; Benzyl glycoside, 2'',3,3'',4''-tetrabenzyl, X-68
 β -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
 β -Pyranose-*form*; Me glycoside, 3-benzyl, hexa-Ac, X-68
 β -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
 β -Pyranose-*form*; Me glycoside, X-68
 α -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
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 α -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
 β -Pyranose-*form*, X-62
 β -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
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 β -D-Xylopyranosyl-(1 \rightarrow 2)-[β -D-xylopyranosyl-(1 \rightarrow 4)]-D-xylose;
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